Pott Creek II Stream Restoration Project
Year 3 Monitoring Report - 2007

October 2007
Prepared By:

Mid-Atlantic Mitigation, LLC

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APPENDICES

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 clearing and 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).

The project goals are 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 Creek, 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 LLC (a division of EarthMark Mitigation Services) 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 help determine the success of the project. Six permanent cross-sections throughout Pott Creek, two throughout Rhodes Mill Creek, and one on unnamed tributaries 1 thru 4 were established. Cross-sections will document 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. All cross-sections and longitudinal profile sections are noted on the As-built plans included in the previously submitted Mitigation Plan and Year 1 Monitoring Reports.

The third year monitoring was completed on October 19th, 2007. The vegetation in all of the plots continues to meet and/or exceed the requirements. Limited noxious species were found in some areas and will be monitored and treated if necessary, more detailed information is included in Section 3.1.2.

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 one mile west of the intersection of the Hickory-Lincolnton Hwy and Paint Shop Road on either side of Paint Shop Road.

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 restoration project is being managed and monitored by Mid-Atlantic Mitigation, LLC.

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 Creek 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	April 2005
Temporary and Permanent seeding	August 2004	April 2005
Bareroot Plantings	October 2004	February 2005
Mitigation Plan	November 2004	June 2005
Year 1 Monitoring	December 2004	October 2005
Year 2 Monitoring	October 2006	October 2006
Year 3 Monitoring	October 2007	October 2007
Year 4 Monitoring	October 2008	
Year 5 Monitoring	October 2009	

* By contract amendment the planned completion date was extended until April 2005

Table III. Project Contacts

Project Manager Mid-Atlantic Mitigation, LLC	1960 Derita Road Concord, NC 28027 Rich Mogensen (704) 782-4133
Designer Mulkey Engineers and Consultants	6750 Tryon Road Raleigh, NC 27511
Construction Contractor Shamrock Environmental Corporation	P.O Box 14987 Browns Summit, NC 27214
Planting & Seeding Contractor Mid-Atlantic Mitigation, LLC Seed mixes provided by IKEX Nursery Stock provided by NC Forest Service; Mellow Marsh Farm; and Pinelands Nursery & Supply	1960 Derita Road Concord, NC 28027 Kristy Rodrigue (704) 782-6257
Monitoring Performers Mid-Atlantic Mitigation, LLC	1960 Derita Road Concord, North Carolina 28027 Christine Cook (704) 782-4140

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 o*ccur in some areas of the project, primarily in Zone 2 (flood plain). Neither species has taken control or out-competed the planted woody vegetation. The primary area of concern is along the left bank of UT1. MAM plans to watch this area closely and spray with Round-up (Glyphosate) in the spring, as necessary. Chinese privet is also found bordering some of the project and is found in the large adjacent wetland preservation areas, but has not invaded the stream restoration areas from adjacent properties. A small amount (one or two stems) was found in several plots. This is in line with last years' (2006) observations and does not indicate an increase in the amount of privet in the project area. Privet growing in the project area will be closely monitored and sprayed with Round-up in the spring, if necessary. As will be documented below, the planted species and healthy volunteer communities are doing well and are not currently under any threat of being out-competed by any invasive species on site.

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. Overall coverage of each plot for herbaceous and woody species has exceeded 75% in all plots and throughout the project, this is documented by the vegetation photolog (Appendix A). Volunteers and/or invasive species were noted, but were not figured into the final stem count.

On September 27 – 28, 2007, the third year-vegetative monitoring was performed on the established vegetative plots.

Table VI. Approximate number of Planted species

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

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

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 Live Planted	25	11	23	27	20	29	21	58	34	34	16	298
Volunteers	7	9	4	5	3	2	10	4	1	4	9	58
Number "Stressed"	3	2	0	2	1	2	5	3	2	1	1	22
Percent Survival	86%	31%	64%	51%	74%	81%	50%	52%	41%	57%	46%	54%
Percent "Stressed"	12%	18%	0%	7%	5%	7%	24%	5%	6%	3%	6%	7%
Stems per acre (w/o Vols)	435	191	400	470	348	505	365	1010	592	592	278	
Number of Species	8	8	11	9	9	8	8	9	8	9	9	
Number of Planted Species	8	8	9	7	8	7	7	9	7	9	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	54
Percent "Stressed"	7
Stems Per Acre w/o volunteers	472
Number of Species Counted	16
Total Planted Species Counted	13

The mortality rates for both the first and second monitoring years were approximately 10%, however this year showed an increase to approximately 27%, this is most likely due to the exceptionally dry conditions of this growing season. The community continues to be very diverse and rich with healthy volunteers. Plot 11, along Rhodes Mill, was below the Year 3 goal of 320 stems per acre, but still exceeded the final goal of 260 stems per acre, with 278 stems per acre. Plot 2 is below the final goal at 191 stems per acre. Despite 2 of the 11 plots showing high mortality, stems per acre overall, more than compensates. The site as a whole shows an average of 472 stems per acre, which exceeds both the 3 and 5 year goals and demonstrates only 54 percent survival.

In Appendix A, the vegetative survey data tables show the actual counts of each species found per plot, severely stressed but not dead plants were noted. The herbaceous cover plant community has not changed significantly over the last three years.

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 each of the 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 18th & 19th, 2007 by the MAM staff. The 2005 survey was completed with a 2 man (MAM Staff) crew using rented traditional survey equipment. The 2006 survey was done with a 3 man crew, including a PLS, using a robotic total station. Some cross section irons were reset, when the original iron could not be found, these were Cross-Sections 3 and 4. The 2007 survey was done by a 2 and 3

man crew with a tape line strung from rebar set in each bank of the cross section and using an auto laser level. All cross-section irons were found except for Cross-Section 6, which was temporarily reset. This winter MAM staff will attempt to find one of the 2 original irons and remark it's location for future surveys. Visual observation suggests that all of the surveyed cross sections are stable and well vegetated, except for large fluctuations in the amounts of sand deposited in all areas of the stream channel. Appendix B has the cross-section data tables, plots and photos.

Pott Creek CS1 (Riffle)
Sand deposition causes slight fluctuations in bed and bank elevations, but does not appear significant. Photos show this area as being well vegetated and stable. The thalweg appears left of center. For conditions of the riffle itself see section 3.2.3 and Appendix D.

Pott Creek CS2 (Riffle)
There appears to be no significant differences between the year 1 and year 3 surveys, deposition has allowed vegetation to take root on the island/ point bar right of center. Photos show this area as being well vegetated and stable. Point bars are a natural feature of sandy piedmont streams. For conditions of the riffle itself see section 3.2.3 and Appendix D.

Pott Creek CS3 (Pool)
Sand has continued to settle into this pool area. The depth of the pool has decreased by approximately two feet. Photos show this area as being well vegetated and stable. This is a dynamic system with much sand being passed through during larger storm events.

Pott Creek CS4 (Pool)
Sand has continued to settle into this pool area, however changes between the 2006 and 2007 survey are not significant. The depth of the pool has decreased by approximately two feet and the thalwag seems to shift from year to year. Photos show this area as being well vegetated and stable. This is a dynamic system with much sand being passed through during storm events. Some fluctuations in elevation on the banks all appear to be due to variability in vegetation from year to year.

Pott Creek CS5 (Riffle)
Photos show this area as being well vegetated and stable. A sand bar has formed and stabilized with vegetation on the right side of the channel.

Pott Creek CS6 (Pool)
Photos show this area as being well vegetated and stable. Direct observation made while wading this cross-section indicates the pool depth has decreased by approximately 2 to 3 feet. The left bank iron was not located this year, therefore the 2007 cross section maybe slightly off line from 2005 and 2006. Every effort will be made to find this iron this winter and remark to be more easily found in 2008.

UT 1 CSa
Fluctuations in elevations on the small tributaries appears to have more to do with variations in vegetation from year to year, however there is some indication of silt deposition on all of the UTs particularly, UT 4. There appear to be no significant changes to the cross-sections on any of the UTs.

UT 2 CSb
Fluctuations in depths on the small tributaries appears to have more to do with variations in vegetation from year to year, however there is some indication of silt deposition on all of the UTs particularly, UT 4. There appear to be no significant changes to the cross-sections on any of the UTs.

UT 3 CSc
Fluctuations in depths on the small tributaries appears to have more to do with variations in vegetation from year to year, however there is some indication of silt deposition on all of the UTs particularly, UT 4. There appear to be no significant changes to the cross-sections on any of the UTs.

UT 4 CSd
Fluctuations in depths on the small tributaries appears to have more to do with variations in vegetation from year to year, however there is some indication of silt deposition on all of the UTs particularly, UT 4. There appear to be no significant changes to the cross-sections on any of the UTs.

Rhodes Mill CS1 (Pool)
Photos show this area as being well vegetated and stable, except for the slight undercut which appears to be forming in the left bank. MAM does not feel this area presents a significant problem at this time, the change from the 2005 survey is very slight and the area will be monitored. The 2006 survey seems to suggest that sand may have been deposited on the bank during 2006, and washed away again in 2007.

Rhodes Mill CS2 (Riffle)
Photos show this area as being well vegetated and stable. There are no significant changes to this cross-section, since 2006.

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 was installed on August 24, 2006 to track bank full events between site visits. During this monitoring period only one bank full event was documented. Photo Documentation and descriptions are located in Appendix C.

Table IX. Verification of Bankfull Events

Date of Collection	Date of Occurrence	Method	Photo # (if available)
February 15, 2007	February 13th & 14th , 2007	Crest Stage Gage	Appendix C

The site was visited and showed signs of over-bank flow, rack lines and drift debris, but no signs of severe damage or erosion caused by the event. The Crest Stage gage was checked on February 15, 2007 and documented a bank full event. According to rainfall data from both Lincolnton and Hickory significant rainfall came through the area within 5 days of the site visit. A rainfall event immediately preceding the site visit on February 13th and 14th, 2007 generated approximately 1.5 inches of rain fall and a similar event was recorded by the SCO (State Climate Office) on January 1st, 2007 with an average of 1.25 inches of rainfall between the Lincolnton and Hickory areas.

3.2.3 Longitudinal Profiles

Profiles were done on approximately 3000 linear feet over the entire project, Pott Creek 1000 lf; Rhodes Mill 400 lf; UT1 650 lf; UT2 350 lf, UT3 480 lf; and UT4 350 lf. Pebble counts were done on all constructed riffles and any naturally forming riffles with significant build up of bed material within the profile reach. Lengths and spacing of the riffle-run-pool-glide (R-R-P-G) 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: No significant erosion problems were noted inside the profile reach. A few macro-invertebrates were found while sampling (stone flies, may flies and several snails). There are two constructed riffles inside profile limits, a pebble count was done on each. There are also several naturally forming riffles, but no significant bed material has accumulated so no pebble counts were done. This reach carries a significant bed load of sand and the naturally forming sand riffles appear to be remaining relatively stable. Both constructed riffles, Riffle 1 and Riffle 2, show no signs of significant fining or embedding, with annual graphs continuing to look similar and actually showing a reduction in fine sand. Stable sand bars are present in several of the riffles above UT 1, not just within the Profile limits. The significant bed load of sand carried in Pott Creek has the greatest effect on the pool areas. Pools may be shorter in overall length, but deep areas remain stable with excess sand accumulating in the run and glide sections of the stream channel. This is the upper most segment of the project where most sand and silt washes in from upstream of the project during high flow events settles out. With that in mind, this section of the project is in excellent condition.

Rhodes Mill Creek – 400 foot Profile: There are two areas of minor concern within the profile reach. The right bank associated with Pool 1 has developed a slight under cut, however the area has remained stable through out the growing season and is currently well vegetated. This feature also creates a unique area of pool habitat within the profile reach. The lower log vane which is associated with constructed Riffle 3 has continued to erode on the right bank despite live-staking efforts. The log structure has become completely exposed on the right side and the stream flows around the log structure on the right. This area will continue to be monitored. Pebble counts were repeated on all riffles

within the profile limits. A few macro-invertebrates were found while sampling (including crawling water beetles, may flies and several snails). Riffle 1 contains a narrow island approximately one foot from the right bank, this area is stable and the Pebble count shows no significant fining or embedding and continued evidence of smaller substrate being moved downstream. Riffle 2 was very narrow at the time of sampling due to low water conditions that were the most severe ever observed on site since completion. Excellent substrate was present on the sand bar area on the left side of the channel, but only substrate in the water was sampled. The Pebble Count does not show evidence of any significant fining or embedding and appears overall to be the most stable of the four areas sampled. The area of Riffles 3 and 4 have fluctuated during the last 3 years of monitoring. Riffle 3 now exhibits only sand as substrate and Riffle 4 appears to have retained the Riffle 3 substrate as it has migrated downstream, therefore (for pebble count sampling purposes, the distinction between the two riffles is not clear and what was sampled in 2006 as Riffle 3 was sampled this year as Riffle 4. The graphs of 2006 and 2007 are comparable and do not indicate any significant fining or embedding. In 2006, a pebble count was done on a natural riffle (Riffle 5) that has accumulated larger bed material at the lower limit of the profile. This riffle appears to be comprised of bed material washed down from upstream. Riffle 5 was sampled again this year and shows a significant increase in substrate size, and no significant evidence of fining or embedding. It was obvious after the 2005 monitoring report that the riffles on Rhodes Mill Creek were constructed with stone which is not large enough to withstand the actual high flows this stream experiences, however the stream itself continues to stabilize and is in overall good condition.

UT1 – 600 foot Profile: In the fall of 2006 thick vegetation in and around the UTs made observations all but impossible. 2007 monitoring of the unnamed tributaries was done on April 18th before overgrowth of vegetation could prevent useful observation. This stream is the largest and most active of all the UT's, but contains no defined substrate other then sand and silt. 2007 observations show the bed to be mostly sand and to have no evidence of any permanent vegetative growth in the stream bed. One small section of the left bank, which was noted in the 2005 report and live-staked in 2006 has once again sloughed off and will need to be live-staked again, this area represents approximately 3 feet of the more than 600 feet of UT1, and is therefore not a significant problem.

UT2 – 350 foot Profile: UT2 shows very little bed form diversity, with some sandy substrate, but a mostly mud/muck bottom, which may allow annuals like polygonum an opportunity to grow on the stream bottom during dryer conditions, but there is no evidence of that happening so far this spring. UT2 has one approximately 3 foot (out of 350 feet; < 1% cover) section where some cattails are growing in the stream but are not blocking stream flow. UT2 also has a well developed *juncus effuses* population along the banks, the plants are providing shade for the streambed but are not blocking stream flow or growing directly in the streambed.

UT3 – 480 foot Profile: UT3 also shows very little bed form diversity, with some sandy substrate, but a mostly mud/muck bottom, which may allow annuals like polygonum an opportunity to grow on the stream bottom during dryer conditions, but there is no

evidence of that happening so far this spring. UT3 has developed a much larger population of cattails (approximately 40 feet, non-contiguous of 480 feet; about 8% cover) and while they are not blocking stream flow they are creating some of the better habitat along these small streams, they will be monitored and controlled if necessary.

UT 4- 350 foot Profile: UT4 also has very little bed form diversity and its substrate is entirely red mud. There is one small section (approximately 4 feet out of 350; slightly over 1% cover) where grass has grown in a shallow area of the stream bed, but is not significant at this time.

3.2.4 Channel Stability Problem Areas

All structures marked on the as-built plan 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 significant 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 live staked this winter, as necessary. Areas directly under the bridge in the DOT ROW outside of the easement continue to be bare but have not suffered significant additional erosion since the initial event in October of 2005. The area directly under the bridge still needs to be stabilized by the NCDOT (it is not in the conservation easement area), if the bridge is not scheduled for replacement in the near future.

3.2.5 Other Problems

The on going beaver issue is being actively addressed. The site was inspected by a beaver trapper/contractor earlier this year and this event was documented and an update was submitted at that time. Since that time, beaver have returned to the site and beaver activity has been monitored. Thus far damage to vegetation on the site is within tolerable limits. Starting below the confluence of UT2 high water levels affect an approximately 3 foot section of the lower bank by not allowing herbaceous vegetation to establish. All structures below this point were under water until the large dam below the bridge was removed, conditions before and after dam removal were documented in the photo log. The beaver contractor will be removing the beaver population this winter, and the beaver population will be controlled and monitored for the remainder of the monitoring period.

3.2.6 Channel Stability Assessment Summary

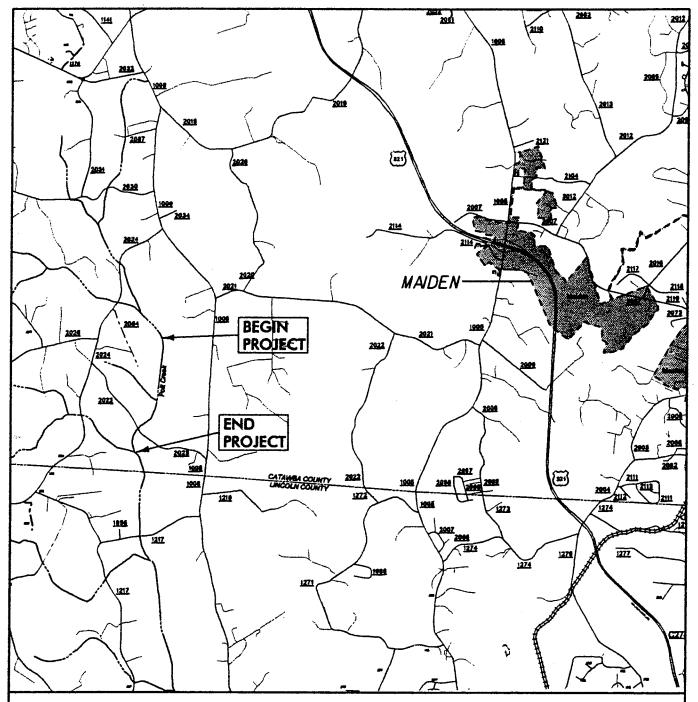
Overall, with respect to the major over bank events since restoration was completed the site is in excellent condition and is weathering all over bank events well. The site appears very stable and problem areas within the restored reach comprise less than 5% of the overall length of the project. The problem area on Rhodes Mill where the log structure has been eroded out from the right bank will be addressed this year. If necessary, the strategy will be to remove the log structure all together and stabilize both banks accordingly.

CATAWBA COUNTY

POTT CREEK II STREAM RESTORATION PROJECT

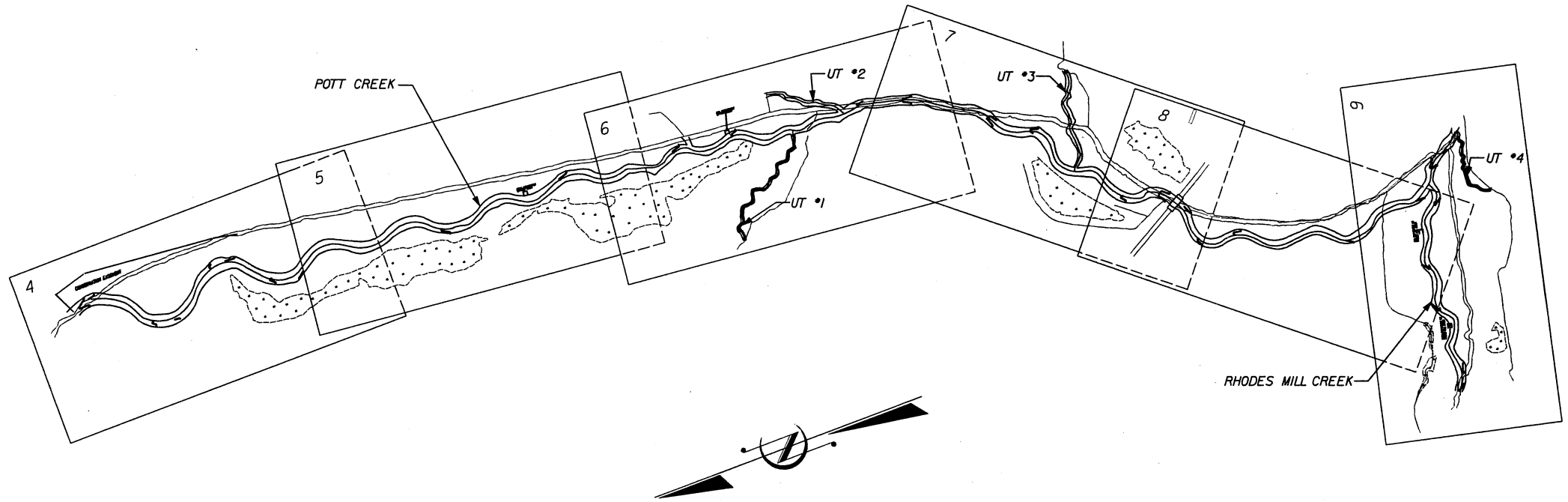
LOCATION: POTT CREEK II RESTORATION SITE NORTH & SOUTH OF SR 2023 (PAINT SHOP ROAD) WEST OF MAIDEN, NORTH CAROLINA

AS BUILT PLANS



VICINITY MAP

APPROXIMATE SCALE 1 : 60,000



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
4 - 9	PLAN SHEETS

REVISIONS			SCALE	PROJECT MANAGER	PROJECT ENGINEER		PLANS PREPARED FOR
DATE	BY	DESCRIPTION	AS SHOWN	RICHARD K. MOGENSEN, PWS		EARTHMARK COMPANIES 9301 AVIATION BOULEVARD SUITE CEI CONCORD, NC 28027 (704) 782-4133	Ecosystem Enhancement Program
			DATE: 5/26/05			EarthMark companies	TITLE SHEET | SHEET OF 7

ROCK CROSSVANE — ROCK VANE

J HOOK

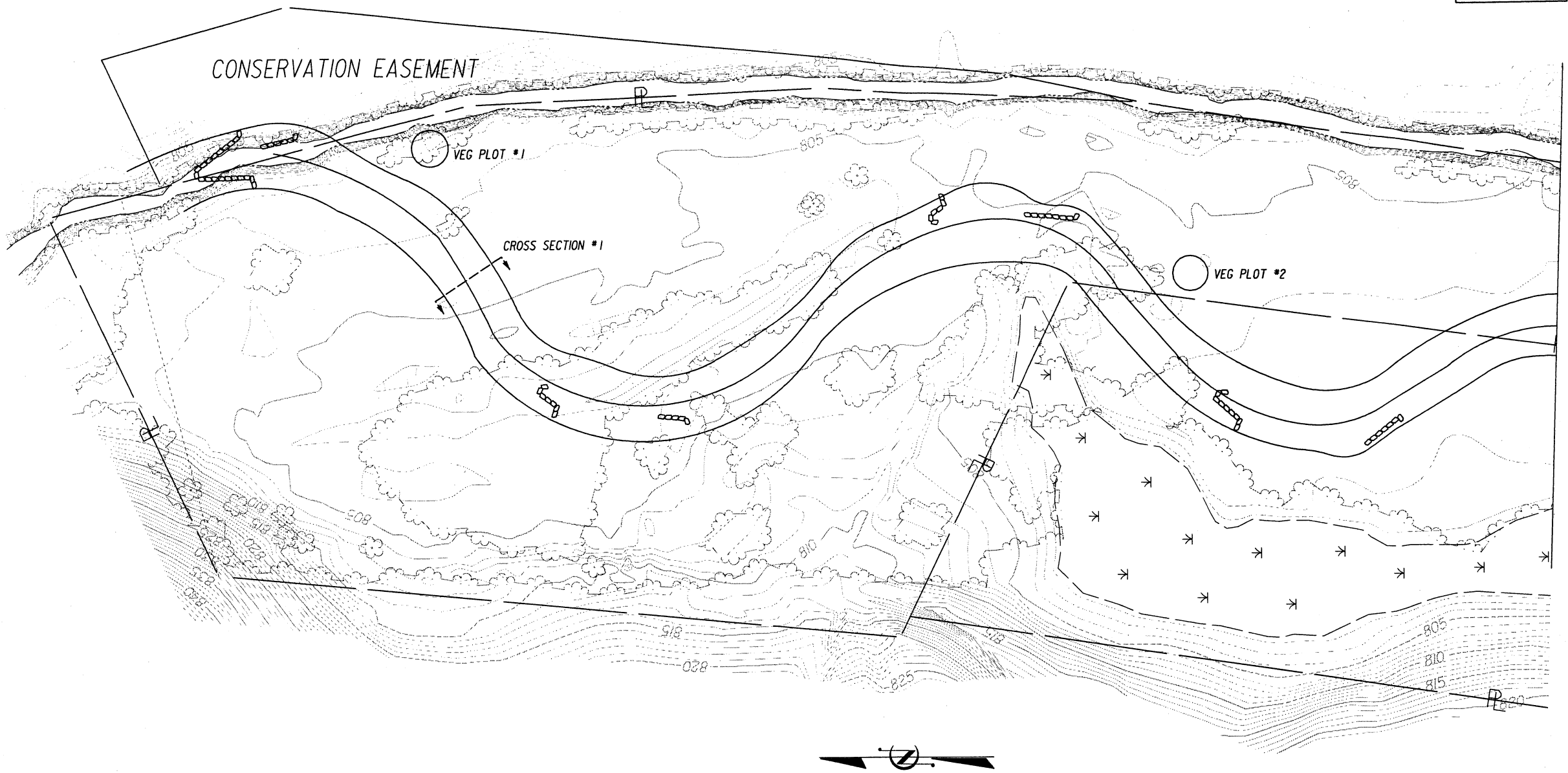
50 0 100

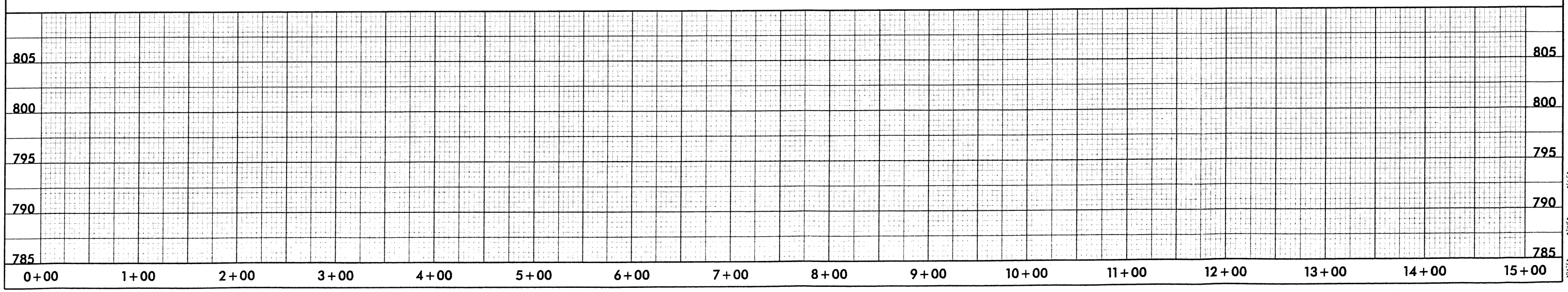
PROJECT ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
POTT CREEK II STREAM RESTORATION	4

PLAN & PROFILE

EarthMark companies





J HOOK

50 0 100

PROJECT ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
POTT CREEK II STREAM RESTORATION	5

PLAN & PROFILE

EarthMark companies

MATCH TO SHEET 4

MATCH TO SHEET 6

VEG PLOT #3

BEGIN 1000' PROFILE ON POTT CREEK

CROSS SECTION #2

805 810 815 820

805 810 815 820

805
800
795
790
785

15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00

ROCK CROSSVANE — ROCK VANE

J HOOK

50 0 100

PROJECT ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
POTT CREEK II STREAM RESTORATION	6

PLAN & PROFILE

EarthMark companies

MATCH TO SHEET 5

END 1000' PROFILE ON POTT CREEK

CROSS SECTION UT2

VEG PLOT #4

CROSS SECTION #3

CROSS SECTION UT1

VEG PLOT #5

MATCH TO SHEET 7

805 800 795 790 785

30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00

ROCK CROSSVANE J HOOK

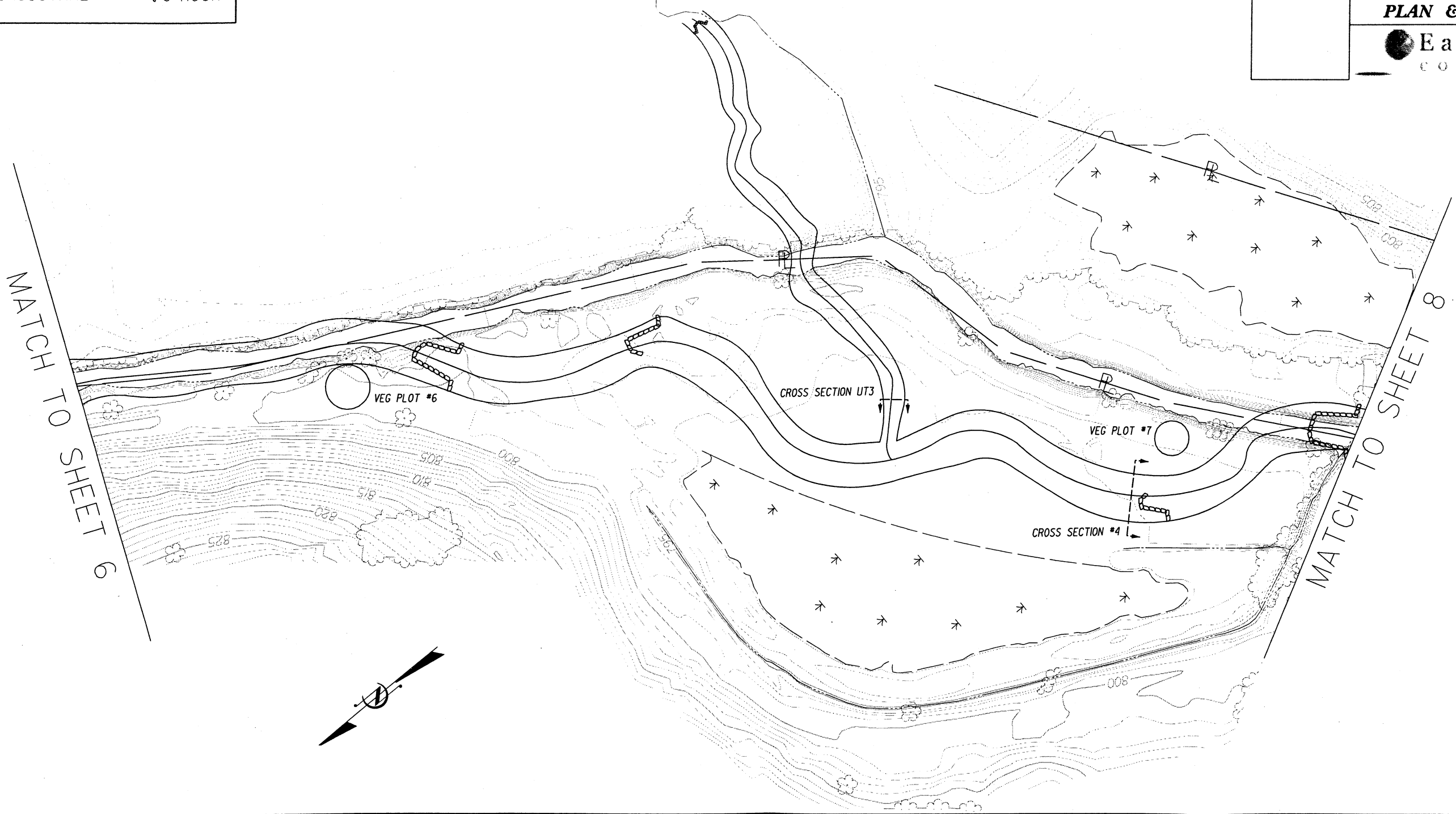
50 0 100

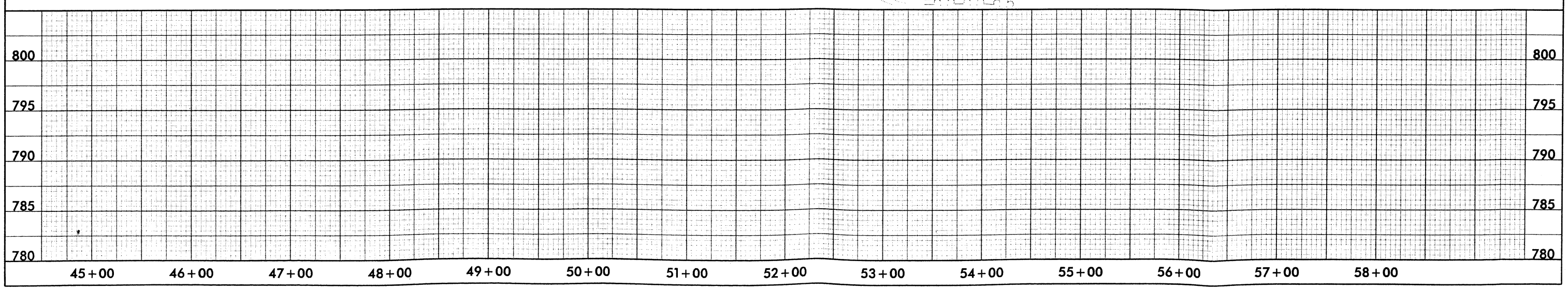
PROJECT ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
POTT CREEK II STREAM RESTORATION	7

PLAN & PROFILE

EarthMark companies





J HOOK — ROCK VANE

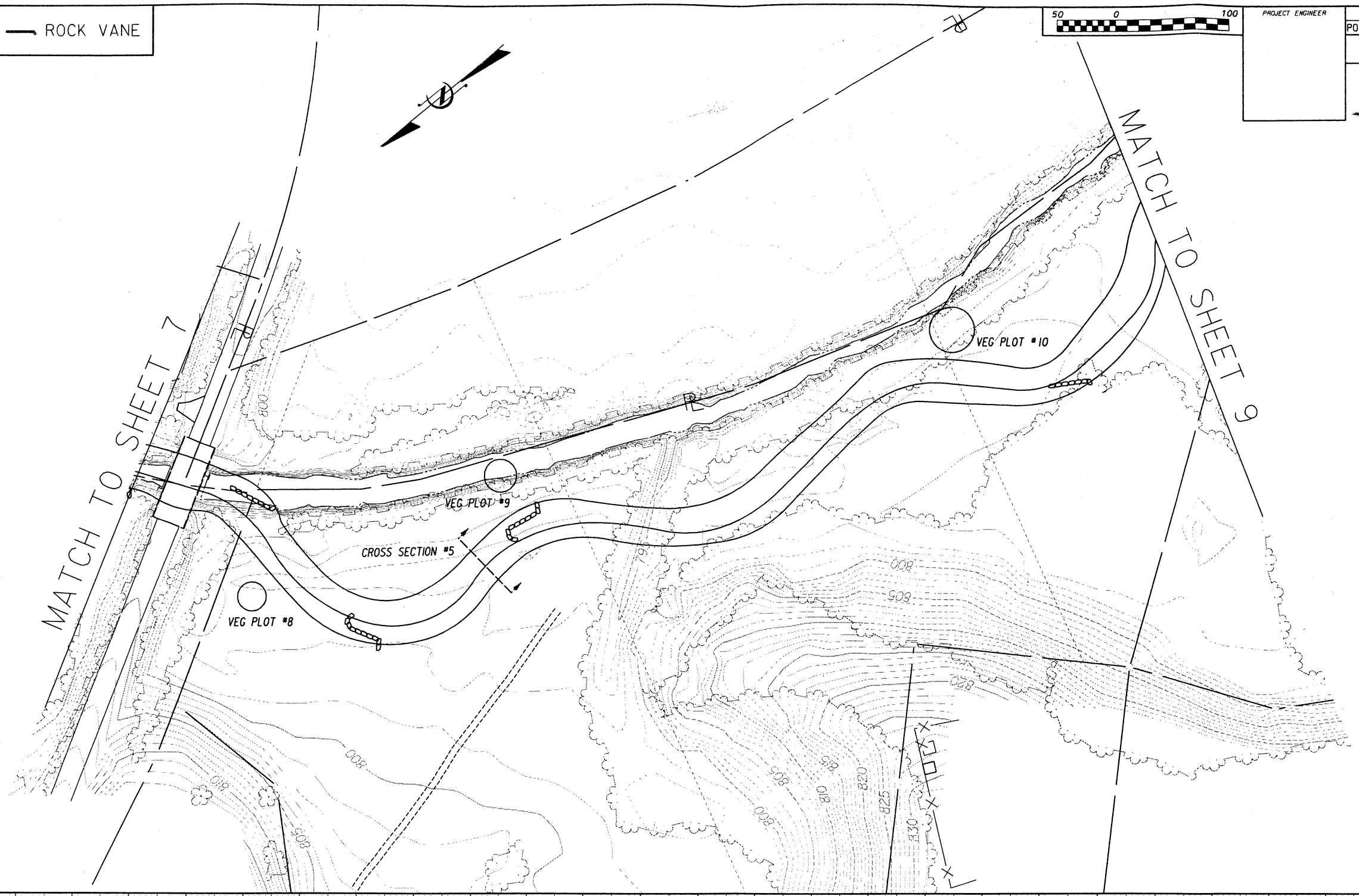
50 0 100

PROJECT ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
POTT CREEK II STREAM RESTORATION	8

PLAN & PROFILE

EarthMark companies



800
795
790
785
780

58+00 59+00 60+00 61+00 62+00 63+00 64+00 65+00 66+00 67+00 68+00 69+00

50 0 100

PROJECT ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
POTT CREEK II STREAM RESTORATION	9

PLAN & PROFILE

EarthMark companies

MATCH TO SHEET 8

CROSS SECTION #6

VEG PLOT #11

END 500' PROFILE ON RHODES MILL CREEK

CROSS SECTION RM1

BEGIN 500' PROFILE ON RHODES MILL CREEK

CROSS SECTION RM2

CROSS SECTION UT4

795

800

300

ROCK CROSSVANE

ROCK VANE

J HOOK

800	800
795	795
790	790
785	785
780	780

69+00 70+00 71+00 72+00 73+00 74+00

APPENDIX A. Vegetation Raw Data

Vegetation Raw Data
Vegetation Monitoring Plot Photos

Vegetation Plots

1 (Northeast)

2 (North)

3 (Southeast)

4 (North)

5 (Along UT1 West)

6 (North)

7 (Northeast)

8 (Southwest)

9 (North)

10 (North)

11 (Along Rhodes Mill North)

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												
Total Live Planted	25	11	23	27	20	29	21	58	34	34	16	298
Volunteers	7	9	4	5	3	2	10	4	1	4	9	58
Number "Stressed"	3	2	0	2	1	2	5	3	2	1	1	22
Percent Survival	86%	31%	64%	51%	74%	81%	50%	52%	41%	57%	46%	54%
Percent "Stressed"	12%	18%	0%	7%	5%	7%	24%	5%	6%	3%	6%	7%
Stems per acre	435	191	400	470	348	505	365	1010	592	592	278	
Number of Species	8	8	11	9	9	8	8	9	8	9	9	
Number of Planted Species	8	8	9	7	8	7	7	9	7	9	8	

Combined Totals

Percent Survival	54
Percent "Stressed"	7
Stems Per Acre	472
Number of Species	16
Total Planted Species	13

Vegetation Plot 1

Comments: a lot of rubus in plot, some multi-flora rose, small patches

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

Live Count **32** **(7 Volunteers)**

Species	**Type**	**General Health**	**Height (inches)**	**Crown Diameter (inches)**
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Betula nigra	Live Stake	Good		
Betula nigra	Live Stake	Good		
Cornus amomum	Tubling	Stressed		
Diospyros vigininia	Bareroot	Good		
Diospyros vigininia	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Stressed		
Fraxinus pennsylvanica	Bareroot	Stressed		
Platanus occidentalis	Bareroot	Good		
Platanus occidentalis	Bareroot	Good		
Quercus bicolor	Tubling	Good		
Quercus phellos	Tubling	Good		
Quercus phellos	Bareroot	Good		
Quercus phellos	Bareroot	Good		

Quercus phellos	Bareroot	Good
Quercus phellos	Bareroot	Good
Salix nigra	Volunteer	
Salix nigra	Volunteer	
Salix nigra	Volunteer	
Salix nigra	Live Stake	Good
Salix nigra	Live Stake	Good

Vegetation Plot 2

Comments: Some Rhubus, some multi-flora rose

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	

Live Count **20** **(9 Volunteers)**

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Betula nigra	Bareroot	Stressed		
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Diospryos virginiana	Bareroot	Good		
Plantanus occidentalis	Volunteer			
Plantanus occidentalis	Volunteer			
Plantanus occidentalis	Volunteer			
Plantanus occidentalis	Volunteer			
Plantanus occidentalis	Volunteer			
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Stressed		
Quercus palustris	Bareroot	Good		
Quercus phellos	Bareroot	Good		
Salix nigra	Livestake	Good		
Salix nigra	Livestake	Good		
Salix nigra	Livestake	Good		

Vegetation Plot 3

Comments:	Plot grown up with dog fennel and golden rod. Invasives found in this plot: rubis, multiflora rose, and chinese privet
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	
	Rubus
Morning Glory sp.	

Live Count **27** **(4+ Volunteers)**

Species	**Type**	**General Health**	**Height (inches)**	**Crown Diameter (inches)**
Alnus serrulata	Volunteer			
Alnus serrulata	Volunteer			
Betula nigra	Bareroot	Good		
Betula nigra	Volunteer-numerous			
Cornus amomum	Bareroot	Good		
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Liriodendron tulipifera	Volunteer	Good		
Plantanus occidentalis	Bareroot	Good		
Plantanus occidentalis	Volunteer-numerous			
Quercus bicolor	Tubeling	Good		
Quercus palustris	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Salix nigra	Live Stake	Good		
Salix nigra	Live Stake	Good		
Salix nigra	Live Stake	Good		
Salix nigra	Live Stake	Good		
Salix nigra	Live Stake	Good		
Salix nigra	Live Stake	Good		

Salix nigra	Live Stake	Good
Salix nigra	Live Stake	Good
Salix nigra	Live Stake	Good
Salix nigra	Live Stake	Good
Sambucca canadensis	Live Stake	Good

Vegetation Plot 4

Comments:	Some invasives in plot: rubus, honey suckle (a lot), chinese privet trees are tall and healthly
Herbaceous Cover	100%
Fescue sp.	
NY Ironweed	
Smartweed	Polygonum pennsylvanicum
Tearthumb	Polygonum hydropiperoides
Plains Coreopsis	
Goldenrod	
Daisy Fleabane	
Horse Nettle	
Poke Weed	
Multifloria Rose	
Soft Rush	Juncus effusus
New England Aster	
Annual Gaillardia	
Moss Verbana	
Gay Feather	

Live Count **32** **(5 Volunteers)**

Species	**Type**	**General Health**	**Height (inches)**	**Crown Diameter (inches)**
Betula nigra	Bareroot	Good		
Betula nigra	volunteer			
Betula nigra	volunteer			
Cephalanthus occidentalis	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Liquidambar styraciflua	volunteer			
Liquidambar styraciflua	volunteer			
Plantanus occidentalis	volunteer			
Quercus lyrata	Bareroot	Stressed		
Quercus lyrata	Bareroot	Stressed		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		

Quercus palustris	Bareroot	Good
Quercus phellos	tubling	Good
Quercus phellos	tubling	Good
Quercus phellos	tubling	Good
Quercus phellos	bareroot	Good
Salix nigra	Livestake	Good
Salix nigra	Livestake	Good

Vegetation Plot 5 A lot of Rubus, posion ivy and honey suckle

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
Soft Rush Juncus effusus
Trumpet Creeper
Sourweed
New England Aster
Annual Gaillardia
Bifloria Rose
Greenbrier Smilex
Gay Feather

Live Count **23** **(3 Volunteer)**

Species	**Type**	**General Health**	**Height (inches)**	**Crown Diameter (inches)**
Cornus amomum	Tubelings	Good		
Diospryos virginiana	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Stressed		
Liriodendron tulipifera	Volunteer			
Liriodendron tulipifera	Volunteer			
Plantanus occidentalis	Live Stake	Good		
Plantanus occidentalis	Live Stake	Good		
Plantanus occidentalis	Volunteer			
Quercus bicolor	Tubling	Good		
Quercus bicolor	Tubling	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus palustris	Bareroot	Good		
Salix nigra	Livestake	Good		
Salix nigra	Livestake	Good		
Salix nigra	Livestake	Good		

Vegetation Plot 6 Some rubus near creek along plot edge

Comments:

Herbaceous Cover 100%

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

Live Count **31** **(2 Volunteers)**

Species	**Type**	**General Health**	**Height (inches)**	**Crown Diameter (inches)**
Betula nigra	Volunteer			
Cornus amomum	Tubling	Good		
Cornus amomum	Bareroot	Good		
Cornus amomum	Bareroot	Stressed		
Cornus amomum	Livestake	Good		
Cornus amomum	Livestake	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Stressed		
Fraxinus pennsylvanica	Bareroot	Good		
Liriodendron tulipifera	Volunteer			
Platanus occidentalis	Bareroot	Good		
Platanus occidentalis	Volunteer			
Quercus bicolor	Tubling	Good		
Quercus bicolor	Bareroot	Good		
Quercus bicolor	Bareroot	Good		
Quercus bicolor	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus palustris	Bareroot	Good		
Quercus palustris	Bareroot	Good		

Quercus palustris	Bareroot	Good
Salix nigra	Livestake	Good
Salix nigra	Livestake	Good
Salix nigra	Livestake	Good

Vegetation Plot 7

Comments:	some honeysuckle
Herbaceous Cover	**97%**
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	
Trumpet Creeper	

Live Count **37** **(10 Volunteers)**

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Betula nigra	Bareroot	stressed		
Cornus amomum	Bareroot	Good		
Cornus amomum	Bareroot	Good		
Diospyros virginiana	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Platanus occidentalis	Bareroot	Good		
Platanus occidentalis	Bareroot	Good		
Platanus occidentalis	Bareroot	Good		
Platanus occidentalis	Bareroot	Stressed		
Platanus occidentalis	Bareroot	Good		
Platanus occidentalis	Bareroot	Good		
Platanus occidentalis	Bareroot	Good		
Platanus occidentalis	Bareroot	Stressed		
Platanus occidentalis	Bareroot	Good		
Platanus occidentalis	Bareroot	Stressed		
Platanus occidentalis	volunteer			
Platanus occidentalis	volunteer			
Platanus occidentalis	volunteer			
Platanus occidentalis	volunteer			
Platanus occidentalis	volunteer			
Platanus occidentalis	volunteer			
Platanus occidentalis	volunteer			

Platanus occidentalis	volunteer	
Platanus occidentalis	volunteer	
Quercus bicolor	Tubling	Good
Quercus bicolor	Bareroot	Good
Quercus bicolor	Bareroot	Good
Quercus lyrata	Tubling	Good
Quercus lyrata	Tubling	Good
Quercus lyrata	Tubling	Good
Quercus palustris	Bareroot	Good
Quercus palustris	Bareroot	Good
Quercus palustris	Bareroot	Good
Quercus palustris	tubling	Good
Quercus palustris	Bareroot	stressed
Sambucca canadensis	volunteer	

Vegetation Plot 8

Comments: some multiflora

Herbaceous Cover 100%

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

Live Count **62** **(4 Volunteer)**

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Dying		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Stressed		
Platanus occidentalis	Live Stake	Good		
Platanus occidentalis	Live Stake	Good		
Platanus occidentalis	Live Stake	Good		

Platanus occidentalis	Live Stake	Good
Platanus occidentalis	Live Stake	Good
Platanus occidentalis	Live Stake	Good
Platanus occidentalis	Live Stake	Good
Platanus occidentalis	Live Stake	Good
Platanus occidentalis	Live Stake	Good
Platanus occidentalis	Volunteer	
Platanus occidentalis	Volunteer	
Platanus occidentalis	Volunteer	
Platanus occidentalis	Volunteer	
Quercus bicolor	Bareroot	Good
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Stressed
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Stressed
Quercus lyrata	Bareroot	Good
Quercus lyrata	Bareroot	Gpod
Quercus lyrata	Bareroot	Gpod
Quercus lyrata	Bareroot	Gpod
Quercus nigra	Bareroot	Good
Quercus palustris	Bareroot	Good
Quercus palustris	Bareroot	Good
Quercus phellos	Bareroot	Good
Quercus phellos	Bareroot	Good
Quercus phellos	Bareroot	Good
Salix nigra	Live Stake	
Salix nigra	Live Stake	
Salix nigra	Live Stake	

Vegetation Plot 9

Comments: Some rubus was found in this plot. Some remnant sand was still in floodplain but overall herb cover is better than last year

Dead Count

Herbaceous Cover 92%

Fescue sp.
NY Ironweed
Smartweed Polygonum pennsylvanicum
Plains Coreopsis
Goldenrod
Daisy Fleabane
Annual Gaillardia
Moss Verbana
Gay Feather

Live Count **35** **(1 Volunteers)**

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Cornus amomum	Live Stake	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Stressed		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Platanus occidentalis	Volunteer			
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus nigra	Bareroot	Good		
Quercus palustris	Bareroot	Stressed		
Quercus phellos	Bareroot	Good		
Quercus phellos	Bareroot	Good		

Salix nigra	Livestake	Good
Salix nigra	Livestake	Good
Salix nigra	Livestake	Good
Salix nigra	Livestake	Good
Salix nigra	Livestake	Good

Vegetation Plot 10

Comments:	trees in this plot were very large and healthy
Herbaceous Cover	90%
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 **38** **(4 Volunteers)**

Species	Type	General Health	Height (inches)	Crown Diameter (inches)
Cornus amomum	Bareroot	Good		
Cornus amomum	Live Stake	Good		
Betula nigra	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Platanus occidentalis	Live Stake			
Quercus lyrata	Bareroot			
Quercus lyrata	Bareroot			
Quercus lyrata	Bareroot			
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus nigra	Bareroot	Good		
Quercus palustris	Bareroot	Good		

Quercus palustris	Bareroot	Good
Quercus palustris	Bareroot	Good
Quercus palustris	Bareroot	Good
Quercus phellos	Bareroot	Stressed
Quercus phellos	Bareroot	Good
Salix nigra	Live Stake	Good
Salix nigra	Live Stake	Good
Salix nigra	Volunteer	
Salix nigra	Volunteer	
Salix nigra	Volunteer	
Salix nigra	Volunteer	

Vegetation Plot 11

Comments: Lots of small sycamore volunteers on bank- grown up w/ Herbaceous plants
trees are very healthy *also small alder volunteers

Herbaceous Cover 100%

Fescue sp.
NY Ironweed
Smartweed Polygonum pennsylvanicum
Soft Rush Juncus effusus
Begger Tick's Bidens frondosa
Goldenrod
Daisy Fleabane
Horse Nettle
Gay Feather

Live Count **25** **(9 Volunteers)**

Species	**Type**	**General Health**	**Height (inches)**	**Crown Diameter (inches)**
Alnus serrulata	Volunteer			
Alnus serrulata	Volunteer			
Betula nigra	Livestake	Good		
Betula nigra	Volunteer			
Betula nigra	Volunteer			
Cornus amomum	Bareroot	Good		
Cornus amomum	Bareroot	Good		
Cornus amomum	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Fraxinus pennsylvanica	Bareroot	Good		
Liquidambar styraciflua	Volunteer			
Liquidambar styraciflua	Volunteer			
Platanus occidentalis	Volunteer			
Platanus occidentalis	Volunteer			
Platanus occidentalis	Volunteer			
Platanus occidentalis	Livestake	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus lyrata	Bareroot	Good		
Quercus nigra	Bareroot	Good		
Quercus palustris	Bareroot	Good		
Quercus palustris	Bareroot	Good		
Quercus palustris	Bareroot	Stressed		
Salix nigra	Livestake	Good		

APPENDIX B. Cross Sections

Data Plots and Tables
Photos

2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
70.3	4.739	19.739		100	GS	60.3
58.2			6.162	98.577	RBF	48.2
45.5			10.740	93.999	REW	35.5
36.6			12.002	92.737	Thw	26.6
34.1			10.725	94.014	LEW	24.1
31.4			8.713	96.026		21.4
28.7			8.741	95.998		18.7
19.4			5.843	98.896	LBF	9.4
10			4.919	99.82	GS	0

2007 Data

0			3.28	100.24	GS rebar
8			4.26	99.26	
12			5.02	98.5	
15			6.07	97.45	
18			7.03	96.49	
21			7.65	95.87	
23			8.53	94.99	
24			9.72	93.8	LEW
24.8			10.31	93.21	SOW
25.7			11.08	92.44	
27.3			10.82	92.7	Thw
30.0			10.2	93.32	
35.0			10.19	93.33	
37.0			10.03	93.49	REW
38.8			8.79	94.73	
41.0			6.95	96.57	
45.0			5.76	97.76	
48.0			4.8	98.72	
51.0			4.53	98.99	
54.6			4.2	99.32	
63.0			3.52	100	GS rebar

2005 w	2006 w	2007 w	2005 e	2006 e	2007 e
60	0	0	100	100.01266	100.24
48	11	8	98.577	98.91681	99.26
36	20	12	93.999	96.55607	98.5
27	23	15	92.737	94.97554	97.45
24	24	18	94.014	93.64022	96.49
21	30	21	96.026	93.59748	95.87

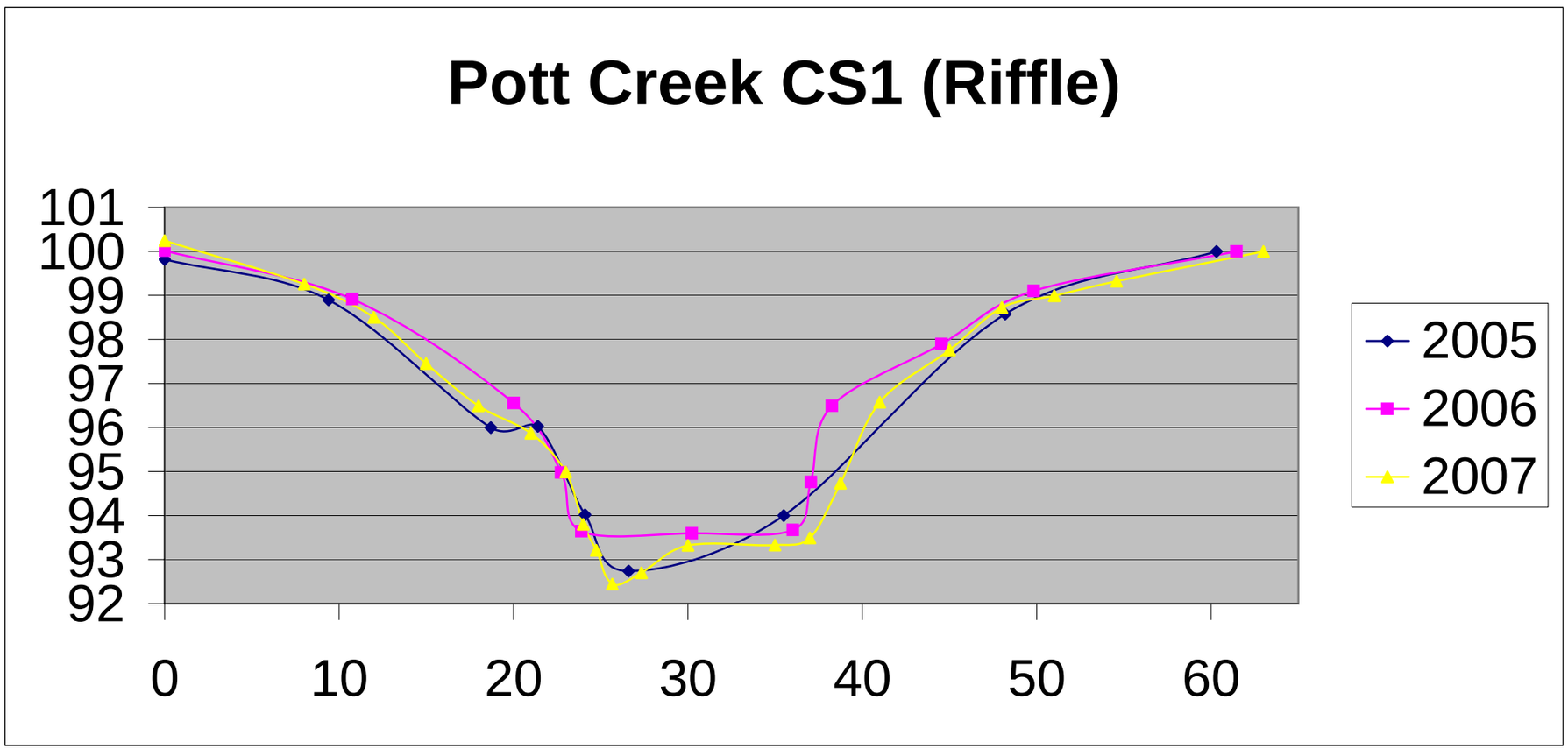
2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
PC11	4995.182	5006.866	95.01494	100.01266		0
PC12	4999.212	4996.872	93.91909	98.91681	ltb	10.77
PC13	5003.695	4988.648	91.55835	96.55607	lbf?	20.02
PC14	5004.79	4986.158	89.97782	94.97554		22.73
PC15	5005.114	4985.033	88.6425	93.64022	lew	23.9
PC16	5006.37	4978.765	88.59976	93.59748	THW	30.23
PC17	5009.166	4973.599	88.67336	93.67108	rew	36.03
PC18	5009.352	4972.585	89.765	94.76272		37.05
PC19	5009.841	4971.471	91.49072	96.48844	rbf?	38.26
PC110	5011.447	4965.371	92.89686	97.89458	rtb?	44.55
PC111	5012.801	4960.246	94.10344	99.10116	rtb	49.83
PC112	5016.714	4949.301	95.00228	100		61.45

19	36	23	95.998	93.67108	94.99
9	37	24	98.896	94.76272	93.8
0	38	25	99.82	96.48844	93.21
	45	26		97.89458	92.44
	50	27		99.10116	92.7
	61	30		100	93.32
		35			93.33
		37			93.49
		39			94.73
		41			96.57
		45			97.76
		48			98.72
		51			98.99
		55			99.32
		63			100

Survey Data		
Station	Elevation	Feature
0	100.24	GS rebar
8	99.26	
12	98.5	
15	97.45	
18	96.49	
21	95.87	
23	94.99	
24	93.8	LEW
24.8	93.21	SOW
25.7	92.44	
27.3	92.7	Thw
30.0	93.32	
35.0	93.33	
37.0	93.49	REW
38.8	94.73	
41.0	96.57	
45.0	97.76	
48.0	98.72	
51.0	98.99	
54.6	99.32	
63.0	100	GS rebar

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area: Range 105 -136	120.5	128.30	118.2	121.2		
Bankfull Width: Range 33.3 - 41.2	37.25	41.50	40.9	37.2		
Bankfull Mean Depth: Range 3.1 - 3.3	3.2	3.10	2.9	3.3		
Bankfull Max Depth: Range 4.5 - 5.1	4.82	6.20	5.5	6.3		
Width/Depth Ratio: Range 10.7 - 12.5	11.6	13.40	14.10	11.40		
Entrenchment Ratio: Range 7.2 - 9.0	8.05	7.20	7.30	8.10		
Average Width of Flood Prone Area = 300						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
77.3	5.32	20.32		100.00	GS	66.4
63.1			5.284	100.04	RFB	52.2
53.4			8.468	96.85		42.5
52.4			10.257	95.06	REW	41.5
51.9			10.988	94.33	Thw	41
36.6			10.363	94.96	LEW	25.7
34			8.252	97.07		23.1
31.4			7.946	97.37		20.5
24.4			5.391	99.93	LBF	13.5
10.9			4.95	100.37	GS	0

2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
PC21	5021.839	5005.995	97.21542	100.39873		0.00
PC22	5011.482	4997.96	96.86841	100.05172	lbf	13.09
PC23	5004.723	4991.521	94.05649	97.2398		22.41
PC24	5002.023	4989.025	91.42863	94.61194	lew	26.09
PC25	5000.768	4987.946	91.58424	94.76755		27.74
PC26	4998.98	4986.612	91.71234	94.89565		29.97
PC27	4994.388	4982.376	91.58226	94.76557		36.21
PC28	4993.025	4981.68	92.35304	95.53635	sand bar	37.70
PC29	4991.936	4980.656	91.21239	94.3957	thw	39.19
PC210	4989.802	4979.094	91.62571	94.80902	rew	41.83
PC211	4989.151	4978.868	93.30685	96.49016		42.47
PC212	4981.004	4972.012	96.90567	100.08898	rbf	53.12
PC213	4970.744	4963.074	96.81669	100		66.73

2007 Data

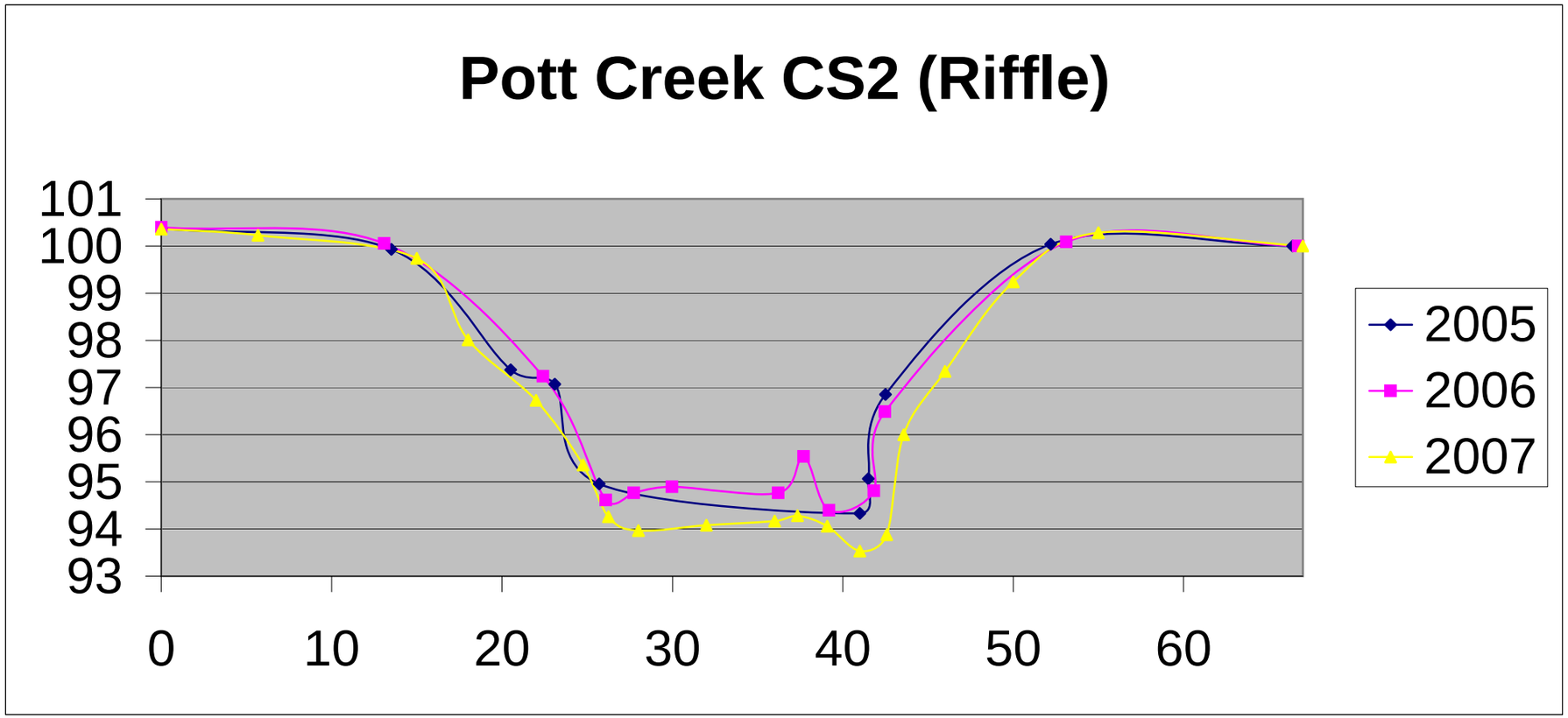
0.0	3.5	100.36	GS rebar	
5.7	3.63	100.23		
15.0	4.12	99.74		
18.0	5.85	98.01		
22.0	7.13	96.73		
24.8	8.5	95.36	Mid bank	
26.3	9.6	94.26	LEW	
28.0	9.89	93.97		
32.0	9.78	94.08		
36.0	9.69	94.17		
37.3	9.58	94.28	Sand bar	
39.1	9.8	94.06	Sand bar	
41.0	10.33	93.53	Thw	
42.6	9.98	93.88	REW	
43.6	7.86	96		
46.0	6.52	97.34		
50.0	4.62	99.24		
55.0	3.58	100.28		
67.0	3.86	100	GS rebar	

2005 w	2006 w	2007 w	2005 e	2006 e	2007e
66	0	0	100.00	100.40	100.36
52	13	6	100.04	100.05	100.23
43	22	15	96.85	97.24	99.74
42	26	18	95.06	94.61	98.01
41	28	22	94.33	94.77	96.73
26	30	25	94.96	94.90	95.36
23	36	26	97.07	94.77	94.26
21	38	28	97.37	95.54	93.97

14	39	32	99.93	94.40	94.08
0	42	36	100.37	94.81	94.17
	42	37		96.49	94.28
	53	39		100.09	94.06
	67	41		100.00	93.53
		43			93.88
		44			96
		46			97.34
		50			99.24
		55			100.28
		67			100

Survey Data		
Station	Elevation	Feature
0.0	100.36	GS rebar
5.7	100.23	
15.0	99.74	
18.0	98.01	
22.0	96.73	
24.8	95.36	Mid bank
26.3	94.26	LEW
28.0	93.97	
32.0	94.08	
36.0	94.17	
37.3	94.28	Sand bar
39.1	94.06	Sand bar
41.0	93.53	Thw
42.6	93.88	REW
43.6	96	
46.0	97.34	
50.0	99.24	
55.0	100.28	
67.0	100	GS rebar

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area: Range 105 -136	120.5	132.60	134.30	141.40		
Bankfull Width: Range 33.3 - 41.2	37.25	56.20	55	37.4		
Bankfull Mean Depth: Range 3.1 - 3.3	3.2	2.40	2.4	3.8		
Bankfull Max Depth: Range 4.5 - 5.1	4.82	5.70	5.7	6.2		
Width/Depth Ratio: Range 10.7 - 12.5	11.6	23.80	22.60	9.90		
Entrenchment Ratio: Range 7.2 - 9.0	8.05	5.30	5.50	8.00		
Average Width of Flood Prone Area = 300						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
54	5.797	20.797		100	GS	43.2
38.7			6.996	98.801	RBF	27.9
33.1			8.404	97.393		22.3
28.8			10.478	95.319	REW	18
19			13.245	92.552	Thw	8.2
14.3			10.445	95.352	LEW	3.5
14.2			5.465	100.332	LBF	3.4
10.8			5.349	100.448	GS	0

2007 Data

0.0		3.29	100.35	GS rebar	
6.0		2.9	100.74		
15.0		2.94	100.7		
19.0		4.02	99.62		
22.0		6	97.64		
23.8		6.68	96.96		
25.3		8	95.64		
26.0		8.95	94.69	LEW	
27.6		9.28	94.36		
30.0		9.28	94.36		
32.0		9.43	94.21	Thw	
37.0		8.86	94.78	REW	
41.3		8.58	95.06		
42.3		7.23	96.41		
42.1		6.6	97.04		
44.6		6.17	97.47		
48.0		5.52	98.12		
51.0		4.58	99.06		
55.0		4.1	99.54		
66.0		3.64	100	GS rebar	

2005 w	2006 w	2007 w	2005 e	2006 e	2007 e
23.0	66	0	100.448	100.00	100.35
26.0	49	6	100.332	98.81	100.74
27.0	44	15	95.352	97.38	100.7

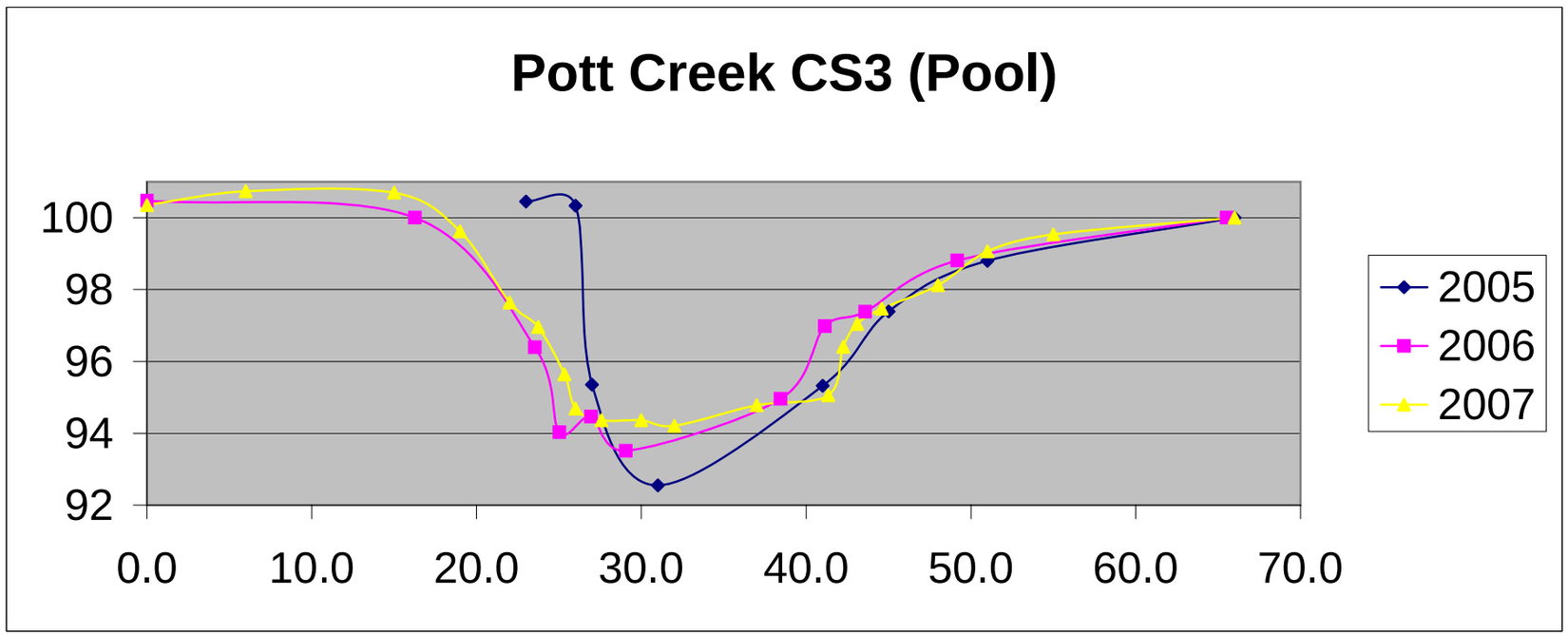
2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
PC31	4980.128	5059.115	94.95965	100.46555		65.52
PC32	4984.588	5043.472	94.50367	100.00957	lbf	49.18
PC33	4986.551	5036.454	90.89199	96.39789	lew	43.59
PC34	4987.25	5035.134	88.52315	94.02905		41.14
PC35	4987.965	5033.315	88.95515	94.46105		38.46
PC36	4987.846	5031.086	88.00485	93.51075	Thw	29.07
PC37	4990.353	5022.034	89.35064	94.85654		26.96
PC38	4991.149	5019.476	91.46976	96.97566	rew	25.02
PC39	4992.295	5017.257	91.86973	97.37563		23.55
PC310	4993.752	5011.854	93.30651	98.81241	rbf	16.26
PC311	4998.676	4996.276	94.4941	100		0.00
				5.5059		

31.0	41	19	92.552	96.98	99.62
41.0	38	22	95.319	94.96	97.64
45.0	29	24	97.393	93.51	96.96
51.0	27	25	98.801	94.46	95.64
66.0	25	26	100	94.03	94.69
	24	28		96.39	94.36
	16	30		100.00	94.36
	0	32		100.47	94.21
		37			94.78
		41			95.06
		42			96.41
		43			97.04
		45			97.47
		48			98.12
		51			99.06
		55			99.54
		66			100

Survey Data		
Station	Elevation	Feature
0.0	100.35	GS rebar
6.0	100.74	
15.0	100.7	
19.0	99.62	
22.0	97.64	
23.8	96.96	
25.3	95.64	
26.0	94.69	LEW
27.6	94.36	
30.0	94.36	
32.0	94.21	Thw
37.0	94.78	REW
41.3	95.06	
42.3	96.41	
42.1	97.04	
44.6	97.47	
48.0	98.12	
51.0	99.06	
55.0	99.54	
66.0	100	GS rebar

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area	152	136.80	141.50	110.00		
Bankfull Width: Range 33.3 - 41.2	37.25	39.80	49.2	35.9		
Bankfull Mean Depth: Range 3.1 - 3.3	3.2	3.40	2.90	3.1		
Bankfull Max Depth: Range 4.5 - 5.1	4.82	7.80	6.50	5.3		
Width/Depth Ratio: Range 10.7 - 12.5	11.6	11.60	17.10	11.70		
Entrenchment Ratio: Range 7.2 - 9.0	8.05	7.50	6.10	8.40		
Average Width of Flood Prone Area = 300						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
-10.5	4.49	19.49		100	GS	0
6			5.46	99.03	RTB	4.5
13.2			8.393	96.097		15.3
20.4			11.011	93.479	Thw	30.5
35.6			8.724	95.766		37.7
46.4			4.613	99.877	LTB	44.9
50.9			3.7	100.79	GS	61.4

2007 Data

69.0			4.28	100.00	GS rebar	
55.0			4.74	99.54		
49.4			6.73	97.55		
46.3			8.35	95.93	REW	
44.0			9.9	94.38	Thw	
40.0			9.78	94.50		
33.0			9.53	94.75		
30.3			9.4	94.88		
24.6			8.51	95.77	LEW	
23.2			7.22	97.06		
19.0			5.73	98.55		
15.0			4.61	99.67		
10.0			3.85	100.43		
0.0			3.38	100.90	GS rebar	

2005 w	2006 w	2007 w	2005 e	2006 e	2007 e
8	69	69	100.79	100	100.00
13	60	55	99.877	99.97281	99.54
23	53	49	95.766	99.02216	97.55
39	46	46	93.479	96.30711	95.93
46	45	44	96.097	95.02188	94.38
53	39	40	99.03	94.16638	94.50
69	24	33	100	95.20222	94.75
	23	30		97.01393	94.88
	16	25		99.17987	95.77
	0	23		100.7875	97.06

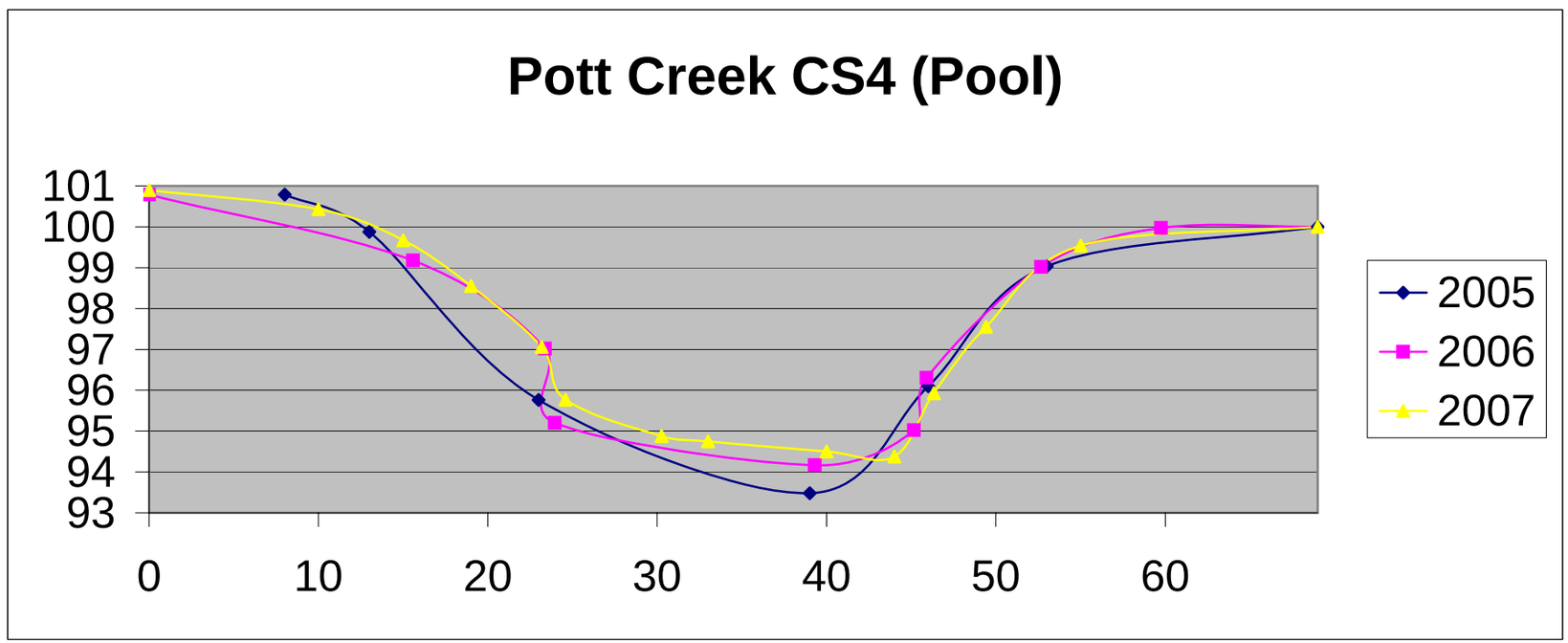
2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
PC41	4987.725	5070.994	95.19477	100.78751		0.00
PC42	4990.612	5055.683	93.58713	99.17987	lbf	15.58
PC43	4992	5048.013	91.42119	97.01393		23.38
PC44	4992.219	5047.467	89.60948	95.20222	lew	23.95
PC45	4994.948	5032.348	88.57364	94.16638		39.31
PC46	4996.179	5026.62	89.42914	95.02188	thw	45.17
PC47	4996.309	5025.906	90.71437	96.30711	rew	45.90
PC48	4997.894	5019.3	93.42942	99.02216		52.68
PC49	4999.082	5012.322	94.38007	99.97281	rbf	59.76
PC410	5000.663	5002.92	94.40726	100		69.29
				5.59274		

19	98.55
15	99.67
10	100.43
0	100.90

Survey Data		
Station	Elevation	Feature
0.0	100.9	GS rebar
10.0	100.43	
15.0	99.67	
19.0	98.55	
23.2	97.06	
24.6	95.77	LEW
30.3	94.88	
33.0	94.75	
40.0	94.5	
44.0	94.38	Thw
46.3	95.93	REW
49.4	97.55	
55.0	99.54	
69.0	100	GS rebar

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area	152	156.60	154.80	151.30		
Bankfull Width: Range 33.3 - 41.2	37.25	44.30	51.90	56.2		
Bankfull Mean Depth: Range 3.1 - 3.3	3.2	3.50	3.00	2.7		
Bankfull Max Depth: Range 4.5 - 5.1	4.82	6.40	5.80	5.6		
Width/Depth Ratio: Range 10.7 - 12.5	11.6	12.50	17.40	20.90		
Entrenchment Ratio: Range 7.2 - 9.0	8.05	6.80	5.80	5.30		
Average Width of Flood Prone Area = 300						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
80.7	7.585	22.585		100.00	GS	68.2
67.7			8.332	99.25	GS	55.2
64.9			8.243	99.34	RTB	52.4
55.9			11.148	96.44		43.4
41.8			12.515	95.07	Thw	29.3
38.2			11.248	96.34		25.7
29.7			6.803	100.78	LTB	17.2
12.5			5.852	101.73	GS	0

sw shots not be equal

Break over sand bar

2007 Data

69.0			5.46	100.00	GS rebar	
64.0			5.92	99.54		
59.0			6.09	99.37		
55.0			6.09	99.37		
51.0			6	99.46		
48.9			6.62	98.84		
46.0			7.21	98.25		
44.6			8.48	96.98	REW	
42.8			9.38	96.08		
39.5			9.66	95.80		
36.0			9.81	95.65		
31.0			10.15	95.31		
28.0			10.1	95.36	Thw	
26.5			10.45	95.01	LEW	
25.9			8.77	96.69		
24.4			8.6	96.86		
21.7			8.15	97.31		
18.0			7.19	98.27		
13.0			6.16	99.30		
6.0			4.34	101.12		
0.0			4.36	101.10	GS rebar	

2005 w	2006 w	2007 w	2005 e	2006 e	2007 e
68	0	69	100.00	101.96	100.00
55	17	64	99.25	101.08	99.54
52	24	59	99.34	97.40	99.37
43	26	55	96.44	95.50	99.37
29	31	51	95.07	95.29	99.46
26	35	49	96.34	95.24	98.84

2006 Data

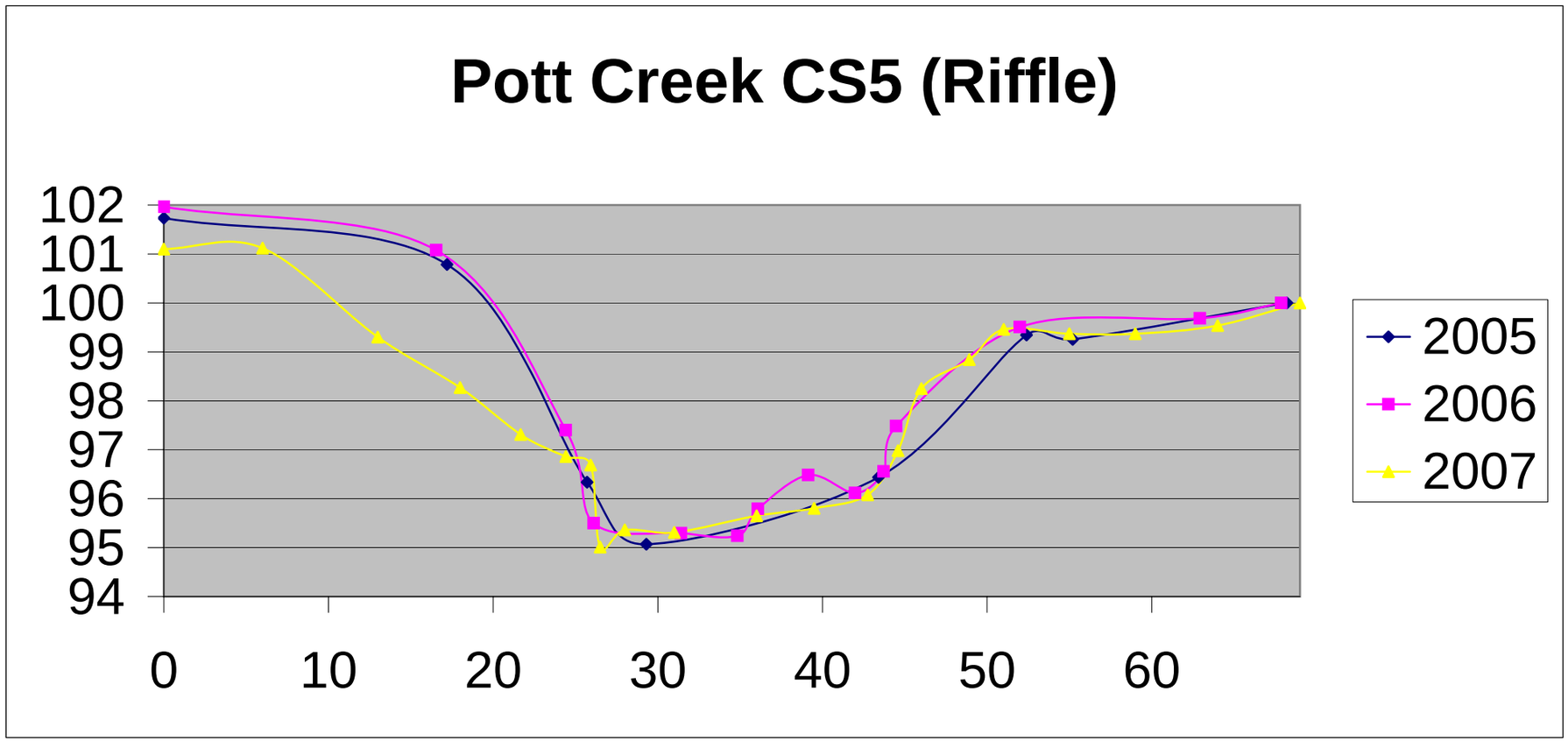
Point	X	Y	Elevation	Corrected E	Feature	Width
PC51	5008.841	4992.711	95.74474	101.96392	lbf	0.00
PC52	4994.003	5000.081	94.85883	101.07801		16.55
PC53	4987.325	5004.249	91.17889	97.39807	lew	24.41
PC54	4985.913	5005.207	89.28146	95.50064		26.11
PC55	4981.094	5007.434	89.07554	95.29472		31.40
PC56	4978.111	5009.131	89.02411	95.24329		34.84
PC57	4977.08	5009.835	89.57124	95.79042		36.08
PC58	4974.304	5011.121	90.26662	96.4858	sand bar	39.13
PC59	4971.641	5012.213	89.89936	96.11854		41.99
PC510	4970.008	5012.827	90.33597	96.55515		43.71
PC511	4969.386	5013.277	91.26472	97.4839	rew	44.48
PC512	4962.533	5016.419	93.28916	99.50834	rbf	51.99
PC513	4953.002	5021.774	93.46448	99.68366		62.92
PC514	4948.692	5024.177	93.78082	100		67.86

6.21918

17	36	46	100.78	95.79	98.25
0	39	45	101.73	96.49	96.98
	42	43		96.12	96.08
	44	40		96.56	95.80
	44	36		97.48	95.65
	52	31		99.51	95.31
	63	28		99.68	95.36
	68	27		100.00	95.01
		26			96.69
		24			96.86
		22			97.31
		18			98.27
		13			99.30
		6			101.12
		0			101.10

Survey Data		
Station	Elevation	Feature
0.0	101.1	GS rebar
6.0	101.12	
13.0	99.3	
18.0	98.27	
21.7	97.31	
24.4	96.86	
25.9	96.69	
26.5	95.01	LEW
28.0	95.36	Thw
31.0	95.31	
36.0	95.65	
39.5	95.8	
42.8	96.08	
44.6	96.98	REW
46.0	98.25	
48.9	98.84	
51.0	99.46	
55.0	99.37	
59.0	99.37	
64.0	99.54	
69.0	100	GS rebar

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area: Range 105 -136	120.5	114.00	106.90	126.90		
Bankfull Width: Range 33.3 - 41.2	37.25	49.50	49	58.7		
Bankfull Mean Depth: Range 3.1 - 3.3	3.2	2.30	2.2	2.2		
Bankfull Max Depth: Range 4.5 - 5.1	4.82	4.90	4.8	5		
Width/Depth Ratio: Range 10.7 - 12.5	11.6	21.50	22.50	27.10		
Entrenchment Ratio: Range 7.2 - 9.0	8.05	6.10	6.10	5.10		
Average Width of Flood Prone Area = 300						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
82.2	6.889	21.889		100	GS	76.2
62.2			7.765	99.124	RTB	56.2
53.9			10.857	96.032		47.9
39.8			14.19	92.699	Thw	33.8
31.9			10.795	96.094		25.9
24.1			6.907	99.98	LTB	18.1
6			5.691	101.2	GS	0

2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
PC61	5012.852	4994.61	95.64714	101.19915		0.00
PC62	4998.254	5005.994	94.36622	99.91823	LBF	18.51
PC63	4992.564	5010.706	91.13655	96.68856		25.90
PC64	4992.167	5011.149	89.8149	95.36691	LEW	26.48
PC65	4984.34	5017.221	86.70749	92.2595	THW	36.39
PC66	4974.784	5024.409	89.11025	94.66226	REW	48.34
PC67	4973.861	5025.191	90.93076	96.48277		49.55
PC68	4969.641	5029.167	93.04645	98.59846		55.33
PC69	4952.788	5042.515	94.44799	100	RBF	76.83

2007 Data

0	2.86	100.36	GS reset no rebar	
5	3.34	99.88		
8	4.16	99.06		
10	5.42	97.8		
12	6.38	96.84	LEW	
12.3	8.22	95	SOW	
13.0	8.7	94.52		
14.6	9.76	93.46		
17.4	10.46	92.76		
21.1	10.82	92.4	Thw	
23	10.46	92.76		
25	9.95	93.27		
27	9.55	93.67		
29	9.02	94.2		
31	8.71	94.51		
32	8.44	94.78		
34	7.93	95.29	REW	
36	7.76	95.46		
38	6.22	97		
40.5	5.71	97.51		
44	4.41	98.81		
49	3.7	99.52		
56	3.82	99.4		
65	3.22	100	GS rebar	

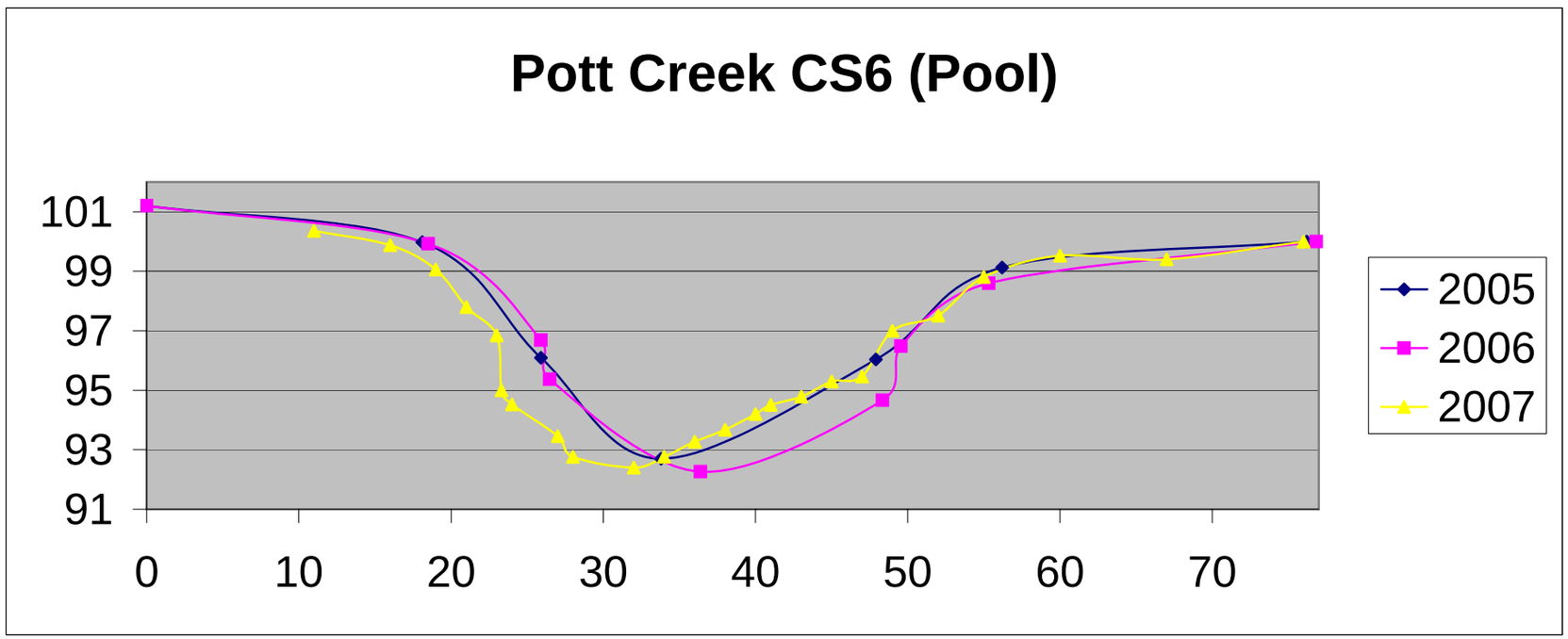
5.55201

2005 w	2006 w	2007 w	2005 e	2006 e	2007 e

76	0	11	100	101.20	100.36
56	19	16	99.124	99.92	99.88
48	26	19	96.032	96.69	99.06
34	26	21	92.699	95.37	97.8
26	36	23	96.094	92.26	96.84
18	48	23.3	99.98	94.66	95
0	50	24.0	101.2	96.48	94.52
	55	27.0		98.60	93.46
	77	28.0		100.00	92.76
		32			92.4
		34			92.76
		36			93.27
		38			93.67
		40			94.2
		41			94.51
		43			94.78
		45			95.29
		47			95.46
		49			97
		52			97.51
		55			98.81
		60			99.52
		67			99.4
		76			100

Survey Data		
Station	Elevation	Feature
11	100.36	GS no rebar
16	99.88	
19	99.06	
21	97.8	
23	96.84	LEW
23.3	95	SOW
24.0	94.52	
27.0	93.46	
28.0	92.76	
32	92.4	Thw
34	92.76	
36	93.27	
38	93.67	
40	94.2	
41	94.51	
43	94.78	
45	95.29	REW
47	95.46	
49	97	
52	97.51	
55	98.81	
60	99.52	
67	99.4	
76	100	GS rebar

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area	152	126.50	124.20	136.90		
Bankfull Width: Range 33.3 - 41.2	37.25	36.40	33.8	35.6		
Bankfull Mean Depth: Range 3.1 - 3.3	3.2	3.50	3.7	3.8		
Bankfull Max Depth: Range 4.5 - 5.1	4.82	6.40	6.3	6.4		
Width/Depth Ratio: Range 10.7 - 12.5	11.6	10.50	9.20	9.30		
Entrenchment Ratio: Range 7.2 - 9.0	8.05	8.20	8.90	8.40		
Average Width of Flood Prone Area = 300						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
45.5	5.11	15.11		100.00	GS	39.9
35.2			4.76	100.35	LTB	29.6
31			8.22	96.89		25.4
29.4			9.053	96.06	Thw	23.8
14.4			8.273	96.84		8.8
5.6			5.377	99.73	RTB	0

2007 Data

40.5			3.5	100.00	GS	
35			2.98	100.52		
30			3.08	100.42		
27			4.5	99.00		
26			7.72	95.78	LEW	
24			7.63	95.87		
22			7.47	96.03		
19			7.5	96.00		
16			7.13	96.37	REW	
14.7			6.75	96.75		
12			6.02	97.48		
6			5.06	98.44		
4			4.2	99.30		
0			3.44	100.06	GS	

2005 W	2006 W	2007 W	2005 E	2006 E	2007 E
40	40	41	100.00	100.00	100.00
30	32	35	100.35	100.56	100.52
25	30	30	96.89	98.23	100.42
24	28	27	96.06	96.38	99.00
9	26	26	96.84	96.39	95.78
0	21	24	99.73	96.98	95.87
	15	22		97.32	96.03
	14	19		98.00	96.00
	10	16		98.56	96.37
	0	15		100.12	96.75
		12			97.48

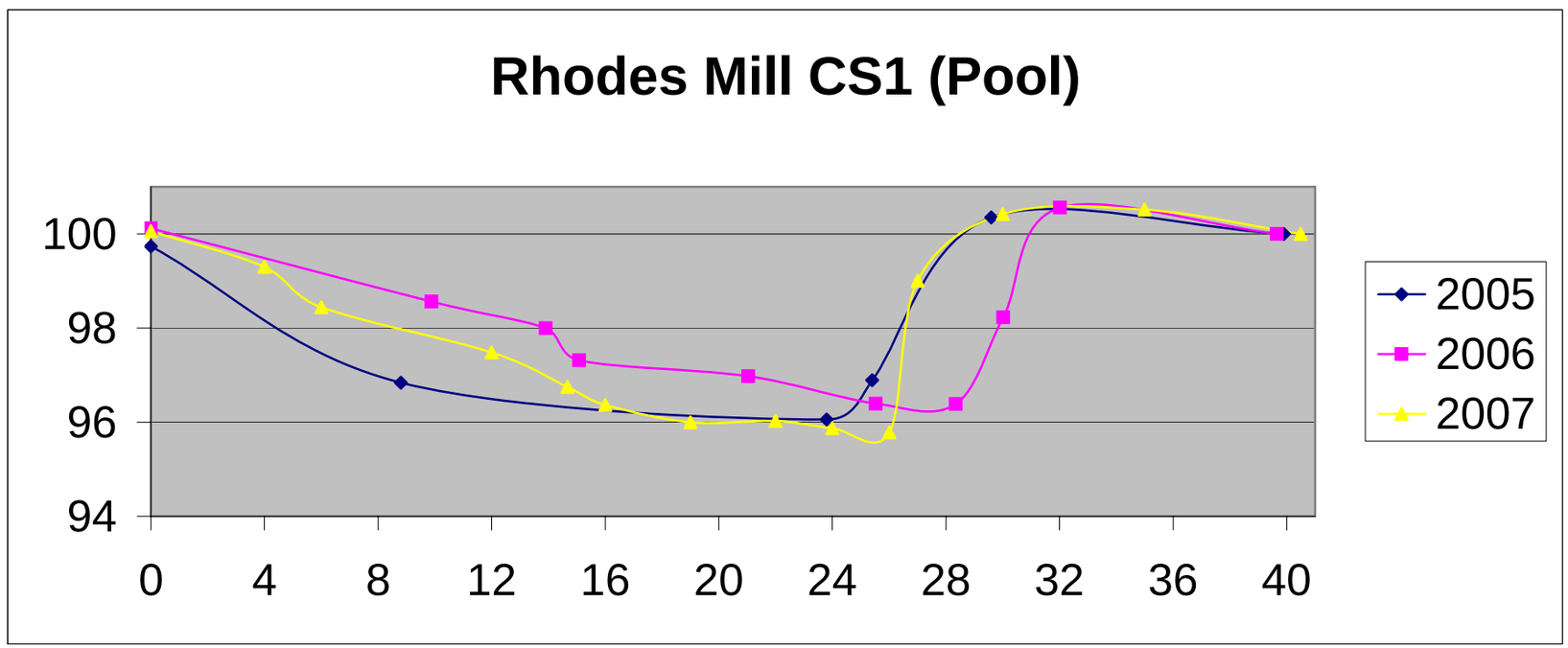
2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
RM11	5027.367	4962.208	93.745	100		39.65
RM12	5021.332	4970.033	94.30578	100.56078	lbf	32.02
RM13	5018.582	4972.999	91.97382	98.22882		30.02
RM14	5017.772	4973.847	90.12935	96.38435	lew	28.35
RM15	5014.106	4978.554	90.13327	96.38827	thw	25.53
RM16	5011.177	4981.959	90.72113	96.97613	rew	21.04
RM17	5009.565	4984.278	91.06062	97.31562		15.08
RM18	5008.744	4985.756	91.74026	97.99526		13.91
RM19	5007.711	4987.488	92.30816	98.56316		9.88
RM110	5003.917	4994.19	93.86134	100.11634	rbf	0.00
				6.255		

6	98.44
4	99.30
0	100.06

Survey Data		
Station	Elevation	Feature
0	100.06	GS
4	99.30	
6	98.44	rbf
12	97.48	
14.7	96.75	
16	96.37	REW
19	96.00	
22	96.03	
24	95.87	
26	95.78	LEW
27	99.00	Lbf
30	100.42	
35	100.52	
40.5	100.00	GS

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area	50	72.20	66.20	53.20		
Bankfull Width	32	28.90	31	23.6		
Bankfull Mean Depth	2.19	2.50	2.1	2.3		
Bankfull Max Depth	3.15	3.70	3.7	3.5		
Width/Depth Ratio	14.6	11.50	14.60	10.50		
Entrenchment Ratio	9.38	10.40	9.70	12.70		
Average Width of Flood Prone Area = 300						



2005 data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
50.6	5.098	15.098		100.00	GS	43.9
41.5			5.415	99.68	RTB	34.8
38			7.153	97.95		31.3
35.6			7.953	97.15		28.9
34.5			8.776	96.32		27.8
29.8			9.64	95.46	Thw	23.1
24.1			8.702	96.40		17.4
20.3			8.005	97.09		13.6
19.7			7.3	97.80		13
6.7			5.068	100.03	LTB	0

2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
RM21	5035.185	4969.661	94.26488	99.96162		43.15
RM22	5029.08	4973.893	94.40695	100.10369	lbf	28.64
RM23	5023.627	4978.057	91.84569	97.54243		26.96
RM24	5022.915	4978.964	90.58399	96.28073	lew	26.22
RM25	5018.775	4981.602	89.77666	95.4734	thw	25.04
RM26	5015.152	4984.809	90.4377	96.13444	rew	20.20
RM27	5014.337	4985.664	90.85671	96.55345		15.35
RM28	5013.661	4986.027	91.445	97.14174		14.22
RM29	5012.454	4987.196	91.86787	97.56461		7.38
RM210	5001.731	4996.969	94.30326	100	rbf	0.00

2007 Data

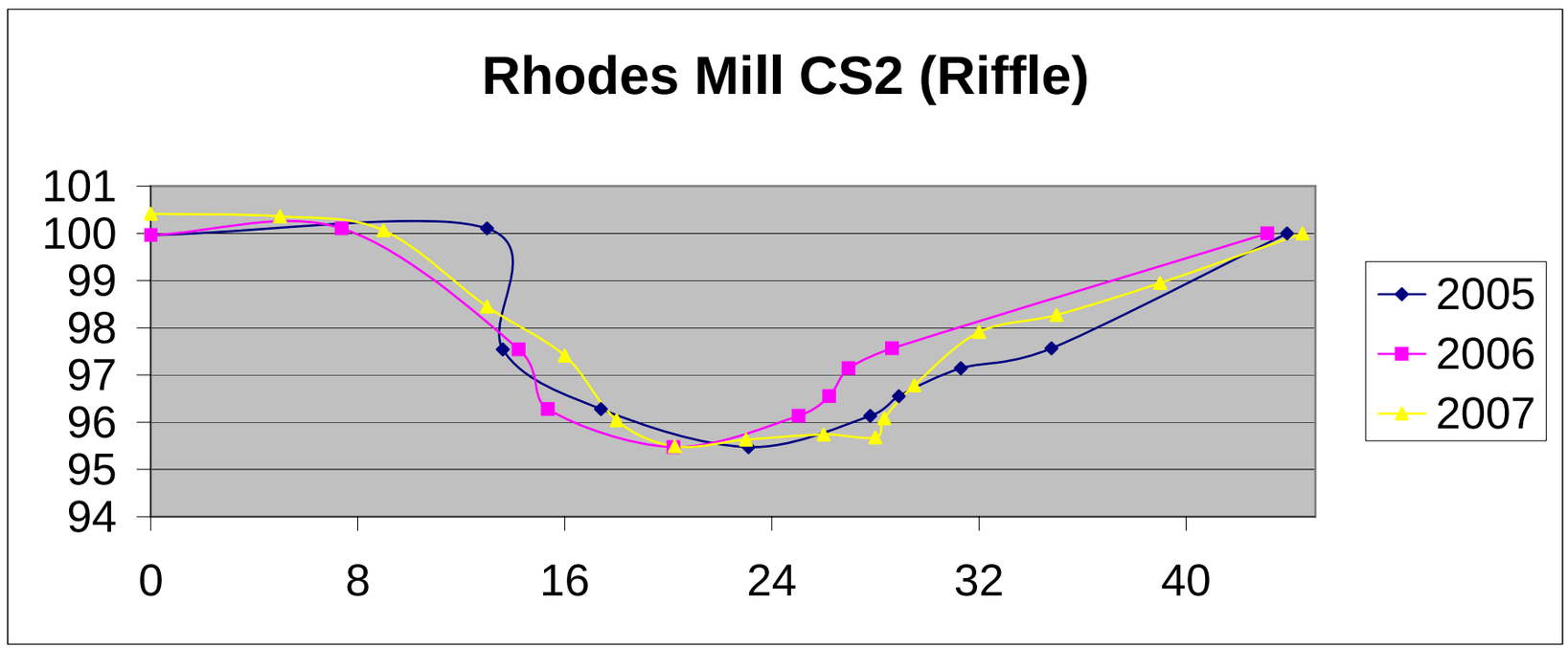
0			3.71	100	GS							5.69674
5			4.76	98.95								
9			5.44	98.27								
13			5.8	97.91								
16			6.93	96.78								
18.0			7.63	96.08	REW							
20.3			8.03	95.68								
23.0			7.97	95.74								
26.0			8.08	95.63	Thw							
28.0			8.22	95.49	LEW							
28.3			7.67	96.04								
29.5			6.3	97.41								
32.0			5.26	98.45								
35.0			3.65	100.06								
39			3.35	100.36								
44.5			3.3	100.41	GS							

2005 W	2006 W	2007 W	2005 E	2006 E	2007 E
44	43	0	100.00	100.00	100.41
35	29	5	97.56	97.56	100.36
31	27	9	97.14	97.14	100.06
29	26	13	96.55	96.55	98.45

28	25	16	96.13	96.13	97.41
23	20	18	95.47	95.47	96.04
17	15	20	96.28	96.28	95.49
14	14	23	97.54	97.54	95.63
13	7	26	100.10	100.10	95.74
0	0	28	99.96	99.96	95.68
		28			96.08
		30			96.78
		32			97.91
		35			98.27
		39			98.95
		45			100

Survey Data		
Station	Elevation	Feature
0	100	GS
5	98.95	
9	98.27	
13	97.91	rbf
16	96.78	
18.0	96.08	REW
20.3	95.68	
23.0	95.74	
26.0	95.63	Thw
28.0	95.49	LEW
28.3	96.04	
29.5	97.41	
32.0	98.45	lbf
35.0	100.06	
39	100.36	
44.5	100.41	GS

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area	70	73.50	80.70	88.50		
Bankfull Width	32	32.80	37.5	35		
Bankfull Mean Depth	2.19	2.20	2.2	2.5		
Bankfull Max Depth	3.15	4.20	4.5	4.6		
Width/Depth Ratio	14.6	14.60	17.40	13.80		
Entrenchment Ratio	9.38	9.20	8.00	8.60		
Average Width of Flood Prone Area = 300						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
24.7	5.042	15.042		100.00	GS	18.5
20.3			5.261	99.78	LTB	14.1
16.6			6.593	98.45		10.4
13.9			7.196	97.85	Ctr	7.7
13.1			6.58	98.46		6.9
11.1			5.343	99.70	RTB	4.9
6.2			4.931	100.11	GS	0

2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
UT11	4989.308	4993.69	94.6191	100	GS	19.05
UT12	4985.965	4997.729	94.21897	99.59987	LTB	14.70
UT13	4984.7	4998.792	93.31888	98.69978		12.00
UT14	4982.86	5001.042	93.027	98.4079	Ctr	9.78
UT15	4981.416	5002.741	93.34605	98.72695		6.87
UT16	4979.882	5004.973	94.48612	99.86702	RTB	5.24
UT17	4977.116	5008.322	94.8248	100.2057	GS	0.00

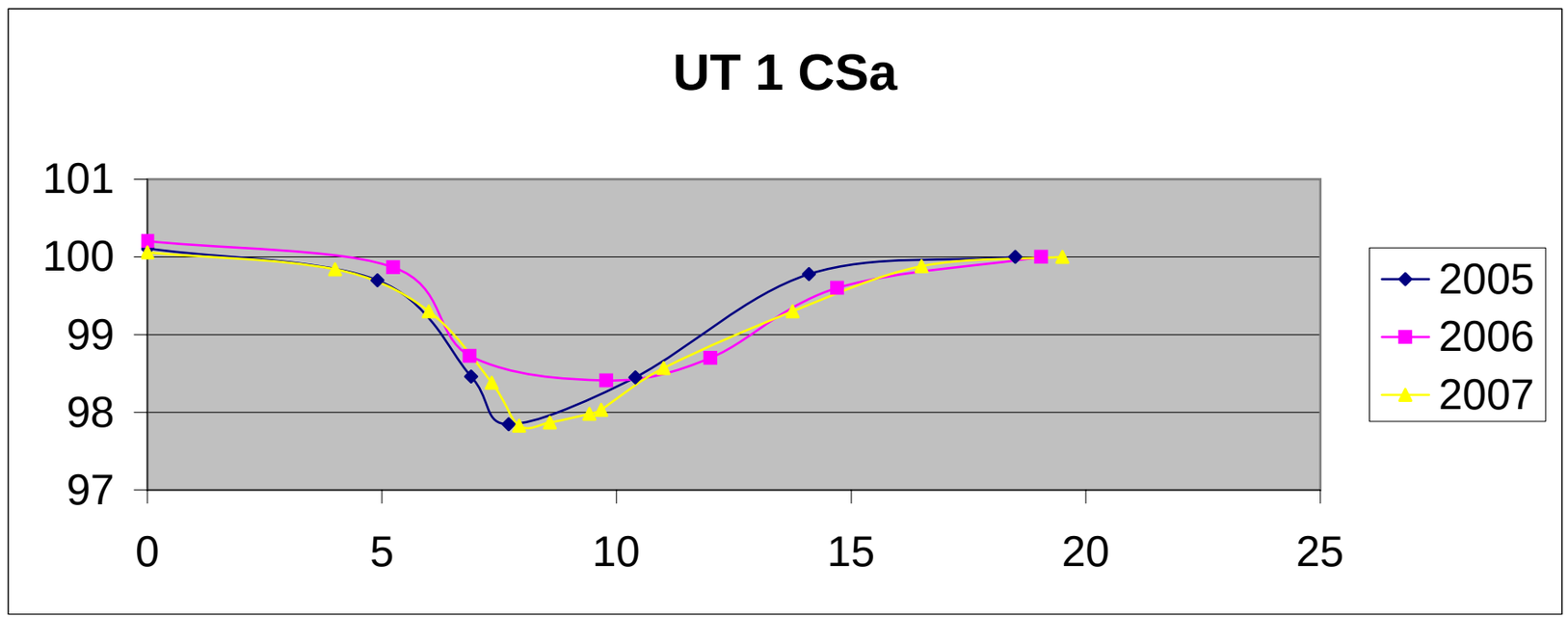
2007 Data

19.5		4.1	100.00	GS rebar	
16.5		4.22	99.88		5.3809
13.8		4.8	99.30		
11.0		5.53	98.57		
9.7		6.07	98.03	LEW	
9.4		6.12	97.98		
8.6		6.23	97.87	Thw	
7.9		6.27	97.83	REW	
7.3		5.72	98.38		
6.0		4.8	99.30		
4.0		4.26	99.84		
0.0		4.04	100.06	GS rebar	

2005 w	2006 w	2007 w	2005 e	2006 e	2007 e
19	19	20	100.00	100.00	100.00
14	15	17	99.78	99.60	99.88
10	12	14	98.45	98.70	99.30
8	10	11	97.85	98.41	98.57
7	7	10	98.46	98.73	98.03
5	5	9	99.70	99.87	97.98
0	0	9	100.11	100.21	97.87
		8			97.83
		7			98.38
		6			99.30
		4			99.84
		0			100.06

Survey Data		
Station	Elevation	Feature
0.0	100.06	GS rebar
4.0	99.84	
6.0	99.30	
7.3	98.38	
7.9	97.83	REW
8.6	97.87	Thw
9.4	97.98	
9.7	98.03	LEW
11.0	98.57	
13.8	99.30	
16.5	99.80	
19.5	100.00	GS rebar

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area	10.2	9.60	10.00	11.60		
Bankfull Width	10.5	10.20	12.4	12.3		
Bankfull Mean Depth	0.97	0.90	0.8	0.9		
Bankfull Max Depth	1.9	1.90	1.5	2		
Width/Depth Ratio	10.8	10.80	15.30	13.10		
Entrenchment Ratio	16.7	17.20	14.20	14.20		
Average Width of Flood Prone Area = 175						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
19.3	6.049	16.049		100.000	LTB	13
14			8.702	97.347		7.7
13.3			8.905	97.144	Thw	7
12.2			8.711	97.338		5.9
6.3			6.253	99.796	RTB	0

2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
UT21	5005.954	5028.169	92.70472	100	LTB	13.42
UT22	5010.017	5024.868	90.25848	97.55376		7.82
UT23	5010.599	5023.968	89.72807	97.02335	Thw	6.26
UT24	5011.917	5023.111	90.15774	97.45302		5.23
UT25	5015.968	5019.238	92.48625	99.78153	RTB	0.00

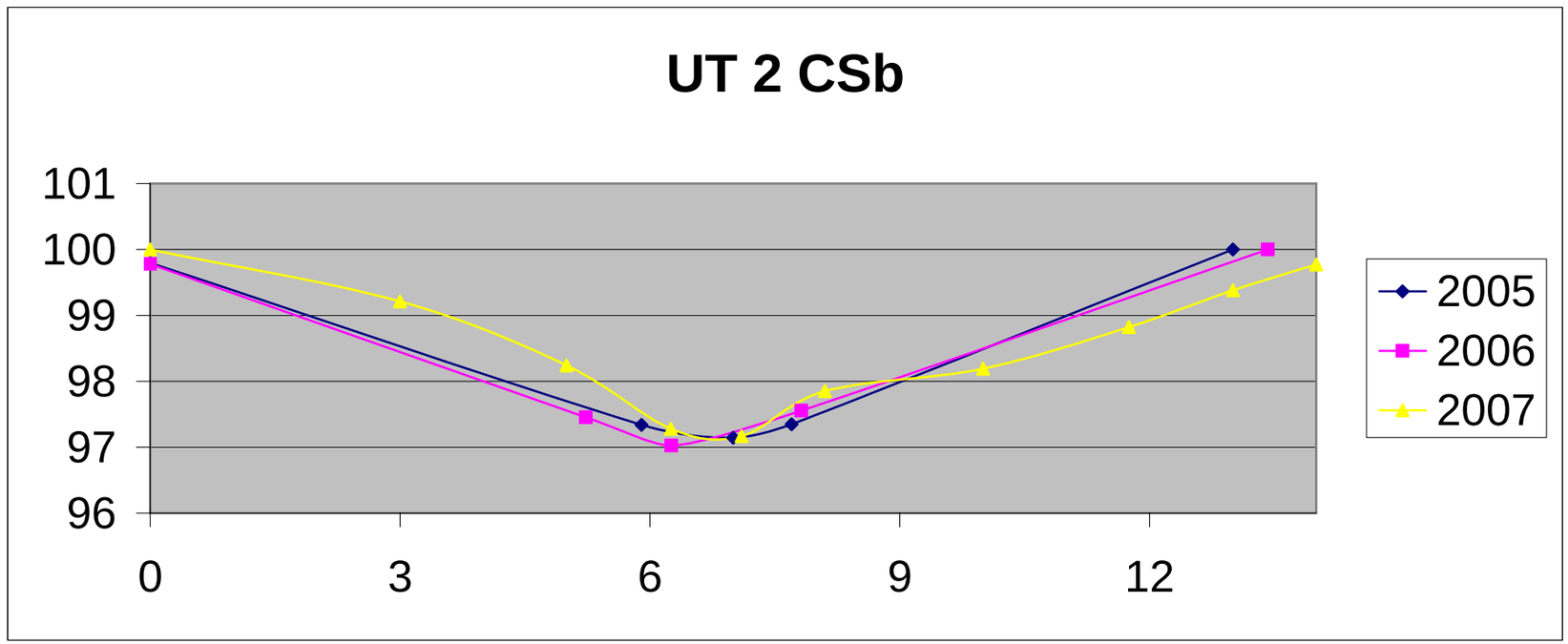
2007 data

					7.29528	
14.0			5.95	99.77	GS rebar	
13.0			6.34	99.380		
11.8			6.9	98.820		
10.0			7.53	98.190		
8.1			7.87	97.85	REW	
7.1			8.55	97.17	Thw	
6.3			8.44	97.28	LEW	
5.0			7.48	98.24		
3.0			6.51	99.21		
0.0			5.72	100	GS rebar	

2005 W	2006 W	2007 W	2005 E	2006 E	2007 E
13	13	14	100.000	100.000	99.77
8	8	13	97.347	97.554	99.380
7	6	12	97.144	97.023	98.820
6	5	10	97.338	97.453	98.190
0	0	8	99.796	99.782	97.85
		7			97.17
		6			97.28
		5			98.24
		3			99.21
		0			100

Survey Data		
Station	Elevation	Feature
0.0	100	GS rebar
3.0	99.21	lbf
5.0	98.24	
6.3	97.28	LEW
7.1	97.17	Thw
8.1	97.85	REW
10.0	98.190	
11.8	98.820	rbf
13.0	99.380	
14.0	99.77	GS rebar

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area	21	20.40	21.10	19.30		
Bankfull Width	13.7	13.00	13.40	14		
Bankfull Mean Depth	1.5	1.60	1.6	1.4		
Bankfull Max Depth	2.79	2.90	3	2.8		
Width/Depth Ratio	9.1	8.30	8.50	10.10		
Entrenchment Ratio	5.8	6.20	6.00	5.70		
Average Width of Flood Prone Area = 80						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
21.5	5.309	15.309		100	LTB	14
16.1			7.24	98.069		8.6
15.2			7.728	97.581	Ctr	7.7
12.2			7.214	98.095		4.7
7.5			5.62	99.689	RTB	0

2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
UT31	5006.153	5008.243	94.62318	100	LTB	0.00
UT32	5002.446	5012.162	92.59927	97.97927		5.39
UT33	5001.007	5013.114	91.95454	97.33454	Ctr	7.08
UT34	4999.878	5014.563	92.45898	97.83898		8.90
UT35	4996.326	5018.239	94.34446	99.72446	RTB	14.02

2007 Data

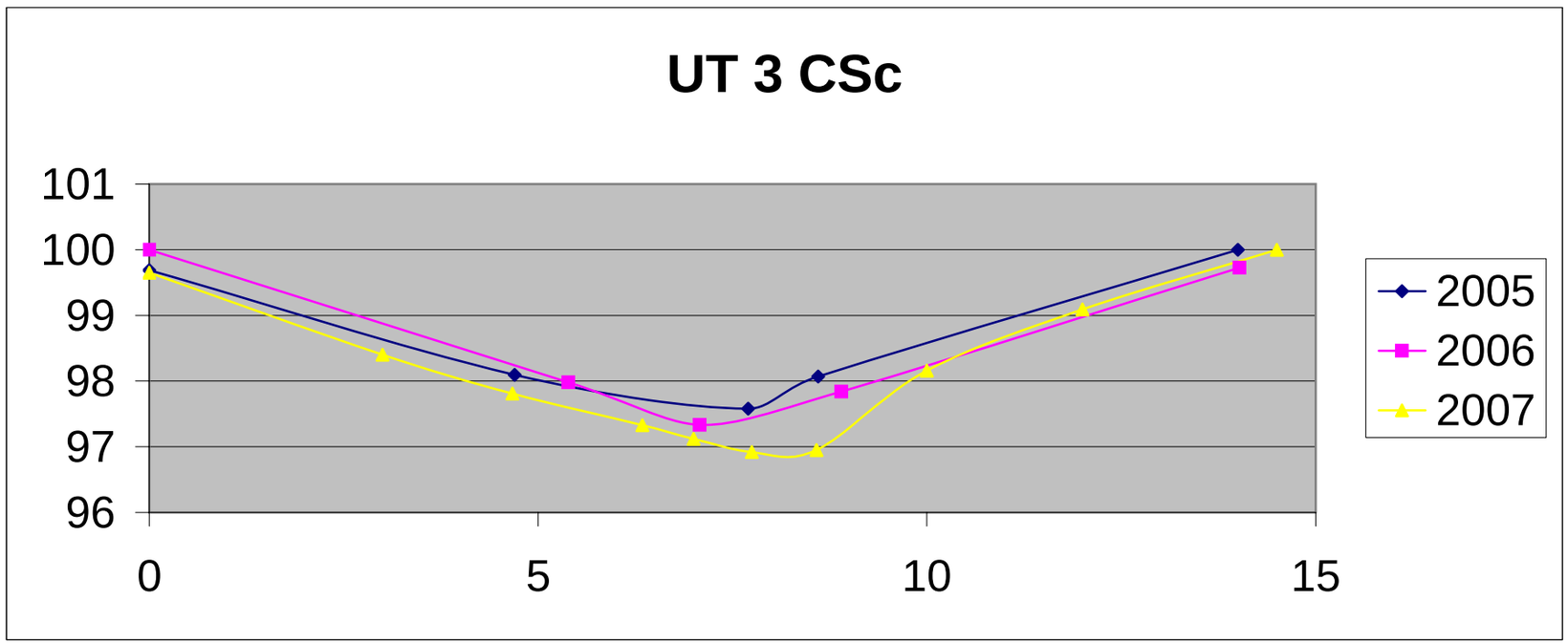
14.5			3.89	100	GS	
12.0			4.8	99.09		
10.0			5.73	98.16		
8.6			6.94	96.95	LEW	
7.8			6.97	96.92	Thw	
7.0			6.77	97.12	REW	
6.3			6.56	97.33		
4.7			6.08	97.81		
3.0			5.49	98.4		
0.0			4.24	99.65	GS	

5.38

2005 W	2006 W	2007 W	2005 E	2006 E	2007 E
14	0	15	100	100.00	100
9	5	12	98.069	97.98	99.09
8	7	10	97.581	97.33	98.16
5	9	9	98.095	97.84	96.95
0	14	8	99.689	99.72	96.92
		7			97.12
		6			97.33
		5			97.81
		3			98.4
		0.0			99.65

Survey Data		
Station	Elevation	Feature
0.0	99.65	GS
3.0	98.4	rbf
4.7	97.81	
6.3	97.33	
7.0	97.12	REW
7.8	96.92	Thw
8.6	96.95	LEW
10.0	98.16	lbf
12.0	99.09	
14.5	100	GS

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area	18.3	18.90	20.00	24.10		
Bankfull Width	13.9	14.00	14.00	14.50		
Bankfull Mean Depth	1.3	1.30	1.4	1.7		
Bankfull Max Depth	2.68	2.40	2.7	3.1		
Width/Depth Ratio	10.7	10.40	9.80	8.70		
Entrenchment Ratio	18	17.90	17.80	17.20		
Average Width of Flood Prone Area = 250						



2005 Data

Station	Backshot	HI	Foreshot	Elevation	Feature	Width
20.2	6.155	16.155		100	RTB	14.7
17.7			6.712	99.443		12.2
14.8			8.439	97.716		9.3
13.3			8.612	97.543	Ctr	7.8
11.1			8.47	97.685		5.6
7.7			6.554	99.601		2.2
5.5			5.911	100.244	LTB	0

2006 Data

Point	X	Y	Elevation	Corrected E	Feature	Width
UT41	5013.03	5000	94.21376	100.20797		14.64
UT42	5013.641	4997.613	93.47387	99.46808	LBF	11.27
UT43	5014.151	4994.33	91.84492	97.83913	LEW	9.14
UT44	5013.381	4992.556	91.59618	97.59039	Thw	7.45
UT45	5013.215	4990.863	91.88739	97.8816	REW	5.71
UT46	5013.237	4988.729	93.25119	99.2454	RBF	2.41
UT47	5013.495	4985.364	94.00579	100		0

2007 Data

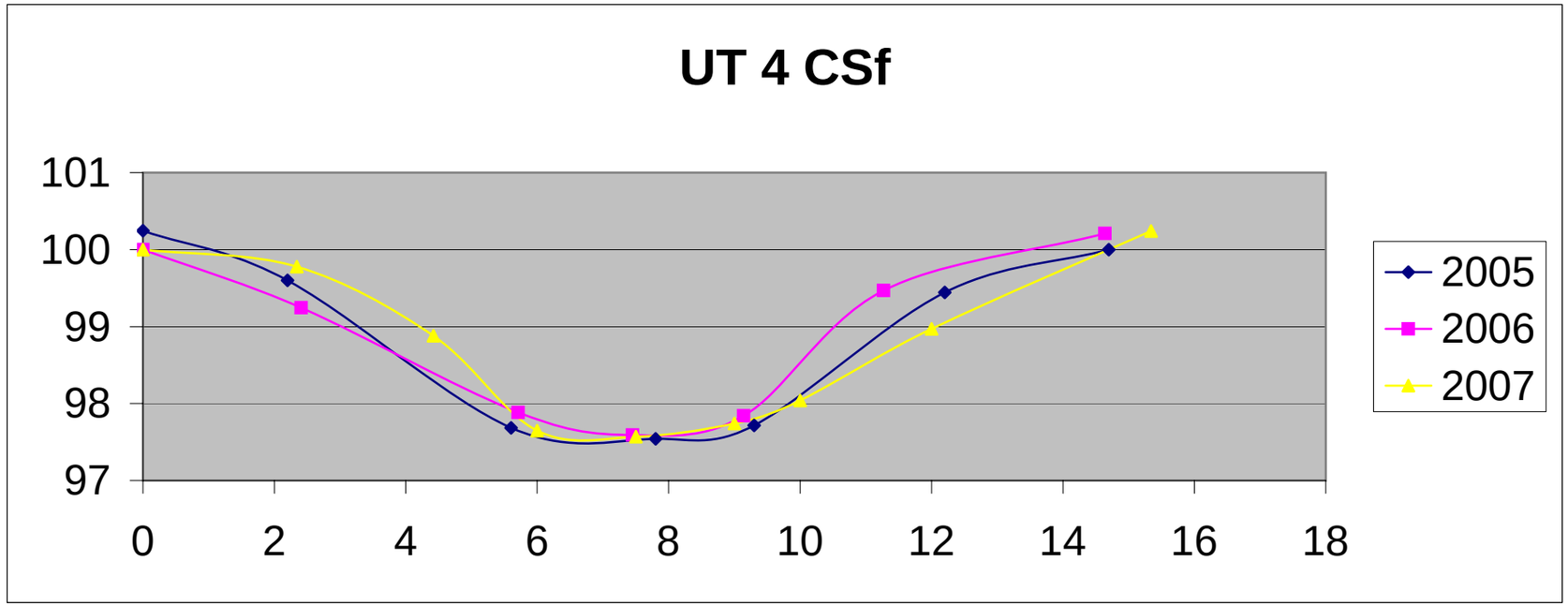
15.3			4.34	100.24		
12.0			5.61	98.97	Lbf	
10.0			6.54	98.04		
9.0			6.84	97.74	LEW	
7.5			7.01	97.57	Thw	
6.0			6.93	97.65	REW	
4.4			5.7	98.88	Rbf	
2.3			4.8	99.78		
0.0			4.58	100		

5.99421

2005 Width	2006 W	2007 W	2005 Elev	2006 Elev	2007 E
15	15	15	100	100.21	100.24
12	11	12	99.443	99.47	98.97
9	9	10	97.716	97.84	98.04
8	7	9	97.543	97.59	97.74
6	6	8	97.685	97.88	97.57
2	2	6	99.601	99.25	97.65
0	0	4	100.244	100.00	98.88
		2			99.78
		0			100

Survey Data		
Station	Elevation	Feature
0.0	100	
2.3	99.78	
4.4	98.88	rbf
6.0	97.65	REW
7.5	97.57	Thw
9.0	97.74	LEW
10.0	98.04	
12.0	98.97	lbf
15.3	100.24	

Summary Data Table	As-built Mean	M1 2005	M2 2006	M3 2007	M4 2008	M5 2009
Bankfull Cross Sectional Area	19.4	22.00	20.00	21.60		
Bankfull Width	13.2	14.70	14.6	15.3		
Bankfull Mean Depth	1.47	1.50	1.4	1.4		
Bankfull Max Depth	2.37	2.70	2.6	2.7		
Width/Depth Ratio	8.98	9.80	10.70	10.80		
Entrenchment Ratio	8.71	7.80	7.90	7.50		
Average Width of Flood Prone Area = 115						



APPENDIX C. Bank Full Events

Photo Log

Bank Full Event February 15th, 2007


02/15/2007


02/15/2007


02/15/2007


02/15/2007


02/15/2007


02/15/2007

APPENDIX D. Profile Raw Data

Data Tables
Pebble Count Graphs

Visual Morphological Stability Assessment

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

Feature Category		
Riffle 1	Present?	Yes - constructed
	Stable?	Yes - minor migration
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
Riffle 2	Present?	Natural riffle forming on it's own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	Yes
Riffle 3	Present?	Natural riffle forming on it's own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	Yes
Riffle 4	Present?	Yes - constructed
	Stable?	No - Beaver took advantage of this problem area; pool formed below beaver dam, remains of riffle have deposited about 30 feet downstream
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	No
Riffle 5	Present?	Natural riffle forming on it's own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	Yes
Riffle 6	Present?	Natural riffle forming on it's own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	Yes
Riffle 7	Present?	Natural riffle forming on it's own
	Stable?	N/A
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	Yes

Visual Morphological Stability Assessment

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

Feature Category		
Riffle 1	Present?	Yes - constructed
	Stable?	Yes
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
Riffle 2	Present?	Yes - constructed
	Stable?	Yes - most substrate seems to be on left bank, water is severly down
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
Riffle 3	Present?	Yes - appears to be a constructed riffle between two log sills, all sand but functiong as a riffle
	Stable?	Yes
	Minimal evidence of embedding/fining?	Peeble Count actually done on what is now being called Riffle 4
	Length Appropriate	Yes
Riffle 4	Present?	Yes
	Stable?	Yes
	Minimal evidence of embedding/fining?	Yes
	Length Appropriate	Yes
Riffle 5	Present?	This appears to be a riffle made up of substrate washed out of the upstream riffles
	Stable?	Yes
	Minimal evidence of embedding/fining?	Subsrtate measured out larger this year, smaller substrate seems to be washing out of the reach
	Length Appropriate	Yes

Visual Morphological Stability Assessment

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

Feature Category		
Riffles	Present?	12 counted, substrate still sand
	Stable?	Yes >99%
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	YES

Visual Morphological Stability Assessment

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

Feature Category		
Riffles	Present?	Not really, depths were measured in order to count and measure pools - no other features noted
	Stable?	YES
	Minimal evidence of embedding/fining?	N/A
	Length Appropriate	N/A

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 3 (480 lf) Same as UT2

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 4 (350 lf) Same as UT2

Visual Morphological Stability Assessment

Project: Pott Creek
Reach: UT 5 (40 lf) Same as UT2

Table X. Categorical Stream Feature Visual Stability Assessment

Reach:	Pott Creek (1000 lf)
Feature	**MY 2007**
Riffles	100
Pools	57
Thalweg	75
Vanes	100

Reach:	Rhodes Mill (500 lf)
Feature	**MY 2007**
Riffles	67
Pools	75
Thalweg	87.5
Vanes	100

Reach:	UT 1 (600 lf)
Feature	**MY 2007**
Riffles	100
Pools	100
Thalweg	95
Vanes	100

Reach:	UT 2 (350 lf)
Feature	**MY 2007**
Riffles	n/a
Pools	100
Thalweg	100
Vanes	n/a

Reach:	UT 3 (480 lf)
Feature	**MY 2007**
Riffles	n/a
Pools	100
Thalweg	100
Vanes	100

Reach:	UT 4 (350 lf)
Feature	**MY 2007**
Riffles	n/a
Pools	100
Thalweg	100
Vanes	n/a

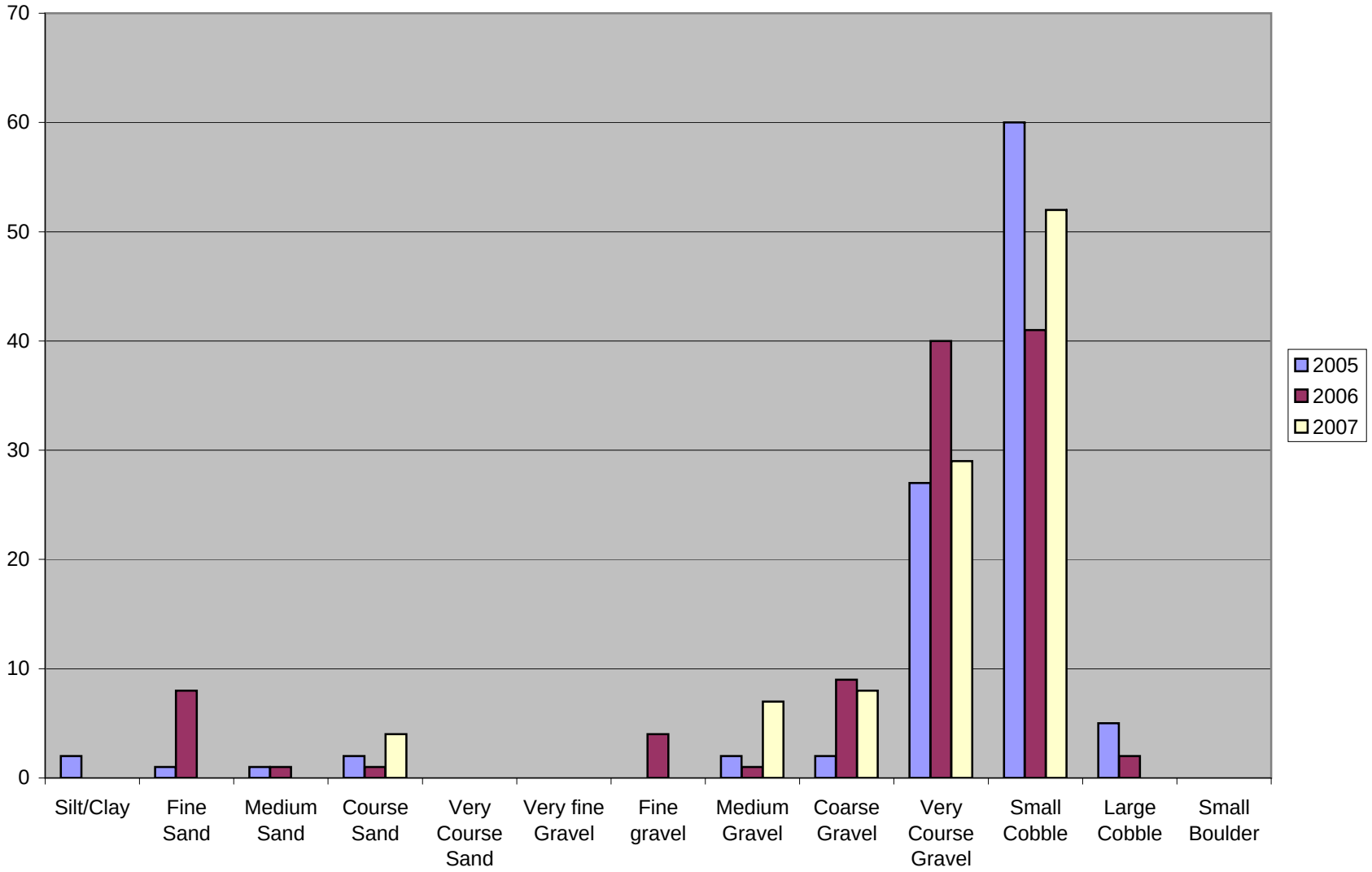
Pott Creek

Feature	Length (ft)	Depth (in)	Comments
Pool 1	31.43	8.70	
Glide	95.80		Thalwag right of center
Riffle 1	37.99		Constructed riffle - Sand bar with vegetation in riffle; some migration below bottom log sill - Pebble Count
Run	21.75		Thalwag centered
Pool 2	14.96	10.20	
Glide	204.36		Thalwag centered through most of this long featureless section
Deep section near structure	14.93	12.00	Pool 2a
Glide 2a	19.13		thalwag centered
Riffle 2	81.69		naturally forming sand riffle
Run	0.00		
Pool 3	26.54	8.5, 12	
Glide	66.86		Thalwag centered
Riffle 3	10.47		naturally forming sand riffle
Run	0.00		
Pool 4	23.72	9.75	
Glide	49.74		Thalwag centered
	31.33	15.50	formerly Riffle 4, beaverdam dismantled above first log sill of constructed riffle; "pool" has formed between the 2 log sills
Riffle 4	9.45		Peeble Count, remains of stone from constructed riffle have gathered here
Run	13.75		thalwag centered
Pool 5	8.30	11.00	
Glide	55.87		Thalwag left of center
Riffle 5	0.00		
Run	0.00		
Pool 6	19.16	10.50	
Glide	48.26		thalwag centered
Riffle 6	34.65		naturally forming sand riffle
Run	20.44		thalwag right of center
Pool 7	39.27	10.98	
Glide	65.09		Thalwag centered
Riffle 7	11.88		naturally forming sand riffle
Run	26.15		Thalwag centered
	1082.97		

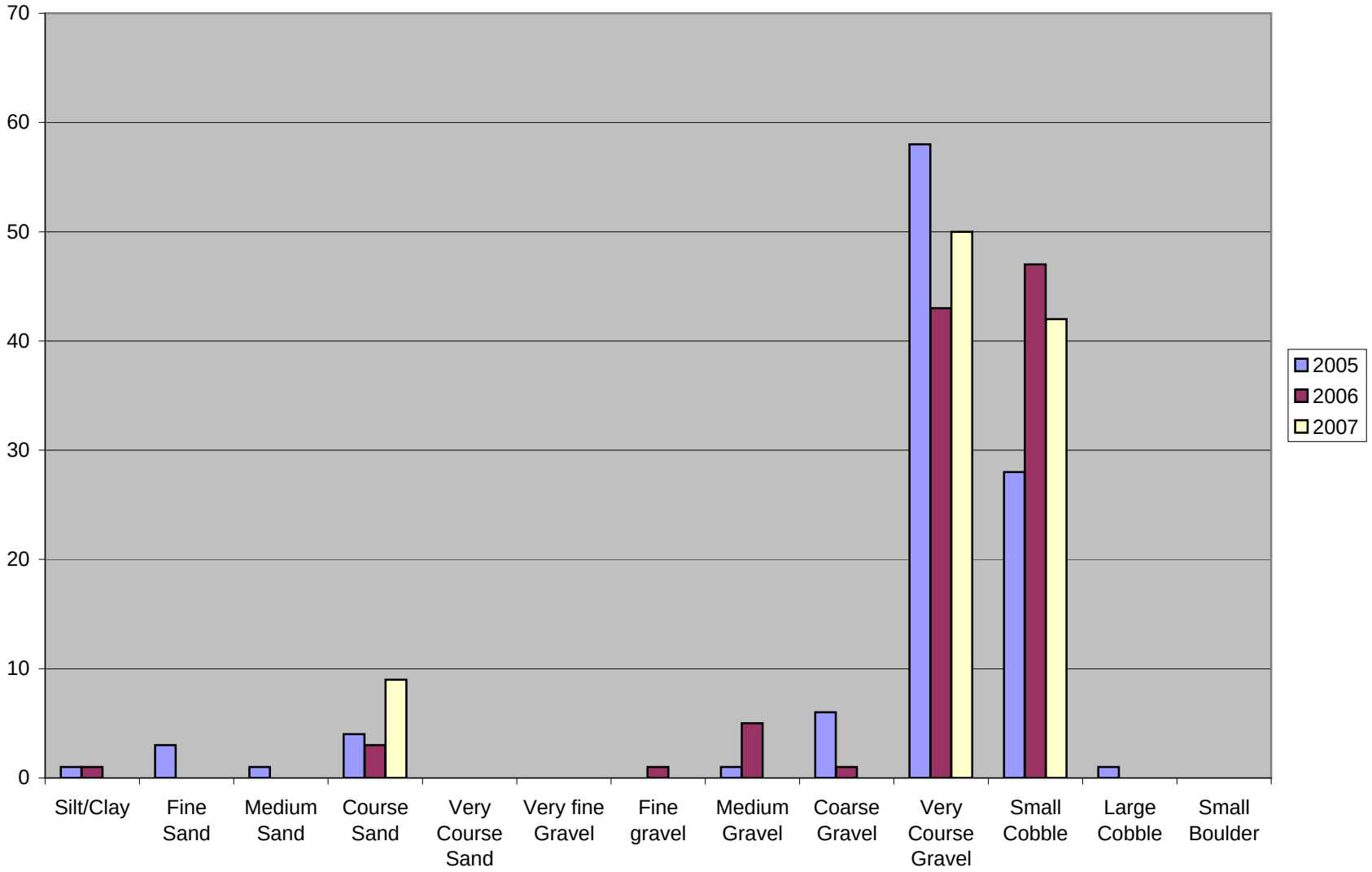
	Avg. Pool to Pool	Avg. Pool Length	Max Pool Depth
Proposed	**172**	**101.3**	**n/a**
MY1 2005	**95.86**	**69.64**	**n/a**
MY2 2006	**99.42**	**40.95**	**n/a**
MY3 2007	**136.06**	**23.34**	**12**
MY4 2008			
MY5 2009			

Pott Creek	Riffle 1			Riffle 2		
	2005	2006	2007	2005	2006	2007
Silt/Clay	2			1	1	
Fine Sand	1	8		3		
Medium Sand	1	1		1		
Course Sand	2	1	4	4	3	9
Very Course Sand						
Very fine Gravel						
Fine gravel		4			1	
Medium Gravel	2	1	7	1	5	
Coarse Gravel	2	9	8	6	1	
Very Course Gravel	27	40	29	58	43	50
Small Cobble	60	41	52	28	47	42
Large Cobble	5	2		1		
Small Boulder						
	102	107	100	103	101	101

Pott Creek Riffle 1 Peeble Count



Pott Creek Riffle 2 Peeble Count



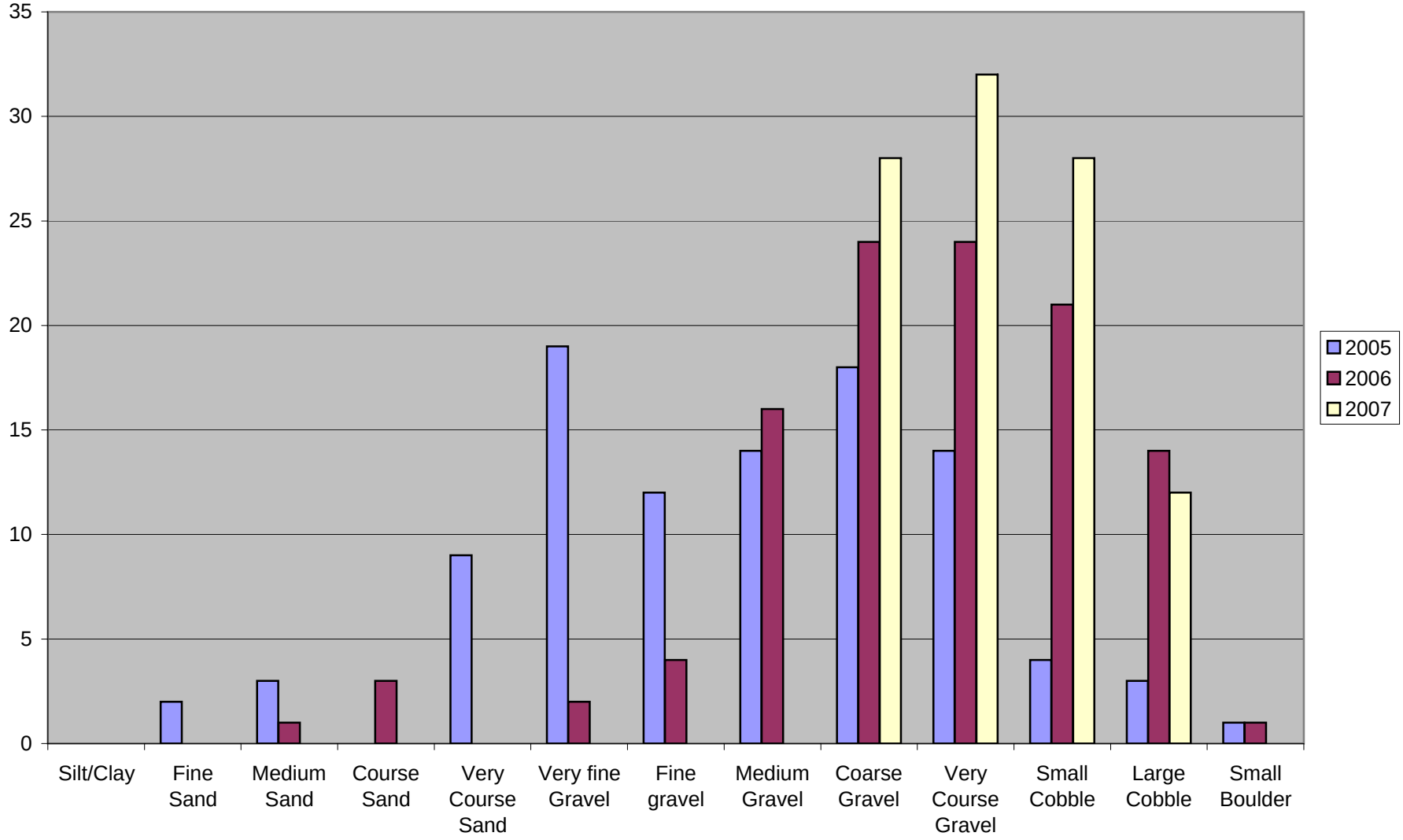
Rhodes Mill

Feature	Length (Ft)	Depth (in)	Comments
Pool 1	50.14	16.50	
Glide	23.79		Thalwag centered
Riffle 1	28.87		vegetated island closer to right bank, Pebble Count
Run	6.63		Thalwag centered
Pool 2	11.38	14.20	
Glide	73.46		Thalwag centered
Riffle 2	34.09		riffle in same shape as previous years observations, migrated below log sill, substrate is mostly on sand bar on left bank, Pebble Count
Pool 3	23.13	9.50	
Glide	35.04		Thalwag centered
Formerly Riffle 3	8.96		Constructed riffle is completey out side both sills, substrate has migrated downstream, took Pebble Count downstream where subtrate is currently (Riffle 4)
Pool 4	3.38	11.60	water goes around bottom log sill, bad spot in right bank, creates deep pool area
Glide	19.91		Thalwag centered
Riffle 4	17.61		Peeble Count
Run	3.97		Thalwag centered
Pool 5	10.14	16.25	
Glide	26.18		Thalwag slightly left of center
Riffle 5	20.47		Peeble Count
	397.15		

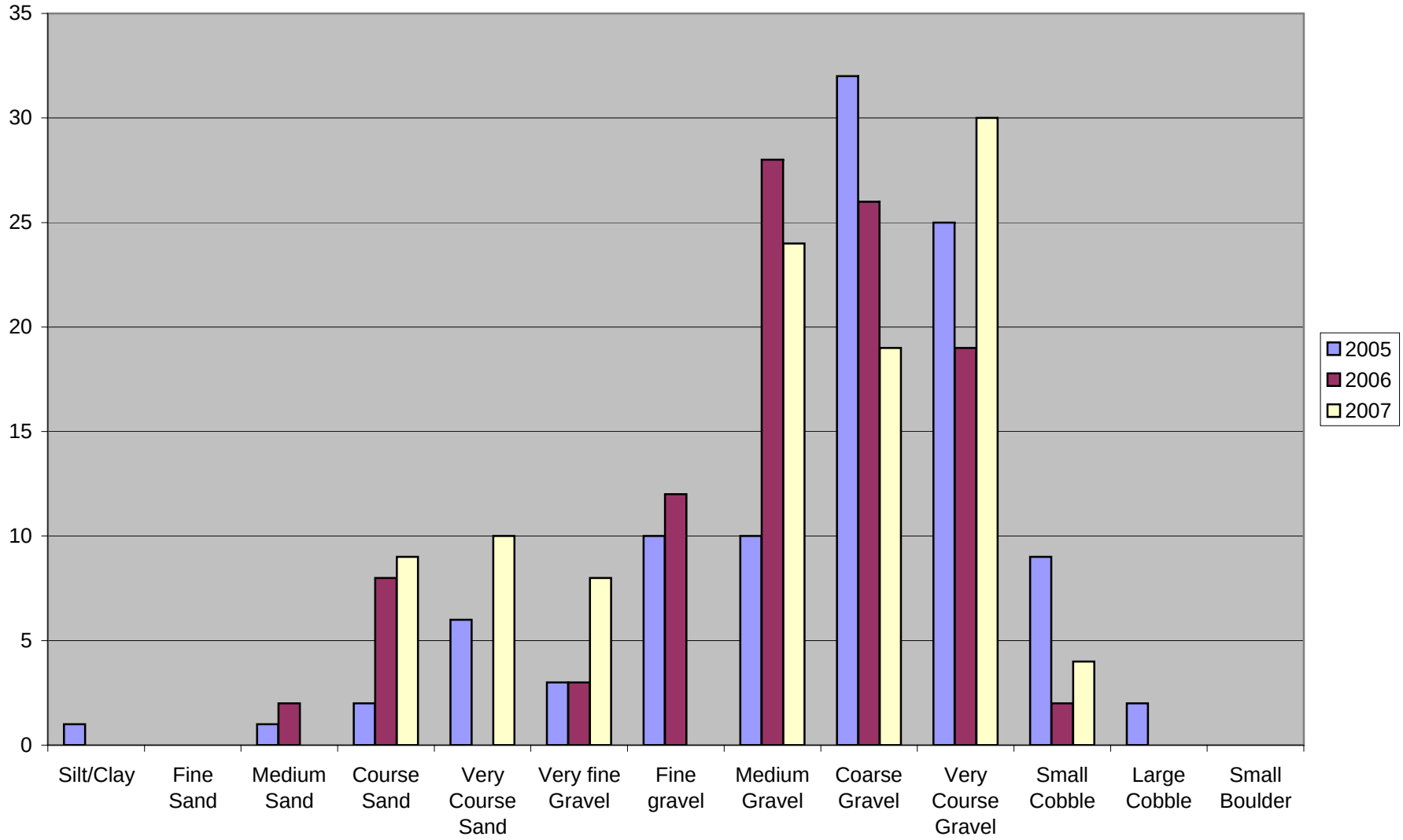
	Avg. Pool to Pool Spacing	Avg. Pool Length	Max Pool Depth
Proposed	**108.6**	**70.2**	**n/a**
MY1 2005	**109.55**	**19.08**	**n/a**
MY2 2006	**93.81**	**24.90**	**n/a**
MY3 2007	**63.08**	**19.63**	**16.5**
MY4 2008			
MY5 2009			

Rhodes Mill	Riffle 1			Riffle 2			Riffle 3			Riffle 5	
	2005	2006	2007	2005	2006	2007	2005	2006	2007	2006	2007
Silt/Clay				1			1			1	
Fine Sand	2						2				
Medium Sand	3	1		1	2						
Course Sand		3		2	8	9	2				
Very Course Sand	9			6		10	6		4	8	
Very fine Gravel	19	2		3	3	8	14		13	6	
Fine gravel	12	4		10	12		8			15	
Medium Gravel	14	16		10	28	24	18	2	7	38	
Coarse Gravel	18	24	28	32	26	19	15	6	13	27	25
Very Course Gravel	14	24	32	25	19	30	18	40	55	5	10
Small Cobble	4	21	28	9	2	4	7	17	8		30
Large Cobble	3	14	12	2			6	33			37
Small Boulder	1	1					3	4			
	99	110	100	101	100	104	100	102	100	100	102

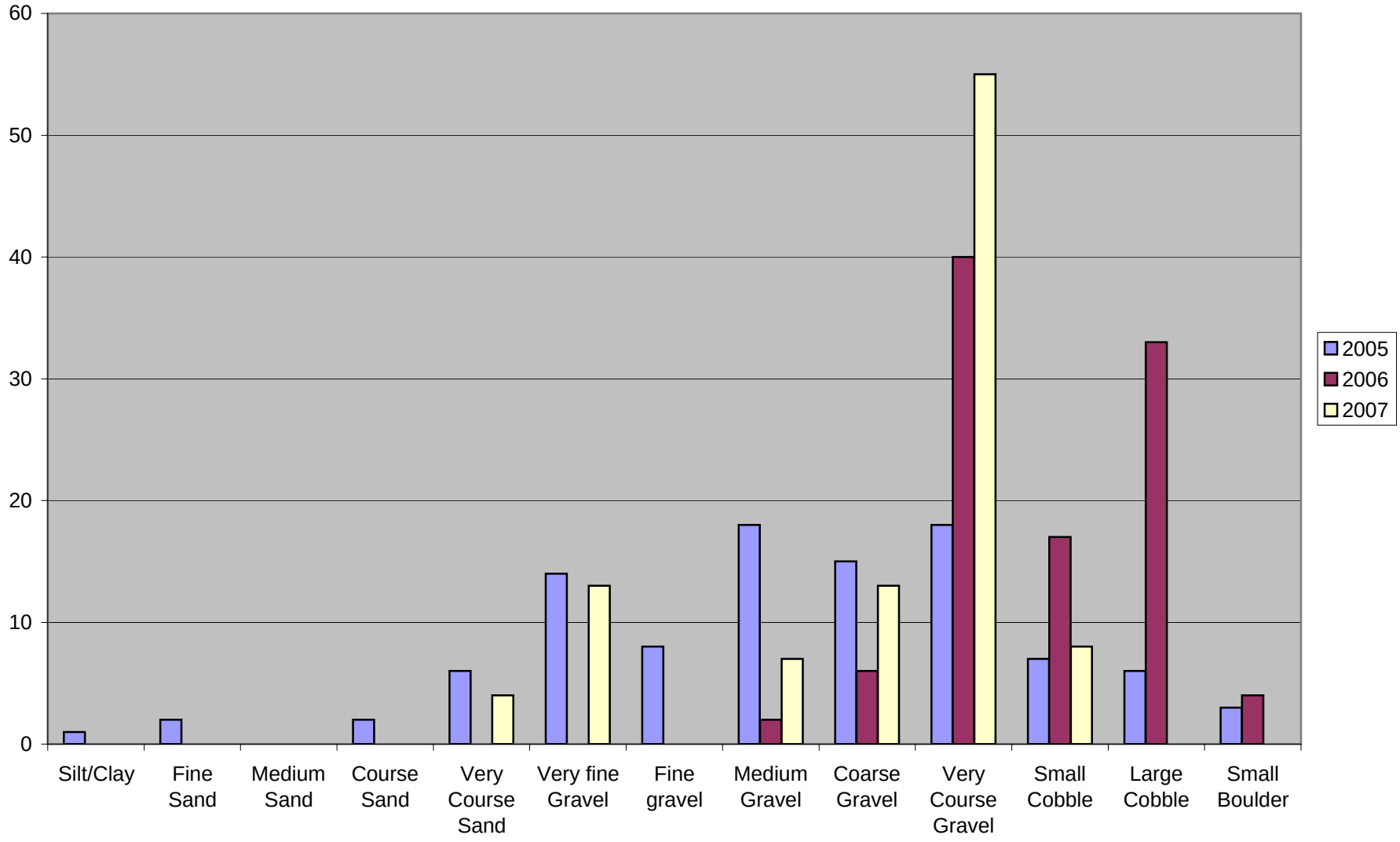
Rhodes Mill Riffle 1 Peeble Count



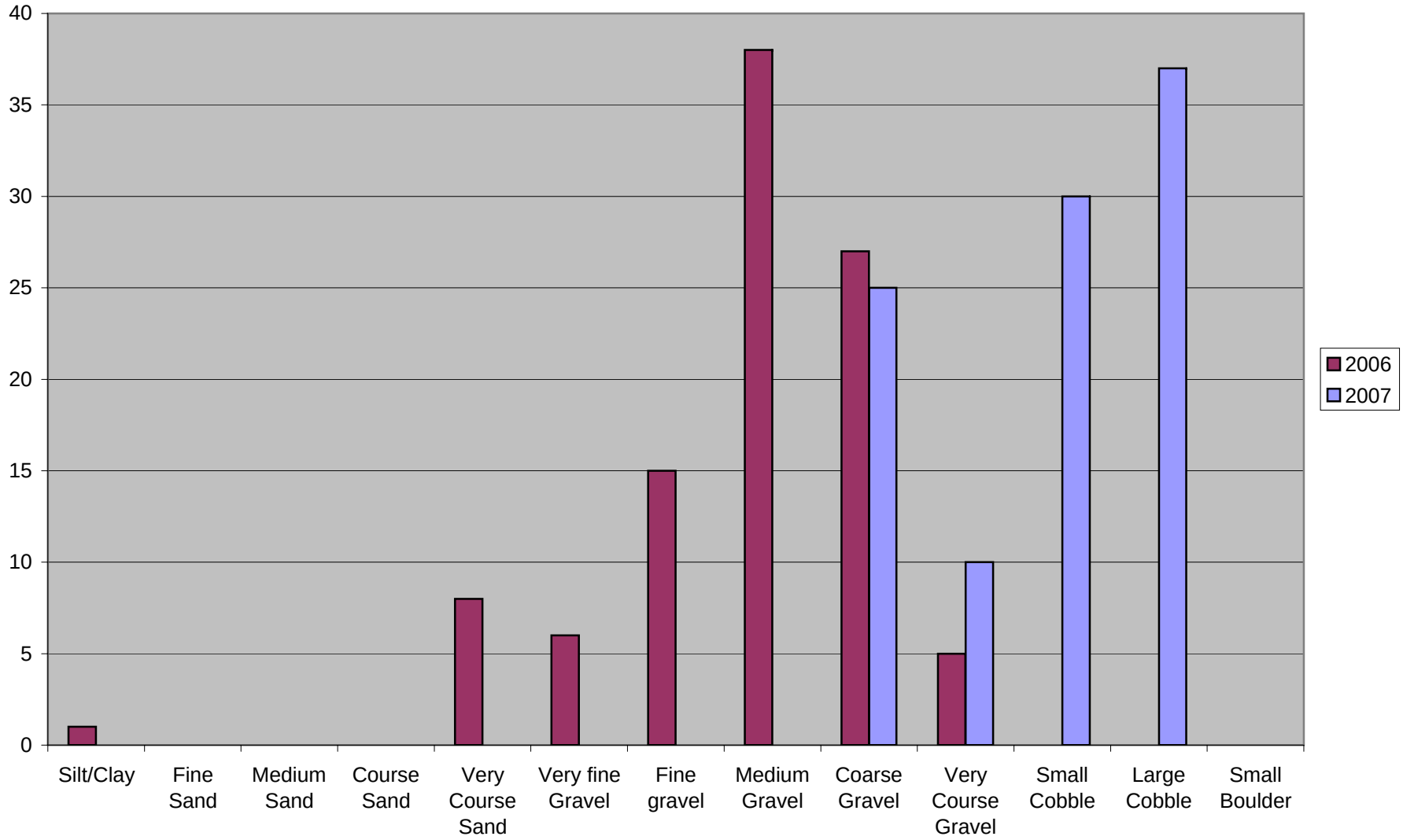
Rhodes Mill Riffle 2 Peeble Count



Rhodes Mill Riffle 3/4 Peeble Count



Rhodes Mill Riffle 5 Peeble Count



Feature	Length ft	Depth ft	Comments
Riffle 1	3.58	0.229	
Run	5.75	0.292	
Pool 1	4.33	0.406	
Glide	3.33	0.328	
Riffle 2	44	0.156	
Run	11.58	0.188	Pool to Pool Spacing: 58.91
Pool 2	4.17	0.784	
Glide	22.17	0.177	
Riffle 3	15.42	0.167	
Run	1.75	0.245	Pool to Pool Spacing: 39.34
Pool 3	2.58	0.656	
Glide	20.67	0.188	
Riffle 4	10.33		
Run	2.33	0.135	Pool to Pool Spacing: 72.62
Pool 4	3	0.708	
Glide	17.92	0.201	
Riffle 5	5.83	0.167	
Run	1.42	0.24	Pool to Pool Spacing: 25.17
Pool 5	10.75	0.495	
Glide	8.17	0.156	
Riffle 6	16.75	0.125	
Run	1.75	0.229	Pool to Pool Spacing: 26.67
Pool 6	2.33	0.74	Structure??
Glide	41.66	0.292	
Riffle 7	4.25	0.201	
Run	1.5	0.24	Pool to Pool Spacing: 47.41
Pool 7	1.75	0.854	
Glide	8.33	0.167	
Riffle 8	7.67	0.125	
Run	2.75	0.177	Pool to Pool Spacing: 18.75
Pool 8	2.33	0.495	
Glide	9.66	0.188	
Riffle 9	5	0.177	
Run	1.5	0.188	Pool to Pool Spacing: 16.16
Pool 9	1.42	0.573	
Glide	169.49	0.238	long section of non-descript bed form
Riffle 10	9	0.245	
Run	7.83	0.156	Pool to Pool Spacing: 186.32
Pool 10	2.25	0.833	
Glide	32.09	0.208	
Riffle 11	5	0.161	
Run	1.83	0.24	Pool to Pool Spacing: 38.92

UT1

	Avg. Pool to Pool Spacing	Avg. Pool Length	Max Pool Depth
Proposed	**48.2**	**28.8**	**2.6***
MY1 2005	**34.9**	**16.75**	**n/a**
MY2 2006	**n/a**	**n/a**	**n/a**
MY3 2007	**57.7**	**3.51**	**0.854**
MY4 2008			
MY5 2009			

*from bankfull

General Comments: Pools seem to be shortening up, mostly associatied with rock and log structures, however the bed form diversity is excellent and the r-r-p-g sequence is good except for one unusually long "Glide".

Pool 11	5.25	0.458	
Glide	80.24	0.236	
Riffle 12	21.08	0.375	
Run	3.33	0.201	Pool to Pool Spacing: 104.65
Pool 12	2	0.75	
Glide	6	0.167	
	653.12		

UT2

Feature	Length ft	Depth ft	Comments
	0	0.11	
	33.55	0.13	
Head of Pool	12.86	0.23	
Foot of Pool	26.67	0.17	Length of pool: 39.53
	12.12	0.13	
	21.12	0.15	
	25.98	0.17	
	12.04	0.25	
	2.16	0.17	Pool spacing: 73.42; Cattails
Head of Pool	17.09	0.42	
	20.70	0.42	
Foot of Pool	27.75	0.32	Length of pool: 65.54
	13.91	0.23	
	25.62	0.16	
	16.04	0.26	
	11.51	0.21	
	23.52	0.33	Pool spacing: 90.6
Head of Pool	26.50	0.21	
Foot of Pool	26.04		Length of pool: 52.54
	355.17		

	Avg. Pool to Pool Spacing	Avg. Pool Length	Max Pool Depth
Proposed	**24.6**	**14.9**	**n/a**
MY1 2005	**38.16**	**20.43**	**n/a**
MY2 2006	**23.19**	**25.77**	**n/a**
MY3 2007	**82.01**	**52.54**	**0.42**
MY4 2008			
MY5 2009			

UT3

Feature	Length ft	Depth ft	Comments
Pool 1	0.00	0.367	
	17.97	0.083	
	53.82	0.250	Cattails
	13.45	0.250	Pool Spacing: 67.27, very soft bottom
	28.70	0.383	
Pool 2	28.40	0.417	Pool Length: 87.21, Cattails
	30.11	0.300	Cattails
	22.57	0.308	Pool Spacing: 22.57, cattails
Pool 3	27.32	0.433	Pool Length: 71.53
	15.97	0.383	
	28.24	0.283	Cattails
	14.27	0.308	Pool Spacing: 14.27, cattails
	20.73	0.417	
	17.32	0.417	
Pool 4	11.51	0.450	Pool Length: 67.24
	17.68	0.450	
	10.79	0.267	Pool Spacing: 10.79
Pool 5	20.66	0.717	Pool Length: 55.95
	23.58	0.500	
	11.71	0.283	
	17.71	0.225	
	25.49	0.367	
	16.06		
	474.07		

	Avg. Pool to Pool Spacing	Avg. Pool Length	Max Pool Depth
Proposed	**37.1**	**23.3**	**n/a**
MY1 2005	**25.5**	**21.12**	**n/a**
MY2 2006	**n/a**	**n/a**	**n/a**
MY3 2007	**28.7**	**70.48**	**0.717**
MY4 2008			
MY5 2009			

UT4

Feature	Length ft	Depth ft	Comments
	0.00	0.183	
	15.91	0.208	
	10.92	0.225	
	8.19	0.200	
	17.84	0.250	
Pool 1	8.40	0.375	Pool Length: 9.98
	11.58	0.258	
	17.35	0.217	
	9.87	0.283	
	15.78	0.300	
	8.63	0.200	
	28.31	0.283	Pool Spacing: 79.94
Pool 2	8.33	0.383	Pool Length: 22.57
	14.24	0.217	
	23.75	0.208	
	8.13	0.267	
	9.58	0.250	
	10.10	0.300	Pool Spacing: 51.56
Pool 3	13.05	0.442	Pool Length: 23.87
	10.82	0.358	
	18.40	0.333	
	13.71	0.367	
	9.25	0.275	grass
	7.71	0.217	grass
	13.55	0.292	
	15.06	0.125	
	14.56	0.133	
		0.617	in Pott Creek
	343.02		

	Avg. Pool to Pool Spacing	Avg. Pool Length	Max Pool Depth
Proposed	**n/a**	**n/a**	**n/a**
MY1 2005	**n/a**	**n/a**	**n/a**
MY2 2006	**n/a**	**n/a**	**n/a**
MY3 2007	**65.75**	**18.81**	**0.442**
MY4 2008			
MY5 2009			

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	0	100
	Facet Grade appears stable?	2	2	0	100%
	Minimal evidence of embedding/fining?	2	2	N/A	
	Length Appropriate?	N/A	2	N/A	100
Pools	Present(not subject to severe agrad.)?	4	N/A	3	57
	Length Appropriate?	4	N/A	3	57
Thalweg	Upstream of meander bend (run) centering?	3	N/A	1	75
	Downstream of meander bend (glide) centering?	6	N/A	2	75
Bed General	General channel bed aggradation (bar formation)	1	N/A	N/A	
	Channel bed degradation - down or head-cutting?	0	N/A	N/A	
Vanes	Free of back or arm scour?	24	24	0	100
(Entire project) Since previous report	Free of structural failure?	24	24	0	100

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?	2	3	N/A	67
	Armor Stable (no displacement)?	3	3	0	100
	Facet Grade appears stable?	3	3	0	100
	Minimal evidence of embedding/fining?	3	3	N/A	
	Length Appropriate?	3	3	N/A	
Pools	Present(not subject to severe agrad.)?	4	N/A	1	75
	Length Appropriate?	4	N/A	1	75
Thalweg	Upstream of meander bend (run) centering?	2	N/A	0	100
	Downstream of meander bend (glide) centering?	4	N/A	1	75
Bed General	General channel bed aggradation (bar formation)	2	N/A	N/A	
	Channel bed degradation - down or head-cutting?	0	N/A	N/A	
Vanes	Free of back or arm scour?	5	5	0	100
(Entire project)	Free of structural failure?	5	5	0	100

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?	12	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?	YES	N/A	N/A	
Pools	Present(not subject to severe agrad.)?	12	N/A	N/A	
	Length Appropriate?	YES	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	YES	N/A	N/A	
	Downstream of meander bend (glide) centering?	YES	N/A	1	
Bed General	General channel bed aggradation (bar formation)	NONE	N/A	N/A	
	Channel bed degradation - down or head-cutting?	NONE	N/A	N/A	
Vanes	Free of back or arm scour?	2	3	0	100%
(Entire project)	Free of structural failure?	2	3	0	100%

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?	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.)?	3	N/A	N/A	
	Length Appropriate?	NO	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	YES	N/A	N/A	
	Downstream of meander bend (glide) centering?	YES	N/A	N/A	
Bed General	General channel bed aggradation (bar formation)	NONE	N/A	N/A	
	Channel bed degradation - down or head-cutting?	NONE	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?	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.)?	5	N/A	N/A	
	Length Appropriate?	NO	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	YES	N/A	N/A	
	Downstream of meander bend (glide) centering?	YES	N/A	N/A	
Bed General	General channel bed aggradation (bar formation)	NONE	N/A	N/A	
	Channel bed degradation - down or head-cutting?	NONE	N/A	N/A	
Vanes	Free of back or arm scour?	1	1	0	100%
(Entire project)	Free of structural failure?	1	1	0	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.)?	3	N/A	N/A	
	Length Appropriate?	YES	N/A	N/A	
Thalweg	Upstream of meander bend (run) centering?	YES	N/A	N/A	
	Downstream of meander bend (glide) centering?	YES	N/A	N/A	
Bed General	General channel bed aggradation (bar formation)	NONE	N/A	N/A	
	Channel bed degradation - down or head-cutting?	NONE	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