

Pott Creek II Stream Restoration Project Year 1 Monitoring Report - 2005



November 23, 2005

Prepared By:



**Mid - Atlantic
Mitigation, LLC
(AN EARTHMARK COMPANY)**

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1.0 EXECUTIVE SUMMARY/PROJECT ABSTRACT

On behalf of the North Carolina Department of Transportation (NCDOT), Mid-Atlantic Mitigation, LLC (MAM) with technical assistance from Mulkey Engineers and Consultants (Mulkey) restored 10,054 linear feet of stream that was severely degraded due to past channelization, removal and ongoing maintenance of the riparian buffer, and continuous cattle grazing. Construction of the project began in October 2004 and was completed in April 2005. The Pott Creek II Stream Restoration Project will provide NCDOT with 10,054 Stream Mitigation Units (SMUs).

This project aims to provide a stable network of stream channels that neither aggrade nor degrade while maintaining their dimension, pattern, and profile with the capacity to transport the watershed's water and sediment load. The objective of the restoration plan is to restore the primary stream function and values associated with nutrient removal and transformation, sediment retention, flood-flow attenuation, wildlife (both aquatic and terrestrial) habitat, and also to provide restoration of riparian zones that have been historically used for pasture. Ultimately, the Pott Creek II site will improve the overall downstream water quality by reducing the amount of sediment being produced by bank erosion and increased scour and will also improve fish and aquatic habitat by providing both natural material stabilization structures (rootwads, rock vanes, and riparian buffer) and by reducing the silt and clay fines in the streambed. Additional water quality benefits will be generated by removing cattle from the riparian corridor. Degraded agricultural/pasture wetlands and existing bottomland hardwood wetlands on site will be preserved.

Pott Creek enters from the north and runs the entire length of the project crossing under Paint Shop road and continuing south. Unnamed Tributary 1 (UT 1) enters from the west and had been heavily degraded by cattle traffic and grazing. UT2, UT3, and UT5 enter from the east and were severely entrenched. UT 4 enters from the west, south of the confluence of Pott Creek and Rhodes Mill, and was also severely degraded by cattle traffic and grazing and also showed evidence of past channelization. Approximately, 7209 linear feet of the channel on Pott Creek was restored and relocated consistent with C-type stream channels, approximately 1827 linear feet of channel was restored on the perennial tributaries, and approximately 1018 linear feet of channel on Rhodes Mill Creek were restored by construction of a channel with proper dimension, pattern, and profile.

The streams and vegetation will be monitored annually for five years (October 2005 thru October 2009) by Mid-Atlantic Mitigation and the monitoring report will be submitted to NCEEP/NCDOT by the end of the calendar year. Ten 50' by 50' and one 100' by 25' permanent vegetative plots were established on-site. Survivability within these plots will determine the success of the project. Six permanent cross-sections throughout Pott Creek, two throughout Rhodes Mill, and one on unnamed tributaries 1 thru 4 were established. Cross-sections will determine changes in dimension, pattern and profile of

the restored stream(s). Approximately 3000 linear feet of longitudinal profiles have been established throughout the project and will monitor the riffle-run-pool-glide sequences and overall stability of the restored stream(s). Within the profiles pebble counts will be performed to monitor any unacceptable increase in sand and finer substrate.

The first year monitoring was completed on November 15, 2005. Due to two big rain events that occurred within this monitoring year some areas of the stream will need to be closely monitored. More livestakes will be added in these areas of concern to prevent stream bank damage for the future years. The vegetation in all of the plots met their first year requirements. Noxious species were found in some areas and will be monitored.

2.0 PROJECT BACKGROUND

2.1 LOCATION AND SETTING

The Pott Creek II Stream Restoration Project is located in Catawba County approximately five miles west of Maiden and eight miles southwest of Newton, North Carolina. It is located approximately 1 mile west of the intersection of the Hickory-Lincolnton Hwy and Paint Shop Road on either side of Paint Shop Road. (Figure 1).

The Pott Creek II Stream Restoration Project lies in the South Fork Catawba River Basin and in the US Geologic Survey (USGS) Hydrologic Unit Code (HUC) 03050102.

The property is being managed and monitored by Mid-Atlantic Mitigation, LLC but is owned by the State of North Carolina.

2.2 STRUCTURE AND OBJECTIVES

The restoration of Pott Creek utilized a combination of natural channel design methodologies with limited soil bio-engineering applications and methods consistent with a Rosgen Priority Level II-type restoration along Pott Creek and Rhodes Mill Creek. Level II restoration involved constructing a new channel at the existing elevation. Pott Creek was constructed to the west of the existing channel and Rhodes Mill was constructed to the north of the existing channel. A Priority Level I restoration (reconnecting the channel to its historical floodplain) was not feasible due to limited relief across the site and controlling outfall and inflow elevations. Advantages of the Priority II restoration include a decrease in bank height and improved stream pattern geometry resulting in reduced streambank erosion, establishment of riparian vegetation to help stabilize the banks, establishment of a floodplain to help remove stress from the channel during flood events, improvement of aquatic habitat, abatement of wide-scale flooding of original land surface, and reduction of sediment and easier downstream grade transition. The Level II restoration, over time, will stabilize pattern and the channel profile, reduce overall shear, restore natural dimension, and reduce sedimentation. A Priority Level I restoration was utilized on the largest tributary, UT 1 of the five tributaries. Level I restoration is advantageous because it promotes re-connection to the floodplain and a stable channel. It also reduces bank height and streambank erosion,

reduces overall land loss, decreases sediment, and raises the water table. The slope of the new channel was reduced until its bankfull elevation was consistent with the adjacent floodplain on either side.

2.3 PROJECT HISTORY AND BACKGROUND

Table I. Project Deliverables

Mitigation Type	Linear Feet	SMU Formula
Stream Restoration (Pott Creek main channel)	7209.0	7209.0
Stream Enhancement –Category I (Pott Creek main channel)	0	0
Stream Restoration (Rhodes Mill Creek)	1018.0	1018.0
Stream Restoration (Pott Creek unnamed tributaries)	1827.0	1827.0
TOTALS		10,054.0

Table II. Project Activity and Reporting History

Activity or Report	Calendar Year of Completion or Planned Completion	Actual Completion Date
Restoration Plan	March 2004	September 2004
Construction	August 2004	October 2004
Temporary and Permanent seeding	August 200	October 2004
Bareroot Plantings	October 2004	February 2005
Mitigation Plan	November 2004	June 2005
Year 1 Monitoring	December 2004	October 2005
Year 2 Monitoring	October 2006	
Year 3 Monitoring	October 2007	
Year 4 Monitoring	October 2008	
Year 5 Monitoring	October 2009	

Table III. Project Contacts

Project Manager Rich Mogensen	Mid-Atlantic Mitigation, LLC 9301 Aviation Blvd., Suite CE1 Concord, North Carolina 28027
Designer Jenny Flemming	Mulkey Engineers and Consultants 6750 Tryon Road Raleigh, North Carolina
Construction Contractor Bill Wright	Shamrock Environmental Corporation P.O Box 14987 Browns Summit, North Carolina 27214
Planting Contractor Kristy Rodrigue	Mid-Atlantic Mitigation, LLC 9301 Aviation Blvd., Suite CE1 Concord, North Carolina 28027
Monitoring Performers Christine Cook Kristy Rodrigue	Mid-Atlantic Mitigation, LLC 9301 Aviation Blvd., Suite CE1 Concord, North Carolina 28027

Table IV. Project Background

Project Background Table	
Project County	Catawba
Drainage Area	19.7 square miles
Drainage Cover Estimate (%)	3%
Physiographic Region	Piedmont
Ecoregion	45a Southern Inner Piedmont
Wetland Type	Piedmont Bottomland Forest / Piedmont Swamp Forest
Cowardin Classification	PSS1A, PFO1A
Dominant soil types	Chewacla (Wehadkee) Congaree
Reference site ID	UT to Fourth Creek
USGS HUC for Project and Reference	03050102/ 03050101
NCDWQ Sub-basin for Project and Reference	03-08-35/ 03-08-32
% of project easement fenced	30 – no cattle is present on adjacent properties that are not fenced

3.0 PROJECT CONDITION AND MONITORING RESULTS

3.1 VEGETATION ASSESSMENT

3.1.1 Soil Data

Table V. Preliminary Soil Data

Series	Max Depth (in)	% Clay on Surface	K	T	OM %
Chewacla	60	10-27	.28	5	1-4
Wehadkee	61	15-40	.32	5	2-5
Congaree	62	10-25	.37	5	< 4

3.1.2 Vegetative Problem Areas

Mutiflora Rose and *Rhubus sp* occur in some areas of the project, primarily in Zone 2 (flood plain). Neither species has taken control or out-competed the planted woody vegetation. MAM plans to watch them closely and spray with Round-UP in the spring. Chinese privet is also found bordering some of the project from adjacent properties. A small amount was found in plot 4 but has not starting growing in the rest of the project area and will be closely monitored as well.

3.1.3 Stem Counts

Two Planting Zones were established at the Pott Creek II Restoration Project. Zone 1 which consisted of mainly livestakes and Zone 2 which consisted of Bareroot Seedlings and Tublings. Eleven permanent vegetative plots have been established at random locations, which sample both Zones 1 and 2. All vegetative plots are 2,500 square feet in size, vegetative plots 1-4, and 6-11 are all 50 foot by 50 foot squares, while vegetative plot 5 is a 100 foot by 25 foot rectangle due to limited space along UT1. Living woody stems were counted in each plot and analyzed for species diversity and survival. Dead species were counted but not figured into the yearly stem counts. Overall coverage of each plot for herbaceous and woody species were documented photographically. Shown in Photo log in Appendix A. Volunteers and/or invasive species were noted, but were not figured into the yearly stem counts.

Table VI. Approximate number of Planted species

Planted Species	Bareroot Seedling	Tublings	Livestakes
<i>Quercus nigra</i>	2,000		
<i>Quercus phellos</i>	2,000	1,000	
<i>Quercus palustris</i>	2,000	1,000	
<i>Quercus bicolor</i>		1,000	
<i>Quercus lyrata</i>	2,500		
<i>Fraxinus pennsylvanica</i>	2,000		
<i>Platanus occidentalis</i>	1,000		1,000
<i>Celtis laevigata</i>	1,050		
<i>Diospyros virginiana</i>	200		
<i>Cornus amomum</i>	1,000	1,000	3,000
<i>Lindera benzion</i>	1,500		
<i>Betula nigra</i>	1,000		400
<i>Cephalanthus occidentalis</i>	525		
<i>Salix nigra</i>			3,000
<i>Salix sericea</i>			600
<i>Sambucus canadensis</i>			1,025
	16,775	4,000	9,025

Total Planted Species= 20,775 Total Livestakes planted= 9,025

On October 12-14 2005, the first year-vegetative monitoring was performed on the established vegetative plots. Planted species that could be identified were noted.

Table VII. Stems Counts for Live, Stressed, and Volunteers species

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8	Plot 9	Plot 10	Plot 11	Total
Total Dead	4	2	1	3	0	8	3	17	5	1	6	50
Total Live Planted	21	23	31	46	26	28	30	93	78	53	26	455
Volunteers	4	10	4	4	1	0	9	1	0	7	3	43
Number "Stressed"	4	11	9	4	10	1	7	15	17	24	12	114
Percent Survival	81%	92%	97%	94%	100%	78%	91%	84%	94%	98%	81%	90%
Percent "Stressed"	19%	48%	29%	9%	38%	4%	23%	16%	22%	45%	46%	25%
Stems per acre	365	400	540	801	453	487	522	1620	1359	923	453	
Number of Species	7	12	10	11	10	6	8	8	8	10	9	
Number of Planted Species	7	10	9	10	9	6	8	8	8	10	8	

3.1.4 Vegetation Assessment Summary

Vegetation success will be defined as tree survival to meet 320 stems per acre after 3 years and 260 stems per acre after 5 years inside the permanent vegetative plots and herbaceous cover evaluated with photos showing 75% coverage, after 5 years.

Table VIII. Combined Totals for Stem Count

Combined Totals	
Percent Survival	90%
Percent "Stressed"	25%
Stems Per Acre	720 (Without Volunteers)
Number of Species	19
Total Planted Species	16

In all the plots the vegetative success criteria were met for the 3 and 5 year goals. In vegetative plots 1-8 the herbaceous cover was found to be 95% to 100%. Plot 9 had herbaceous cover of 60% due to sand and silt during a recent over bank event. Plot 10 has 90% herbaceous cover and plot 11 has 100% cover.

In Appendix A , the vegetative survey data tables show the actual counts of each species found per plot, the general health of plants counted, the height , and the crown diameter. The herbaceous cover plants that could be identified were noted as well.

All of the surveyed cross sections appear stable and well vegetated. Sand and silt deposits from the extreme rain event the week proceeding monitoring has caused some cross sections to look bare (cross sections 1 and 5 on Pott Creek, cross section 1 on Rhodes Mill, and the north bank of UT2). Hopefully this sand and silt cover will be washed away in normal rain events and allow the herbaceous cover to re-grow. Some bare areas will be live staked this winter. However, none of the bare areas seem to be eroding or causing any concerns at this time.

3.2 **Channel Stability Assessment**

3.2.1 Cross Sections

There are six permanent cross-sections throughout Pott Creek (four on the upstream side of the bridge and two on the downstream side). Cross-sections on Pott Creek are 50% riffles and 50% pools. There are two permanent cross-sections on Rhodes Mill Creek, one riffle, one pool; and one cross section on unnamed tributaries (1 thru 4). Each permanent cross-section is shown on the As-built plan and will be surveyed each year to monitor changes in the dimension of the restored stream(s), photographic documentation of each cross-section will also be made.

Cross-sections were surveyed on October 27, 2005. Monitoring cross-sections measured the deepest part of the stream (thalweg), while the as-built survey was measured on the center-line, this causes a slight difference in the depth measurements between as-built and monitoring. All cross-sections for future monitoring will be measured on the thalweg going forward. All of the surveyed cross sections appear stable and well vegetated. Sand and silt deposits from the extreme rain event the week proceeding monitoring has caused some cross sections to look bare (cross sections 1 and 5 on Pott Creek, cross section 1 on Rhodes Mill, and the north bank of UT2). Hopefully this sand and silt cover will be washed away in normal rain events and allow the herbaceous cover to re-grow. Some bare areas will be live staked this winter. However, none of the bare areas seem to be eroding or causing any concerns at this time. Appendix B has the cross-section data tables, plots and photos.

3.2.2 Bank Full Events

At least 1 bank full event per monitoring season will be photo documented, ideally two. A crest-stage gage will be installed to track bank full events between site visits. During this monitoring period two major bank full events were documented. Photo Documentation and descriptions are located in Appendix C.

Date of collection	Date of Occurrence	Method	Photo # (if available)
March 29, 2005	March 28, 2005	On site rain gage (5in'')	Appendix D
October 7, 2005	October 4-6, 2005	On site rain gage (12in'')	Appendix D

3.2.3 Longitudinal Profiles

Profiles were done on more than 3000 linear feet over the entire project, Pott Creek 1000 lf; Rhodes Mill 500 lf; UT1 600 lf; UT2 350 lf, UT3 480 lf; and UT4 350 lf. Pebble counts were done on each constructed riffle within the profile reach. Lengths and spacing of the riffle-run-pool-glide sequence were measured where they existed, each profile reach was observed for stability and vegetative cover, making note of any signs of erosion. Raw Data, data tables, and graphs of the Pebble Count data are available in Appendix D. The following observations were made in each profile section:

Pott Creek – 1000 foot profile (Actual field measurement 1062 ft) has very few problems, one small erosion problem near the end of the profile on the west bank will be live staked. Found a few Macro-invertebrates while sampling (Crane flies, caddis flies, stone flies and damsel flies), 2 constructed riffles inside 1000 ft profile limits pebble count done on both. Riffle 1 is 6% sand and silt, 30% gravel (), and 64% Cobble (primarily the smallest 64 – 96 mm) size class); Riffle 2 is 9% silt/clay (primarily course sand and fine clay chunks), 63% gravel (primarily the largest (32 – 48 mm and 48 – 64 mm) size classes), and 28% made up primarily of small cobble (64 – 96 mm size class).

Rhodes Mill - 3 riffles (all constructed) in 500' Profile (actual field measured profile 505 ft), did pebble counts on all three. Found a few Macro-invertebrates while sampling (may flies and cadis flies). Working downstream from top Profile limit; Riffle 1 is 14% sand (primarily very course sand), 78% gravel (25% is the smallest 2 to 4 mm size, while the rest of the sample is relatively evenly distributed among the other gravel sizes), 7% Cobble (also evenly distributed in size), and 1% boulder; Riffle 2 is 1% silt/clay, 9% sand (primarily very course sand), 79% gravel (54% fall in the 22.6 to 45 mm sizes), and 11% made up primarily of small cobble; Riffle 3 is 1% silt/clay, 10% sand (primarily very course sand), 73% gravel (20% is the smallest 2 to 4 mm size, while the rest of the sample is relatively evenly distributed among the other gravel sizes), 13% Cobble (also evenly distributed in size), and 1% boulder.

UT1 – (Actual field measurement 602 ft) Stream is most active of all the UT's, still no defined substrate other than sand and silt. Banks are stable with only 2 problem areas associated with structures. Thalweg centered throughout stream length. Riffle-run-pool-glide sequence just beginning to form.

UT2 – (Actual field measurement 355 ft) Basically the same as UT3, Thalweg centered throughout stream length, holds R-R-P-G sequence throughout stream length, riffles are still formed by vegetation.

UT3 – (Actual field measurement length of 480 ft) 0 to very low Near Bank Stress, riffle-run-pool-glide sequence just beginning to form, loses the sequence about half way as it approaches the confluence with Pott Creek. Channel is very stable and 100% vegetated. No rock or sand substrate, vegetation in channel has formed “riffles”. Fish noted in stream. Lots of leaf pack and habitat. Thalweg centered throughout stream length.

UT 4 - 350 feet of stream in project area (measurement from as-built). 0 to very low Near Bank Stress. No signs of erosion or instability. Channel has 100% cover with herbaceous vegetation (surface protection), also some vegetation in the streambed, due to dry conditions. Stream depth is uniform for the entire reach. No apparent riffle –run – pool – glide sequence.

UT5 - small tributary not on original plans. Only 40 feet of stream within the project (measurement from As-built) boundary, stable, vegetated, basically one big riffle.

Table X. Categorical Stream Feature Visual Stability Assessment

Reach: Pott Creek (1000 lf)		Reach: Rhodes Mill (500 lf)	
Feature	MY 2005	Feature	MY 2005
Riffles	50	Riffles	56
Pools	100	Pools	100
Thalweg	78	Thalweg	33
Vanes	92	Vanes	60

Reach: UT 1 (600 lf)	
Feature	MY 2005
Riffles	100
Pools	100
Thalweg	100
Vanes	67

Reach: UT 2 (350 lf)	
Feature	MY 2005
Riffles	100
Pools	100
Thalweg	100
Vanes	n/a

Reach: UT 3 (480 lf)	
Feature	MY 2005
Riffles	100
Pools	100
Thalweg	100
Vanes	100

Reach: UT 4 (350 lf)	
Feature	MY 2005
Riffles	n/a
Pools	n/a
Thalweg	100
Vanes	n/a

3.2.4 Channel Stability Problem Areas

All structures marked on the as-built were photographed and assessed for structural failures and erosion problems, also the entire length of Pott Creek, Rhodes Mill, and all of the UT's were walked and any problem areas were photographed and documented. This Photo Log with comments on each structure and problem area is available in Appendix E. All problem areas were deemed to be minor at this time and will be smoothed out and live staked this winter. The only major problem area is the area directly under the bridge at Paint Shop road. The area upstream of the bridge where the first cross vane has been destroyed will be re-graded and live staked. Also the confluence of the ditch with Pott Creek on the west bank just upstream of the bridge will be plugged and partially filled in to reduce the flow of water from this area in high flow events. The area directly under the bridge needs to be stabilized by the DOT, if the bridge is not scheduled for replacement in the near future.

3.2.4 Channel Stability Assessment Summary

Overall, with respect to the major over bank events that the Pott Creek site has endured, the site is in excellent condition with only four minor problems on Pott Creek and one major problem at the bridge, only one minor problem on Rhodes Mill, and one minor problem on UT 1. All of these minor problems will be corrected this winter and live staked. Heavy equipment will be brought out to correct the problems around the bridge as described above. These problem areas comprise a very small percentage of the project as a whole and will hopefully, be easily corrected.

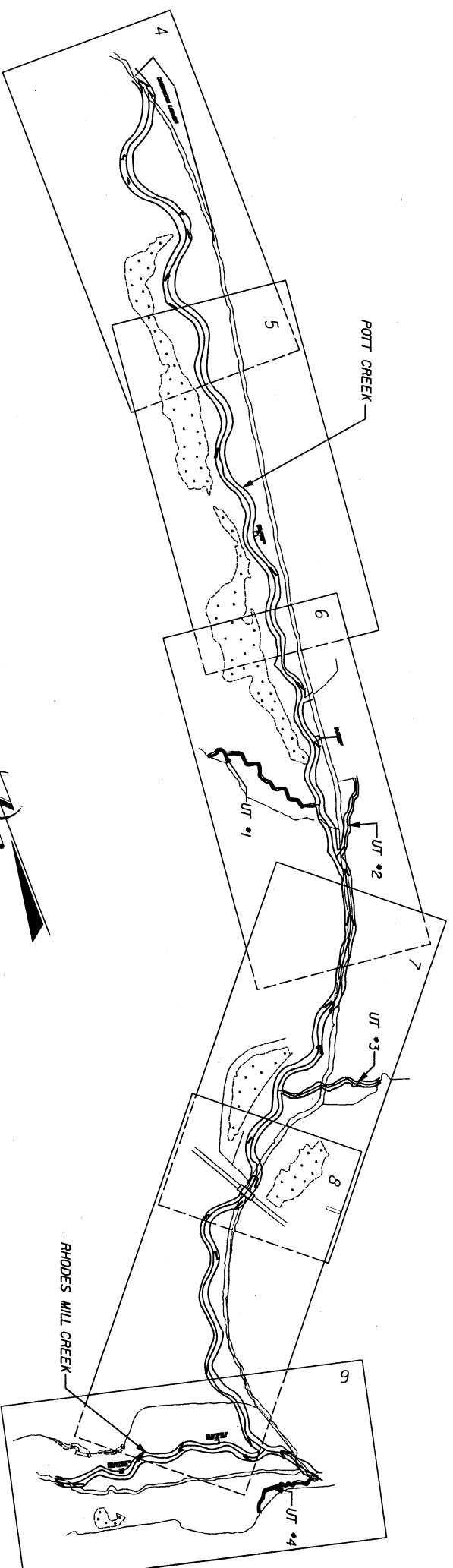
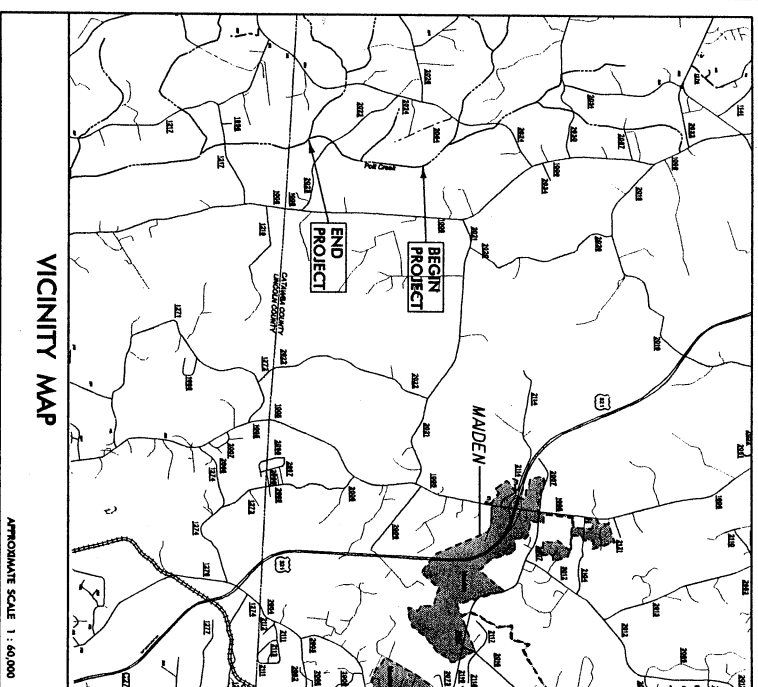
Figure 3: As-Built Plans

CATAWBA COUNTY

POTT CREEK II STREAM RESTORATION PROJECT

LOCATION: POTT CREEK II RESTORATION SITE NORTH & SOUTH OF SR 2023 (PAINT SHOP ROAD) WEST OF MAIDEN, NORTH CAROLINA

AS BUILT PLANS




INDEX OF SHEETS	
SHEET NUMBER	SHEET
1	TITLE SHEET
4 - 9	PLAN SHEETS

REVISIONS		SCALE AS SHOWN	
DATE	BY	DATE	SCALE
		5/26/05	

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PROJECT MANAGER
RICHARD K. MOGENSEN, PWS

PROJECT ENGINEER



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CONCORD, NC 28027
(704) 782-4133

PLANS PREPARED FOR



Ecosystem Enhancement

TITLE SHEET

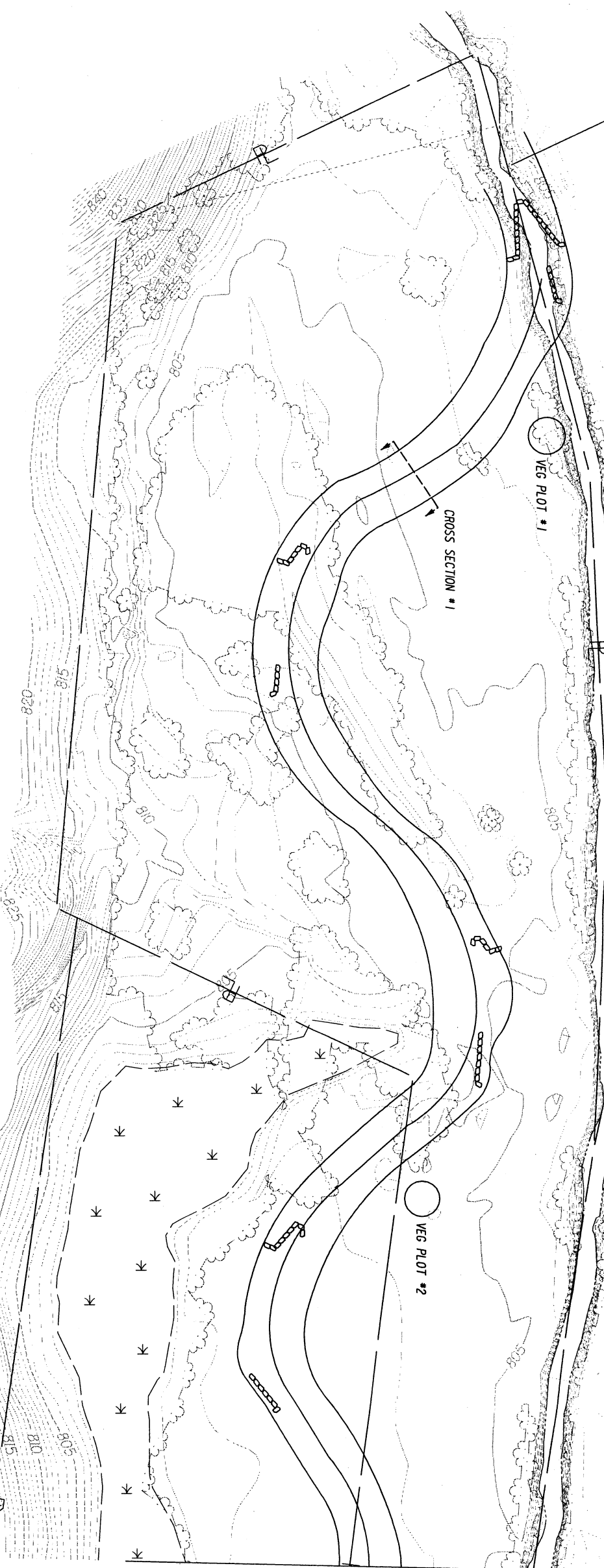
SHEET 7 OF 7

ROCK CROSSVANE
ROCK VANE

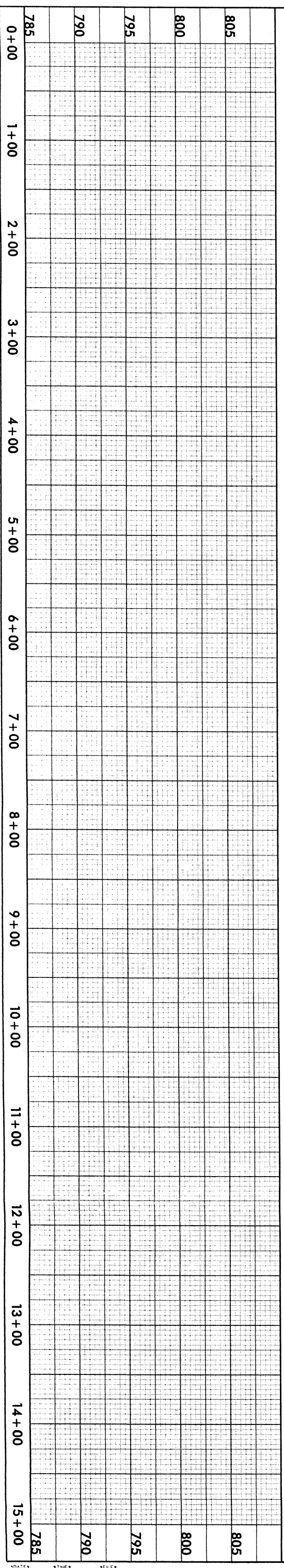


PROJECT ENGINEER
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SHEET NO. 4
EarthMark
companies

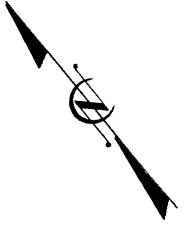
CONSERVATION EASEMENT



MATCH TO SHEET 5



J HOOK
ROCK VANE



PROJECT ENGINEER

SHEET NO. 8

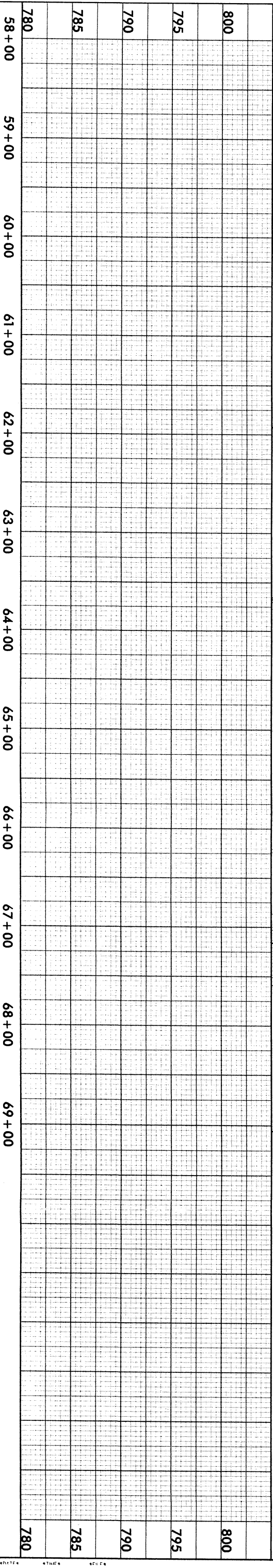
PROJECT REFERENCE NO.
POTTI CREEK II STREAM RESTORATION

EarthMark
companies

PLAN & PROFILE

MATCH TO SHEET 7

MATCH TO SHEET 9



APPENDIX A

- Vegetation Raw Data**
- Vegetation Plot Photo Log**

Vegetation Plots



1 (Northeast)



2 (North)



3(Southeast)



4 (North)



5 (Along UT1 West)



6 (North)



7 (Northeast)



8 (Southwest)



9 (North) Sand deposition, trees seem fine, herbaceous community will need time to recover.



10 (North)



11 (Along Rhodes Mill North) This plot had the highest amount of herbaceous competition.

Vegetation Plot 1

Comments: Erosion at stream bank in plot, small piece of plot missing, may have lost some live stakes, area will be live staked again this winter

Herbaceous Cover	95%	some minor bare spots
Fescue sp.		
NY Ironweed		
Smartweed		Polygonum pennsylvanicum
Tearthumb		Polygonum hydropiperoides
Water pepper		Polygonum arifolium
Cardinal Flower		
Plains Coreopsis		
Goldenrod		
Daisy Fleabane		
Horse Nettle		
Poke Weed		
New England Aster		
Annual Gaillardia		
Moss Verbana		
Gay Feather		

Dead Count	4
Oak sp.	
River Birch	
Fraxinus pennsylvanica	
Oak sp.	

Live Count 25 (4 Volunteers)				
Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Cornus amomum	Tubling	Good	28	26
Diosyos virginiana	Bareroot	Good	14	4
Fraxinus pennsylvanica	Bareroot	Good	42	14
Fraxinus pennsylvanica	Bareroot	Good	49	24
Fraxinus pennsylvanica	Bareroot	Good	32	16
Fraxinus pennsylvanica	Bareroot	Good	24	10
Fraxinus pennsylvanica	Bareroot	Good	51	18
Fraxinus pennsylvanica	Bareroot	Good	48	16
Fraxinus pennsylvanica	Bareroot	Good	49	15
Fraxinus pennsylvanica	Bareroot	Good	33	14
Fraxinus pennsylvanica	Bareroot	Good	36	24
Fraxinus pennsylvanica	Bareroot	Stressed	25	21
Fraxinus pennsylvanica	Bareroot	Good	32	16
Plantus Occidentalis	Bare Root	Stressed	20	12
Plantus Occidentalis	Volunteer			
Plantus Occidentalis	Volunteer			
Quercus lyrata	Bareroot	Stressed	21	9
Quercus phellos	Bareroot	Good	33	12
Quercus phellos	Bareroot	Good	23	14
Quercus phellos	Bareroot	Stressed	14	9
Quercus phellos	Bareroot	Good	19	9
Quercus phellos	Tubling	Good	16	6
Quercus phellos	Bareroot	Good	11	11
Salix nigra	Volunteer			
Salix nigra	Volunteer			

Vegetation Plot 2

Comments:

Herbaceous Cover	100%
Fescue sp.	
NY Ironweed	
Smartweed	Polygonum pennsylvanicum
Tearthumb	Polygonum hydropiperoides
Water pepper	Polygonum arifolium
Plains Coreopsis	
Goldenrod	
Daisy Fleabane	
Horse Nettle	
Poke Weed	
Sourweed	
Soft Rush	Juncus effusus
New England Aster	
Annual Gaillardia	
Moss Verbana	
Gay Feather	

Dead Count 2
Unidentified
Oak sp.

Live Count 33 (10 Volunteers)				
Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Betula nigra	Tubeling	Stressed	18	6
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Cornus amomum	Live Stake	Stressed	43	25
Cornus amomum	Live Stake	Stressed	23	17
Diosryos virginiana	Bareroot	Good	9	3
Diosryos virginiana	Bareroot	Stressed	13	4
Liriodendron tulipifera	Volunteer			
Plantus Occidentalis	Volunteer			
Plantus Occidentalis	Volunteer			
Populus deltoides	Volunteer			
Populus deltoides	Volunteer			
Quercus bicolor	Tubeling	Good	16	7
Quercus bicolor	Tubeling	Stressed	19	6
Quercus bicolor	Tubeling	Stressed	15	8
Quercus bicolor	Tubeling	Good	18	10
Quercus bicolor	Tubeling	Good	16	9
Quercus bicolor	Tubeling	Good	20	8
Quercus bicolor	Tubeling	Stressed	11	5
Quercus lyrata	Bareroot	Stressed	14	4
Quercus lyrata	Bareroot	Good	25	10

Quercus lyrata	Bareroot	Stressed	17	7
Quercus palustris	Bareroot	Stressed	16	6
Quercus palustris	Bareroot	Good	18	8
Quercus palustris	Bareroot	Good	31	12
Quercus palustris	volunteer			
Quercus phellos	Bareroot	Stressed	9	4
Quercus phellos	Bareroot	Good	13	8
Quercus phellos	Bareroot	Good	15	13
Salix nigra	Livestake	Good	24	26
Sambucus canadensis	Live stake	Good	24	23

Vegetation Plot 3

Comments: This plot seems a little over grown, some trees are competing with vines and other herbaceous plants

Herbaceous Cover	97%	Some minor bare spots
Fescue sp.		
NY Ironweed		
Smartweed		Polygonum pennsylvanicum
Tearthumb		Polygonum hydropiperoides
Water pepper		Polygonum arifolium
Plains Coreopsis		
Goldenrod		
Daisy Fleabane		
Horse Nettle		
Poke Weed		
Sourweed		
Soft Rush		Juncus effusus
New England Aster		
Annual Gaillardia		
Moss Verbana		
Gay Feather		
		Rubus
Morning Glory sp.		

Dead Count 1 Unidentified

Live Count 35 (4 Volunteers)

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Betula nigra	Bareroot	Good	21	9
Betula nigra	Bareroot	Good	32	21
Betula nigra	Bareroot	Good	30	17
Betula nigra	Volunteer			
Cephalanthus occidentalis	Bareroot	Stressed	8	5
Cornus amomum	Bareroot	Good	25	10
Cornus amomum	Bareroot	Stressed	32	18
Cornus amomum	Live Stake	Good	20	10
Cornus amomum	Live Stake	Good	21	10
Cornus amomum	Live Stake	Stressed	14	10
Diosryos virginiana	Bareroot	Stressed	14	5
Fraxinus pennsylvanica	Bareroot	Stressed	55	24
Fraxinus pennsylvanica	Bareroot	Good	42	20
Fraxinus pennsylvanica	Bareroot	Good	46	23
Fraxinus pennsylvanica	Bareroot	Good	30	12
Fraxinus pennsylvanica	Bareroot	Good	55	21
Liriodendron tulipifera	Volunteer			
Plantus Occidentalis	Volunteer			
Plantus Occidentalis	Volunteer			
Quercus bicolor	Tubeling	Stressed	9	5
Quercus bicolor	Tubeling	Stressed	19	10

Quercus bicolor	Tubeling	Good	19	9
Quercus palustris	Bareroot	Good	28	19
Quercus palustris	Bareroot	Stressed	50	9
Quercus palustris	Bareroot	Stressed	31	17
Salix nigra	Live Stake	Good	28	20
Salix nigra	Live Stake	Good	27	12
Salix nigra	Live Stake	Good	62	34
Salix nigra	Live Stake	Good	46	6
Salix nigra	Live Stake	Good	66	58
Salix nigra	Live Stake	Good	78	26
Salix nigra	Live Stake	Good	70	16
Salix nigra	Live Stake	Good	64	19
Salix nigra	Live Stake	Good	54	20
Salix nigra	Live Stake	Good	35	10

Vegetation Plot 4

Comments:

Herbaceous Cover	100%	Dead Count 3
Fescue sp.		Unidentified
NY Ironweed		Unidentified
Smartweed	Polygonum pennsylvanicum	Betula nigra
Tearthumb	Polygonum hydropiperoides	
Plains Coreopsis		
Goldenrod		
Daisy Fleabane		
Horse Nettle		
Poke Weed		
Chinese Privot	All pulled up	
Multiflora Rose		
Soft Rush	Juncus effusus	
New England Aster		
Annual Gaillardia		
Moss Verbana		
Gay Feather		

Live Count 50 (4 Volunteers)

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Betula nigra	volunteer			
Betula nigra	volunteer			
Betula nigra	volunteer			
Celtis laevigata	Bareroot	Stressed	10	4
Celtis laevigata	Bareroot	Good	13	6
Cornus amomum	Bareroot	Good	40	23
Cornus amomum	Bareroot	Good	19	12
Fraxinus pennsylvanica	Bareroot	Good	25	12
Fraxinus pennsylvanica	Bareroot	Good	50	17
Fraxinus pennsylvanica	Bareroot	Good	46	17
Fraxinus pennsylvanica	Bareroot	Good	37	20
Fraxinus pennsylvanica	Bareroot	Good	53	38
Fraxinus pennsylvanica	Bareroot	Good	56	23
Fraxinus pennsylvanica	Bareroot	Good	39	16
Fraxinus pennsylvanica	Bareroot	Good	43	22
Fraxinus pennsylvanica	Bareroot	Good	55	28
Fraxinus pennsylvanica	Bareroot	Good	57	24
Fraxinus pennsylvanica	Bareroot	Good	46	21
Fraxinus pennsylvanica	Bareroot	Good	46	16
Fraxinus pennsylvanica	Bareroot	Good	29	13
Fraxinus pennsylvanica	Bareroot	Good	32	14
Liriodendron tulipifera	volunteer			
Lindera benzoin	Bareroot	Good	41	27
Quercus bicolor	tubling	Good	19	10
Quercus bicolor	tubling	stressed	28	11

Quercus bicolor	tubling	Good	22	6
Quercus bicolor	tubling	Good	13	5
Quercus bicolor	tubling	Good	27	18
Quercus bicolor	tubling	Good	21	9
Quercus bicolor	tubling	Good	24	6
Quercus bicolor	tubling	Good	32	13
Quercus lyrata	Bareroot	Good	35	16
Quercus lyrata	Bareroot	Good	36	20
Quercus lyrata	Bareroot	Good	31	15
Quercus palustris	Bareroot	Good	32	23
Quercus palustris	Bareroot	Good	30	19
Quercus palustris	Bareroot	Good	49	27
Quercus palustris	Bareroot	Good	32	16
Quercus palustris	Bareroot	Good	30	12
Quercus palustris	Bareroot	Good	36	14
Quercus palustris	Bareroot	Good	48	20
Quercus palustris	Bareroot	Stressed	25	10
Quercus phellos	tubling	Good	16	17
Quercus phellos	tubling	Good	15	9
Quercus phellos	tubling	Good	26	11
Quercus phellos	bareroot	Good	32	16
Quercus phellos	bareroot	Good	32	12
Quercus phellos	bareroot	Good	25	17
Quercus phellos	bareroot	Good	38	17
Salix nigra	Live stake	Stressed	24	4

Vegetation Plot 5

Comments:

Herbaceous Cover 100%

Dead Count 0

Fescue sp.
 NY Ironweed
 Smartweed Polygonum pennsylvanicum
 Tearthumb Polygonum hydropiperoides
 Water pepper Polygonum arifolium
 Plains Coreopsis
 Goldenrod
 Daisy Fleabane
 Horse Nettle
 Soft Rush Juncus effusus
 Trumpet Creeper
 Sourweed
 New England Aster
 Annual Gaillardia
 Biflora Rose
 Greenbrier Smilax
 Gay Feather

Live Count 27 (1 Volunteer)

Species	Type	General Health	Height (inches)	Crown	
				Diameter (inches)	
Cornus amomum	Tubelings	Good	23	8	
Cornus amomum	Tubelings	Good	16	11	
Diosryos virginiana	Bareroot	Good	24	17	
Fraxinus pennsylvanica	Bareroot	Good	33	17	
Fraxinus pennsylvanica	Bareroot	Good	37	13	
Fraxinus pennsylvanica	Bareroot	stressed	52	14	
Fraxinus pennsylvanica	Bareroot	stressed	28	11	
Fraxinus pennsylvanica	Bareroot	Good	34	11	
Fraxinus pennsylvanica	Bareroot	Good	42	16	
Fraxinus pennsylvanica	Bareroot	stressed	24	10	
Fraxinus pennsylvanica	Bareroot	stressed	36	13	
Fraxinus pennsylvanica	Bareroot	Good	36	22	
Liriodendron tulipifera	Volunteer				
Plantus Occidentalis	Live Stake	Good	55	12	
Quercus bicolor	Tubling	stressed	19	9	
Quercus bicolor	Tubling	stressed	18	9	
Quercus lyrata	Bareroot	Good	48	22	
Quercus lyrata	Bareroot	Stressed	32	19	
Quercus lyrata	Bareroot	Good	30	20	
Quercus lyrata	Bareroot	Good	46	24	
Quercus lyrata	Bareroot	Stressed	54	26	
Quercus lyrata	Bareroot	Good	24	15	
Quercus lyrata	Bareroot	Stressed	33	19	
Quercus lyrata	Bareroot	Good	36	17	

Quercus palustris	Tubling	Stressed	17	10
Quercus phellos	Tubeling	Good	17	3
Salix nigra	Livestake	Good	38	12

Vegetation Plot 6

Comments:

Herbaceous Cover 100%

Dead Count 8

Fescue sp.		Betula nigra
NY Ironweed		Betula nigra
Smartweed	Polygonum pennsylvanicum	Betula nigra
Tearthumb	Polygonum hydropiperoides	Betula nigra
Plains Coreopsis		Betula nigra
Goldenrod		Live Stake
Daisy Fleabane		Live Stake
Horse Nettle		
Poke Weed		
New England Aster		
Annual Gaillardia		
Moss Verbana		
Gay Feather		

Live Count 28

Species	Type	General Health	Height (inches)	Crown
				Diameter (inches)
Cornus amomum	Live Stake	Good	14	10
Cornus amomum	Live Stake	Good	28	14
Cornus amomum	Live Stake	Good	22	9
Cornus amomum	Tubling	Good	12	8
Cornus amomum	Bareroot	Good	39	27
Cornus amomum	Bareroot	Good	36	14
Fraxinus pennsylvanica	Bareroot	Good	52	21
Fraxinus pennsylvanica	Bareroot	Good	53	23
Fraxinus pennsylvanica	Bareroot	Good	57	13
Fraxinus pennsylvanica	Bareroot	Good	57	17
Fraxinus pennsylvanica	Bareroot	Good	56	20
Fraxinus pennsylvanica	Bareroot	Good	66	26
Quercus bicolor	Tubling	Good	24	16
Quercus bicolor	Tubling	Good	16	10
Quercus bicolor	Tubling	Good	21	11
Quercus bicolor	Tubling	Good	22	14
Quercus bicolor	Tubling	Good	18	11
Quercus bicolor	Tubling	Good	25	12
Quercus bicolor	Tubling	Good	24	11
Quercus bicolor	Tubling	Good	45	20
Quercus bicolor	Tubling	Good	17	11
Quercus bicolor	Tubling	Good	17	12
Quercus lyrata	Bareroot	Good	36	11
Quercus lyrata	Bareroot	Good	33	13
Quercus lyrata	Bareroot	Good	31	18
Quercus palustris	Bareroot	Good	23	14
Quercus palustris	Bareroot	Stressed	17	10
Salix nigra	Live Stake	Good	63	65

Vegetation Plot 7

Comments:

Herbaceous Cover	97%	Dead Count	3
Fescue sp.		Fraxinus pennsylvanica	
NY Ironweed		Plantus occidentalis	
Smartweed	Polygonum pennsylvanicum	Unidentified	
Tearthumb	Polygonum hydropiperoides		
Water pepper	Polygonum arifolium		
Plains Coreopsis			
Goldenrod			
Daisy Fleabane			
Horse Nettle			
Poke Weed			
Sourweed			
Soft Rush	Juncus effusus		
New England Aster			
Annual Gaillardia			
Moss Verbana			
Gay Feather			
Trumpet Creeper			

Live Count **39** **(9 Volunteers)**

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Betula nigra	volunteer			
Betula nigra	volunteer			
Betula nigra	volunteer			
Betula nigra	volunteer			
Cornus amomum	Bareroot	Good	37	13
Cornus amomum	Bareroot	Good	33	23
Fraxinus pennsylvanica	Bareroot	Good	56	18
Fraxinus pennsylvanica	Bareroot	Good	49	11
Fraxinus pennsylvanica	Bareroot	Good	37	15
Fraxinus pennsylvanica	Bareroot	Good	42	17
Lindera benzoin	Bareroot	Good	23	7
Plantus occidentalis	Bareroot	Good	44	9
Plantus occidentalis	Bareroot	Good	44	7
Plantus occidentalis	Bareroot	Good	44	12
Plantus occidentalis	Bareroot	Stressed	33	10
Plantus occidentalis	Bareroot	Good	33	13
Plantus occidentalis	Bareroot	Good	75	27
Plantus occidentalis	Bareroot	Good	59	43
Plantus occidentalis	Bareroot	Stressed	38	10
Plantus occidentalis	Bareroot	Good	39	20
Plantus occidentalis	Bareroot	Stressed	28	12
Plantus occidentalis	Bareroot	Good	57	25
Plantus occidentalis	Bareroot	Good	41	9
Plantus occidentalis	volunteer			

Plantus occidentalis	volunteer			
Plantus occidentalis	volunteer			
Plantus occidentalis	volunteer			
Plantus occidentalis	volunteer			
Quercus Bicolor	Tubling	Good	18	7
Quercus nigra	Tubling	Good	16	11
Quercus nigra	Tubling	Good	16	6
Quercus palustris	Bareroot	Good	20	10
Quercus palustris	Bareroot	Good	21	14
Quercus palustris	Bareroot	Good	34	16
Quercus palustris	tubling	Stressed	17	5
Quercus palustris	Bareroot	Stressed	23	8
Quercus palustris	Bareroot	Stressed	31	8
Quercus palustris	Tubling	Stressed	13	9
Quercus palustris	Tubling	Good	23	12

Vegetation Plot 8

Comments: Silted over in recent overbank event, highly mixed herbaceous layer, no obvious dominant species, lots of 6 to 10" Sycamore Volunteers

Herbaceous Cover	100%	Dead Count	17
Fescue sp.		Oak sp.	Unidentified
NY Ironweed		Lindera benzion	Unidentified
Smartweed	Polygonum pennsylvanicum	Lindera benzion	Unidentified
Cardinal Flower		Oak sp.	Unidentified
Plains Coreopsis		Oak sp.	Unidentified
Goldenrod		Oak sp.	Unidentified
Daisy Fleabane		Fraxinus pensylvanica	Unidentified
Horse Nettle			Unidentified
Poke Weed			
Sourweed			
Soft Rush	Juncus effusus		
Annual Gaillardia			
Moss Verbana			
Gay Feather			

Live Count **94** **(1 Volunteer)**

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Cornus amomum	Live Stake	Good	23	11
Cornus amomum	Live Stake	Good	16	14
Cornus amomum	Live Stake	Good	14	9
Cornus amomum	Live Stake	Good	17	9
Fraxinus pennsylvanica	Bareroot	Good	36	8
Fraxinus pennsylvanica	Bareroot	Good	37	12
Fraxinus pennsylvanica	Bareroot	Good	37	15
Fraxinus pennsylvanica	Bareroot	Good	39	16
Fraxinus pennsylvanica	Bareroot	Good	37	17
Fraxinus pennsylvanica	Bareroot	Good	53	20
Fraxinus pennsylvanica	Bareroot	Good	41	16
Fraxinus pennsylvanica	Bareroot	Good	27	15
Fraxinus pennsylvanica	Bareroot	Good	48	17
Fraxinus pennsylvanica	Bareroot	Good	59	16
Fraxinus pennsylvanica	Bareroot	Good	47	18
Fraxinus pennsylvanica	Bareroot	Good	31	9
Fraxinus pennsylvanica	Bareroot	Good	49	18
Fraxinus pennsylvanica	Bareroot	Good	57	15
Fraxinus pennsylvanica	Bareroot	Good	36	15
Fraxinus pennsylvanica	Bareroot	Good	48	16
Fraxinus pennsylvanica	Bareroot	Good	44	22
Fraxinus pennsylvanica	Bareroot	Good	48	18
Fraxinus pennsylvanica	Bareroot	Good	34	8
Fraxinus pennsylvanica	Bareroot	Good	21	10
Fraxinus pennsylvanica	Bareroot	Stressed	44	9
Fraxinus pennsylvanica	Bareroot	Stressed	49	16
Fraxinus pennsylvanica	Bareroot	Good	33	15

Fraxinus pennsylvanica	Bareroot	Good	33	6
Fraxinus pennsylvanica	Bareroot	Good	40	13
Fraxinus pennsylvanica	Bareroot	Stressed	42	10
Fraxinus pennsylvanica	Bareroot	Stressed	24	4
Fraxinus pennsylvanica	Bareroot	Stressed	49	12
Fraxinus pennsylvanica	Bareroot	Stressed	31	4
Fraxinus pennsylvanica	Bareroot	Stressed	29	9
Fraxinus pennsylvanica	Bareroot	Stressed	29	9
Fraxinus pennsylvanica	Bareroot	Stressed	39	13
Plantus Occidentalis	Live Stake	Good	13	6
Plantus Occidentalis	Live Stake	Good	17	4
Plantus Occidentalis	Live Stake	Good	14	6
Plantus Occidentalis	Live Stake	Good	24	8
Plantus Occidentalis	Live Stake	Good	20	9
Plantus Occidentalis	Live Stake	Good	34	11
Plantus Occidentalis	Live Stake	Good	28	9
Plantus Occidentalis	Live Stake	Good	27	9
Plantus Occidentalis	Live Stake	Good	36	12
Plantus Occidentalis	Live Stake	Good	37	14
Plantus Occidentalis	Live Stake	Good	13	3
Plantus Occidentalis	Live Stake	Good	11	4
Quercus lyrata	Bareroot	Good	27	12
Quercus lyrata	Bareroot	Good	23	12
Quercus lyrata	Bareroot	Stressed	17	10
Quercus lyrata	Bareroot	Good	22	15
Quercus lyrata	Bareroot	Good	33	18
Quercus lyrata	Bareroot	Stressed	14	18
Quercus lyrata	Bareroot	Good	31	18
Quercus lyrata	Bareroot	Good	27	14
Quercus lyrata	Bareroot	Good	32	13
Quercus lyrata	Bareroot	Good	46	20
Quercus lyrata	Bareroot	Good	29	14
Quercus lyrata	Bareroot	Good	15	8
Quercus lyrata	Bareroot	Good	30	18
Quercus nigra	Bareroot	Good	29	20
Quercus nigra	Bareroot	Good	32	18
Quercus nigra	Bareroot	Good	38	14
Quercus palustris	Bareroot	Good	30	16
Quercus palustris	Bareroot	Good	37	16
Quercus palustris	Bareroot	Good	25	15
Quercus palustris	Bareroot	Good	37	35
Quercus palustris	Bareroot	Good	35	20
Quercus palustris	Bareroot	Good	38	22
Quercus palustris	Bareroot	Good	41	16
Quercus palustris	Bareroot	Good	24	12
Quercus palustris	Bareroot	Good	31	9
Quercus palustris	Bareroot	Good	23	12
Quercus palustris	Bareroot	Good	42	13
Quercus palustris	Bareroot	Good	32	12
Quercus palustris	Bareroot	Good	38	21
Quercus palustris	Bareroot	Stressed	41	25
Quercus palustris	Bareroot	Good	43	27

Quercus palustris	Bareroot	Good	32	14
Quercus palustris	Bareroot	Good	40	14
Quercus palustris	Bareroot	Good	21	12
Quercus palustris	Bareroot	Good	22	16
Quercus palustris	Bareroot	Stressed	27	10
Quercus palustris	Bareroot	Stressed	23	8
Quercus palustris	Bareroot	Stressed	22	10
Quercus palustris	Bareroot	Good	38	17
Quercus palustris	Bareroot	Good	12	6
Quercus phellos	Bareroot	Good	22	7
Quercus phellos	Bareroot	Good	16	5
Quercus phellos	Bareroot	Good	27	12
Quercus phellos	Bareroot	Good	22	10
Quercus phellos	Bareroot	Good	12	8
Sambucus canadensis	volunteer			

Fraxinus pennsylvanica	Bareroot	Good	18	11
Fraxinus pennsylvanica	Bareroot	Stressed	19	8
Fraxinus pennsylvanica	Bareroot	Stressed	12	7
Fraxinus pennsylvanica	Bareroot	Good	26	7
Fraxinus pennsylvanica	Bareroot	Stressed	47	19
Fraxinus pennsylvanica	Bareroot	Good	29	11
Fraxinus pennsylvanica	Bareroot	Stressed	18	8
Fraxinus pennsylvanica	Bareroot	Good	34	12
Lindera benzoin	Bareroot	Good	18	12
Lindera benzoin	Bareroot	Good	16	7
Lindera benzoin	Bareroot	Stressed	8	4
Lindera benzoin	Bareroot	Good	19	11
Lindera benzoin	Bareroot	Good	15	8
Lindera benzoin	Bareroot	Good	12	5
Plantus Occidentalis	Live Stake	Good	14	7
Quercus lyrata	Bareroot	Good	12	13
Quercus lyrata	Bareroot	Good	20	8
Quercus lyrata	Bareroot	Good	35	11
Quercus lyrata	Bareroot	Stressed	21	10
Quercus lyrata	Bareroot	Stressed	20	11
Quercus lyrata	Bareroot	Stressed	11	9
Quercus lyrata	Bareroot	Good	26	17
Quercus lyrata	Bareroot	Good	14	7
Quercus lyrata	Bareroot	Good	24	16
Quercus lyrata	Bareroot	Stressed	29	26
Quercus lyrata	Bareroot	Stressed	19	9
Quercus nigra	Bareroot	Good	15	11
Quercus nigra	Bareroot	Stressed	14	5
Quercus palustris	Bareroot	Stressed	20	5
Quercus palustris	Bareroot	Good	23	8
Quercus palustris	Bareroot	Stressed	17	7
Quercus palustris	Bareroot	Stressed	8	6
Quercus palustris	Bareroot	Stressed	8	6
Quercus palustris	Bareroot	Good	6	5
Quercus palustris	Bareroot	Good	18	6
Quercus palustris	Bareroot	Good	22	13
Quercus palustris	Bareroot	Good	27	13
Quercus palustris	Bareroot	Good	20	17
Quercus phellos	Bareroot	Good	13	4
Quercus phellos	Bareroot	Stressed	8	10
Salix nigra	Livestake	Good	29	23
Salix nigra	Livestake	Good	28	23
Salix nigra	Livestake	Good	46	26
Salix nigra	Livestake	Good	10	11
Salix nigra	Livestake	Good	33	14
Salix nigra	Livestake	Good	38	11
Salix nigra	Livestake	Good	48	30

Vegetation Plot 9

Comments: Plot was covered with about 40% sand and silt during over bank event. We can reasonably assume that percent cover with herbaceous species was close to 100% before the event.

Herbaceous Cover	60%	Dead Count 5
Fescue sp.		Unidentified
NY Ironweed		Unidentified
Smartweed	Polygonum pennsylvanicum	Unidentified
Plains Coreopsis		Unidentified
Goldenrod		
Daisy Fleabane		
Annual Gaillardia		
Moss Verbana		
Gay Feather		

Live Count 78

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Cornus amomum	Live Stake	Good	11	9
Cornus amomum	Live Stake	Good	14	12
Cornus amomum	Live Stake	Good	14	6
Cornus amomum	Live Stake	Good	8	4
Cornus amomum	Live Stake	Good	19	19
Cornus amomum	Live Stake	Good	13	10
Cornus amomum	Live Stake	Good	18	14
Cornus amomum	Live Stake	Good	12	12
Cornus amomum	Live Stake	Good	13	6
Cornus amomum	Live Stake	Good	8	5
Cornus amomum	Live Stake	Good	29	8
Cornus amomum	Live Stake	Good	10	5
Cornus amomum	Live Stake	Good	10	4
Cornus amomum	Live Stake	Good	12	5
Cornus amomum	Live Stake	Good	28	11
Fraxinus pennsylvanica	Bareroot	Good	26	11
Fraxinus pennsylvanica	Bareroot	Good	37	19
Fraxinus pennsylvanica	Bareroot	Good	39	14
Fraxinus pennsylvanica	Bareroot	Good	26	8
Fraxinus pennsylvanica	Bareroot	Good	18	11
Fraxinus pennsylvanica	Bareroot	Good	25	11
Fraxinus pennsylvanica	Bareroot	Good	45	12
Fraxinus pennsylvanica	Bareroot	Good	27	10
Fraxinus pennsylvanica	Bareroot	Good	23	10
Fraxinus pennsylvanica	Bareroot	Good	18	12
Fraxinus pennsylvanica	Bareroot	Good	26	18
Fraxinus pennsylvanica	Bareroot	Good	38	15
Fraxinus pennsylvanica	Bareroot	Stressed	55	15
Fraxinus pennsylvanica	Bareroot	Good	20	9
Fraxinus pennsylvanica	Bareroot	Good	43	13
Fraxinus pennsylvanica	Bareroot	Good	34	10

Vegetation Plot 10

Comments: A little bit of sand and silt cover. A lot of tiny Sycamore volunteers

Herbaceous Cover 90% **Dead Count 1**
Cornus amomum

- Fescue sp.
- NY Ironweed
- Smartweed Polygonum pennsylvanicum
- Plains Coreopsis
- Goldenrod
- Daisy Fleabane
- Horse Nettle
- Poke Weed
- Sourweed
- Soft Rush Juncus effusus
- Annual Gaillardia
- Moss Verbana
- Gay Feather

Live Count 60 (7 Volunteers)

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Cephalanthus occidentalis	Volunteer			
Cornus amomum	Live Stake	Stressed	16	5
Fraxinus pennsylvanica	Bareroot	Good	43	21
Fraxinus pennsylvanica	Bareroot	Good	36	10
Fraxinus pennsylvanica	Bareroot	Good	42	12
Fraxinus pennsylvanica	Bareroot	Stressed	38	13
Fraxinus pennsylvanica	Bareroot	Good	48	15
Fraxinus pennsylvanica	Bareroot	Good	51	17
Fraxinus pennsylvanica	Bareroot	Good	39	25
Fraxinus pennsylvanica	Bareroot	Good	41	17
Fraxinus pennsylvanica	Bareroot	Stressed	47	18
Fraxinus pennsylvanica	Bareroot	Good	35	20
Fraxinus pennsylvanica	Bareroot	Stressed	28	16
Fraxinus pennsylvanica	Bareroot	Stressed	37	15
Fraxinus pennsylvanica	Bareroot	Stressed	39	16
Fraxinus pennsylvanica	Volunteer			
Plantus Occidentalis	volunteer			
Plantus Occidentalis	volunteer			
Quercus lyrata	Bareroot	Good	23	13
Quercus lyrata	Bareroot	Good	17	10
Quercus lyrata	Bareroot	Stressed	22	8
Quercus lyrata	Bareroot	Good	33	19
Quercus lyrata	Bareroot	Good	40	32
Quercus lyrata	Bareroot	Good	38	26
Quercus lyrata	Bareroot	Good	35	19
Quercus lyrata	Bareroot	Good	10	6
Quercus lyrata	Bareroot	Stressed	32	10
Quercus nigra	Bareroot	Stressed	21	9

Quercus nigra	Bareroot	Stressed	14	8
Quercus nigra	Bareroot	Good	29	9
Quercus palustris	Bareroot	Good	43	23
Quercus palustris	Bareroot	Good	29	11
Quercus palustris	Bareroot	Good	39	22
Quercus palustris	Bareroot	Good	54	23
Quercus palustris	Bareroot	Good	34	23
Quercus palustris	Bareroot	Stressed	30	15
Quercus palustris	Bareroot	Stressed	36	19
Quercus palustris	Bareroot	Stressed	12	9
Quercus phellos	Bareroot	Good	19	9
Salix nigra	Live Stake	Good	45	16
Salix nigra	Live Stake	Good	27	22
Salix nigra	Live Stake	Good	25	9
Salix nigra	Live Stake	Stressed	35	23
Salix nigra	Live Stake	Stressed	25	21
Salix nigra	Live Stake	Good	26	14
Salix nigra	Live Stake	Stressed	26	14
Salix nigra	Live Stake	Stressed	21	16
Salix nigra	Live Stake	Stressed	21	13
Salix nigra	Live Stake	Stressed	29	20
Salix nigra	Live Stake	Stressed	17	12
Salix nigra	Live Stake	Stressed	18	2
Salix nigra	Live Stake	Stressed	16	13
Salix nigra	Live Stake	Stressed	35	26
Salix nigra	Live Stake	Good	26	17
Salix nigra	Live Stake	Good	22	15
Salix nigra	Live Stake	Stressed	32	16
Salix nigra	Volunteer			
Salix nigra	Volunteer			
Salix nigra	Volunteer			
Salix sericea	Live Stake	Good	35	22

Vegetation Plot 11

Comments: a lot of silt, but plants visible underneath, this plot is more grown up and "weedy" than others on the downstream side, lots of small sycamore volunteers on the bank

Herbaceous Cover	100%	Dead Count	6
Fescue sp.		Unidentified	
NY Ironweed		Unidentified	
Smartweed	Polygonum pennsylvanicum	Unidentified	
Soft Rush	Juncus effusus	Betula nigra	
Beggar Tick's	Bidens frondosa	live stake	
Goldenrod			
Daisy Fleabane			
Horse Nettle			
Gay Feather			

Live Count		29 (3 Volunteers)		
Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Betula nigra	Bareroot	Stressed	25	14
Celtis laevigata	Bareroot	Good	8	4
Cornus amomum	Bareroot	Good	30	8
Cornus amomum	Bareroot	Good	28	8
Cornus amomum	Bareroot	Good	20	7
Fraxinus pennsylvanica	Bareroot	Good	29	11
Fraxinus pennsylvanica	Bareroot	Good	25	10
Fraxinus pennsylvanica	Bareroot	Good	36	15
Fraxinus pennsylvanica	Bareroot	Good	24	9
Fraxinus pennsylvanica	Bareroot	Good	34	15
Fraxinus pennsylvanica	Bareroot	Good	33	10
Fraxinus pennsylvanica	Bareroot	Stressed	40	16
Fraxinus pennsylvanica	Bareroot	Stressed	27	10
Liquidambar styraciflua	Volunteer			
Liquidambar styraciflua	Volunteer			
Plantus Occidentalis	Volunteer			
Quercus lyrata	Bareroot	Good	17	11
Quercus lyrata	Bareroot	Good	16	7
Quercus lyrata	Bareroot	Stressed	16	7
Quercus lyrata	Bareroot	Good	16	9
Quercus lyrata	Bareroot	Stressed	27	14
Quercus lyrata	Bareroot	Stressed	11	5
Quercus lyrata	Bareroot	Stressed	18	14
Quercus nigra	Bareroot	Stressed	17	7
Quercus nigra	Bareroot	Stressed	30	20
Quercus palustris	Bareroot	Good	25	9
Quercus palustris	Bareroot	Stressed	12	9
Quercus palustris	Bareroot	Stressed	28	18
Quercus palustris	Bareroot	Stressed	19	12

10 (50X50)
 1 (25X100)

 11 plots
 2500 square feet each

Total 27500
 (1 acre = 43560 sq. feet)

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8	Plot 9	Plot 10	Plot 11	Total
Total Dead	4	2	1	3	0	8	3	17	5	1	6	50
Total Live Planted	21	23	31	46	26	28	30	93	78	53	26	455
Volunteers	4	10	4	4	1	0	9	1	0	7	3	43
Number "Stressed"	4	11	9	4	10	1	7	15	17	24	12	114

Percent Survival	81%	92%	97%	94%	100%	78%	91%	84%	94%	98%	81%	90%
Percent "Stressed"	19%	48%	29%	9%	38%	4%	23%	16%	22%	45%	46%	25%

Stems per acre	365	400	540	801	453	487	522	1620	1359	923	453
Number of Species	7	12	10	11	10	6	8	8	8	10	9
Number of Planted Species	7	10	9	10	9	6	8	8	8	10	8

Combined Totals

Percent Survival 90
 Percent "Stressed" 25
 Stems Per Acre 720 (Without Volunteers)
 Number of Species 19
 Total Planted Species 16

APPENDIX B

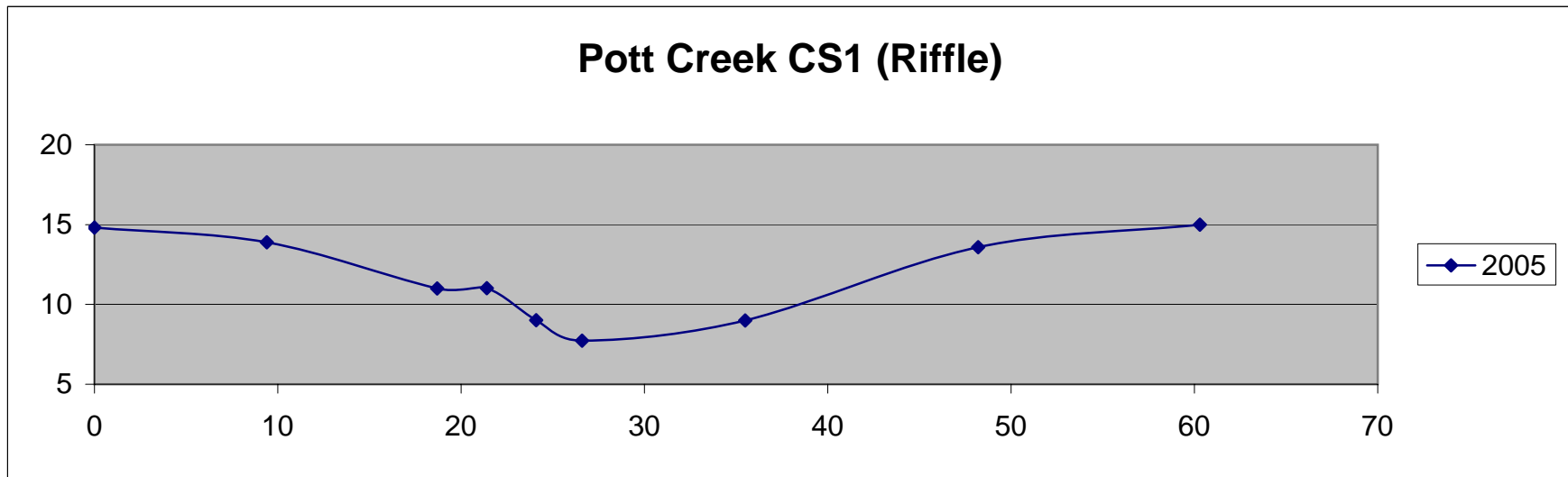
- Cross Section Plots and Tables**
- Cross Section Photos**

Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
70.3	4.739	19.739		15.000	GS	Bankfull Cross Sectional Area	232.76
58.2			6.162	13.577	RBF	Bankfull Width	38.80
45.5			10.740	8.999	REW	Bankfull Mean Depth	6.00
36.6			12.002	7.737	Thw	Bankfull Max Depth	6.16
34.1			10.725	9.014	LEW	Width/Depth Ratio	6.47
31.4			8.713	11.026		Entrenchment Ratio	1.55
28.7			8.741	10.998			
19.4			5.843	13.896	LBF		
10			4.919	14.82	GS		

Station	Width (ft)		Elevation	Depth (ft)	
70.3	12.1	60.3	15.000	1.423	7.263
58.2	12.7	48.2	13.577	4.578	5.84 RTB
45.5	8.9	35.5	8.999	1.262	1.262 REW
36.6	2.5	26.6	7.737	-1.277	0 Thw
34.1	2.7	24.1	9.014	-2.012	1.277 LEW
31.4	2.7	21.4	11.026	0.028	3.289
28.7	9.3	18.7	10.998	-2.898	3.261
19.4	9.4	9.4	13.896	-0.924	6.159 LTB
10		0	14.82		7.083

Survey Data			
Station	Foreshot	Elevation	Feature
60.3	4.739	15.000	GS
48.2	6.162	13.577	RBF
35.5	10.740	8.999	REW
26.6	12.002	7.737	Thw
24.1	10.725	9.014	LEW
21.4	8.713	11.026	
18.7	8.741	10.998	
9.4	5.843	13.896	LBF
0	4.919	14.82	GS

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	120.5	232.76
Bankfull Width	37.25	38.80
Bankfull Mean Depth	3.2	6.00
Bankfull Max Depth	4.82	6.16
Width/Depth Ratio	11.6	6.47
Entrenchment Ratio	8.05	7.73

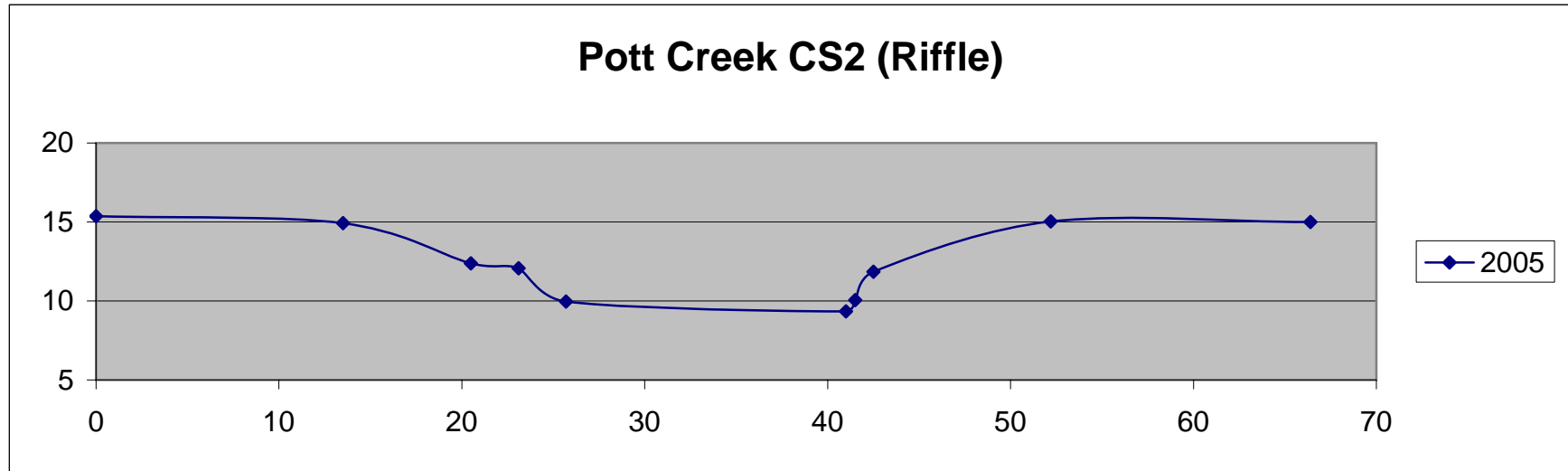


Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
77.3	5.32	20.32		15	GS	Bankfull Cross Sectional Area	218.66
63.1			5.284	15.036	RFB	Bankfull Width	38.70
53.4			8.468	11.852		Bankfull Mean Depth	5.65
52.4			10.257	10.063	REW	Bankfull Max Depth	5.70
51.9			10.988	9.332	Thw	Width/Depth Ratio	6.85
36.6			10.363	9.957	LEW	Entrenchment Ratio	1.72
34			8.252	12.068			
31.4			7.946	12.374			
24.4			5.391	14.929	LBF		
10.9			4.95	15.37	GS		

Station	Width (ft)		Elevation	Depth (ft)	
77.3	14.2	66.4	15	-0.036	5.668
63.1	9.7	52.2	15.036	3.184	5.704 RBF
53.4	1	42.5	11.852	1.789	2.52
52.4	0.5	41.5	10.063	0.731	0.731 REW
51.9	15.3	41	9.332	-0.625	0 Thw
36.6	2.6	25.7	9.957	-2.111	0.625 LEW
34	2.6	23.1	12.068	-0.306	2.736
31.4	7	20.5	12.374	-2.555	3.042
24.4	13.5	13.5	14.929	-0.441	5.597 LBF
10.9		0	15.37		6.038

Survey Data			
Station	Foreshot	Elevation	Feature
66.4	5.32	15	GS
52.2	5.284	15.036	RBF
42.5	8.468	11.852	
41.5	10.257	10.063	REW
41	10.988	9.332	Thw
25.7	10.363	9.957	LEW
23.1	8.252	12.068	
20.5	7.946	12.374	
13.5	5.391	14.929	LBF
0	4.95	15.37	GS

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	120.5	218.66
Bankfull Width	37.25	38.70
Bankfull Mean Depth	3.2	5.65
Bankfull Max Depth	4.82	5.70
Width/Depth Ratio	11.6	6.85
Entrenchment Ratio	8.05	7.75

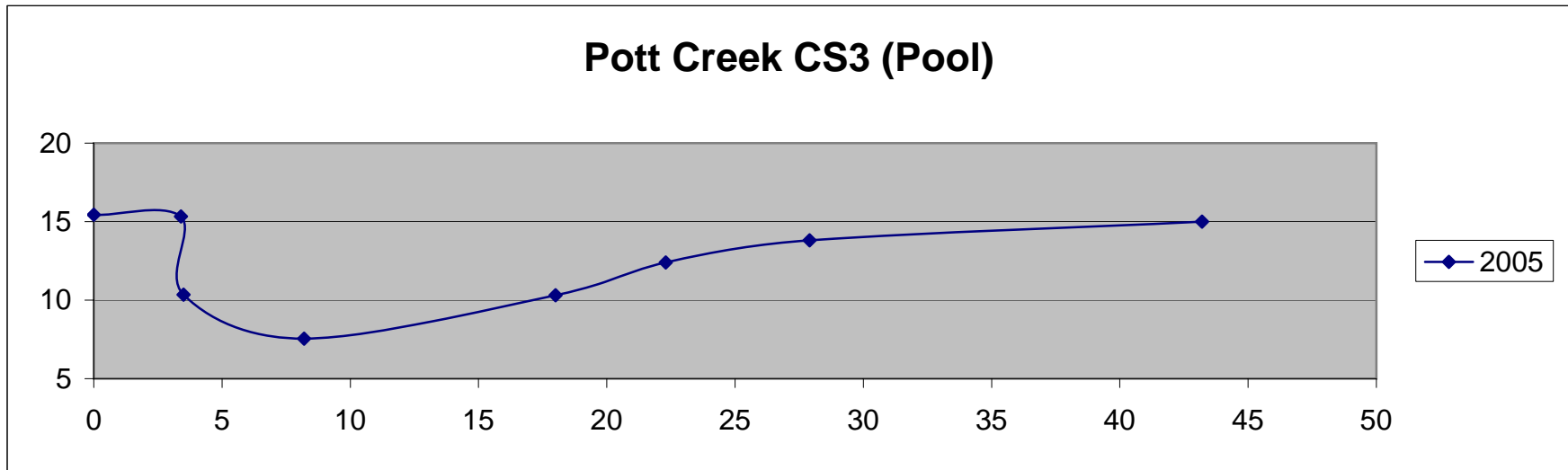


Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
54	5.797	20.797		15	GS	Bankfull Cross Sectional Area	171.84
38.7			6.996	13.801	RBF	Bankfull Width	24.50
33.1			8.404	12.393		Bankfull Mean Depth	7.01
28.8			10.478	10.319	REW	Bankfull Max Depth	7.78
19			13.245	7.552	Thw	Width/Depth Ratio	3.49
14.3			10.445	10.353	LEW	Entrenchment Ratio	1.76
14.2			5.465	15.332	LBF		
10.8			5.349	15.448	GS		

Station	Width (ft)		Elevation	Depth (ft)	
54	15.3	43.2	15	1.199	7.448
38.7	5.6	27.9	13.801	1.408	6.249 RBF
33.1	4.3	22.3	12.393	2.074	4.841
28.8	9.8	18	10.319	2.767	2.767 REW
19	4.7	8.2	7.552	-2.801	0 Thw
14.3	0.1	3.5	10.353	-4.979	2.801 LEW
14.2	3.4	3.4	15.332	-0.116	7.78 LBF
10.8		0	15.448		7.896

Survey Data			
Station	Foreshot	Elevation	Feature
43.2	5.797	15	GS
27.9	6.996	13.801	RBF
22.3	8.404	12.393	
18	10.478	10.319	REW
8.2	13.245	7.552	Thw
3.5	10.445	10.353	LEW
3.4	5.465	15.332	LBF
0	5.349	15.448	GS

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	152	171.84
Bankfull Width	37.25	24.50
Bankfull Mean Depth	3.2	7.01
Bankfull Max Depth	4.82	7.78
Width/Depth Ratio	11.6	3.49
Entrenchment Ratio	8.05	12.24

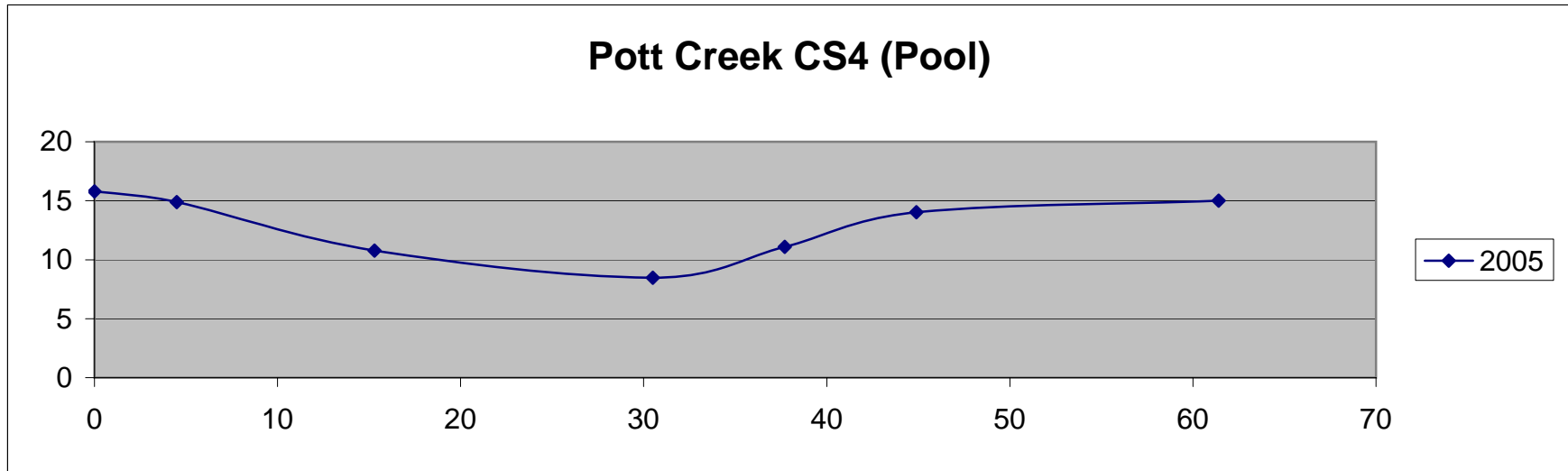


Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
-10.5	4.49	19.49		15	GS	Bankfull Cross Sectional Area	241.35
6			5.46	14.03	RTB	Bankfull Width	40.40
13.2			8.393	11.097		Bankfull Mean Depth	5.97
20.4			11.011	8.479	Thw	Bankfull Max Depth	6.40
35.6			8.724	10.766		Width/Depth Ratio	6.76
46.4			4.613	14.877	LTB	Entrenchment Ratio	1.52
50.9			3.7	15.79	GS		

Station	Width (ft)	Elevation	Depth (ft)
-10.5	-16.5	61.4	15 0.97 6.521
6	-7.2	44.9	14.03 2.933 5.551 RBF
13.2	-7.2	37.7	11.097 2.618 2.618 REW
20.4	-15.2	30.5	8.479 -2.287 0 Thw
35.6	-10.8	15.3	10.766 -4.111 2.287 LEW
46.4	-4.5	4.5	14.877 -0.913 6.398 LBF
50.9	0	15.79	7.311

Survey Data			
Station	Foreshot	Elevation	Feature
61.4	4.49	15	GS
44.9	5.46	14.03	RBF
37.7	8.393	11.097	REW
30.5	11.011	8.479	Thw
15.3	8.724	10.766	LEW
4.5	4.613	14.877	LBF
0	3.7	15.79	GS

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	152	241.35
Bankfull Width	37.25	40.40
Bankfull Mean Depth	3.2	5.97
Bankfull Max Depth	4.82	6.40
Width/Depth Ratio	11.6	6.76
Entrenchment Ratio	8.05	7.43

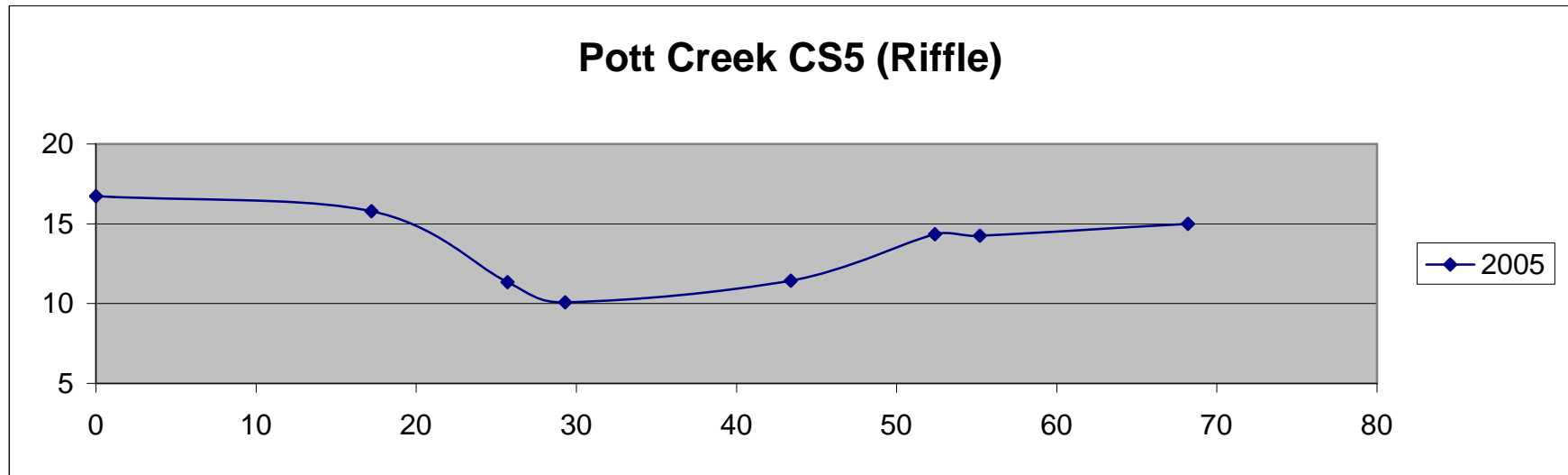


Station	Backshot	HI	Foreshot	Elevation	Feature	SW shots should not be equal	
80.7	7.585	22.585		15	GS	Break over sand bar	
67.7			8.332	14.253	GS		
64.9			8.243	14.342	RTB		Summary Data Table
55.9			11.148	11.437			Bankfull Cross Sectional Area
41.8			12.515	10.07	Thw		Bankfull Width
38.2			11.248	11.337			Bankfull Mean Depth
29.7			6.803	15.782	LTB		Bankfull Max Depth
12.5			5.852	16.733	GS		Width/Depth Ratio
							Entrenchment Ratio

Station	Width (ft)		Elevation	Depth (ft)	
80.7	13	68.2	15	0.747	4.93
67.7	2.8	55.2	14.253	-0.089	4.183 RBF
64.9	9	52.4	14.342	2.905	4.272
55.9	14.1	43.4	11.437	1.367	1.367 REW
41.8	3.6	29.3	10.07	-1.267	0 Thw
38.2	8.5	25.7	11.337	-4.445	1.267 LEW
29.7	17.2	17.2	15.782	-0.951	5.712 LBF
12.5		0	16.733		6.663

Survey Data			
Station	Foreshot	Elevation	Feature
68.2	7.585	15	GS
55.2	8.332	14.253	RBF
52.4	8.243	14.342	
43.4	11.148	11.437	REW
29.3	12.515	10.07	Thw
25.7	11.248	11.337	LEW
17.2	6.803	15.782	LBF
0	5.852	16.733	GS

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	120.5	188.01
Bankfull Width	37.25	38.00
Bankfull Mean Depth	3.2	4.95
Bankfull Max Depth	4.82	5.71
Width/Depth Ratio	11.6	7.68
Entrenchment Ratio	8.05	7.89

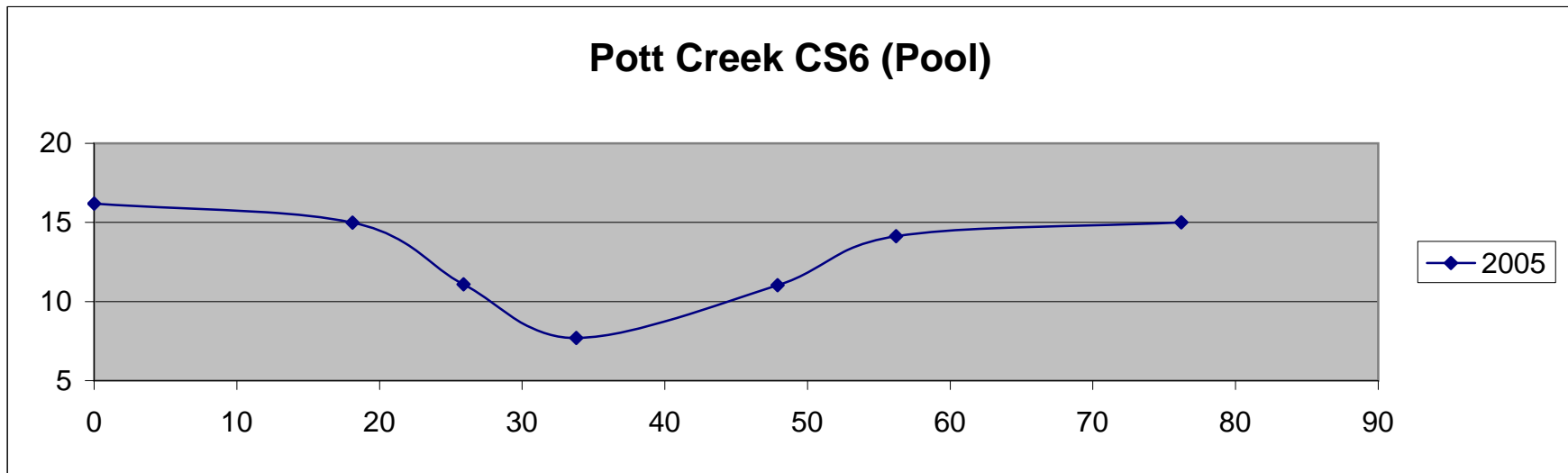


Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
82.2	6.889	21.889			15 GS	Bankfull Cross Sectional Area	261.14
62.2			7.765	14.124	RTB	Bankfull Width	38.10
53.9			10.857	11.032		Bankfull Mean Depth	6.85
39.8			14.19	7.699	Thw	Bankfull Max Depth	7.28
31.9			10.795	11.094		Width/Depth Ratio	5.56
24.1			6.907	14.982	LTB	Entrenchment Ratio	2.00
6			5.691	16.198	GS		

Station	Width (ft)		Elevation	Depth (ft)	
82.2	20	76.2	15	0.876	7.301
62.2	8.3	56.2	14.124	3.092	6.425 RBF
53.9	14.1	47.9	11.032	3.333	3.333 REW
39.8	7.9	33.8	7.699	-3.395	0 Thw
31.9	7.8	25.9	11.094	-3.888	3.395 LEW
24.1	18.1	18.1	14.982	-1.216	7.283 LBF
6		0	16.198		8.499

Survey Data			
Station	Foreshot	Elevation	Feature
76.2	6.889	15	GS
56.2	7.765	14.124	RBF
47.9	10.857	11.032	REW
33.8	14.19	7.699	Thw
25.9	10.795	11.094	LEW
18.1	6.907	14.982	LBF
0	5.691	16.198	GS

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	152	261.14
Bankfull Width	37.25	38.10
Bankfull Mean Depth	3.2	6.85
Bankfull Max Depth	4.82	7.28
Width/Depth Ratio	11.6	5.56
Entrenchment Ratio	8.05	7.87

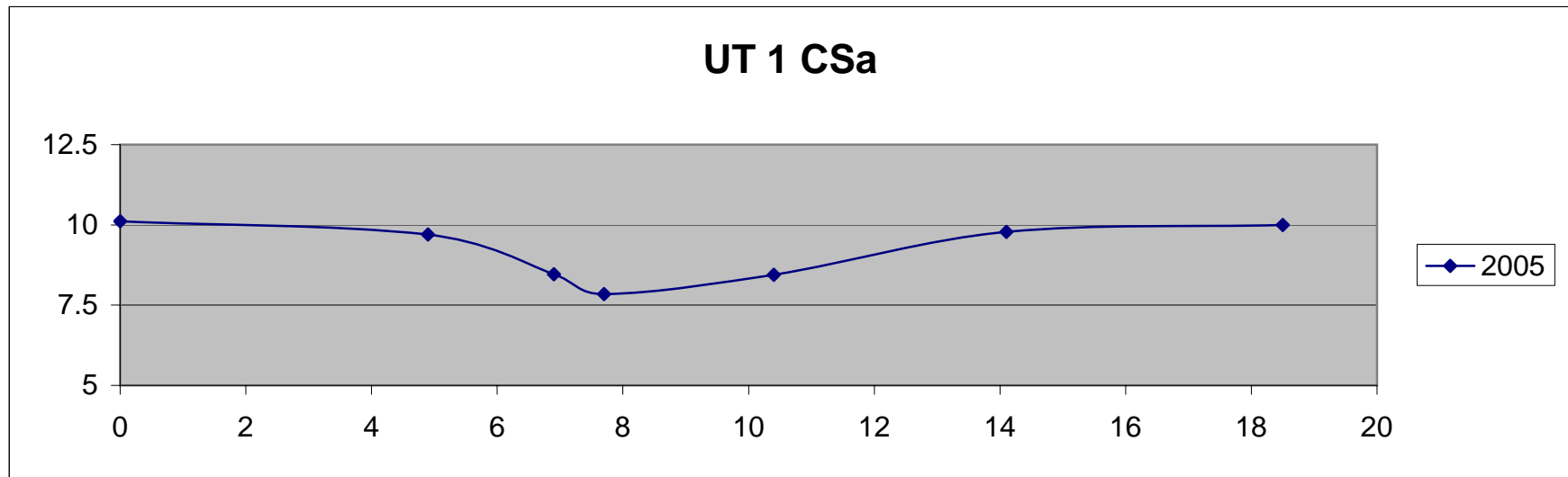


Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
24.7	5.042	15.042		10	GS	Bankfull Cross Sectional Area	17.42
20.3			5.261	9.781	LTB	Bankfull Width	9.20
16.6			6.593	8.449		Bankfull Mean Depth	1.89
13.9			7.196	7.846	Ctr	Bankfull Max Depth	1.94
13.1			6.58	8.462		Width/Depth Ratio	4.86
11.1			5.343	9.699	RTB	Entrenchment Ratio	2.01
6.2			4.931	10.111	GS		

Station	Width (ft)		Elevation	Depth (ft)	
24.7	4.4	18.5	10	0.219	2.154
20.3	3.7	14.1	9.781	1.332	1.935
16.6	2.7	10.4	8.449	0.603	0.603
13.9	0.8	7.7	7.846	-0.616	0
13.1	2	6.9	8.462	-1.237	0.616
11.1	4.9	4.9	9.699	-0.412	1.853
6.2		0	10.111		2.265

Survey Data			
Station	Foreshot	Elevation	Feature
0	5.042	10.111	GS
4.9	5.261	9.699	REW
6.9	6.593	8.462	RBF
7.7	7.196	7.846	Thw
10.4	6.58	8.449	LBF
14.1	5.343	9.781	LEW
18.5	4.931	10	GS

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	10.2	17.42
Bankfull Width	10.5	9.20
Bankfull Mean Depth	0.97	1.89
Bankfull Max Depth	1.9	1.94
Width/Depth Ratio	10.8	4.86
Entrenchment Ratio	16.7	19.02

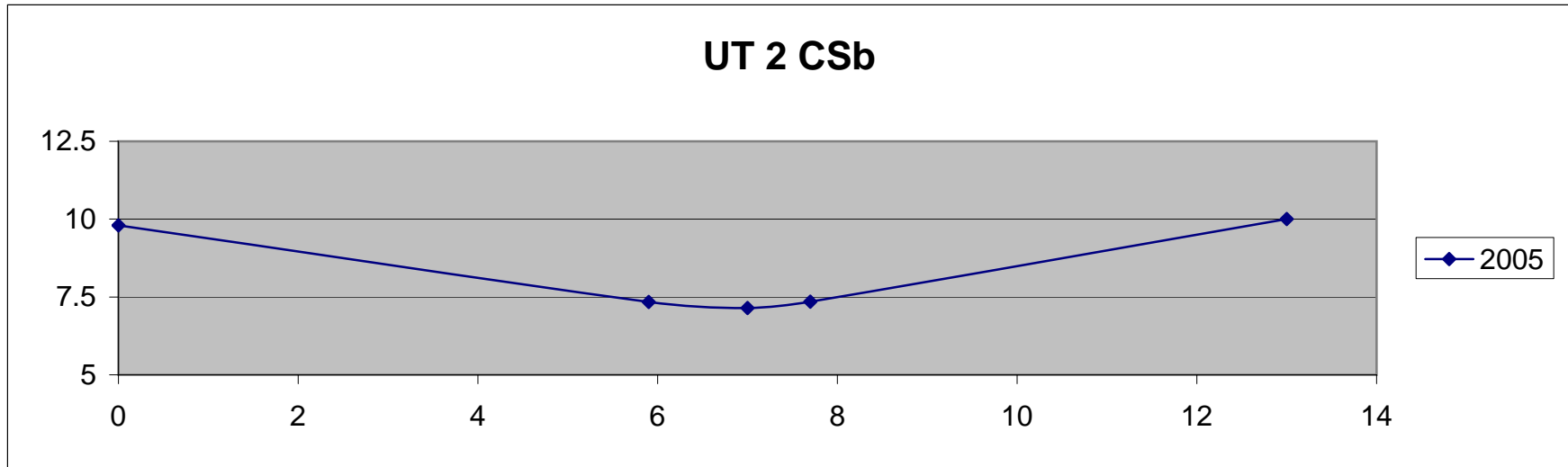


Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
19.3	6.049	16.049			10 LTB	Bankfull Cross Sectional Area	35.80
14			8.702	7.347		Bankfull Width	13.00
13.3			8.905	7.144	Thw	Bankfull Mean Depth	2.75
12.2			8.711	7.338		Bankfull Max Depth	2.86
6.3			6.253	9.796	RTB	Width/Depth Ratio	4.72
						Entrenchment Ratio	1.00

Station	Width (ft)		Elevation	Depth (ft)	
19.3	5.3	13	10	2.653	2.856
14	0.7	7.7	7.347	0.203	0.203
13.3	1.1	7	7.144	-0.194	0
12.2	5.9	5.9	7.338	-2.458	0.194
6.3		0	9.796		2.652

Survey Data			
Station	Foreshot	Elevation	Feature
0	6.049	9.796	RBF
5.9	8.702	7.338	REW
7	8.905	7.144	Thw
7.7	8.711	7.347	LEW
13	6.253	10	LBF

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	21	35.80
Bankfull Width	13.7	13.00
Bankfull Mean Depth	1.5	2.75
Bankfull Max Depth	2.79	2.86
Width/Depth Ratio	9.1	4.72
Entrenchment Ratio	5.8	6.15

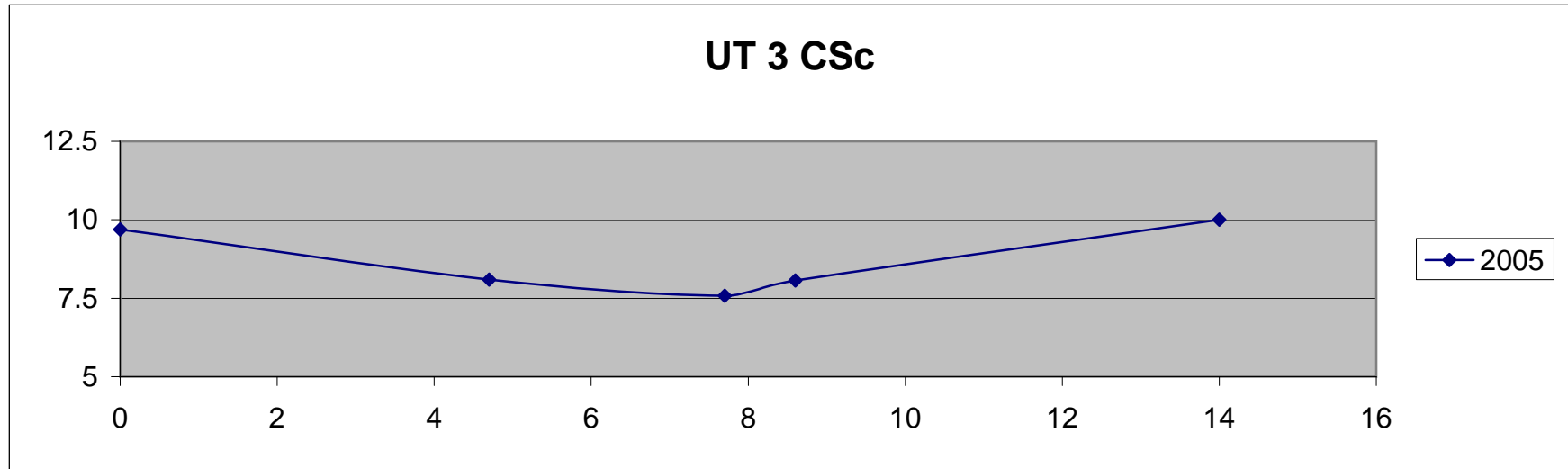


Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
21.5	5.309	15.309			10 LTB	Bankfull Cross Sectional Area	31.68
16.1			7.24	8.069		Bankfull Width	14.00
15.2			7.728	7.581	Ctr	Bankfull Mean Depth	2.26
12.2			7.214	8.095		Bankfull Max Depth	2.42
7.5			5.62	9.689	RTB	Width/Depth Ratio	6.19
						Entrenchment Ratio	1.00

Station	Width (ft)		Elevation	Depth (ft)	
21.5	5.4	14	10	1.931	2.419
16.1	0.9	8.6	8.069	0.488	0.488
15.2	3	7.7	7.581	-0.514	0
12.2	4.7	4.7	8.095	-1.594	0.514
7.5		0	9.689		2.108

Survey Data			
Station	Foreshot	Elevation	Feature
0	5.309	9.689	RBF
4.7	7.24	8.095	REW
7.7	7.728	7.581	Thw
8.6	7.214	8.069	LEW
14	5.62	10	LBF

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	18.3	31.68
Bankfull Width	13.9	14.00
Bankfull Mean Depth	1.3	2.26
Bankfull Max Depth	2.68	2.42
Width/Depth Ratio	10.7	6.19
Entrenchment Ratio	18	17.86

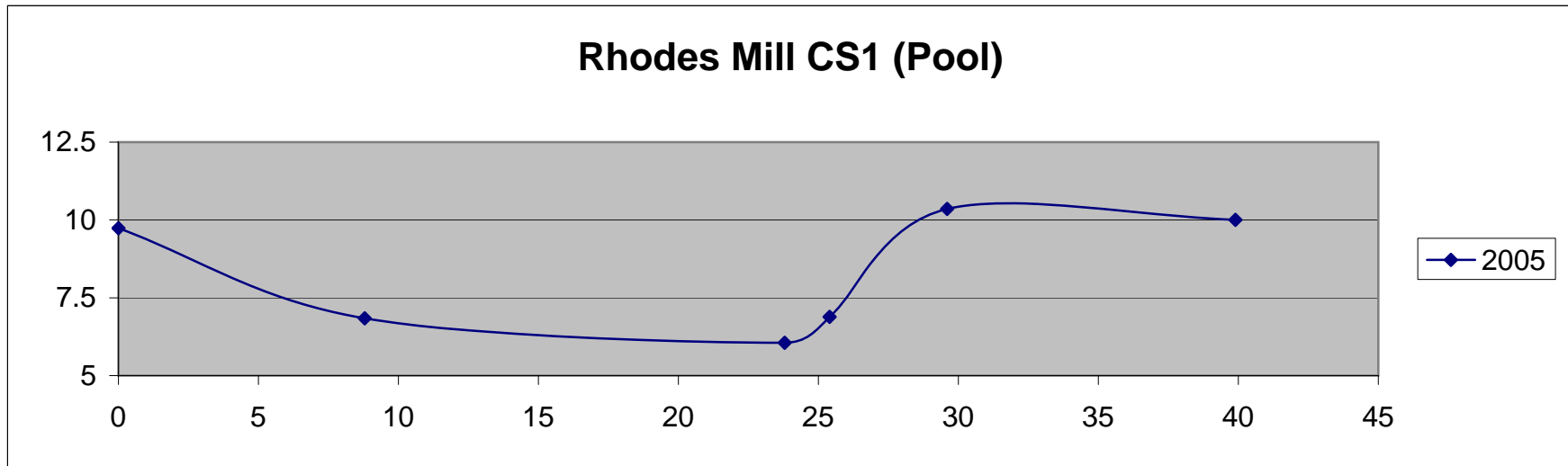


Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
45.5	5.11	15.11		10	GS	Bankfull Cross Sectional Area	123.90
35.2			4.76	10.35	LTB	Bankfull Width	31.10
31			8.22	6.89		Bankfull Mean Depth	3.98
29.4			9.053	6.057	Thw	Bankfull Max Depth	4.29
14.4			8.273	6.837		Width/Depth Ratio	7.81
5.6			5.377	9.733	RTB	Entrenchment Ratio	1.28

Station	Width (ft)		Elevation	Depth (ft)	
45.5	10.3	39.9	10	-0.35	3.943
35.2	4.2	29.6	10.35	3.46	4.293
31	1.6	25.4	6.89	0.833	0.833
29.4	15	23.8	6.057	-0.78	0
14.4	8.8	8.8	6.837	-2.896	0.78
5.6		0	9.733		3.676 RBF
					0.78 REW
					0 Thw
					0.833 LEW
					4.293 LBF
					3.943

Survey Data			
Station	Foreshot	Elevation	Feature
0	5.11	9.733	GS
8.8	4.76	6.837	RBF
23.8	8.22	6.057	REW
25.4	9.053	6.89	Thw
29.6	8.273	10.35	LEW
39.9	5.377	10	LBF

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	50	123.90
Bankfull Width	32	31.10
Bankfull Mean Depth	2.19	3.98
Bankfull Max Depth	3.15	4.29
Width/Depth Ratio	14.6	7.81
Entrenchment Ratio	9.38	9.65

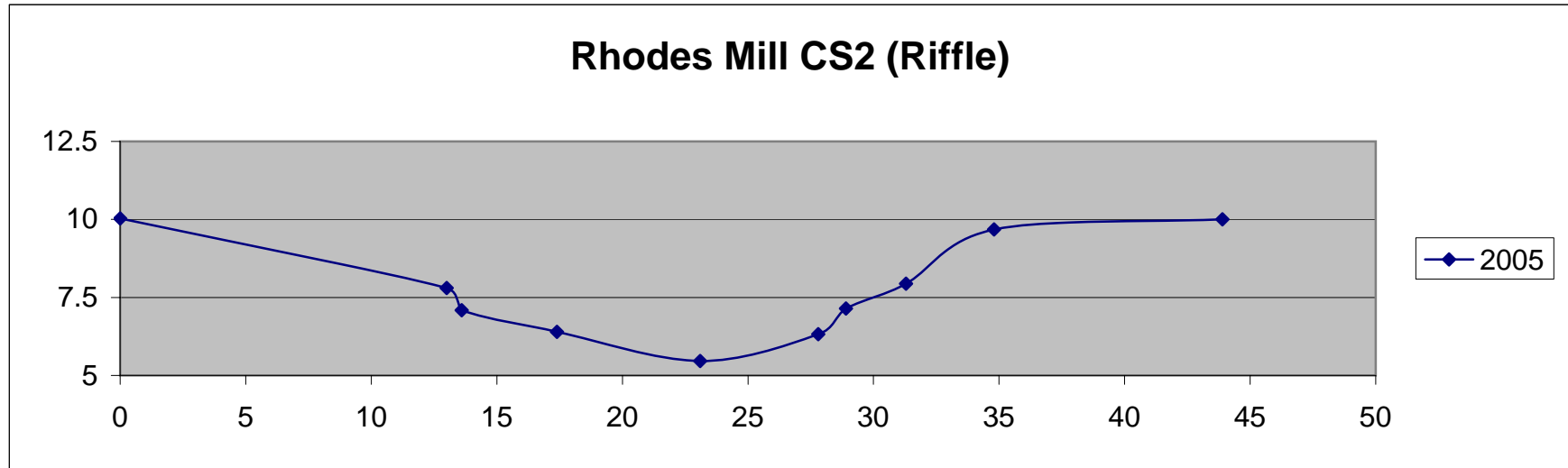


Station	Backshot	HI	Foreshot	Elevation	Feature	Elevation	Depth (ft)	
50.6	5.098	15.098			10 GS	10	0.317	4.542
41.5			5.415	9.683	LTB	9.683	1.738	4.225
38			7.153	7.945		7.945	0.8	2.487
35.6			7.953	7.145		7.145	0.823	1.687
34.5			8.776	6.322		6.322	0.864	0.864
29.8			9.64	5.458	Thw	5.458	-0.938	0
24.1			8.702	6.396		6.396	-0.697	0.938
20.3			8.005	7.093		7.093	-0.705	1.635
19.7			7.3	7.798		7.798	-2.232	2.34
6.7			5.068	10.03	RTB	10.03		4.572

Station	Width (ft)		Summary Data Table	
50.6	9.1	43.9	Bankfull Cross Sectional Area	135.90
41.5	3.5	34.8	Bankfull Width	30.90
38	2.4	31.3	Bankfull Mean Depth	4.40
35.6	1.1	28.9	Bankfull Max Depth	4.57
34.5	4.7	27.8	Width/Depth Ratio	7.03
29.8	5.7	23.1	Entrenchment Ratio	1.42
24.1	3.8	17.4		
20.3	0.6	13.6		
19.7	13	13		
6.7		0		

Survey Data			
Station	Foreshot	Elevation	Feature
0	5.098	10.03	GS
13	5.415	7.798	RBF
13.6	7.153	7.093	
17.4	7.953	6.396	
23.1	8.776	5.458	REW
27.8	9.64	6.322	Thw
28.9	8.702	7.145	LEW
31.3	8.005	7.945	
34.8	7.3	9.683	
43.9	5.068	10	LBF

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	70	135.90
Bankfull Width	32	30.90
Bankfull Mean Depth	2.19	4.40
Bankfull Max Depth	3.15	4.57
Width/Depth Ratio	14.6	7.03
Entrenchment Ratio	9.38	9.71

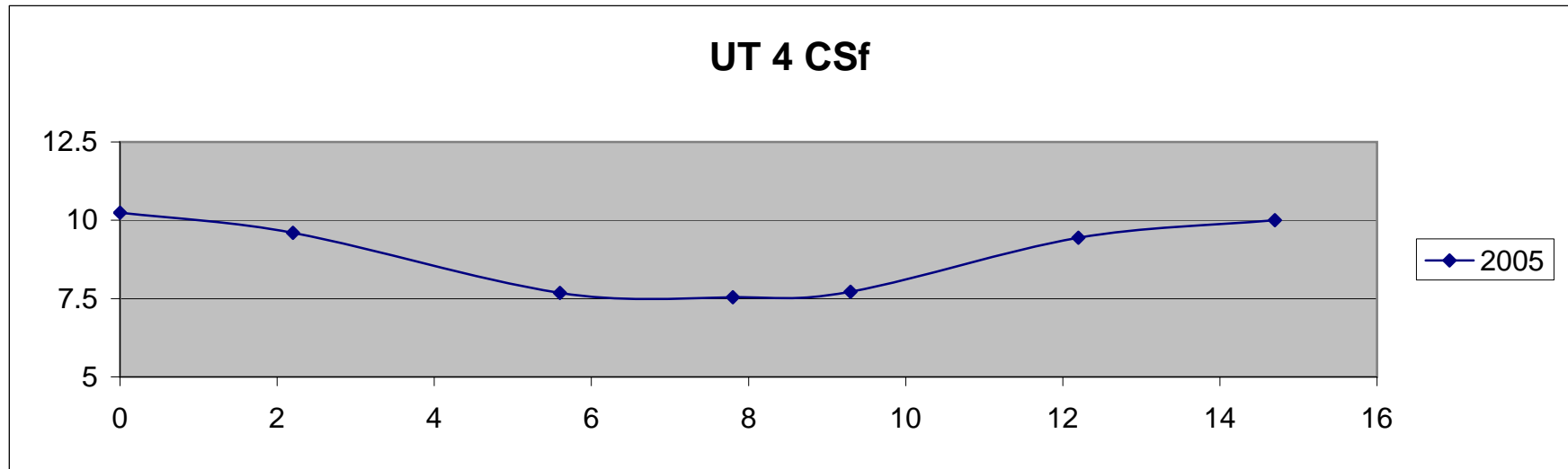


Station	Backshot	HI	Foreshot	Elevation	Feature	Summary Data Table	
20.2	6.155	16.155			10 RTB	Bankfull Cross Sectional Area	19.79
17.7			6.712	9.443		Bankfull Width	10.00
14.8			8.439	7.716		Bankfull Mean Depth	1.98
13.3			8.612	7.543	Ctr	Bankfull Max Depth	2.06
11.1			8.47	7.685		Width/Depth Ratio	5.05
7.7			6.554	9.601		Entrenchment Ratio	1.47
5.5			5.911	10.244	LTB		

Station	Width (ft)		Elevation	Depth (ft)	
20.2	2.5	14.7	10	0.557	2.457
17.7	2.9	12.2	9.443	1.727	1.9 RBF
14.8	1.5	9.3	7.716	0.173	0.173 REW
13.3	2.2	7.8	7.543	-0.142	0 Thw
11.1	3.4	5.6	7.685	-1.916	0.142 LEW
7.7	2.2	2.2	9.601	-0.643	2.058 LBF
5.5		0	10.244		2.701

Survey Data			
Station	Foreshot	Elevation	Feature
14.7	61.55	10	GS
12.2	6.712	9.443	RBF
9.3	8.439	7.716	REW
7.8	8.612	7.543	Thw
5.6	8.47	7.685	LEW
2.2	6.554	9.601	LBF
0	5.911	10.244	GS

Summary Data Table	As-built	M1 2005
Bankfull Cross Sectional Area	19.4	19.79
Bankfull Width	13.2	10.00
Bankfull Mean Depth	1.47	1.98
Bankfull Max Depth	2.37	2.06
Width/Depth Ratio	8.98	5.05
Entrenchment Ratio	8.71	11.50



APPENDIX C

- Bank Full Events**
- Photo Log**

Bank Full Event 1: March 28, 2005

Construction crew was actively demobilizing, vegetation had not had time to take hold. All major problems caused by this event were immediately repaired by construction crew still on-site, minor problem areas were live-staked.



Straw had just been put down in many areas.



Front field upstream of the bridge.



Part of the Channel at almost exact bankfull.



Front field downstream of the bridge.



The bridge at Paint Shop Road.



Newly planted bareroots marked with flagging.

Bank Full Event 2: October 6, 2005 This was an extreme rainfall event with a average of 10 to 15 inches in a 24 hour period in the Lincolnton area. The on-site rain gage held 12 inches. Water came over the Paint Shop Road bridge and caused problems under the bridge, mainly in the DOT ROW, which is outside the project boundary.



Under the Paint Shop Road Bridge, West.



Downstream from bridge, close to bankfull.



Under the bridge, East.



Upstream from bridge, close to bankfull.



Debris hanging under bride.

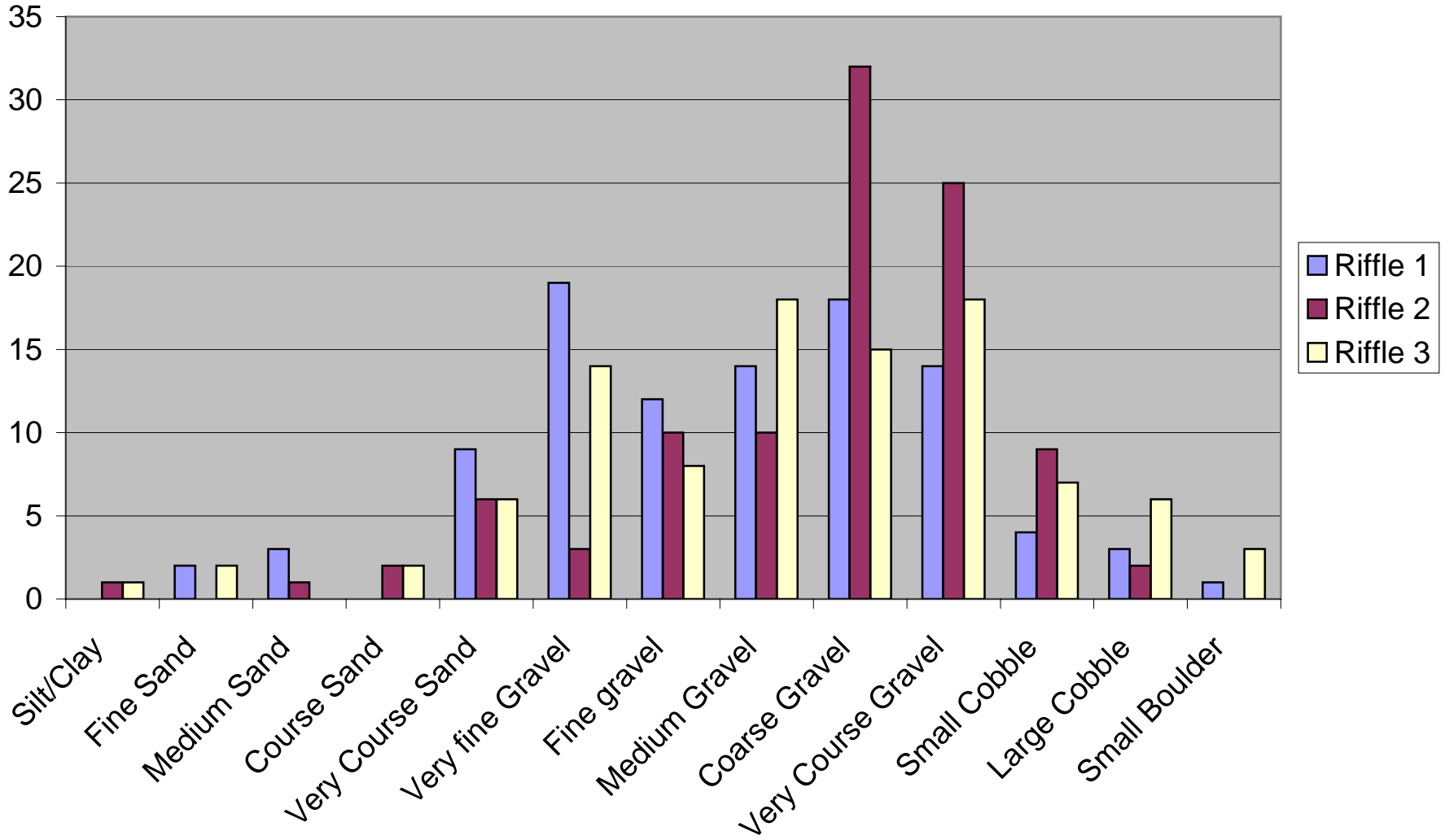


Debris hung on railings of the bridge.

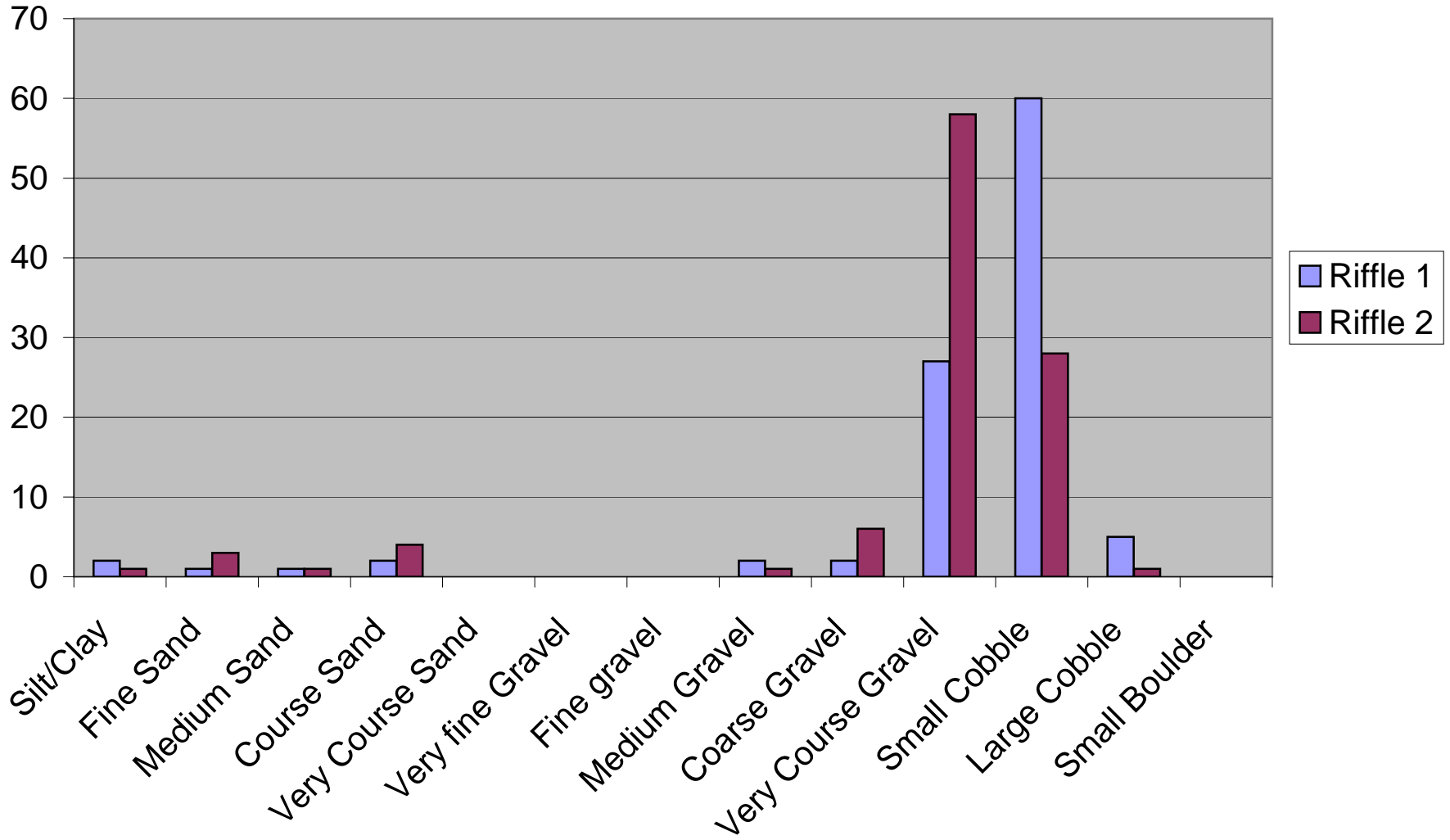
APPENDIX D

- Profile Raw Data**
- Data Tables**
- Pebble Count Graphs**

Rhodes Mill Pebble Counts



Pott Creek Pebble Counts



Rhodes Mill

	Riffle 1	Riffle 2	Riffle 3
Silt/Clay		1	1
Fine Sand	2		2
Medium Sand	3	1	
Course Sand		2	2
Very Course Sand	9	6	6
Very fine Gravel	19	3	14
Fine gravel	12	10	8
Medium Gravel	14	10	18
Coarse Gravel	18	32	15
Very Course Gravel	14	25	18
Small Cobble	4	9	7
Large Cobble	3	2	6
Small Boulder	1		3
	99	101	100

Pott Creek

	Riffle 1	Riffle 2
Silt/Clay	2	1
Fine Sand	1	3
Medium Sand	1	1
Course Sand	2	4
Very Course Sand		
Very fine Gravel		
Fine gravel		
Medium Gravel	2	1
Coarse Gravel	2	6
Very Course Gravel	27	58
Small Cobble	60	28
Large Cobble	5	1
Small Boulder		
	102	103

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: Pott Creek (1000 lf)

Feature

Category

Riffle 1	Present?	Yes
	Stable?	Yes
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
		Natural riffle forming on it's own
Riffle 2	Present?	own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	N/A
Riffle 3	Present?	Yes
	Stable?	Migrating
	Minimal evidence of embedding/fining?	Yes
		Has migrated about 13 feet, actual length 28.42
	Length Appropriate	Natural riffle forming on it's own
Riffle 4	Present?	own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	N/A
		Natural riffle forming on it's own
Riffle 5	Present?	own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	N/A

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: Rhodes Mill (500 lf)

Feature

Category

Riffle 1	Present?	Yes
		Armor was pulled up, but re-buried itself. Has migrated about 4 feet
	Stable?	about 4 feet
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
Riffle 2	Present?	Yes
	Stable?	migrating
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
Riffle 3	Present?	Yes
	Stable?	migrating
	Minimal evidence of embedding/fining?	Yes

Length Appropriate Yes

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 1 (600 lf)

Feature
Category
9 Riffles Present? Yes
Counted Stable? N/A
N/A, plants are substrate
Minimal evidence of embedding/fining? forming riffles
Length Appropriate Yes

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 2 (350 lf)

Feature
Category
6 Riffles Present? Yes
Counted Stable? N/A
N/A, plants are substrate
Minimal evidence of embedding/fining? forming riffles
Length Appropriate Yes

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 3 (480 lf)

Feature
Category
9 Riffles Present? Yes
Counted Stable? N/A
N/A, plants are substrate
Minimal evidence of embedding/fining? forming riffles
Length Appropriate Yes

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 4 (350 lf)

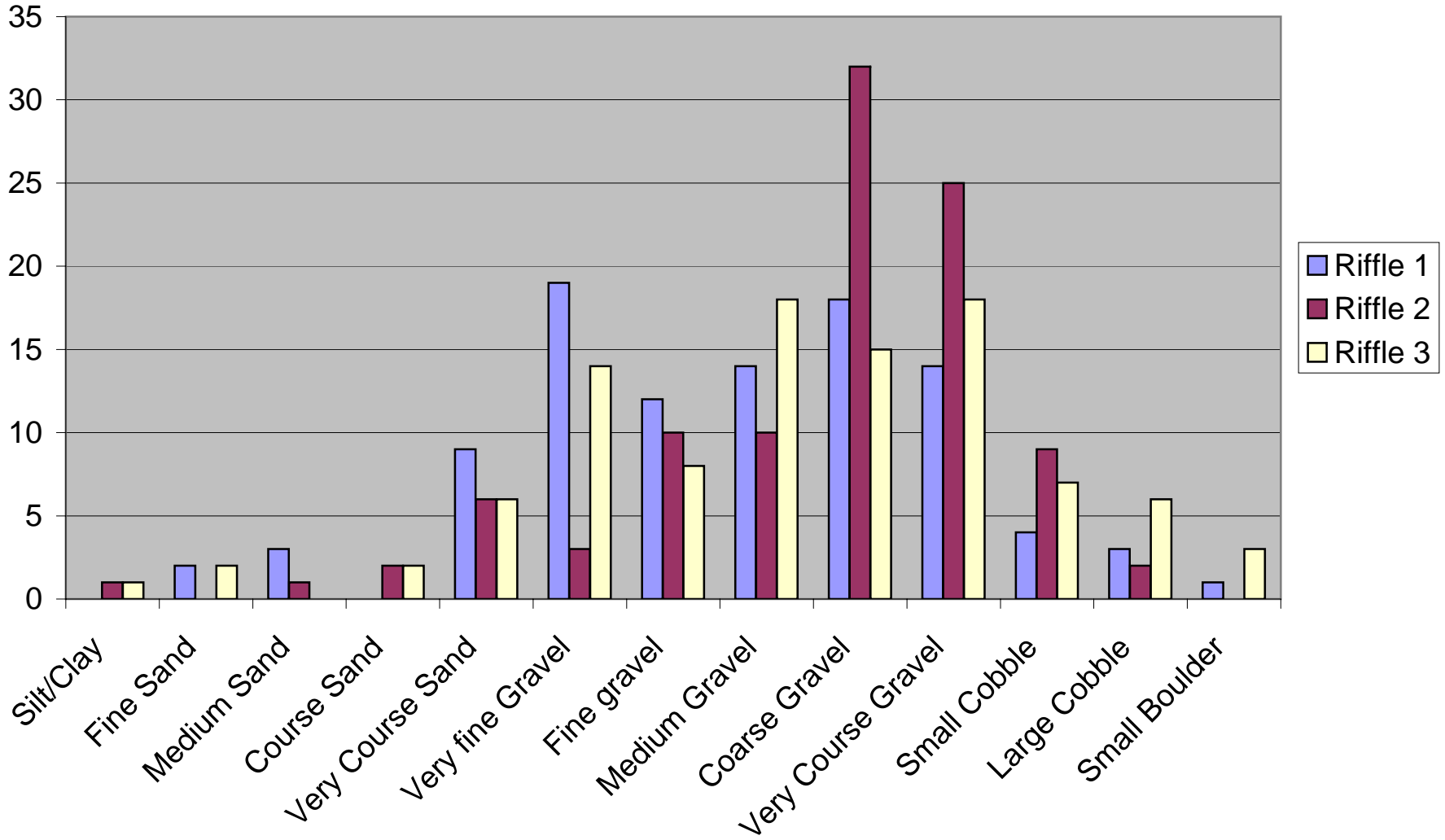
No visible R-R-P-G Sequence

Visual Morphological Stability Assessment

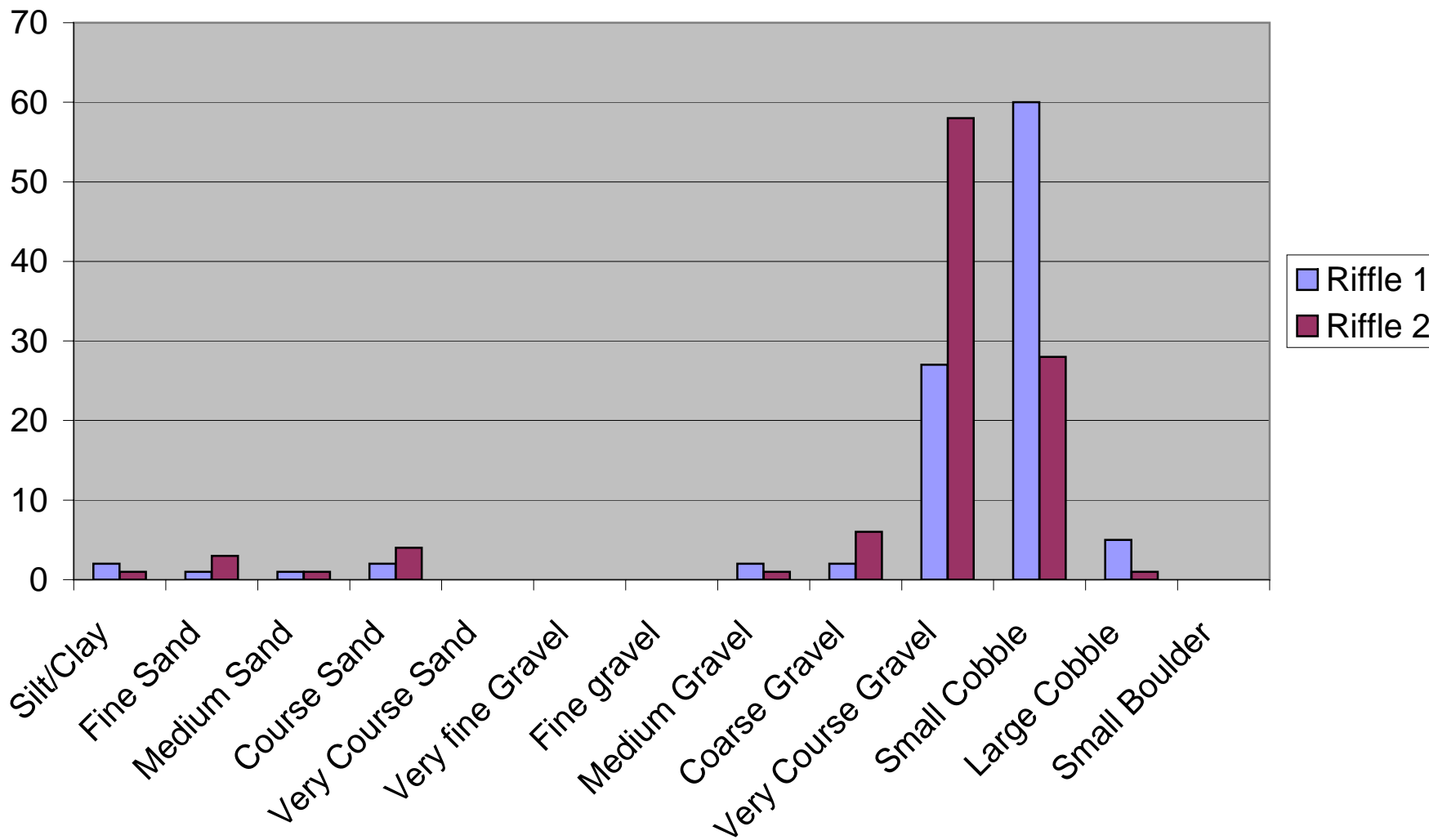
Project: Pott Creek
Reach: UT 5 (40 lf)

No visible R-R-P-G Sequence

Rhodes Mill Pebble Counts



Pott Creek Pebble Counts



Rhodes Mill

	Riffle 1	Riffle 2	Riffle 3
Silt/Clay		1	1
Fine Sand	2		2
Medium Sand	3	1	
Course Sand		2	2
Very Course Sand	9	6	6
Very fine Gravel	19	3	14
Fine gravel	12	10	8
Medium Gravel	14	10	18
Coarse Gravel	18	32	15
Very Course Gravel	14	25	18
Small Cobble	4	9	7
Large Cobble	3	2	6
Small Boulder	1		3
	99	101	100

Pott Creek

	Riffle 1	Riffle 2
Silt/Clay	2	1
Fine Sand	1	3
Medium Sand	1	1
Course Sand	2	4
Very Course Sand		
Very fine Gravel		
Fine gravel		
Medium Gravel	2	1
Coarse Gravel	2	6
Very Course Gravel	27	58
Small Cobble	60	28
Large Cobble	5	1
Small Boulder		
	102	103

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: Pott Creek (1000 lf)

Feature

Category

Riffle 1	Present?	Yes
	Stable?	Yes
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
		Natural riffle forming on it's own
Riffle 2	Present?	own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	N/A
Riffle 3	Present?	Yes
	Stable?	Migrating
	Minimal evidence of embedding/fining?	Yes
		Has migrated about 13 feet, actual length 28.42
	Length Appropriate	Natural riffle forming on it's own
Riffle 4	Present?	own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	N/A
		Natural riffle forming on it's own
Riffle 5	Present?	own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	N/A

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: Rhodes Mill (500 lf)

Feature

Category

Riffle 1	Present?	Yes
		Armor was pulled up, but re-buried itself. Has migrated about 4 feet
	Stable?	about 4 feet
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
Riffle 2	Present?	Yes
	Stable?	migrating
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
Riffle 3	Present?	Yes
	Stable?	migrating
	Minimal evidence of embedding/fining?	Yes

Length Appropriate Yes

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 1 (600 lf)

Feature
Category
9 Riffles Present? Yes
Counted Stable? N/A
N/A, plants are substrate
Minimal evidence of embedding/fining? forming riffles
Length Appropriate Yes

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 2 (350 lf)

Feature
Category
6 Riffles Present? Yes
Counted Stable? N/A
N/A, plants are substrate
Minimal evidence of embedding/fining? forming riffles
Length Appropriate Yes

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 3 (480 lf)

Feature
Category
9 Riffles Present? Yes
Counted Stable? N/A
N/A, plants are substrate
Minimal evidence of embedding/fining? forming riffles
Length Appropriate Yes

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 4 (350 lf)

No visible R-R-P-G Sequence

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 5 (40 lf)

No visible R-R-P-G Sequence

Table X. Categorical Stream Feature Visual Stability Assessment

Reach: Pott Creek (1000 lf)	
Feature	MY 2005
Riffles	50
Pools	100
Thalweg	78
Vanes	92

Reach: Rhodes Mill (500 lf)	
Feature	MY 2005
Riffles	56
Pools	100
Thalweg	33
Vanes	60

Reach: UT 1 (600 lf)	
Feature	MY 2005
Riffles	100
Pools	100
Thalweg	100
Vanes	67

Reach: UT 2 (350 lf)	
Feature	MY 2005
Riffles	100
Pools	100
Thalweg	100
Vanes	n/a

Reach: UT 3 (480 lf)	
Feature	MY 2005
Riffles	100
Pools	100
Thalweg	100
Vanes	100

Reach: UT 4 (350 lf)	
Feature	MY 2005
Riffles	n/a
Pools	n/a
Thalweg	100
Vanes	n/a

Pott Creek

Feature	Length	Comments
Pool 1	51.58	
Glide	85.67	Thalweg left of center
Riffle 1	33.75	Constructed riffle - Pebble Count
Run	19	Thalweg left of center, good leaf pack
Pool 2	54.66	
Glide ?	229.5	Thalweg left of center, 2 natural riffles and a pool seem to be forming in this stretch, clay and sand deposits are the major substrate for these riffles
Run	7.42	Thalweg centered
Pool 3	61.58	
Glide	8.42	Thalweg centered
Riffle 2	20	natural riffle, all clay chunks and sand
Run	8	Thalweg centered
Pool 4	55	
Glide	17	Thalweg centered
Riffle 3	28.42	Constructed Riffle has migrated about 13 feet, all clay but still functioning, last 15 feet is constructed substrate, did Pebble count here
Run	32	Thalweg centered
Pool 5	62.67	
Glide	13.83	
Riffle 4	14	natural riffle, all clay chunks and sand, right above confluence of UT 5, which is stable with rocks in place
Run	7.33	small problem area downstream on west bank, needs livestakes, thalweg right of center
Pool 6	117.5	
Glide	29.58	Thalweg centered
Riffle 5	10.83	natural clay riffle
Run	10.42	Thalweg centered
Pool 7	84.5	

1062.66

	Proposed M1 2005	
Avg. Pool to Pool Spacing	172	95.86
Avg. Pool Length	101.3	69.64

Rhodes Mill

Feature	Length	Comments
Pool 1	16	Aggrading, sandbar forming on left inside meander bend, pool present, but shallow
Glide	44.5	Thalweg right of center, need to live stake outside of meander bend between root wads and riffle
Riffle 1	28.33	armor has been torn up and reburied by rocks and sand, riffle has migrated about 4 feet - Pebble Count
Run	9.75	Thalweg centered, structure working well
Pool 2	26.58	several pools strug together, good habitat, leaf litter
Glide	119.16	Thalweg left of center, centered through the meander bend, log sill where riffle used to be is acting as a drop structure, pool has formed at base, stable.
Riffle 2	47.33	blownout, has migrated below log sill, substrate still good, but spread out downstream, large boulders present also, Pebble Count
Run	2.42	Thalweg left of center
Pool 3	18.16	
Glide	37.67	Thalweg left of center, more centered approaching riffle
Riffle 3	20.83	a lot of larger rocks, migrated a few feet below log sill, lots of leaf pack, Pebble Count
Run	18.67	Thalweg left of center
Pool 4	15.58	
Glide	100.66	end of profile, another riffle out of place ended measurement at log sill, thalweg centered

505.64

Proposed M1 2005

Avg. Pool to Pool Spacing	108.6	109.55
Avg. Pool Length	70.2	19.08

Feature	Length	Comments	UT1
Glide	5.08		
Riffle 1	4.16		
Run	22.75		
Pool 1	13.83	There should be a pool here, created by the structure that has disappeared, no structure = no pool	
Glide	17		
Riffle 2	24.83		
Run	10.42		
Pool 2	12.33		
Glide	10.67		
Riffle 3	4.16		
Run	28.33		
?	78.92	loses sequence, pool and a glide, but not really a pool	
Riffle 4	5		
Run	14.33		
Pool 4	21		
Glide	14.67		
Riffle 5	12		
Run	4.16		
Pool 5	23		
Glide	13		
Riffle 6	5		
Run	13.92		
Pool 6	19.58		
Glide	26.67		
Riffle 7	5.33		
Run	14		
Pool 7	19.83		
Glide	13.08		
Riffle 8	5.5		
Run	2.83		
Pool 8	17.05		
Glide	19		
Riffle 9	4.75		
Run	6.83		
Pool 9	7.42		
Glide	56.16		
Riffle 10	26.17	several drop structures and boulders coming down to the confluence of Pott Creek	

602.76

Proposed M1 2005
 Avg. Pool to Pool Spacing 48.2 34.99
 Avg. Pool Length 28.8 16.75

UT2

Feature	Length	Comments
Pool 1	7	
Glide	24.83	
Riffle 1	7.42	
Run	6.42	
Pool 2	2.58	
Glide	1.83	
Riffle 2	19.16	
Run	17.92	
Pool 3	55.75	
Gilde	13.5	
Riffle 3	7.75	
Run	19.5	
Pool 4	44.42	
Glide	14.08	
Riffle 4	10.33	
Run	5.16	
Pool 5	8.25	Stream bed full of Juncus downstream of this pool area, but still holds a reasonable R-R-P-G sequence
Glide	35.5	
Riffle 5	2.83	
Run	4.58	
Pool 6	4.58	
Glide	18.33	
Riffle 6	23.75	

355.47

Proposed M1 2005

Avg. Pool to Pool Spacing	24.6	38.16
Avg. Pool Length	14.9	20.43

UT3

Feature	Length	Comments
Pool 1	7	
Glide	17.58	
Riffle 1	14.16	
Run	6.08	
Pool 2	17.5	
Glide	22.58	
Riffle 2	4.92	
Run	15.83	
Pool 3	43.33	
Glide	12	
Riffle 3	8.42	
Run	1	
Pool 4	16.67	
Glide	5	
Riffle 4	19.58	
	211.65	
Run	123.58	loses R-R-P-G sequence as tributary approaches Pott Creek, not quite half way
Riffle ?	145.5	

269.08

480.73

Proposed M1 2005

Avg. Pool to Pool Spacing	37.1	25.5
Avg. Pool Length	23.3	21.12

Visual Morphological Stability Assessment

Project: Pott Creek					
Reach: Pott Creek (1000 lf)					
Feature Category		(# Stable) Performing as Intended	Total # per As-built	Total unstable	% Stable
Riffles	Present?	2	2	N/A	
	Armor Stable (no displacement)?	2	2	2	
	Facet Grade appears stable?	1	2	1	50%
	Minimal evidence of embedding/fining?	2	2	N/A	
	Length Appropriate?	2	2	N/A	
Pools	Present(not subject to severe agrad.)?	7	N/A	N/A	100%
	Length Appropriate?	7	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	6	N/A	2	75%
	Downstream of meander bend (glide) centering?	5	N/A	1	83%
Bed General	General channel bed aggradation (bar formation)	1	N/A	N/A	
	Channel bed degradation - down or head-cutting?	N/A	N/A	N/A	
Vanes	Free of back or arm scour?	22	24	2	92%
(Entire project)	Free of structural failure?	21	24	3	87.50%

Visual Morphological Stability Assessment

Project: Pott Creek					
Reach: Rhodes Mill (500 lf)					
Feature Category		(# Stable) Performing as Intended	Total # per As-built	Total unstable	% Stable
Riffles	Present?	3	3	N/A	
	Armor Stable (no displacement)?	2	3	1	67%
	Facet Grade appears stable?	0	3	3	0%
	Minimal evidence of embedding/fining?	3	3	N/A	100%
	Length Appropriate?	3	3	N/A	
Pools	Present(not subject to severe agrad.)?	4	N/A	N/A	100%
	Length Appropriate?	4	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	1	N/A	3	33%
	Downstream of meander bend (glide) centering?	0	N/A	3	0%
Bed General	General channel bed aggradation (bar formation)	2	N/A	N/A	
	Channel bed degradation - down or head-cutting?	N/A	N/A	N/A	
Vanes	Free of back or arm scour?	3	5	2	60%
(Entire project)	Free of structural failure?	3	5	2	60%

Visual Morphological Stability Assessment

Project: Pott Creek					
Reach: UT 1 (600 lf)					
Feature Category		(# Stable) Performing as Intended	Total # per As-built	Total unstable	% Stable
Riffles	Present?	9	N/A	N/A	100%
	Armor Stable (no displacement)?	N/A	N/A	N/A	
	Facet Grade appears stable?	N/A	N/A	N/A	
	Minimal evidence of embedding/fining?	N/A	N/A	N/A	
	Length Appropriate?	9	N/A	N/A	
Pools	Present(not subject to severe agrad.)?	9	N/A	N/A	100%
	Length Appropriate?	9	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	9	N/A	N/A	100%
	Downstream of meander bend (glide) centering?	9	N/A	N/A	
Bed General	General channel bed aggradation (bar formation)	N/A	N/A	N/A	
	Channel bed degradation - down or head-cutting?	N/A	N/A	N/A	
Vanes	Free of back or arm scour?	2	3	1	67%
(Entire project)	Free of structural failure?	1	3	2	33%

Visual Morphological Stability Assessment

Project: Pott Creek					
Reach: UT 2 (350 lf)					
Feature Category		(# Stable) Performing as Intended	Total # per As-built	Total unstable	% Stable
Riffles	Present?	6	N/A	N/A	100%
	Armor Stable (no displacement)?	N/A	N/A	N/A	
	Facet Grade appears stable?	N/A	N/A	N/A	
	Minimal evidence of embedding/fining?	N/A	N/A	N/A	
	Length Appropriate?	6	N/A	N/A	
Pools	Present(not subject to severe agrad.)?	6	N/A	N/A	100%
	Length Appropriate?	6	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	5	N/A	N/A	100%
	Downstream of meander bend (glide) centering?	6	N/A	N/A	
Bed General	General channel bed aggradation (bar formation)	N/A	N/A	N/A	
	Channel bed degradation - down or head-cutting?	N/A	N/A	N/A	
Vanes	Free of back or arm scour?	N/A	N/A	N/A	
(Entire project)	Free of structural failure?	N/A	N/A	N/A	

Visual Morphological Stability Assessment

Project: Pott Creek					
Reach: UT 3 (480 lf)					
Feature Category		(# Stable) Performing as Intended	Total # per As-built	Total unstable	% Stable
Riffles	Present?	4	2	N/A	100%
	Armor Stable (no displacement)?	N/A	N/A	N/A	
	Facet Grade appears stable?	N/A	N/A	N/A	
	Minimal evidence of embedding/fining?	N/A	N/A	N/A	
	Length Appropriate?	4	2	N/A	
Pools	Present(not subject to severe agrad.)?	4	N/A	N/A	100%
	Length Appropriate?	4	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	3	N/A	N/A	100%
	Downstream of meander bend (glide) centering?	4	N/A	N/A	
Bed General	General channel bed aggradation (bar formation)	N/A	N/A	N/A	
	Channel bed degradation - down or head-cutting?	N/A	N/A	N/A	
Vanes	Free of back or arm scour?	1	1	N/A	100%
(Entire project)	Free of structural failure?	1	1	N/A	100%

Visual Morphological Stability Assessment

Project: Pott Creek					
Reach: UT 4 (350 lf)					
Feature Category		(# Stable) Performing as Intended	Total # per As-built	Total unstable	% Stable
Riffles	Present?	N/A	N/A	N/A	
	Armor Stable (no displacement)?	N/A	N/A	N/A	
	Facet Grade appears stable?	N/A	N/A	N/A	
	Minimal evidence of embedding/fining?	N/A	N/A	N/A	
	Length Appropriate?	N/A	N/A	N/A	
Pools	Present(not subject to severe agrad.)?	N/A	N/A	N/A	
	Length Appropriate?	N/A	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	6	N/A	N/A	100%
	Downstream of meander bend (glide) centering?	6	N/A	N/A	
Bed General	General channel bed aggradation (bar formation)	N/A	N/A	N/A	
	Channel bed degradation - down or head-cutting?	N/A	N/A	N/A	
Vanes	Free of back or arm scour?	N/A	N/A	N/A	
(Entire project)	Free of structural failure?	N/A	N/A	N/A	

APPENDIX E

- Structures and Problem Areas**
- Photo Log**

December 14, 2005

NCEEP
1652 Mail Service Center
Raleigh, NC 27699-1652

Attn: Jeff Jurek, Procurement Administrator

RE: SUPPLEMENT TO THE POTT CREEK II 2005 MONITORING REPORT 1

Dear Jeff:

Please accept this supplement to the monitoring report for the above referenced project dated November 23, 2005. As stated in Section 3.2.5 Channel Stability Assessment Summary, we have corrected the problems upstream of the bridge on Paint Shop Road. The following is a description of the work that was completed on December 12, 2005.

Mid-Atlantic Mitigation, LLC personnel oversaw remedial work on the Pott Creek II Stream Restoration Project. The contractor, Leatherman Grading repaired the cross vane and bank erosion upstream of the bridge at Paint Shop Road. The repaired area was stabilized with straw and erosion control matting over Annual Rye Grain seed and live staked. Also, fill material from the repairs was placed in the ditch upstream of the bridge on the west bank. This will prevent flow from the ditch from causing additional erosion problems during future storm events. We would like to reiterate that the storm that caused the original erosion was a severe event with over 12 inches of rain in approximately 24 hours. For more details, please refer to the attached pictures.

Mid-Atlantic Mitigation, LLC is pleased with the results of these remedial activities and believes that the Pott Creek project will continue to progress towards permanent stability. Your prompt processing of the invoice for Task 8 is greatly appreciated. If you have any questions please don't hesitate to call me at (704) 782-4133.

Thank you,

Richard Mogensen
Director
Mid-Atlantic Mitigation, LLC
An EarthMark company

