STILLHOUSE CREEK STREAM RESTORATION – Project # 363
2010 FINAL MONITORING REPORT – YEAR 4
January 25, 2011

Submitted to:

North Carolina Department of
Environment and Natural Resources
Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699-1652

Designed by:
United States Department of Agriculture
Natural Resources Conservation Services (NRCS)

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CONDUCTED FOR THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

APPENDICES

I. Executive Summary/Project Abstract

As outlined in the 2005 Restoration Plan, the Stillhouse Creek Restoration Project was designed to achieve the following goals and objectives:

- Reduce stream bank erosion and prevent downcutting by restoring degraded, incised stream to stable, referenced condition
- Prevent stream erosion from continuing to threaten existing building foundation located near the head of the stream by implementing natural stream design restoration
- Improve retention of nutrients by restoring woody vegetation to riparian buffer
- Increase environmental education opportunities within a park setting
- Improve wildlife habitat within the conservation easement area and in-stream
- Enhance habitat for wetland dependent plants and animals by use of shallow wetland habitat areas in the floodplain
- Improve water quality by providing temporary stormwater storage in shallow wetland habitat areas in the floodplain
- Improve aesthetics of stream corridor

In June 2010 RJG&A staff used the CVS-EEP monitoring protocol, level 2, to evaluate the planted woody stem survival in four permanent vegetation plots. Generally, planted woody stem survival and vigor are high. Planted stem density lags behind in plot 2 in Reach 2, but vigor is excellent. The average live planted woody stem density was 313 live stems per acre; total (planted and volunteer) stem density was 1,284 live stems per acre. For buffer areas that are eligible for buffer restoration credits (1.12 acres out of the 2-acre conservation easement), the vegetation success criteria is 320 stems/acre after Year 5. Supplemental planting for areas with low woody stem densities will be conducted in 2011. There are scattered woody invasives, including *Ligustrum sinense* (Chinese privet) and *Ailanthus altissima* (tree of heaven), throughout the conservation easement. Treatment and removal of targeted invasive exotic plants within the project area was conducted in 2010 and will continue through the 2011 growing season.

RJG&A staff collected cross-section, longitudinal, and pebble data in July 2010. Overall, the site is maintaining its as-built dimension, pattern, and profile. Evaluation of the crest gauge on 16 March 2010 and 14 July 2010 indicate that several bankfull events have occurred in 2010. This was supported by on-site qualitative evidence.

Summary information/data related to the occurrence of items such as beaver or encroachment and statistics related to performance of various project and monitoring elements can be found in the tables and figures in the report appendices. Narrative background and supporting information formerly found in these reports can be found in the Baseline Monitoring Report (formerly Mitigation Plan) and in the Mitigation Plan (formerly the Restoration Plan) documents available on EEP's website. All raw data supporting the tables and figures in the appendices are available from EEP upon request.

II. Methodology

Monitoring methodologies follow the current EEP-provided templates and guidelines (Lee *et al* 2006). Photographs were taken digitally. A Trimble Geo XT handheld mapping-grade unit was used to locate cross section, vegetation corner, photopoint, locations and collect problem area locations. Additional notations were written on the Current Condition Plan View maps created in March 2010.

2.1. Stream Methodology

Methods employed were a combination those specified in the Mitigation Plan, the First Annual Monitoring Report, and standard regulatory guidance and procedures documents. Stream monitoring data was collected using the techniques described in USACE Stream Mitigation Guidelines, US Forest Service's Stream Channel Reference Sites, and Applied River Morphology (USACE, 2003; Harrelson et al., 1994; Rosgen, 1996).

A South Total Station was used to collect the longitudinal profile data. The location of bedform features, in-stream structures, bankfull, top of bank, water depth, and permanent benchmarks were collected. Data were analyzed using RIVERMorph and Microsoft Excel. Stations were assigned based on a stream centerline created from the as-built survey data. Cross-section data was collected using a Nikon automatic level and analyzed using RIVERMorph. Elevations for the longitudinal profile and cross sections were derived from known permanent benchmarks. Photographs facing downstream were taken at each cross section.

2.2. Vegetation Methodology

Four representative vegetation survey plots were selected and installed in reaches 1, 2, 3 and 4 during October 2007, pursuant to the EEP/CVS vegetation monitoring protocol (Lee *et al* 2006). All plots measure 100 square meters and are either 10 meters by 10 meters, or five meters by 20 meters. The four corners of each plot (either 10x100 or 5x20 feet) were marked with 18-inch long, one-half-inch diameter galvanized steel conduit.

For monitoring year 4, Level 1 (planted woody stems) and Level 2 (volunteer woody stems) data collection was performed in June 2010. Within each plot, each planted woody stem location (x and y) was recorded, and height and live stem diameter were recorded for each stem location. All planted stems were identified with pink flagging. Vegetation was identified using Weakley (Weakley 2007). Photos were taken of each vegetation plot from the 0,0 corner.

III. References

CDM (2005). *Stillhouse Creek Stream Restoration Project Sediment and Erosion Control Plan*. Provided by NCEEP, November 2007.

Harrelson, Cheryl, C. L. Rawlins, and John Potpondy. (1994). *Stream Channel Reference Sites: An Illustrated Guide to Field Technique*. USDA, Forest Service. General Technical Report RM-245.

Lee, Michael T., Peet, Robert K., Roberts, Steven D., Wentworth, Thomas R. (2006). *CVS-EEP Protocol for Recording Vegetation Version 4.0*. Retrieved October 30, 2006, from: http://www.nceep.net/business/monitoring/veg/datasheets.htm.

NC CRONOS (2010). North Carolina Climate Retrieval and Observations Network of the Southeast Database, Station NC-OR-6, Orange County, NC. Retrieved August 25, 2010 from: http://www.ncclimate.ncsu.edu/cronos.

Radford, A.E., H.E. Ahles, and C.R. Bell (1968). *Manual of the Vascular Flora of the Carolinas*. University of North Carolina Press. Chapel Hill, NC.

Rosgen, D L (1996) *Applied River Morphology*. Wildland Hydrology Books, Pagosa Springs, CO.

Rosgen, DL. (1997). "A Geomorphological Approach to Restoration of Incised Rivers. In *Proceedings of the Conference on Management of Landscapes Disturbed by Channel Incision*, ed. S.S.Y. Wang, E.J. Langendoen and F.B. Shields, Jr. University of Mississippi Press, Oxford, MS.

USACOE (2003) *Stream Mitigation Guidelines*. USACOE, USEPA, NCWRC, NCDENR-DWQ

Weakley, Alan (2007). *Flora of the Carolinas, Virginia, Georgia, and Surrounding Areas*. Retrieved March 27, 2007 from: http://www.herbarium.unc.edu/flora.htm.

Appendix A. Project Vicinity Map and Background Tables

Take I-85 to the Town of Hillsborough. Take exit 164 and head north on South Churton Street for 1.3 miles. Turn east on East Margaret Lane and then right on South Cameron Street. Parking is available in a government lot on the left/west side of South Cameron.

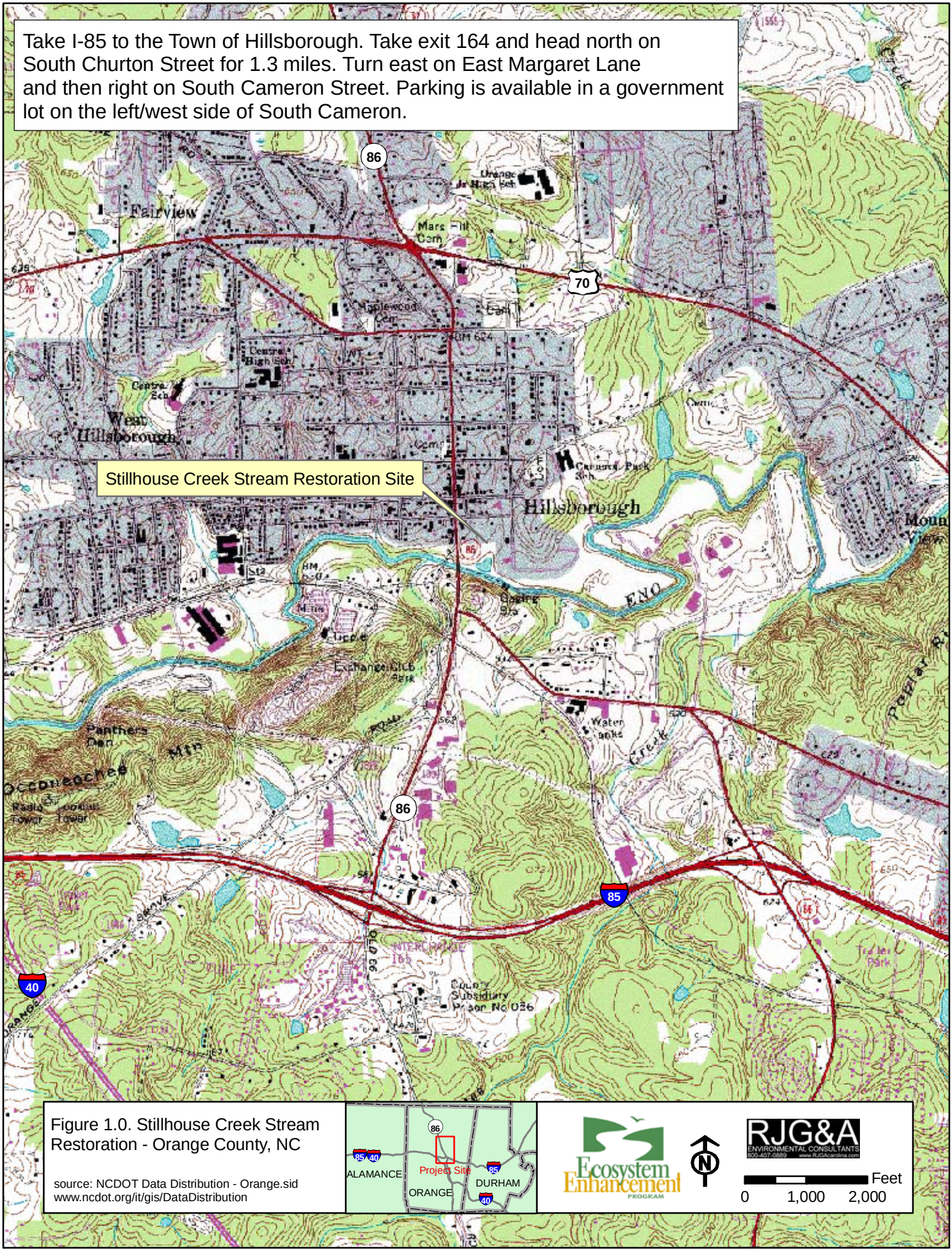


Figure 1.0. Stillhouse Creek Stream Restoration - Orange County, NC

source: NCDOT Data Distribution - Orange.sid
www.ncdot.org/it/gis/DataDistribution

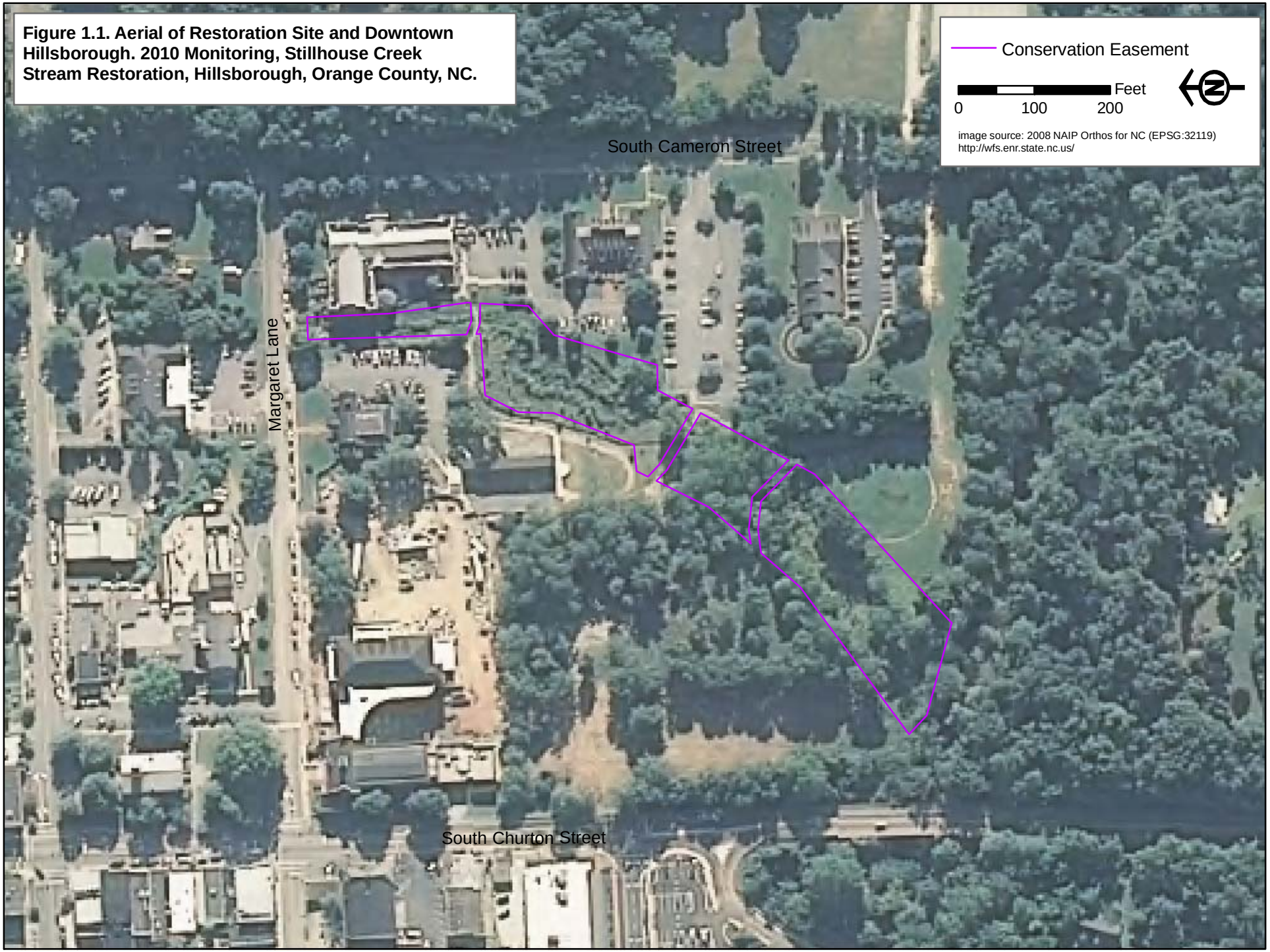


Figure 1.1. Aerial of Restoration Site and Downtown Hillsborough. 2010 Monitoring, Stillhouse Creek Stream Restoration, Hillsborough, Orange County, NC.
Conservation Easement
Feet
0
100
200
image source: 2008 NAIP Orthos for NC (EPSG:32119)
http://wfs.enr.state.nc.us/
South Cameron Street
Margaret Lane
South Churton Street

Table 1.0 Project Components
Stillhouse Creek Stream Restoration – EEP Project #363

Project Component or Reach ID	Existing Feet/Acres	Restoration Level	Approach	Footage or Acreage	Stationing	Mitigation Ratio	Mitigation Units	BMP Elements[1]	Comment
Reach I	748	R	P2	223 lf	00+00-02+23	1:1	223		Shallow pools, small meanders, and steep riffles
Reach II		R	P1	400 lf	02+35-6+35	1:1	400		Realigned, reconnected to floodplain
Reach III		EI	P4	196 lf	6+35-6+85, 6+97-8+43	1.5:1	131		Banks stabilized
Reach IV	314	R	P3	355 lf	8+55-12+10	1:1	355		Connected to floodprone area
Riparian Buffer	NA	R		1.12		1:1	1.12		

1 = BR = Bioretention Cell; SF = Sand Filter; SW = Stormwater Wetland; WDP = Wet Detention Pond; DDP = Dry Detention Pond; FS = Filter Strip; Grassed Swale = S; LS = Level Spreader; NI = Natural Infiltration Area, O = Other
CF = Cattle Fencing; WS = Watering System; CH = Livestock Housing

Table 1.1 Component Summations

Stillhouse Creek Stream Restoration – EEP Project #363

Restoration	Stream	Riparian		Non-Ripar	Upland	Buffer	
Level	(lf)	Wetland (Ac)		(Ac)	(Ac)	(Ac)	BMP
		Riverine	Non-Riverine				
Restoration	978					1.12	
Enhancement							
Enhancement I	196						
Enhancement II							
Creation							
Preservation							
HQ Preservation							
Totals (Feet/Acres)	**1174**	**0**		**0**	**0**	**2.1**	**0**
MU Totals	**1109**	**0**		**0**	**0**	**2.1**	0

Non-Applicable

Table 2. Project Activity and Reporting History
Stillhouse Creek Stream Restoration – EEP Project #363

Elapsed Time Since Grading Complete: 4 yrs 4 months
Elapsed Time Since Planting Complete: 4 yrs 4 Months
Number of Reporting Years[1]: 4

Activity or Deliverable	Data Collection Complete	Completion or Delivery
Restoration Plan	-	Nov-05
Final Design – 90%	-	Nov-05
Construction	-	Mar-06
Temporary S&E mix applied	-	NA
Permanent seed mix applied	-	NA
Bare Root Planting	-	Mar-06
Mitigation Plan/As-built	Aug-06	Dec-07
Year 1 Monitoring		Dec-07
Qualitative Evaluation	June and November 2007	
Vegetation	Oct-07	
Geomorphologic	Nov-07	
Year 2 Monitoring		Nov-08
Qualitative Evaluation	May and October 2008	
Vegetation	Aug-08	
Geomorphologic	Aug-08	
Year 3 Monitoring		Aug-09
Qualitative Evaluation	March and August 2009	
Vegetation	Aug-09	
Geomorphologic	Aug-09	
Year 4 Monitoring		Aug-10
Qualitative Evaluation	March and July 2010	
Vegetation	Jul-10	
Geomorphologic	Jul-10	

Bolded items are examples of those items that are not standard, but may come up and should be included
Non-bolded items represent events that are standard components over the course of a typical project.
The above are obviously not the extent of potential relevant project activities, but are just provided as example as part of this exhibit.
If planting and morphology are on split monitoring schedules that should be made clear in the table
1 = Equals the number of reports or data points produced excluding the baseline

Table 3. Project Contacts Table Stillhouse Creek Stream Restoration – EEP Project #363	
Designer Primary project design POC	NRCS Angela Greene
Construction Contractor Construction contractor POC	Fluvial Solutions Peter Jelenevsky
Survey Contractor Survey contractor POC	NA NA
Planting Contractor Planting contractor POC	Fluvial Solutions Peter Jelenevsky
Seeding Contractor Contractor point of contact	NA NA
Seed Mix Sources	NA
Nursery Stock Suppliers	Mellow Marsh
Monitoring Performers	Robert J. Goldstein & Associates 1221 Corporation Parkway, Raleigh NC 27610
Stream Monitoring POC	Sean Doig, (919) 872-1174
Vegetation Monitoring POC	Sean Doig, (919) 872-1174
Wetland Monitoring POC	NA

Table 4. Project Attribute Table

Stillhouse Creek Stream Restoration – EEP Project #363

Project County	Orange
Physiographic Region	Piedmont
Ecoregion	Carolina Slate Belt
Project River Basin	Neuse
USGS HUC for Project (14 digit)	'3020201030020
NCDWQ Sub-basin for Project	03-04-01
Within extent of EEP Watershed Plan?	No
WRC Hab Class (Warm, Cool, Cold)	Warm
% of project easement fenced or demarcated	25%
Beaver activity observed during design phase?	NA

Restoration Component Attribute Table

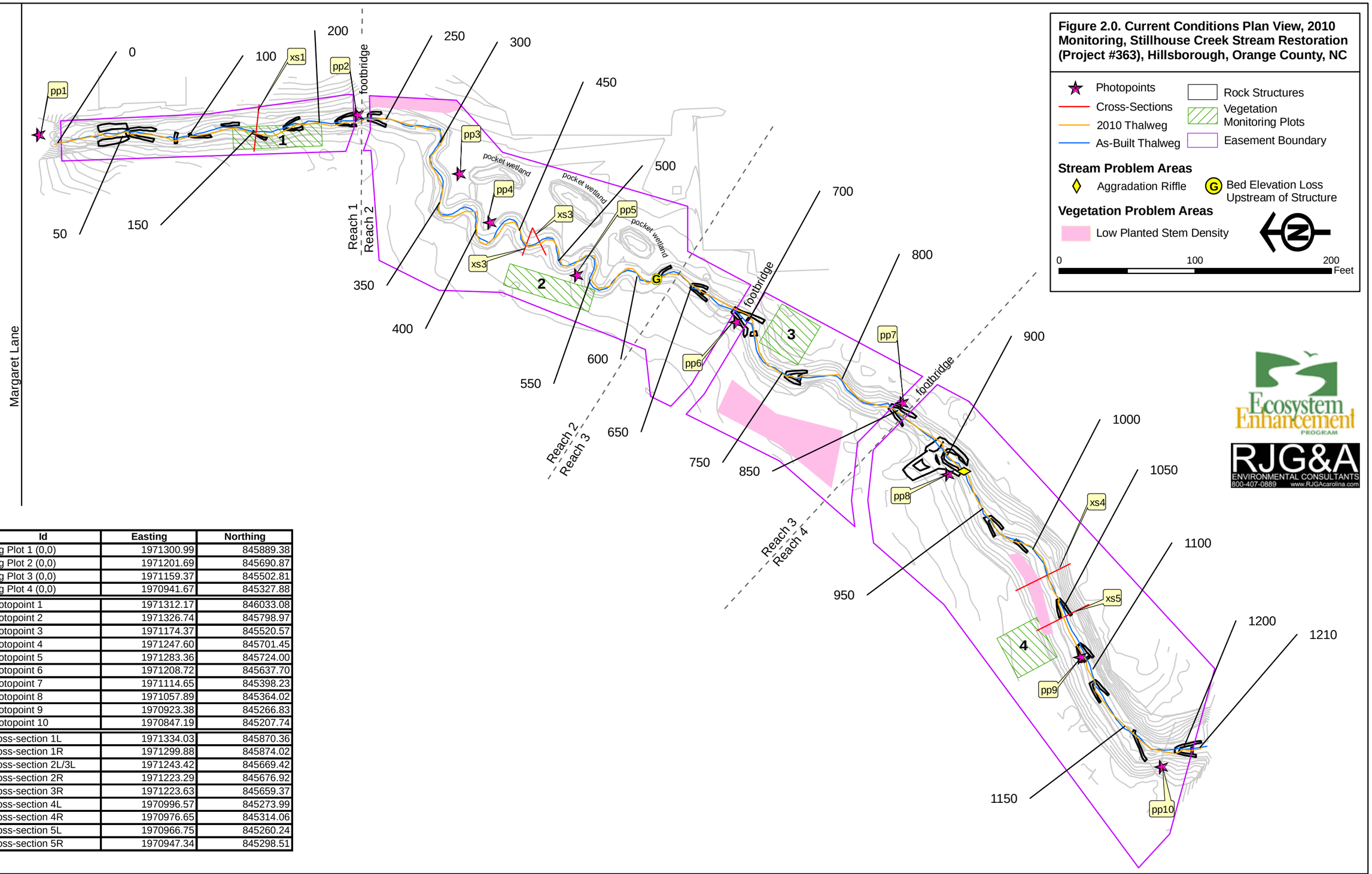
	Reach 1	Reach 2	Reach 3	Reach 4
Drainage area	0.19	0.20	0.21	0.22
Stream order	First			
Restored length (feet)	235	400	220	355
Perennial or Intermittent	Perennial			
Watershed type (Rural, Urban, Developing etc.)	Urban	Urban	Urban	Urban
Watershed LULC Distribution (e.g.)	-	-	-	-
Residential	-	-	-	-
Ag-Row Crop	-	-	-	-
Ag-Livestock	-	-	-	-
Forested	-	-	-	-
Etc.	-	-	-	-
Watershed impervious cover (%)	-	-	-	-
NCDWQ AU/Index number	27-2-(7)	27-2-(7)	27-2-(7)	27-2-(7)
NCDWQ classification	C-NSW	C-NSW	C-NSW	C-NSW
303d listed?	No	No	No	No
Upstream of a 303d listed segment?	No	No	No	No
Reasons for 303d listing or stressor	NA	NA	NA	NA
Total acreage of easement	2.09 acres			
Total vegetated acreage within the easement	-	-	-	-
Total planted acreage as part of the restoration	-	-	-	-
Rosgen classification of pre-existing	E4	E4	E4	G4c/1
Rosgen classification of As-built[1]	E4	E4	E4	B4/1
Valley type	-	-	-	-
Valley slope	0.012	0.012	0.012	0.0185
Valley side slope range (e.g. 2-3.%)	-	-	-	-
Valley toe slope range (e.g. 2-3.%)	-	-	-	-
Cowardin classification	NA	NA	NA	NA
Trout waters designation	No	No	No	No
Species of concern, endangered etc.? (Y/N)	No	No	No	No

Table 4. Project Attribute Table Stillhouse Creek Stream Restoration – EEP Project #363				
Dominant soil series and characteristics				
Series	Georgeville	Georgeville	Georgeville	Congaree
Depth	65	65	65	63
Clay%	27-May	27-May	27-May	25-May
K	0.43	0.43	0.43	0.28
T	3	3	3	5

Appendix B. Visual Assessment Data

Figure 2.0.	Current Conditions Plan View
Table 5.0	Visual Morphological Stability Assessment
Table 6.0	Vegetation Condition Assessment Table
e-Table	Stream Problem Areas Inventory Table
e-Table	Vegetation Problem Areas Inventory Table
Figure 3.0-3.4	Stream Station Photos
e-Photos	Stream Problem Area Photos
Figures 4.0-4.1	Vegetation Monitoring Plot Photos
e-Photos	Vegetation Problem Area Photos

Figure 2.0. Current Conditions Plan View, 2010 Monitoring, Stillhouse Creek Stream Restoration (Project #363), Hillsborough, Orange County, NC



Id	Easting	Northing
Veg Plot 1 (0,0)	1971300.99	845889.38
Veg Plot 2 (0,0)	1971201.69	845690.87
Veg Plot 3 (0,0)	1971159.37	845502.81
Veg Plot 4 (0,0)	1970941.67	845327.88
Photopoint 1	1971312.17	846033.08
Photopoint 2	1971326.74	845798.97
Photopoint 3	1971174.37	845520.57
Photopoint 4	1971247.60	845701.45
Photopoint 5	1971283.36	845724.00
Photopoint 6	1971208.72	845637.70
Photopoint 7	1971114.65	845398.23
Photopoint 8	1971057.89	845364.02
Photopoint 9	1970923.38	845266.83
Photopoint 10	1970847.19	845207.74
Cross-section 1L	1971334.03	845870.36
Cross-section 1R	1971299.88	845874.02
Cross-section 2L/3L	1971243.42	845669.42
Cross-section 2R	1971223.29	845676.92
Cross-section 3R	1971223.63	845659.37
Cross-section 4L	1970996.57	845273.99
Cross-section 4R	1970976.65	845314.06
Cross-section 5L	1970966.75	845260.24
Cross-section 5R	1970947.34	845298.51

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Table 5 **Visual Stream Morphology Stability Assessment**

Reach ID **Reach 1**

Assessed Length **223**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	6	6			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	7	7			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	7	7			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	7	7			100%			
		2. Thalweg centering at downstream of meander (Glide)	7	7			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	7	7			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	7	7			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	7	7			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	7	7			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	7	7			100%			

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Table 5 **Visual Stream Morphology Stability Assessment**

Reach ID **Reach 2**

Assessed Length **400**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	14	14			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	17	17			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	17	17			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	17	17			100%			
		2. Thalweg centering at downstream of meander (Glide)	17	17			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	2	2			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	1	2			50%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	1	2			50%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	2	2			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	2	2			100%			

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Table 5 **Visual Stream Morphology Stability Assessment**

Reach ID **Reach 3**

Assessed Length **196**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	2	2			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	6	6			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	6	6			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	6	6			100%			
		2. Thalweg centering at downstream of meander (Glide)	6	6			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	4	4			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	4	4			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	4	4			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	4	4			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	4	4			100%			

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Table 5 **Visual Stream Morphology Stability Assessment**

Reach ID **Reach 4**

Assessed Length **355**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			1	15	96%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	4	4			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	7	7			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	7	7			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	7	7			100%			
		2. Thalweg centering at downstream of meander (Glide)	7	7			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	8	8			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	7	8			88%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	7	8			88%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	8	8			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	8	8			100%			

Table 6 **Vegetation Condition Assessment**
Planted Acreage[1] **2.1**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas	Very limited cover of both woody and herbaceous material.	0.1 acres	NA	0	0.00	0.0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.01 acres	Pink	3	0.12	5.7%
			Total	3	0.12	5.7%
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 acres	NA	0	0.00	0.0%
			Cumulative Total	3	0.12	5.7%

Easement Acreage[2] **2.1**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Easement Acreage
4. Invasive Areas of Concern[4]	Areas or points (if too small to render as polygons at map scale).	1000 SF	NA	0	0.00	0.0%
5. Easement Encroachment Areas[3]	Areas or points (if too small to render as polygons at map scale).	NA	NA	0	0.00	0.0%

1 = Enter the planted acreage within the easement. This number is calculated as the easement acreage minus any existing mature tree stands that were not subject to supplemental planting of the understory, the channel acreage, crossings or any other elements not directly planted as part of the project effort.

2 = The acreage within the easement boundaries.

3 = Encroachment may occur within or outside of planted areas and will therefore be calculated against the overall easement acreage. In the event a polygon is cataloged into items 1, 2 or 3 in the table and is the result of encroachment, the associated acreage should be tallied in the relevant item (i.e., item 1,2 or 3) as well as a parallel tally in item 5.

4 = Invasives may occur in or out of planted areas, but still within the easement and will therefore be calculated against the overall easement acreage. Invasives of concern/interest are listed below. The list of high concern spcies are those with the potential to directly outcompete native, young, woody stems in the short-term (e.g. monitoring period or shortly thereafter) or affect the community structure for existing, more established tree/shrub stands over timeframes that are slightly longer (e.g. 1-2 decades). The low/moderate concern group are those species that generally do not have this capacity over the timeframes discussed and therefore are not expected to be mapped with regularity, but can be mapped, if in the judgement of the observer their coverage, density or distribution is suppressing the viability, density, or growth of planted woody stems. Decisions as to whether remediation will be needed are based on the integration of risk factors by EEP such as species present, their coverage, distribution relative to native biomass, and the practicality of treatment. For example, even modest amounts of Kudzu or Japanese Knotweed early in the projects history will warrant control, but potentially large coverages of Microstegium in the herb layer will not likley trigger control because of the limited capacities to impact tree/shrub layers within the timeframes discussed and the potential impacts of treating extensive amounts of ground cover. Those species with the "watch list" designator in gray shade are of interest as well, but have yet to be observed across the state with any frequency. Those in *red italics* are of particular interest given their extreme risk/threat level for mapping as points where isolated specimens are found, particularly ealry in a projects monitoring history. However, areas of discreet, dense patches will of course be mapped as polygons. The symbology scheme below was one that was found to be helpful for symbolzing invasives polygons, particulalry for situations where the conditon for an area is somewhere between isolated specimens and dense, discreet patches. In any case, the point or polygon/area feature can be symbolized to describe things like high or low concern and species can be listed as a map inset, in legend items if the number of species are limited or in the narrative section of the executive summary.

Stream Problem Areas (electronic submission only) Stillhouse Creek Stream Restoration - EEP Project #363			
Feature Issue	**Station Numbers**	**Suspected Cause**	**Photo #**
Reach 1. No stream problems identified.			
Reach 2			
Bed elevation loss upstream of structure	622	In-stream structure set too high	SP1
Reach 3. No stream problems identified.			
Reach 4			
Mid-channel bar	910-952	Overwide channel/insufficient carrying capacity for load	SP2

SP1. Too-high structure resulting in upstream grade loss. Looking downstream.

SP2. Aggradation/bar formation at station 910-925. Looking downstream.

Stream Problem Areas (electronic submission only) UT to Rocky River Stream Restoration - EEP Project #402			
Feature Category	**Station Numbers**	**Probable Cause**	**Photo #**
Reach 1. No vegetation problems identified.			
Reach 2			
Low planted stem density (left bank)	230-280	Insufficient initial planting and/or competition from fescue	VP1
Reach 3. No vegetation problems identified.			
Low planted stem density (right bank)	720-820	Mature overstory and fescue	VP2
Reach 4.			
Low planted stem density (right bank)	990-1060	Insufficient initial planting	NA

VP1. Low planted stem density, looking north towards first footbridge.

VP2. Low planted stem density, Reach 3.

Figure 3.0. Permanent Photopoint Photographs - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

PP #1 (Sta. 0+00 – Looking Downstream) (06/14/07)

PP #1 (Sta. 0+00– Looking Downstream) (07/17/10)

PP #2 (Sta. 2+30 – Looking Downstream) (06/14/07)

PP #2 (Sta. 2+30 – Looking Downstream) (03/17/10)

Figure 3.1. Permanent Photopoint Photographs - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

PP #3 (Sta. 3+35 – Looking Downstream) (06/14/07)

PP #3 (Sta. 3+35 – Looking Downstream) (07/17/10)

PP #4 (Sta. 4+25 – Looking Downstream) (06/14/07)

PP #4 (Sta. 4+25 – Looking Downstream) (07/17/10)

Figure 3.2. Permanent Photopoint Photographs - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

PP #5 (Sta. 5+50 – Looking Upstream) (06/14/07)

PP #5 (Sta. 5+50 – Looking Upstream) (03/17/10)

PP #6 (Sta. 6+95 – Looking Upstream) (06/14/07)

PP #6 (Sta. 6+95 – Looking Upstream) (07/17/10)

Figure 3.3. Permanent Photopoint Photographs - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

PP #7 (Sta. 8+50 – Looking Downstream) (06/14/07)

PP #7 (Sta. 8+50 – Looking Downstream) (07/17/10)

PP #8 (Sta. 9+10 – Looking Downstream) (06/14/07)

PP #8 (Sta. 9+10 – Looking Downstream) (03/17/10)

Figure 3.4. Permanent Photopoint Photographs - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

PP #9 (Sta. 10+93 – Looking Downstream) (06/14/07)

PP #9 (Sta. 10+93 – Looking Downstream) (07/17/10)

PP #10 (Sta. 11+85 – Looking Upstream) (06/14/07)

PP #10 (Sta. 11+85 – Looking Upstream) (07/17/10)

Figure 4.0. Vegetation Monitoring Plot Photographs - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

Plot 1 (Sta. 1+35) (10/31/07)

Plot 1(Sta. 1+35) (6/30/10)

Plot 2 (Sta. 4+60) (10/31/07)

Plot 2 (Sta. 4+60) (6/30/10)

Figure 4.1. Vegetation Monitoring Plot Photographs - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

Plot 3 (Sta. 7+20) (10/31/07)

Plot 3 (Sta. 7+20) (6/30/10)

Plot 4 (Sta. 10+55) (11/05/07)

Plot 4 (Sta. 10+55) (6/30/10)

Appendix C. Vegetation Plot Data

Table 7.0	Vegetation Plot Mitigation Success Summary Table
Table 8.0	Vegetation Metadata
Table 9.0	Stem Count Total and Planted by Plot and Species
e-Tables	Raw CVS vegetation data sheets

Table 7. Vegetation Plot Criteria Attainment Stillhouse Creek Stream Restoration - EEP Project #363		
Vegetation Plot ID	Vegetation Survival Threshold Met	Tract Mean
1	Y	75%
2	N	
3	Y	
4	Y	

Table 8. Vegetation Metadata
Stillhouse Creek Stream Restoration - EEP Project #363

Report Prepared By	sean doig
Date Prepared	7/9/2010 9:31
database name	363Stillhouse.mdb
database location	C:\Documents and Settings\Owner\Desktop\EEP2010
computer name	GATELAP
file size	27365376

DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT----------

Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Proj, planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Proj, total stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc.).
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
ALL Stems by Plot and spp	A matrix of the count of total living stems of each species (planted and natural volunteers combined) for each plot; dead and missing stems are excluded.

PROJECT SUMMARY----------

Project Code	363
project Name	Stillhouse
Description	stream restoration
River Basin	Cape Fear River Basin
length(ft)	1,210
stream-to-edge width (ft)	20-80
area (sq m)	8,457.93
Required Plots (calculated)	4
Sampled Plots	4

Table 9. Pleanted and Total Stem Counts (Species by Plot with Annual Means)
Stillhouse Creek Stream Restoration - EEP Project #363

			Current Plot Data (MY4 2010)												Annual Totals											
			E363-jo&sd-0001			E363-jo&sd-0002			E363-jo&sd-0003			E363-jo&sd-0004			MY4 (2010)			MY3 (2009)			MY2 (2008)			MY1 (2007)		
Scientific Name	Common Name	Species Type	P-LS	P-all	T	P-LS	P-all	T	P-LS	P-all	T	P-LS	P-all	T	P-LS	P-all	T	P-LS	P-all	T	P-LS	P-all	T	P-LS	P-all	T
Acer negundo	boxelder	Tree						1			2			2			5			3						9
Acer rubrum	red maple	Tree						1			1						2									3
Ailanthus altissima	tree of heaven	Tree			1												1									2
Betula nigra	river birch	Tree																								1
Carpinus caroliniana	American hornbeam	Shrub Tree																								2
Carya	hickory	Tree																								2
Carya cordiformis	bitternut hickory	Tree																		1						
Carya illinoinensis	pecan	Tree																								5
Carya ovata	shagbark hickory	Tree																								1
Celtis laevigata	sugarberry	Shrub Tree																		14						63
Cornus amomum	silky dogwood	Shrub	3	3	3				1	1	1				4	4	4	5	5	5	5	5	5	5	5	5
Fraxinus pennsylvanica	green ash	Tree					2	2		1	1		2	2		5	5		5	8		5	5		6	8
Ilex verticillata	common winterberry	Shrub Tree		3	3					1	1		1	1		5	5		5	5		6	6		6	6
Juglans nigra	black walnut	Tree						5			4			2			11			3						
Lagerstroemia indica	crapemyrtle	Shrub Tree			18												18			9						40
Ligustrum sinense	Chinese privet	Shrub Tree									2			4			6			4						4
Lindera benzoin	northern spicebush	Shrub Tree								1	1		1	1			2		2	2		2	2		2	2
Liquidambar styraciflua	sweetgum	Tree																								2
Liriodendron tulipifera	tuliptree	Tree											1	1		1	1		1	1		1	1		1	1
Morella cerifera	wax myrtle	Shrub Tree		3	3		1	1		6	6		1	1		11	11		11	12		12	12		12	12
Nyssa sylvatica	blackgum	Tree											1	1		1	1		1	1		1	1		1	1
Platanus occidentalis	American sycamore	Tree					2	2								2	2		2	2		2	2		2	2
Quercus nigra	water oak	Tree															0			6						18
Quercus phellos	willow oak	Tree			4					1	1		1	1		2	6		2	2		2	2		2	2
Quercus rubra	northern red oak	Tree								3	3					3	3		3	3		5	5		5	5
Quercus spp.	oak	Tree			8												8									
Rhus copallinum	flameleaf sumac	Shrub Tree																								1
Salix nigra	black willow	Tree																								1
Sambucus canadensis	Common Elderberry	Shrub Tree	4	4	4										4	4	4	4	4	4	4	4	4	5	5	5
Ulmus spp.	elm	Tree						8			6			3			17									
Ulmus rubra	slippery elm	Tree									1						1									
Ulmus alata	winged elm	Tree						12			1						13									1
		Stem count	7	13	44	0	5	32	1	14	31	0	8	19	8	38	126	9	41	85	9	45	45	10	47	204
		size (ares)	1			1			1			1			4			4			4			4		
		size (ACRES)	0.02			0.02			0.02			0.02			0.10			0.10			0.10			0.10		
		Species count	2	4	8	0	3	8	1	7	14	0	7	11	2	10	22	2	11	18	2	11	11	2	11	27
		Stems per ACRE	283.3	526.1	1781	0	202.3	1295	40.47	566.6	1255	0	323.7	768.9	80.94	384.5	1275	91.05	414.8	860	91.05	455.3	455.3	101.2	475.5	2064

Plot E363-jo&sd-0001 — **Please fill in any missing data and fix incorrect data.** — **Vegetation Monitoring Data (VMD) Datasheet**

VMD Year (1-5): 3	Date: 6/30/10 - 6/30/10	Party: SD	Role: lead	Notes on plot:
Taxonomic Standard:	Weakley	CH	point	
Taxonomic Standard DATE:	2007			
Latitude or UTM-N: (dec.deg. or m)	36.07411	Datum: NAD83/WGS84		
Longitude or UTM-E:	-79.09711	UTM Zone:		
Coordinate Accuracy (m):		X-Axis bearing (deg): 182		
Plot Dimensions: X: 20	Y: 5	☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X		

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Aug 2009 Data: ddh 1 mm	Height 1cm*	DBH 1 cm	THIS YEAR'S DATA: ddh 1mm	Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
9	Ilex verticillata	(h)	R	2.5	0.6	8	50.0		19	29	—	X	3	chopped	
someone trimmed morella on border of easement and cut some plants in easement															
10	Morella cerifera	(a)	R	1.1	2.7	18	215.0	0.6		284	1.6	☐	4		
11	Cornus amomum	(i)	L	3.4	4.3		255.0	1.0	n/a	320	1.8	☐	4	—	
12	Ilex verticillata	(j)	R	4.0	2.3	8	73.0		9	71	—	☐	3		
cut morella thrown on to veg plot plants															
13	Sambucus canadensis	(k)	L	5.9	3.2		210.0	0.7	n/a	290	1.2	☐	4		
cut morella thrown on to veg plot plants															
15	Sambucus canadensis	(l)	L	7.9	1.5		207.0	0.7	~~19~~ n/a	230	1.0	☐	3		
16	Cornus amomum	(m)	L	9.4	4.0		322.0	1.4	n/a	360	2.5	☐	4		
17	Ilex verticillata	(b)	R	10.2	0.6	8	76.0		8	86	—	☐	3		
18	Morella cerifera	(e)	R	12.4	0.5		285.0	1.2		258	1.0	☐	3		
19	Morella cerifera	(c)	R	11.0	2.5	35	225.0	1.0		350	2.0	☐	4		
20	Sambucus canadensis	(d)	L	12.3	4.8		333.0	1.2	n/a	350	2.7	☐	4		
21	Cornus amomum	(f)	L	14.8	4.2		293.0	1.2	n/a	300	1.9	☐	4	—	
22	Sambucus canadensis	(g)	L	16.7	2.5		81.0		~~8~~ n/a	65	—	☐	2	chopped	

 # stems: 13

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	ddh 1 mm	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Plot (continued): E363-jo&sd-0001

ID	Species	map char	source	X (m)	Y (m)	Aug 2009 Data: ddh (mm)	Height (cm)	DBH (cm)	THIS YEAR'S DATA: ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
Crepe Myrtle		___		III	IIII	___	IIII IIII	I			
Quercus ? myrland ?: Sp		___	I	IIII	III	___					
Q phellos		___		IIII		___					
Acer rubrum		___		I		___					
		___				___					
		___				___					
		___				___					

**Required if cut-off >10cm or subsample ? 100%. ●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10

Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

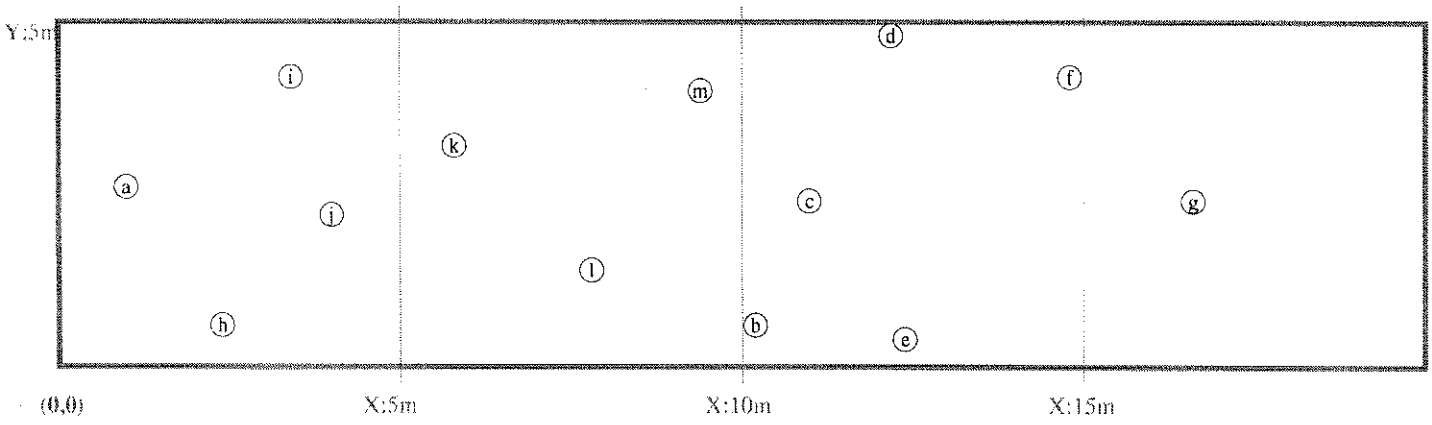
*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

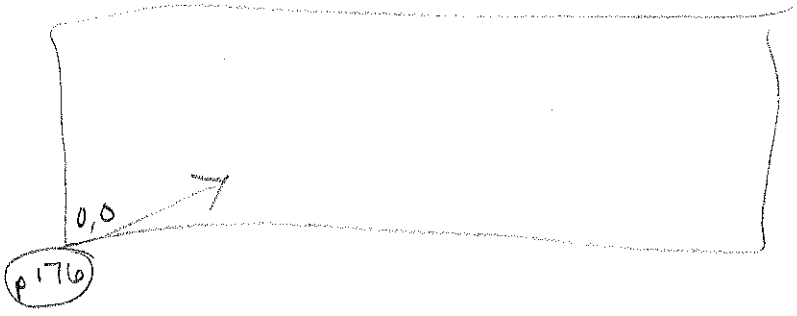
Map of stems on plot E363-jo&sd-0001

X-axis: 182°

N

 # stems: 13
map size: LARGE





*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Plot E363-jo&sd-0002 — Please fill in any missing data and fix incorrect data. — **Vegetation Monitoring Data (VMD) Datasheet**

VMD Year (1-5): 3	Date: 6/30/10 - 6/30/10	Party: SD	Role: lead	Notes on plot:
Taxonomic Standard:	Wentworth	CH	Data	
Taxonomic Standard DATE:	2007			
Latitude or UTM-N: (dec.deg. or m)	36.07356	Datum: NAD83/W		
Longitude or UTM-E:	-79.09745	UTM Zone:		
Coordinate Accuracy (m):		X-Axis bearing (deg): 208		
Plot Dimensions: X: 20	Y: 5	☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X		

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Aug 2009 Data ddh 1 mm	Aug 2009 Data Height 1cm*	Aug 2009 Data DBH 1 cm	THIS YEAR'S DATA ddh 1mm	Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
28	Platanus occidentalis	a	R	0.8	3.8		550.0	5.0	✓	700	6.7		4	—	—
29	Morella cerifera	c	R	3.3	0.4		270.0	1.2	✓	342	2.4		4	—	—
30	Fraxinus pennsylvanica	d	R	5.0	3.2		353.0	2.8	✓	420	4.1		4	—	—
31	Fraxinus pennsylvanica	e	R	6.8	1.3		450.0	4.0	✓	470	4.2		4	—	—
32	Platanus occidentalis	b	B	11.3	4.7		700.0	9.2	✓	1120	14		4	—	—

 # stems: 5

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	ddh 1 mm	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Explanation of cut-off & subsampling**:

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
Juglans nigra			I	III	I						
Acer rubrum			I								
Ulmus winged Fulva (?)			++++ II	I	II		I				
Betula nigra Ulmus sp.			III	++++							
Pinus taeda				I							
Acer negundo				I							

**Required if cut-off >10cm or subsample ? 100%.

●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10 Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

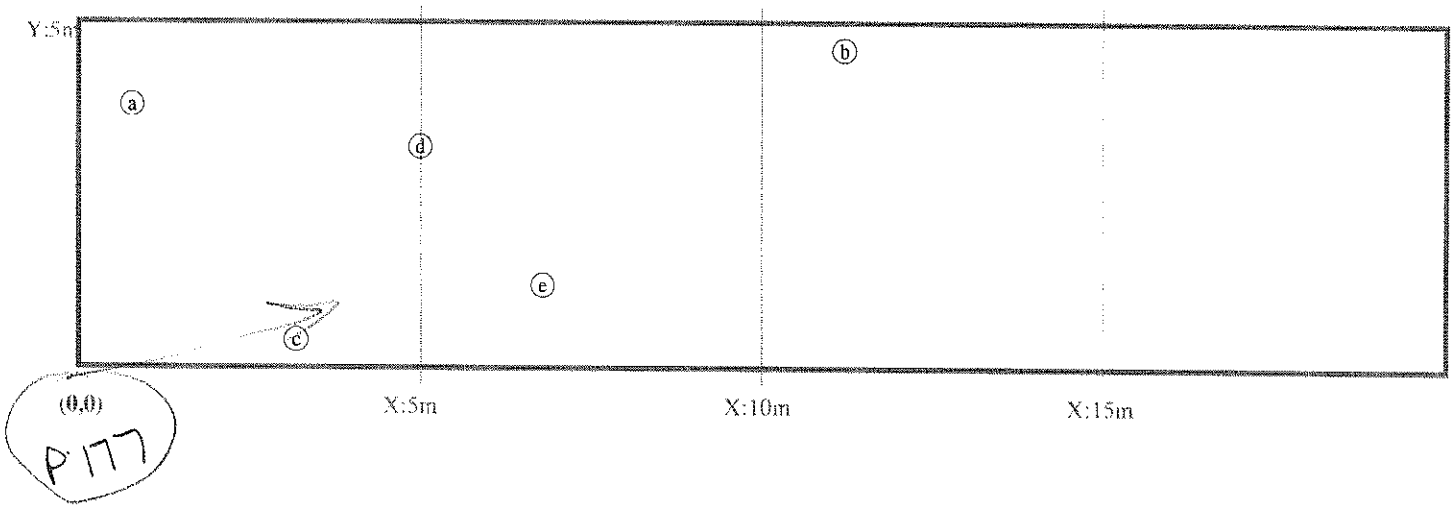
Printed in the CVS-EEP Entry Tool ver. 2.2.7

Map of stems on plot E363-jo&sd-0002

X-axis: 208°

 # stems: 5
map size: LARGE

N



*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Plot E363-jo&sd-0003 — **Please fill in any missing data and fix incorrect data.** — **Vegetation Monitoring Data (VMD) Datasheet**

VMD Year (1-5): 3 Date: 6/30/2010 - 6/30/2010 Party: SD, CH Role: lead, subs Notes on plot:

Taxonomic Standard: Weakley

Taxonomic Standard DATE: 2007

Latitude or UTM-N: (dec.deg. or m) 36.07304 Datum: NAD83/WGS84

Longitude or UTM-E: -79.09759 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 196

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Aug 2009 Data ddh 1 mm	Aug 2009 Data Height 1cm*	Aug 2009 Data DBH 1 cm	THIS YEAR'S DATA ddh 1mm	Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
41	Fraxinus pennsylvanica	d	R	1.0	3.1	12	102.0	DBH?	15	124	—		2	Rubus	
42	Cornus amomum	b	L	0.4	4.6		85.0		10 n/a	88	—		2		
43	Quercus rubra	e	R	1.6	5.7	31	207.0	1.0	—	330	2.1		4	VINE	
44	Morella cerifera	c	R	0.7	6.7		345.0	2.0	—	420	3.1		4	—	—
45	Morella cerifera	a	R	0.2	9.2		270.0	0.7	—	350	1.5		4	—	—
46	Cornus amomum	g	L	4.4	0.9		63.0		n/a	—	—		0	0	Dead - subst
47	Lindera benzoin	f	R	4.1	4.4	7	153.0	0.3	13	178	0.4		3	VINE	—
48	Quercus rubra	h	R	5.3	4.8	25	212.0	1.2	—	280	2.3		4	—	—
49	Morella cerifera	l	R	6.9	4.6		310.0	1.5	33	167	1.6		1	VINE	Morning glory
50	Morella cerifera	k	R	6.4	2.2		304.0	1.2	—	360	1.9		4	—	—
54	Quercus phellos	n	R	8.0	6.0	15	149.0	0.3	16	148	0.2		5	—	—
55	Ilex verticillata	o	R	8.9	6.8	3	42.0		—	—	—		—	—	Missing
56	Morella cerifera	j	R	6.2	7.3	15	159.0	0.3	18	200	0.5		4	—	—
57	Morella cerifera	m	R	7.8	8.7		325.0	2.0	—	385	1.7		4	—	—
58	Quercus rubra	i	R	5.7	8.9	27	225.0	1.0	—	310	2.0		4	—	—

 # stems: 15

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	ddh 1 mm	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

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Plot (continued): E363-jo&sd-0003

ID	Species	map char	source	X (m)	Y (m)	Aug 2009 Data: ddh (mm)	Height (cm)	DBH (cm)	THIS YEAR'S DATA: ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
Ulmus winged		---				---		1			
Betula ~~nigra~~ Ulmus sp.		---	|||	1		---					
Juglans nigra		---			1	---	1	11			
Ligust		---	11			---					
Acer neg		---		1		---	1				
Acer rubrum		---		1		---					
Lindera benz		---	1			---					

**Required if cut-off >10cm or subsample ? 100%.

●1 ●2 ●3 ●●4 ●●5 ●●6 ●●7 ●●8 ●●9 ●●10

Form WS2, ver 9.1

Ulnus rubra 1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

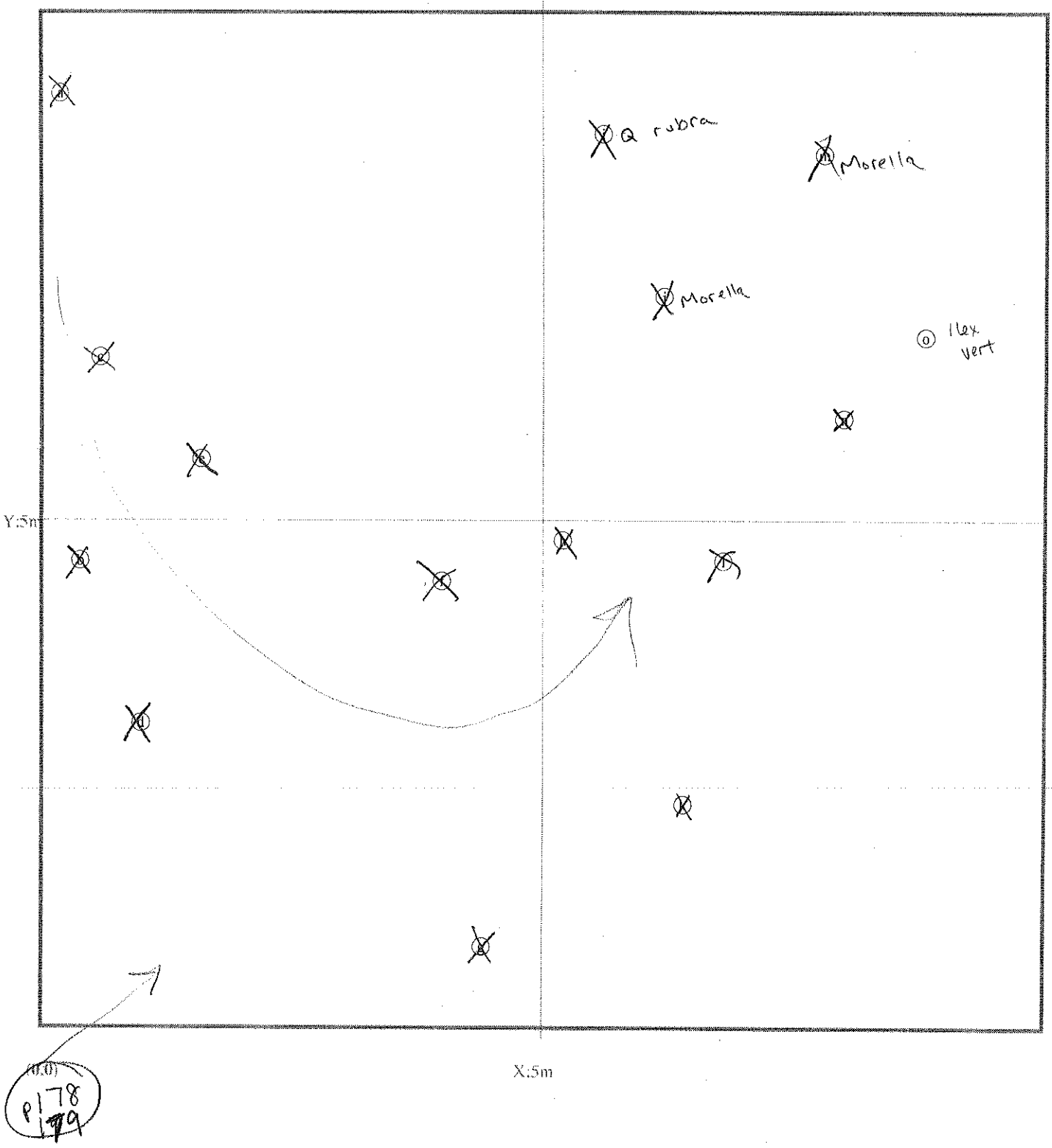
*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Map of stems on plot E363-jo&sd-0003

X-axis: 196°

N

 # stems: 15
map size: LARGE



*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Plot E363-jo&sd-0004 — Please fill in any missing data and fix incorrect data. — **Vegetation Monitoring Data (VMD) Datasheet**

VMD Year (1-5): 3	Date: 6/30/10 - 6/30/10	Party:	Role:	Notes on plot:
Taxonomic Standard:	Weakley	SD	lead	
Taxonomic Standard DATE:	2007	CH	scribe	
Latitude or UTM-N: (dec.deg. or m)	36.07256 Datum: NAD83/W			
Longitude or UTM-E:	-79.09832 UTM Zone:			
Coordinate Accuracy (m):	X-Axis bearing (deg): 247			
Plot Dimensions: X: 10	Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X			

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Aug 2009 Data ddh 1 mm	Height 1cm*	DBH 1 cm	THIS YEAR'S DATA ddh 1mm	Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
67	Quercus phellos	b	R	1.9	2.0	14	106.0	DBH?	17	122	—	☐	3	—	—
68	Fraxinus pennsylvanica	a	R	0.1	7.5	12	88.0		14	134	—	☐	3	—	—
69	Ilex verticillata	c	R	2.0	9.5	6	45.0		5	35	—	☐	2	overtopped	DEER
70	Liriodendron tulipifera	d	B	4.8	8.5		500.0	4.8	10	106	—	X			
71	Morella cerifera	f	R	5.2	0.8	9	95.0		14	163	0.4	☐	4	—	—
72	Nyssa sylvatica	h	R	7.7	0.6	4	58.0		5	62	—	☐	3	—	—
75	Fraxinus pennsylvanica	g	R	7.3	5.7	10	79.0		11	97	—	☐	4	—	—
76	Lindera benzoin	e	R	5.0	6.8	7	90.0		7	111	—	☐	4	—	—

 # stems: 8 — New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	ddh 1 mm	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	Seedlings — Height Classes: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Saplings — DBH: Sub-Sapl	0-1 cm	1-2.5	Trees — DBH: 2.5-	5-	=10 (write DBH)
Ligust		___	1	11		___					
Juglans nig		___	1			___	1				
Acer neg		___	11			___					
B nigra Ulmus sp		___	1	1	1	___					
		___				___					
		___				___					
		___				___					

**Required if cut-off >10cm or subsample ?100%. ●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10 Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

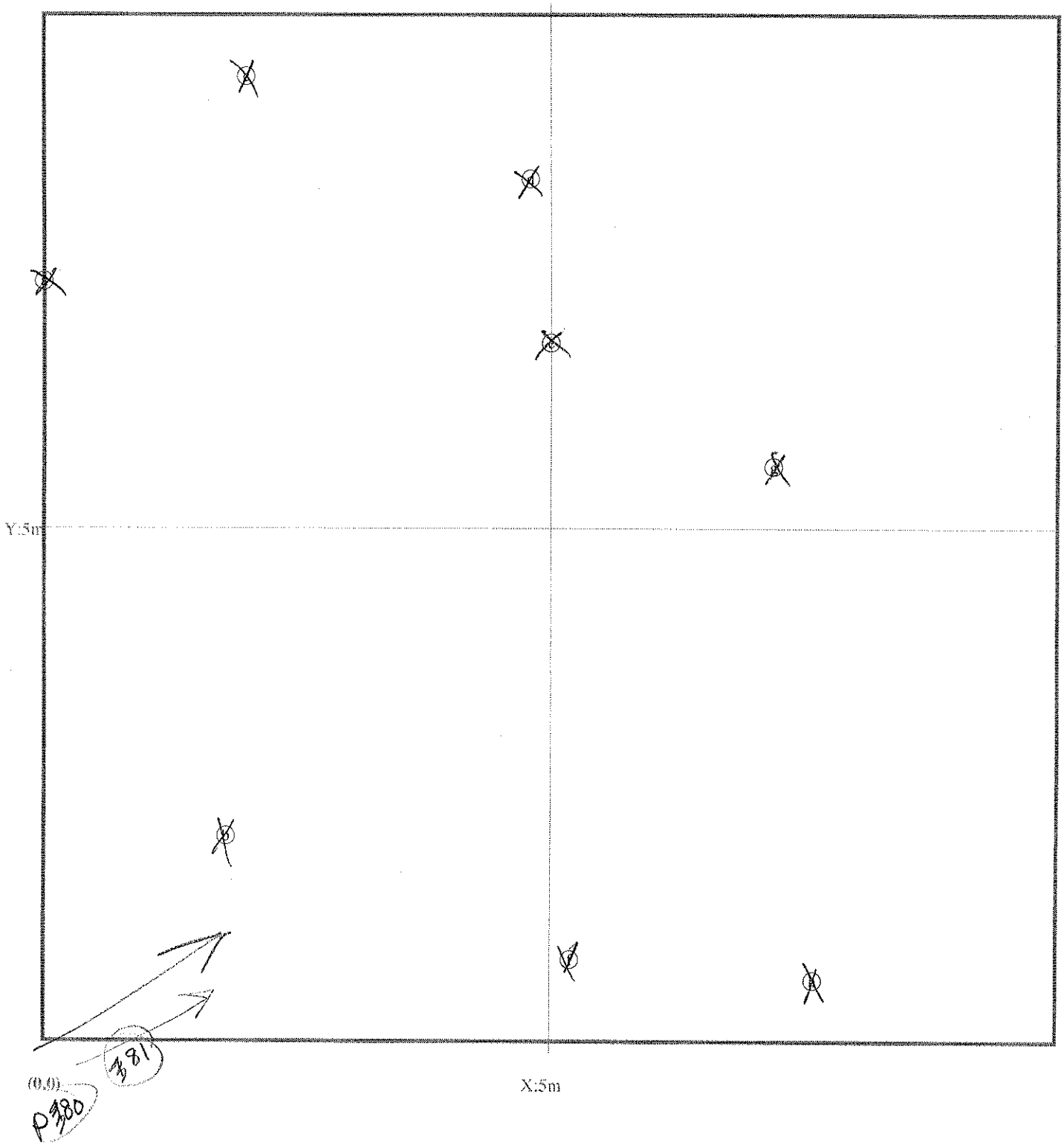
*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Map of stems on plot E363-jo&sd-0004

X-axis: 247°

 # stems: 8
map size: LARGE

N



*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

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Appendix D. Stream Survey Data

Figures 5.0-5.4	Cross sections with Annual Overlays
e-Tables	Raw cross-section survey data spreadsheets
Figures 6.0-6.2	Longitudinal Profiles with Annual Overlays
e-Tables	Raw longitudinal profile survey data spreadsheets
Figures 7.0-7.4	Pebble Count Plots with Annual Overlays
e-Tables	Raw pebble count data spreadsheets
Tables 10.0-10.1	Baseline Stream Data Summary Table
Table 11.0	Monitoring—Cross-Section Morphology Data Table
Table 11.1-11.4	Monitoring—Stream Reach Morphology Data Table

Figure 5.0. Cross Sections with Annual Overlays - Stillhouse Creek Stream Restoration – EEP Project #363

River Basin:	Neuse
Watershed:	Stillhouse Creek
XS ID	XS 1 (pool)
Reach:	2
Date:	6/30/2010
Field Crew:	SD & CH

Station	Rod Ht.	Elevation
0	4.83	508.16
0	5.02	507.97
2.9	6.06	506.93
7	7.66	505.33
10.7	8.28	504.71
14.2	8.63	504.36
15.1	9.02	503.97
16.7	10.21	502.78
19.6	10.97	502.42
20.6	10.7	502.69
21.2	9.32	504.07
23.3	8.73	504.66
26.2	7.56	505.83
30.1	6.19	507.2
34.6	5.2	508.19
34.6	4.81	508.58

SUMMARY DATA

Bankfull Width (ft)	12.72
Floodprone Width (ft)	26.83
Bankfull Mean Depth (ft)	1.02
Bankfull Max Depth (ft)	2.29
Bankfull Area (ft^2)	13.04
Bankfull Width/Depth Ratio	12.42
Bankfull Entrenchment Ratio	2.11
Bankfull Bank Height Ratio	1.00
d50 (mm)	0.28

View of cross-section Stillhouse XS-1 looking downstream

Stream Type: B5

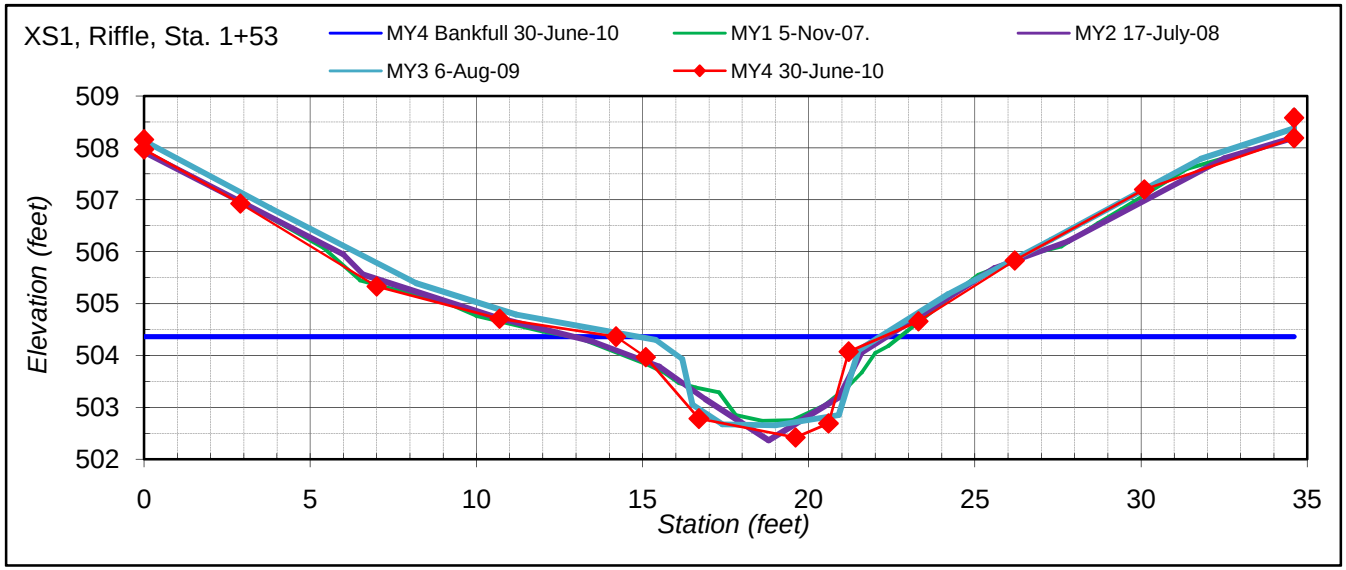


Figure 5.1. Cross Sections with Annual Overlays - Stillhouse Creek Stream Restoration – EEP Project #363

River Basin:	Neuse
Watershed:	Stillhouse Creek
XS ID	XS 2 (pool)
Reach:	2
Date:	6/30/2010
Field Crew:	SD & CH

Station	Rod Ht.	Elevation
0	5	502.74
0	5.22	502.52
3.2	5.4	502.34
6.6	5.98	501.76
9	6.46	501.28
10	7.47	500.27
11.2	7.87	499.87
12.5	8.06	499.68
14.3	8.13	499.61
15.2	8.13	499.61
15.4	7.78	499.96
16.4	6.07	501.67
17.6	6.11	501.63
19	5.66	502.08
21.4	5.18	502.56
21.4	5.02	502.72

SUMMARY DATA

Bankfull Width (ft)	17.10
Floodprone Width (ft)	94.50
Bankfull Mean Depth (ft)	1.26
Bankfull Max Depth (ft)	2.73
Bankfull Area (ft^2)	21.60
Bankfull Width/Depth Ratio	13.54
Bankfull Entrenchment Ratio	5.53
Bankfull Bank Height Ratio	1.00
d50 (mm)	6.39

View of cross-section Stillhouse XS-2 looking downstream

Stream Type:	C4

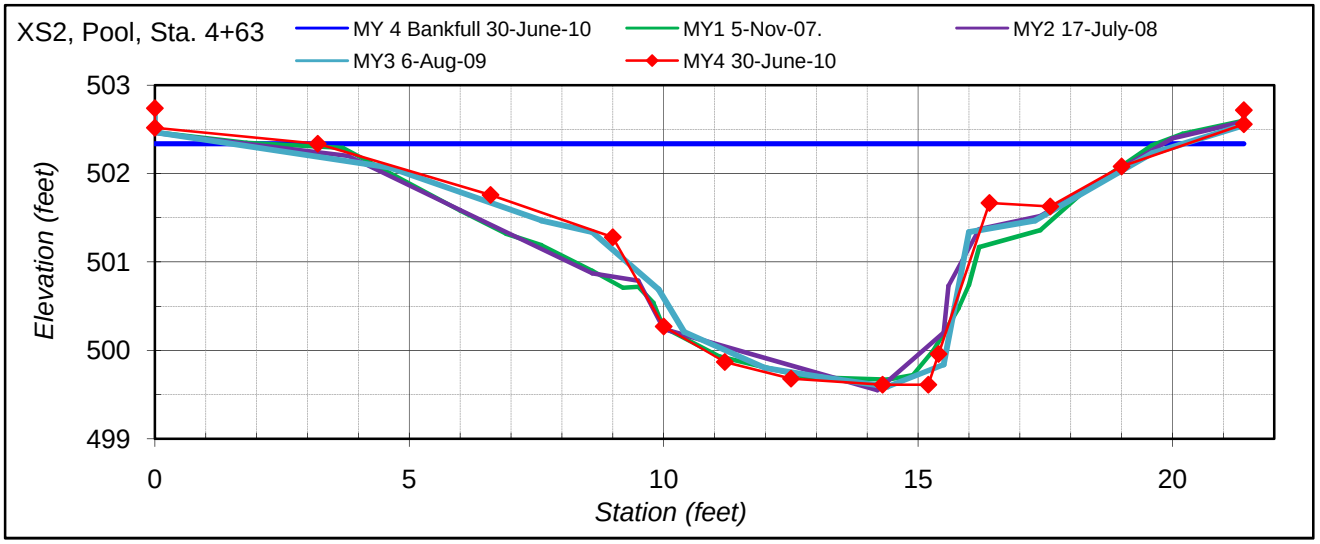


Figure 5.2. Cross Sections with Annual Overlays - Stillhouse Creek Stream Restoration – EEP Project #363

River Basin:	Neuse
Watershed:	Stillhouse Creek
XS ID	XS 3 (riffle)
Reach:	2
Date:	6/30/2010
Field Crew:	SD & CH

Station	Rod Ht.	Elevation
0	5	502.74
0	5.25	502.49
1.6	5.31	502.43
3.2	5.42	502.32
4.7	5.79	501.95
5.9	6.09	501.65
8.3	6.28	501.46
10.4	6.33	501.41
11.4	7.14	500.6
12.2	7.24	500.5
12.9	7.22	500.52
13.5	6.48	501.26
14.1	6.33	501.41
15.3	6.1	501.64
18.1	5.81	501.93
22.2	5.72	502.02
22.2	5.63	502.11

SUMMARY DATA

Bankfull Width (ft)	14.31
Floodprone Width (ft)	107.00
Bankfull Mean Depth (ft)	0.51
Bankfull Max Depth (ft)	1.45
Bankfull Area (ft^2)	7.27
Bankfull Width/Depth Ratio	28.18
Bankfull Entrenchment	7.48
Bankfull Bank Height Ratio	1.00
d50 (mm)	26.36

View of cross-section Stillhouse XS-3 looking downstream

Stream Type:	C4

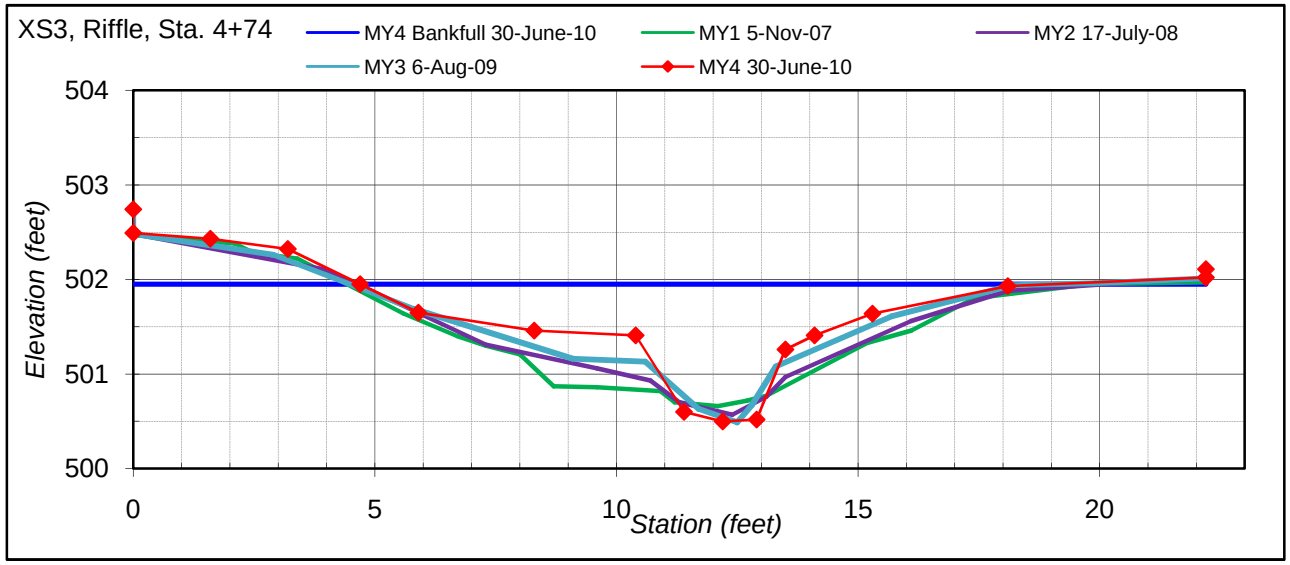


Figure 5.3. Cross Sections with Annual Overlays - Stillhouse Creek Stream Restoration – EEP Project #363

River Basin:	Neuse
Watershed:	Stillhouse Creek
XS ID	XS 4 (riffle)
Reach:	4
Date:	6/30/2010
Field Crew:	SD & CH

Station	Rod Ht.	Elevation
0	2.69	500.46
0	2.79	500.36
1.6	3.14	500.01
5.1	5.63	497.52
8.2	7.75	495.4
10.3	9.1	494.05
12.2	9.31	493.84
14.4	9.79	493.36
15.9	10.25	492.9
16.7	11.26	491.89
19	11.47	491.68
19.6	11.33	491.82
21	10.35	492.8
23.9	10.02	493.13
27.4	9.38	493.77
31.7	9.11	494.04
35	8.37	494.78
38.1	7.17	495.98
40.2	6.16	496.99
42.5	5.37	497.78
44.7	5.05	498.1
44.7	4.79	498.36

SUMMARY DATA

Bankfull Width (ft)	14.88
Floodprone Width (ft)	30.26
Bankfull Mean Depth (ft)	0.92
Bankfull Max Depth (ft)	2.09
Bankfull Area (ft^2)	13.72
Bankfull Width/Depth Ratio	16.13
Bankfull Entrenchment	2.09
Bankfull Bank Height Ratio	1.00
d50 (mm)	6.03

Stream Type:	B4

View of cross-section Stillhouse XS-4 looking downstream

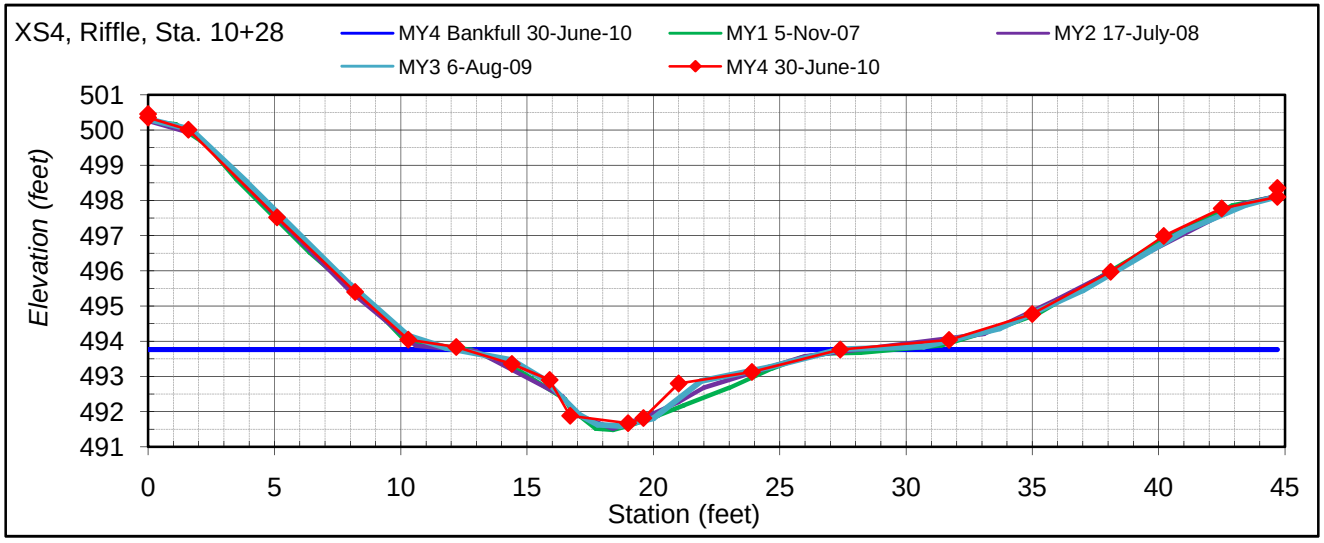


Figure 5.4. Cross Sections with Annual Overlays - Stillhouse Creek Stream Restoration – EEP Project #363

River Basin:	Neuse
Watershed:	Stillhouse Creek
XS ID	XS 5 (pool)
Reach:	4
Date:	6/30/2010
Field Crew:	SD & CH

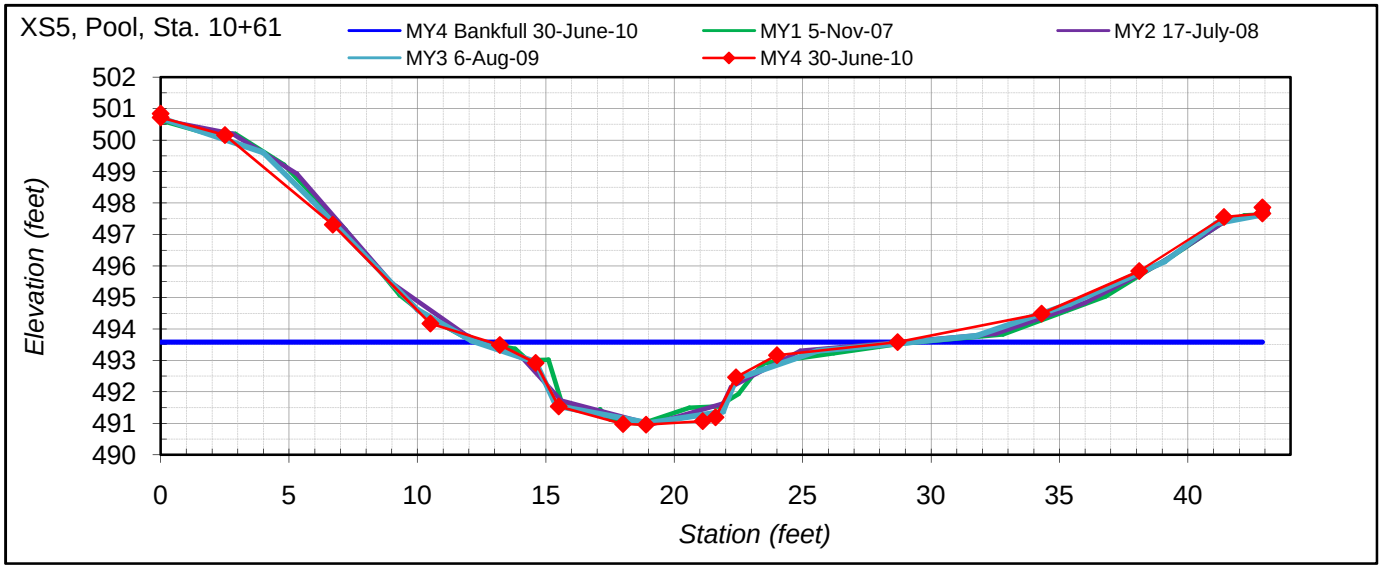
Station	Rod Ht.	Elevation
0	2.31	500.84
0	2.43	500.72
2.5	2.99	500.16
6.7	5.84	497.31
10.5	8.98	494.17
13.2	9.66	493.49
14.6	10.23	492.92
15.5	11.61	491.54
18	12.17	490.98
18.9	12.19	490.96
21.1	12.08	491.07
21.6	11.96	491.19
22.4	10.69	492.46
24	9.99	493.16
28.7	9.57	493.58
34.3	8.67	494.48
38.1	7.31	495.84
41.4	5.6	497.55
42.9	5.48	497.67
42.9	5.29	497.86

SUMMARY DATA

Bankfull Width (ft)	15.86
Floodprone Width (ft)	30.75
Bankfull Mean Depth (ft)	1.29
Bankfull Max Depth (ft)	2.62
Bankfull Area (ft^2)	20.40
Bankfull Width/Depth	12.33
Bankfull Entrenchment	1.67
Bankfull Bank Height	1.00
d50 (mm)	13.00

View of cross-section Stillhouse XS-S looking downstream

Stream Type: B4



Cross-section 1 Raw Data

MY1(2007)

Station	Rod Ht.	Elevation
0	5	508.16
0	5.22	507.94
2.5	6.06	507.10
4	6.58	506.58
5.4	7.09	506.07
6.5	7.71	505.45
7.6	7.9	505.26
9	8.12	505.04
10	8.4	504.76
12	8.7	504.46
13.1	8.82	504.34
15.1	9.32	503.84
15.7	9.51	503.65
16.1	9.69	503.47
16.6	9.78	503.38
17.3	9.87	503.29
17.8	10.31	502.85
18.6	10.42	502.74
19.5	10.41	502.75
20.5	10.11	503.05
21.2	9.75	503.41
21.6	9.49	503.67
22	9.11	504.05
22.4	8.98	504.18
25.1	7.61	505.55
26.8	7.19	505.97
27.6	7.06	506.10
28.7	6.61	506.55
29.4	6.34	506.82
31.4	5.56	507.60
33.3	5.21	507.95
34.6	4.97	508.19
34.6	4.58	508.58

MY2 (2008)

Station	Rod Ht.	Elevation
0	4.09	508.16
0	4.33	507.92
6	6.3	505.95
6.6	6.69	505.56
10.6	7.52	504.73
13.5	7.98	504.27
15.5	8.46	503.79
16.9	9.1	503.15
18.8	9.89	502.36
20.9	9.06	503.19
21.6	8.19	504.06
25.6	6.56	505.69
27.8	6.05	506.20
32.5	4.45	507.80
34.6	4.05	508.20
34.6	3.71	508.54

MY3 (2009)

Station	Rod Ht.	Elevation
0	4.63	508.16
0	4.85	507.94
3.8	6.15	506.64
8.2	7.6	505.19
11.2	8.2	504.59
15.4	8.69	504.10
16.2	9.06	503.73
16.5	9.94	502.85
17.4	10.32	502.47
19	10.34	502.45
20.9	10.14	502.65
21.5	8.89	503.90
24.2	7.81	504.98
27.3	6.76	506.03
31.8	5.2	507.59
34.6	4.61	508.18
34.6	4.27	508.52

MY4 (2010)

Station	Rod Ht.	Elevation
0	4.83	508.16
0	5.02	507.97
2.9	6.06	506.93
7	7.66	505.33
10.7	8.28	504.71
14.2	8.63	504.36
15.1	9.02	503.97
16.7	10.21	502.78
19.6	10.97	502.42
20.6	10.7	502.69
21.2	9.32	504.07
23.3	8.73	504.66
26.2	7.56	505.83
30.1	6.19	507.2
34.6	5.2	508.19
34.6	4.81	508.58

Cross-section 2 Raw Data

MY1 (2007)

Station	Rod Ht.	Elevation
0	4.66	502.74
0	4.93	502.47
1.8	5.05	502.35
3.7	5.11	502.29
6	5.82	501.58
6.9	6.08	501.32
7.6	6.21	501.19
8.6	6.5	500.90
9.2	6.69	500.71
9.5	6.68	500.72
9.8	6.86	500.54
10	7.14	500.26
11.1	7.47	499.93
12.8	7.7	499.70
14.4	7.73	499.67
14.9	7.68	499.72
15.3	7.4	500.00
15.8	6.92	500.48
16	6.66	500.74
16.2	6.23	501.17
17.4	6.04	501.36
18.2	5.63	501.77
19.6	5.08	502.32
20.2	4.95	502.45
21.4	4.8	502.60
21.4	4.63	502.77

MY2 (2008)

Station	Rod Ht.	Elevation
0	4.71	502.72
0	4.97	502.46
3.8	5.23	502.2
6	5.84	501.59
8.6	6.56	500.87
9.5	6.64	500.79
10	7.19	500.24
14.2	7.88	499.55
15.5	7.23	500.2
15.6	6.7	500.73
16.2	6.06	501.37
17.4	5.91	501.52
20	5.03	502.4
21.4	4.84	502.59
21.4	4.66	502.77

MY3 (2009)

Station	Rod Ht.	Elevation
0	4.71	502.73
0	4.97	502.47
4.6	5.37	502.07
7.6	5.97	501.47
8.6	6.1	501.34
9.9	6.75	500.69
10.4	7.23	500.21
12	7.64	499.80
13.1	7.74	499.70
14.4	7.85	499.59
15.5	7.6	499.84
16	6.1	501.34
17.3	5.97	501.47
19.6	5.21	502.23
21.4	4.89	502.55
21.4	4.67	502.77

MY4 (2010)

Station	Rod Ht.	Elevation
0	5	502.74
0	5.22	502.52
3.2	5.4	502.34
6.6	5.98	501.76
9	6.46	501.28
10	7.47	500.27
11.2	7.87	499.87
12.5	8.06	499.68
14.3	8.13	499.61
15.2	8.13	499.61
15.4	7.78	499.96
16.4	6.07	501.67
17.6	6.11	501.63
19	5.66	502.08
21.4	5.18	502.56
21.4	5.02	502.72

Cross-section 3 Raw Data

MY1 (2007)

Station	Rod Ht.	Elevation
0	4.66	502.74
0	4.93	502.47
2.1	5.02	502.38
2.5	5.12	502.28
3.4	5.18	502.22
5.6	5.76	501.64
6.7	6	501.4
7.3	6.1	501.3
8	6.19	501.21
8.7	6.53	500.87
9.6	6.54	500.86
10.9	6.58	500.82
11.2	6.7	500.7
12.1	6.74	500.66
12.7	6.68	500.72
13.1	6.63	500.77
14.7	6.2	501.2
15.2	6.07	501.33
16.1	5.94	501.46
17.4	5.6	501.8
19.8	5.45	501.95
22.2	5.43	501.97
22.2	5.29	502.11

MY2 (2008)

Station	Rod Ht.	Elevation
0	4.71	502.74
0	4.97	502.48
4	5.35	502.10
7.3	6.14	501.31
9.6	6.39	501.06
10.7	6.52	500.93
11.3	6.75	500.70
12.4	6.88	500.57
13.1	6.69	500.76
13.5	6.48	500.97
16.1	5.89	501.56
18.1	5.57	501.88
21	5.47	501.98
22.2	5.45	502.00
22.2	5.32	502.13

MY3 (2009)

Station	Rod Ht.	Elevation
0	4.71	502.74
0	4.97	502.48
2.9	5.19	502.26
5.8	5.76	501.69
9.1	6.29	501.16
10.6	6.32	501.13
11.7	6.82	500.63
12.5	6.96	500.49
12.8	6.78	500.67
13.3	6.37	501.08
15.7	5.84	501.61
18.2	5.51	501.94
19.9	5.49	501.96
22.2	5.44	502.01
22.2	5.32	502.13

MY4 (2010)

Station	Rod Ht.	Elevation
0	5	502.74
0	5.25	502.49
1.6	5.31	502.43
3.2	5.42	502.32
4.7	5.79	501.95
5.9	6.09	501.65
8.3	6.28	501.46
10.4	6.33	501.41
11.4	7.14	500.6
12.2	7.24	500.5
12.9	7.22	500.52
13.5	6.48	501.26
14.1	6.33	501.41
15.3	6.1	501.64
18.1	5.81	501.93
22.2	5.72	502.02
22.2	5.63	502.11

Cross-section 4 Raw Data

MY1 (2007)

Station	Rod Ht.	Elevation
0	2.02	500.46
0	2.22	500.26
1.1	2.31	500.17
2.3	2.88	499.60
3.5	3.87	498.61
6.4	5.95	496.53
9	7.58	494.90
10.2	8.47	494.01
12.8	8.72	493.76
14.7	9.32	493.16
16.5	10.12	492.36
16.8	10.47	492.01
17	10.55	491.93
17.7	10.95	491.53
18.4	10.99	491.49
19.1	10.85	491.63
20.2	10.58	491.90
21.2	10.3	492.18
23	9.8	492.68
24.7	9.24	493.24
25.9	8.93	493.55
26.9	8.82	493.66
28.2	8.8	493.68
31.4	8.59	493.89
33.7	8.09	494.39
35.2	7.7	494.78
40.5	5.46	497.02
42.9	4.62	497.86
44.7	4.35	498.13
44.7	4.08	498.40

MY2 (2008)

Station	Rod Ht.	Elevation
0	2.12	500.46
0	2.31	500.27
1.9	2.7	499.88
3.5	3.87	498.71
8	7.15	495.43
10.6	8.7	493.88
13	8.85	493.73
16.4	10.13	492.45
17	10.67	491.91
18.4	11.05	491.53
19.8	10.69	491.89
21	10.3	492.28
22	9.89	492.69
26	9	493.58
33.1	8.36	494.22
36	7.37	495.21
43.3	4.68	497.90
44.7	4.44	498.14
44.7	4.18	498.40

MY3 (2009)

Station	Rod Ht.	Elevation
0	2.3	500.46
0	2.44	500.32
1.7	2.73	500.03
3.9	4.22	498.54
8	7.14	495.62
10.3	8.6	494.16
11.8	8.94	493.82
14.4	9.29	493.47
15.7	9.85	492.91
17.1	10.85	491.91
17.8	11.12	491.64
18.7	11.16	491.60
20	10.94	491.82
21.9	9.88	492.88
24.6	9.49	493.27
27.4	8.98	493.78
30.7	8.91	493.85
33.7	8.39	494.37
37	7.31	495.45
41	5.62	497.14
43.5	4.87	497.89
44.7	4.64	498.12
44.7	4.36	498.40

MY4 (2010)

Station	Rod Ht.	Elevation
0	2.69	500.46
0	2.79	500.36
1.6	3.14	500.01
5.1	5.63	497.52
8.2	7.75	495.4
10.3	9.1	494.05
12.2	9.31	493.84
14.4	9.79	493.36
15.9	10.25	492.9
16.7	11.26	491.89
19	11.47	491.68
19.6	11.33	491.82
21	10.35	492.8
23.9	10.02	493.13
27.4	9.38	493.77
31.7	9.11	494.04
35	8.37	494.78
38.1	7.17	495.98
40.2	6.16	496.99
42.5	5.37	497.78
44.7	5.05	498.1
44.7	4.79	498.36

Cross-section 5 Raw Data

MY1 (2007)

Station	Rod Ht.	Elevation
0	1.64	500.84
0	1.85	500.63
1.9	2.29	500.19
2.9	2.28	500.20
4.8	3.26	499.22
7.2	5.33	497.15
9.3	7.41	495.07
10.4	8.11	494.37
12.1	8.85	493.63
13.8	9.11	493.37
14.3	9.48	493.00
15.1	9.46	493.02
15.6	10.78	491.70
16	10.93	491.55
16.8	11.15	491.33
17.1	11.03	491.45
17.5	11.36	491.12
18.7	11.5	490.98
20.6	10.98	491.50
21.7	10.94	491.54
22.5	10.54	491.94
23.1	9.9	492.58
23.5	9.57	492.91
26.2	9.25	493.23
28.8	8.95	493.53
32.8	8.65	493.83
36.8	7.44	495.04
38.7	6.49	495.99
39.4	6.16	496.32
41.3	5.12	497.36
42.2	4.87	497.61
43.1	4.83	497.65
43.1	4.62	497.86

MY2 (2008)

Station	Rod Ht.	Elevation
0	1.74	500.84
0	1.93	500.65
2.8	2.38	500.20
5.3	3.65	498.93
9	7.13	495.45
11.8	8.73	493.85
12.3	8.93	493.65
14.1	9.52	493.06
15.6	10.86	491.72
19.1	11.61	490.97
21.9	10.95	491.63
22.2	10.43	492.15
24.9	9.28	493.30
32.5	8.74	493.84
36	7.75	494.83

MY2 (2008)

Station	Rod Ht.	Elevation
38.8	6.56	496.02
41.6	5.08	497.50
43.1	4.92	497.66
43.1	4.71	497.87

MY3 (2009)

Station	Rod Ht.	Elevation
0	2.09	500.84
0	2.23	500.70
4	3.33	499.60
5.9	4.87	498.06
10	8.32	494.61
12.1	9.3	493.63
14.6	9.98	492.95
15.4	11.37	491.56
19	11.92	491.01
21.9	11.56	491.37
22.4	10.53	492.40
25.6	9.63	493.30
28.9	9.38	493.55
31.8	9.15	493.78
35.4	8.14	494.79
39.1	6.79	496.14
41.1	5.58	497.35
43	5.28	497.65
43	5.28	497.65

MY4 (2010)

Station	Rod Ht.	Elevation
0	2.31	500.84
0	2.43	500.72
2.5	2.99	500.16
6.7	5.84	497.31
10.5	8.98	494.17
13.2	9.66	493.49
14.6	10.23	492.92
15.5	11.61	491.54
18	12.17	490.98
18.9	12.19	490.96
21.1	12.08	491.07
21.6	11.96	491.19
22.4	10.69	492.46
24	9.99	493.16
28.7	9.57	493.58
34.3	8.67	494.48
38.1	7.31	495.84
41.4	5.6	497.55
42.9	5.48	497.67
42.9	5.29	497.86

Figure 6.0. Longitudinal Profiles with Annual Overlays - Stillhouse Creek Stream Restoration - EEP Project #363

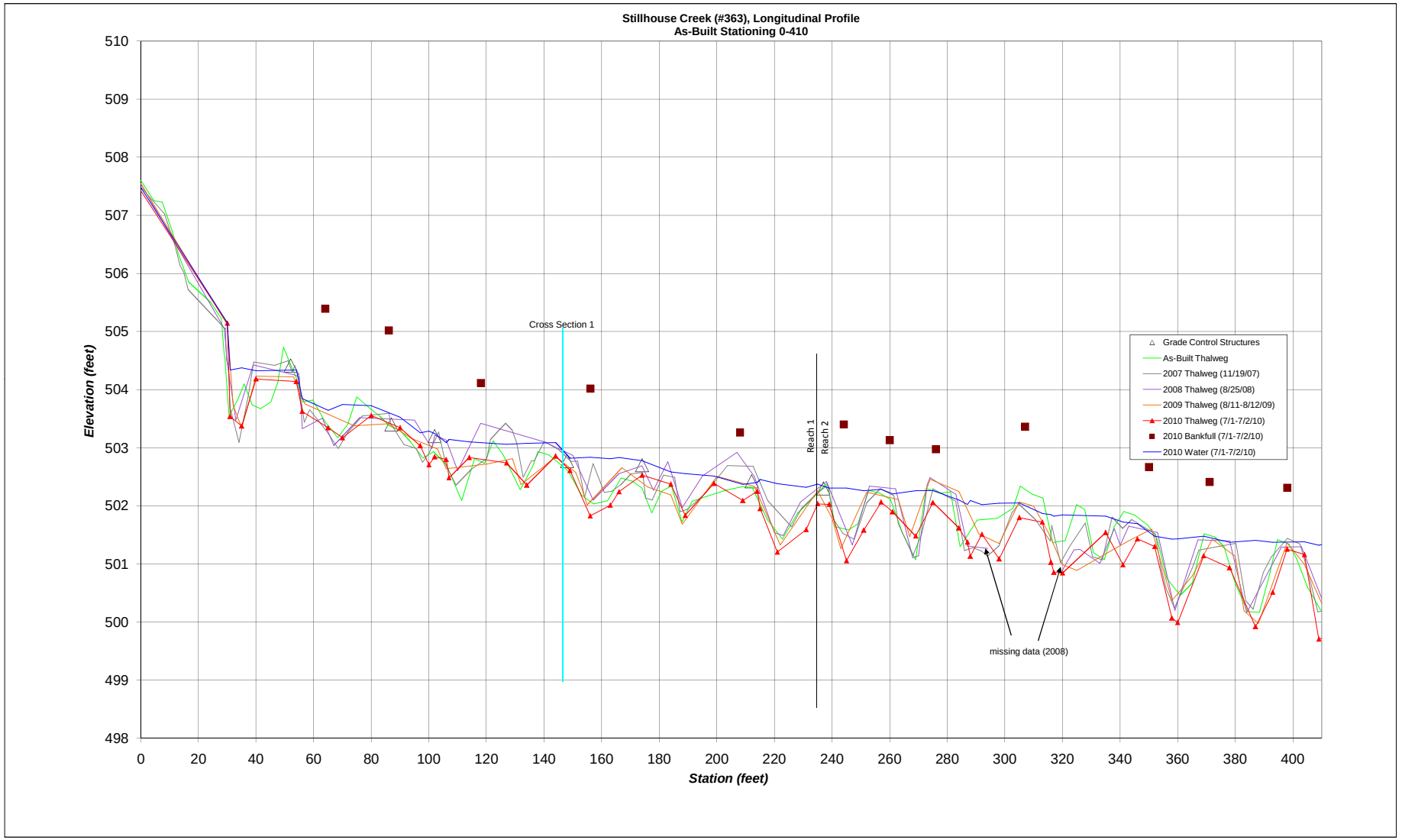


Figure 6.1. Longitudinal Profiles with Annual Overlays - Stillhouse Creek Stream Restoration - EEP Project #363

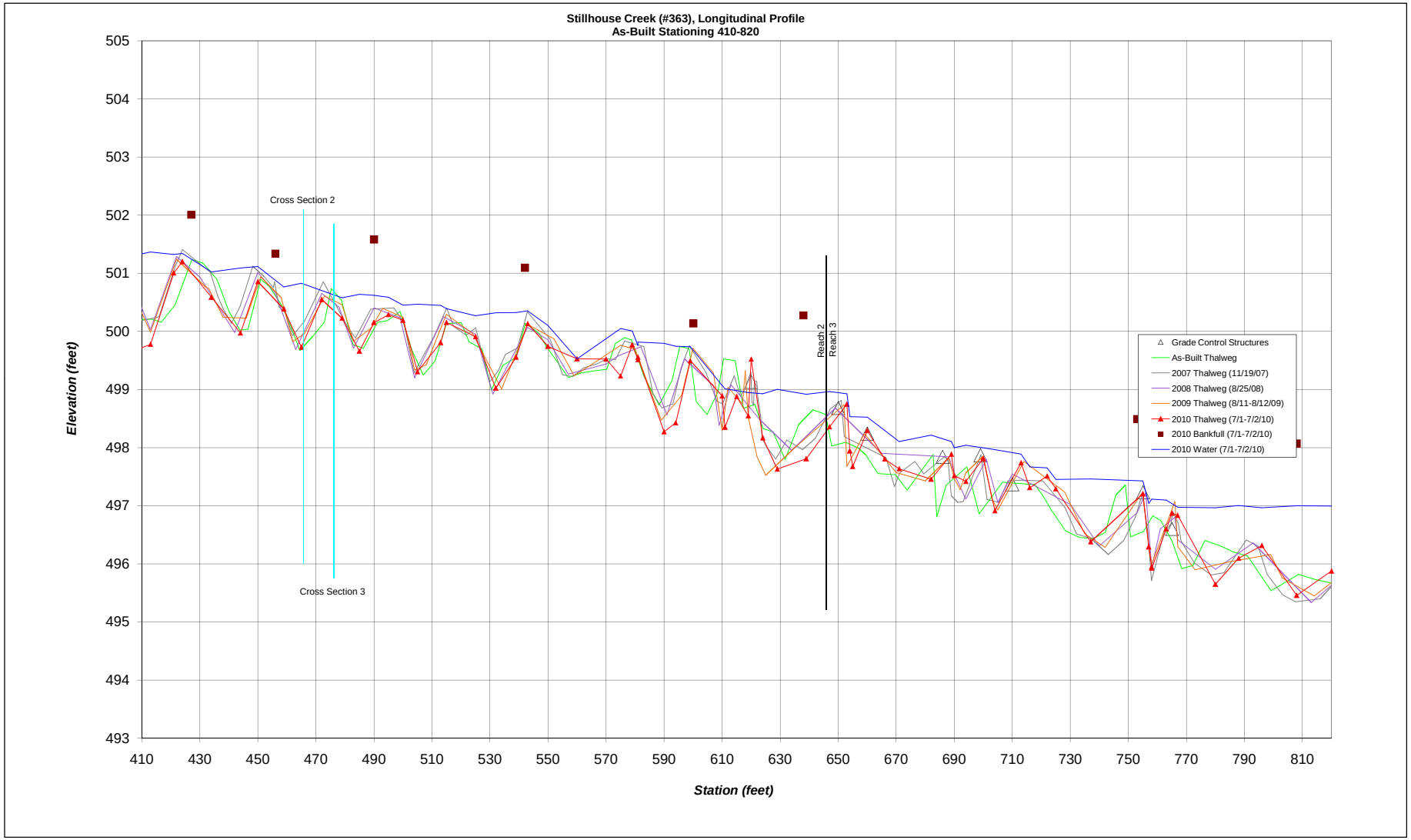
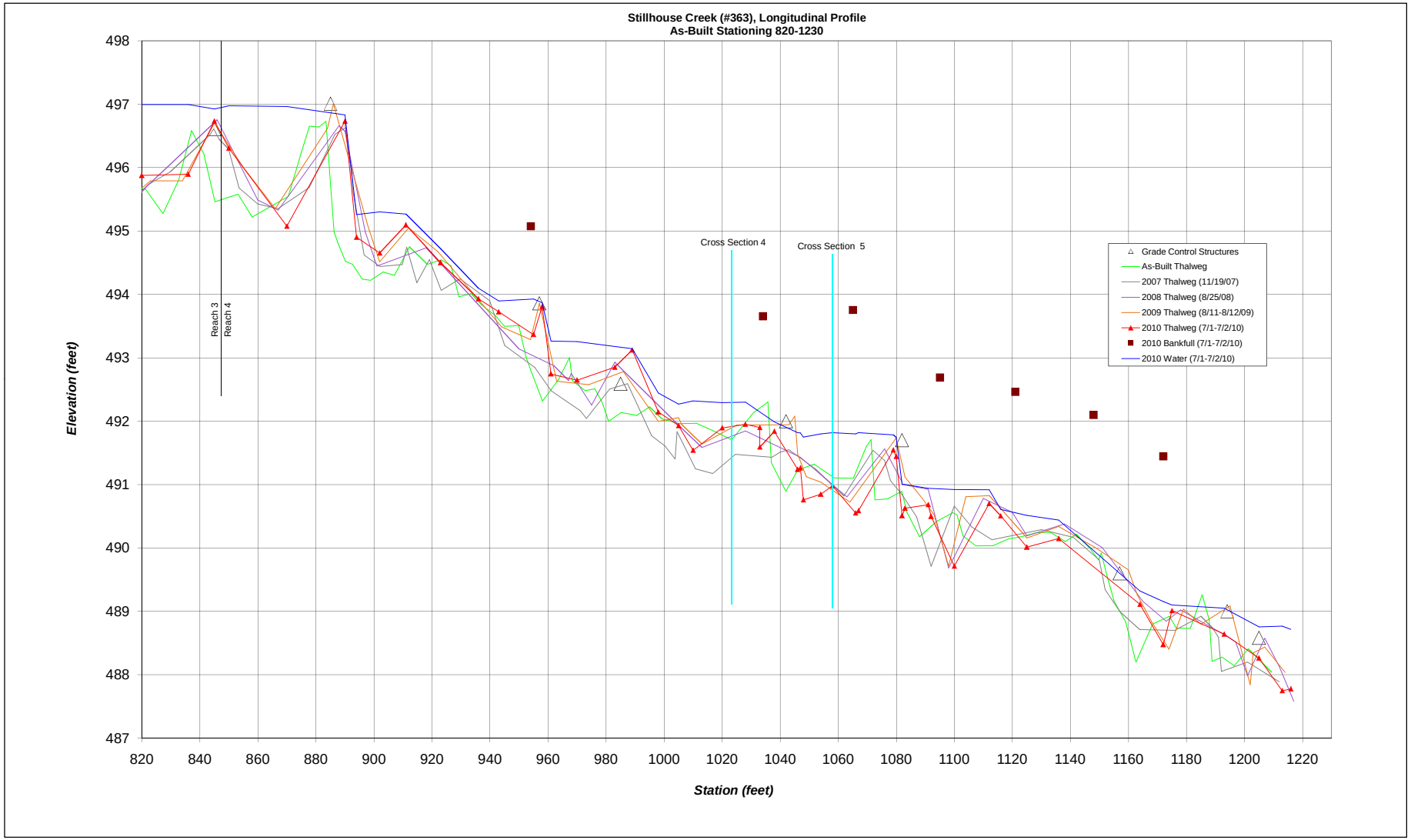


Figure 6.2. Longitudinal Profiles with Annual Overlays - Stillhouse Creek Stream Restoration - EEP Project #363



As-Built Data 2006

Station	Thalweg Elevation	Water Surface Elevation
0.00	507.60	507.65
4.56	507.25	507.30
7.45	507.23	507.28
11.01	506.71	506.76
13.03	506.34	506.39
16.55	505.85	505.90
24.23	505.50	505.55
27.94	505.22	505.27
28.85	504.62	504.85
29.17	504.55	504.60
30.70	503.50	504.60
31.32	503.62	504.82
33.68	503.83	504.81
35.85	504.10	504.80
38.62	503.74	504.82
41.52	503.67	504.80
45.08	503.79	504.81
47.54	504.13	504.82
49.50	504.73	504.78
51.85	504.44	504.55
53.85	504.22	504.29
56.20	503.79	504.04
59.71	503.82	504.02
63.91	503.45	504.00
68.31	503.17	503.97
71.80	503.40	504.00
74.95	503.87	503.99
79.81	503.66	503.75
83.04	503.54	503.67
86.10	503.38	503.51
90.25	503.29	503.37
93.62	503.10	503.30
97.97	502.82	503.27
101.63	502.93	503.25
106.12	502.70	503.26
111.38	502.09	503.29
115.86	502.81	503.29
119.36	502.73	503.28
122.30	503.12	503.27
125.91	502.87	503.17
131.71	502.28	503.16
136.08	502.68	503.16
137.80	502.93	503.14
141.76	502.87	503.00
148.26	502.60	502.78
152.93	502.19	502.68
157.14	502.03	502.65

Station	Thalweg Elevation	Water Surface Elevation
161.99	502.09	502.64
166.73	502.48	502.66
170.70	502.42	502.63
173.97	502.31	502.69
177.41	501.88	502.63
180.79	502.25	502.64
184.25	502.34	502.64
187.90	501.72	502.57
191.35	502.08	502.60
196.46	502.16	502.60
203.30	502.27	502.56
209.08	502.33	502.62
212.20	502.32	502.46
217.47	501.76	502.42
222.74	501.43	502.42
227.93	501.87	502.48
234.50	502.19	502.54
238.27	502.39	502.48
241.14	501.64	502.44
245.82	501.59	502.48
248.97	501.69	502.47
252.72	502.26	502.46
256.53	502.22	502.45
260.27	502.11	502.45
264.49	501.52	502.42
269.00	501.07	502.42
272.62	502.30	502.49
277.47	502.21	502.46
281.14	502.24	502.44
284.41	501.29	502.39
290.41	501.75	502.55
297.32	501.78	502.68
302.86	501.96	502.45
305.29	502.34	502.43
309.43	502.20	502.31
313.23	502.13	502.27
316.58	501.37	502.12
320.89	501.40	502.10
324.93	502.02	502.11
327.74	501.93	501.99
330.78	501.19	501.95
334.51	501.07	502.02
337.97	501.65	502.03
341.28	501.90	501.95
345.09	501.84	501.89
349.67	501.66	501.69
352.91	501.42	501.62

Station	Thalweg Elevation	Water Surface Elevation
356.19	500.75	501.53
360.86	500.46	501.56
365.04	500.67	501.57
369.17	501.52	501.82
373.00	501.46	502.26
376.10	501.29	501.55
380.01	500.66	501.48
384.25	500.18	501.48
388.35	500.16	501.41
391.90	500.83	501.49
394.64	501.42	501.51
398.68	501.34	501.40
401.27	501.09	501.37
405.01	500.61	501.36
409.60	500.21	501.37
413.41	500.21	501.40
416.69	500.16	501.37
421.43	500.45	501.35
427.23	501.23	501.35
431.02	501.18	501.27
435.91	500.90	501.04
440.12	500.33	501.01
443.77	500.03	501.02
446.59	500.04	501.00
450.97	500.90	501.00
453.89	500.78	500.85
459.12	500.38	500.78
464.46	499.67	500.79
468.79	499.91	500.80
472.86	500.15	500.79
475.30	500.73	500.78
478.84	500.54	500.62
482.77	499.77	500.39
486.41	499.71	500.47
491.19	500.15	500.54
494.59	500.18	500.36
498.98	500.34	500.42
502.96	499.69	500.33
506.95	499.25	500.34
511.04	499.49	500.32
514.95	500.13	500.36
520.08	500.15	500.23
522.74	499.82	500.20
527.30	499.70	500.23
530.48	498.99	500.23
534.42	499.41	500.23
538.88	499.55	500.20
542.20	500.14	500.22

Station	Thalweg Elevation	Water Surface Elevation
546.91	499.96	500.04
549.39	499.74	499.97
552.81	499.50	499.96
556.97	499.21	500.00
561.54	499.28	500.00
567.04	499.33	499.99
570.18	499.34	499.97
573.25	499.80	500.00
576.40	499.89	499.97
578.80	499.85	499.93
582.93	499.24	499.81
588.25	498.73	499.83
592.80	499.16	499.81
595.35	499.74	499.85
598.58	499.70	499.78
601.09	498.79	499.64
604.78	498.57	499.60
608.52	498.96	499.68
610.46	499.53	499.65
614.48	499.50	499.57
617.36	498.68	498.94
621.27	498.75	498.90
624.10	498.33	498.79
627.56	498.27	498.79
631.73	497.79	498.79
636.38	498.40	498.80
641.28	498.65	499.75
645.60	498.57	498.72
647.75	498.03	498.41
652.55	498.09	498.38
656.96	497.99	498.17
659.50	497.87	498.02
663.65	497.56	498.06
669.74	497.53	498.01
673.81	497.27	497.99
682.72	497.88	497.99
683.94	496.81	497.81
687.17	497.35	497.80
694.36	497.67	497.75
698.55	496.86	497.62
706.63	497.40	497.59
712.87	497.38	497.49
717.72	497.36	497.45
720.53	497.17	497.47
723.61	496.91	497.49
728.32	496.57	497.49
733.17	496.45	497.46
737.97	496.44	497.46

Station	Thalweg Elevation	Water Surface Elevation
742.04	496.54	497.50
745.69	497.18	497.48
748.94	497.36	497.45
750.78	496.46	496.96
755.15	496.55	496.94
758.34	496.83	496.92
761.11	496.75	496.90
764.96	496.40	496.89
768.42	495.92	496.87
772.18	495.97	496.85
776.32	496.40	496.85
781.54	496.31	496.87
786.42	496.20	496.88
791.02	496.13	496.84
799.17	495.54	496.85
808.57	495.82	496.81
814.53	495.73	496.91
821.34	495.66	496.86
827.27	495.27	496.85
832.69	495.81	496.83
837.11	496.58	496.88
841.40	496.21	496.89
845.22	495.46	496.84
853.16	495.58	496.89
858.04	495.22	496.87
870.49	495.54	496.82
874.99	496.24	496.87
877.80	496.65	496.85
881.11	496.64	496.80
883.44	496.73	496.75
885.27	495.60	495.62
886.27	494.98	495.19
887.57	494.82	494.97
890.21	494.52	494.92
892.67	494.47	494.77
895.94	494.24	494.82
898.82	494.22	494.91
903.17	494.36	494.86
907.03	494.30	494.92
912.23	494.75	494.89
918.44	494.47	494.80
923.14	494.55	494.76
926.53	494.45	494.60
929.25	493.96	494.11
933.54	494.01	494.21
937.37	493.83	494.05
941.84	493.67	493.93

Station	Thalweg Elevation	Water Surface Elevation
944.95	493.50	493.79
949.92	493.51	493.56
952.36	493.02	493.20
954.12	492.79	493.04
958.04	492.33	493.06
958.11	492.32	493.05
963.52	492.65	493.08
967.36	493.00	493.05
968.42	492.64	492.79
972.84	492.48	492.75
976.11	492.51	492.69
978.60	492.31	492.41
980.88	492.00	492.41
985.23	492.14	492.36
990.50	492.09	492.35
994.97	492.22	492.37
999.27	492.03	492.34
1005.15	491.96	492.37
1011.12	491.97	492.38
1016.70	491.86	492.36
1023.33	491.71	492.26
1030.75	492.13	492.33
1033.88	492.24	492.34
1035.77	492.31	492.32
1036.95	491.35	491.84
1041.99	490.89	491.84
1046.00	491.23	491.82
1051.75	491.32	491.81
1058.68	491.10	491.78
1065.16	491.10	491.79
1069.63	491.59	491.83
1071.28	491.71	491.76
1072.64	490.76	491.31
1076.99	490.77	491.29
1081.92	490.90	491.30
1083.71	490.56	490.91
1088.03	490.18	490.91
1094.13	490.42	490.88
1099.49	490.56	490.88
1100.95	490.52	490.64
1103.00	490.19	490.49
1107.45	490.03	490.49
1113.36	490.04	490.52
1118.60	490.14	490.52
1123.33	490.18	490.50
1128.43	490.24	490.45
1133.14	490.25	490.45

Station	Thalweg Elevation	Water Surface Elevation
1138.23	490.10	490.43
1142.11	490.22	490.44
1146.41	490.01	490.23
1149.82	489.81	490.01
1150.65	489.92	490.02
1152.53	489.58	489.77
1155.07	489.16	489.36
1159.03	488.84	489.33
1162.58	488.20	488.39
1168.41	488.80	489.30
1174.14	488.92	489.34
1176.54	488.74	489.34
1181.31	488.73	489.32
1185.46	489.26	489.31
1187.92	488.85	488.92
1188.79	488.21	488.86
1192.29	488.28	488.87
1196.42	488.14	488.86
1201.33	488.41	488.87
1209.39	488.04	488.84

Longitudinal Profile 2007

Station	Thalweg Elevation	Water Surface Elevation
0.00	507.49	507.49
8.15	507.02	507.02
11.79	506.50	506.50
13.64	506.13	506.13
14.90	506.02	506.02
16.39	505.72	505.72
26.25	505.21	505.21
29.22	505.04	505.04
29.31	505.07	505.07
29.78	504.51	504.51
30.43	504.42	504.45
30.90	503.70	504.46
34.06	503.09	504.49
37.39	503.91	504.46
39.15	504.48	504.48
46.46	504.42	504.42
51.08	504.50	504.50
52.53	504.30	504.30
53.45	504.42	504.42
54.65	504.25	504.25
54.80	504.28	504.28
55.22	503.87	503.87
55.91	503.74	503.80
56.72	503.44	503.84
58.54	503.65	503.82
64.62	503.28	503.80
68.49	502.98	503.80
71.72	503.25	503.80
76.92	503.54	503.81
86.17	503.59	503.63
86.63	503.42	503.46
91.36	503.05	503.40
95.58	502.99	503.39
97.80	502.75	503.40
99.89	502.89	503.39
103.40	503.27	503.37
105.91	502.70	503.40
109.41	502.35	503.35
114.79	502.63	503.33
120.13	502.81	503.39
121.39	503.14	503.70
124.48	503.31	503.69
126.64	503.42	503.64
128.90	503.30	503.48
130.44	503.09	503.30
132.72	502.49	503.27
135.64	502.78	503.28
136.52	502.77	503.27

Station	Thalweg Elevation	Water Surface Elevation
140.06	503.11	503.28
145.29	502.96	503.26
149.34	502.76	503.24
151.31	502.77	503.23
151.65	502.77	503.23
154.00	502.14	503.20
156.98	502.72	503.22
160.93	502.23	503.21
163.46	502.25	503.15
166.64	502.36	503.18
170.14	502.55	503.19
174.23	502.57	503.07
175.27	502.13	503.73
177.56	502.10	503.20
181.47	502.53	503.21
185.30	502.49	503.19
187.18	501.90	503.20
189.65	501.94	503.14
195.60	502.19	503.15
203.71	502.69	503.14
212.58	502.68	502.88
217.68	502.09	502.73
225.91	501.64	502.74
229.26	501.95	502.74
234.96	502.22	502.67
238.60	502.35	502.69
240.48	501.77	502.67
243.82	501.52	502.72
247.68	501.42	501.68
252.03	502.05	502.69
256.70	502.29	502.64
261.49	502.17	502.52
263.00	501.69	502.51
268.04	501.14	502.31
271.04	501.51	502.46
275.02	502.29	502.49
282.93	502.08	502.23
285.99	501.23	502.20
288.91	501.28	502.25
291.93	501.22	502.14
293.96	501.13	502.17
297.94	501.31	502.23
302.40	501.88	502.26
304.80	502.03	502.20
310.68	501.76	502.01
312.36	501.64	501.94
315.78	501.39	501.89
316.24	501.66	502.11

Station	Thalweg Elevation	Water Surface Elevation
319.31	501.02	502.10
322.16	501.28	502.10
327.89	501.70	502.08
330.44	501.12	502.09
333.84	501.07	502.08
337.23	501.80	502.08
340.85	501.61	502.08
344.00	501.76	501.96
352.34	501.51	501.73
354.08	500.96	501.72
355.94	500.58	501.72
358.82	500.24	501.70
364.95	500.92	501.80
367.30	501.24	501.78
380.26	501.35	501.57
383.61	500.36	501.66
386.17	500.22	501.59
389.70	500.85	501.61
392.43	501.12	501.63
398.07	501.44	501.62
402.46	501.34	501.54
405.54	500.81	501.55
408.61	500.17	501.57
415.93	500.25	501.55
421.55	501.12	501.52
424.04	501.41	501.57
433.57	501.02	501.18
436.15	500.61	501.25
438.12	500.38	501.24
440.85	500.14	501.24
443.82	500.43	501.27
448.25	501.12	501.30
452.10	500.95	501.11
455.32	500.75	500.99
455.74	500.85	501.00
457.27	500.43	500.88
459.47	500.32	500.87
462.03	499.93	500.96
466.10	500.18	500.99
472.51	500.85	500.95
481.38	500.04	500.57
483.63	499.89	500.56
488.91	500.38	501.18
496.92	500.40	500.52
500.34	500.14	500.52
503.84	499.29	500.54
507.68	499.64	500.52
510.88	499.93	500.51

Station	Thalweg Elevation	Water Surface Elevation
515.06	500.40	500.52
517.54	500.08	500.50
525.06	500.06	500.51
529.82	499.13	500.50
532.74	499.32	500.51
535.33	499.60	500.48
539.52	499.71	500.51
542.87	500.34	500.48
550.74	499.86	500.01
555.03	499.25	499.99
558.45	499.22	499.97
562.23	499.37	499.97
567.24	499.45	500.01
570.09	499.53	500.02
573.26	499.51	499.99
576.37	499.83	500.00
582.97	499.74	499.83
586.18	498.92	499.82
589.27	498.68	499.80
593.03	498.75	499.80
595.80	499.37	499.82
598.67	499.75	499.80
604.49	499.28	499.33
608.17	498.80	499.30
610.17	498.75	499.32
614.12	499.23	499.28
616.23	498.89	499.14
617.36	498.96	499.14
618.92	499.54	499.54
619.88	499.29	499.29
620.27	498.79	498.99
620.84	498.73	498.98
621.13	499.14	499.14
621.95	499.14	499.14
622.27	498.86	498.98
623.26	498.53	498.97
623.75	498.16	498.96
625.67	497.98	498.98
628.49	497.80	499.00
632.31	498.13	498.98
637.75	497.96	498.98
642.08	498.15	499.00
647.30	498.67	499.02
651.05	498.81	498.87
652.05	498.19	498.49
666.49	497.83	498.03
669.41	497.33	498.01
671.19	497.56	498.05

Station	Thalweg Elevation	Water Surface Elevation
676.39	497.76	498.04
679.46	497.55	498.01
686.39	497.84	498.04
687.75	497.81	497.95
688.97	497.17	497.93
691.15	497.06	497.94
693.06	497.07	497.95
699.18	497.87	497.91
701.30	497.11	497.66
705.29	497.06	497.72
708.52	497.43	497.73
713.48	497.44	497.55
720.56	497.43	497.52
728.20	496.96	497.13
732.15	496.51	497.11
736.97	496.44	497.16
743.13	496.16	497.10
748.24	496.39	497.08
752.46	496.81	497.11
754.84	497.21	497.21
756.66	496.55	497.01
757.93	495.71	496.96
762.26	496.54	496.99
764.69	496.69	496.99
765.34	496.90	496.98
767.18	496.69	497.39
768.11	496.39	496.75
772.72	496.01	496.79
778.50	495.81	496.71
782.87	495.85	496.81
790.60	496.41	496.80
794.70	496.30	496.77
797.82	495.82	496.79
803.17	495.46	496.80
807.61	495.35	496.79
816.07	495.40	496.80
822.22	495.73	496.78
829.85	495.94	496.84
843.38	496.52	496.78
844.78	496.61	496.78
846.66	496.45	496.72
849.87	496.29	496.74
853.50	495.68	496.76
859.93	495.42	496.72
866.95	495.35	496.75
877.70	495.69	496.79
886.57	496.53	496.73
890.27	496.63	496.63

Station	Thalweg Elevation	Water Surface Elevation
892.15	495.99	495.99
892.87	495.60	495.60
896.59	494.62	494.87
902.04	494.44	494.88
909.74	494.47	494.85
911.32	494.74	494.84
914.78	494.18	494.70
919.07	494.55	494.74
923.21	494.06	494.28
929.63	494.25	494.32
939.91	493.90	493.94
945.06	493.19	493.28
955.38	492.85	492.87
961.09	492.48	492.73
966.26	492.32	492.82
971.00	492.17	492.81
973.21	492.05	492.83
981.19	492.51	492.84
987.37	492.59	492.65
995.74	491.77	491.88
1000.28	491.61	491.90
1003.80	491.40	491.77
1004.42	491.84	492.24
1006.68	491.63	491.83
1010.78	491.25	491.81
1016.79	491.17	491.75
1024.54	491.48	491.80
1037.15	491.43	491.70
1040.00	491.51	491.66
1042.00	491.40	491.55
1042.00	491.33	491.33
1042.00	490.73	490.73
1042.00	493.56	493.68
1065.00	490.51	491.38
1065.00	493.33	493.42
1065.00	493.24	493.37
1065.00	493.24	493.29
1065.00	493.86	494.28
1097.00	489.50	490.62
1110.00	490.30	490.59
1113.00	490.41	490.47
1116.00	490.15	490.23
1116.00	492.29	492.46
1126.00	489.82	490.16
1133.00	489.98	490.18
1144.00	489.91	490.06
1157.00	489.48	489.54
1161.00	489.17	489.27

Station	Thalweg Elevation	Water Surface Elevation
1165.00	488.93	489.73
1167.00	488.50	488.86
1167.00	491.22	491.53
1167.00	491.29	491.42
1198.00	488.23	488.49
1212.00	487.97	488.49
1212.00	487.89	488.48
1212.00	488.91	489.97
1221.00	487.41	488.53
1221.00	488.75	490.65
1221.00	486.73	488.53

Station	Bankfull Elevation
80	505.70
120	504.91
140	505.41
157	505.79
270	503.81
375	503.52
465	502.62
530	501.93
762	498.60
810	498.67
976	494.63
1023	493.51
1057	493.12
1174	491.43
1128	492.59

Longitudinal Profile Data 2008

Station	Thalweg Elevation	Water Surface Elevation
0	507.55	
29	505.05	
30	504.45	
33	503.48	504.46
39	504.43	504.44
53	504.26	504.26
55	504.22	504.22
56	503.33	503.69
63	503.51	503.68
67	503.04	503.68
76	503.52	503.69
95	503.47	503.65
101	502.99	503.59
102	503.21	503.59
106	503.13	503.55
110	502.60	503.58
118	503.42	503.57
140	503.10	503.35
150	502.87	503.19
157	502.10	503.20
166	502.55	503.20
174	502.69	503.24
178	502.27	503.23
183	502.76	503.14
188	501.97	503.17
195	502.51	503.18
207	502.92	503.17
213	502.50	502.80
220	501.54	502.76
223	501.48	502.78
229	502.07	502.77
238	502.42	502.61
247	501.32	502.62
253	502.34	502.57
262	502.29	502.59
268	501.11	502.61
270	501.14	502.54
273	502.36	502.56
274	502.49	502.63
283	502.20	502.30
287	501.31	502.36
294	501.27	502.32
295		
320	500.89	502.09
324	501.24	502.12
326	501.25	502.13

Station	Thalweg Elevation	Water Surface Elevation
333	501.01	502.11
338	501.61	502.13
340	501.32	502.12
343	501.65	502.11
353	501.54	501.75
359	500.20	501.74
367	501.41	501.71
378	501.40	501.60
384	500.16	501.56
396	501.29	501.63
403	501.29	501.54
413	500.03	501.53
422	501.29	501.51
430	500.94	501.04
442	499.98	501.09
450	501.02	501.12
456	500.66	500.81
463	499.69	500.83
472	500.65	500.82
478	500.42	500.58
483	499.71	500.60
490	500.40	500.60
499	500.24	500.41
504	499.20	500.40
514	500.25	500.45
525	499.95	500.35
531	498.92	500.27
543	500.07	500.42
550	499.85	499.95
557	499.26	499.94
570	499.44	500.04
574	499.58	499.96
582	499.74	499.79
591	498.56	499.76
597	499.53	499.78
607	499.06	499.11
609	498.38	499.14
613	499.08	499.08
623	498.48	498.98
634	497.95	498.93
649	498.68	498.93
665	497.90	498.00
688	497.84	497.89
690	497.55	497.93
694	497.11	497.90
701	497.80	497.81

Station	Thalweg Elevation	Water Surface Elevation
705	497.06	497.78
710	497.54	497.74
730	497.02	497.04
740	496.31	497.03
753	496.88	496.98
756	497.23	497.23
758	495.94	496.94
761	496.60	497.00
766	496.80	496.81
767	496.41	496.79
780	495.90	496.85
793	496.36	496.72
813	495.33	496.81
829	496.02	496.83
846	496.76	496.84
860	495.49	496.75
867	495.33	496.73
888	496.66	496.71
890	496.58	496.70
897	494.98	495.10
901	494.45	495.15
918	494.74	494.99
950	493.14	493.24
962	492.87	493.17
967	492.64	493.14
968	492.75	493.25
975	492.25	493.15
983	492.93	493.13
1006	491.89	492.04
1013	491.59	492.04
1028	491.84	492.04
1047	491.43	491.68
1063	490.81	491.71
1076	491.56	491.71
1082	491.04	491.19
1082	491.00	491.17
1091	490.92	490.94
1098	489.68	490.98
1110	490.78	491.01
1120	490.56	490.66
1125	490.19	490.59
1138	490.38	490.58
1151	490.01	490.02
1165	489.16	489.21
1173	488.84	489.17
1178	489.02	489.12
1192	488.66	489.06

Station	Thalweg Elevation	Water Surface Elevation
1197	488.52	488.87
1201	487.98	488.83
1207	488.58	488.83
1212	488.13	488.78
1217	487.58	488.80

Bankfull	
Station	Elevation
75	506.9564
92	506.2907
110	506.4334
160	506.0059
191	505.6203
210	505.8466
265	504.1124
353	503.4299
403	502.9306
452	502.7058
540	501.7816
560	501.6463
575	501.295
615	501.04
657	501.2255
747	499.2093
907	497.9035
953	495.7756
1000	494.828
1037	493.9069
1072	493.5685
1126	492.9265
1156	492.1404
1210	491.0386

Longitudinal Profile Data 2009

Station	Thalweg Elevation	Water Surface Elevation
0	507.55	507.59
30	505.12	505.14
32	503.73	504.44
35	503.34	504.44
40	504.23	504.43
53	504.22	504.36
57	503.75	503.85
74	503.38	503.78
86	503.41	503.57
94	503.16	503.26
103	502.98	503.14
106	502.64	503.14
120	502.72	503.12
129	502.81	503.15
132	502.36	503.08
144	502.84	503.04
151	502.57	502.87
153	502.31	502.84
155	502.01	502.68
167	502.65	502.75
176	502.32	502.72
184	502.19	502.76
188	501.68	502.76
200	502.51	502.73
213	502.33	502.69
222	501.32	502.62
229	501.83	502.60
235	502.26	502.56
240	501.78	502.44
243	501.26	502.44
252	502.24	502.74
263	502.11	502.67
267	501.47	502.67
274	502.46	502.66
284	502.25	502.37
291	501.51	502.21
298	501.35	502.29
305	502.06	502.28
310	501.99	502.19
315	501.55	502.05
320	500.98	502.06
325	500.89	502.01
334	501.14	502.07
343	501.39	502.09
351	501.60	501.85
358	500.37	501.85
365	500.79	501.90
372	501.42	501.82
380	501.13	501.79
383	500.19	501.85

Station	Thalweg Elevation	Water Surface Elevation
388	499.97	501.87
398	501.36	501.87
404	500.99	501.43
413	499.99	501.47
422	501.24	501.44
432	500.76	501.12
433	500.74	501.16
438	500.24	501.16
446	500.23	501.16
451	500.94	501.12
458	500.58	500.86
462	499.82	500.85
466	499.96	500.87
473	500.61	500.79
479	500.46	500.69
483	499.83	500.65
489	500.05	500.63
493	500.40	500.67
500	500.24	500.48
504	499.34	500.49
508	499.42	500.47
515	500.30	500.44
524	499.96	500.36
534	499.01	500.41
543	500.12	500.36
552	499.87	500.12
559	499.23	499.99
568	499.53	500.08
575	499.76	500.07
580	499.69	500.03
589	498.47	499.99
596	498.89	499.96
600	499.71	499.91
607	499.28	499.30
610	498.30	499.10
612	499.03	499.05
617	498.75	498.93
618	499.32	498.82
619	498.53	498.73
622	497.84	498.79
625	497.52	498.74
635	498.00	498.92
652	498.74	498.84
653	497.68	498.48
659	498.24	498.44
670	497.57	498.09
680	497.43	498.09
688	497.83	498.01
690	497.47	497.96
692	497.28	497.96

Station	Thalweg Elevation	Water Surface Elevation
694	497.57	497.97
700	497.86	497.88
703	497.12	497.90
705	496.93	497.89
714	497.76	497.77
728	497.24	497.34
735	496.51	497.26
742	496.28	497.20
755	497.24	497.24
757	496.29	497.09
758	495.99	497.09
766	497.07	497.09
767	496.30	496.80
773	495.90	496.82
785	496.04	496.81
799	496.16	496.82
803	495.76	496.81
814	495.45	496.75
823	495.79	496.81
834	495.79	496.81
845	496.70	496.80
855	496.00	496.76
866	495.35	496.76
884	496.62	496.78
886	497.01	496.71
898	495.07	495.43
902	494.51	495.38
912	495.05	495.41
922	494.68	494.76
944	493.49	493.59
954	493.29	493.61
957	493.86	493.86
963	492.63	493.28
974	492.57	493.28
986	492.78	493.23
998	492.00	492.34
1005	492.06	492.17
1006	491.95	492.23
1013	491.64	492.19
1025	491.94	492.26
1043	491.94	491.96
1045	492.08	492.09
1046	491.48	491.89
1049	491.12	491.85
1054	491.04	491.90
1064	490.72	491.83
1080	491.73	491.89
1083	491.11	491.28

Station	Thalweg Elevation	Water Surface Elevation
1089	490.78	491.15
1093	490.52	491.03
1098	489.71	491.02
1104	490.81	491.05
1112	490.82	490.94
1125	490.16	490.51
1136	490.34	490.52
1149	489.99	490.19
1160	489.66	489.67
1163	489.26	489.52
1168	488.83	489.27
1174	488.40	489.21
1179	489.04	489.20
1185	488.80	489.20
1195	489.09	489.15
1202	487.84	488.91
1203	488.34	488.98
1207	488.43	489.02
1214	488.04	489.04

Station	Bankfull Elevation
98	505.01
165	503.94
340	504.04
385	502.91
463	502.94
563	501.36
610	500.84
630	500.77
762	498.22
985	494.82
1128	492.78
1175	491.69
1205	490.57

Longitudinal Profile Data 2010

Station	Thalweg Elevation	Water Surface Elevation
-2	507.5711	507.6311
30	505.1424	505.1524
31	503.5356	504.3356
35	503.3737	504.3737
40	504.1836	504.3236
54	504.1394	504.3394
56	503.6235	503.8435
65	503.3428	503.6428
70	503.1721	503.7421
80	503.554	503.724
90	503.3455	503.5255
97	503.0342	503.2542
100	502.7057	503.2857
102	502.8426	503.2426
106	502.797	503.087
107	502.482	503.142
114	502.8309	503.1009
127	502.7384	503.0584
134	502.3542	503.0742
144	502.8563	503.0863
149	502.607	502.817
156	501.8233	502.8333
163	502.009	502.809
166	502.2404	502.8304
174	502.5263	502.7763
184	502.3733	502.5833
189	501.8322	502.5522
199	502.383	502.513
209	502.0885	502.3685
214	502.2512	502.4012
215	501.9504	502.4504
221	501.2006	502.3806
231	501.5896	502.3196
235	502.0331	502.3731
239	502.0245	502.3045
245	501.0548	502.3048
251	501.5802	502.2602
257	502.0623	502.2823
261	501.8952	502.2052
269	501.4776	502.2576
275	502.055	502.265
284	501.617	502.097
287	501.3744	502.0244
288	501.1296	502.0896
292	501.5095	502.0195
298	501.0855	502.0455
305	501.7962	502.0462
313	501.7179	501.8679
316	501.0267	501.8467
317	500.8525	501.8225

Station	Thalweg Elevation	Water Surface Elevation
320	500.8427	501.8427
335	501.5403	501.8203
341	500.9819	501.7219
346	501.4295	501.6895
352	501.2979	501.4779
358	500.0636	501.4236
360	499.9911	501.4311
369	501.137	501.477
378	500.9322	501.3722
387	499.9165	501.4065
393	500.511	501.371
398	501.2541	501.5841
404	501.1584	501.3784
409	499.7022	501.3222
413	499.7748	501.3648
421	501.0039	501.3239
424	501.2	501.34
434	500.5847	501.0247
444	499.9713	501.0913
450	500.8571	501.1171
459	500.3848	500.7648
465	499.7276	500.8276
472	500.5493	500.8893
479	500.2285	500.5785
485	499.6568	500.6368
490	500.1523	500.6223
495	500.2879	500.5879
500	500.1911	500.4511
505	499.3061	500.4661
513	499.8079	500.4479
515	500.1534	500.3934
525	499.9073	500.2673
532	499.0211	500.3211
539	499.555	500.325
543	500.1318	500.3518
550	499.7405	500.1005
560	499.526	499.526
570	499.5228	500.0328
575	499.2289	500.0489
579	499.7659	500.0059
581	499.5153	499.7553
581	499.5543	499.8143
590	498.2733	499.7933
594	498.4256	499.7456
599	499.4934	499.7334
610	498.8883	499.0683
611	498.3499	499.0099
615	498.8798	498.9798
619	498.5465	498.9465
620	499.5209	499.5209

Bankfull

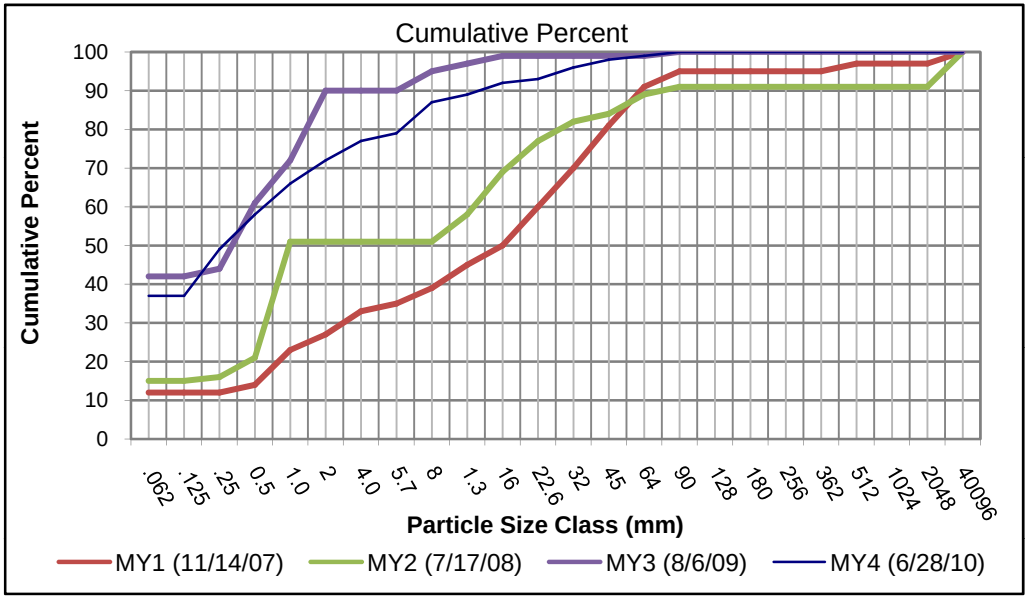
Station	Elevation
64	505.40
86	505.02
118	504.12
156	504.02
208	503.26
244	503.40
260	503.13
276	502.97
307	503.36
350	502.67
371	502.41
398	502.31
427	502.01
456	501.34
490	501.58
542	501.10
600	500.14
638	500.28
753	498.49
808	498.07
954	495.08
1034	493.66
1065	493.76
1095	492.69
1121	492.47
1148	492.10
1172	491.45

Station	Thalweg Elevation	Water Surface Elevation
624	498.1677	498.9277
629	497.6304	499.0004
639	497.8082	498.9182
647	498.3554	498.9654
653	498.7477	498.9277
654	497.9403	498.5303
655	497.6742	498.5942
660	498.2941	498.5241
666	497.8022	497.8022
671	497.6349	498.1049
682	497.4549	498.2149
689	497.8857	498.1057
690	497.5177	497.9977
694	497.4187	498.0387
700	497.811	499.611
704	496.9138	497.9638
713	497.7371	497.8871
716	497.3092	497.6692
722	497.5104	497.6504
725	497.2906	497.4506
737	496.3806	497.4606
755	497.2053	497.4253
757	496.2912	497.0412
758	495.9449	497.1149
758	495.9244	497.1244
763	496.5979	497.0979
765	496.8722	497.1122
767	496.8339	496.9739
780	495.6459	496.9659
788	496.094	497.004
796	496.3137	496.9637
808	495.4566	496.9966
820	495.8755	496.9955
836	495.8945	496.9945
845	496.7339	496.9239
850	496.3057	496.9757
870	495.0757	496.9657
890	496.7325	496.8325
894	494.9001	495.2601
902	494.6517	495.3017
911	495.0964	495.2664
923	494.4993	494.7193
936	493.9295	494.0995
943	493.7243	493.8943
955	493.3653	493.9253
958	493.8102	493.8702
961	492.7443	493.2643
970	492.6471	493.2571
983	492.8512	493.3712
989	493.1223	493.1423

Station	Thalweg Elevation	Water Surface Elevation
998	492.1433	492.4433
1005	491.9309	492.2709
1010	491.54	492.32
1020	491.8936	492.2936
1028	491.9506	492.3006
1033	491.8998	492.1898
1033	491.5908	491.5908
1038	491.8392	491.9892
1046	491.2381	491.8181
1047	491.2637	491.8137
1048	490.7586	491.7486
1054	490.8476	491.7976
1058	490.9799	491.8199
1066	490.5508	491.8008
1067	490.588	491.818
1079	491.5444	491.7844
1080	491.4437	491.7437
1082	490.507	491.007
1083	490.6251	491.0751
1091	490.6821	490.9421
1092	490.4988	490.8488
1100	489.7122	490.9222
1112	490.6992	490.9192
1116	490.5056	490.6056
1125	490.0132	490.5132
1136	490.1494	490.4394
1164	489.1109	489.3209
1172	488.475	489.155
1175	489.0107	489.1007
1193	488.6413	489.0513
1205	488.2629	488.7529
1213	487.7461	488.7661
1216	487.7764	488.7164

Figure 7.0. Pebble Counts - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

Cross Section One-Reach 1			2010		
Descript.	**Material**	**Size (mm)**	**Total #**	**Class %**	**Cum %**
Silt/Clay	Silt/Clay	.062	37	37	37
Sand	Very Fine Sand	.125		0	37
	Fine Sand	.25	12	12	49
	Medium Sand	0.5	9	9	58
	Coarse Sand	1.0	8	8	66
	Very Course Sand	2	6	6	72
Gravel	Very Fine Gravel	4.0	5	5	77
	Fine Gravel	5.7	2	2	79
	Fine Gravel	8	8	8	87
	Medium Gravel	1.3	2	2	89
	Medium Gravel	16	3	3	92
	Coarse Gravel	22.6	1	1	93
	Coarse Gravel	32	3	3	96
	Very Course Gravel	45	2	2	98
	Very Course Gravel	64	1	1	99
Cobble	Small Cobble	90	1	1	100
	Small Cobble	128		0	100
	Medium Cobble	180		0	100
	Large Cobble	256		0	100
Boulder	Small Boulders	362		0	100
	Small Boulders	512		0	100
	Medium Boulders	1024		0	100
	Large Boulders	2048		0	100
Bedrock	Bedrock	40096		0	100
	Total		100		



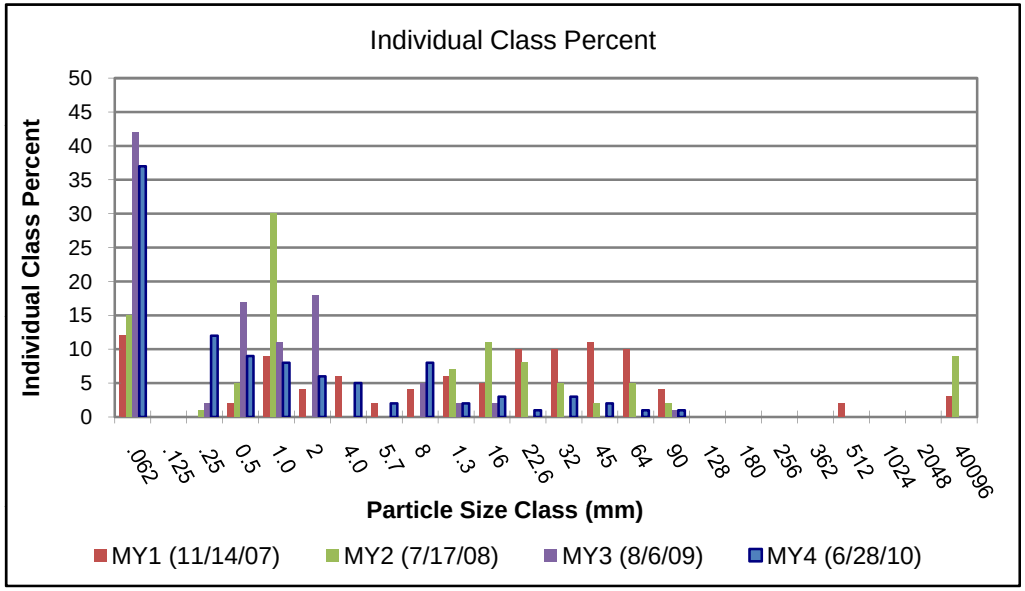
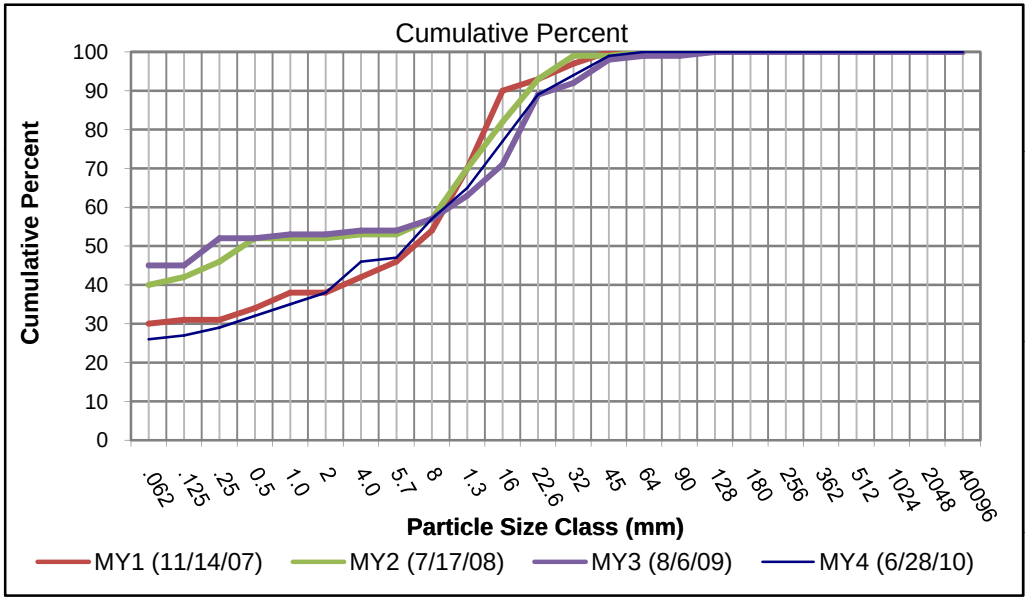


Figure 7.1. Pebble Counts - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

Cross Section Two-Reach 2			2010		
Descript.	**Material**	**Size (mm)**	**Total #**	**Class %**	**Cum %**
Silt/Clay	Silt/Clay	.062	26	26	26
Sand	Very Fine Sand	.125	1	1	27
	Fine Sand	.25	2	2	29
	Medium Sand	0.5	3	3	32
	Coarse Sand	1.0	3	3	35
	Very Course Sand	2	3	3	38
Gravel	Very Fine Gravel	4.0	8	8	46
	Fine Gravel	5.7	1	1	47
	Fine Gravel	8	10	10	57
	Medium Gravel	1.3	8	8	65
	Medium Gravel	16	12	12	77
	Coarse Gravel	22.6	12	12	89
	Coarse Gravel	32	5	5	94
	Very Course Gravel	45	5	5	99
	Very Course Gravel	64	1	1	100
Cobble	Small Cobble	90		0	100
	Small Cobble	128		0	100
	Medium Cobble	180		0	100
	Large Cobble	256		0	100
Boulder	Small Boulders	362		0	100
	Small Boulders	512		0	100
	Medium Boulders	1024		0	100
	Large Boulders	2048		0	100
Bedrock	Bedrock	40096		0	100
	Total		100		



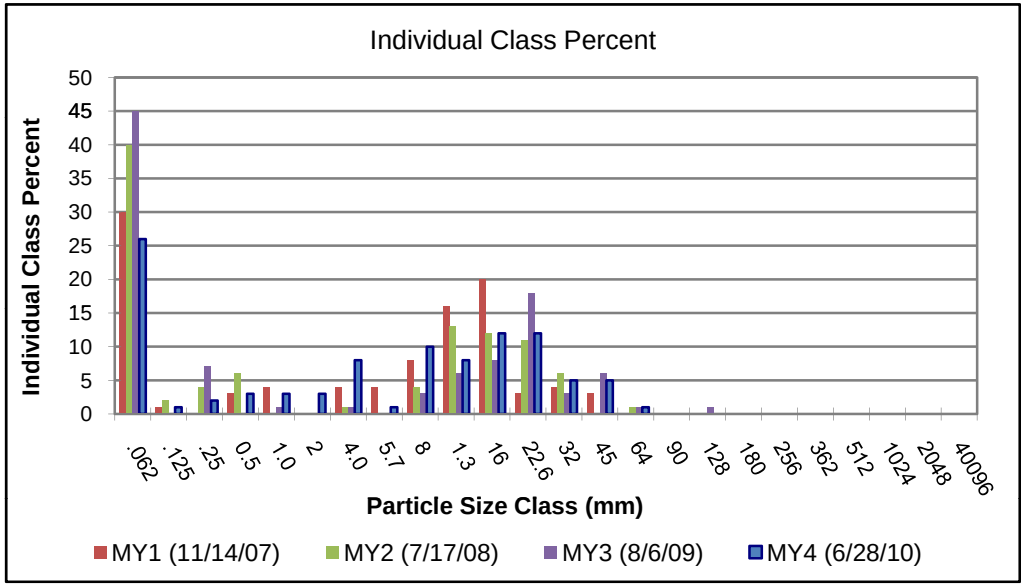
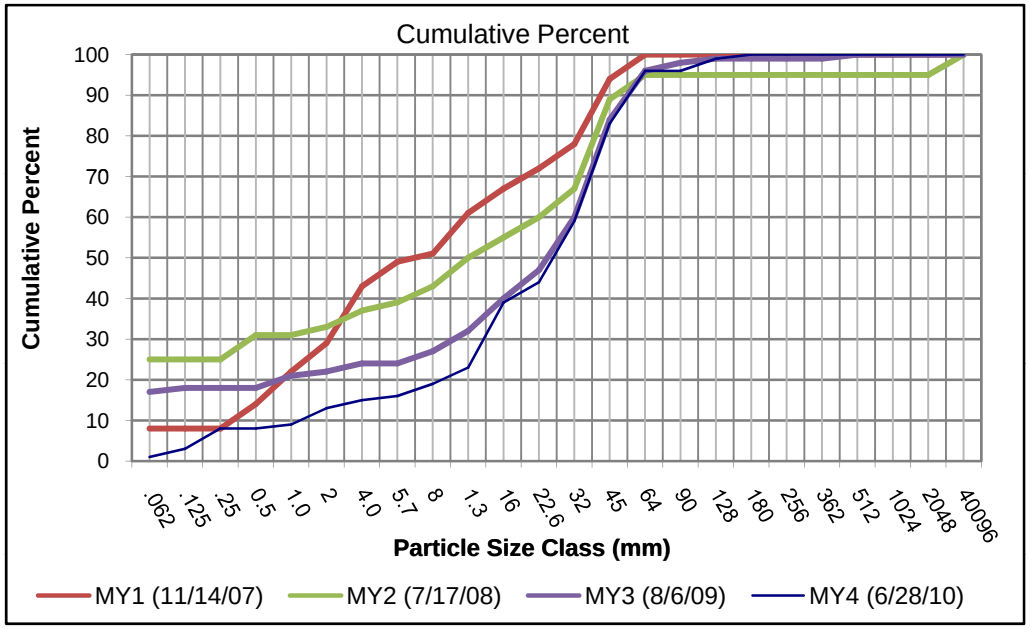


Figure 7.2. Pebble Counts - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

Cross Section Three-Reach 2			2010		
Descript.	**Material**	**Size (mm)**	**Total #**	**Class %**	**Cum %**
Silt/Clay	Silt/Clay	.062	1	1	1
Sand	Very Fine Sand	.125	2	2	3
	Fine Sand	**.25**	**5**	**5**	**8**
	Medium Sand	0.5		0	8
	Coarse Sand	1.0	1	1	9
	Very Course Sand	2	4	4	13
Gravel	Very Fine Gravel	4.0	2	2	15
	Fine Gravel	5.7	1	1	16
	Fine Gravel	**8**	**3**	**3**	**19**
	Medium Gravel	1.3	4	4	23
	Medium Gravel	16	16	16	39
	Coarse Gravel	22.6	5	5	44
	Coarse Gravel	32	15	15	59
	Very Course Gravel	45	24	24	83
	Very Course Gravel	64	13	13	96
Cobble	Small Cobble	90		0	96
	Small Cobble	128	3	3	99
	Medium Cobble	180	1	1	100
	Large Cobble	256		0	100
Boulder	**Small Boulders**	**362**		**0**	**100**
	Small Boulders	512		0	100
	Medium Boulders	1024		0	100
	Large Boulders	2048		0	100
Bedrock	Bedrock	40096		0	100
	Total		100		



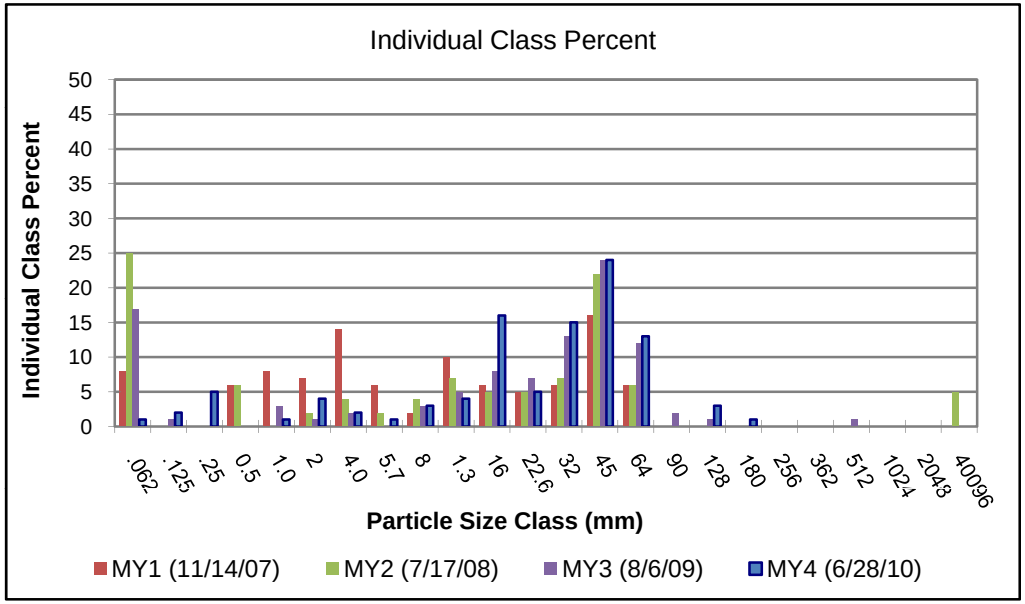
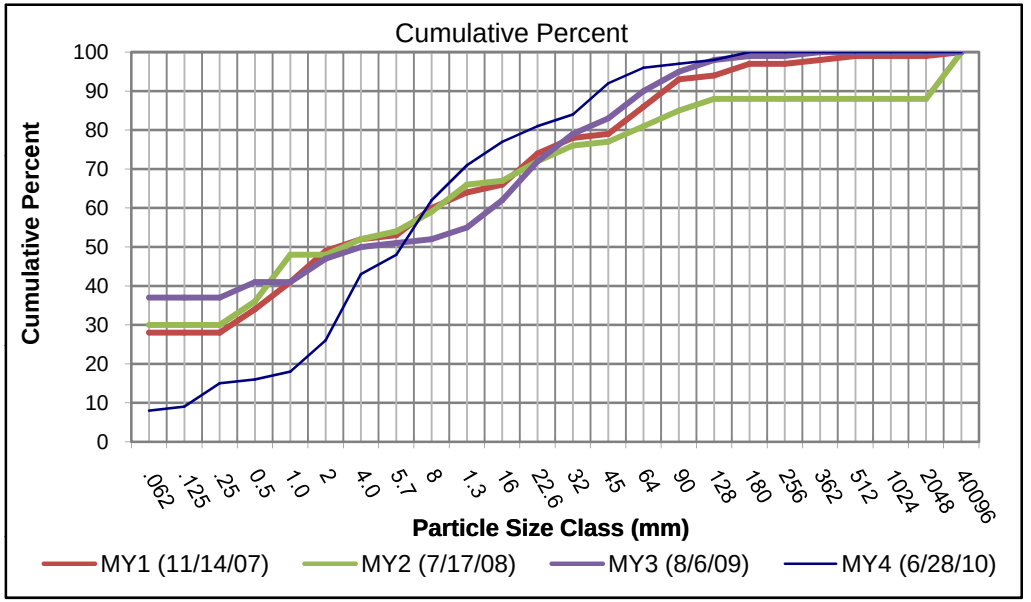


Figure 7.3. Pebble Counts - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

Cross Section Four-Reach 4			2010		
Descript.	**Material**	**Size (mm)**	**Total #**	**Class %**	**Cum %**
Silt/Clay	Silt/Clay	.062	8	8	8
Sand	Very Fine Sand	.125	1	1	9
	Fine Sand	.25	6	6	15
	Medium Sand	0.5	1	1	16
	Coarse Sand	1.0	2	2	18
	Very Course Sand	2	8	8	26
Gravel	Very Fine Gravel	4.0	17	17	43
	Fine Gravel	5.7	5	5	48
	Fine Gravel	8	14	14	62
	Medium Gravel	1.3	9	9	71
	Medium Gravel	16	6	6	77
	Coarse Gravel	22.6	4	4	81
	Coarse Gravel	32	3	3	84
	Very Course Gravel	45	8	8	92
	Very Course Gravel	64	4	4	96
Cobble	Small Cobble	90	1	1	97
	Small Cobble	128	1	1	98
	Medium Cobble	180	2	2	100
	Large Cobble	256		0	100
Boulder	Small Boulders	362		0	100
	Small Boulders	512		0	100
	Medium Boulders	1024		0	100
	Large Boulders	2048		0	100
Bedrock	Bedrock	40096		0	100
	Total		100		



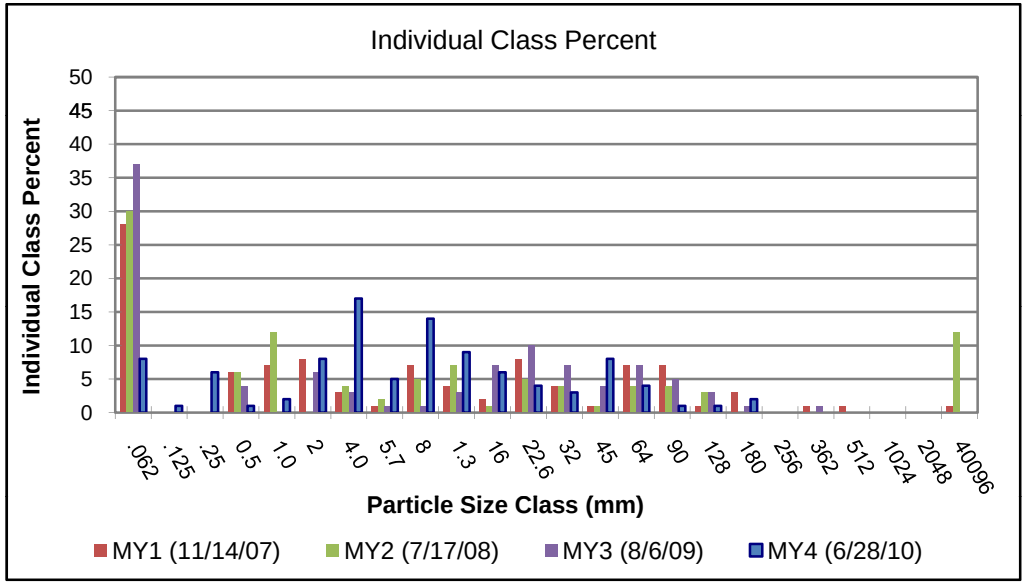
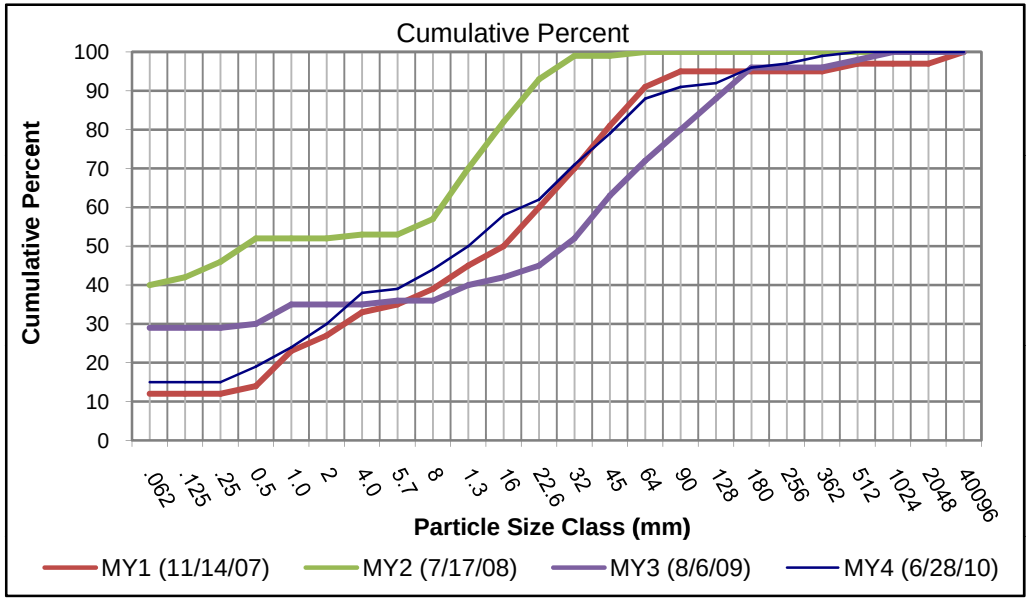


Figure 7.4. Pebble Counts - Year 4 - 2010 - Stillhouse Creek Stream Restoration (EEP Project #363)

Cross Section Five-Reach 4			2010		
Descript.	**Material**	**Size (mm)**	**Total #**	**Class %**	**Cum %**
Silt/Clay	Silt/Clay	.062	15	15	15
Sand	Very Fine Sand	.125		0	15
	Fine Sand	**.25**		**0**	**15**
	Medium Sand	0.5	4	4	19
	Coarse Sand	1.0	5	5	24
	Very Course Sand	2	6	6	30
Gravel	Very Fine Gravel	4.0	8	8	38
	Fine Gravel	5.7	1	1	39
	Fine Gravel	8	5	5	44
	Medium Gravel	1.3	6	6	50
	Medium Gravel	16	8	8	58
	Coarse Gravel	22.6	4	4	62
	Coarse Gravel	32	9	9	71
	Very Course Gravel	45	8	8	79
	Very Course Gravel	64	9	9	88
Cobble	Small Cobble	90	3	3	91
	Small Cobble	128	1	1	92
	Medium Cobble	180	4	4	96
	Large Cobble	256	1	1	97
Boulder	**Small Boulders**	**362**	**2**	**2**	**99**
	Small Boulders	512	1	1	100
	Medium Boulders	1024		0	100
	Large Boulders	2048		0	100
Bedrock	Bedrock	40096		0	100
	Total		100		



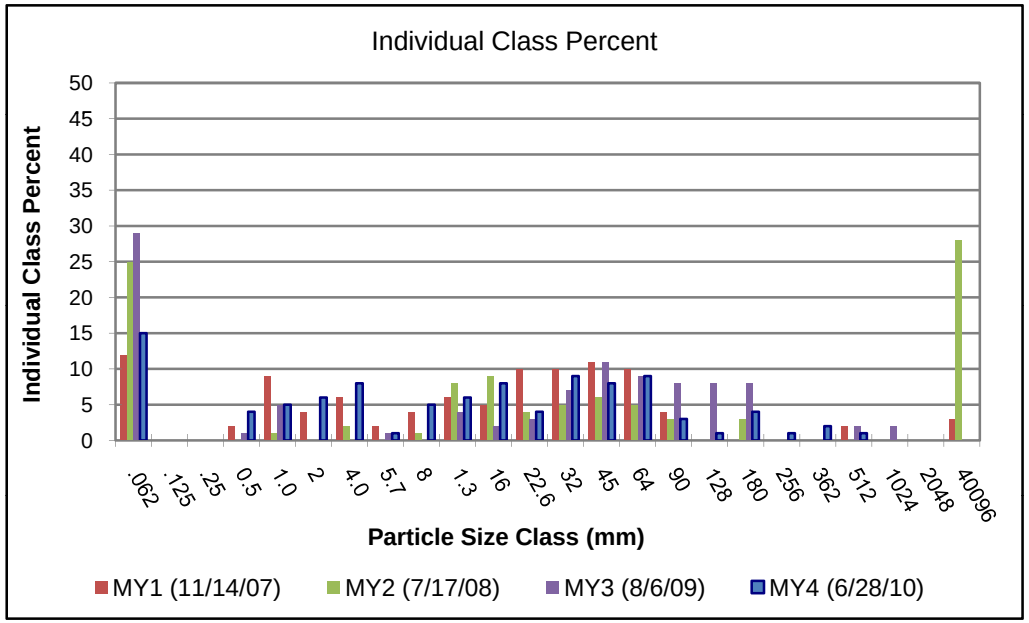


photo 82

Pebble Count

Site Hillsborough X-Sec 1 Date _____

Survey Crew _____

Particle	Description	Size (mm)	Particle Count				%	Cum %
			Riffle	Pool	Other	Total		
Silt/Clay	Silt/Clay	< 0.062		𝍸	𝍸𝍸𝍸	37		
Sand	Very Fine	0.062 – 0.125						
	Fine	0.125 – 0.25			𝍸:	12		
	Medium	0.25 – 0.5			𝍸	9		
	Coarse	0.5 – 1.0			𝍸·	8		
	Very Coarse	1.0 – 2.0			𝍸:	6		
Gravel	Very Fine	2.0 – 4.0			⁘	5		
	Fine	4.0 – 5.7			⁖	2		
	Fine	5.7 – 8.0			𝍸	8		
	Medium	8.0 – 11.3			⁖	2		
	Medium	11.3 – 16.0			⁘	3		
	Coarse	16.0 – 22.6			·	1		
	Coarse	22.6 – 32			⁘	3		
	Very Coarse	32 – 45			⁖	2		
	Very Coarse	45 – 64			·	1		
Cobble	Small	64 – 90			·	1		
	Small	90 – 128						
	Large	128 – 180						
	Large	180 – 256						
Boulder	Small	256 – 362						
	Small	362 – 512						
	Medium	512 – 1024						
	Large	1024 – 2048						
Bedrock	Bedrock	> 2048						
Total								

Pebble Count

Site Stillhouse X Sec 2 **Date** 2 July 10

Survey Crew SD + CH

Particle	Description	Size (mm)	Particle Count				%	Cum %
			Riffle	Pool	Other	Total		
Silt/Clay	Silt/Clay	< 0.062				26		
Sand	Very Fine	0.062 – 0.125				1		
	Fine	0.125 – 0.25				2		
	Medium	0.25 – 0.5				3		
	Coarse	0.5 – 1.0				3		
	Very Coarse	1.0 – 2.0				3		
Gravel	Very Fine	2.0 – 4.0				8		
	Fine	4.0 – 5.7				1		
	Fine	5.7 – 8.0				10		
	Medium	8.0 – 11.3				8		
	Medium	11.3 – 16.0				12		
	Coarse	16.0 – 22.6				12		
	Coarse	22.6 – 32				5		
	Very Coarse	32 – 45				5		
	Very Coarse	45 – 64				1		
Cobble	Small	64 – 90						
	Small	90 – 128						
	Large	128 – 180						
	Large	180 – 256						
Boulder	Small	256 – 362						
	Small	362 – 512						
	Medium	512 – 1024						
	Large	1024 – 2048						
Bedrock	Bedrock	> 2048						
Total			36	34	30			

Pebble Count

Site Stillhouse X-Sec 3 **Date** 2 Jul 10

Survey Crew SD + C H

Particle	Description	Size (mm)	Particle Count				%	Cum %
			Riffle	Pool	Other	Total		
Silt/Clay	Silt/Clay	< 0.062		•		1		
Sand	Very Fine	0.062 – 0.125	•	•		2		
	Fine	0.125 – 0.25	••	••		5		
	Medium	0.25 – 0.5						
	Coarse	0.5 – 1.0	•			1		
	Very Coarse	1.0 – 2.0	•	••		4		
Gravel	Very Fine	2.0 – 4.0	•	•		2		
	Fine	4.0 – 5.7	•			1		
	Fine	5.7 – 8.0		••		3		
	Medium	8.0 – 11.3	••	•		4		
	Medium	11.3 – 16.0	⁘	⁘		10		
	Coarse	16.0 – 22.6	⁘			5		
	Coarse	22.6 – 32	⁘	••		15		
	Very Coarse	32 – 45	⁘	⁘		24		
	Very Coarse	45 – 64	⁘	⁘		13		
Cobble	Small	64 – 90						
	Small	90 – 128	••			3		
	Large	128 – 180	•			1		
	Large	180 – 256						
Boulder	Small	256 – 362						
	Small	362 – 512						
	Medium	512 – 1024						
	Large	1024 – 2048						
Bedrock	Bedrock	> 2048						
Total								

67 33

Pebble Count

Site Stillhouse – Hillsborough XSec 4 **Date** 28 Jun 10

Survey Crew SD + CH

Particle	Description	Size (mm)	Particle Count				%	Cum %
			~~Riffle~~	~~Pool~~	~~Other~~	~~Total~~		
Silt/Clay	Silt/Clay	< 0.062				8		
Sand	Very Fine	0.062 – 0.125				1		
	Fine	0.125 – 0.25				6		
	Medium	0.25 – 0.5				1		
	Coarse	0.5 – 1.0				2		
	Very Coarse	1.0 – 2.0				8		
Gravel	Very Fine	2.0 – 4.0	6	5	6	17		
	Fine	4.0 – 5.7				5		
	Fine	5.7 – 8.0	4	7	3	14		
	Medium	8.0 – 11.3				9		
	Medium	11.3 – 16.0				6		
	Coarse	16.0 – 22.6				4		
	Coarse	22.6 – 32				3		
	Very Coarse	32 – 45				8		
	Very Coarse	45 – 64				4		
Cobble	Small	64 – 90				1		
	Small	90 – 128				1		
	Large	128 – 180				2		
	Large	180 – 256						
Boulder	Small	256 – 362						
	Small	362 – 512						
	Medium	512 – 1024						
	Large	1024 – 2048						
Bedrock	Bedrock	> 2048						
Total								

38 30 32

Pebble Count

Site Hillsborough X-Sec 5 **Date** 28 Jun 10

Survey Crew CDH + SD

Particle	Description	Size (mm)	Particle Count ~~Riffle~~	~~Pool~~	~~Other~~	Total	%	Cum %
Silt/Clay	Silt/Clay	< 0.062				15		
Sand	Very Fine	0.062 – 0.125						
	Fine	0.125 – 0.25						
	Medium	0.25 – 0.5				4		
	Coarse	0.5 – 1.0				5		
	Very Coarse	1.0 – 2.0				6		
Gravel	Very Fine	2.0 – 4.0				8		
	Fine	4.0 – 5.7				1		
	Fine	5.7 – 8.0				5		
	Medium	8.0 – 11.3				6		
	Medium	11.3 – 16.0				8		
	Coarse	16.0 – 22.6				4		
	Coarse	22.6 – 32				9		
	Very Coarse	32 – 45				8		
	Very Coarse	45 – 64				9		
Cobble	Small	64 – 90				3		
	Small	90 – 128				1		
	Large	128 – 180				4		
	Large	180 – 256				1		
Boulder	Small	256 – 362				2		
	Small	362 – 512				1		
	Medium	512 – 1024						
	Large	1024 – 2048						
Bedrock	Bedrock	> 2048						
Total								

9 38 53

Table 10.0 Baseline Stream Data Summary
Stillhouse Creek (NCEEP# 363) - Reaches 1-3 (855 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med*	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)	NA				6.0	7.0	--	7.6	--	--	7.3	9.7	--	12.4	--	--	7.5	-	9.5	--	--	--	--	--	--
Floodprone Width (ft)					17.1	35.1	--	47.0	--	--	27.0	49.6	--	74.0	--	--	23.0	-	176.0	--	--	--	--	--	--
Bankfull Mean Depth (ft)	NA				5.6	7.3	--	8.1	--	--	7.3	10.4	--	13.2	--	--	-	9.0	-	--	--	--	--	--	--
[1]Bankfull Max Depth (ft)	NA				0.8	1.0	--	1.4	--	--	0.9	1.1	--	1.3	--	--	1.0	-	1.2	--	--	--	--	--	--
Bankfull Cross Sectional Area (ft^2)	NA				1.2	1.7	--	2.0	--	--	1.6	1.8	--	2.0	--	--	1.3	-	2.4	--	--	--	--	--	--
Width/Depth Ratio	NA				4.4	7.1	--	9.3	--	--	7.3	9.3	--	14.0	--	--	6.0	-	10.0	--	--	--	--	--	--
Entrenchment Ratio	NA				2.3	5.1	--	6.3	--	--	2.7	5.6	--	10.1	--	--	2.7	-	20.7	--	--	--	--	--	--
[1]Bank Height Ratio	NA				1.0	1.1	--	1.4	--	--	1.0	1.1	--	1.3	--	--	--	1.0	--	--	--	--	--	--	--
Profile																									
Riffle Length (ft)					-	-	-	--	--	--	-	-	-	--	--	--	-	-	-	2.4	6.6	--	15.3	--	--
Riffle Slope (ft/ft)					-	-	-	--	--	--	0	0.0204	-	0.054	--	--	0.006	-	0.017	-0.003	0.029	--	0.14	--	--
Pool Length (ft)					11.0	-	22.5	46.5	--	--	7.5	11.8	-	17.0	--	--	8.5	-	19.6	9.4	22.8	--	76.0	--	--
Pool Max depth (ft)					-		--	--	--	--	-	-	-	--	--	--	-	-	-	0.0	5.0	--	18.2	--	--
Pool Spacing (ft)					-	37.2	--	--	--	--		21.5	--		--	--		15.3	-			--		--	--
Pattern																									
Channel Beltwidth (ft)					6.0	11.6	--	19.0	--	--	12.4	13.7	--	16.7	--	--	8.5		19.6	8.7	16.3	--	24.7	--	--
Radius of Curvature (ft)					8.7	12.2	--	16.5	--	--	6.5	14.6	--	20.5	--	--	12.8		23.8	4.6	10.0	--	32.7	--	--
Rc:Bankfull width (ft/ft)							--		--	--		--	--	--	--	--						--		--	--
Meander Wavelength (ft)					29.0	63.0	--	116.0	--	--	21.2	34.7	--	57.0	--	--	12.8		39.1	23.8	37.8	--	75.4	--	--
Meander Width Ratio					0.9	1.7	--	2.7	--	--	1.0	1.4	--	2.3	--	--	1.0		2.3			--		--	--
Transport parameters																									
Reach Shear Stress (competency) lb/f^2					--						--						--			--					
Max part size (mm) mobilized at bankfull					--						--						--			--					
Stream Power (transport capacity) W/m^2					--						--						--			--					
Additional Reach Parameters																									
Rosgen Classification	NA				E4						E4/5						E4			--					
Bankfull Velocity (fps)	NA				--												--			--					
Bankfull Discharge (cfs)	NA				--																				
Valley length (ft)					672						168														
Channel Thalweg length (ft)					748						267.5						946			855					
Sinuosity (ft)					1.1						1.6						1.4			1.30					
Water Surface Slope (Channel) (ft/ft)	NA				0.0126						0.0094						0.0086			0.011					
BF slope (ft/ft)	NA				--						--						--			--					
[3]Bankfull Floodplain Area (acres)					--						--						--			--					
[4]% of Reach with Eroding Banks					--						--														
Channel Stability or Habitat Metric					--						--														
Biological or Other					--						--														

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = For projects with a proximal USGS gauge in-line with the project reach (added bankfull verification - rare).

3. Utilizing survey data produce an estimate of the bankfull floodplain area in acres, which should be the area from the top of bank to the toe of the terrace riser/slope. 4 = Proportion of reach exhibiting banks that are eroding based on the visual survey for comparison to monitoring data; 5. Of value/needed only if the n exceeds 3

* Mean, not median, provided for design numbers.

Table 10.1 Baseline Stream Data Summary
Stillhouse Creek (NCEEP# 363) - Reaches 4 (355 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med*	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)	NA				9.8	11.8	--	14.8	--	--	23.1	25.6	--	28.0	--	--	14.9	--	19.5	--	--	--	--	--	--
Floodprone Width (ft)					15.5	19.3	--	26.8	--	--	33.0	33.7	--	35.0	--	--	17.9	--	35.1	--	--	--	--	--	--
Bankfull Mean Depth (ft)	NA				19.2	21.7	--	24.7	--	--	68.5	43.5	--	48.9	--	--	18.0	--	22.0	--	--	--	--	--	--
[1]Bankfull Max Depth (ft)	NA				1.7	1.9	--	2.0	--	--	1.5	1.7	--	1.9	--	--	1.1	--	1.2	--	--	--	--	--	--
Bankfull Cross Sectional Area (ft^2)	NA				2.6	2.7	--	2.8	--	--	2.4	2.7	--	2.9	--	--	1.7	--	1.9	--	--	--	--	--	--
Width/Depth Ratio	NA				4.9	6.2	--	8.6	--	--	12.4	15.2	--	17.2	--	--	12.4	--	17.2	--	--	--	--	--	--
Entrenchment Ratio	NA				1.4	1.6	--	1.8	--	--	1.2	1.3	--	1.4	--	--	1.2	--	1.8	--	--	--	--	--	--
[1]Bank Height Ratio	NA				2.5	2.6	--	2.9	--	--	1.0	1.0	--	1.0	--	--	1.0	--	1.0	--	--	--	--	--	--
Profile																									
Riffle Length (ft)					--	--	--	--	--	--	9.5	18.4	--	29.0	--	--	6.0	--	19.5	2.5	17.3	--	40.1	--	--
Riffle Slope (ft/ft)					--	--	--	--	--	--	0.008	0.012	--	0.016	--	--	0.017	--	0.034	0.043	0.129	--	0.164	--	--
Pool Length (ft)					--	--	--	--	--	--	8.2	31.2	--	68.0	--	--	5.0	--	53.0	15.0	70.1	--	42.6	--	--
Pool Max depth (ft)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pool Spacing (ft)					--	--	--	--	--	--	27.2	62.4	--	129.0	--	--	39.0	--	94.0	0.0	11.1	--	40.1	--	--
Pattern																									
Channel Beltwidth (ft)					--	--	--	--	--	--	40.0	43.7	-	51.0	--	--	23.8	--	39.0	12.0	19.6	--	27.9	--	--
Radius of Curvature (ft)					--	--	--	--	--	--	19.5	41.3	-	54.0	--	--	29.8	--	39.0	25.4	40.3	--	55.4	--	--
Rc:Bankfull width (ft/ft)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Meander Wavelength (ft)					--	--	--	--	--	--	130.0	168.0	--	245.0	--	--	39.0	--	94.0	96.2	132.6	--	187.8	--	--
Meander Width Ratio					--	--	--	--	--	--	1.6	1.7	--	2.0	--	--	1.6	--	2.0			--		--	--
Transport parameters																									
Reach Shear Stress (competency) lb/f^2					--						--								--						
Max part size (mm) mobilized at bankfull					--						--								--						
Stream Power (transport capacity) W/m^2					--						--								--						
Additional Reach Parameters																									
Rosgen Classification	NA				G4/1						B4c/1						B4/1		--						
Bankfull Velocity (fps)	NA				--												--		--						
Bankfull Discharge (cfs)	NA				--																				
Valley length (ft)					282						325														
Channel Thalweg length (ft)					314						348						314		355						
Sinuosity (ft)					1.1						1.07						1.1		1.30						
Water Surface Slope (Channel) (ft/ft)	NA				0.017						0.008						0.017		0.02						
BF slope (ft/ft)	NA				--						--						--		--						
[3]Bankfull Floodplain Area (acres)					--						--						--		--						
[4]% of Reach with Eroding Banks					--						--														
Channel Stability or Habitat Metric					--						--														
Biological or Other					--						--														

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = For projects with a proximal USGS gauge in-line with the project reach (added bankfull verification - rare).

3. Utilizing survey data produce an estimate of the bankfull floodplain area in acres, which should be the area from the top of bank to the toe of the terrace riser/slope. 4 = Proportion of reach exhibiting banks that are eroding based on the visual survey for comparison to monitoring data; 5. Of value/needed only if the n exceeds 3

* Mean, not median, provided for design numbers.

Table 11.0. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)

Stillhouse Creek (NCEEP# 363) - Reaches 1-4 (1,210 feet)

	Cross Section 1 (Riffle)-Reach 1							Cross Section 2 (Pool)-Reach 2							Cross Section 3 (Riffle)-Reach 2						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used		508.16	508.16	508.16	508.16				502.74	502.74	502.74	502.74				502.74	502.74	502.74	502.74		
Bankfull Width (ft)		13.54	12.64	12.03	12.72				17.94	19.12	16.84	17.10				12.41	13.18	15.47	14.31		
Floodprone Width (ft)		25.87	27.95	25.78	26.83				94.50	94.50	94.5	94.50				107.00	107.00	107.00	107.00		
Bankfull Mean Depth (ft)		0.99	1.03	1.03	1.02				1.32	1.25	1.19	1.26				0.69	0.64	0.54	0.51		
Bankfull Max Depth (ft)		2.02	2.37	2.14	2.29				2.68	2.85	2.64	2.73				1.14	1.31	1.47	1.45		
Bankfull Cross Sectional Area (ft^2)		13.39	13.01	12.36	13.04				23.64	23.90	20.00	21.60				8.61	8.43	8.39	7.27		
Bankfull Width/Depth Ratio		13.70	12.29	11.70	12.42				13.61	15.30	14.18	13.54				17.87	20.60	28.53	28.18		
Bankfull Entrenchment Ratio		1.91	2.21	2.14	2.11				5.27	4.94	5.61	5.53				8.70	8.12	6.91	7.48		
Bankfull Bank Height Ratio		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00		
Cross Sectional Area between end pins (ft^2)																					
d50 (mm)		0.04	0.98	0.34	0.28				6.85	0.42	0.21	6.39				6.85	11.30	24.8	26.36		
	Cross Section 4 (Riffle)-Reach 4							**Cross Section 5 (Pool)-Reach 4**													
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used		500.46	500.46	500.46	500.46				500.84	500.84	500.84	500.84									
Bankfull Width (ft)		12.40	14.70	15.30	14.88				12.41	11.53	12.29	15.86									
Floodprone Width (ft)		29.30	30.64	30.68	30.26				28.91	29.07	28.76	30.75									
Bankfull Mean Depth (ft)		1.06	0.99	0.94	0.92				1.21	1.38	1.35	1.29									
Bankfull Max Depth (ft)		2.06	2.20	2.18	2.09				2.27	2.33	2.29	2.62									
Bankfull Cross Sectional Area (ft^2)		13.20	14.50	15.30	13.72				14.97	15.87	16.58	20.40									
Bankfull Width/Depth Ratio		11.75	14.86	16.25	16.13				10.29	8.38	9.10	12.33									
Bankfull Entrenchment Ratio		2.36	2.00	1.91	2.09				2.33	2.52	2.34	1.67									
Bankfull Bank Height Ratio		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00									
Cross Sectional Area between end pins (ft^2)																					
d50 (mm)		2.67	3.00	4.00	6.03				16.00	22.60	29.30	13.00									

1 = Widths and depths for monitoring resurvey will be based on the baseline bankfull datum regardless of dimensional/depositional development. Input the elevation used as the datum, which should be consistent and based on the baseline datum established. If the performer has inherited the project and cannot acquire the datum used

for prior years this must be discussed with EEP. If this cannot be resolved in time for a given years report submission a footnote in this should be included that states: “It is uncertain if the monitoring datum has been consistent over the monitoring history, which may influence calculated values.

Additional data from a prior performer is being acquired to provide confirmation. Values will be recalculated in a future submission based on a consistent datum if determined to be necessary.”

Table 11.1. Monitoring Data - Stream Reach Data Summary
Stillhouse Creek (NCEEP# 363) - Reach 1 (235 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	NA	NA	NA	NA	NA	0	13.5	13.5	13.5	13.5	NA	1	12.6	12.6	12.6	12.6	NA	1	12.0	12.0	12.0	12.0	NA	1
Floodprone Width (ft)	NA	NA	NA	NA	NA	0	25.9	25.9	25.9	25.9	NA	1	28.0	28.0	28.0	28.0	NA	1	25.8	25.8	25.8	25.8	NA	1
Bankfull Mean Depth (ft)	NA	NA	NA	NA	NA	0	1.0	1.0	1.0	1.0	NA	1	1.0	1.0	1.0	1.0	NA	1	1.0	1.0	1.0	1.0	NA	1
[1]Bankfull Max Depth (ft)	NA	NA	NA	NA	NA	0	2.0	2.0	2.0	2.0	NA	1	2.4	2.4	2.4	2.4	NA	1	2.1	2.1	2.1	2.1	NA	1
Bankfull Cross Sectional Area (ft^2)	NA	NA	NA	NA	NA	0	13.4	13.4	13.4	13.4	NA	1	13.0	13.0	13.0	13.0	NA	1	12.4	12.4	12.4	12.4	NA	1
Width/Depth Ratio	NA	NA	NA	NA	NA	0	13.7	13.7	13.7	13.7	NA	1	12.3	12.3	12.3	12.3	NA	1	11.7	11.7	11.7	11.7	NA	1
Entrenchment Ratio	NA	NA	NA	NA	NA	0	1.9	1.9	1.9	1.9	NA	1	2.2	2.2	2.2	2.2	NA	1	2.1	2.1	2.1	2.1	NA	1
[1]Bank Height Ratio	NA	NA	NA	NA	NA	0	1.0	1.0	1.0	1.0	NA	1	1.0	1.0	1.0	1.0	NA	**1**	1.0	1.0	1.0	1.0	NA	1
Profile																								
Riffle Length (ft)	4.35	9.75	10.46	15.3	4.16	5	2.0	11.0	9.0	29.0	8.9	7	4.0	18.0	18.0	32.0	10.1	7	7.0	16.3	17.0	30.0	7.0	7
Riffle Slope (ft/ft)	0.024	0.053	0.038	0.116	0.037	5	-0.01	0.03	0.01	0.08	0.03	7	-0.02	0.02	0.01	0.09	0.03	7	0.00	0.03	0.03	0.08	0.03	7
Pool Length (ft)	15.5	21.74	32.01	32.8	43.07	7	10.0	18.6	18.5	30.0	7.2	8	7.0	14.0	12.5	25.0	6.3	8	10.0	17.5	16.0	26.0	5.6	6
Pool Max depth (ft)	1.8	2.5	2.4	3.2	0.4	7.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pool Spacing (ft)	20.33	32	32.8	43.07	8.28	7	11.0	26.8	27.0	39.0	9.0	8	9.0	27.1	25.0	47.1	14.1	8	19.0	31.8	25.5	71.0	19.5	6
Pattern																								
Channel Beltwidth (ft)	10.39	11.4	--	12.92	0.97	5																		
Radius of Curvature (ft)	13.26	21.53	--	27.17	4.64	5																		
Rc:Bankfull width (ft/ft)	NA	NA	--	NA	NA	0																		
Meander Wavelength (ft)	46.25	65.2	--	82.87	12.59	5																		
Meander Width Ratio	NA	NA	--	NA	NA	0																		
Additional Reach Parameters																								
Rosgen Classification	--						B6						B5						B5					
Channel Thalweg length (ft)	855 (Reaches 1-3)						227						226						228					
Sinuosity (ft)	1.3 (Reaches 1-3)						1.05						1.04						1.05					
Water Surface Slope (Channel) (ft/ft)	0.011 (Reaches 1-3)						0.009						0.009						0.011					
BF slope (ft/ft)	--						0.01						0.008						0.02					
[3]Ri% / Ru% / P% / G% / S%	NA	NA	NA	NA	NA		34	0	66	0	0		53	0	47	0	0		52	0	48	0	0	
[3]SC% / Sa% / G% / C% / B% / Be%													15	36	38	2	0	9	42	48	9	1	0	0
[3]d16 / d35 / d50 / d84 / d95 /													0.25	0.73	0.98	45	2048		0.02	0.05	0.34	1.67	8	
[2]% of Reach with Eroding Banks	NA						0.0						0.0						0.0					
Channel Stability or Habitat Metric	--						--						--						--					
Biological or Other	--						--						--						--					

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave 4. = Of value/needed only if the n exceeds 3

Parameter	MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	12.7	12.7	12.7	12.7	NA	1						
Floodprone Width (ft)	26.8	26.8	26.8	26.8	NA	1						
Bankfull Mean Depth (ft)	1.0	1.0	1.0	1.0	NA	1						
[1]Bankfull Max Depth (ft)	2.3	2.3	2.3	2.3	NA	1						
Bankfull Cross Sectional Area (ft^2)	13.0	13.0	13.0	13.0	NA	1						
Width/Depth Ratio	12.4	12.4	12.4	12.4	NA	1						
Entrenchment Ratio	2.1	2.1	2.1	2.1	NA	1						
[1]Bank Height Ratio	1.0	1.0	1.0	1.0	NA	1						
Profile												
Riffle Length (ft)	5.0	14.5	11.5	32.0	9.4	6						
Riffle Slope (ft/ft)	0.007	0.03	0.03	0.076	0.025	6						
Pool Length (ft)	10.0	18.7	17.0	26.0	5.7	7						
Pool Max depth (ft)	1.6	2.0	2.1	2.2	0.3	6						
Pool Spacing (ft)	22.0	30.0	32.0	37.0	5.7	7						
Pattern												
Channel Beltwidth (ft)												
Radius of Curvature (ft)												
Rc:Bankfull width (ft/ft)												
Meander Wavelength (ft)												
Meander Width Ratio												
Additional Reach Parameters												
Rosgen Classification	B5											
Channel Thalweg length (ft)	225											
Sinuosity (ft)	1.04											
Water Surface Slope (Channel) (ft/ft)	0.03											
BF slope (ft/ft)	0.014											
[3]Ri% / Ru% / P% / G% / S%	40	0	60	0	0							
[3]SC% / Sa% / G% / C% / B% / Be%	37	35	27	1	0	0						
[3]d16 / d35 / d50 / d84 / d95 /	0.03	0.062	0.28	7.14	28.87							
[2]% of Reach with Eroding Banks	0.0											
Channel Stability or Habitat Metric	--											
Biological or Other	--											

Table 11.2. Monitoring Data - Stream Reach Data Summary
Stillhouse Creek (NCEEP# 363) - Reach 2 (400 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	NA	NA	NA	NA	NA	0	12.4	12.4	12.4	12.4	NA	1	13.2	13.2	13.2	13.2	NA	1	15.5	15.5	15.5	15.5	NA	1
Floodprone Width (ft)	NA	NA	NA	NA	NA	0	107.0	107.0	107.0	107.0	NA	1	107.0	107.0	107.0	107.0	NA	1	107.0	107.0	107.0	107.0	NA	1
Bankfull Mean Depth (ft)	NA	NA	NA	NA	NA	0	0.7	0.7	0.7	0.7	NA	1	0.6	0.6	0.6	0.6	NA	1	0.5	0.5	0.5	0.5	NA	1
[1]Bankfull Max Depth (ft)	NA	NA	NA	NA	NA	0	1.1	1.1	1.1	1.1	NA	1	1.3	1.3	1.3	1.3	NA	1	1.5	1.5	1.5	1.5	NA	1
Bankfull Cross Sectional Area (ft^2)	NA	NA	NA	NA	NA	0	8.6	8.6	8.6	8.6	NA	1	8.4	8.4	8.4	8.4	NA	1	8.4	8.4	8.4	8.4	NA	1
Width/Depth Ratio	NA	NA	NA	NA	NA	0	17.9	17.9	17.9	17.9	NA	1	20.6	20.6	20.6	20.6	NA	1	28.5	28.5	28.5	28.5	NA	1
Entrenchment Ratio	NA	NA	NA	NA	NA	0	8.7	8.7	8.7	8.7	NA	1	8.1	8.1	8.1	8.1	NA	1	6.9	6.9	6.9	6.9	NA	1
[1]Bank Height Ratio	NA	NA	NA	NA	NA	0	1.0	1.0	1.0	1.0	NA	1	1.0	1.0	1.0	1.0	NA	1	1.0	1.0	1.0	1.0	NA	1
Profile																								
Riffle Length (ft)	2.4	5.95	5.13	11.63	2.72	15	4.0	8.3	8.0	15.0	3.4	12	6.0	10.0	9.0	28.0	5.3	15	5.0	7.5	7.0	11.0	2.0	14
Riffle Slope (ft/ft)	0.007	0.029	0.028	0.064	0.17	15	-0.01	0.03	0.02	0.09	0.03	12	-0.02	0.02	0.02	0.06	0.02	15	0.011	0.033	0.03	0.062	0.017	14
Pool Length (ft)	11.7	17.12	15.97	28.55	5.2	17.0	9.0	18.4	17.0	28.0	6.0	16	6.0	17.8	17.0	28.0	6.1	16	5.0	19.4	18.5	41.0	8.4	16
Pool Max depth (ft)	1.47	2.26	2.35	2.95	0.4	17.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pool Spacing (ft)	15.41	24.06	26.35	32.17	5.1	16.0	15.0	29.5	26.0	63.0	12.0	16	18.0	28.6	26.0	71.0	12.5	16	7.0	18.6	18.0	33.0	6.1	16
Pattern																								
Channel Beltwidth (ft)	9.66	17.14	--	24.88	4.44	15																		
Radius of Curvature (ft)	4.25	6.83	--	11.09	1.44	15																		
Rc:Bankfull width (ft/ft)	NA	NA	--	NA	NA	0																		
Meander Wavelength (ft)	28.84	32.71	--	39.58	3.33	15																		
Meander Width Ratio	NA	NA	--	NA	NA	0																		
Additional Reach Parameters																								
Rosgen Classification	--						C4						C4						C4					
Channel Thalweg length (ft)	855 (Reaches 1-3)						385						368						371					
Sinuosity (ft)	1.3 (Reaches 1-3)						1.57						1.5						1.51					
Water Surface Slope (Channel) (ft/ft)	0.011 (Reaches 1-3)						0.008						0.009						0.008					
BF slope (ft/ft)	--						0.007						0.007						0.011					
[3]Ri% / Ru% / P% / G% / S%	NA	NA	NA	NA	NA		23	0	77	0	0		34	0	66	0	0		24	0	76	0	0	
[3]SC% / Sa% / G% / C% / B% / Be%													33	10	55	0	0	2	31	6	60	2	1	0
[3]d16 / d35 / d50 / d84 / d95 /													0.04	1.53	5.86	29.63	44.87		0.04	6.56	12.49	32.89	50.46	
[2]% of Reach with Eroding Banks	NA						0.0						0.0						0.0					
Channel Stability or Habitat Metric	--						--						--						--					
Biological or Other	--						--						--						--					

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.

2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table

3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave

Parameter	MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	14.3	14.3	14.3	14.3	NA	1						
Floodprone Width (ft)	107.0	107.0	107.0	107.0	NA	1						
Bankfull Mean Depth (ft)	0.5	0.5	0.5	0.5	NA	1						
[1]Bankfull Max Depth (ft)	1.5	1.5	1.5	1.5	NA	1						
Bankfull Cross Sectional Area (ft^2)	7.3	7.3	7.3	7.3	NA	1						
Width/Depth Ratio	28.2	28.2	28.2	28.2	NA	1						
Entrenchment Ratio	7.5	7.5	7.5	7.5	NA	1						
[1]Bank Height Ratio	1.0	1.0	1.0	1.0	NA	1						
Profile												
Riffle Length (ft)	2.0	6.9	7.0	11.0	2.6	14						
Riffle Slope (ft/ft)	0.01	0.043	0.044	0.106	0.03	14						
Pool Length (ft)	5.0	17.8	18.0	33.0	6.3	17						
Pool Max depth (ft)	1.7	2.2	2.2	2.8	0.4	13						
Pool Spacing (ft)	18.0	24.1	24.0	35.0	4.7	16						
Pattern												
Channel Beltwidth (ft)												
Radius of Curvature (ft)												
Rc:Bankfull width (ft/ft)												
Meander Wavelength (ft)												
Meander Width Ratio												
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg length (ft)	374											
Sinuosity (ft)	1.53											
Water Surface Slope (Channel) (ft/ft)	0.03											
BF slope (ft/ft)	0.008											
[3]Ri% / Ru% / P% / G% / S%	22	0	78	0	0							
[3]SC% / Sa% / G% / C% / B% / Be%	14	12	72	2	0	0						
[3]d16 / d35 / d50 / d84 / d95 /	2.87	7.92	16.38	33.16	48.57							
[2]% of Reach with Eroding Banks	0.0											
Channel Stability or Habitat Metric	--											
Biological or Other	--											

Table 11.3. Monitoring Data - Stream Reach Data Summary
Stillhouse Creek (NCEEP# 363) - Reach 3 (220 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0
Floodprone Width (ft)	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0
Bankfull Mean Depth (ft)	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0
[1]Bankfull Max Depth (ft)	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0
Bankfull Cross Sectional Area (ft^2)	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0
Width/Depth Ratio	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0
Entrenchment Ratio	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0
[1]Bank Height Ratio	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	0
Profile																								
Riffle Length (ft)	7.0	11.4	11.9	14.7	3.3	4	4.0	8.3	7.0	14.0	5.1	3	20.0	29.5	29.5	39.0	13.4	2	14.0	21.5	21.5	29.0	10.6	2
Riffle Slope (ft/ft)	0.00	0.03	0.02	0.07	0.03	4	0.026	0.04	0.027	0.07	0.022	3	0.02	0.02	0.02	0.03	0.00	2	0.014	0.026	0.026	0.037	0.016	2
Pool Length (ft)	17.6	24.0	23.9	28.0	4.2	5	21.0	33.0	31.5	48.0	11.7	4	22.0	35.4	37.0	53.0	13.1	5	7.0	40.6	27.0	99.0	35.2	5
Pool Max depth (ft)	2.2	2.5	2.4	2.8	0.3	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pool Spacing (ft)	10.1	33.5	30.8	54.0	16.3	5	15.0	44.0	51.0	59.0	19.7	4	33.0	40.5	37.5	54.0	9.5	5	23.0	43.6	35.0	88.0	25.7	5
Pattern																								
Channel Beltwidth (ft)	12.64	18.78	--	27.37	6.26	3																		
Radius of Curvature (ft)	12.77	19.09	--	27.36	6.11	3																		
Rc:Bankfull width (ft/ft)	NA	NA	--	NA	NA	0																		
Meander Wavelength (ft)	45.11	60.64	--	73.62	11.78	3																		
Meander Width Ratio	NA	NA	--	NA	NA	0																		
Additional Reach Parameters																								
Rosgen Classification	--						NA						NA						NA					
Channel Thalweg length (ft)	855 (Reaches 1-3)						205						202						207					
Sinuosity (ft)	1.3 (Reaches 1-3)						1.07						1.05						1.08					
Water Surface Slope (Channel) (ft/ft)	0.011 (Reaches 1-3)						0.01						0.01						0.008					
BF slope (ft/ft)	--						0.012						0.016						0.017					
[3]Ri% / Ru% / P% / G% / S%	NA	NA	NA	NA	NA		12	24	64	0	0		29	10	61	0	0		21	10	69	0	0	
[3]SC% / Sa% / G% / C% / B% / Be%													NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
[3]d16 / d35 / d50 / d84 / d95 /													NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	
[2]% of Reach with Eroding Banks	NA						0.0						0.0						0.0					
Channel Stability or Habitat Metric	--						--						--						--					
Biological or Other	--						--						--						--					

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.

2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table

3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave

Parameter	MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	NA	NA	NA	NA	NA	0						
Floodprone Width (ft)	NA	NA	NA	NA	NA	0						
Bankfull Mean Depth (ft)	NA	NA	NA	NA	NA	0						
[1]Bankfull Max Depth (ft)	NA	NA	NA	NA	NA	0						
Bankfull Cross Sectional Area (ft^2)	NA	NA	NA	NA	NA	0						
Width/Depth Ratio	NA	NA	NA	NA	NA	0						
Entrenchment Ratio	NA	NA	NA	NA	NA	0						
[1]Bank Height Ratio	NA	NA	NA	NA	NA	0						
Profile												
Riffle Length (ft)	22.0	23.0	23.0	24.0	1.4	2						
Riffle Slope (ft/ft)	0.009	0.009	0.009	0.009	0.00	2						
Pool Length (ft)	7.0	23.0	23.0	41.0	12.9	6						
Pool Max depth (ft)	2.0	2.4	2.5	2.7	0.2	6						
Pool Spacing (ft)	10.0	30.6	33.0	43.0	12.9	5						
Pattern												
Channel Beltwidth (ft)												
Radius of Curvature (ft)												
Rc:Bankfull width (ft/ft)												
Meander Wavelength (ft)												
Meander Width Ratio												
Additional Reach Parameters												
Rosgen Classification	NA											
Channel Thalweg length (ft)	208											
Sinuosity (ft)	1.08											
Water Surface Slope (Channel) (ft/ft)	0.015											
BF slope (ft/ft)	0.012											
[3]Ri% / Ru% / P% / G% / S%	23	10	67	0	0							
[3]SC% / Sa% / G% / C% / B% / Be%	NA	NA	NA	NA	NA	NA						
[3]d16 / d35 / d50 / d84 / d95 /	NA	NA	NA	NA	NA							
[2]% of Reach with Eroding Banks	0.0											
Channel Stability or Habitat Metric	--											
Biological or Other	--											

Table 11.4. Monitoring Data - Stream Reach Data Summary
Stillhouse Creek (NCEEP# 363) - Reach 4 (355 feet)

Parameter	Baseline						MY-1						MY-2						MY- 3					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	NA	NA	NA	NA	NA	0	12.4	12.4	12.4	12.4	NA	1	14.7	14.7	14.7	14.7	NA	1	15.3	15.3	15.3	15.3	NA	1
Floodprone Width (ft)	NA	NA	NA	NA	NA	0	29.3	29.3	29.3	29.3	NA	1	30.6	30.6	30.6	30.6	NA	1	30.7	30.7	30.7	30.7	NA	1
Bankfull Mean Depth (ft)	NA	NA	NA	NA	NA	0	1.1	1.1	1.1	1.1	NA	1	1.0	1.0	1.0	1.0	NA	1	0.9	0.9	0.9	0.9	NA	1
[1]Bankfull Max Depth (ft)	NA	NA	NA	NA	NA	0	2.1	2.1	2.1	2.1	NA	1	2.2	2.2	2.2	2.2	NA	1	2.2	2.2	2.2	2.2	NA	1
Bankfull Cross Sectional Area (ft^2)	NA	NA	NA	NA	NA	0	13.2	13.2	13.2	13.2	NA	1	14.5	14.5	14.5	14.5	NA	1	15.3	15.3	15.3	15.3	NA	1
Width/Depth Ratio	NA	NA	NA	NA	NA	0	11.8	11.8	11.8	11.8	NA	1	14.9	14.9	14.9	14.9	NA	1	16.3	16.3	16.3	16.3	NA	1
Entrenchment Ratio	NA	NA	NA	NA	NA	0	2.4	2.4	2.4	2.4	NA	1	2.0	2.0	2.0	2.0	NA	1	1.9	1.9	1.9	1.9	NA	1
[1]Bank Height Ratio	NA	NA	NA	NA	NA	0	1.0	1.0	1.0	1.0	NA	1	1.0	1.0	1.0	1.0	NA	1	1.0	1.0	1.0	1.0	NA	1
Profile																								
Riffle Length (ft)	7.7	15.9	14.3	28.4	7.6	5	6.0	21.0	20.0	44.0	14.5	5	6.0	20.4	19.0	44.0	12.7	7	8.0	30.4	24.0	59.0	21.1	5
Riffle Slope (ft/ft)	0.017	0.034	0.021	0.081	0.027	5	0.00	0.03	0.03	0.06	0.02	5	0.022	0.041	0.04	0.09	0.02	7	0.00	0.01	0.01	0.03	0.02	5
Pool Length (ft)	9.1	25.7	27.8	36.4	9.7	8	21.0	31.9	35.0	47.0	9.6	7	6.0	19.1	20.0	29.0	7.2	9	8.0	21.9	24.0	35.0	9.1	7
Pool Max depth (ft)	1.9	2.4	2.4	2.9	0.4	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pool Spacing (ft)	19.4	45.4	50.6	61.1	16.6	7	30.0	49.5	44.5	72.0	17.9	6	8.0	36.7	35.0	66.0	16.6	8	5.0	33.6	34.0	71.0	23.2	6
Pattern																								
Channel Beltwidth (ft)	18.38	25.32	--	37.74	7.54	4																		
Radius of Curvature (ft)	27.8	41.72	--	49.7	8.96	4																		
Rc:Bankfull width (ft/ft)	--	--	--	--	--	--																		
Meander Wavelength (ft)	105.6	143.6	--	178.9	31.28	4																		
Meander Width Ratio			--		--	--																		
Additional Reach Parameters																								
Rosgen Classification	--						B4						B4						B4					
Channel Thalweg length (ft)	355						363						359						359					
Sinuosity (ft)	1.08						1.11						1.09						1.09					
Water Surface Slope (Channel) (ft/ft)	0.02						0.023						0.023						0.017					
BF slope (ft/ft)	--						0.023						0.023						0.019					
[3]Ri% / Ru% / P% / G% / S%	--	--	--	--	--		30	0	70	0	3		40	0	60	0	3		42	0	58	0	3	
[3]SC% / Sa% / G% / C% / B% / Be%													35	15	40	4	0	6	33	8	40	16	3	0
[3]d16 / d35 / d50 / d84 / d95 /																								
[2]% of Reach with Eroding Banks	NA						0.0						0.0						0.0					
Channel Stability or Habitat Metric	--						--						--						--					
Biological or Other	--						--						--						--					

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave

Parameter	MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	14.9	14.9	14.9	14.9	NA	1						
Floodprone Width (ft)	30.3	30.3	30.3	30.3	NA	1						
Bankfull Mean Depth (ft)	0.9	0.9	0.9	0.9	NA	1						
[1]Bankfull Max Depth (ft)	2.1	2.1	2.1	2.1	NA	1						
Bankfull Cross Sectional Area (ft^2)	13.7	13.7	13.7	13.7	NA	1						
Width/Depth Ratio	16.1	16.1	16.1	16.1	NA	1						
Entrenchment Ratio	2.1	2.1	2.1	2.1	NA	1						
[1]Bank Height Ratio	1.0	1.0	1.0	1.0	NA	1						
Profile												
Riffle Length (ft)	13	25.75	23	44	13.67	4						
Riffle Slope (ft/ft)	0.021	0.037	0.038	0.053	0.013	4						
Pool Length (ft)	11	33	32	58	15.29	7						
Pool Max depth (ft)	2.1	2.7	2.9	3.0	0.4	5						
Pool Spacing (ft)	32	50.33	48	72	17.45	6						
Pattern												
Channel Beltwidth (ft)												
Radius of Curvature (ft)												
Rc:Bankfull width (ft/ft)												
Meander Wavelength (ft)												
Meander Width Ratio												
Additional Reach Parameters												
Rosgen Classification	B4											
Channel Thalweg length (ft)	357											
Sinuosity (ft)	1.09											
Water Surface Slope (Channel) (ft/ft)	0.03											
BF slope (ft/ft)	0.015											
[3]Ri% / Ru% / P% / G% / S%	29	0	71	0	3							
[3]SC% / Sa% / G% / C% / B% / Be%	12	16	64	6	2	0						
[3]d16 / d35 / d50 / d84 / d95 /												
[2]% of Reach with Eroding Banks	0.0											
Channel Stability or Habitat Metric	--											
Biological or Other	--											

Appendix E. Hydrologic Data

Table 12.0 Verification of Bankfull Events

Table 12. Verification of Bankfull Events Stillhouse Creek Stream Restoration - EEP Project #363			
Date of Data Collection	**Date of Occurrence (mm/dd/yy)**	**Method**	**Photo (if available)**
14 June 2007	Unknown	On-site high water indicators	NA
7 October 2007	None	Crest gauge	NA
27 November 2007	24-27 October 2007 (4.47”)	Crest gauge	NA
1 May 2008	4 March 2008 (2.00”)	Crest gauge	NA
26 August 2008	5 July 2008 (2.39”)	Crest gauge	NA
6 March 2009	August 28 (4.82”), September 6 (3.98”), and September 26 (2.18”) December 12, 2008 (2.43”) or March 1-2, 2009 (1.33”)	Crest gauge	NA
12 August 2009	6 June 2009 (2.39”), 10 June 2009 (1.31”), or 1 August 2009 (1.38”)	Crest gauge	NA
16 March 2010	11-13 November 2009 (5.21”), 19 December 2009 (1.62”), 26 December 2009 (1.34”), 6 February 2010 (2.01”)	Crest gauge; On-site high water indicators	NA
14 July 2010	29 May 2010 (1.19”)	Crest gauge; On-site high water indicators