

**UT BEAR CREEK (Weaver/McLeod) EEP #92347 -- Chatham County
2013 Stream Restoration Monitoring Report -- Year 4 of 5**

**North Carolina Department of Environment and Natural Resources
Ecosystem Enhancement Program (NCDENR-EEP)**

MY-4 Monitoring Data Collected 2013 --- Project Constructed in 2009



MY-4 Final Report submitted January 30, 2014



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

**UT BEAR CREEK (Weaver/McLeod) EEP #92347 – Chatham County
2013 Stream Restoration Monitoring Report -- Year 4 of 5**

**North Carolina Department of Environment and Natural Resources
Ecosystem Enhancement Program (NCDENR-EEP)**

**Monitoring Data Collected in 2013 --- Project Constructed in 2009
MY-4 Final Report submitted January 30, 2014**

Prepared by:



**Robert J. Goldstein & Associates, Inc.
RJG&A Environmental Consultants
1221 Corporation Parkway, suite 100
Raleigh NC 27610 --- 919-872-1174**
**Gerald Pottern, project manager
gpottern@RJGAcarolina.com**

Table of Contents

1.0	Executive Summary	1
1.1	Goals & Objectives	1
1.2	Project Setting	1
1.3	Vegetation Condition	1
1.4	Stream Channel Condition	2
1.5	Stream Hydrology	2
1.6	Wetland Hydrology	3
1.7	Supporting Data Availability	3
2.0	Methodology	3
2.1	Stream Survey Methods	3
2.2	Vegetation Sampling Methods	4
2.3	Hydrology Methods	4
3.0	References	5

Appendix A.	Project Vicinity Map and Background Tables
Figure 1	Project Vicinity Map and Directions
Table 1.1-1.2	Project Restoration Components
Table 2	Project Activity and Reporting History
Table 3	Project Contacts Table
Table 4	Project Attribute Table
Appendix B.	Visual Assessment Data
Figure 2.1-2.3	Current Conditions Plan View (CCPV)
Table 5	Visual Stream Morphology Stability Assessment
Table 6	Vegetation Condition Assessment Table
e-Table	Stream & Vegetation Problem Area Inventory Table
e-Photos	Stream & Vegetation Problem Area Photos
Figures 3.1-3.9	Stream Station Photo Points
Figures 4.1-4.6	Vegetation Monitoring Plot Photos
Appendix C.	Vegetation Plot Monitoring Data
Table 7	Vegetation Plot Success by Asset Type
Table 8	CVS Stem Counts Total and Planted by Plot and Species
e-Tables	Raw CVS vegetation data sheets
Appendix D.	Stream Survey Data
Figures 5.1-5.9	Cross sections with Annual Overlays
e-Tables	Raw cross-section survey data spreadsheets
Figures 6.1-6.5	Longitudinal Profiles with Annual Overlays
e-Tables	Raw longitudinal profile survey data spreadsheets
Figures 7.1-7.9	Pebble Count Plots with Annual Overlays
e-Tables	Raw pebble count data spreadsheets
Table 9.1-9.2	Baseline Stream Data & Design Summary Table
Table 10.1	Monitoring Data: Cross-Section Morphology Table
Table 10.2-10.3	Monitoring Data: Stream Reach Profile Morphology Table
Appendix E.	Hydrologic Data
Table 12	Verification of Bankfull Events
Figure 8	Monthly Rainfall Data for 2013
Figure 9.1-9.2	Daily Precipitation and Monitoring Well Graphs
e-Tables	Raw Data: Daily Precipitation and Monitoring Wells
Table 13	Wetland Hydrology Criteria Attainment

1.0 Executive Summary

1.1 Goals & Objectives

The goals of the UT Bear Creek (Weaver/McLeod) #92347 Stream Restoration Project are to improve water quality, reduce excess sedimentation input from channel banks, attenuate floodwater flows, and restore aquatic and riparian habitat. To achieve these goals, the project has the following objectives:

- Reduce nutrient loading from the on-site cattle operation by fencing out cattle and re-vegetating the riparian buffer;
- Restore stable channel dimension, pattern, and profile so that on-site streams will transport watershed flows and sediment loads without aggradation or erosion;
- Improve aquatic habitat by enhancing stream bed variability, providing shaded areas within the channel, and introducing woody debris in the form of rootwads, log vanes, and log sills;
- Enhance wildlife habitat by re-vegetating the riparian buffers with native plants, helping to create a wildlife corridor through existing agricultural lands.

1.2 Project Setting

The project is located on private farmland in southwestern Chatham County in the Bear Creek community, on the southeast side of NC-902 across the road from Chatham Central High School. It is in the Carolina Slate Belt region of the Piedmont province, in Cape Fear River HUC 03030003-070050 (NC-DWQ sub-basin 03-06-12). It includes stream channel and riparian restoration on two parallel tributaries of Bear Creek: the Northern UT restored channel length is 3,132 feet, and the Southern UT restored channel length is 1,745 feet. The protected easement along each stream extends from the NC-902 right-of-way downstream (southeastward) to their respective confluences with Bear Creek. The adjacent land is pasture on both sides of the two restored tributaries. The project was constructed and planted in 2009 and the first year of post-construction monitoring (MY-1) was 2010.

1.3 Vegetation Condition

CVS vegetation monitoring plot data were collected in October 2013. Seven of the 12 plots had at least 320 surviving planted trees per acre, and the average density for all 12 plots is 411 trees per acre (Table 7). The five plots that did not meet the 320 trees/acre buffer success threshold (plots 1, 2, 4, 7 and 9) had 243, 162, 243, 283 and 162 surviving planted trees per acre, respectively. However, native volunteer tree seedlings (mostly green ash, sweetgum, and elm) are abundant in all plots, and the total density of native trees and shrubs (planted plus volunteers) in plots ranges from 1,174 to 5,949 per acre. Chinese privet, the only non-native woody plant recorded in the CVS plots, was present in three plots. It comprised 7 to 8% of total

woody stems in plots 2 and 4, and 15% of woody stems in plot 3, all in the upper portion of the northern tributary where it has apparently spread from the roadside.

Stunted tree growth is evident in several CVS plots and areas outside of the plots, especially in the upper segments along both tributaries where soil is dense and clayey. Outside of the CVS plots, more than half of the problem areas mapped as "low planted stem density" in 2011 were removed from "problem areas" on the CCPV maps in 2012 due to abundant colonization by volunteer native trees that had become tall enough to detect. In 2013 those areas are continuing to fill in with volunteer native trees. The currently mapped problem areas with low total woody stem density in Oct 2013 (planted plus volunteers; five areas along the Northern UT and two along the Southern UT) remain the same as in April 2013. During Nov 2013 an EEP contractor planted 1500 new trees (1 and 2 gal containers) of 12 species in areas with low density or poor vigor. The supplemental planting average density was 1500 trees/11.8 acres = 127 added trees/ac.

Some large trees in the riparian forest near Bear Creek south of the Northern UT and near both cattle crossings have fallen on the easement fence and broken the wires and connectors. There are currently no livestock held on the adjacent pastures, and no livestock damage was observed, but fence repair should be completed prior to releasing any livestock in the adjacent pasture. Landowner Oscar Guarin reported to RJG&A that the site is being used to grow hay for sale, and he has no plans to graze livestock on-site.

1.4 Stream Channel Condition

RJG&A staff collected stream bed substrate data and inspected the two channels and their structures during October 2013. Absolute Land Surveying collected cross-sectional and longitudinal stream survey data in November and December 2013. Overall the project appears to have met its morphological goals, and its profile parameters closely mirror the design criteria. The four segments of stream-bank erosion along the Northern UT noted in the 2010 to 2012 reports are stabilizing as the density of non-woody and woody plants on these banks continues to increase. Two of these segments near stations 34+50 and 37+00 have mostly weak-rooted annual vegetation and are still identified as problem areas (total 80 lin.ft), although neither appears to have eroded further during the past two years. The other two segments near stations 20+80 and 23+00 now have dense growths of *Juncus* and other sturdy plants that appear adequate to halt further erosion, and are removed from the "problem area" list and mapping. No new area of erosion was noted in 2013. All rock and log structures appear to be stable and performing as intended. The Southern UT has no channel instability problem areas.

1.5 Stream Hydrology

A PVC crest gage is installed along the Northern UT near station 32+50, with the bottom of the gage (inside of pipe) 1.5 ft below bankfull. The gage was inspected and maintained in April and October 2013. Cork granules on the rod inside the gage revealed peak stages of approximately 1.0 ft above bankfull prior to the April 30 inspection, and approximately 1.6 ft above bankfull prior to the October 17 inspection. Matted grass and

apparently recent wrack lines at or above bankfull were evident during both inspections. Precipitation records at the Siler City Airport (SILR gage, 10 miles NW of the project site) and stream stage records at the Tick Creek USGS gage (3.5 miles N of the project site) during 2013 indicate possible bankfull flow events on Feb 23, Apr 28-29, May 20, Jun 7, and July 1-3. Hydrologic data from the on-site wells, SILR rain gage, and Tick Cr stream gage are summarized in Appendix E.

1.6 Wetland Hydrology

The hydrologic success criteria for restored wetlands requires that soils be saturated within 12 inches of the surface for at least 12.5% of the growing season (27 consecutive days in Chatham County, April through October). Data downloaded from the two RDS Ecotone groundwater gages in the wetland along the Northern UT showed the water table depth within the upper 12 inches at both gages from April 1 through late May, and again from early June through late August. The longest consecutive saturation periods were 82 days for the eastern (lower) gage and 80 days for the western (upper) gage, clearly exceeding the wetland hydrologic success criteria. The battery in each gage was replaced in April 2013. The average monthly precipitation recorded at the SILR rain gage (Siler City Airport,) during April through October was 3.9 inches, and unlike most years there was no prolonged period more than 2 weeks without at least one 0.25 inch rainfall event.

1.7 Supporting Data Availability

Summary information and data related to the occurrence of such things as beaver activity 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.

2.0 Methodology

Monitoring and reporting methods follow the current EEP-provided templates and guidelines (Lee *et al* 2008; NC-EEP 2012). Photographs were taken with an Olympus digital camera. A Trimble Geo XT handheld mapping-grade GPS unit was used to collect cross section endpoints, vegetation plot corners, stream photo points, and problem area locations. All problem areas identified in the fall 2012 and spring 2013 versions of the CCPV map were re-evaluated in October 2013.

2.1 Stream Survey Methods

Longitudinal stationing along each UT was assigned in ArcMap using the as-built centerline data collected in May 2009, beginning with 10+00 at the upper end of each restored stream. Nine permanent cross sections (six along the Northern UT and three

along the Southern UT) were selected and staked during April 2010. Geomorphology data for monitoring year 3 were collected during September to October 2012 using a South Total Station for the longitudinal profiles and a Nikon automatic level for the cross sections. Data collection methods employed were a combination of those specified in the project Mitigation Plan and standard regulatory guidance and procedures documents including the USACE *Stream Mitigation Guidelines*, US Forest Service's *Stream Channel Reference Sites*, and *Applied River Morphology* (USACE, 2003; Harrelson et al., 1994; Rosgen, 1996). Photographs facing downstream were taken at each cross section. Stream bed particle distribution was assessed using the Wolman pebble count method.

2.2 Vegetation Sampling Methods

Twelve representative vegetation survey plots (seven along the Northern UT and five along the Southern UT) were selected and installed in April 2010. The four corners of each 10 x 10 meter plot are marked with metal conduit pipe, and the side closest to the stream was designated as the x-axis. Vegetation data for monitoring year 4 were collected between October 17 and October 29, 2013. Level 1 (planted woody stems) and Level 2 (volunteer woody stems) data collection was performed in all plots, following the most recent CVS-EEP protocol (Lee *et al* 2008). Each planted woody stem location within a plot was recorded (x and y coordinates), along with stem height, diameter at breast height of live stems greater than 137 cm tall, species name, and qualitative vigor rating. Planted stems were marked with survey flagging to facilitate relocation next year and to distinguish them from volunteer trees. Planted and volunteer woody species were identified using Radford et al. (1968) and Weakley (2010). A photo of each vegetation plot was taken from the 0,0 corner.

2.3 Hydrology Methods

Wetlands: Daily groundwater level data were collected from two Remote Data Systems automated groundwater monitoring gages installed in the enhanced riparian wetland adjacent to the Northern UT in April 2010 in accordance with USACE guidance (USACE 2000). These gage data were plotted against precipitation data from the Siler City Airport ECONet station (SILR), located 10 miles northwest of the monitored wetland. Wetland gage and precipitation data and graphs are provided in Appendix E of this monitoring report.

Streams: One PVC crest gage was installed in 2010 at Station 3280 along the Northern UT to verify the on-site occurrence of bankfull events. The bottom of the gage is approximately 0.4 ft above the thalweg and 1.5 ft below bankfull (right bank). The crest gage was evaluated during the spring and fall data collection visits, and the site was assessed for evidence of bankfull events. Dates of potential bankfull events were inferred using precipitation data from the Siler City Airport ECONet station (SILR) and the Tick Creek stream gage near Mt. Vernon Springs (USGS# 02102800), located 3.5 miles north of the crest gage. Data are provided in Appendix E.

3.0 References

- 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. (2008). *CVS-EEP Protocol for Recording Vegetation version 4.2, October 2008*. Retrieved September 2011, from: <http://cvs.bio.unc.edu/methods.htm>
- NC-DENR Ecosystem Enhancement Program. (2012). *NC-EEP Monitoring Report Template and Guidance version 1.5, June 2012*. <http://portal.ncdenr.org/web/eep/dbb-resources>
- 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.
- Robert J. Goldstein & Associates, Inc. (2010). *Baseline Monitoring Document and As-built Baseline Report UT to Bear Creek(#92347)*. August 13, 2010.
- Rosgen, D. L. (1996) *Applied River Morphology*. Wildland Hydrology Books, Pagosa Springs, CO.
- Rosgen, D.L. (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 (2010). *Flora of the Carolinas, Virginia, Georgia, and Surrounding Areas*. <http://www.herbarium.unc.edu/flora.htm>.

APPENDIX A.

PROJECT VICINITY MAP and BACKGROUND TABLES

Figure 1	Project Vicinity Map and Directions
Table 1.1-1.2	Project Restoration Components
Table 2	Project Activity and Reporting History
Table 3	Project Contacts Table
Table 4	Project Attributes Table

Directions to the Site:

From WUE I AS ^ d ^ d Pittsboro, take P O E I E G A ^ o d G [~ o ^ d A I A
 F I A q ^ A , a a A ^ a A I ^ A E A O I : ^ ^ A M U E G F / a a A o } A U j a A M U E G F / a a A
 a a a I a a A a a E O B & ^ ^ A A o A [: o } A W / a A a a a a a e A I A a a A } A [~ I
 ^ d E E A q A a o U j a A G F a a I : ^ A [{ A O a a d A ^ } d a P a @ U & Q [E
 O B & ^ ^ A A o A U j ~ o } A W / a A a a a a [o I A a e A I a a E E A q A a a o I A
 ^ o d } ^ A O E I E G a [A } A [~ I A ^ E V @ A I [] ^ I C A , } ^ I A ^ ^ } A o A
 * a e ^ A [& ^ a A a a [o B & ^ ^ A I a a E

The subject project site is an environmental restoration site of the NCDENR Ecosystem Enhancement Program (EEP) and is encompassed by a recorded conservation easement, but is bordered by land under private ownership. Accessing the site may require traversing areas near or along the easement boundary and therefore access by the general public is not permitted. Access by authorized personnel of state and federal agencies or their designees/contractors involved in the development, oversight and stewardship of the restoration site is permitted within the terms and time frames of their defined roles. Any intended site visitation or activity by any person outside of these previously sanctioned roles and activities requires prior coordination with EEP.

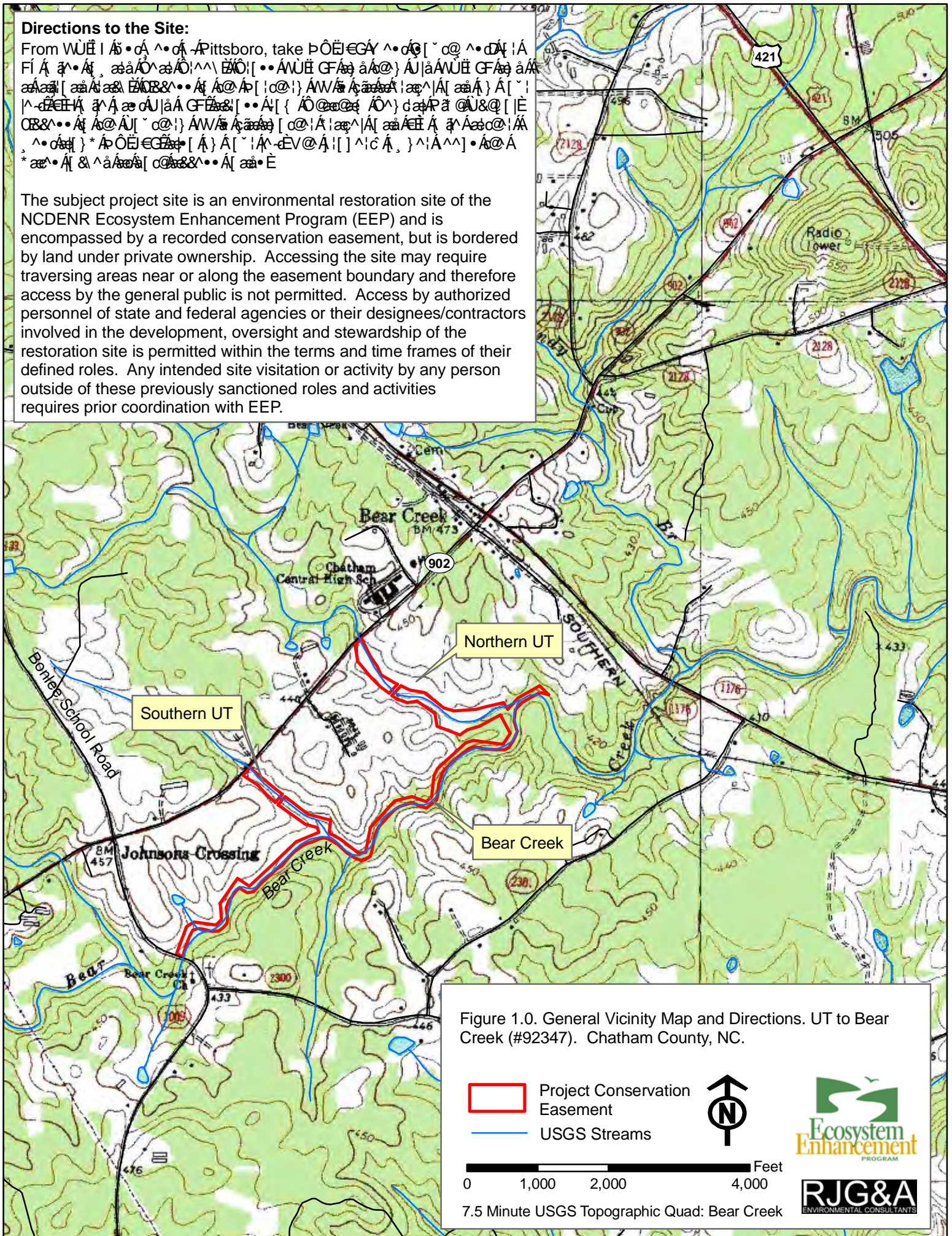


Figure 1.0. General Vicinity Map and Directions. UT to Bear Creek (#92347). Chatham County, NC.

- Project Conservation Easement
- USGS Streams



0 1,000 2,000 4,000 Feet

7.5 Minute USGS Topographic Quad: Bear Creek



**Table 1.1. Project Restoration Components
UT Bear Creek (Weaver/McLeod) Stream Restoration - Project #92347**

Project Component or Reach ID	Existing Feet/Acres	Restoration Level	Approach	Footage or Acreage	Stationing	Mitigation Ratio	Ratio Multiplier	Mitigation Units	Comment
Northern UT to Bear Creek Buffer	4.66	R	--	4.66 ac.	--	1:1	1	4.66	Vegetative Plantings to pasture areas within 50 feet of creek where density of existing vegetation is less than 100 stems/acre.
	0.78	E	--	0.78 ac.	--	2:1	0.5	0.39	Vegetative Plantings to pasture areas within 50 feet of creek where density of existing vegetation is greater than 100 stems/acre, but less than 200 stems/acre
Southern UT to Bear Creek Buffer	2.32	R	--	2.32 ac.	--	1:1	1	2.32	Vegetative Plantings to pasture areas within 50 feet of creek where density of existing vegetation is less than 100 stems/acre.
	0.42	E	--	0.42 ac.	--	2:1	0.5	0.21	Vegetative Plantings to pasture areas within 50 feet of creek where density of existing vegetation is greater than 100 stems/acre, but less than 200 stems/acre
Northern UT to Bear Creek	2,832	R	PI	550 ft.	10+00-15+50	1:1	1	550	Restore channel on new location
			PII	125 ft.	15+50-16+75	1:1	1	125	
			PI	225 ft.	16+75-19+00	1:1	1	225	
			PII	350 ft.	19+50-23+00	1:1	1	350	
			PI	1,675 ft.	23+00-39+75	1:1	1	1,675	
			PII	157 ft.	39+75-41+32	1:1	1	157	
Southern UT to Bear Creek	1,635	R	PI	1,298 ft.	10+00-16+67 17+19-23+50	1:1	1	1,298	Restore channel on new location
			PII	395 ft.	23+50-27+45	1:1	1	395	
Riparian Wetland along Northern UT	0.49	E	--	0.39 ac.	--	2:1	0.5	0.2	Supplemental plantings to existing wetlands

**Table 1.2. Component Summations
 UT Bear Creek (Weaver/McLeod) Stream Restoration - Project #92347**

Restoration Level	Stream (lin.ft)	Riparian Wetland (acre)		Non-Ripar (acre)	Upland (acre)	Buffer (acre)	BMP
		Riverine	Non-Riverine				
Restoration	4,775					6.98	
Enhancement		0.39					
Enhancement I						1.2	
Enhancement II							
Creation							
Preservation							
HQ Preservation							
Totals (Feet/Acres)	4,775	0.39		0	0	8.18	0
MU Totals	4,775	0.2		0	0	7.58	0



Table 2. Project Activity and Reporting History
UT Bear Creek (Weaver/McLeod) Stream Restoration - Project #92347

Elapsed Time Since Grading Complete: 4 yrs 7 months

Elapsed Time Since Planting Complete: 4 yrs 6 Months

Number of Reporting Years¹: 4

Activity or Deliverable	Data Collection Complete	Completion or Delivery
Restoration Plan	U	Jul-07
Final Design – Construction Plans	U	Jan-08
Construction	NA	Apr-09
Containerized, bare root and B&B plantings for entire project	NA	Apr-09
Mitigation Plan / As-built (Year 0 Monitoring – baseline)	Apr-10	Aug-10
Year 1 Monitoring	Nov-10	Dec-10
Year 2 Monitoring	Aug-Sep 2011	Sep-11
Year 3 Monitoring	Sep-Oct 2012	Dec-12
Year 4 Monitoring	Oct-Dec 2013	Jan-14
Year 4 Supplemental Planting	NA	Nov-13

Table 3. Project Contacts Table

UT of Bear Creek Stream Restoration - Project #92347

Designer	Ko & Associates, P.C. 1011 Schaub Drive, Suite 202 Raleigh, North Carolina 27606 R. Kevin Williams, PE, (919) 851-6066
Construction Contractor	Land Mechanics Designs, Inc. 126 Circle G Lane Willow Spring, NC 27592-9671 (919) 639-6132
Survey Contractor	Stewart Proctor 319 Chapanoke Road, Suite 106 Raleigh NC 27603 (919) 779-1855
Planting Contractor	Habitat Assessment and Restoration Program 301 McCullough Drive, 4 th Floor Charlotte, NC 28262 (704) 841-2841
Seeding Contractor	Land Mechanics Designs, Inc. 126 Circle G Lane Willow Spring, NC 27592-9671 (919) 639-6132
Seed Mix Sources	Unknown
Nursery Stock Suppliers	Arborgen aka South Carolina Super Tree Nursery Cure Nursery Foggy Mountain Nursery Virginia Department of Forestry
Monitoring Performers	Robert J. Goldstein & Associates 1221 Corporation Parkway, Ste. 100 Raleigh NC 27610 Gerald Pottern, (919) 872-1174

Table 4. Project Attribute Table: UT Bear Creek Weaver-McLeod (NCEEP #92347)

Project County	Chatham			
Physiographic Region	Piedmont			
Ecoregion	Carolina Slate Belt			
Project River Basin	Cape Fear			
USGS HUC for Project (14 digit)	03030003 070050			
NCDWQ Sub-basin for Project	03-06-12			
Within extent of EEP Watershed Plan?	Rocky River Watershed Plan (2005)			
WRC Hab Class (Warm, Cool, Cold)	Warm			
% of project easement fenced or demarcated	100%			
Beaver activity observed during design phase?	No			
Restoration Component Attribute Table				
	Bear Creek	Northern UT to Bear Cr	Southern UT to Bear Cr	Northern UT Wetland
Drainage area	25.0 sq mi	2.36 sq mi	0.34 sq mi	NA
Stream order	4th	2nd	1st	NA
Restored length (feet)	--	3132	1,745	0.4 acres
Perennial or Intermittent	Perennial	Perennial	Perennial	NA
Watershed type (Rural, Urban, Developing etc.)	Rural	Rural	Rural	NA
Watershed LULC Distribution (e.g.)				
Residential	3%	7%	6%	NA
Commercial	1%	1%	0%	NA
Ag-Row Crop	3%	1%	2%	NA
Ag-Livestock	30%	28%	51%	NA
Forested	52%	54%	35%	NA
Shrub/Scrub/Early Successional	11%	9%	6%	NA
Watershed impervious cover (%)	2%	3%	2%	NA
NCDWQ AU/Index number	17-43-16	17-43-16	17-43-16	NA
NCDWQ classification	C	C	C	NA
303d listed?	No	No	No	NA
Upstream of a 303d listed segment?	No	No	No	NA
Reasons for 303d listing or stressor	NA	NA	NA	NA
Total acreage of easement	15.48	11.75	4.65	NA
Total vegetated acreage within the easement	12.15	1.58	0.55	NA
Total planted acreage as part of the restoration	3.23	11.75	4.56	0.4
Rosgen classification of pre-existing channel	NA	E4/F4	E4/F4	NA

	Bear Creek	Northern UT to Bear Cr	Southern UT to Bear Cr	Northern UT Wetland
Rosgen Classification of As-Built	NA	C4/C5	C4/C5	NA
Valley type	VIII	VIII	VIII	NA
Valley slope	0.1%	0.4%	1%	NA
Valley side slope range (e.g. 2-3.%)	3-15%	3-4%	3-11%	NA
Valley toe slope range (e.g. 2-3.%)	1-20%	7-8%	3-5%	NA
Cowardin classification	R3UBH	R3UBH	R3UBH	PSS1B
Trout waters designation	NA	NA	NA	NA
Species of concern, endangered etc.? (Y/N)	No	No	No	No
Dominant soil series and characteristics				
Series	Georgeville	Chewacla	Cid-Lignum	Chewacla
Depth	0-80	0-80	0-80	0-80
Clay %	5-40	5-40	10-50	5-40
K	0.17-0.37	0.24-0.37	0.24-.043	0.24-0.37
T	5	5	2	5

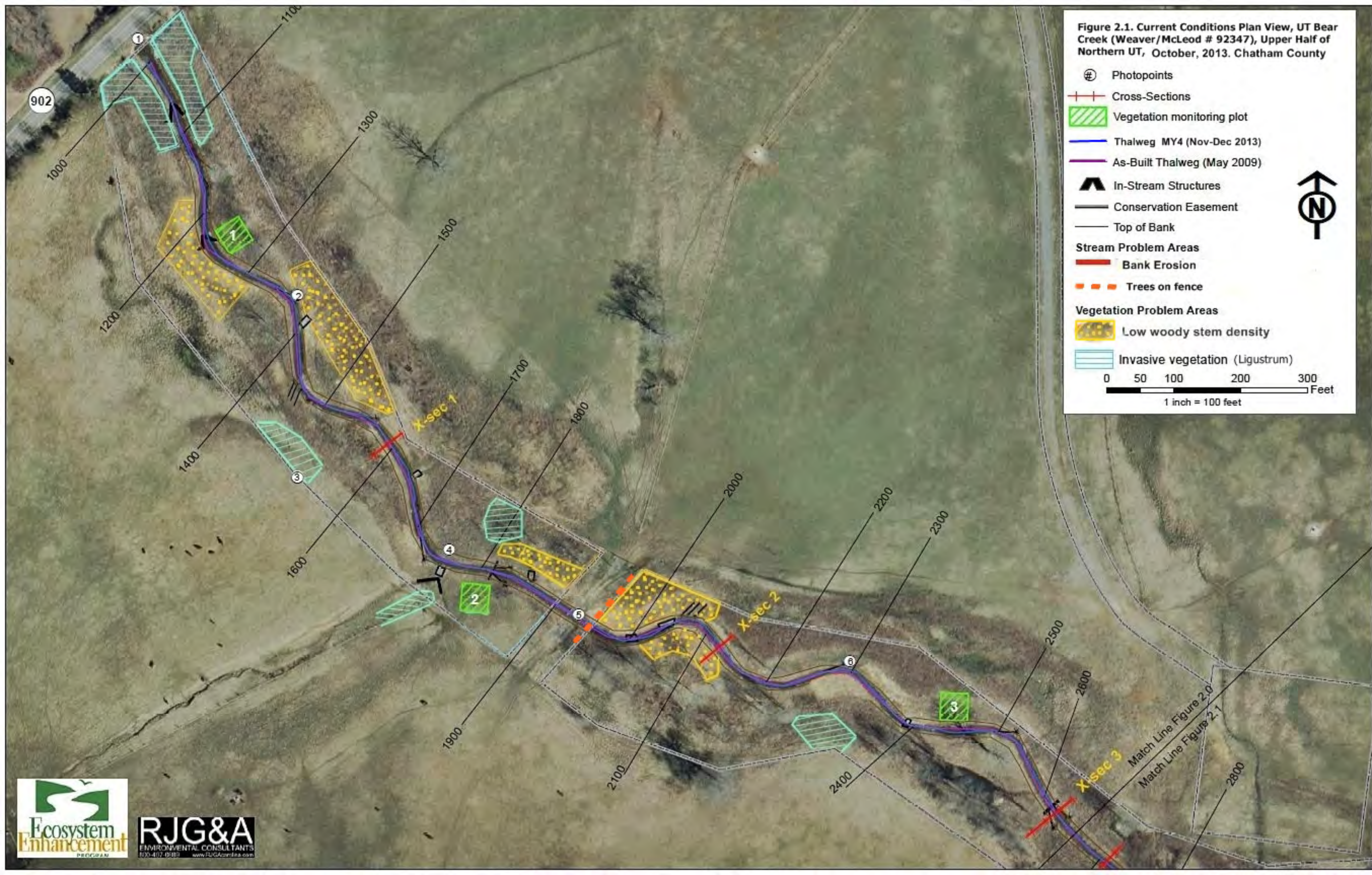
Use N/A for items that may not apply. Use "--" for items that are unavailable and "U" for items that are unknown.

APPENDIX B.

VISUAL ASSESSMENT DATA

Figure 2.1-2.3	Current Conditions Plan View (CCPV)
Table 5	Visual Stream Stability Assessment Table
Table 6	Vegetation Condition Assessment Table
e-Table	Stream & Vegetation Problem Inventory Table
e-Photos	Stream & Vegetation Problem Area Photos
Figure 3.1-3.9	Stream Station Photo-Points
Figure 4.1-4.6	Vegetation Monitoring Plot Photos

Figure 2.1. Current Conditions Plan View, UT Bear Creek (Weaver/McLeod # 92347), Upper Half of Northern UT, October, 2013. Chatham County



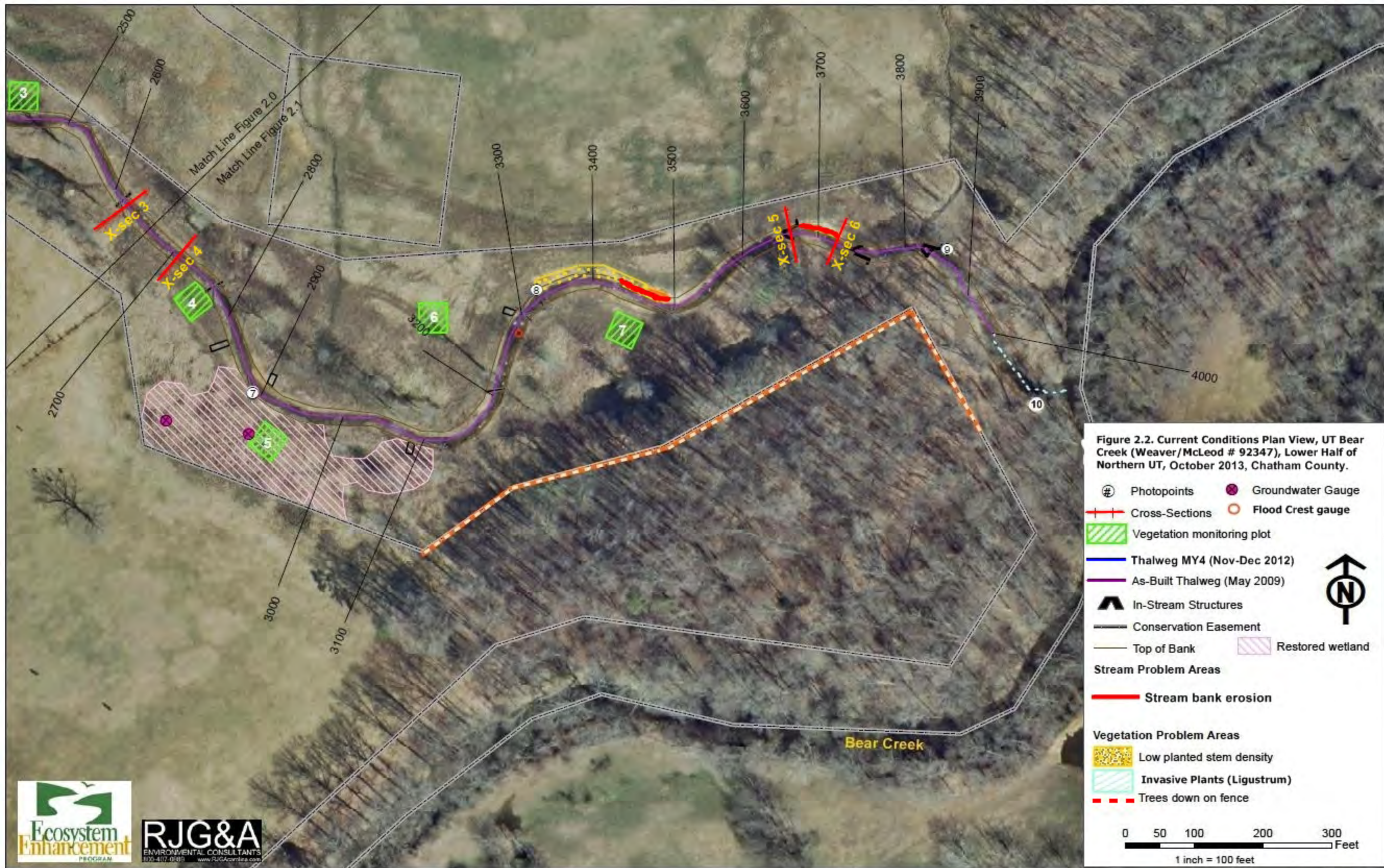


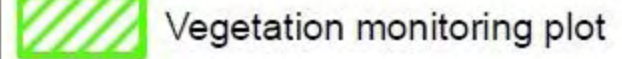

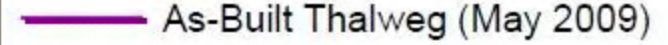
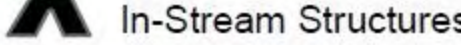
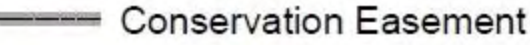
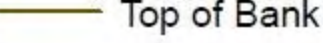
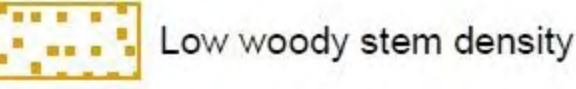
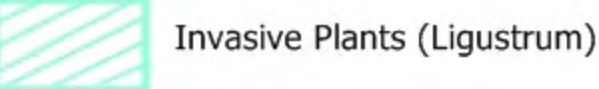



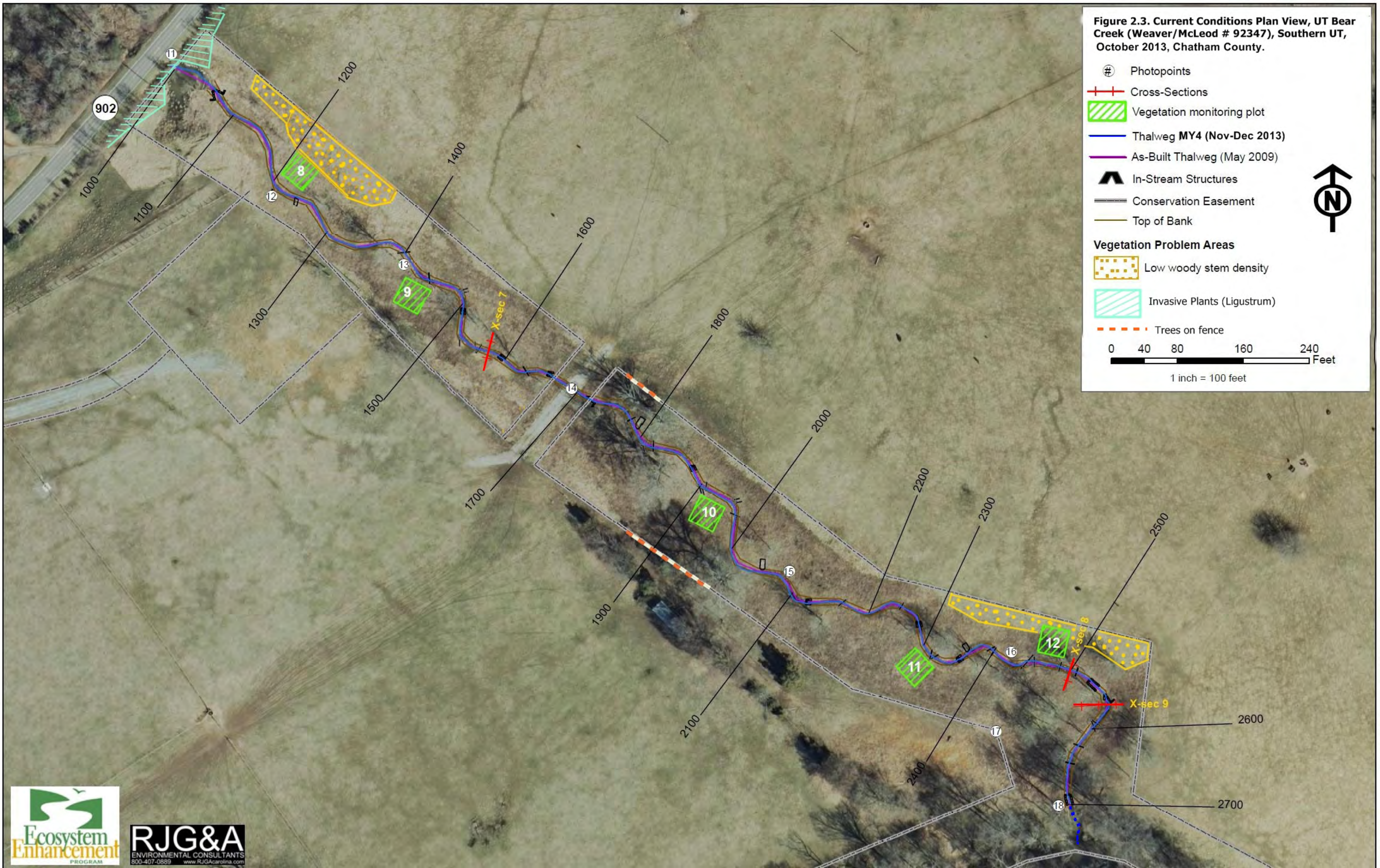
Figure 2.3. Current Conditions Plan View, UT Bear Creek (Weaver/McLeod # 92347), Southern UT, October 2013, Chatham County.

-  Photopoints
-  Cross-Sections
-  Vegetation monitoring plot
-  Thalweg MY4 (Nov-Dec 2013)
-  As-Built Thalweg (May 2009)
-  In-Stream Structures
-  Conservation Easement
-  Top of Bank

Vegetation Problem Areas

-  Low woody stem density
-  Invasive Plants (Ligustrum)
-  Trees on fence

0 40 80 160 240 Feet
1 inch = 100 feet



UT Bear Creek (Weaver/McLeod) – EEP Project #92347 - 2013 (MY-4)

Table 5.1 Visual Stream Morphology Stability Assessment
 Reach ID Northern UT Assessed Length = 2,975 feet

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
1. Bed	1. Vertical Stability (Riffle and Run units)	1. <u>Aggradation</u> - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%
		2. <u>Degradation</u> - Evidence of downcutting			0	0	100%
	2. Riffle Condition	1. <u>Texture/Substrate</u> - Riffle maintains coarser substrate	25	25			100%
	3. Meander Pool Condition	1. <u>Depth</u> Sufficient (Max Pool Depth : Mean Bankfull Depth \geq 1.5)	30	31			97%
		2. <u>Length</u> appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle)	31	31			100%
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run)	31	31			100%
		2. Thalweg centering at downstream of meander (Glide)	31	31			100%
Totals					2	150	95%
2. Bank	1. Scoured/Eroding	Bank lacking vegetative cover due to active scour and erosion.			2	150	95%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are stabilized by roots and are providing habitat.			0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
Totals					2	150	95%
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	22	22			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	10	10			100%
	2a. Piping	Structures lacking any substantial flow underneath or around sills or arms.	10	10			100%
	3. Bank Protection	Bank erosion within the structures extent of influence does <u>not</u> exceed 15%. (See guidance exhibit describing bank influenced by vane arms)	22	22			100%
	4. Habitat	Pool forming structures maintaining Max Pool Depth : Mean Bankfull Depth ratio \geq 1.5 Rootwads/logs providing some cover at low flow.	22	22			100%

UT Bear Creek (Weaver/McLeod) – EEP Project #92347 - 2013 (MY-4)

Table 5.2 Visual Stream Morphology Stability Assessment

Reach ID Southern UT Assessed Length = 1,700 feet

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. Vertical Stability (Riffle and Run units)	1. <u>Aggradation</u> - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%
		2. <u>Degradation</u> - Evidence of downcutting			0	0	100%
	2. Riffle Condition	1. <u>Texture/Substrate</u> - Riffle maintains coarser substrate	27	27		100%	
	3. Meander Pool Condition	1. <u>Depth</u> Sufficient (Max Pool Depth : Mean Bankfull Depth \geq 1.5)	48	48		100%	
		2. <u>Length</u> appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle)	48	48		100%	
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run)	48	48		100%	
2. Thalweg centering at downstream of meander (Glide)		48	48	100%			
Totals					0	0	100%
2. Bank	1. Scoured/Eroding	Bank lacking vegetative cover due to active scour and erosion.			0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does <u>NOT</u> include undercuts that are stabilized by roots and are providing habitat.			0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
Totals					0	0	100%
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	32	32		100%	
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	28	28		100%	
	2a. Piping	Structures lacking any substantial flow underneath or around sills or arms.	28	28		100%	
	3. Bank Protection	Bank erosion within the structures extent of influence does <u>not</u> exceed 15%. (See guidance exhibit describing bank influenced by vane arms)	32	32		100%	
	4. Habitat	Pool forming structures maintaining Max Pool Depth : Mean Bankfull Depth ratio \geq 1.5 Rootwads/logs providing some cover at low flow.	32	32		100%	

Table 6

Vegetation Condition Assessment. UT Bear Creek (Weaver/McLeod) EEP# 92347- 2013 (MY-4)

Planted Acreage¹

18.2

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 acre	Pattern and Color	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.	0.1 acre	orange stipules	8	1.23	6.8%
Total				8	1.23	6.8%
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 acre	Pattern and Color	0	0.00	0.0%
Cumulative Total				8	1.23	6.8%

Easement Acreage²

30.35

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	Pattern and Color	7	0.57	1.9%
				0		
5. Easement Encroachment Areas ³	Areas or points (if too small to render as polygons at map scale).	none	Pattern and Color	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 species 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 likely 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 early 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 symbolizing invasives polygons, particularly for situations where the condition 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

Problem Areas Inventory Tables: UT Bear Creek (Weaver/McLeod) #92347 - MY4 (2013)

Stream Problem Areas - Northern UT

Problem	North UT Station	Suspected Cause	Photo #
Bank erosion & gully at swale outlet, LB	3435-3490 LB	Coir and live stakes washed out in 2010-11; poor root density on bank.	1, 2
Bank erosion, LB	3680-3705 LB	Coir and live stakes washed out in 2010-11; poor root density on bank.	3, 4

Stream Problem Areas - Southern UT

Problem	South UT Station	Suspected Cause	Photo #
None on Southern UT			

Vegetation & Easement Problem Areas - Northern UT

Problem	North UT Station	Suspected Cause	Photo #
<i>Ligustrum sinense</i> invading upper reach along NC-902 (RB+LB)	1000-1100 RB 1000-1170 LB	<i>Ligustrum</i> abundant in roadside scrub along NC-902	5
Low woody stem density and/or poor vigor (RB)	1180-1310 RB	Soil dense/clayey, poor root growth	6
Low woody stem density and/or poor vigor (LB)	1350-1550 LB	Soil dense/clayey, poor root growth	
<i>Ligustrum sinense</i> 4 small patches (.02 to .06 acr each) in middle reach	1450 RB, 1750 RB, 1800 LB, 2300 RB	Stump/root sprouts and seedlings from <i>Ligustrum</i> outside easement fence	
Low woody stem density and/or poor vigor (LB)	1820-1900 LB	Soil dense/clayey, Fescue dominant	7
Broken fence wires at cattle crossing	1930 LB	Tree fallen on fence	9
Low woody stem density and/or poor vigor (LB)	1950-2100 LB	Soil dense/clayey, poor root growth	8
Low woody stem density and/or poor vigor (RB)	2020-2150 RB	Soil dense/clayey, poor root growth	
Broken fence wires (RB) in forest near Bear Creek confluence	3100-4000 RB	Large trees fallen on fence in Bear Creek riparian buffer	

Vegetation & Easement Problem Areas - Southern UT

Problem	South UT Station	Suspected Cause	Photo #
<i>Ligustrum sinense</i> invading upper reach along NC-902 (RB+LB)	1000-1050 RB-LB	<i>Ligustrum</i> abundant in roadside scrub along NC-902	
Low woody stem density and poor vigor (LB)	1160-1340 LB	Soil dense/clayey, Fescue dominant	10
Broken fence wires (RB + LB)	1750 LB, 1900 RB	Trees fallen on fence	11
Low woody stem density, poor vigor (LB)	2300-2550 LB	Soil dense/clayey, Fescue dominant	12

Stream Problem Area Photos - UT Bear Creek (Weaver/McLeod) #92347 - MY4 (2013)



1. N-sta-3450.LB Erosion.Oct 2013. Thin veg cover, no woody.



2. N-sta-3450.LB Erosion.Oct 2013. Thin veg cover, no woody.



3. N-sta-3700.LB Erosion.Oct 2013. Thin veg cover, no woody.



4. N-sta-3700.LB Erosion.Apr 2013. Thin veg cover, no woody.

(South Tributary Has No Stream Problem Areas)

Vegetation & Easement Problem Photos - UT Bear Creek (Weaver/McLeod) #92347 - MY4 (2013)



5. N-sta-1000.LB. Apr.2013. Ligustrum invading from roadside



6. N-sta-1200.RB. Face Dnstr. Oct.2013. Low woody density



7. N-sta-1900.LB. Face Upstr. Apr.2013. Fescue + Low woody



8. N-sta-1980.LB. Face Dnstr. Oct.2013. Low woody density

Vegetation & Easement Problem Photos - UT Bear Creek (Weaver/McLeod) #92347 - MY4 (2013)



9. N-sta-1930.LB. Oct.2013. Fence collapse at cattle crossing



10. S-sta-1280.LB. Face Upstr. Oct.2013. Fescue + Low woody



11. S-sta-1750.LB. Apr.2013. Tree fallen on fence



12. S-sta-2400.LB. Face Dnstr. Apr.2013. Fescue + Low woody

Figure 3.1 Stream Photo-Point Stations - UT Bear Creek Project #92347- MY4 (2013) - North Trib

Photo-Point 1: Northern UT facing Downstream from NC 902 (Sta. 10+00)



PhotoPoint-1: 3/25/2010



PhotoPoint-1: 04/30/2013

Photo-Point 2: Northern UT facing Downstream (Sta. 13+60)



PhotoPoint-2: 3/24/2010



PhotoPoint-2: 10/29/2013

Figure 3.2 Stream Photo-Point Stations - UT Bear Creek Project #92347- MY4 (2013) - North Trib
Photo-Point 3: Northern UT facing Upstream from easement fence corner (Sta. 15+30)



PhotoPoint-3: 3/24/2010



PhotoPoint-3: 10/25/2013

Photo-Point 4: Northern UT facing South across stream toward floodplain swale outlet (Sta. 17+55)



PhotoPoint-4: 3/24/2010



PhotoPoint-4: 10/25/2013

Figure 3.3 Stream Photo-Point Stations - UT Bear Creek Project #92347- MY4 (2013) - North Trib

Photo-Point 5: Northern UT facing Downstream at Cattle Crossing (Sta. 19+30)



PhotoPoint-5: 3/24/2010



PhotoPoint-5: 10/25/2013

Photo-Point 6: Northern UT facing Upstream (Sta. 22+95)



PhotoPoint-6: 3/24/2010



PhotoPoint-6: 10/25/2013

Figure 3.4 Stream Photo-Point Stations - UT Bear Creek Project #92347- MY4 (2013) - North Trib

Photo-Point 7: Northern UT facing Downstream (Sta. 28+95)



PhotoPoint-7: 3/24/2010



PhotoPoint-7: 10/25/2013

Photo-Point 8: Northern UT facing Upstream (Sta. 33+30)



PhotoPoint-8: 3/24/2010



PhotoPoint-8: 10/25/2013

Figure 3.5 Stream Photo-Point Stations - UT Bear Creek Project #92347- MY4 (2013) - North Trib

Photo-Point 9: Northern UT facing Upstream (Sta. 38+50)



PhotoPoint-9: 3/24/2010



PhotoPoint-9: 10/25/2013

Photo-Point 10: Northern UT facing Upstream just above Bear Creek confluence (Sta. 39+75)



PhotoPoint-10: 3/24/2010



PhotoPoint-10: 9/25/2013

Figure 3.6 Stream Photo-Point Stations - UT Bear Creek Project #92347- MY4 (2013) - South Trib

Photo-Point 11: Southern UT facing Downstream from NC 902 (Sta. 10+00)



PhotoPoint-11: 3/25/2010



PhotoPoint-11: 04/30/2013

Photo-Point 12: Southern UT facing Downstream (Sta. 12+10)



PhotoPoint-12: 3/25/2010



PhotoPoint-12: 10/29/2013

Figure 3.7 Stream Photo-Point Stations - UT Bear Creek Project #92347- MY4 (2013) - South Trib

Photo-Point 13: Southern UT facing Upstream (Sta. 14+45)



PhotoPoint-13: 3/25/2010



PhotoPoint-13: 04/30/2013

Photo-Point 14: Southern UT facing Downstream (Sta. 16+90)



PhotoPoint-14: 3/25/2010



PhotoPoint-14: 10/29/2013

Figure 3.8 Stream Photo-Point Stations - UT Bear Creek Project #92347- MY4 (2013) - South Trib

Photo-Point 15: Southern UT facing Downstream (Sta. 20+80)



PhotoPoint-15: 3/25/2010



PhotoPoint-15: 04/30/2013

Photo-Point 16: Southern UT facing Downstream (Sta. 24+20)



PhotoPoint-16: 3/25/2010



PhotoPoint-16: 10/29/2013

Figure 3.9 Stream Photo-Point Stations - UT Bear Creek Project #92347- MY4 (2013) - South Trib

Photo-Point 17: Southern UT facing Upstream from easement fence corner (Sta. 24+25)



PhotoPoint-17: 3/25/2010



PhotoPoint-17: 10/25/2013

Photo-Point 18: Southern UT facing Upstream from Bear Creek confluence (Sta. 27+00)



PhotoPoint-18: 3/25/2010



PhotoPoint-18: 10/25/2013

Figure 4.1 Vegetation Monitoring Plot Photos - UT Bear Creek Stream Restoration - MY4 (2013) - Project #92347

VegPlot 1 (Northern UT Sta. 12+20)



VegPlot-1: 4/14/2010



VegPlot-1: 10/29/2013

VegPlot 2 (Northern UT Sta. 18+15)



VegPlot-2: 4/14/2010



VegPlot-2: 10/29/2013 (10,0 corner)

Figure 4.2 Vegetation Monitoring Plot Photos - UT Bear Creek Stream Restoration - MY4 (2013) - Project #92347

VegPlot 3 (Northern UT Sta. 24+35)



VegPlot-3: 4/14/2010



VegPlot-3: 10/22/2013

VegPlot 4 (Northern UT Sta. 27+75)



VegPlot-4: 4/14/2010



VegPlot-4: 10/17/2013

Figure 4.3 Vegetation Monitoring Plot Photos - UT Bear Creek Stream Restoration - MY4 (2013) - Project #92347

VegPlot 5 (Northern UT Sta. 29+50)



VegPlot-5: 4/14/2010



VegPlot-5: 10/17/2013

VegPlot 6 (Northern UT Sta. 31+10)



VegPlot-6: 4/14/2010



VegPlot-6: 10/17/2013

Figure 4.4 Vegetation Monitoring Plot Photos - UT Bear Creek Stream Restoration - MY4 (2013) - Project #92347

VegPlot 7 (Northern UT Sta. 33+75)



VegPlot-7: 4/14/2010



VegPlot-7: 10/17/2013

VegPlot 8 (Southern UT Sta. 12+00)



VegPlot-8: 4/15/2010



VegPlot-8: 10/17/2013

Figure 4.5 Vegetation Monitoring Plot Photos - UT Bear Creek Stream Restoration - MY4 (2013) - Project #92347

VegPlot 9 (Southern UT Sta. 14+45)



VegPlot-9: 4/15/2010



VegPlot-9: 10/22/2013

VegPlot 10 (Southern UT Sta. 19+35)



VegPlot-10: 4/15/2010



VegPlot-10: 10/29/2013

Figure 4.6 Vegetation Monitoring Plot Photos - UT Bear Creek Stream Restoration - MY4 (2013) - Project #92347

VegPlot 11 (Southern UT Sta. 23+25)



VegPlot-11: 4/15/2010



VegPlot-11: 10/29/2013

VegPlot 12 (Southern UT Sta. 24+55)



VegPlot-12: 4/15/2010



VegPlot-12: 10/22/2013

APPENDIX C.

VEGETATION PLOT MONITORING DATA

Table 7	Vegetation Plot Success Summary
Table 8	CVS Stem Counts Total and Planted by Plot
e-Table	Raw CVS vegetation data sheets

Table 7. Vegetation Plot Mitigation Success Summary
UT to Bear Creek (Weaver/McLeod) # 92347 MY- 4 (Oct 2013)

Plot #	Riparian Buffer Stems ¹	Stream/Wetland Stems ²	Live Stakes	Invasives	Volunteers ³	Total ⁴	Unknown Growth Form
0001	6	6	1	0	56	63	0
0002	4	4	0	4	52	52	0
0003	8	8	0	10	57	55	0
0004	6	6	0	4	44	46	0
0005	n/a	32	0	0	115	147	0
0006	10	10	0	0	42	52	0
0007	7	7	0	0	27	34	0
0008	9	9	0	0	20	29	0
0009	4	4	0	0	50	54	0
0010	8	9	0	0	39	48	0
0011	10	12	0	0	32	44	0
0012	14	15	0	0	60	75	0

Wetland/Stream Vegetation Totals (per acre)

Plot #	Stream/Wetland Stems ²	Volunteers ³	Total ⁴	Success Criteria Met?
0001	243	2266	2550	No
0002	162	2104	2104	No
0003	324	2307	2226	Yes
0004	243	1781	1862	No
0005	1295	4654	5949	Yes
0006	405	1700	2104	Yes
0007	283	1093	1376	No, close
0008	364	809	1174	Yes
0009	162	2023	2185	No
0010	364	1578	1942	Yes
0011	486	1295	1781	Yes
0012	607	2428	3035	Yes
Project Avg	411	2003	2357	Yes

Riparian Buffer Vegetation Totals

Plot #	Riparian Buffer Stems ¹	Success Criteria Met?
0001	243	No
0002	162	No
0003	324	Yes, barely
0004	243	No
0005	n/a	
0006	405	Yes
0007	283	No
0008	364	Yes
0009	162	No
0010	324	Yes, barely
0011	405	Yes
0012	567	Yes
Project Avg	316	No, close

Stem Class

characteristics

¹Buffer Stems Native planted hardwood trees. NOT including pines, shrubs, live stakes, vines.

²Stream/ Wetland Stems Native planted hardwood trees + shrubs. NOT including live stakes, vines.

³Volunteers Native woody trees + shrubs, not planted; not including vines, exotics.

⁴Total Planted + volunteer native trees, shrubs + live stakes; not including vines, exotics.

Color Code for Density Success Criteria

Exceeds criterion by 10% or more

Exceeds criterion by less than 10%

Fails to meet criterion by less than 10%

Fails to meet criterion by more than 10%

Table 8, continued. CVS Stem Counts Total & Planted by Plot and Species.

UT to Bear Creek (Weaver/McLeod) EEP # 92347 MY- 4 (Oct 2013)

Scientific Name	Current Plot Data (MY4 2013)															Annual Means, Total All Plots																		
	E92347-01-0008			E92347-01-0009			E92347-01-0010			E92347-01-0011			E92347-01-0012			MY4 (2013)			MY3 (2012)			MY2 (2011)			MY1 (2010)			MY0 (2010)						
	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	
Acer rub														1			3			7			1			2					4			
Aes syl													1	1	1				1	1	1	1	1	1				1	1	1				
Aln ser							1	1	1	2	2	2				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
Bac hal					2				3			3						38		38			18			15					2			
Bet nig	3	3	3	3	3	3	1	1	1	1	1	1	1	1	17	17	17	17	17	17	17	17	17	20	20	20	21	21	22					
Cel laev	1	1	1												4	4	4	5	5	5	5	5	6	2	2	2	3	3	3					
Cep occ															11	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12				
Corn amo																															1			
Dio virg	1	1	1							1	1	1	1	1	1	1	5	5	5	6	6	6	6	6	7									
Frax pen	2	2	19	1	1	34	3	3	33			17	8	8	49	39	39	388	41	41	388	41	41	506	40	40	194	35	35	341				
Gled tria																	2			1			8	2	2	2	3	3	5					
Jug nig																		3					1											
Lig sin																		18			23			7								9		
Liq sty						8												74			35			5			5					4		
Nyssa																																	2	
Nys syl															2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3			
Pin tae																		2																
Plat occ							2	2	2	2	2	2	1	1	1	16	16	16	16	16	16	16	16	16	16	15	15	15	16	16	16			
Quercus																																2	2	2
Que fal																							1	1	1	1	1	1	1	1	1	1	1	
Que lyr															2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Que mic	1	1	1				2	2	2	1	1	1	1	1	1	9	9	9	10	10	10	9	9	9	8	8	8	5	5	5				
Que nig																																	1	
Que phel										5	5	5	2	2	2	10	10	10	10	10	10	10	10	11	9	9	9	9	9	9	9	9	9	
Que vel															1	1	1						2	2	2									
Rub arg																															16		16	
Salix sp																																	1	
Sal nig															1	2	9	1	2	3	1	2	6	1	2	2						16		
Sym orb						3						9			14			44			39			35	1	1	21	1	1	51				
Ulmus sp																																	7	
Ulm ala	1	1	1												1	1	9	1	1	21			9	4	4	4	4	4	4	4	4	4		
Ulm ame			3			4			6			3			4			46			38												14	
	9	9	29	4	4	54	9	9	48	12	12	44	15	15	75	122	123	717	125	126	679	126	127	702	122	123	347	121	121	554				
	1			1			1			1			1			12			12			12			12			12						
	0.02			0.02			0.02			0.02			0.02			0.30			0.30			0.30			0.30			0.30						
	6	6	7	2	2	6	5	5	7	6	6	10	7	7	10	15	15	24	14	14	22	15	15	24	15	15	21	16	16	26				
	364.2	364.2	1174	161.9	161.9	2185	364.2	364.2	1942	485.6	485.6	1781	607	607	3035	411.4	414.8	2418	421.5	424.9	2290	424.9	428.3	2367	411.4	414.8	1170	408.1	408.1	1868				

Color Codes for Density Success

- Exceeds requirements by 10%
- Exceeds requirements, but by less than 10%
- Fails to meet requirements, by less than 10%
- Fails to meet requirements by more than 10%

01

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot **E92347-01-0001**

VMD Year (1-5): Date:

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: Datum: (dec.deg. or m)

Longitude or UTM-E: UTM Zone:

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

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

Party: Role:

Date last planted:

New planting date m/yy?

Check box if plot was not

Notes: sampled, specify reason below

ID	Species Name	Map char	Source*	Oct 2012 Data		Height 1cm*	DBH 1 cm	Notes*	THIS YEAR'S DATA					
				X 0.1m	Y 0.1m				Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
987	Betula nigra	(a)	R	0.1	0.2	98.0		<input checked="" type="checkbox"/>	142	0.3	<input type="checkbox"/>	3		
988	Platanus occidentalis	(e)	R	6.9	4.1	220.0	1.0	<input type="checkbox"/>	280	1.6	<input type="checkbox"/>	3		
989	Quercus velutina	(f)	R	8.3	0.4	Missing		<input type="checkbox"/>	23	-	<input checked="" type="checkbox"/>	2		
1280	Salix nigra	(g)	R	9.5	7.0	250.0	1.2	<input type="checkbox"/>	240	1.5	<input type="checkbox"/>	4		
1281	Salix nigra	(b)	L	0.1	1.5	215.0	0.9	<input type="checkbox"/>	300+	2.7	<input type="checkbox"/>	4		
384	Quercus michauxii	(c)	R	3.0	3.8	91.0		<input type="checkbox"/>	151	0.6	<input type="checkbox"/>	3	DIS	fungus
385	Quercus lyrata	(d)	R	4.4	6.4	172.0	0.9	<input type="checkbox"/>	205	1.0	<input type="checkbox"/>	4		

stems: 7 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)	Height 1cm*	DBH 1 cm	Vigor*	Damage*	Notes

*Notes by ID: 987-at 0.0 corner

Natural Woody Stems - tallied by species										
Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right): <input type="checkbox"/> 10cm <input checked="" type="checkbox"/> 50cm <input type="checkbox"/> 100cm <input type="checkbox"/> 137cm										
Species Name	Sub-Seed	SEEDLINGS — HEIGHT CLASSES			SAPLINGS — DBH		TREES — DBH			
		10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	=10 (write DBH)
Bac hal										
Liquid sty										
Frax pen										
Salix nigra										
Symph orbi										

Explanation of cut-off & subsampling**: dense weeds

**Required if cut-off >10cm or subsample ? 100%. 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 p.1
 *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, UNKNOW, specify other.
 *HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.
 Printed in the CVS-EEP Entry Tool ver. 2.3.1

01

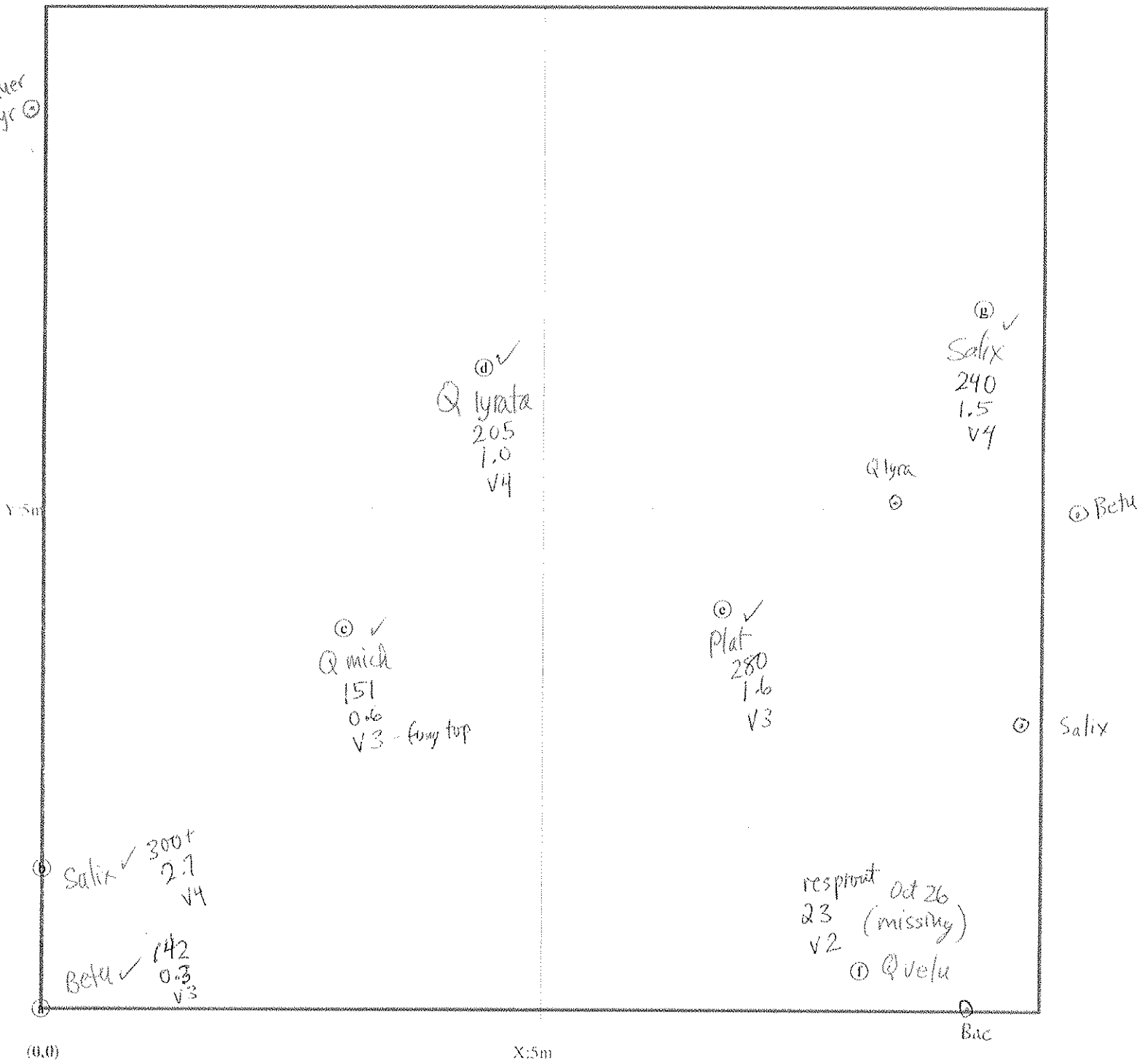
Map of stems on plot E92347-01-0001

Oct 26, 2012

X-axis: 150°



stems: 7
map size:
LARGE



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

p. 2

*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, UNKNOW, 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

2013 Oct 29

01

#02

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot **E92347-01-0002** NORTH Party: G. Potters Role: Date last planted:
 VMD Year (1-5): 4 Date: 29/10/2013
 Taxonomic Standard:
 Taxonomic Standard DATE:
 Latitude or UTM-N: 1884205 Datum: NAD83/W
 (dec.deg. or m)
 Longitude or UTM-E: 677197 UTM Zone: 18N
 Coordinate Accuracy (m):
 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	Oct 2012 Data		Notes*	THIS YEAR'S DATA					
						Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
996	Betula nigra	(d)	R	9.9	0.1	55.0			68	-		2		
998	Fraxinus pennsylvanica	(b)	R	2.0	4.6	36.0			-	-		M		missing
1001	Fraxinus pennsylvanica	(a)	R	1.0	9.5	66.0			98	-		2		
1297	Celtis laevigata	(c)	R	2.5	0.1	65.0			65	-		2		

stems: 4 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)	Height 1cm*	DBH 1 cm	Vigor*	Damage*	Notes
Quercus lyrata		1.8	4.3	67	-	2		

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	Sub-Seed	SEEDLINGS — HEIGHT CLASSES			SAPLINGS — DBH			TREES — DBH		
		10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	=10 (write DBH)
Frax pen		☑	☒	☐		☐				
Bacc halim			☐	☐		☐				
Gledit triac			☐	☐		☐				
Ligustr sine		☐	☐	☐		☐				
Symph orbi		☐	☐	☐		☐				

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

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

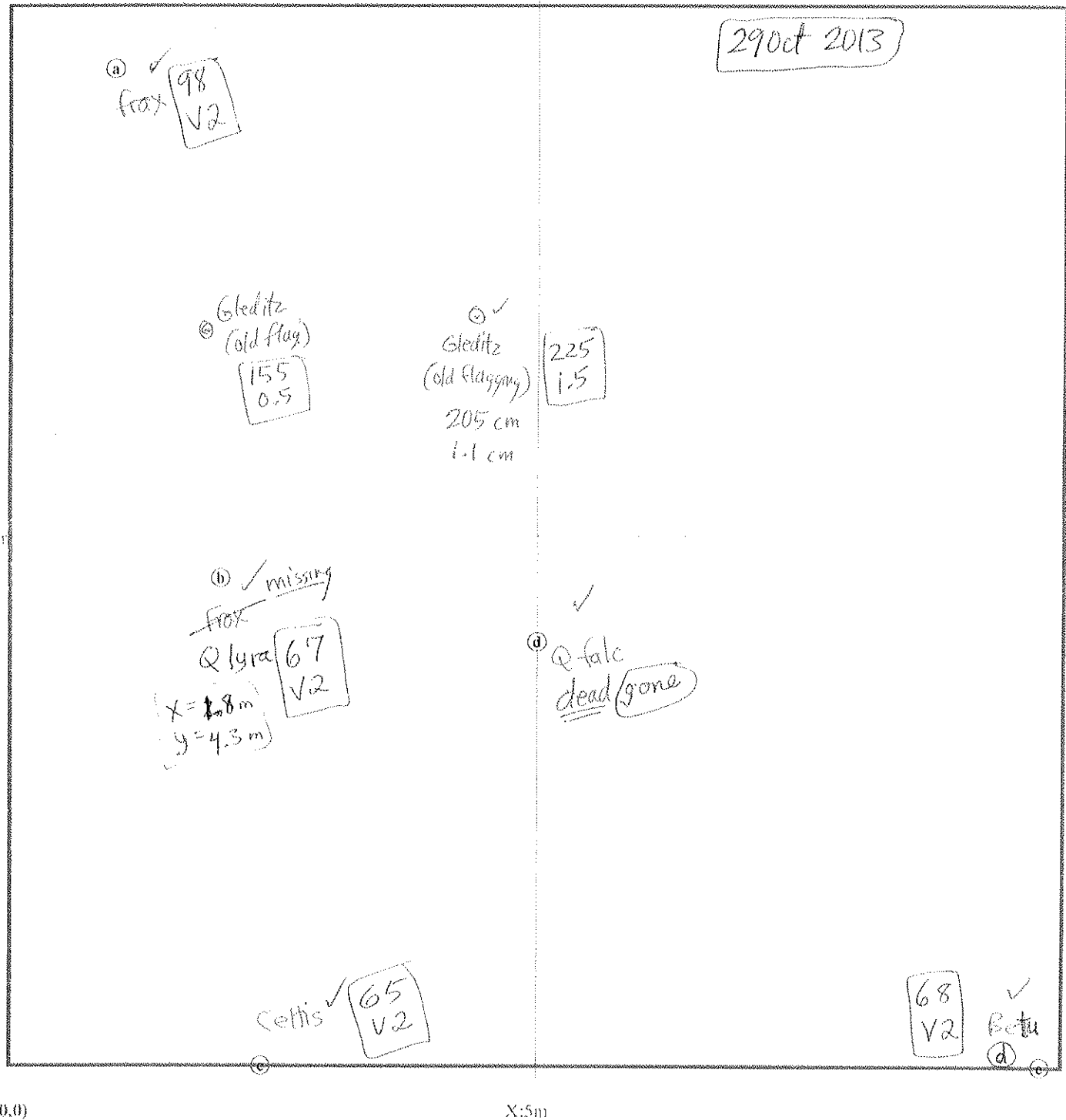
*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 3
 *VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.
 *DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSecs, GAME, LIVESTock, Other/Unknown
 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-FEP Entry Tool ver. 2.3.1

02

Map of stems on plot E92347-01-0002

X-axis: 275°

stems: 5
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 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

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot **E92347-01-0003** NORTH Party: S. Pottorn Role: Date last planted:
 VMD Year (1-5): 4 Date: 22/OCT/2013
 Taxonomic Standard:
 Taxonomic Standard DATE:
 Latitude or UTM-N: 1884743 Datum: NAD83/W
 Longitude or UTM-E: 677040 UTM Zone: 18N
 Coordinate Accuracy (m):
 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	Oct 2012 Data		Notes*	THIS YEAR'S DATA					
						Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
1007	Fraxinus pennsylvanica	(b)	R	1.1	1.1	27.0			-	-		M		missing
1008	Quercus phellos	(c)	R	2.9	1.4	73.0			90	-		2		
1009	Quercus michauxii	(g)	R	5.5	0.2	125.0	DBH?		197	0.8		3	DIS	fungus
1010	Betula nigra	(k)	R	9.5	0.6	87.0		✓	126	-		3		
1011	Quercus michauxii	(h)	R	6.6	2.5	10.0	DBH?		-	-		M		missing
1012	Nyssa sylvatica	(a)	R	0.4	3.1	10.0			49	-		1		
1013	Betula nigra	(e)	R	3.9	4.1	80.0			104	-		2		
1014	Fraxinus pennsylvanica	(j)	R	8.7	4.2	55.0			119	-		3		
1015	Fraxinus pennsylvanica	(i)	R	8.0	5.4	58.0		✓	107	-		2		
1016	Celtis laevigata	(f)	R	5.2	7.0	30.0		✓	-	-		M		missing
1019	Diospyros virginiana	(d)	R	3.2	8.7	37.0		✓	41	-		2		

stems: 11 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)	Height 1cm*	DBH 1 cm	Vigor*	Damage*	Notes

*Notes by ID: 1010-leader died
 1015-top died
 1016-broken
 1019-top died

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 5

*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): **E92347-01-0003**

Oct 2012 Data

THIS YEAR'S DATA

ID	Species	map char	source X (m)	Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Notes*	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	<input checked="" type="checkbox"/> c	SEEDLINGS — HEIGHT CLASSES				SAPLINGS — DBH			TREES — DBH		
		Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	=10 (write DBH)
<i>Ligustrum sme</i>			☐	☐							
<i>Frax pen</i>			☐	☐	☐						
<i>Symphoricarpos orbic</i>			☐								
<i>Baccharis halimifolia</i>											
<i>Salix nigra</i>											

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



Form WS2, ver 9.1

22 Oct 13

Solidago
Andropogon
 other grasses
Eupatorium
Fleabane

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p.6

*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, VINI: Strangulation, UNKNown, specify other.

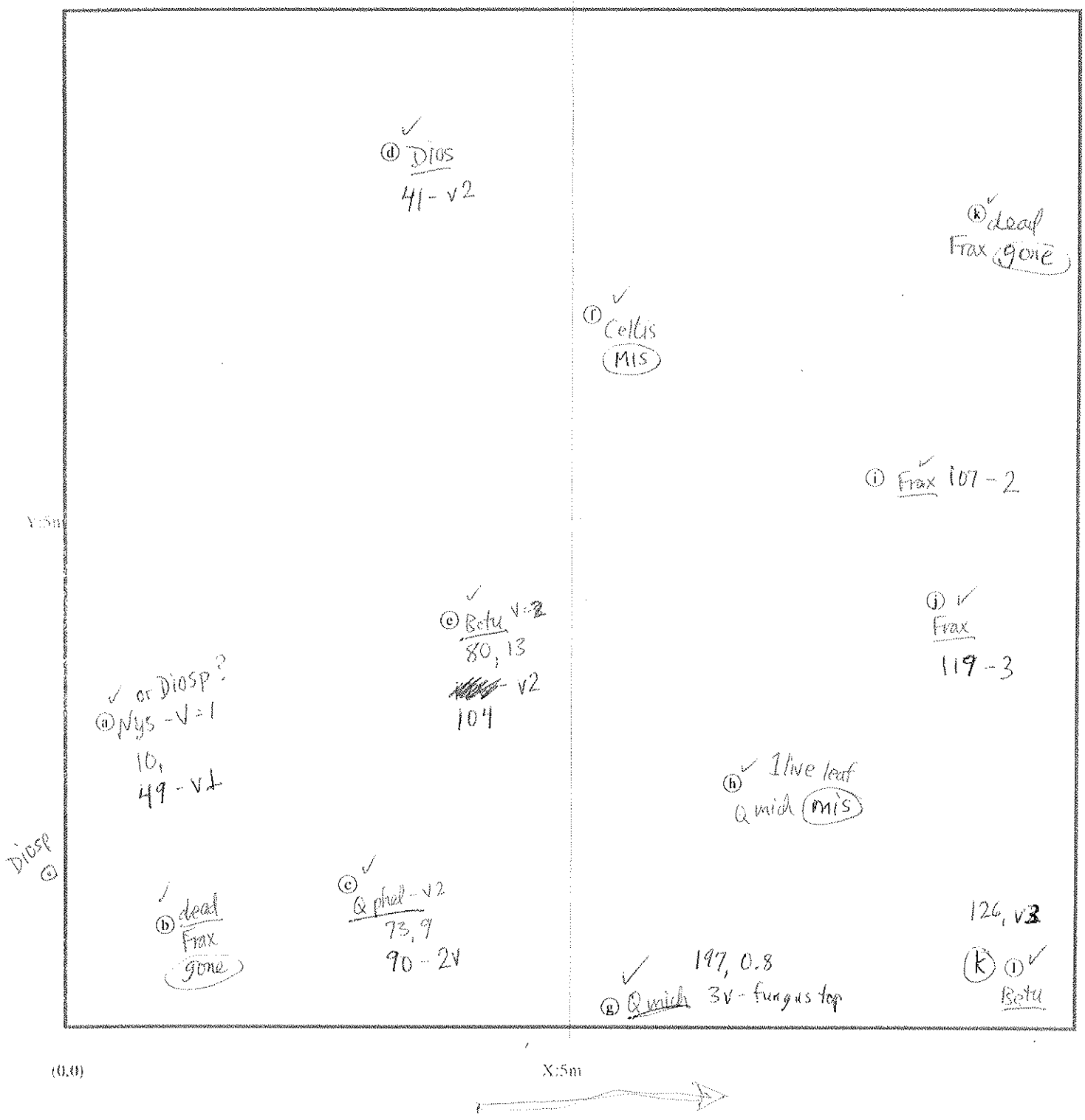
*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

03

Map of stems on plot E92347-01-0003

X-axis: 100° N
stems: 12
map size: LARGE

Oct 22, 2013 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, HURRricane, DISeased, VINE Strangulation, UNKNown, specify other.
 *HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot **E92347-01-0004** NORTH Party: G-Pottern Role: Date last planted: _____
 VMD Year (1-5): 4 Date: 17/Oct/2013- / / New planting date m/yy? _____
 Taxonomic Standard: _____
 Taxonomic Standard DATE: _____
 Latitude or UTM-N: 1884972 Datum: NAD83/W
 (dec.deg. or m) Longitude or UTM-E: 676808 UTM Zone: 18nc
 Coordinate Accuracy (m): _____ X-Axis bearing (deg): 310
 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	Oct 2012 Data		Notes*	THIS YEAR'S DATA					
						Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
1025	Fraxinus pennsylvanica	(c)	R	8.5	0.0	168.0	0.6		260	1.3	<input type="checkbox"/>	3		
1026	Celtis laevigata	(d)	R	7.4	3.0	56.0			143	0.2	<input type="checkbox"/>	3		
1027	Quercus michauxii	(b)	R	4.2	2.5	115.0	DBH?		176	0.8	<input type="checkbox"/>	3	DIS	fungus
1028	Nyssa sylvatica	(a)	R	1.0	3.6	54.0			85	-	<input type="checkbox"/>	2		
1029	Platanus occidentalis	(f)	R	9.8	3.6	214.0	1.3		270	2.1	<input type="checkbox"/>	4		
1030	Betula nigra	(c)	R	7.2	5.8	135.0	DBH?		220	1.2	<input type="checkbox"/>	4		

stems: 6 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)	Height 1cm*	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.):											<input type="checkbox"/> 10cm <input type="checkbox"/> 50cm <input type="checkbox"/> 100cm <input type="checkbox"/> 137cm
Species Name	Sub-Seed	SEEDLINGS — HEIGHT CLASSES			SAPLINGS — DBH			TREES — DBH			=10 (write DBH)
		10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-		
Frax penn		☒	☒	☒							
Bacc halim			☒	☒							
Ligustrum		☒	☒								

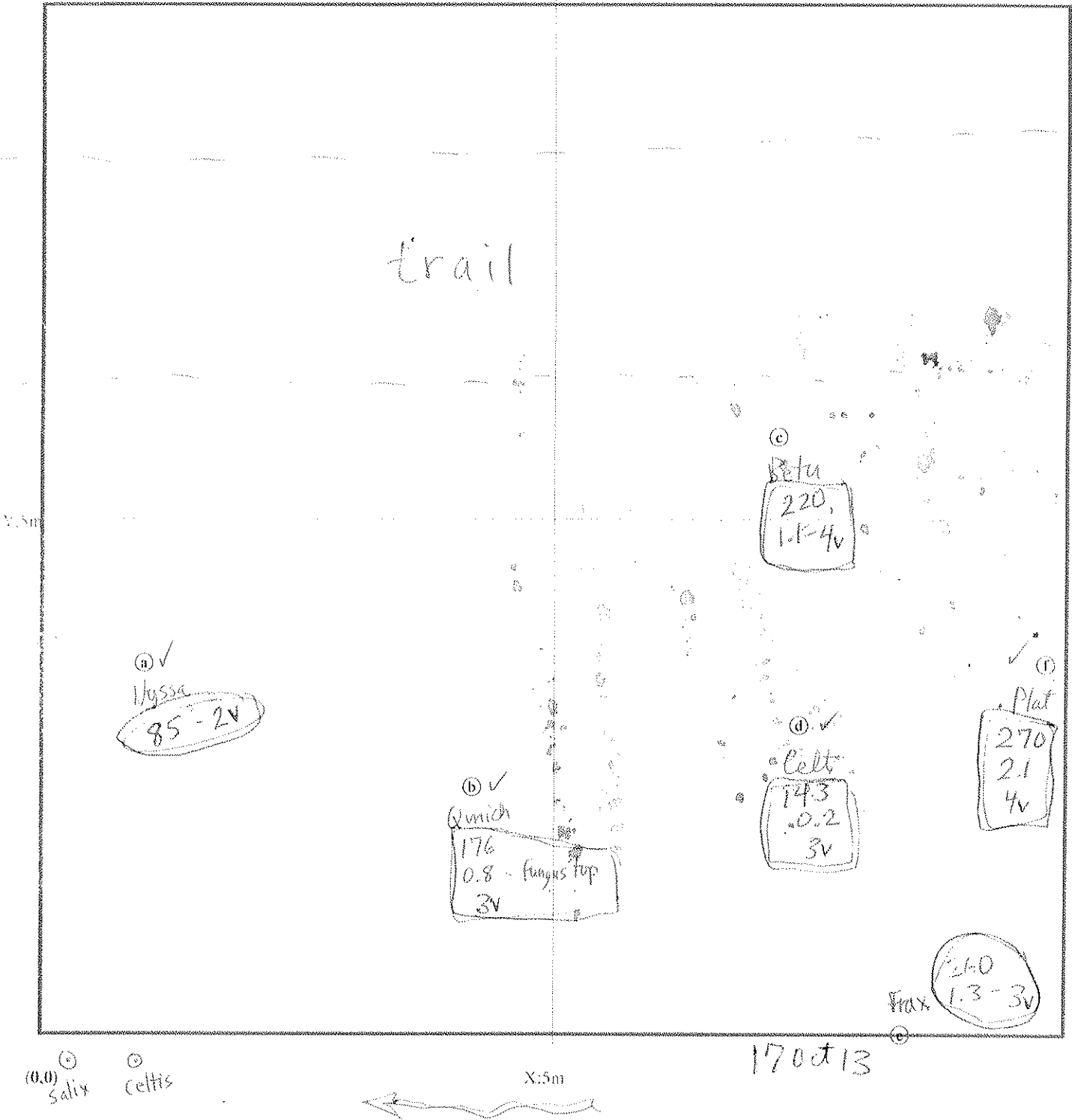
**Required if cut-off >10cm or subsample >100%. Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubing, R=bare Root, M=Mechanically, U=Unknown p. 8
 *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 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-FEP Entry Tool ver. 2.3.1

Map of stems on plot E92347-01-0004

X-axis: 310°

stems: 6
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.

Printed in the CVS-EEP Entry Tool ver. 2.2.7

05

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot **E92347-01-0005** *NORTH (Wetland)* Party: *GRPottern* Role: Date last planted:
 VMD Year (1-5): Date: *17 / OCT / 2013* - *1 / 1*
 Taxonomic Standard:
 Taxonomic Standard DATE:
 Latitude or UTM-N: *1885064* Datum: *NAD83/W*
 (dec.deg. or m)
 Longitude or UTM-E: *676653* UTM Zone: *18N*
 Coordinate Accuracy (m): X-Axis bearing (deg):
 Plot Dimensions: X: Y: Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X)
 Notes: Check box if plot was not sampled, specify reason below

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Dec 2012 Data		Notes*	THIS YEAR'S DATA					
						Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
1037	Fraxinus pennsylvanica	d	R	1.9	1.5	130.0	DBH?		230	0.9		4		
1038	Cephalanthus occidentalis	f	R	2.2	1.0	91.0			82	-		1		
1039	Fraxinus pennsylvanica	j	R	3.2	0.4	94.0			225	0.8		3		
1040	Fraxinus pennsylvanica	n	R	4.6	0.9	210.0	1.2		300+	1.8		4		
1041	Fraxinus pennsylvanica	p	R	5.5	1.0	250.0	1.9		300+	3.2		4		
1042	Fraxinus pennsylvanica	w	R	7.9	1.1	240.0	1.8		300+	3.3		4		
1043	Platanus occidentalis	D	R	9.5	0.1	300.0	2.0		300+	4.1		4		
1044	Fraxinus pennsylvanica	P	R	9.8	0.4	270.0	1.8		300+	3.4		4		
1045	Fraxinus pennsylvanica	z	R	8.2	2.5	220.0	1.6		300+	2.7		4		
1046	Cephalanthus occidentalis	u	R	6.9	2.2	127.0	DBH?		135	-		3		
1048	Cephalanthus occidentalis	o	R	5.1	2.5	80.0			88	-		2		
1049	Cephalanthus occidentalis	k	R	3.5	3.8	95.0			120	-		3		
1050	Cephalanthus occidentalis	g	R	2.9	3.7	96.0			135	-		3		
1051	Cephalanthus occidentalis	s	R	6.1	4.0	102.0	DBH?		110	-		3		
1052	Cephalanthus occidentalis	x	R	7.8	4.0	136.0	DBH?		148	0.4		4		
1053	Platanus occidentalis	B	R	9.0	4.2	240.0	1.1		300+	3.0		4		
1054	Fraxinus pennsylvanica	C	R	9.0	5.3	280.0	1.7		300+	2.7		4		
1055	Cephalanthus occidentalis	r	R	5.9	4.6	125.0	DBH?		155	0.3		3		
1056	Fraxinus pennsylvanica	l	R	6.0	5.1	260.0	1.7		300+	2.8		3		
1057	Fraxinus pennsylvanica	a	R	0.3	5.6	240.0	1.7		300+	2.7		4		
1058	Fraxinus pennsylvanica	e	R	1.9	5.2	139.0	0.4		290	1.5		3		
1059	Fraxinus pennsylvanica	h	R	3.1	5.4	186.0	1.0		280	1.9		3		
1060	Cephalanthus occidentalis	A	R	8.5	6.2	116.0	DBH?		130	-		3		
1061	Cephalanthus occidentalis	v	R	8.0	6.6	153.0	0.4		151	0.4		3		
1062	Cephalanthus occidentalis	m	R	4.2	6.9	115.0	DBH?		140	0.3		4		
1063	Fraxinus pennsylvanica	i	R	3.0	6.6	240.0	1.4		300+	2.8		4		
1065	Fraxinus pennsylvanica	c	R	1.7	7.5	270.0	1.5		300+	2.4		3		
1067	Fraxinus pennsylvanica	v	R	7.2	8.5	320.0	2.1		300+	3.5		4		
1068	Fraxinus pennsylvanica	B	R	9.5	7.3	210.0	1.3		300+	2.3		3		
1071	Fraxinus pennsylvanica	f	R	3.6	8.2	186.0	0.9		300	2.0		3		
1072	Fraxinus pennsylvanica	q	R	5.4	9.6	174.0	0.7		290	1.9		3		

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 10
 *VIGOR: 4=excellent, 3=good, 2=fair,
 I=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. 2.3.1

05

2013

Plot (continued): E92347-01-0005 NORTH

				Dec 2012 Data			Notes*	THIS YEAR'S DATA					
ID	Species	map source char	X Y (m) (m)	ddh (mm)	Height (cm)	DBH (cm)		ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*
* 1073	Betula nigra	(b) R	1.3 1.7	118.0	DBH?		290	1.8			4		

stems: 32 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)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:
 10cm 50cm 100cm 137cm *Dense Groundcover*

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

Species Name	Sub-Seed	SEEDLINGS — HEIGHT CLASSES			SAPLINGS — DBH			TREES — DBH		
		10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	=10 (write DBH)
Frax penn	---		☒	☒	---	☒	☒			
Ulmus amer	---		☒	☒	---	☒				
Acer rubrum	---		☒		---					
Ulmus alata	---		☒		---					
Liquid styrac	---		☒	☒	---	☒	☒	☒		
Juglans nigra	---		☒		---					
Symphor orb	---		☒		---					

**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 p. 11
 *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-FEP Entry Tool ver. 2.3.1

05

2012

Map of stems on plot E92347-01-0005

CAPITAL LETTERS represent stems that are different from stems marked with lowercase letters (i.e. "A" is different from "a").

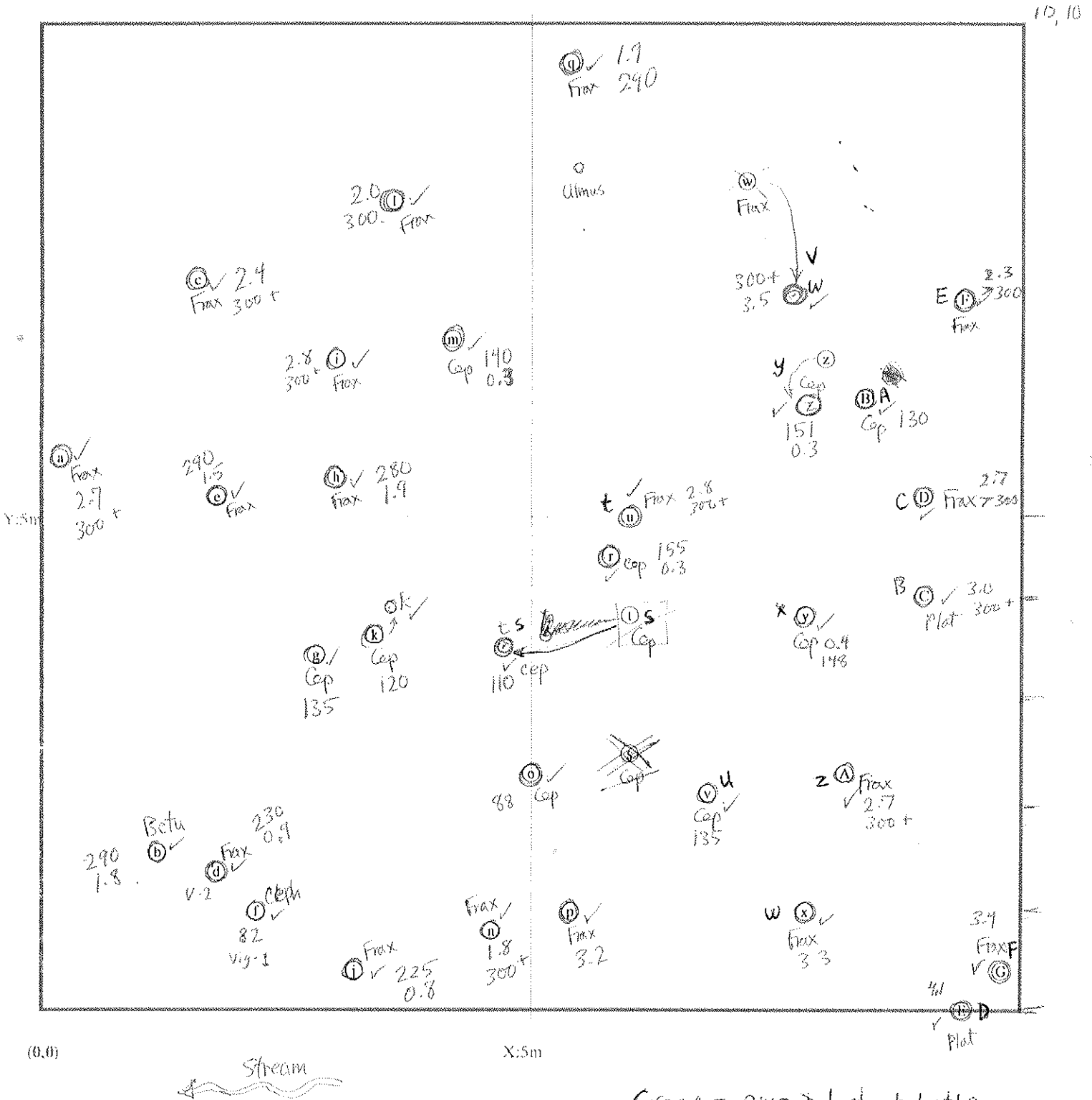
X-axis: 295"

stems: 33

map size:

LARGE

Height + DBH 170J 2013



Green = 2013 datasheet letters

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 12

*VIGOR: 4=excellent, 3=good, 2=fair,

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSecs, GAME, LIVESTock, Other/Unknown

I=unlikely to survive year, 0=dead,

ANIMAL, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUGht, STORM, HURRICane, DISeased, VINE

M=missing.

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

2012-05

#06

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot **E92347-01-0006**

VMD Year (1-5): Date:

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: Datum: (dec.deg. or m)

Longitude or UTM-E: UTM Zone:

Coordinate Accuracy (m):

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

Party: Role:

Date last planted:

New planting date m/yy?

Check box if plot was not

Notes: sampled, specify reason below

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2012 Data		Notes*	THIS YEAR'S DATA					
						Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
1078	Platanus occidentalis	a	R	0.4	0.4	77.0			64	-		2		
1079	Platanus occidentalis	d	R	3.4	0.3	105.0	DBH?		117	-		2		
1080	Diospyros virginiana	g	R	6.4	0.4	74.0			141	0.4		3		
1081	Platanus occidentalis	j	R	9.4	0.4	188.0	0.8		270	1.5		4		
1082	Celtis laevigata	i	R	8.7	3.5	48.0			27	-		1	Deer	
1083	Platanus occidentalis	f	R	5.6	3.5	70.0			99	-		2		
1085	Platanus occidentalis	k	R	9.5	6.6	88.0			210	1.0		4		
1086	Fraxinus pennsylvanica	h	R	7.1	9.2	156.0	0.6		256	1.6		3		
1087	Quercus velutina	e	R	3.9	9.6	Missing			-	-		M		missing
1088	Fraxinus pennsylvanica	b	R	0.6	9.6	58.0			86	-		2		
1090	Platanus occidentalis	c	R	3.1	6.0	71.0			134	-		3		

stems: 11 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)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

*Notes by ID: 1090-resprout

Crest Gauge Rod = 122cm, corkline @ 94cm.

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 13
 *VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.
 *DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSecs, GAME, LIVESTock, Other/Unknown
 ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRricane, DISeased, VINe
 Strangulation, UNKNown, specify other.
 *HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m. Printed in the CVS-FEP Entry Tool ver. 2.3.1

(06)

Plot (continued): E92347-01-0006				Oct 2012 Data			Notes*	THIS YEAR'S DATA					
ID	Species	map char	source X Y (m) (m)	dbh (mm)	Height (cm)	DBH (cm)		dbh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*

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	<input checked="" type="checkbox"/> c	SEEDLINGS — HEIGHT CLASSES				SAPLINGS — DBH			TREES — DBH		
		Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	=10 (write DBH)
Fraxin penn			☒ ☒	☒ .	.						
Liquid styr			• •	•							
Symph orbi			•	•							
Ulm alata			•	•							

**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 p. 14
 *VIGOR: 4=excellent, 3=good, 2=fair, *DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSecs, GAME, LIVESTock, Other/Unknown
 1=unlikely to survive year, 0=dead, ANIMAL, Human FRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUGHT, STORM, HURRICane, DISeased, VINI
 M=missing, Strangulation, UNKNown, specify other.
 *HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m. Printed in the CVS-EEP Entry Tool ver. 2.3.1

06

Map of stems on plot E92347-01-0006

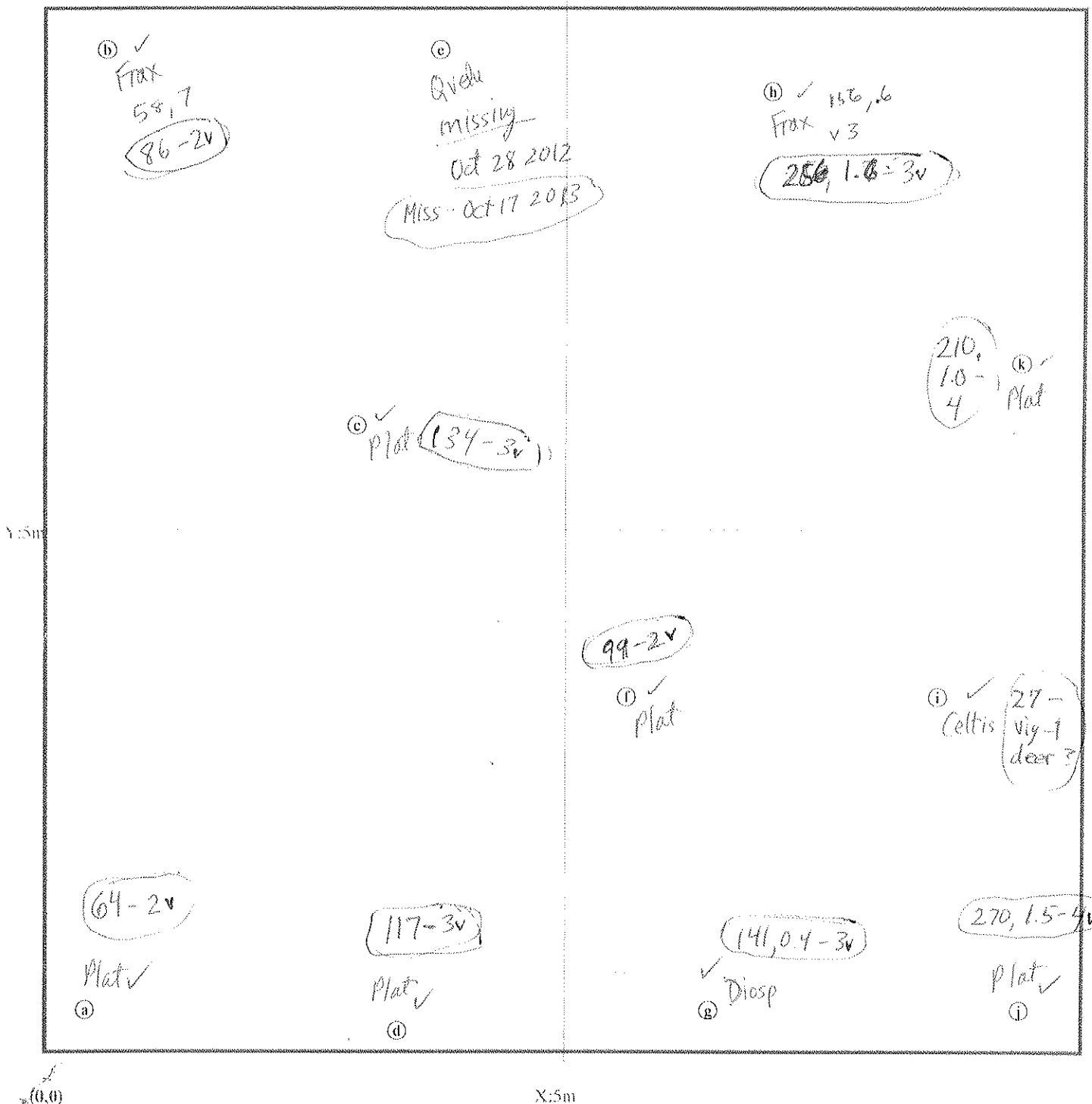
X-axis: 90°



stems: 11
map size:
LARGE

data 17 Oct 2013

10,10



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

p. 15

*VIGOR: 4=excellent, 3=good, 2=fair,

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSecs, GAME, LIVESTock, Other/Unknown

1=unlikely to survive year, 0=dead,

ANIMAL, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUGHT, STORM, HURRICane, DISeased, VINE

M=missing.

Strangulation, UNKNown, specify other.

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

Printed in the CVS-FEP Entry Tool ver. 2.2.7

Map of stems on plot E92347-01-0007 - North

X-axis: 290°

stems: 8
map size:
LARGE



Alnus

Dios

(d) Q phel

(h) Q phel

Y:5m

(b) Bet

(f) Q mich

(a) Plat
118-2

(c) Frax
103-2

(e) Bet

(g) Dios

(0,0)

X:5m



*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p.17

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

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSecs, 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-FEP Entry Tool ver. 2.3.1

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot E92347-01-0008 *south*

VMD Year (1-5): Date: *29/0ct/13* - /

Taxonomic Standard: _____

Taxonomic Standard DATE: _____

Latitude or UTM-N: Datum:

(dec.deg. or m)

Longitude or UTM-E: UTM Zone:

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

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

Party: *G. Pottorn* Role: _____ Date last planted: _____

New planting date m/yy?

Check box if plot was not

Notes: sampled, specify reason below

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Sep 2012 Data		Notes*	THIS YEAR'S DATA					
						Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
1103	Betula nigra	(g)	R	9.3	0.2	63.0			93	-	<input type="checkbox"/>	2		
1104	Betula nigra	(i)	R	9.9	9.0	240.0	1.8		300+	2.7	<input type="checkbox"/>	4		
1105	Betula nigra	(a)	R	1.4	9.6	350.0	2.3		400+	3.5	<input type="checkbox"/>	4		
1107	Fraxinus pennsylvanica	(d)	R	4.7	2.0	144.0	0.5		215	0.6	<input type="checkbox"/>	3		
388	Diospyros virginiana	(c)	R	5.5	7.5	95.0			135	-	<input type="checkbox"/>	3		
389	Celtis laevigata	(f)	R	7.0	2.0	187.0	0.5		240	0.5	<input type="checkbox"/>	3		
564	Fraxinus pennsylvanica	(h)	R	9.9	2.5	189.0	0.8		300+	1.8	<input type="checkbox"/>	4		
565	Quercus michauxii	(c)	R	2.8	1.0	176.0	0.5		260	1.0	<input type="checkbox"/>	4		
566	Ulmus alata	(b)	R	2.0	2.5	151.0	0.3		220	0.4	<input type="checkbox"/>	3		

stems: 9 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)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling: *tall dense weeds*

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

Species Name	Sub-Seed	SEEDLINGS — HEIGHT CLASSES			SAPLINGS — DBH			TREES — DBH		
		10 cm 50 cm	50 cm 100 cm	100 cm 137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	=10 (write DBH)
<i>Frax pens</i>				<input type="checkbox"/>		<input type="checkbox"/>				
<i>Ulmus amer</i>				<input type="checkbox"/>						

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

*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

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

Form WS2, ver 9.1

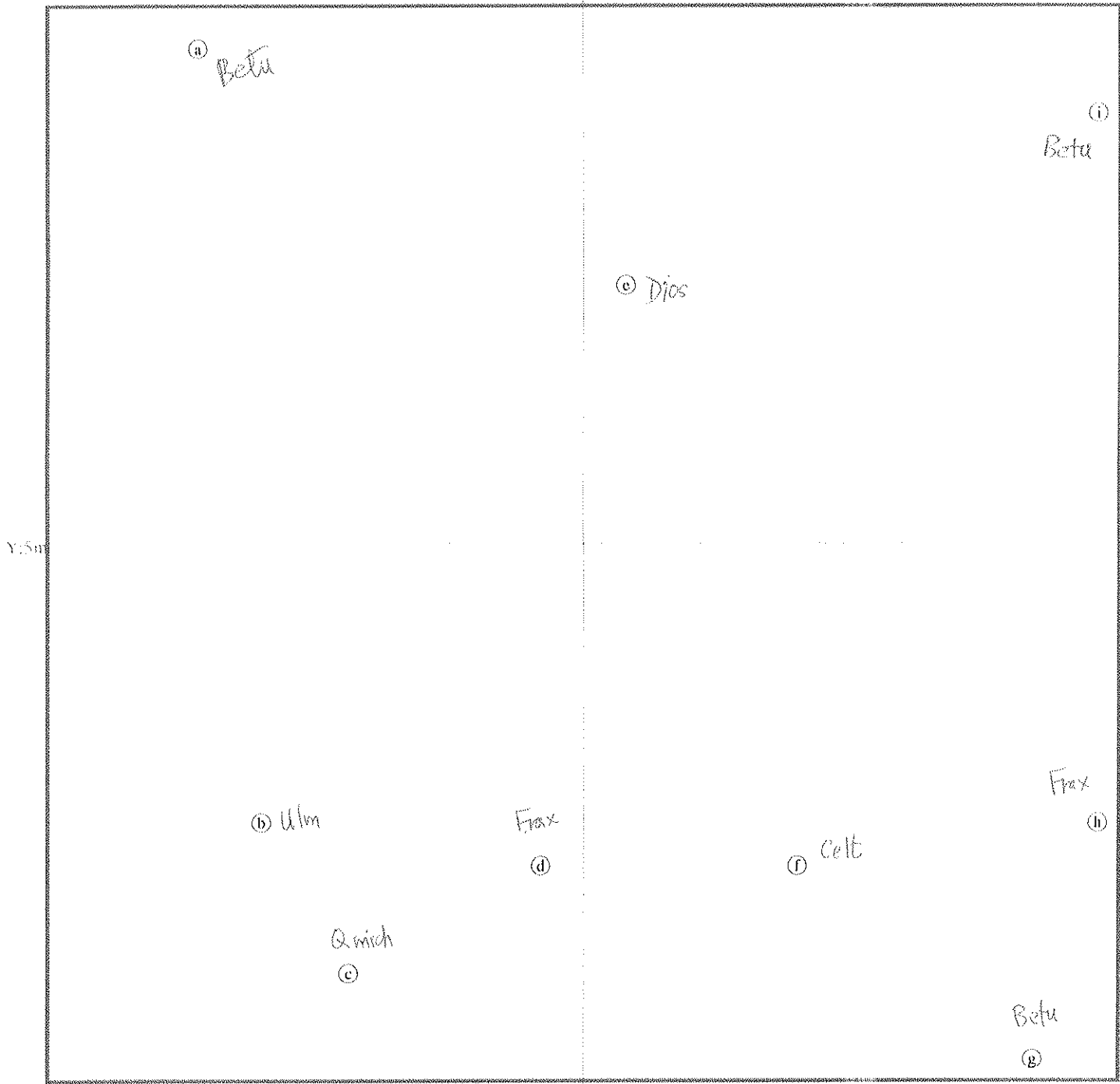
Printed in the CVS-FEP Entry Tool ver. 2.3.1

Map of stems on plot E92347-01-0008 - south

X-axis: 130° N

stems: 9
map size: LARGE

Solidago, Euphor, Rubus, Verbes, etc 2m+ tall, dense



(0,0)

X:5m



*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 19

*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, VINI Strangulation, UNKNown, specify other.

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

9

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot E92347-01-0009

South

Party:

Role:

Date last planted:

VMD Year (1-5): 4

Date:

29 OCT 13 1 1

G-pattern

New planting date m/yy?

Check box if plot was not

Notes: sampled, specify reason below

Empty box for notes

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N:

(dec.deg. or m)

1882512

Datum: NAD83/W

Longitude or UTM-E:

675739

UTM Zone: 18c

Coordinate Accuracy (m):

X-Axis bearing (deg):

325

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	Sep 2012 Data		Notes*	THIS YEAR'S DATA					
						Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
1112	Betula nigra	a	R	1.7	3.9	129.0	DBH?		180	0.4		3		
1113	Betula nigra	d	R	5.7	6.1	250.0	1.3		300*	2.0		4		
1114	Fraxinus pennsylvanica	e	R	4.0	8.5	95.0			160	0.4		3		
1115	Betula nigra	b	R	2.0	8.5	240.0	0.8		300*	1.8		4		

stems: 4 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)	Height 1cm*	DBH 1 cm	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

dense woods

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

Species Name	Sub-Seed	SEEDLINGS — HEIGHT CLASSES			SAPLINGS — DBH			TREES — DBH		
		10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	=10 (write DBH)
Frax penn			X	X						
Ulmus amer			*	*						
Liquid styr			*	*						
Symph orbic			*	*						
Bacc halim			*	*						

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



Form WS2, ver 9.1

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

p. 20

*VIGOR: 4=excellent, 3=good, 2=fair,

*DAMAGE: REMOVAL, CUT, MOWING, BEAVER, DEER, RODENTS, INSECTS, GAME, LIVESTOCK, Other/Unknown

1=unlikely to survive year, 0=dead,

ANIMAL, Human TRAMPLED, Site Too WET, Site Too DRY, FLOOD, DROUGHT, STORM, HURRICANE, DISEASED, VINE

M=missing.

Strangulation, UNKNOWN, specify other.

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

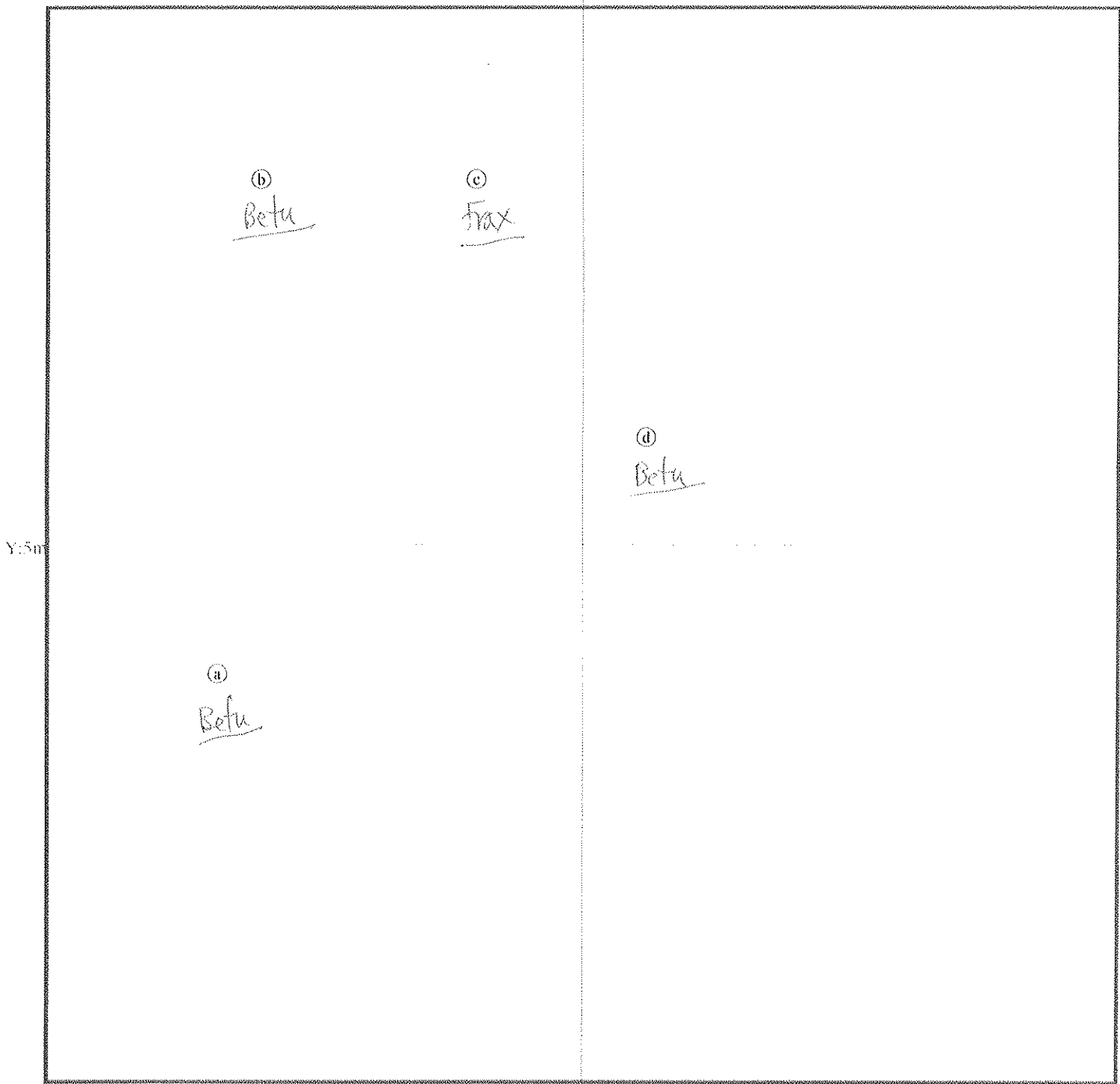
Printed in the CVS-EFP Entry Tool ver. 2.3.1

9

Map of stems on plot E92347-01-0009 - South

X-axis: 325°

stems: 4
map size:
LARGE



Y:5m

(0,0)

X:5m



*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 21
 *VIGOR: 4=excellent, 3=good, 2=fair, I=unlikely to survive year, 0=dead, M=missing. *DAMAGE: REMOval, CUT, MOWing, BEAVer, DEER, RODents, INSEctis, 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

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot **E92347-01-0010** SOUTH Party: _____ Role: _____ Date last planted: _____
 VMD Year (1-5): Date: 29 / OCT / 2013 - / /
 Taxonomic Standard: _____
 Taxonomic Standard DATE: _____
 Latitude or UTM-N: 1882875 Datum: NAD83/W 1983
 (dec,deg, or m) 675481 UTM Zone: 18N
 Longitude or UTM-E: _____
 Coordinate Accuracy (m): X-Axis bearing (deg): 290
 Plot Dimensions: X: Y: Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X)
 New planting date m/yy?
 Check box if plot was not sampled, specify reason below
 Notes: sampled, specify reason below

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2012 Data		Notes*	THIS YEAR'S DATA					
						Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re- sprout	Vigor*	Damage*	Notes
1119	Platanus occidentalis	(h)	R	9.4	1.7	400.0	5.7	<input type="checkbox"/>	400+	9.0	<input type="checkbox"/>	4		
1120	Fraxinus pennsylvanica	(e)	R	5.9	1.7	140.0	0.4	<input type="checkbox"/>	265	1.2	<input type="checkbox"/>	3		
1121	Fraxinus pennsylvanica	(c)	R	3.0	1.8	190.0	1.0	<input checked="" type="checkbox"/>	300+	2.3	<input type="checkbox"/>	4		
1122	Fraxinus pennsylvanica	(f)	R	6.2	3.6	176.0	0.9	<input type="checkbox"/>	245	1.5	<input type="checkbox"/>	4		
1124	Platanus occidentalis	(b)	R	2.6	4.8	320.0	2.3	<input type="checkbox"/>	300+	3.5	<input type="checkbox"/>	4		
1125	Quercus michauxii	(d)	R	3.9	6.8	98.0		<input type="checkbox"/>	205	0.6	<input type="checkbox"/>	4		
1126	Quercus michauxii	(g)	R	8.0	6.7	143.0	0.5	<input type="checkbox"/>	245	1.7	<input type="checkbox"/>	4		
1127	Alnus serrulata	(a)	R	1.1	8.2	55.0		<input type="checkbox"/>	156	0.4	<input type="checkbox"/>	4		
1128	Betula nigra	(i)	R	9.5	9.5	270.0	1.5	<input type="checkbox"/>	300+	3.5	<input type="checkbox"/>	4		

stems: 9 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)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

*Notes by ID: 1121-resprout

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 22
 *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-FEP Entry Tool ver. 2.3.1

Plot (continued): **E92347-01-0010**

Oct 2012 Data

THIS YEAR'S DATA *29 OCT 13*

ID	Species	map char	source	X (m)	Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Notes*	ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes
----	---------	----------	--------	-------	-------	----------	-------------	----------	--------	----------	-------------	----------	-----------	--------	---------	-------

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:
dense tall weeds

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

Species Name	<input checked="" type="checkbox"/> c	SEEDLINGS — HEIGHT CLASSES				SAPLINGS — DBH			TREES — DBH		
		Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	= 10 (write DBH)
<i>Frax penn</i>					<input checked="" type="checkbox"/>						
<i>Ulmus amer</i>											
<i>Bacch halim</i>											

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



Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Bag 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, INSecs, GAME, LIVESTock, Other/Unknown ANIMAL, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRricane, DISeased, VINE Strangulation, UNKNown, specify other.

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

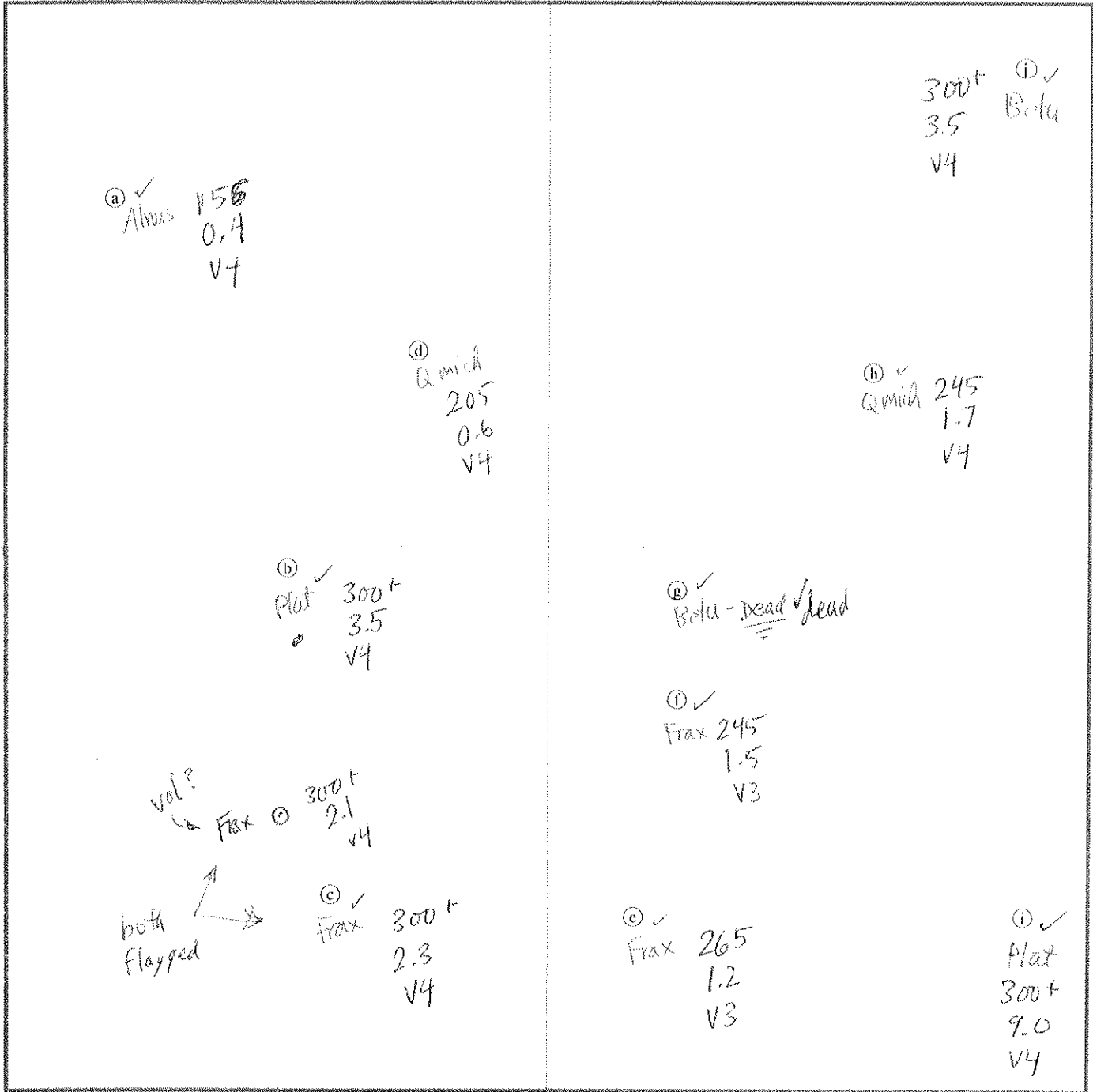
Map of stems on plot E92347-01-0010 - south

X-axis: 290°

stems: 10
map size:
LARGE



Plot



(0,0)

X:5m

Tall dense Rubus, solid, Eupat, Grass

<cut Rubus N+E edges>

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

p. 24

*VIGOR: 4=excellent, 3=good, 2=fair,

*DAMAGE: REMOval, CUT, MOWing, BEAVER, DEER, RODents, INSEcts, GAME, LIVESTock, Other/Unknown

1=unlikely to survive year, 0=dead,

ANIMAL, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUGHT, STORM, HURRICane, DISeased, VINE

M=missing.

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

#11

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot **E92347-01-0011** SOUTH

VMD Year (1-5): Date: -

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) Datum:

Longitude or UTM-E: UTM Zone:

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

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

Party: Role:

Date last planted:

New planting date m/yy?

Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X Y		Sep 2012 Data		Notes*	THIS YEAR'S DATA					
				0.1m	0.1m	Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
1138	Quercus phellos	(b)	R	0.6	0.4	56.0			70	-	<input type="checkbox"/>	2		
1139	Betula nigra	(e)	R	2.9	0.4	340.0	2.4		400+	4.7	<input type="checkbox"/>	4		
1140	Alnus serrulata	(h)	R	5.6	0.7	35.0			75	-	<input type="checkbox"/>	3		
1141	Platanus occidentalis	(k)	R	9.0	0.3	94.0			132	-	<input type="checkbox"/>	2		
1142	Quercus phellos	(c)	R	2.5	1.8	32.0			96	-	<input type="checkbox"/>	2		
1143	Alnus serrulata	(j)	R	6.8	5.1	67.0			98	-	<input type="checkbox"/>	3		
1144	Quercus phellos	(l)	R	9.1	6.5	53.0			57	-	<input type="checkbox"/>	2		
1145	Platanus occidentalis	(i)	R	6.6	7.6	46.0		<input checked="" type="checkbox"/>	55	-	<input type="checkbox"/>	1		
1146	Quercus phellos	(f)	R	4.3	6.3	83.0			97	-	<input type="checkbox"/>	2		
1147	Quercus phellos	(g)	R	4.4	9.4	108.0	DBH?	<input type="checkbox"/>	210	0.6	<input type="checkbox"/>	3		
1315	Quercus michauxii	(a)	R	0.1	2.8	88.0			115	-	<input type="checkbox"/>	3	DIS	fungus
390	Diospyros virginiana	(d)	R	2.5	4.4	121.0	DBH?	<input type="checkbox"/>	162	0.6	<input type="checkbox"/>	3		

stems: 12 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)	Height 1cm*	DBH 1 cm	Vigor*	Damage*	Notes
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

*Notes by ID: 1145-top dead

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 25
 *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 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. 2.3.1

(11)

Plot (continued): **E92347-01-0011**

Sep 2012 Data

THIS YEAR'S DATA **22 OCT 13**

ID	Species	map char	source	X (m)	Y (m)	dbh (mm)	Height (cm)	DBH (cm)	Notes*	dbh (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.):											<input type="checkbox"/> 10cm	<input checked="" type="checkbox"/> 50cm	<input type="checkbox"/> 100cm	<input type="checkbox"/> 137cm		
Species Name	<input checked="" type="checkbox"/> c	SEEDLINGS — HEIGHT CLASSES				SAPLINGS — DBH			TREES — DBH							
		Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	=10 (write DBH)					
<i>Frax penn</i>				✱ ✱	✱ ✱											
<i>Symphor orbic</i>				□	•											
<i>Ulmus amer</i>				•	•											
<i>Bacc halim</i>				• ✱	• ✱											

**Required if cut-off >10cm or subsample ? 100%. Form WS2, ver 9.1

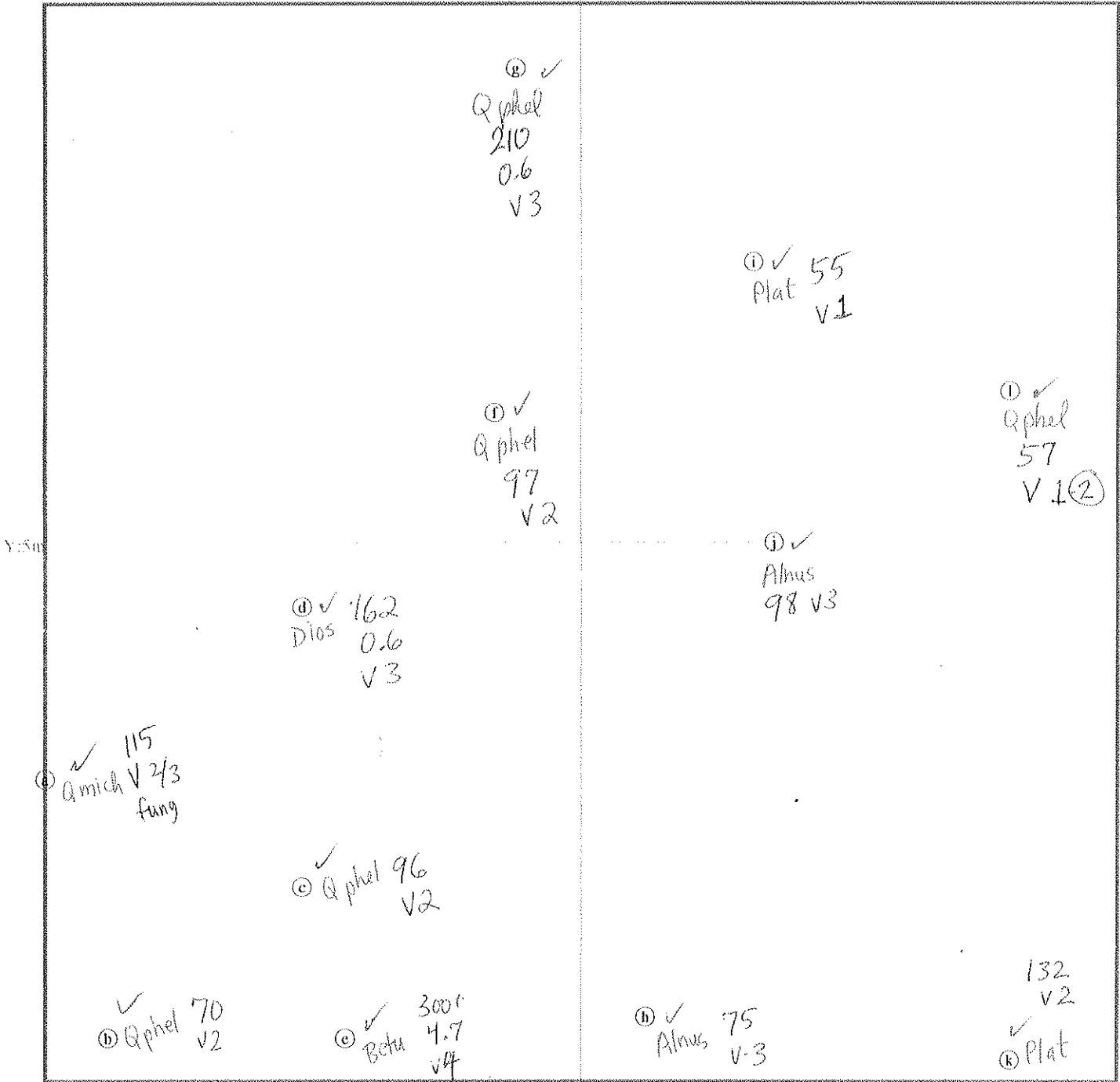
*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 26
 *VIGOR: 4=excellent, 3=good, 2=fair, *DAMAGE: REMOval, CUT, MOWing, BEAVer, DEER, RODents, INSEcts, GAME, LIVESTock, Other/Unknown
 †=unlikely to survive year, 0=dead, ANImal, Human TRAMpled, Site Too DRY, FLOOD, DROUght, STORM, HURRIcane, DISeased, VINE
 M=missing. Strangulation, UNKNown, specify other.
 *HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m. Printed in the CVS-EEP Entry Tool ver. 2.3.1

Map of stems on plot E92347-01-0011 - South

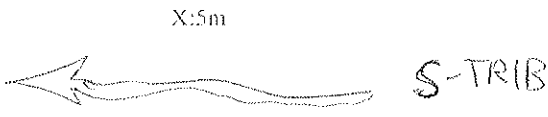
X-axis: 315°

stems: 12
map size:
LARGE

begin 22 Oct 13, photo
+ 29 Oct (finish) photo



(0,0)
 < 2013 No Vols > 137



*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 27
 *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

Vegetation Monitoring Data (VMD) Datasheet

Please fill in any missing data and correct any errors.

Plot E92347-01-0012 SOUTH Party: _____ Role: _____ Date last planted: _____
 VMD Year (1-5): Date: - /
 Taxonomic Standard: _____
 Taxonomic Standard DATE: _____
 Latitude or UTM-N: Datum:
 (dec.deg. or m) UTM Zone:
 Longitude or UTM-E: _____
 Coordinate Accuracy (m): X-Axis bearing (deg):
 Plot Dimensions: X: Y: 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 Y		Sep 2012 Data		Notes*	THIS YEAR'S DATA					
				0.1m	0.1m	Height 1cm*	DBH 1 cm		Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
1148	Betula nigra	(a)	R	0.3	0.2	213.0	0.6		300+	2.8	<input type="checkbox"/>	4		
1149	Aesculus sylvatica	(j)	R	9.7	0.7	47.0			52	-	<input type="checkbox"/>	2		
1150	Platanus occidentalis	(i)	R	4.5	2.1	280.0	2.3		400+	6.5	<input type="checkbox"/>	4		
1151	Fraxinus pennsylvanica	(o)	R	9.8	3.9	162.0	0.8		300+	2.2	<input type="checkbox"/>	4		
1152	Quercus phellos	(n)	R	9.6	4.8	96.0			150	0.3	<input type="checkbox"/>	2		
1153	Diospyros virginiana	(j)	R	6.0	5.1	188.0	0.9		300	2.5	<input type="checkbox"/>	4		
1154	Fraxinus pennsylvanica	(c)	R	1.0	5.3	186.0	0.8		300+	2.1	<input type="checkbox"/>	4		
1155	Fraxinus pennsylvanica	(b)	R	0.6	2.1	143.0	0.4		250	1.6	<input type="checkbox"/>	3		
1316	Quercus michauxii	(d)	R	1.4	2.3	102.0	DBH?		190	0.7	<input type="checkbox"/>	3	DIS	fungus
1317	Fraxinus pennsylvanica	(e)	R	2.5	1.3	189.0	1.2		300+	2.9	<input type="checkbox"/>	4		
1318	Fraxinus pennsylvanica	(g)	R	4.0	1.0	103.0	DBH?		225	1.0	<input type="checkbox"/>	3		
1319	Fraxinus pennsylvanica	(l)	R	9.0	0.5	192.0	0.8		300+	2.5	<input type="checkbox"/>	4		
1320	Fraxinus pennsylvanica	(f)	R	3.5	3.6	169.0	0.8		300+	1.7	<input type="checkbox"/>	4		
1321	Fraxinus pennsylvanica	(h)	R	4.0	8.0	92.0			172	0.8	<input type="checkbox"/>	3		
429	Quercus phellos	(k)	R	8.0	8.0	103.0	DBH?		210	1.0	<input type="checkbox"/>	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)	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 p. 28
 *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 DRY, FLOOD, DROUGHT, STORM, HURRICane, DISeased, VINI: Strangulation, UNKNown, specify other.
 *HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.
 Printed in the CVS-EEP Entry Tool ver. 2.3.1

Plot (continued): **E92347-01-0012**

Sep 2012 Data

THIS YEAR'S DATA

ID	Species	map char	source X (m)	Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Notes*	ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

dense weeds

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

Species Name	<input checked="" type="checkbox"/> c	Sub-Seed	SEEDLINGS — HEIGHT CLASSES			SAPLINGS — DBH			TREES — DBH						
			10 cm 50 cm	50 cm- 100 cm	100 cm- 137 cm	Sub-Sapl	0-1 cm	1-2.5	2.5-	5-	=10 (write DBH)				
<i>Frax penn</i>				<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>							
<i>Symphor orbic</i>				<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>										
<i>Ulm amer</i>				<input type="checkbox"/>	<input type="checkbox"/>										
<i>Acer rub</i>				<input type="checkbox"/>	<input type="checkbox"/>										

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



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

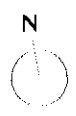
*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*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, UNKNOW, specify other.

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

Map of stems on plot E92347-01-0012 - south

X-axis: 100°

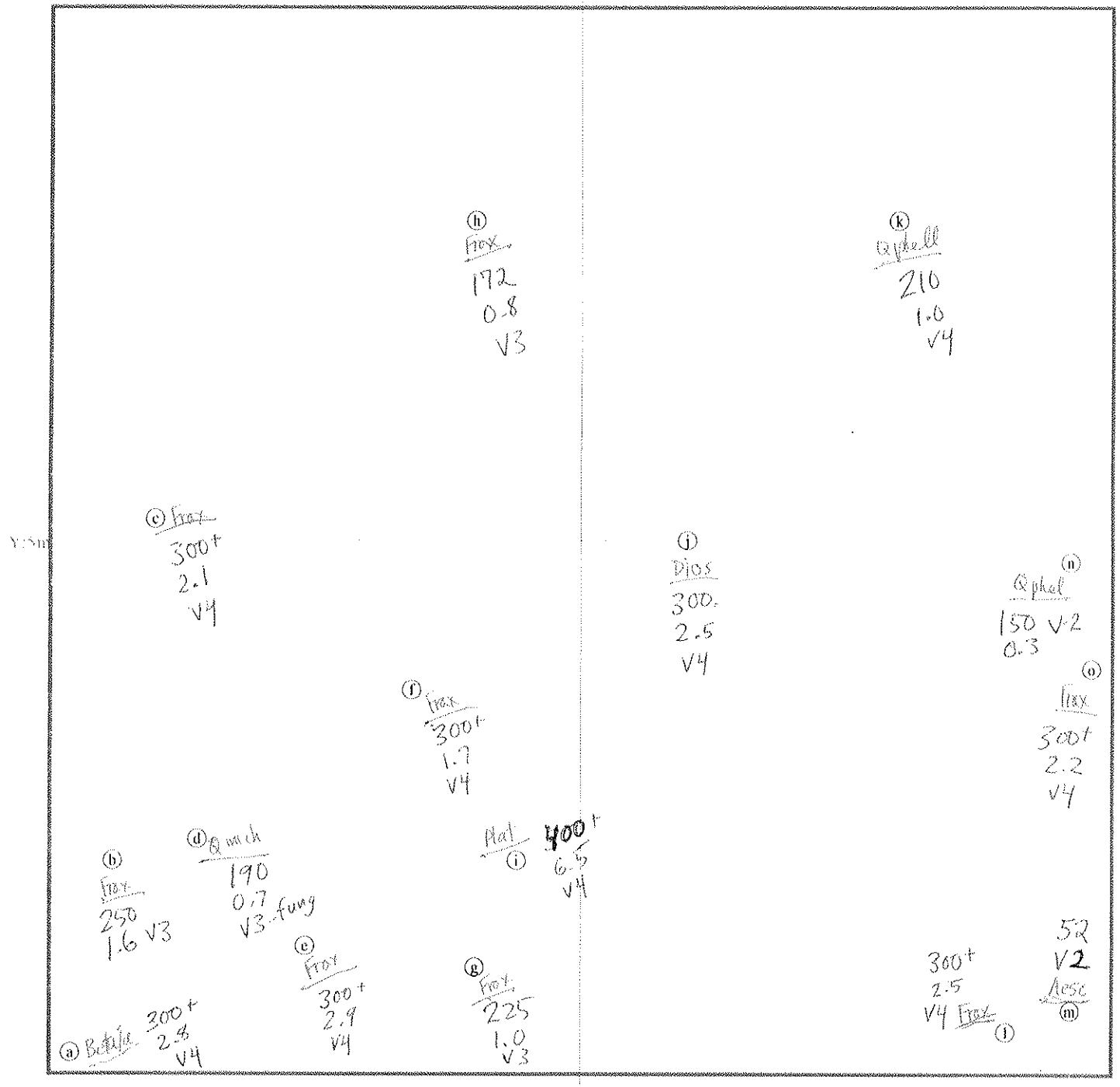


stems: 15
map size:
LARGE

Tall dense Solidago, Rubus, Frax, Verbesina

0, 10 22 Oct 13

10, 10



*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown p. 30
 *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.

APPENDIX D.

STREAM MORPHOLOGY SURVEY DATA

Figures 5.1-5.9 e-Tables	Cross sections with Annual Overlays Raw cross-section survey data spreadsheets
Figures 6.1-6.5 e-Tables	Longitudinal Profiles with Annual Overlays Raw longitudinal profile survey spreadsheet
Figures 7.1-7.9 e-Tables	Pebble Count Plots with Annual Overlays Raw pebble count data spreadsheets
Table 9	Baseline Stream Data Summary Table
Table 10	Cross-Section Geomorph Monitoring Data
Table 11.1-11.2	Stream Reach Geomorph Monitoring Data

Figure 5.1 Cross Section 1 Survey Plot and Photo -- UT Bear Creek (Weaver/McLeod) #92347 -- MY-4: Nov 2013

River Basin: Cape Fear
Watershed: UT to Bear Creek
XS ID XS 1 (riffle)
Reach: Northern
Date: 11/1/2013
Field Crew: C. Eliason

SUMMARY DATA

Bankfull Width (ft)	21.2
Floodprone Width (ft)	100.0
Bankfull Mean Depth (ft)	1.2
Bankfull Max Depth (ft)	2.1
Bankfull Area (ft ²)	23.4
Width/Depth Ratio	17.3
Entrenchment Ratio	5.0
Bank Height Ratio	1.0
Cross Sectional Area	72.8



View of cross-section XS-1 looking downstream

Station	Rod Ht.	Elevation	Notes
0		100.00	on
0		99.92	off
3.11		99.33	
11.96		99.02	TLB
15.32		97.85	
16.81		96.95	
19.5		96.99	
23.45		96.94	
25.38		97.49	
29.83		98.85	TRB
37.52		99.09	
49.48		98.85	
58.65		99.92	

Stream Type: C

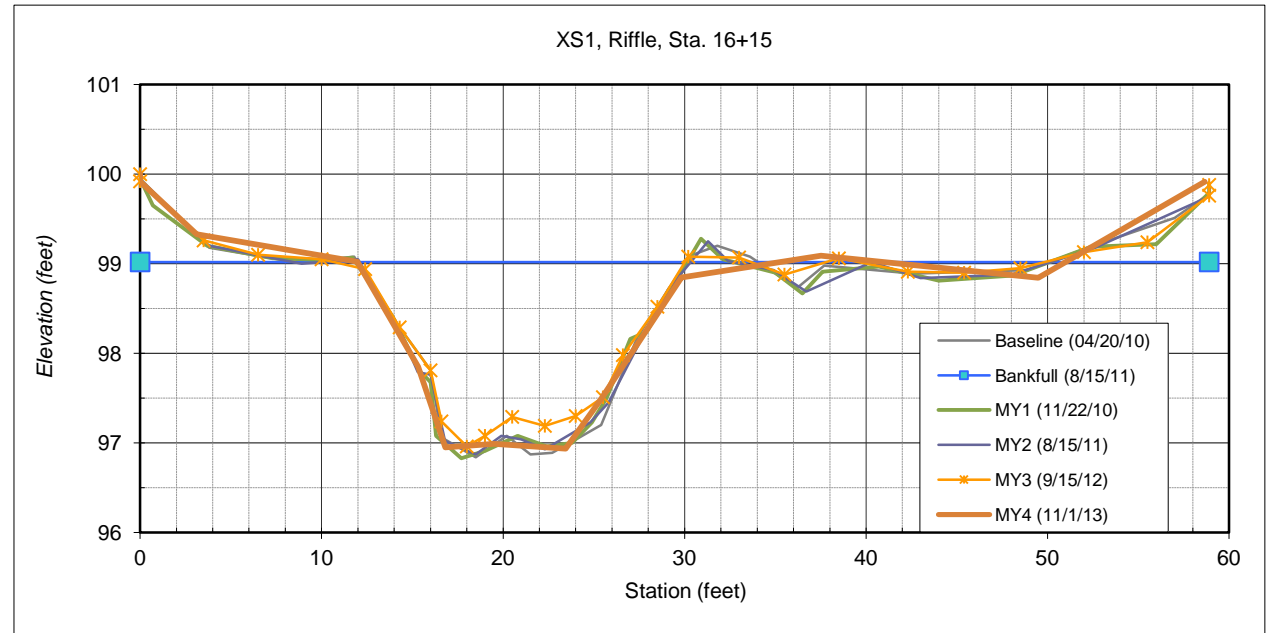


Figure 5.2 Cross Section 2 Survey Plot and Photo -- UT Bear Creek (Weaver/McLeod) #92347 -- MY-4: Nov 2013

River Basin: Cape Fear
Watershed: UT to Bear Creek
XS ID XS 2 (riffle)
Reach: Northern
Date: 11/1/2013
Field Crew: C. Eliason

SUMMARY DATA

Bankfull Width (ft)	20.8
Floodprone Width (ft)	100.0
Bankfull Mean Depth (ft)	1.2
Bankfull Max Depth (ft)	2.0
Bankfull Area (ft ²)	22.5
Width/Depth Ratio	17.3
Entrenchment Ratio	4.8
Bank Height Ratio	1.0
Cross Sectional Area	78.3



View of cross-section XS-2 looking downstream

Station	Rod Ht.	Elevation	Notes
0		100.00	on
0		99.92	off
5.73		98.85	
11.98		98.46	
16.26		98.84	TLB
20.79		97.47	
22.5		96.85	
25.83		96.70	
30.5		97.31	
35.26		98.73	
45.48		98.81	TRB
45.63		98.77	
53.13		100.33	

Stream Type: C

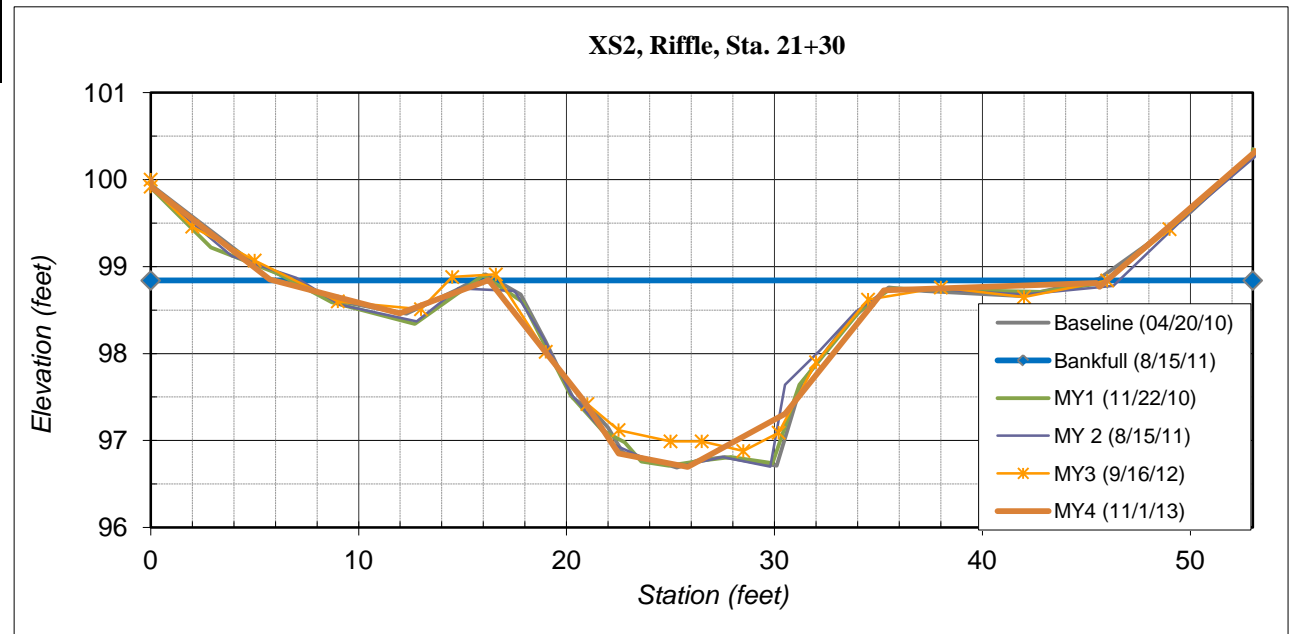


Figure 5.3 Cross Section 3 Survey Plot and Photo -- UT Bear Creek (Weaver/McLeod) #92347 -- MY-4: Nov 2013

River Basin:	Cape Fear
Watershed:	UT to Bear Creek
XS ID	XS 3 (pool)
Reach:	Northern
Date:	11/1/2013
Field Crew:	CE

SUMMARY DATA	
Bankfull Width (ft)	20.3
Floodprone Width (ft)	100.0
Bankfull Mean Depth (ft)	2.2
Bankfull Max Depth (ft)	3.7
Bankfull Area (ft ²)	43.9
Width/Depth Ratio	9.0
Entrenchment Ratio	5.1
Bank Height Ratio	1.0
Cross Sectional Area	86.2



View of cross-section XS-3 looking downstream

Station	Rod Ht.	Elevation	Notes
0		100	on
0		99.90	off
7.16		99.37	
14.13		99.43	
20.92		99.03	TLB
24.79		97.97	
25.43		95.91	
30.58		95.96	
34.43		96.08	
37.11		98.57	
40.25		99.34	TRB
53.43		99.48	
65.31		99.42	
78.96		100.72	

Stream Type: E

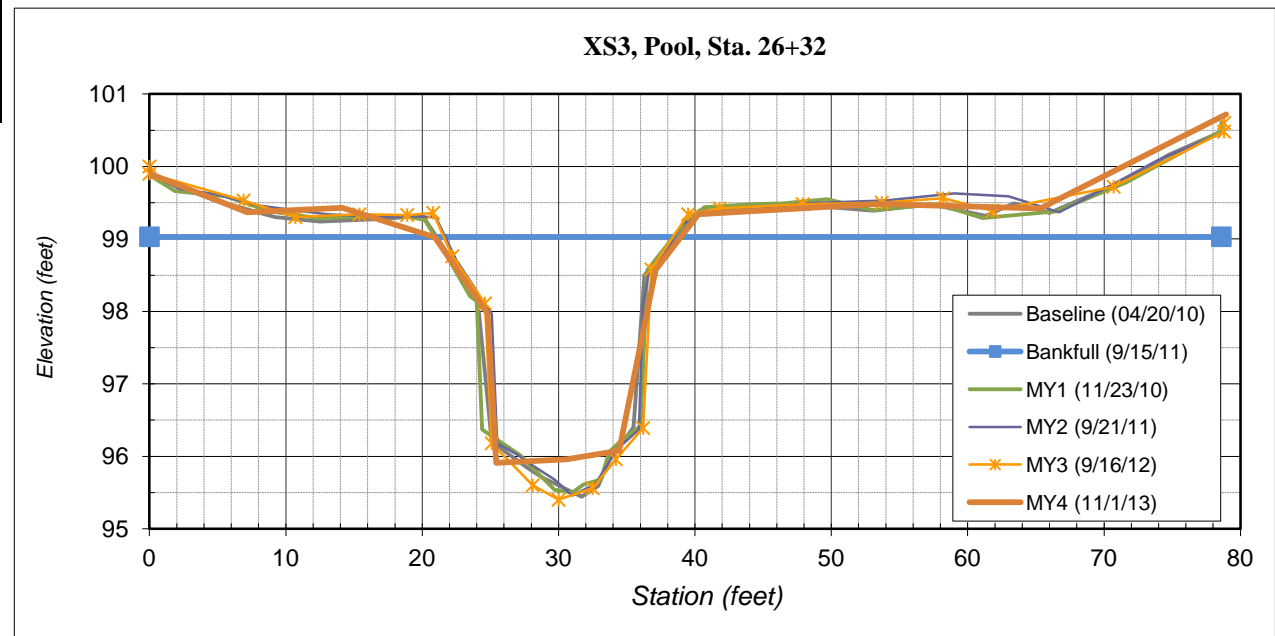


Figure 5.4 Cross Section 4 Survey Plot and Photo -- UT Bear Creek (Weaver/McLeod) #92347 -- MY-4: Nov 2013

River Basin: Cape Fear
Watershed: UT to Bear Creek
XS ID XS 4 (riffle)
Reach: Northern
Date: 11/1/2013
Field Crew: CE

SUMMARY DATA

Bankfull Width (ft)	20.8
Floodprone Width (ft)	100.0
Bankfull Mean Depth (ft)	1.5
Bankfull Max Depth (ft)	2.4
Bankfull Area (ft ²)	27.9
Width/Depth Ratio	13.9
Entrenchment Ratio	4.9
Bank Height Ratio	1.0
Cross Sectional Area	55.8



View of cross-section XS-4 looking downstream

Station	Rod Ht.	Elevation	Notes
0		100	on
0		99.89	off
11.73		99.67	
21.81		99.32	
23.54		99.53	TLB
26.96		98.32	
28.62		97.52	
32.72		97.23	
37.13		97.18	
38.37		98.03	
42.93		99.37	TRB
52.35		99.47	
61.8		99.38	
68.63		100.11	

Stream Type: C

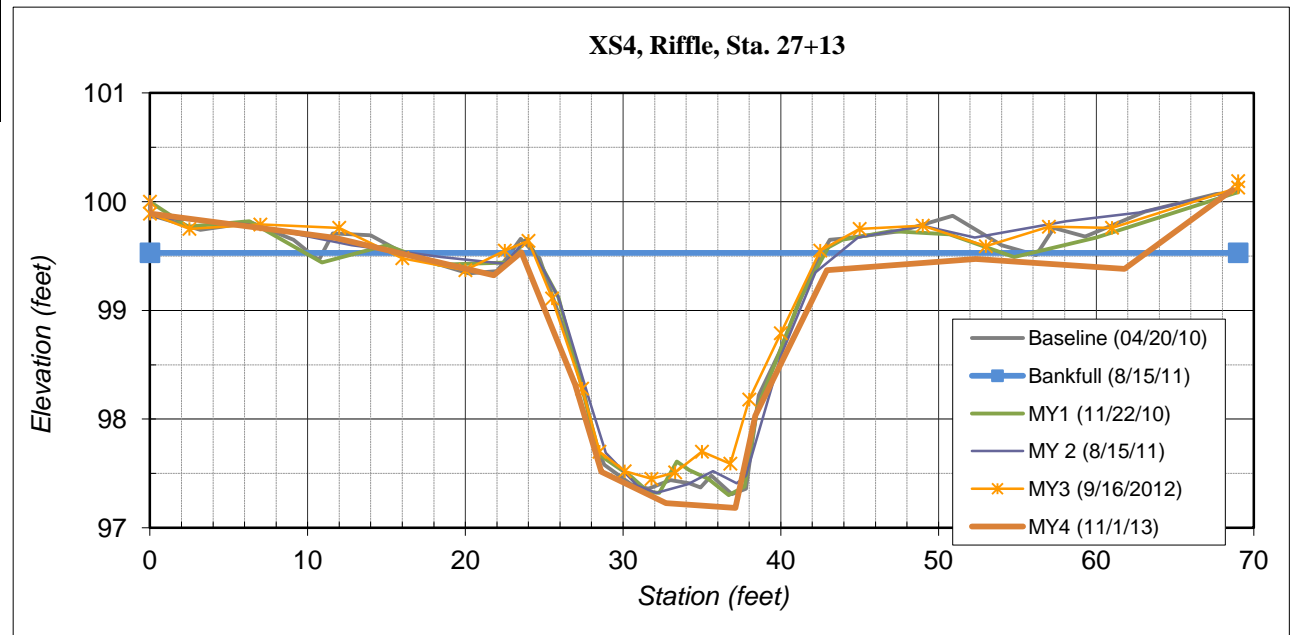


Figure 5.5 Cross Section 5 Survey Plot and Photo -- UT Bear Creek (Weaver/McLeod) #92347 -- MY-4: Nov 2013

River Basin: Cape Fear
Watershed: UT to Bear Creek
XS ID XS 5 (pool)
Reach: Northern
Date: 11/1/2013
Field Crew: CE

SUMMARY DATA

Bankfull Width (ft)	25.4
Floodprone Width (ft)	220.0
Bankfull Mean Depth (ft)	1.4
Bankfull Max Depth (ft)	3.6
Bankfull Area (ft ²)	34.6
Width/Depth Ratio	18.9
Entrenchment Ratio	8.7
Bank Height Ratio	1.0
Cross Sectional Area	63.0



View of cross-section XS-5 looking downstream

Station	Rod Ht.	Elevation	Notes
0		100	on
0		99.98	off
6.98		99.719	
19.66		98.66	TLB
22.86		98.023	
23.53		96.088	
26.55		95.695	
31.31		96.23	
32.49		98.191	
35.74		98.736	TRB
53.29		100.094	

Stream Type: C

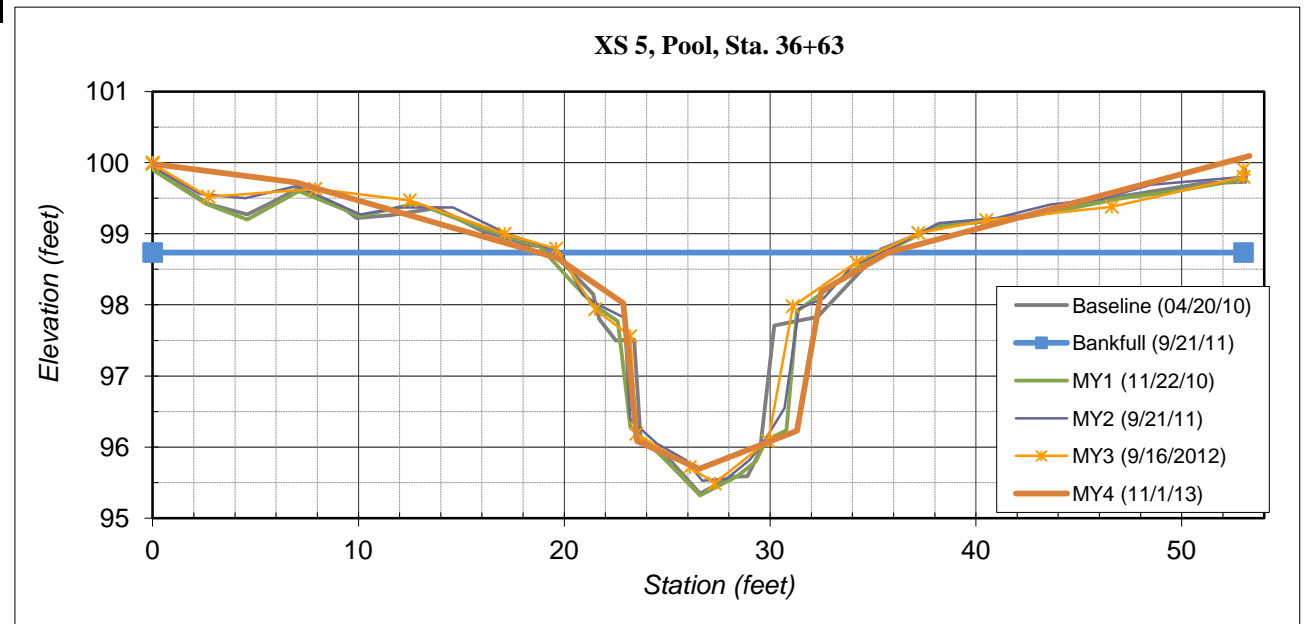


Figure 5.6 Cross Section 6 Survey Plot and Photo -- UT Bear Creek (Weaver/McLeod) #92347 -- MY-4: Nov 2013

River Basin: Cape Fear
Watershed: UT to Bear Creek
XS ID XS 6 (riffle)
Reach: Northern
Date: 11/1/2013
Field Crew: CE

SUMMARY DATA

Bankfull Width (ft)	21.3
Floodprone Width (ft)	220.0
Bankfull Mean Depth (ft)	1.2
Bankfull Max Depth (ft)	2.0
Bankfull Area (ft ²)	24.0
Width/Depth Ratio	17.8
Entrenchment Ratio	10.3
Bank Height Ratio	1.0
Cross Sectional Area	38.7



View of cross-section XS-6 looking downstream

Station	Rod Ht.	Elevation	Notes
0		100	on
0		99.87	off
13.17		99.64	
22.2		99.49	TLB
25.17		98.54	
26.39		98.15	
29.2		97.66	
36.11		97.85	
37.85		98.35	
38.24		98.53	TRB
43.14		99.82	
44.91		99.75	
60.46		100.49	

Stream Type: C

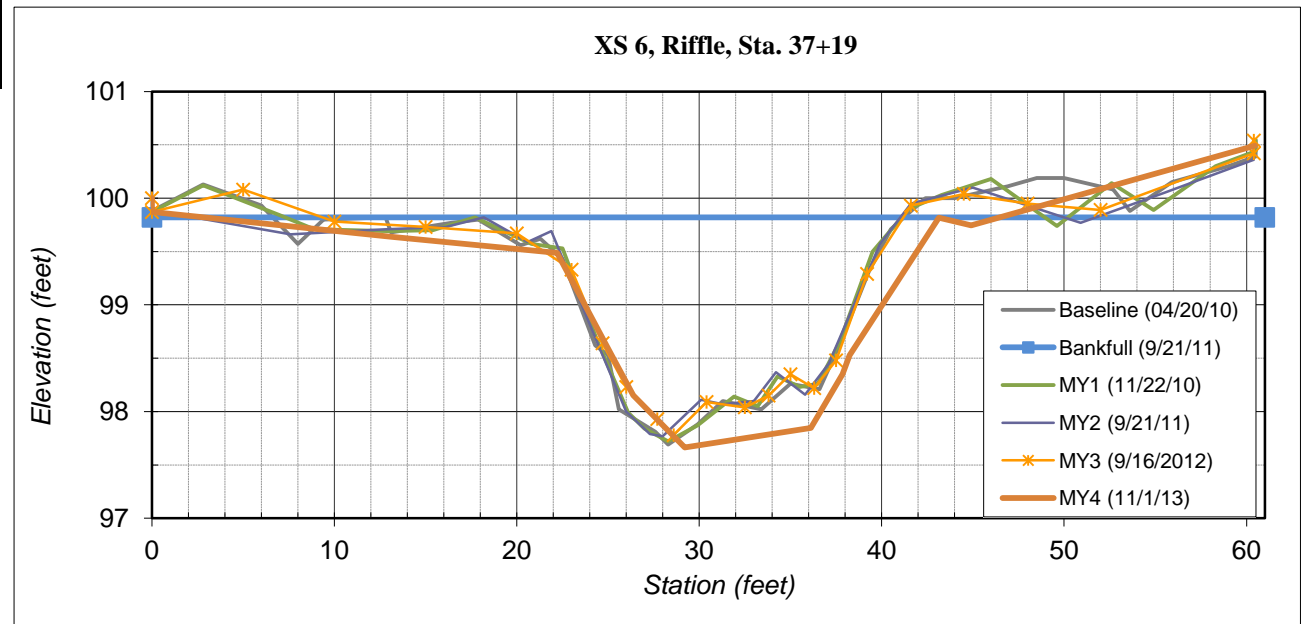


Figure 5.8 Cross Section 8 Survey Plot and Photo -- UT Bear Creek (Weaver/McLeod) #92347 -- MY-4: Nov 2013

River Basin: Cape Fear
Watershed: UT to Bear Creek
XS ID XS 8 (riffle)
Reach: Southern
Date: 11/1/2013
Field Crew: CE

SUMMARY DATA

Bankfull Width (ft)	16.0
Floodprone Width (ft)	50.0
Bankfull Mean Depth (ft)	0.9
Bankfull Max Depth (ft)	1.6
Bankfull Area (ft ²)	9.4
Width/Depth Ratio	17.8
Entrenchment Ratio	3.1
Bank Height Ratio	1.0
Cross Sectional Area	43.8



View of cross-section XS-8 looking downstream

Stream Type: E

Station	Rod Ht.	Elevation	Notes
0		100	on
0		99.92	off
5.29		98.79	
9.56		98.26	
12.5		98.29	TLB
14.53		97.40	
15.13		96.80	
16.85		96.61	
18.71		96.91	
19.36		97.40	
21.62		98.02	TRB
27.48		98.11	
33.51		98.57	
41.48		98.79	

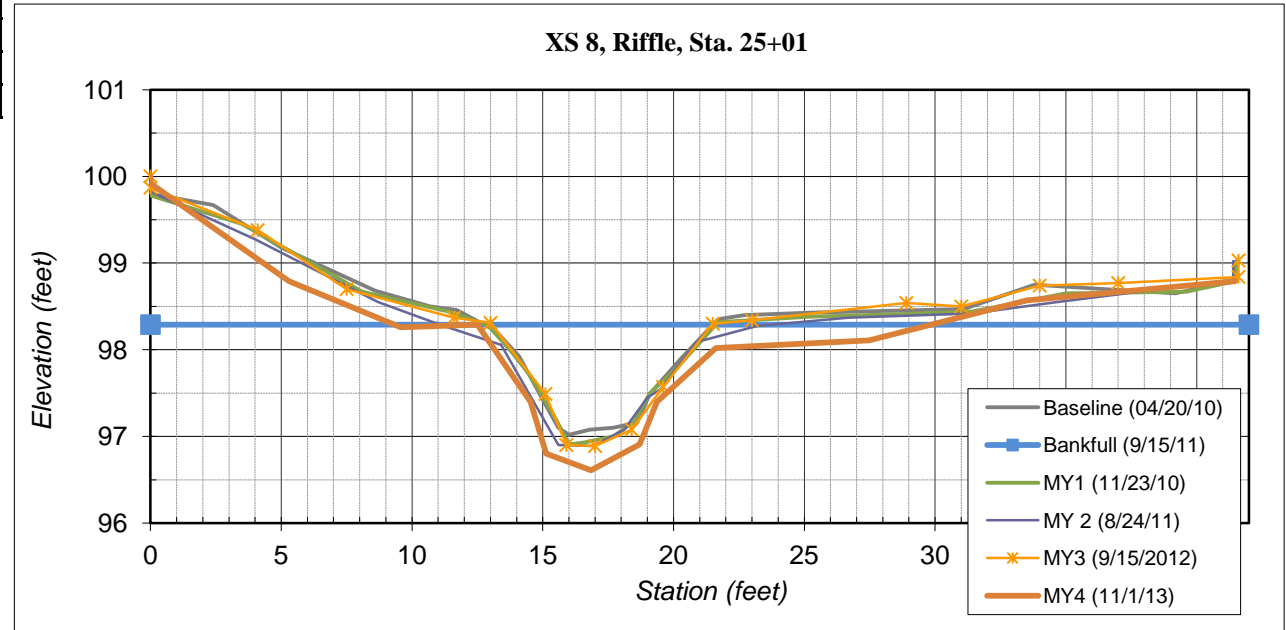


Figure 5.9 Cross Section 9 Survey Plot and Photo -- UT Bear Creek (Weaver/McLeod) #92347 -- MY-4: Nov 2013

River Basin: Cape Fear
Watershed: UT to Bear Creek
XS ID XS 9 (pool)
Reach: Northern
Date: 11/1/2013
Field Crew: CE

SUMMARY DATA

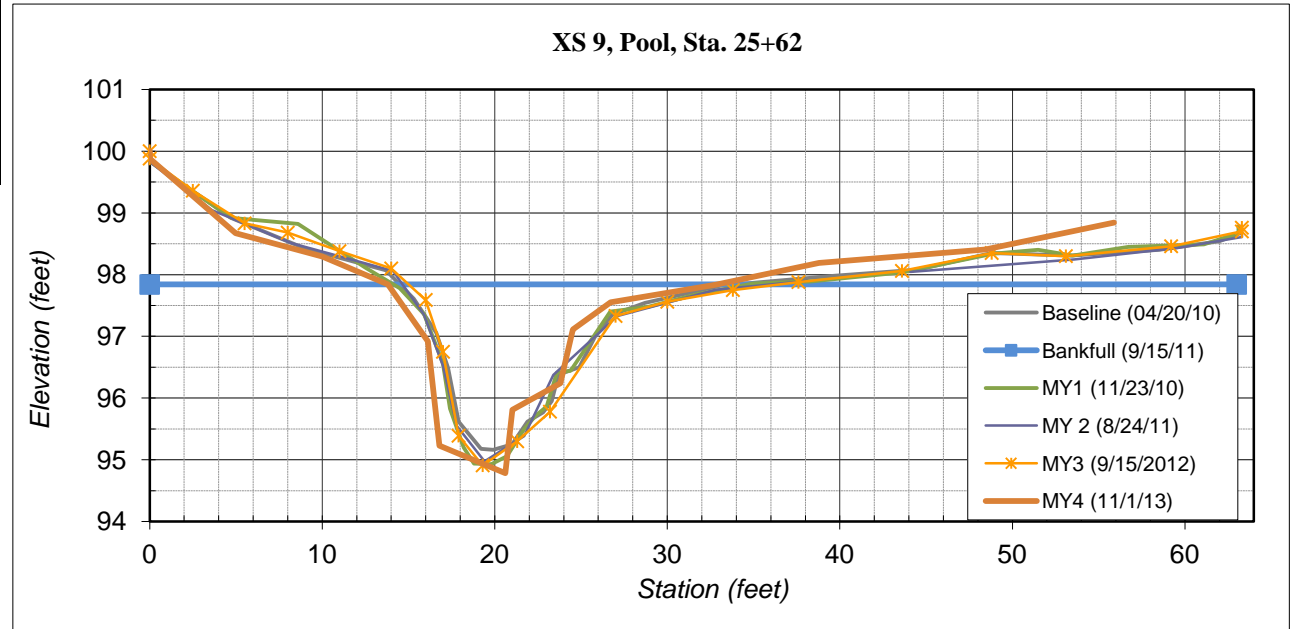
Bankfull Width (ft)	22.5
Floodprone Width (ft)	100.0
Bankfull Mean Depth (ft)	1.1
Bankfull Max Depth (ft)	3.0
Bankfull Area (ft ²)	23.0
Width/Depth Ratio	20.5
Entrenchment Ratio	4.3
Bank Height Ratio	1.0
Cross Sectional Area	59.3



View of cross-section XS-9 looking downstream

Station	Rod Ht.	Elevation	Notes
0		100.00	on
0		99.88	off
4.97		98.67	
10.01		98.30	
13.81		97.84	TLB
16.12		96.92	
16.8		95.23	
20.61		94.79	
21.02		95.81	
23.8		96.24	
24.52		97.11	TRB
26.71		97.55	
32.81		97.84	
38.79		98.19	
48.44		98.41	
55.89		98.84	

Stream Type: B



e-Tables: Cross-Sections Survey Raw Data -- MY4 Nov 2013

Xsec 1 -- Nov 2013							
POINT ID	NORTHING	EASTING	STATION	OFFSET	ELEVATION	ELEVATION	DESCRIPTOR
					NAVD 88	LOCAL	
2046	677376.91	1884098.93	0+00	0	416.77	100.00	xs1b
2047	677375.63	1884095.99	0+03.11	0	416.10	99.33	xs1b
2048	677369.44	1884089.59	0+11.96	0	415.79	99.02	xs1b top bnk
2049	677367.19	1884087.09	0+15.32	0	414.62	97.85	xs1b bnk full
2050	677366.62	1884085.64	0+16.81	0	413.72	96.95	xs1b toe
2051	677365.26	1884083.29	0+19.50	0	413.76	96.99	xs1b thw
2052	677362.26	1884080.62	0+23.45	0	413.70	96.94	xs1b toe
2053	677360.70	1884079.38	0+25.38	0	414.25	97.49	xs1b bnk full
2054	677357.63	1884076.12	0+29.83	0	415.62	98.85	xs1b top bnk
2056	677352.90	1884070.06	0+37.52	0	415.86	99.09	xs1b
2057	677345.99	1884060.29	0+49.48	0	415.61	98.85	xs1b
2058	677341.06	1884052.51	0+58.65	0	416.68	99.92	xs1b

Xsec 2 -- Nov 2013							
POINT ID	NORTHING	EASTING	STATION	OFFSET	ELEVATION	ELEVATION	DESCRIPTOR
					NAVD88	LOCAL	
2333	677133.42	1884498.11	0+00	0	415.65	100.00	xs2
2334	677129.60	1884493.77	0+05.73	0	414.50	98.85	xs2
2335	677126.39	1884488.39	0+11.98	0	414.11	98.46	xs2
2336	677124.13	1884484.76	0+16.26	0	414.49	98.84	xs2 top bank
2337	677121.99	1884480.75	0+20.79	0	413.11	97.47	xs2 bank full
2338	677121.16	1884479.24	0+22.50	0	412.49	96.85	xs2 toe
2339	677119.01	1884476.67	0+25.83	0	412.34	96.70	xs2 thw
2340	677116.75	1884472.57	0+30.50	0	412.95	97.31	xs2 bank full
2341	677114.19	1884468.55	0+35.26	0	414.37	98.73	xs2 top bank
2342	677107.96	1884460.24	0+45.48	0	414.46	98.81	xs2 top bank
2343	677108.03	1884460.38	0+45.63	0	414.41	98.77	xs2
2344	677104.15	1884453.77	0+53.13	0	415.97	100.33	xs2

Xsec 3 -- Nov 2013							
POINT ID	NORTHING	EASTING	STATION	OFFSET	ELEVATION	ELEVATION	DESCRIPTOR
					NAVD 88	LOCAL	
2136	676938.18	1884905.26	0+00	0	413.54	100.00	xs3
2137	676934.17	1884899.33	0+07.16	0	412.91	99.37	xs3
2138	676930.33	1884893.51	0+14.13	0	412.97	99.43	xs3
2139	676926.39	1884887.98	0+20.92	0	412.57	99.03	xs3 top bnk
2140	676924.14	1884884.82	0+24.79	0	411.51	97.97	xs3 bnk full
2141	676923.69	1884884.36	0+25.43	0	409.45	95.91	xs3 toe
249	676920.51	1884880.31	0+30.58	0	409.50	95.96	XS3 thw
2142	676917.27	1884877.87	0+34.43	0	409.62	96.08	xs3 toe
2143	676915.68	1884875.73	0+37.11	0	412.11	98.57	xs3 bnk full
2144	676914.29	1884872.87	0+40.25	0	412.88	99.34	xs3 top bnk
2145	676906.30	1884862.36	0+53.43	0	413.02	99.48	xs3
2146	676900.60	1884851.85	0+65.31	0	412.96	99.42	xs3
2147	676892.54	1884840.83	0+78.96	0	414.26	100.72	xs3

Xsec 4 -- Nov 2013

POINT ID	NORTHING	EASTING	STATION	OFFSET	ELEVATION		DESCRIPTOR
					NAVD 88	LOCAL	
2156	676888.57	1884959.09	0+00	0	413.29	100.00	xs4
2157	676879.17	1884952.03	0+11.73	0	412.95	99.67	xs4
2158	676871.27	1884945.76	0+21.81	0	412.61	99.32	xs4
2159	676870.05	1884944.54	0+23.54	0	412.82	99.53	xs4 top bank
2160	676867.21	1884942.59	0+26.96	0	411.60	98.32	xs4 tbank full
2161	676865.74	1884941.76	0+28.62	0	410.80	97.52	xs4 toe
2162	676862.05	1884939.77	0+32.72	0	410.51	97.23	xs4 thw
2163	676858.13	1884937.57	0+37.13	0	410.47	97.18	xs4 toe
2164	676857.40	1884936.53	0+38.37	0	411.32	98.03	xs4 bank full
2165	676853.73	1884933.80	0+42.93	0	412.66	99.37	xs4 top bank
2166	676847.46	1884926.63	0+52.35	0	412.76	99.47	xs4
2167	676840.50	1884920.22	0+61.80	0	412.67	99.38	xs4
2168	676836.17	1884914.77	0+68.63	0	413.39	100.11	xs4

Xsec 5 -- Nov 2013

POINT ID	NORTHING	EASTING	STATION	OFFSET	ELEVATION		DESCRIPTOR
					NAVD 88	LOCAL	
2313	676916.88	1885642.09	0+00	0	410.66	100.00	xs5
2314	676910.11	1885643.96	0+06.98	0	410.38	99.72	xs5
2315	676897.71	1885646.70	0+19.66	0	409.32	98.66	xs5 top bank
2316	676894.57	1885647.34	0+22.86	0	408.68	98.02	xs5 bnk full
2317	676893.91	1885647.45	0+23.53	0	406.75	96.09	xs5 toe
2236	676890.46	1885644.96	0+26.55	0	406.36	95.70	thw po mx
2318	676886.41	1885649.83	0+31.31	0	406.89	96.23	xs5 toe
2319	676885.19	1885649.68	0+32.49	0	408.85	98.19	xs5 bnk full
2320	676881.99	1885650.21	0+35.74	0	409.40	98.74	xs5 top bank
2321	676864.27	1885650.52	0+53.29	0	410.76	100.09	xs5

Xsec 6 -- Nov 2013

POINT ID	NORTHING	EASTING	STATION	OFFSET	ELEVATION		DESCRIPTOR
					NAVD 88	LOCAL	
2301	676906.48	1885712.83	0+00	0	409.57	100.00	xs6
2302	676894.13	1885708.28	0+13.17	0	409.21	99.64	xs6
2303	676885.64	1885705.19	0+22.20	0	409.06	99.49	xs6 top bank
2304	676882.99	1885703.81	0+25.17	0	408.11	98.54	xs6 bnk full
2305	676882.03	1885702.88	0+26.39	0	407.72	98.15	xs6 toe
2306	676879.24	1885702.30	0+29.20	0	407.23	97.66	xs6 thw
2307	676873.10	1885699.01	0+36.11	0	407.42	97.85	xs6 toe
2308	676871.68	1885697.84	0+37.85	0	407.92	98.35	xs6 bnk full
2309	676866.58	1885696.38	0+38.24	0	408.10	98.53	xs6 top bank
2310	676871.01	1885698.51	0+43.14	0	409.38	99.82	xs6 bnk full
2311	676865.05	1885695.42	0+44.91	0	409.31	99.75	xs6
2312	676849.87	1885691.63	0+60.46	0	410.06	100.49	xs6

Xsec 7 -- Nov 2013

POINT ID	NORTHING	EASTING	STATION	OFFSET	ELEVATION		DESCRIPTOR
					NAVD 88	LOCAL	
157	675691.49	1882596.37	0+00	0	422.61	100.00	xs7 ipf
158	675686.60	1882595.43	0+04.96	0	422.57	99.96	xs7
159	675679.95	1882593.58	0+11.87	0	422.14	99.53	xs7
160	675674.09	1882591.63	0+18.03	0	422.04	99.43	xs7 tob
161	675672.94	1882591.59	0+19.15	0	421.64	99.03	xs7 bf
162	675672.07	1882591.28	0+20.08	0	420.77	98.16	xs7 toe
163	675671.20	1882590.79	0+21.05	0	420.78	98.17	xs7 thw
164	675670.45	1882590.35	0+21.88	0	421.08	98.47	xs7 toe
165	675669.43	1882589.37	0+23.13	0	421.74	99.13	xs7 bf
166	675666.52	1882588.65	0+26.13	0	422.39	99.78	xs7 tob
167	675659.64	1882587.49	0+33.06	0	422.29	99.68	xs7
168	675654.36	1882586.44	0+38.43	0	422.36	99.75	xs7
169	675650.42	1882585.28	0+42.54	0	422.53	99.92	xs7
1061	675648.05	1882584.19	0+45.12	0	423.00	100.39	xs-7 ipf

Xsec 8 -- Nov 2013

POINT ID	NORTHING	EASTING	STATION	OFFSET	ELEVATION		DESCRIPTOR
					NAVD 88	LOCAL	
1162	675297.82	1883305.89	0+00	0	414.16	99.55	xs-8 ipf
1163	675292.76	1883304.27	0+05.29	0	413.03	98.42	xs-8
1164	675288.47	1883303.46	56	0	412.50	97.89	xs-8
1165	675285.59	1883302.72	0+12.50	0	412.53	97.92	xs-8 tob
1166	675283.47	1883302.54	14.53	0	411.64	97.03	xs-8 tob/full
1167	675282.84	1883302.49	0+15.13	0	411.04	96.43	xs-8 toe
1168	675281.25	1883301.83	16.85	0	410.85	96.24	xs-8 flow
1169	675279.46	1883301.28	18.71	0	411.15	96.54	xs-8 toe
1170	675278.92	1883300.91	0+19.36	0	411.64	97.03	xs-8 tob/full
1171	675276.96	1883299.73	0+21.62	0	412.26	97.65	xs-8 tob
1172	675271.69	1883297.16	+27.48	0	412.35	97.74	xs-8
1173	675266.47	1883294.00	0+33.51	0	412.81	98.20	xs-8
1174	675259.54	1883289.92	0+41.48	0	413.03	98.42	xs-8 ipf

Xsec 9 -- Nov 2013

POINT ID	NORTHING	EASTING	STATION	OFFSET	ELEVATION		DESCRIPTOR
					NAVD 88	LOCAL	
1184	675240.69	1883362.69	0+00	0	414.24	100.00	xs-9 pf
1185	675241.07	1883357.70	0+04.97	0	412.90	98.67	xs-9
1186	675240.56	1883352.67	0+10.01	0	412.53	98.30	xs-9
1187	675240.23	1883348.88	0+13.81	0	412.07	97.84	xs-9 tob
1188	675240.26	1883346.58	0+16.12	0	411.15	96.92	xs-9 tob/full
1189	675240.14	1883345.90	0+16.80	0	409.47	95.23	xs-9 toe
1190	675237.55	1883342.16	0+20.61	0	409.02	94.79	xs-9 flow
1191	675238.35	1883338.94	0+21.02	0	410.05	95.81	xs-9 toe
1192	675238.41	1883338.22	0+23.80	0	410.48	96.24	xs-9 tob/full
1193	675238.46	1883336.03	0+24.52	0	411.34	97.11	xs-9 tob
1194	675238.90	1883329.92	0+26.71	0	411.79	97.55	xs-9
1195	675239.31	1883323.92	0+32.81	0	412.07	97.84	xs-9
1196	675238.49	1883314.28	0+38.79	0	412.42	98.19	xs-9
1197	675239.72	1883306.80	0+48.44	0	412.64	98.41	xs-9
1198	675239.04	1883299.63	0+55.89	0	413.08	98.84	xs-9 ipf

Figure 6.1 UT Bear Creek Longitudinal Profile - Northern UT (Sta. 1000-2000)

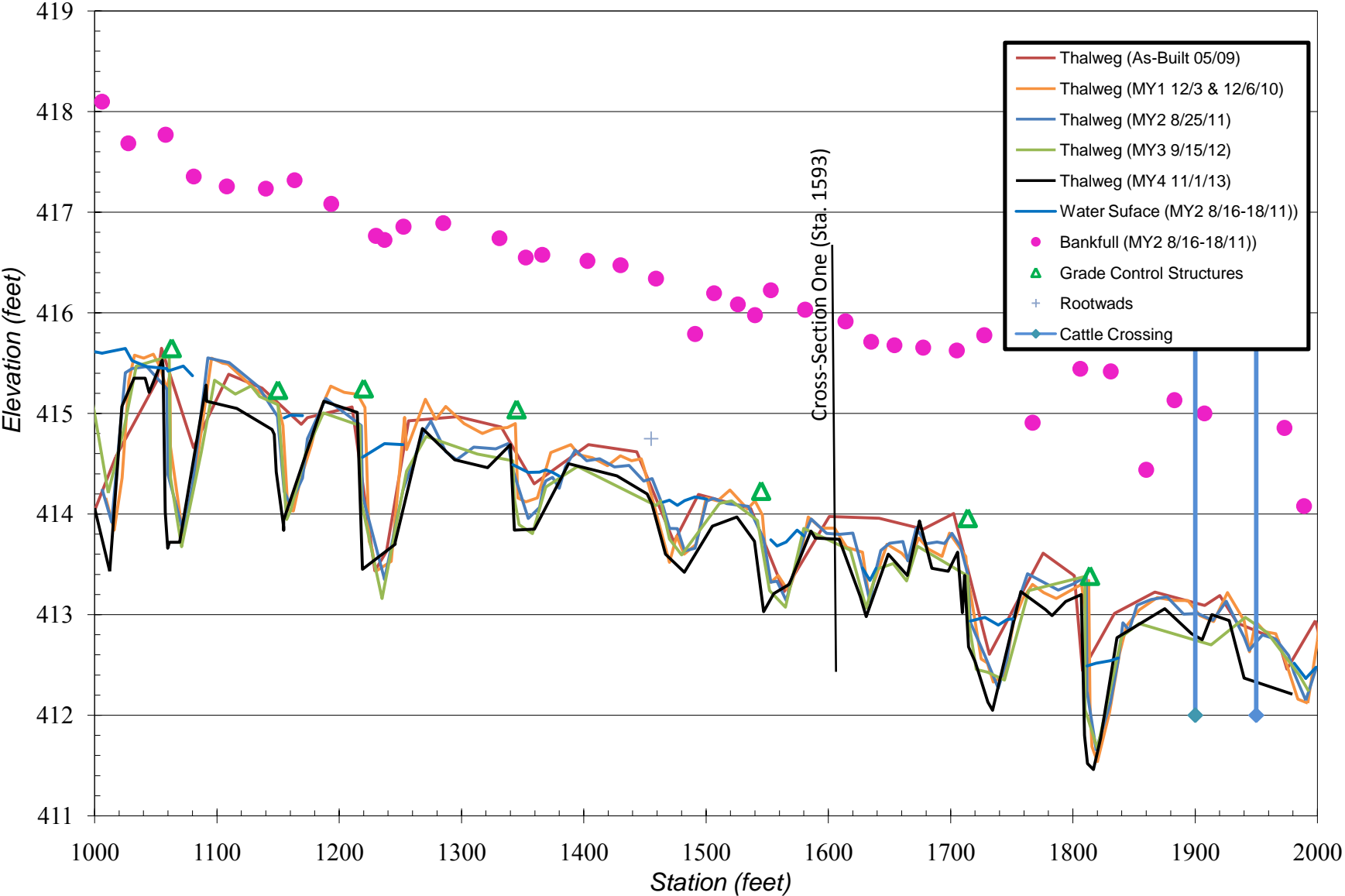


Figure 6.2 UT Bear Creek Longitudinal Profile - Northern UT (Sta. 2000 -3000)

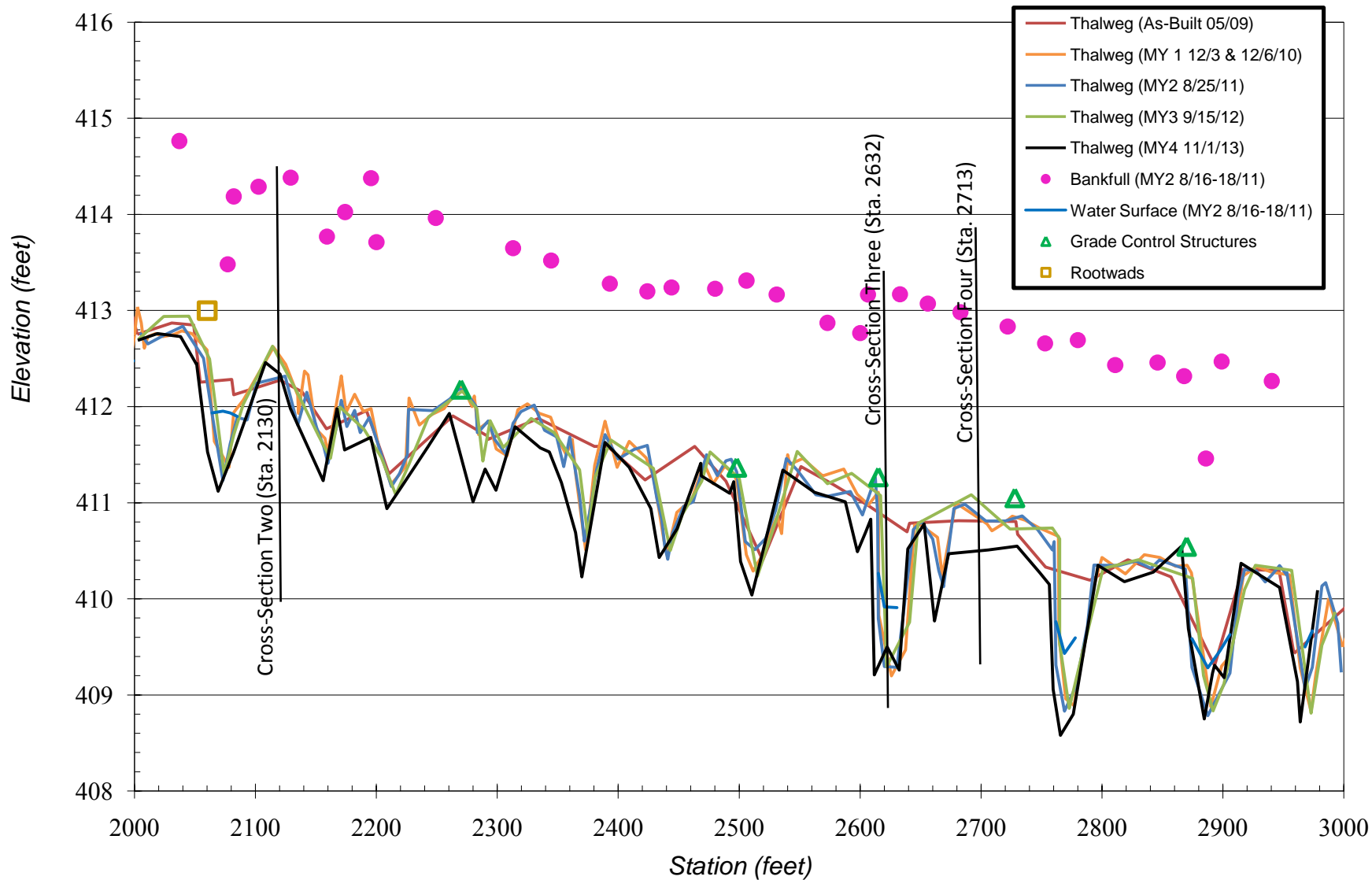


Figure 6.4 UT Bear Creek Longitudinal Profile - Southern UT (Sta. 1000-1900)

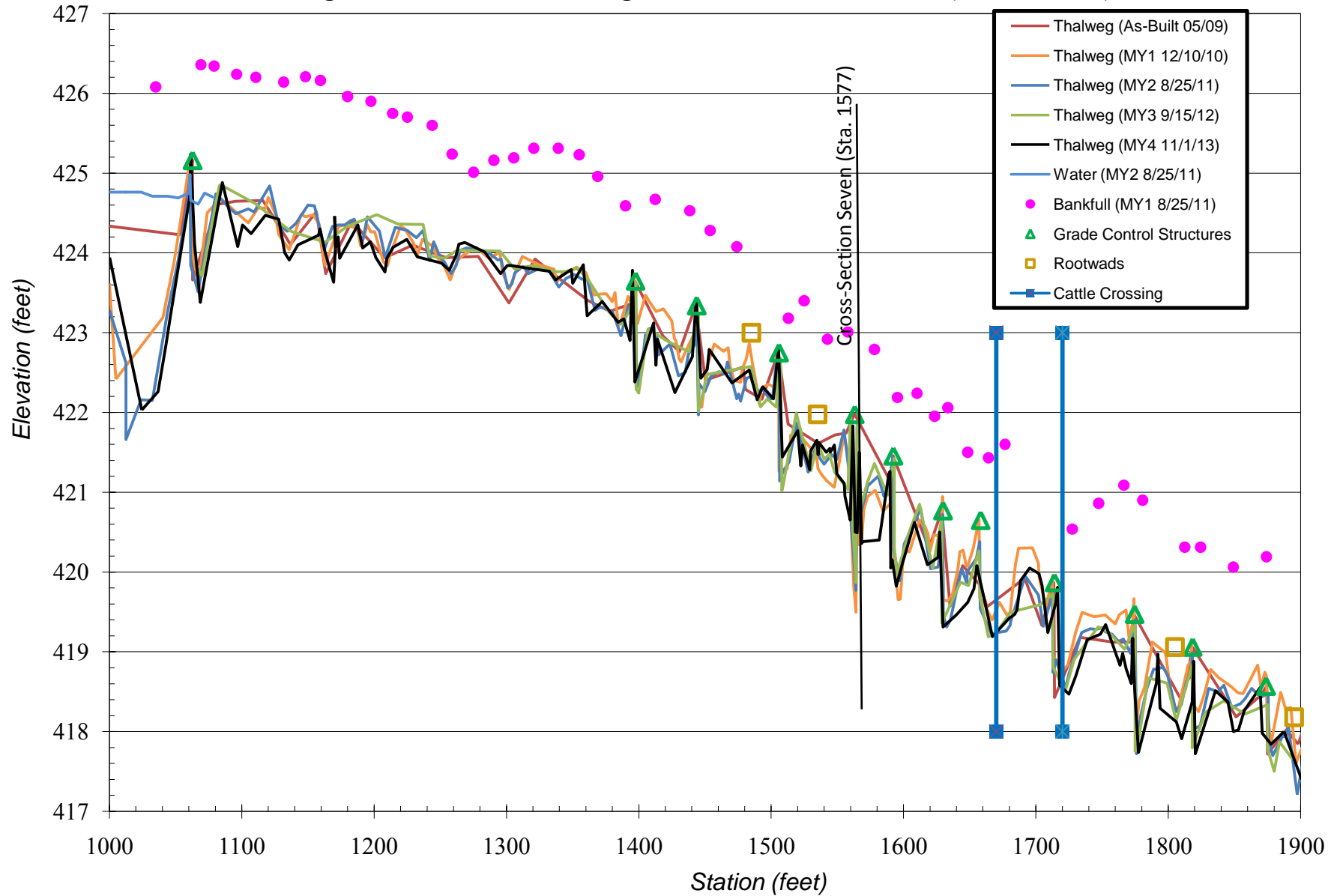
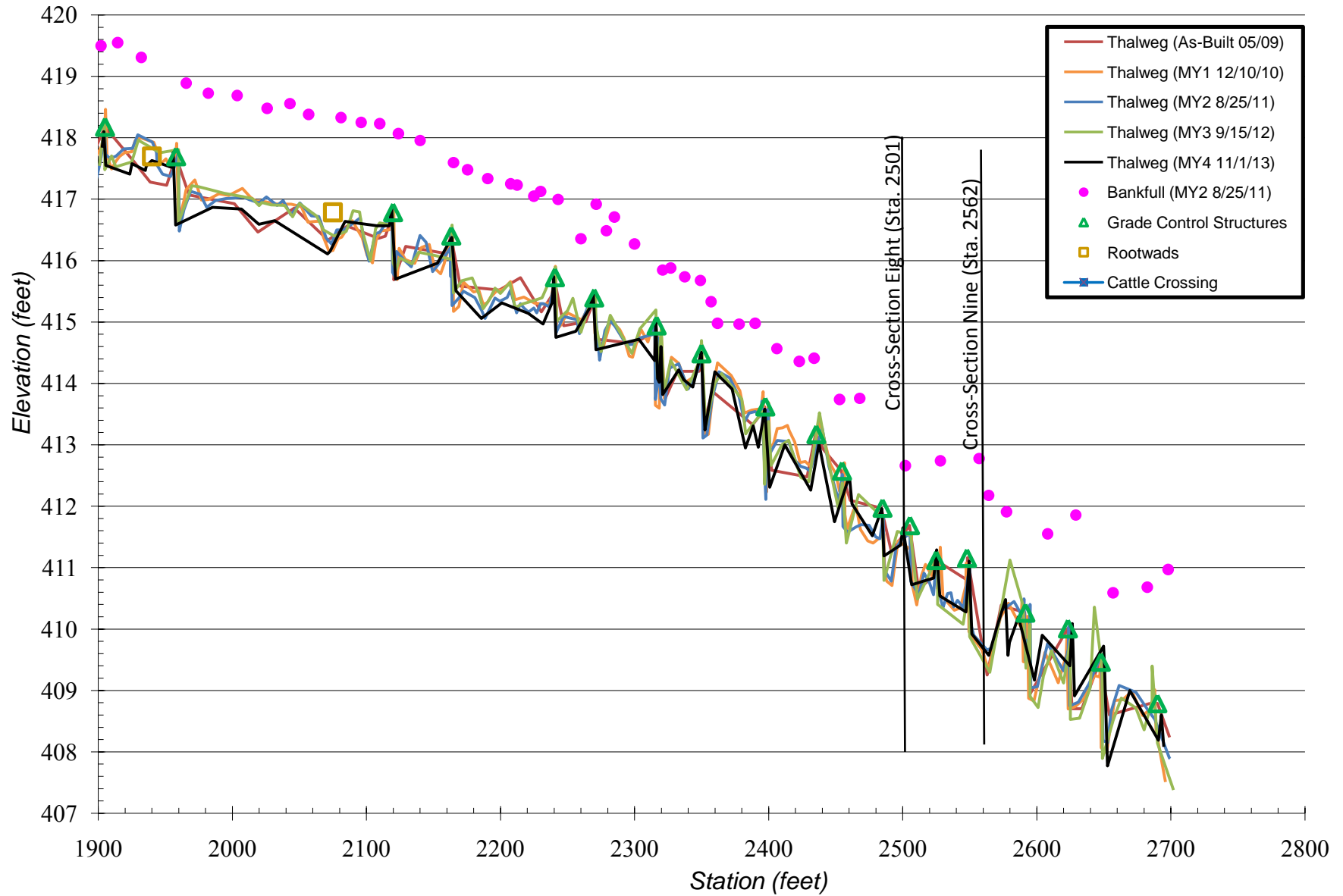


Figure 6.5 UT Bear Creek Longitudinal Profile - Southern UT (Sta. 1900-2800)



e-Tables: Longitudinal Profile Survey Raw Data -- MY4 Nov 2013

Longitudinal Profile Data - Northern UT -- MY4 (2013)					
ID	Northing	Easting	Description	Station	Elevation
1	677821.564	1883794.493	HPOOL	1000.02	414.06
2	677810.864	1883800.474	POOLM	1012.25	413.43
3	677802.84	1883806.675		1022.28	415.07
4	677794.596	1883812.338		1032.25	415.35
5	677786.716	1883816.873	TPOOL/HRIF	1041.34	415.35
6	677783.956	1883818.414		1044.51	415.21
7	677773.727	1883822.867	HPOOL/TRIF	1055.32	415.53
8	677773.119	1883823.016		1055.95	415.47
9	677771.464	1883823.793		1057.76	414.02
10	677769.551	1883824.339	POOLM	1059.75	413.66
11	677768.321	1883825.056		1061.14	413.72
12	677760.334	1883827.059		1069.36	413.72
13	677739.547	1883833.212	TPOOL/HRIF	1091.08	415.28
14	677739.28	1883833.874		1091.6	415.12
15	677716.482	1883843.495		1116.33	415.05
16	677690.22	1883855.643	HPOOL/TRIF	1145.09	414.84
17	677688.397	1883856.117		1146.97	414.79
18	677686.845	1883856.047		1148.48	414.42
19	677681.106	1883858.139		1154.51	413.87
20	677681.063	1883858.064	POOLM	1154.53	413.84
21	677680.94	1883857.972		1154.64	413.94
22	677648.304	1883859.391	TPOOL/HRIF	1187.36	415.12
23	677620.97	1883860.623	HPOOL/TRIF	1214.83	415.01
24	677616.907	1883861.914	POOLM	1218.99	413.45
25	677593.575	1883870.096		1245.73	413.7
26	677593.495	1883870.18		1245.85	413.72
27	677579.591	1883887.805	TPOOL/HRIF	1268.05	414.85
28	677566.608	1883910.673		1294.35	414.54
29	677556.744	1883935.964		1321.25	414.46
30	677547.688	1883952.979	HPOOL/TRIF	1340.08	414.69
31	677544.536	1883954.31	POOLM	1343.24	413.84
32	677532.084	1883966.038		1359.63	413.85
33	677504.554	1883970.907	TPOOL/HRIF	1387.54	414.5
34	677464.796	1883971.203		1427.1	414.38
35	677439.944	1883974.515		1451.93	414.2
36	677436.49	1883976.266	HPOOL/TRIF	1455.8	414.1
37	677426.5	1883980.836		1466.78	413.6
38	677415.806	1883992.128	POOLM	1482.17	413.42
39	677405.752	1884012.913	TPOOL/HRIF	1505.06	413.88
40	677400.411	1884032.253		1525.11	413.97
41	677397.106	1884046.427	HPOOL/TRIF	1539.56	413.73
42	677394.873	1884053.838	POOLM	1547.18	413.03
43	677390.663	1884060.832		1555.33	413.21

44	677382.406	1884070.413	1567.95	413.3
45	677367.604	1884080.351 TPOOL/HRIF	1585.78	413.83
46	677365.258	1884083.288	1589.34	413.76
47	677348.264	1884093.202	1608.8	413.75
48	677333.235	1884102.058 HPOOL/TRIF	1626.19	413.18
49	677328.962	1884104.202 POOLM	1630.97	412.98
50	677310.713	1884108.231 TPOOL/HRIF	1649.08	413.6
51	677295.894	1884113.565	1664.63	413.39
52	677285.611	1884112.25	1674.49	413.93
53	677275.621	1884114.316	1684.69	413.46
54	677262.444	1884116.428	1698.03	413.43
55	677255.253	1884118.59	1705.72	413.62
56	677252.142	1884121.171	1709.67	413.02
57	677250.583	1884121.957 HPOOL/TRIF	1711.42	413.39
58	677247.543	1884123.06	1714.62	412.68
59	677242.734	1884125.791	1720.15	412.53
60	677233.462	1884130.16	1730.39	412.13
61	677232.477	1884133.14 POOLM	1734.37	412.05
62	677221.461	1884153.821 TPOOL/HRIF	1757.47	413.23
63	677216.335	1884173.733	1777.7	413.05
64	677214.877	1884178.835	1782.94	412.99
65	677214.743	1884190.049	1794.09	413.13
66	677213.073	1884202.575 HPOOL/TRIF	1806.91	413.2
67	677212.082	1884204.955	1809.54	411.8
68	677211.411	1884207.205	1811.89	411.52
69	677208.866	1884211.565 POOLM	1816.81	411.46
70	677207.206	1884217.105	1822.59	411.77
71	677204.776	1884230.779	1836.08	412.77
72	677184.615	1884264.305 TPOOL/HRIF	1875.17	413.06
73	677172.012	1884282.12	1896.96	412.81
74	677168.269	1884290.205	1905.79	412.75
75	677163.156	1884296.216	1913.6	413
76	677155.91	1884308.607 HPOOL/TRIF	1927.85	412.94
77	677149.11	1884318.369	1939.96	412.37
78	677131.269	1884353.586 POOLM	1979.52	412.21
79	677131.198	1884377.343 TPOOL/HRIF	2002.69	412.69
80	677136.295	1884392.826	2018.95	412.76
81	677145.192	1884409.787	2038	412.73
82	677150.785	1884421.65 HPOOL/TRIF	2051.2	412.44
83	677150.801	1884421.685	2051.16	412.46
84	677153.274	1884430.602	2060.25	411.53
85	677153.234	1884439.409 POOLM	2068.99	411.12
86	677149.396	1884452.634	2081.83	411.52
87	677129.909	1884470.87 TPOOL/HRIF	2108.19	412.46
88	677119.008	1884476.668	2120.25	412.34
89	677112.079	1884481.88 HPOOL/TRIF	2128.9	411.98
90	677092.082	1884499.865 POOLM	2155.9	411.23

91	677086.929	1884510.463	TPOOL/HRIF	2167.42	411.98
92	677083.136	1884515.742		2173.71	411.55
93	677076.195	1884536.576	HPOOL/TRIF	2195.29	411.68
94	677075.001	1884549.939	POOLM	2208.62	410.94
95	677075.978	1884562.879		2220.94	411.17
96	677084.808	1884582.48		2242.35	411.58
97	677090.525	1884599.489		2260.29	411.93
98	677092.46	1884608.128		2269.52	411.5
99	677094.638	1884618.598		2280	411.01
100	677092.835	1884628.462	TPOOL/HRIF	2289.86	411.35
101	677090.652	1884638.009		2298.94	411.13
102	677080.242	1884649.926		2314.76	411.79
103	677064.383	1884663.587		2335.49	411.57
104	677059.908	1884669.844	HPOOL/TRIF	2343.09	411.53
105	677051.134	1884675.034		2352.94	411.21
106	677041.385	1884681.858		2364.64	410.69
107	677038.528	1884686.387	POOLM	2369.88	410.23
108	677028.088	1884702.635	TPOOL/HRIF	2389.06	411.63
109	677024.638	1884722.593	HPOOL/TRIF	2409.07	411.37
110	677021.888	1884740.556		2426.97	410.94
111	677021.797	1884747.495	POOLM	2433.91	410.43
112	677019.685	1884762.103		2448.56	410.73
113	677021.348	1884781.789		2468.23	411.41
114	677022.383	1884782.256	TPOOL/HRIF	2468.66	411.28
115	677021.609	1884805.318		2492.1	411.1
116	677020.413	1884808.448	HPOOL/TRIF	2495.44	411.22
117	677017.335	1884813.367		2501.21	410.39
118	677016.12	1884823.143	POOLM	2510.53	410.04
119	677008.505	1884829.515		2520.46	410.54
120	676995.499	1884838.539	TPOOL/HRIF	2536.12	411.34
121	676972.376	1884850.796		2562.18	411.11
122	676949.215	1884861.01		2587.76	411.01
123	676939.703	1884864.86		2597.85	410.49
124	676934.901	1884869.65		2604.47	410.69
125	676931.291	1884871.999	HPOOL/TRIF	2608.84	410.83
126	676929.186	1884874.145	POOLM	2611.82	409.21
127	676920.506	1884880.308		2622.45	409.5
128	676912.442	1884886.034		2632.32	409.26
129	676907.159	1884890.745	TPOOL/HRIF	2639.4	410.52
130	676895.57	1884898.437		2653.05	410.78
131	676891.014	1884905.913		2661.58	409.77
132	676882.18	1884913.582		2673.24	410.47
133	676862.052	1884939.767		2706.15	410.51
134	676848.061	1884959.043		2729.93	410.55
135	676836.756	1884973.495		2748.2	410.28
136	676829.645	1884978.703	HPOOL/TRIF	2756.55	410.15
137	676826.958	1884980.311		2759.68	409.06

138	676822.362	1884984.525	POOLM	2765.73	408.58
139	676813.118	1884989.864		2776.4	408.8
140	676793.497	1884996.288	TPOOL/HRIF	2796.7	410.35
141	676773.681	1885006.029		2818.71	410.18
142	676750.286	1885011.842		2842.61	410.28
143	676750.211	1885011.837		2842.68	410.28
144	676728.257	1885019.07	HPOOL/TRIF	2865.91	410.55
145	676723.202	1885021.35		2871.45	409.69
146	676711.351	1885027.246	POOLM	2884.69	408.75
147	676706.15	1885032.173		2891.55	409.23
148	676701.068	1885038.813		2893.13	409.31
149	676693.17	1885050.562		2901.06	409.18
150	676682.073	1885080.758	TPOOL/HRIF	2915.03	410.37
151			HPOOL/TRIF	2947.03	410.12
152	676677.281	1885095.088		2961.72	409.14
153	676676.38	1885097.297	POOLM	2963.99	408.72
154	676675.248	1885111.699	TPOOL/HRIF	2978.44	410.09
155	676675.825	1885139.615		3006.2	409.67
156	676676.03	1885151.104	HPOOL/TRIF	3017.67	409.65
157	676676.072	1885162.239	POOLM	3028.8	408.79
158	676668.998	1885184.31	TPOOL/HRIF	3052.14	409.51
159	676658.391	1885203.895		3074.39	409.26
160	676651.703	1885221.117	HPOOL/TRIF	3093.51	409.09
161	676649.53	1885227.657		3100.11	408.34
162	676649.845	1885235.034	POOLM	3107.47	407.68
163	676646.171	1885253.28		3123.77	408.41
164	676654.273	1885269.207	TPOOL/HRIF	3141.56	409.17
165	676676.274	1885289.959		3170.6	409.39
166	676679.458	1885292.776	HPOOL/TRIF	3174.69	409.14
167	676689.28	1885301.111	POOLM	3187.49	408.04
168	676704.9	1885307.739	TPOOL/HRIF	3203.66	408.99
169	676728.048	1885311.181		3226.85	409.01
170	676738.867	1885313.917	HPOOL/TRIF	3238	408.85
171	676753.983	1885317.833	POOLM	3253.61	407.91
172	676771.496	1885323.47	TPOOL/HRIF	3272.11	409.19
173	676787.414	1885332.404		3290.36	408.93
174	676796.738	1885337.93	HPOOL/TRIF	3301.52	408.88
175	676800.423	1885341.54	POOLM	3306.66	407.3
176	676808.317	1885351.381		3319.26	407.88
177	676818.539	1885362.717	TPOOL/HRIF	3334.61	408.83
178	676825.701	1885375.815		3349.56	408.84
179	676833.543	1885392.678	HPOOL/TRIF	3368.15	407.99
180	676834.061	1885398.713		3374.36	407.44
181	676836.023	1885419.854	POOLM	3395.51	407.21
182	676834.079	1885432.953	TPOOL/HRIF	3408.57	408.49
183	676824.985	1885455.495		3432.82	408.46
184	676817.439	1885473.62		3452.44	407.88

185	676812.671	1885483.258	HPOOL/TRIF	3463.19	407.54
186	676810.207	1885489.401		3469.8	407.2
187	676808.096	1885498.835		3479.84	407.4
188	676805.38	1885506.022		3487.11	407.08
189	676804.263	1885511.509	POOLM	3492.63	406.91
190	676806.025	1885524.1		3503.74	407.3
191	676811.394	1885535.014		3515.84	407.23
192	676821.158	1885546.825	TPOOL/HRIF	3531.03	408.15
193	676839.323	1885564.805		3555.98	408.35
194	676851.533	1885575.891		3571.28	407.85
195	676852.608	1885575.931		3573.27	408.07
196	676852.491	1885576.268	HPOOL/TRIF	3573.79	408.02
197	676861.106	1885584.189		3574.03	408.13
198	676864.059	1885587.95		3585.27	407.05
199	676871.912	1885601.623	POOLM	3590.04	406.76
200	676882.479	1885621.222	TPOOL/HRIF	3605.76	408.12
201	676889.988	1885642.679		3627.95	407.99
202	676890.457	1885644.96	HPOOL/TRIF	3650.91	407.95
203	676891.888	1885660.633		3653.21	406.36
204	676889.948	1885678.963	POOLM	3668.94	406.19
205	676879.243	1885702.304	TPOOL/HRIF	3687.18	407.33
206	676875.712	1885707.927		3712.53	407.23
207	676870.065	1885722.482		3719.09	407.15
208	676869.003	1885727.302	HPOOL/TRIF	3734.59	407.41
209	676866.083	1885744.813	POOLM	3739.5	405.41
210	676868.252	1885757.705		3757.22	405.64
211	676874.371	1885778.786	TPOOL/HRIF	3769.65	406.95
212	676873.711	1885802.453		3791.35	406.94
213	676873.401	1885805.722	HPOOL/TRIF	3815.2	406.49
214	676869.962	1885813.559		3815.67	405.51
215	676865.559	1885820.408		3818.41	405.03
216	676852.811	1885842.17		3826.89	405.81
217	677844.716	1883782.081	POOLM	3835.04	403.97
218			TPOOL/HRIF	3860.26	405.26

Longitudinal Profile Data - Southern UT -- MY4 (2013)					
ID	Northing	Easting	Description	Station	Elevation
1	676016.596	1882206.351		1000.32	423.94
2	676005.597	1882229.196	POOLM	1024.57	422.03
3	676003.159	1882235.611		1036.81	422.26
4	676000.714	1882241.98		1042.81	422.85
5	675994.794	1882248.554		1046.22	423.22
6	675985.557	1882259.32		1060.76	424.7
7	675984.486	1882258.968		1061.35	425.09
8	675984.379	1882259.024	TPOOL/HPOOL	1061.47	425.24
9	675982.752	1882260.801		1064.43	424.11

10	675979.286	1882263.514 POOLM	1068.73	423.38
11	675969.425	1882270.132 TPOOL/HRIF	1085.46	424.88
12	675960.222	1882277.278	1097.02	424.08
13	675957.584	1882280.217	1100.69	424.35
14	675954.27	1882285.791	1107.17	424.24
15	675949.543	1882295.551	1117.86	424.47
16	675945.732	1882304.692	1127.95	424.42
17	675943.031	1882308.127	1132.48	424
18	675941.134	1882310.946	1135.86	423.91
19	675936.439	1882315.351	1142.53	424.1
20	675923.063	1882322.936	1158.03	424.22
21	675922.182	1882323.52	1159.12	424.3
22	675918.449	1882325.087 TRIF/HPOOL	1163.16	424
23	675912.446	1882326.877 POOLM	1169.43	423.63
24	675910.91	1882326.211	1170.77	424.05
25	675901.799	1882328.309	1170.17	424.46
26	675900.863	1882328.004	1171.1	424.07
27	675899.054	1882328.402 TPOOL/HRIF	1172.87	424.2
28	675897.842	1882328.518	1174.07	423.93
29	675884.157	1882328.37	1187.75	424.35
30	675880.989	1882328.975	1191.36	424.06
31	675875.345	1882330.573	1197.2	424.14
32	675871.768	1882332.455	1201.26	423.94
33	675866.348	1882337.028	1208.29	423.76
34	675865.541	1882338.298	1209.76	423.93
35	675863.19	1882342.375	1214.37	424.07
36	675859.297	1882351.991	1224.71	424.17
37	675857.221	1882359.601	1232.67	423.95
38	675849.301	1882376.092	1251.04	423.87
39	675845.971	1882380.6	1256.79	423.78
40	675841.314	1882383.188	1262.08	423.97
41	675839.33	1882383.57	1264.06	424.11
42	675835.306	1882385.657	1268.57	424.13
43	675821.602	1882391.651	1283.55	424.01
44	675811.496	1882397.923	1295.52	423.74
45	675807.669	1882401.4	1300.64	423.84
46	675806.666	1882403.876	1303.31	423.84
47	675800.793	1882418.661	1319.49	423.8
48	675796.863	1882431.101	1332.27	423.77
49	675795.852	1882436.367	1337.31	423.66
50	675797.598	1882448.217	1349.04	423.79
51	675797.966	1882449.194	1350.08	423.62
52	675799.426	1882457.057	1358.11	423.85
53	675799.847	1882459.849	1360.92	423.21
54	675801.258	1882466.134	1367.82	423.32
55	675802.261	1882470.651	1372.35	423.39
56	675797.812	1882481.238	1384.36	423.13

57	675796.098	1882485.481	1388.74	423.17
58	675792.374	1882488.173	1393.33	422.9
59	675790.908	1882489.308 TRIF/HPOOL	1395.18	423.78
60	675789.339	1882490.293 POOLM	1397.04	422.38
61	675777.452	1882497.63	1411.1	423.12
62	675776.102	1882499.036 TPOOL/HRIF	1412.94	422.59
63	675775.016	1882499.309	1414.05	422.92
64	675764.741	1882507.216	1427.2	422.25
65	675757.161	1882517.586	1440.55	422.7
66	675755.936	1882519.95 TRIF/HPOOL	1443.34	423.43
67	675756.735	1882523.568 POOLM	1446.8	422.43
68	675754.994	1882528.225 TPOOL/HRIF	1451.67	422.54
69	675754.612	1882529.725	1453.21	422.79
70	675749.53	1882546.059	1470.44	422.37
71	675742.677	1882557.156	1483.47	422.53
72	675736.927	1882559.192	1489.5	422.16
73	675733.196	1882561.208	1493.61	422.32
74	675724.604	1882561.811	1501.74	422.17
75	675720.969	1882561.489 TRIF/HPOOL	1505.63	422.82
76	675718.294	1882561.02 POOLM	1508.36	421.44
77	675706.755	1882558.344 TPOOL/HRIF	1520.06	421.77
78	675704.46	1882557.923	1522.39	421.33
79	675703.102	1882557.803	1523.75	421.59
80	675697.93	1882557.405	1529.18	421.28
81	675697.277	1882557.486	1529.84	421.52
82	675692.591	1882557.413	1534.54	421.65
83	675691.69	1882557.912	1535.48	421.47
84	675691.064	1882557.867	1536.1	421.62
85	675687.299	1882559.751	1541.55	421.5
86	675685.324	1882561.755	1544.28	421.55
87	675684.954	1882562.01	1544.69	421.5
88	675682.944	1882564.51	1547.76	421.59
89	675681.813	1882565.989	1549.57	421.23
90	675678.263	1882570.124	1555.23	421.11
91	675677.828	1882570.214	1555.74	420.95
92	675675.611	1882573.538	1559.7	420.65
93	675675.031	1882575.403 TRIF/HPOOL	1561.72	421.83
94	675674.512	1882577.052 POOLM	1563.45	420.5
95	675674.139	1882578.645	1564.91	420.49
96	675673.415	1882579.909 TPOOL/HPOOL	1566.66	421.5
97	675673.423	1882581.596 POOLM	1568.33	420.36
98	675673.381	1882582.408	1569.13	420.38
99	675668.376	1882599.451	1581.71	420.4
100	675666.04	1882603.198	1588.87	421.23
101	675664.838	1882605.39 TPOOL/HPOOL	1589.75	421.26
102	675664.729	1882606.304	1590.29	420.07
103	675664.496	1882606.797	1590.33	420.05

104	675664.457	1882606.817	1591.4	420.15
105	675663.373	1882607.505 POOLM	1594.5	419.82
106	675661.89	1882610.713	1599.24	420.11
107	675658.129	1882613.555 TPOOL/HRIF	1608.33	420.62
108	675651.46	1882619.74	1618.08	420.09
109	675645.936	1882627.675	1625.96	420.18
110	675644.815	1882635.602 TRIF/HPOOL	1627.38	420.5
111	675645.173	1882637.043 POOLM	1629.78	419.31
112	675645.3	1882638.9	1639.8	419.46
113	675646.457	1882649.033	1648.44	419.62
114	675646.774	1882657.515	1653.18	419.79
115	675645.063	1882661.872 TPOOL/HPOOL	1655.39	420.08
116	675643.905	1882663.919 POOLM	1667.21	419.19
117	675643.022	1882665.522	1679.77	419.42
118	675633.867	1882680.36	1684.09	419.47
119	675631.616	1882684.006	1685.8	419.53
120	675630.671	1882685.436 TPOOL/HRIF	1688.3	419.89
121	675629.045	1882687.375	1695.33	420.05
122	675625.1	1882693.2	1702.36	419.98
123	675621.677	1882699.359	1704.72	419.83
124	675620.043	1882701.124	1707.08	419.51
125	675618.766	1882703.143	1708.93	419.24
126	675618.477	1882704.964	1715.08	419.61
127	675615.192	1882709.621 TRIF/HPOOL	1716.39	419.81
128	675614.515	1882711.069	1717.85	418.58
129	675613.972	1882712.503 POOLM	1724.87	418.47
130	675611.347	1882718.798	1730.21	418.7
131	675609.259	1882723.713 TPOOL/HRIF	1738.68	419.15
132	675608.178	1882732.012	1748.66	419.22
133	675606.007	1882747.018	1752.64	419.34
134	675603.989	1882750.562	1763.57	418.83
135	675597.588	1882759.739	1765.47	418.98
136	675595.758	1882761.178	1768.22	418.78
137	675593.288	1882762.377	1772.11	418.6
138	675589.536	1882764.332 TRIF/HPOOL	1773.17	419.17
139	675588.769	1882764.762	1774.58	418.53
140	675587.654	1882765.285 POOLM	1777.47	417.74
141	675584.906	1882766.864	1791.09	418.61
142	675572.6	1882771.6 TPOOL/HPOOL	1792.14	418.97
143	675571.548	1882771.863	1793.84	418.29
144	675570.03	1882772.625	1806.16	418.12
145	675560.918	1882779.315 POOLM	1810.08	417.91
146	675558.434	1882782.4	1818.09	418.37
147	675554.836	1882788.596 TPOOL/HPOOL	1819.24	418.88
148	675554.593	1882790.062 POOLM	1820.37	417.72
149	675554.424	1882791.182 TPOOL/HRIF	1835.67	418.51
150	675551.595	1882806.17	1845.08	418.37

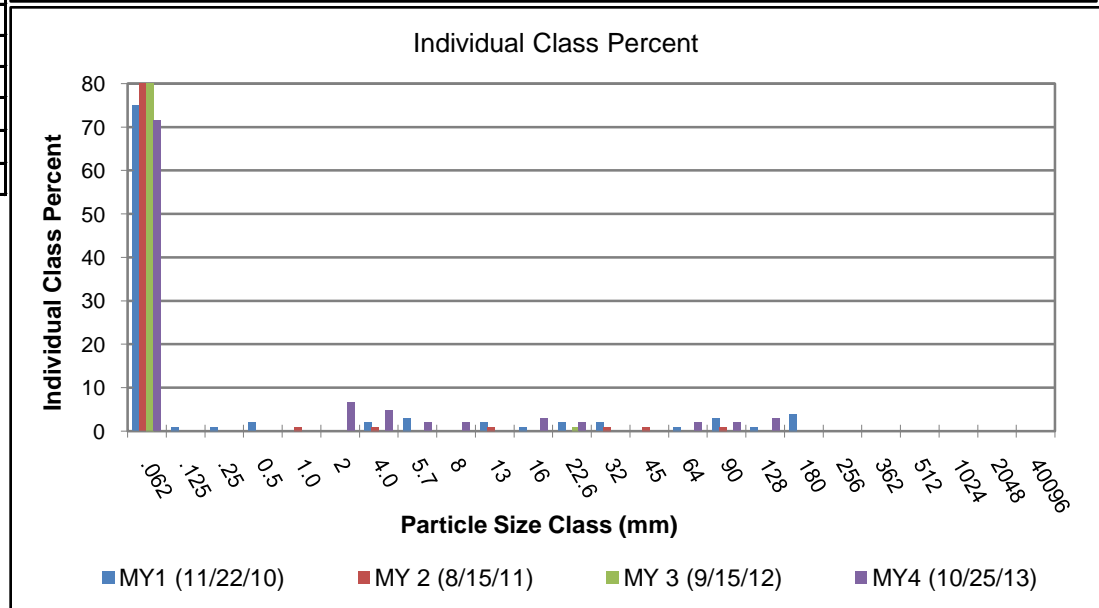
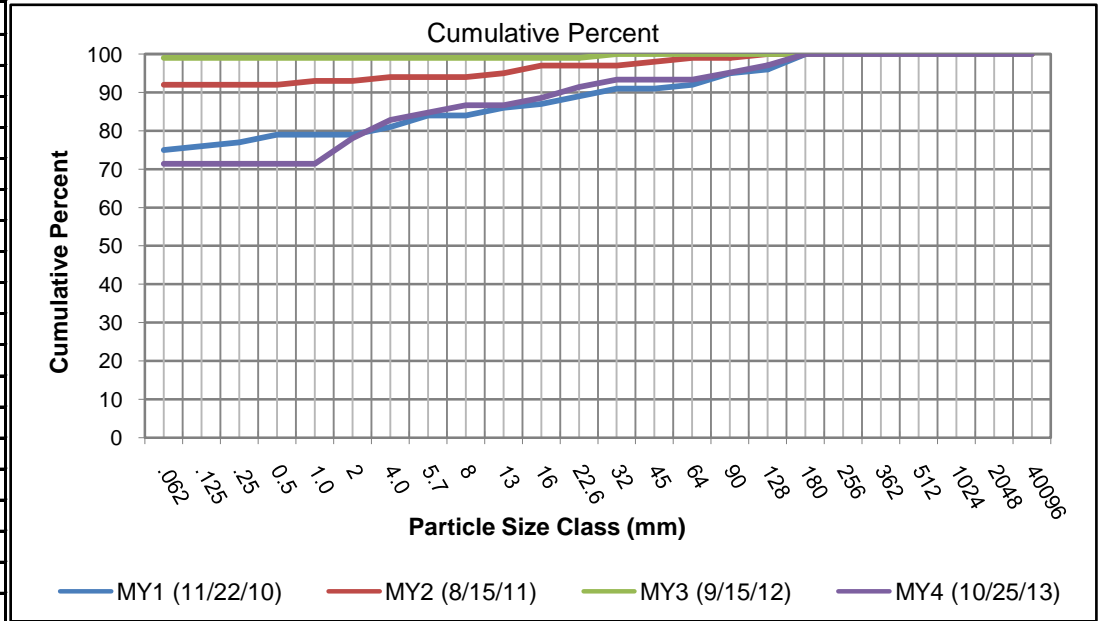
151	675550.383	1882815.662	1849.34	418
152	675549.013	1882819.699	1853.06	418.02
153	675544.038	1882827.226	1857.42	418.26
154	675541.261	1882830.424	1867.13	418.5
155	675533.31	1882836.408 TRIF/HPOOL	1869.32	418.55
156	675531.585	1882837.636	1870.91	417.98
157	675529.862	1882838.597 POOLM	1877.77	417.84
158	675523.373	1882841.531 TPOOL/HRIF	1887.5	418
159	675514.954	1882845.714	1900.69	417.4
160	675512.215	1882847.354	1902.97	417.84
161	675506.26	1882853.083 TRIF/HPOOL	1904.16	418.1
162	675505.663	1882854.268	1905.64	417.55
163	675504.838	1882855.499 POOLM	1923.62	417.41
164	675496.666	1882871.3 TPOOL/HRIF	1925.17	417.58
165	675495.791	1882872.583	1935.21	417.47
166	675491.442	1882881.651	1935.87	417.54
167	675490.796	1882882.05	1940.06	417.63
168	675488.238	1882885.996	1954.75	417.52
169	675473.639	1882891.566 TRIF/HPOOL	1956.05	417.76
170	675472.339	1882891.655 POOLM	1957.86	416.58
171	675471.026	1882891.208 TPOOL/HRIF	1985.28	416.87
172	675443.572	1882886.827	2006.88	416.84
173	675423.09	1882887.804	2019.78	416.59
174	675412.911	1882894.127	2031.67	416.65
175	675406.4	1882903.285	2071.08	416.11
176	675400.545	1882942.423	2072.89	416.15
177	675398.261	1882946.718	2084.07	416.64
178	675389.126	1882954.252	2108.06	416.57
179	675369.798	1882965.212	2117.19	416.57
180	675367.281	1882973.471 TRIF/HPOOL	2118.92	416.86
181	675366.985	1882975.586 POOLM	2121.74	415.7
182	675366.444	1882977.41	2153.07	415.96
183	675366.423	1883017.61 TPOOL/HPOOL	2163.79	416.38
184	675365.682	1883018.979	2166.89	415.51
185	675364.933	1883020.524 POOLM	2185.78	415.06
186	675353.246	1883041.509 TPOOL/HRIF	2201.01	415.31
187	675352.842	1883057.233	2220.83	415.14
188	675362.506	1883074.601	2231.86	414.97
189	675364.052	1883083.847	2238.46	415.31
190	675361.963	1883089.501 TRIF/HPOOL	2239.7	415.74
191	675361.577	1883090.919 POOLM	2241.44	414.75
192	675360.26	1883092.166 TPOOL/HRIF	2256.18	414.85
193	675353.038	1883104.871	2266.38	415.22
194	675346.027	1883111.987 TRIF/HPOOL	2269.2	415.45
195	675343.226	1883112.239 POOLM	2271.25	414.55
196	675341.22	1883112.692 TPOOL/HRIF	2303.33	414.72
197	675310.778	1883120.327	2315.13	414.37

198	675301.298	1883126.468	TRIF/HPOOL	2315.99	415.01
199	675300.948	1883127.397		2317.28	414.08
200	675300.401	1883128.662	POOLM	2318.44	414.02
201	675300.148	1883130.167	TPOOL/HPOOL	2319.83	414.6
202	675299.426	1883131.289	POOLM	2320.94	413.82
203	675298.029	1883131.767	TPOOL/HRIF	2332.89	414.22
204	675292.887	1883142.78		2336.82	414.06
205	675291.647	1883152.138		2343.5	413.94
206	675294.178	1883158.547	TRIF/HPOOL	2349.78	414.51
207	675294.75	1883160.028	POOLM	2352.48	413.24
208	675295.623	1883161.644	TPOOL/HRIF	2359.95	414.19
209	675311.182	1883184.461		2372.78	413.91
210	675312.679	1883195.278		2382.66	412.95
211	675307.995	1883202.383		2388.45	413.31
212	675294.452	1883216.486		2392.28	412.96
213	675289.158	1883229.992		2397.21	413.58
214	675289.084	1883235.262		2400.85	412.31
215	675294.045	1883248.743		2412.05	413
216	675293.525	1883252.623		2431.5	412.26
217	675293.239	1883253.635	TRIF/HPOOL	2437.53	413.02
218	675293.028	1883255.295	POOLM	2449.21	411.75
219	675290.953	1883264.482		2459.1	412.42
220	675290.421	1883265.726	TPOOL/HPOOL	2460.45	412.47
221	675290.289	1883267.944		2462.17	412.04
222	675288.22	1883282.549	POOLM	2477.32	411.52
223	675287.921	1883283.7	TPOOL/HPOOL	2484.5	411.96
224	675287.089	1883284.963	POOLM	2486.01	411.19
225	675281.184	1883301.612		2498.6	411.37
226	675280.758	1883303.171	TPOOL/HPOOL	2500.17	411.65
227	675280.283	1883304.728	POOLM	2506.79	410.72
228	675272.305	1883318.59		2523.2	410.83
229	675271.002	1883319.773	TPOOL/HPOOL	2525.3	411.29
230	675269.356	1883321.43		2527.63	410.54
231	675256.737	1883336.536	POOLM	2547.28	410.28
232	675254.95	1883338.157	TPOOL/HPOOL	2549.68	411.11
233	675253.289	1883338.929		2551.53	409.92
234	675236.82	1883341.755	POOLM	2564.22	409.57
235	675220.124	1883328.665		2570.44	410.04
236	675219.168	1883328.021	TPOOL/HPOOL	2576.75	410.48
237	675217.661	1883326.935	POOLM	2578.6	409.57
238	675216.664	1883326.174		2579.7	409.78
239	675216.122	1883324.759	TPOOL/HPOOL	2586.37	410.2
240	675215.032	1883323.554	POOLM	2598.29	409.17
241	675194.267	1883307.506	TPOOL/HRIF	2604.01	409.9
242	675193.188	1883306.739		2624.79	409.4
243	675191.465	1883305.626	TRIF/HPOOL	2626.56	410.09
244	675172.794	1883296.23	POOLM	2628.13	408.91

245	675171.726	1883296.225		2649.85	409.72
246	675169.715	1883295.632	TPOOL/HPOOL	2650.56	409.36
247	675154.179	1883290.537	POOLM	2652.78	407.77
248	675133.17	1883293.141	TPOOL/HRIF	2669.5	409
249	675131.091	1883293.947		2690.73	408.19
250	675129.391	1883294.235	TRIF/HPOOL	2692.95	408.6
251	675108.586	1883304.385	POOLM	2694.66	408.08

Figure 7.1 Pebble Count Plot: X-Sec 1 -- MY4-2013 -- UT to Bear Creek Stream Restoration (EEP Project #92347)

Cross Section One - Northern UT			2013		
Descript.	Material	Size (mm)	Total #	Class %	Cum %
Silt/Clay	Silt/Clay	.062	75	71	71
Sand	Very Fine Sand	.125		0	71
	Fine Sand	.25		0	71
	Medium Sand	0.5		0	71
	Coarse Sand	1.0		0	71
	Very Course Sand	2	7	7	78
Gravel	Very Fine Gravel	4.0	5	5	83
	Fine Gravel	5.7	2	2	85
	Fine Gravel	8	2	2	87
	Medium Gravel	13		0	87
	Medium Gravel	16	2	2	89
	Coarse Gravel	22.6	3	3	91
	Coarse Gravel	32	2	2	93
	Very Course Gravel	45		0	93
	Very Course Gravel	64		0	93
Cobble	Small Cobble	90	2	2	95
	Small Cobble	128	2	2	97
	Medium Cobble	180	3	3	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			105		



Cross-Section 1

Figure 7.2 Pebble Count Plot: X-Sec 2 -- MY4-2013 -- UT to Bear Creek Stream Restoration (EEP Project #92347)

Cross Section Two-Northern UT			2013		
Descript.	Material	Size (mm)	Total #	Class %	Cum %
Silt/Clay	Silt/Clay	.062	58	49	49
Sand	Very Fine Sand	.125		0	49
	Fine Sand	.25		0	49
	Medium Sand	0.5		0	49
	Coarse Sand	1.0		0	49
	Very Course Sand	2	6	5	54
Gravel	Very Fine Gravel	4.0	13	11	65
	Fine Gravel	5.7	16	13	78
	Fine Gravel	8	2	2	80
	Medium Gravel	13	7	6	86
	Medium Gravel	16	2	2	87
	Coarse Gravel	22.6	3	3	90
	Coarse Gravel	32	3	3	92
	Very Course Gravel	45	2	2	94
	Very Course Gravel	64	1	1	95
Cobble	Small Cobble	90	1	1	96
	Small Cobble	128	3	3	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
Bedrock	Bedrock	40096		0	100
Total			119		

Cross-Section 2

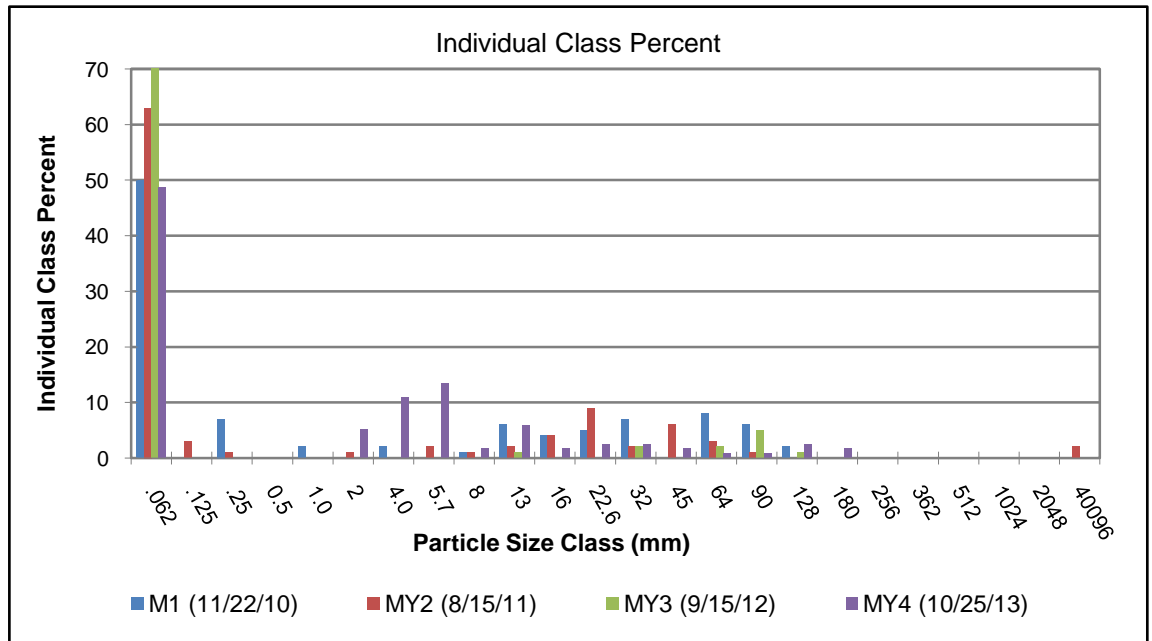
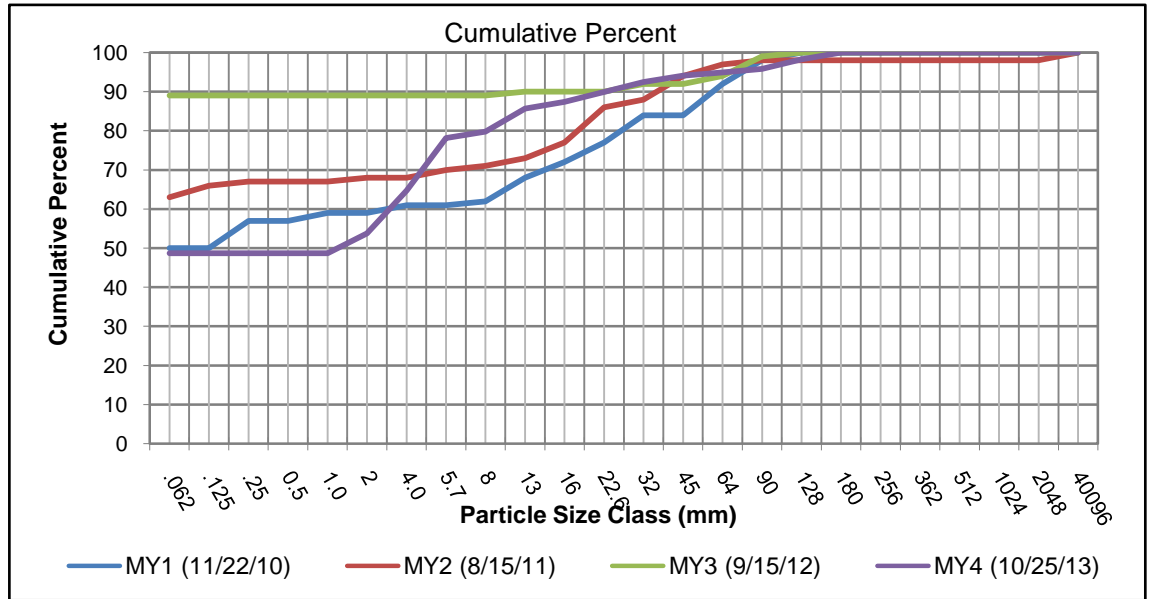


Figure 7.3 Pebble Count Plot: X-Sec 3 -- MY4-2013 -- UT to Bear Creek Stream Restoration (EEP Project #92347)

Cross Section Three-Northern UT			2013		
Descript.	Material	Size (mm)	Total #	Class %	Cum %
Silt/Clay	Silt/Clay	.062	38	29	29
Sand	Very Fine Sand	.125		0	29
	Fine Sand	.25		0	29
	Medium Sand	0.5	10	8	37
	Coarse Sand	1.0	27	21	58
	Very Course Sand	2	21	16	74
Gravel	Very Fine Gravel	4.0	21	16	91
	Fine Gravel	5.7	4	3	94
	Fine Gravel	8		0	94
	Medium Gravel	13		0	94
	Medium Gravel	16	1	1	95
	Coarse Gravel	22.6	3	2	97
	Coarse Gravel	32	1	1	98
	Very Course Gravel	45		0	98
Cobble	Very Course Gravel	64	1	1	98
	Small Cobble	90	2	2	100
	Small Cobble	128		0	100
	Medium Cobble	180		0	100
Boulder	Large Cobble	256		0	100
	Small Boulders	362		0	100
	Small Boulders	512		0	100
	Medium Boulders	1024		0	100
Bedrock	Large Boulders	2048		0	100
	Bedrock	40096		0	100
Total			129		

Cross-Section 3

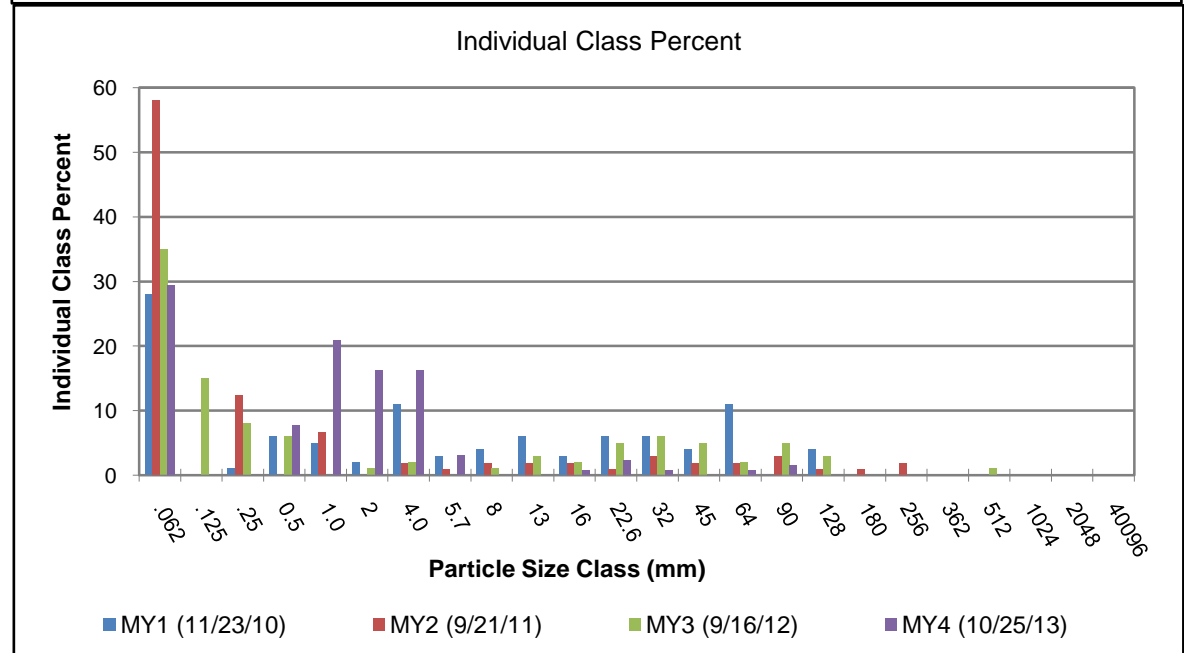
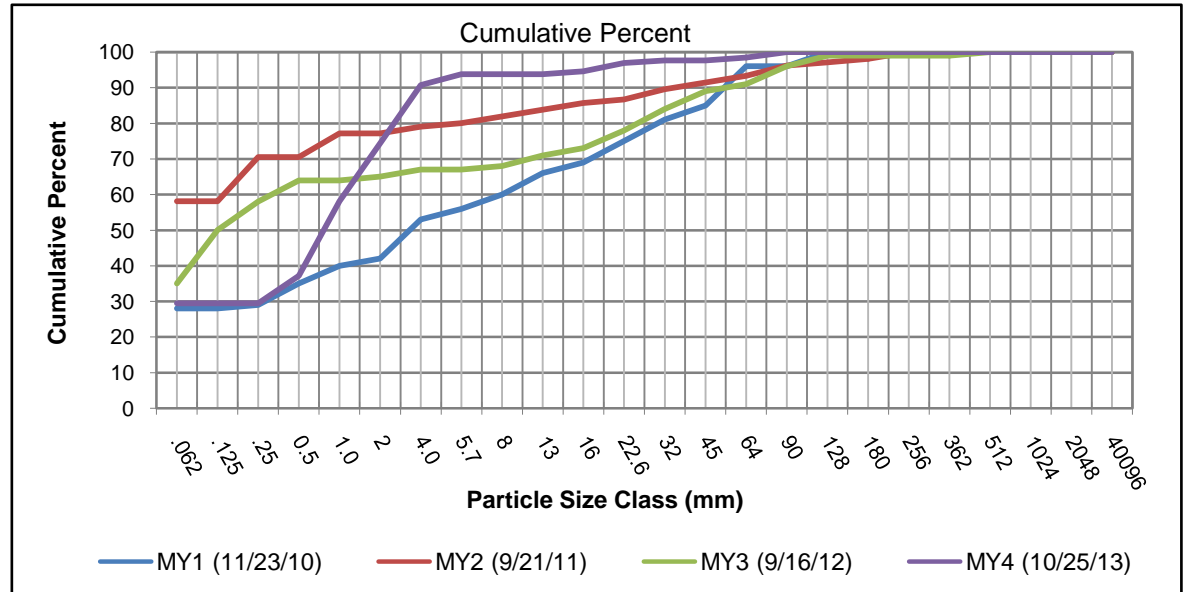


Figure 7.4 Pebble Count Plot: X-Sec 4 -- MY4-2013 -- UT to Bear Creek Stream Restoration (EEP Project #92347)

Cross Section Four-Northern UT			2013		
Descript.	Material	Size (mm)	Total #	Class %	Cum %
Silt/Clay	Silt/Clay	.062	20	14	14
Sand	Very Fine Sand	.125		0	14
	Fine Sand	.25		0	14
	Medium Sand	0.5	5	3	17
	Coarse Sand	1.0	10	7	24
	Very Course Sand	2	13	9	33
Gravel	Very Fine Gravel	4.0	20	14	47
	Fine Gravel	5.7	20	14	61
	Fine Gravel	8	12	8	69
	Medium Gravel	13	7	5	74
	Medium Gravel	16	4	3	77
	Coarse Gravel	22.6	2	1	78
	Coarse Gravel	32	2	1	80
	Very Course Gravel	45		0	80
	Very Course Gravel	64		0	80
Cobble	Small Cobble	90	6	4	84
	Small Cobble	128	12	8	92
	Medium Cobble	180	3	2	94
	Large Cobble	256	2	1	96
Boulder	Small Boulders	362	6	4	100
	Small Boulders	512		0	100
	Medium Boulders	1024		0	100
	Large Boulders	2048		0	100
Bedrock	Bedrock	40096		0	100
Total			144		

Cross-Section 4

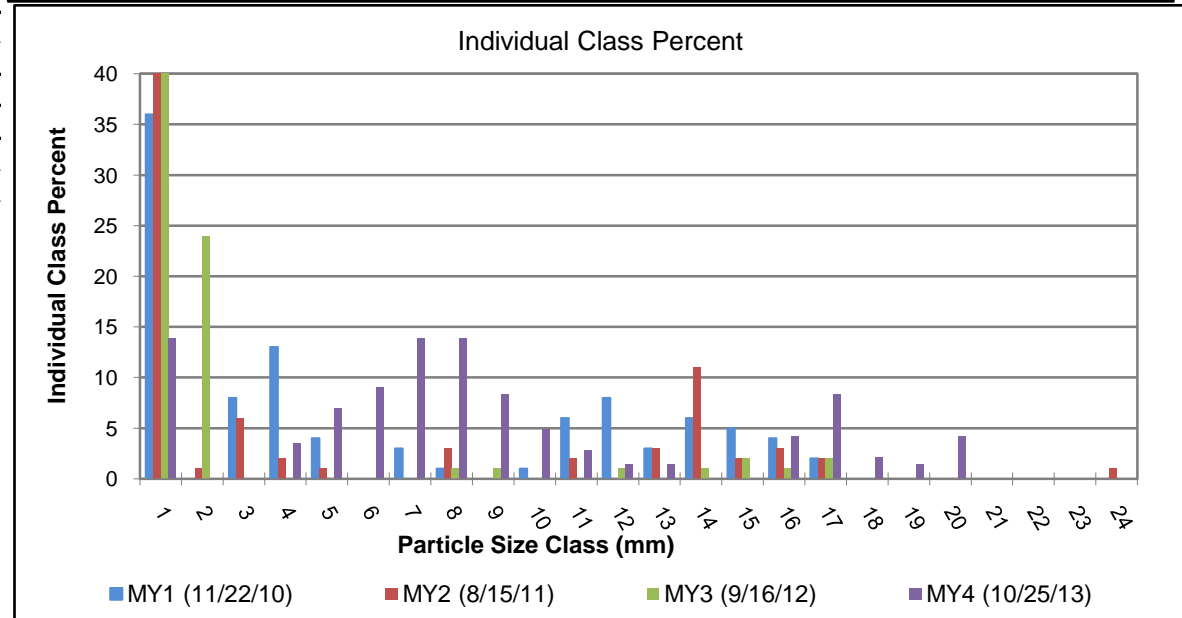
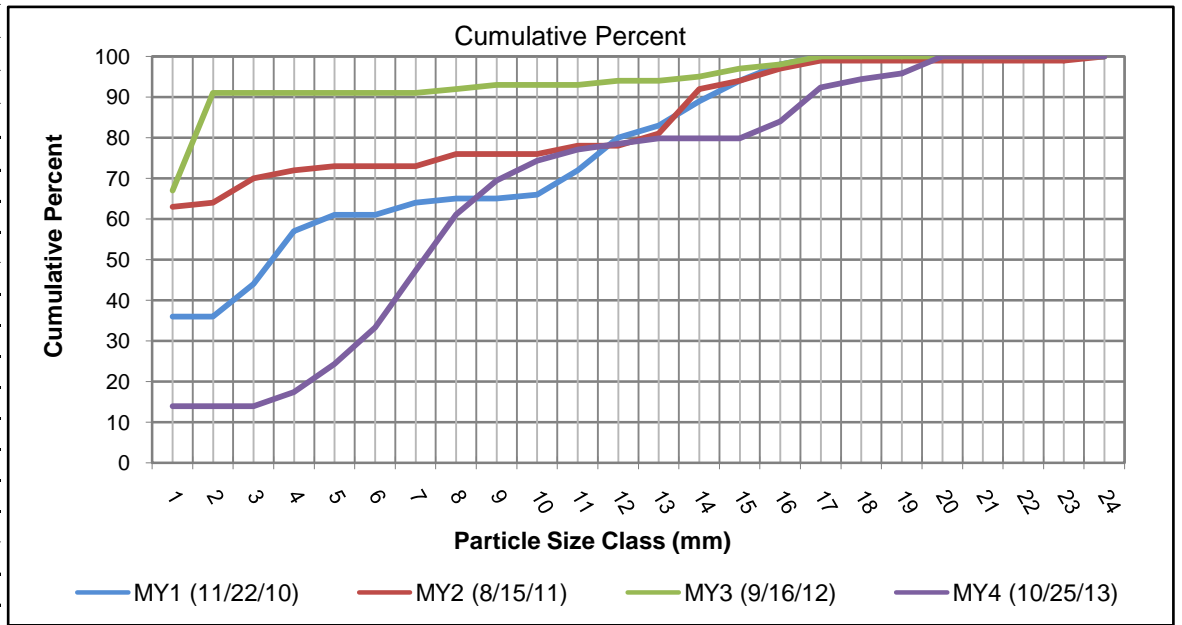


Figure 7.5 Pebble Count Plot: X-Sec 5 -- MY4-2013 -- UT to Bear Creek Stream Restoration (EEP Project #92347)

Cross Section Five-Northern UT			2013		
Descript.	Material	Size (mm)	Total #	Class %	Cum %
Silt/Clay	Silt/Clay	.062	17	12	12
Sand	Very Fine Sand	.125		0	12
	Fine Sand	.25		0	12
	Medium Sand	0.5		0	12
	Coarse Sand	1.0		0	12
	Very Coarse Sand	2	17	12	24
Gravel	Very Fine Gravel	4.0	38	27	51
	Fine Gravel	5.7	8	6	57
	Fine Gravel	8	11	8	65
	Medium Gravel	13	9	6	71
	Medium Gravel	16	13	9	80
	Coarse Gravel	22.6	10	7	87
	Coarse Gravel	32		0	87
	Very Coarse Gravel	45	2	1	89
Cobble	Very Coarse Gravel	64		0	89
	Small Cobble	90		0	89
	Small Cobble	128	6	4	93
	Medium Cobble	180	4	3	96
Boulder	Large Cobble	256		0	96
	Small Boulders	362	6	4	100
	Small Boulders	512		0	100
	Medium Boulders	1024		0	100
Bedrock	Large Boulders	2048		0	100
	Bedrock	40096		0	100
Total			141	141	

Cross-Section 5

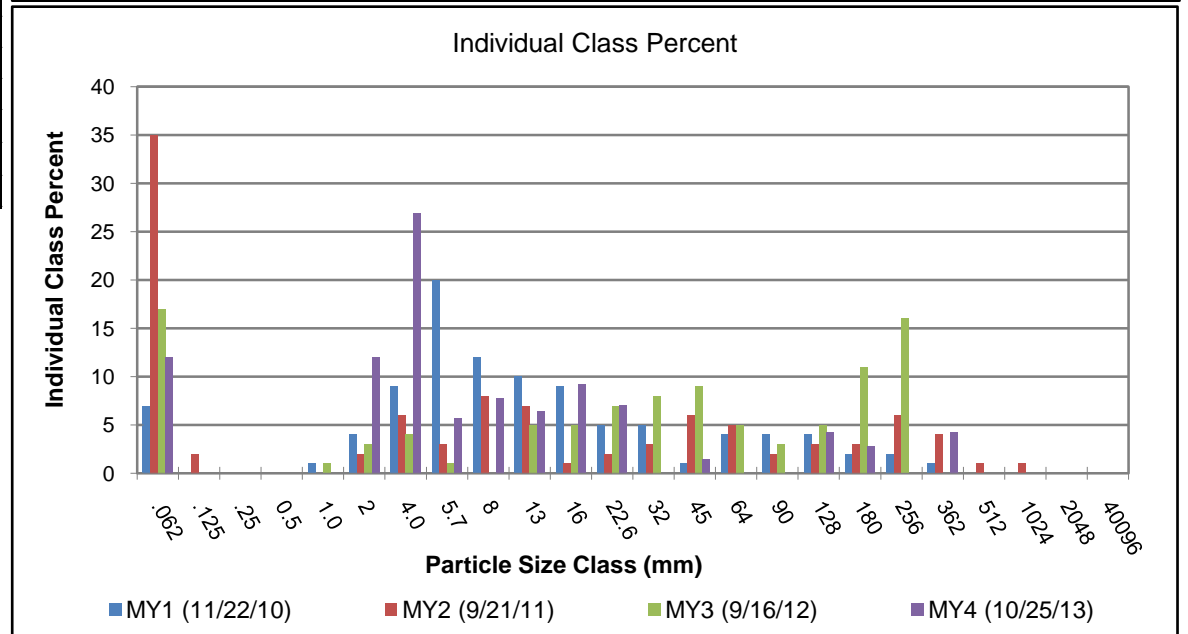
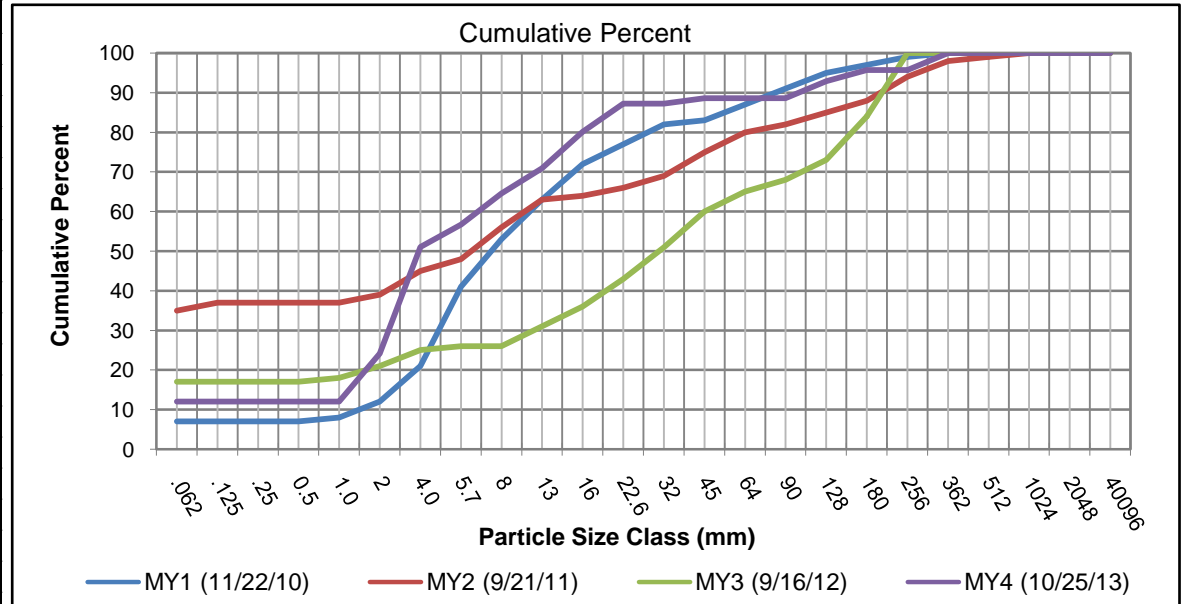
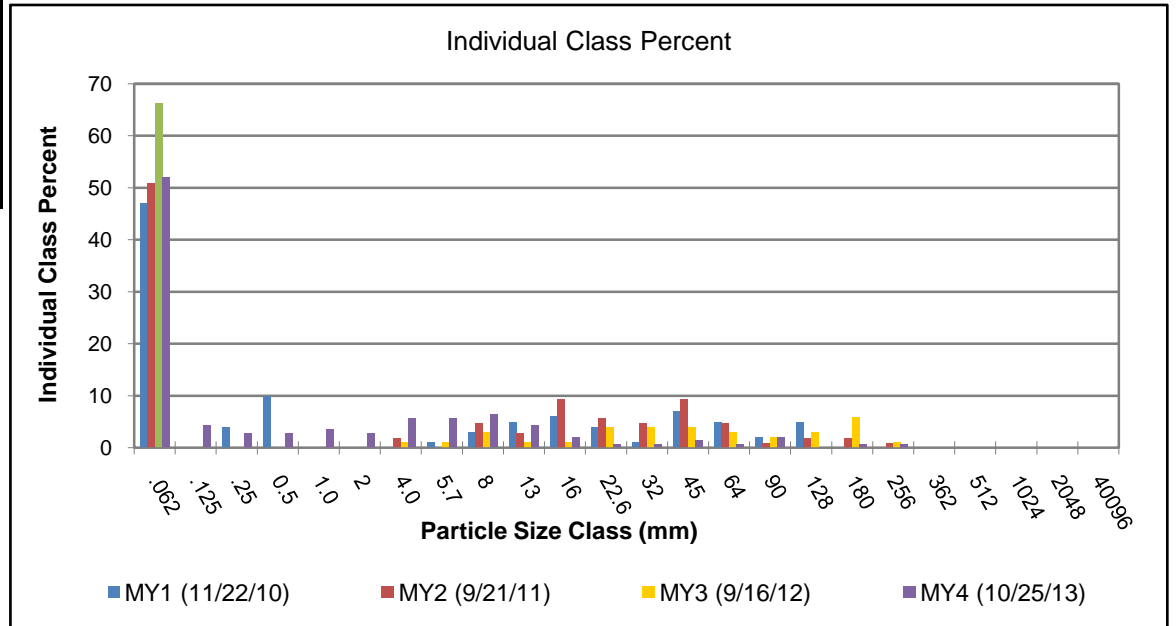
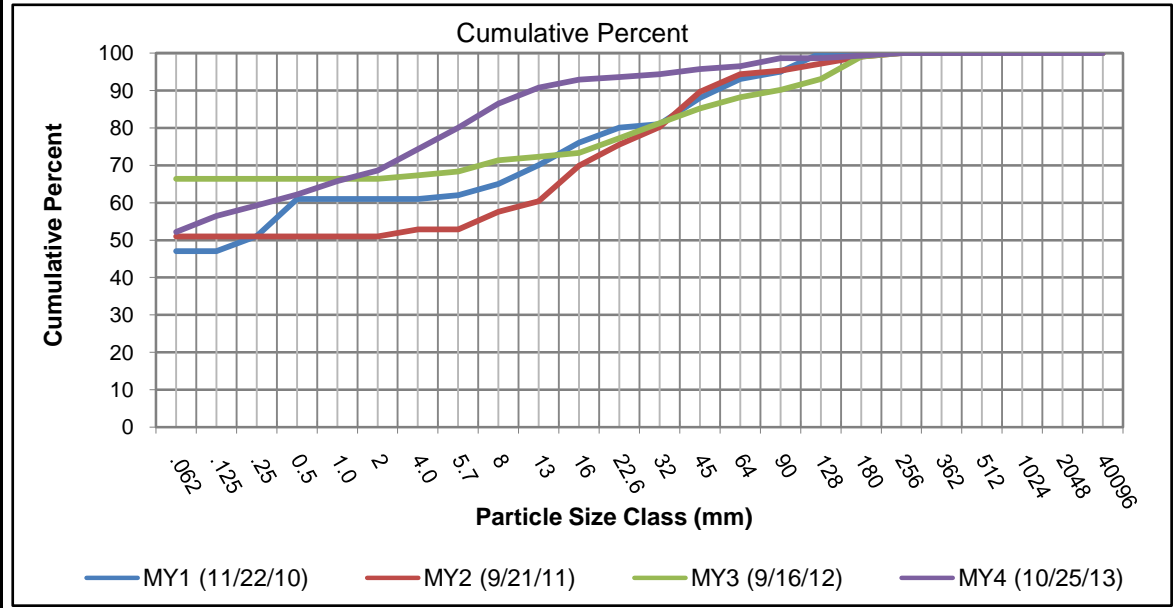


Figure 7.6 Pebble Count Plot: X-Sec 6 -- MY4-2013 -- UT to Bear Creek Stream Restoration (EEP Project #92347)

Cross Section Six-Northern UT			2013		
Descript.	Material	Size (mm)	Total #	Class %	Cum %
Silt/Clay	Silt/Clay	.062	73	52	52
Sand	Very Fine Sand	.125	6	4	56
	Fine Sand	.25	4	3	59
	Medium Sand	0.5	4	3	62
	Coarse Sand	1.0	5	4	66
	Very Course Sand	2	4	3	69
Gravel	Very Fine Gravel	4.0	8	6	74
	Fine Gravel	5.7	8	6	80
	Fine Gravel	8	9	6	86
	Medium Gravel	13	6	4	91
	Medium Gravel	16	3	2	93
	Coarse Gravel	22.6	1	1	94
	Coarse Gravel	32	1	1	94
	Very Course Gravel	45	2	1	96
	Very Course Gravel	64	1	1	96
Cobble	Small Cobble	90	3	2	99
	Small Cobble	128		0	99
	Medium Cobble	180	1	1	99
	Large Cobble	256	1	1	100
Boulder	Small Boulders	362		0	100
	Small Boulders	512		0	100
	Medium Boulders	1024		0	100
Bedrock	Large Boulders	2048		0	100
	Bedrock	40096		0	100
Total			140		



Cross-Section 6

Figure 7.7 Pebble Count Plot: X-Sec 7 -- MY4-2013 -- UT to Bear Creek Stream Restoration (EEP Project #92347)

Cross Section Seven-Southern UT			2013		
Descript.	Material	Size (mm)	Total #	Class %	Cum %
Silt/Clay	Silt/Clay	.062	60	49	49
Sand	Very Fine Sand	.125	3	2	52
	Fine Sand	.25		0	52
	Medium Sand	0.5	6	5	57
	Coarse Sand	1.0	3	2	59
	Very Course Sand	2		0	59
Gravel	Very Fine Gravel	4.0		0	59
	Fine Gravel	5.7		0	59
	Fine Gravel	8	3	2	61
	Medium Gravel	13	4	3	65
	Medium Gravel	16	2	2	66
	Coarse Gravel	22.6	10	8	75
	Coarse Gravel	32	13	11	85
	Very Course Gravel	45	5	4	89
	Very Course Gravel	64	7	6	95
Cobble	Small Cobble	90	3	2	98
	Small Cobble	128	1	1	98
	Medium Cobble	180		0	98
	Large Cobble	256	2	2	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			122		

Cross-Section 7

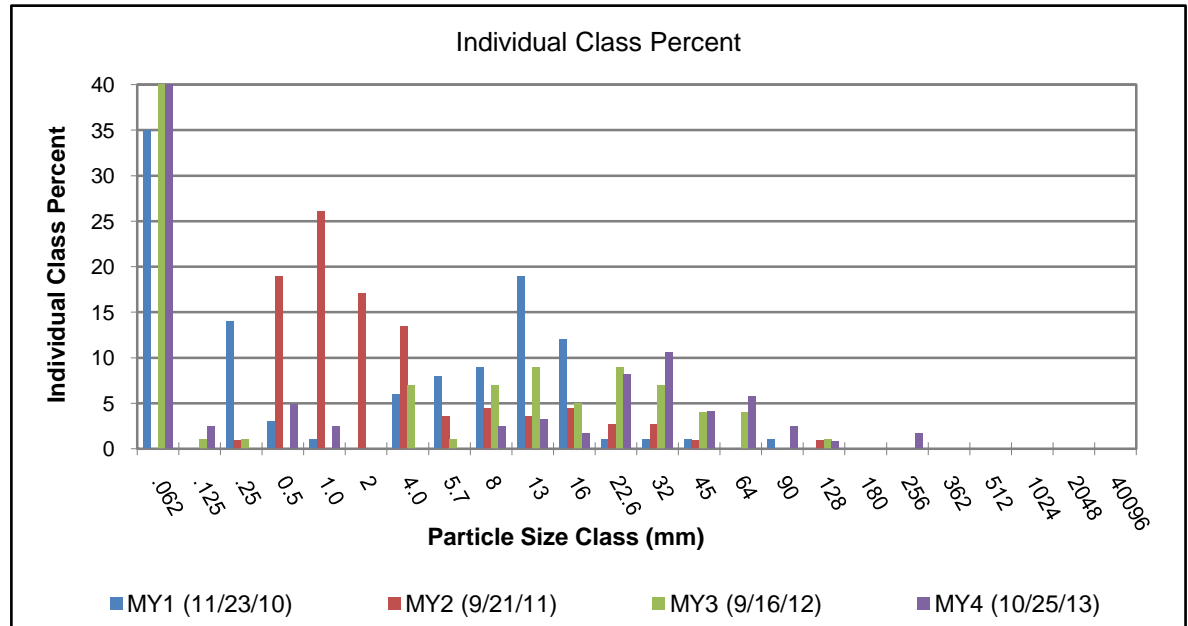
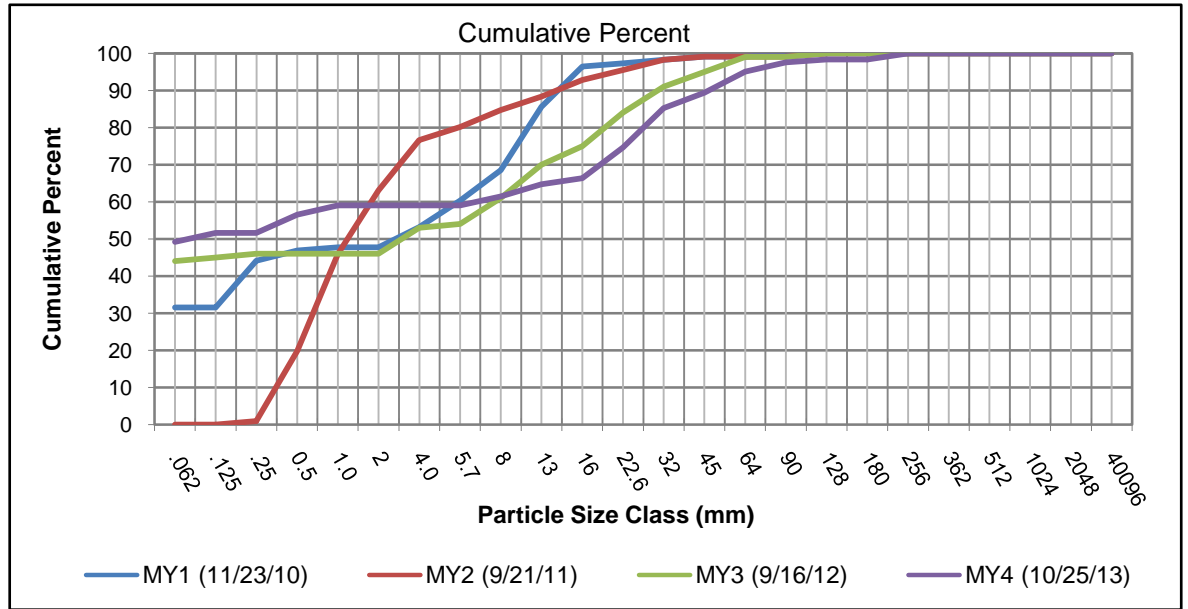
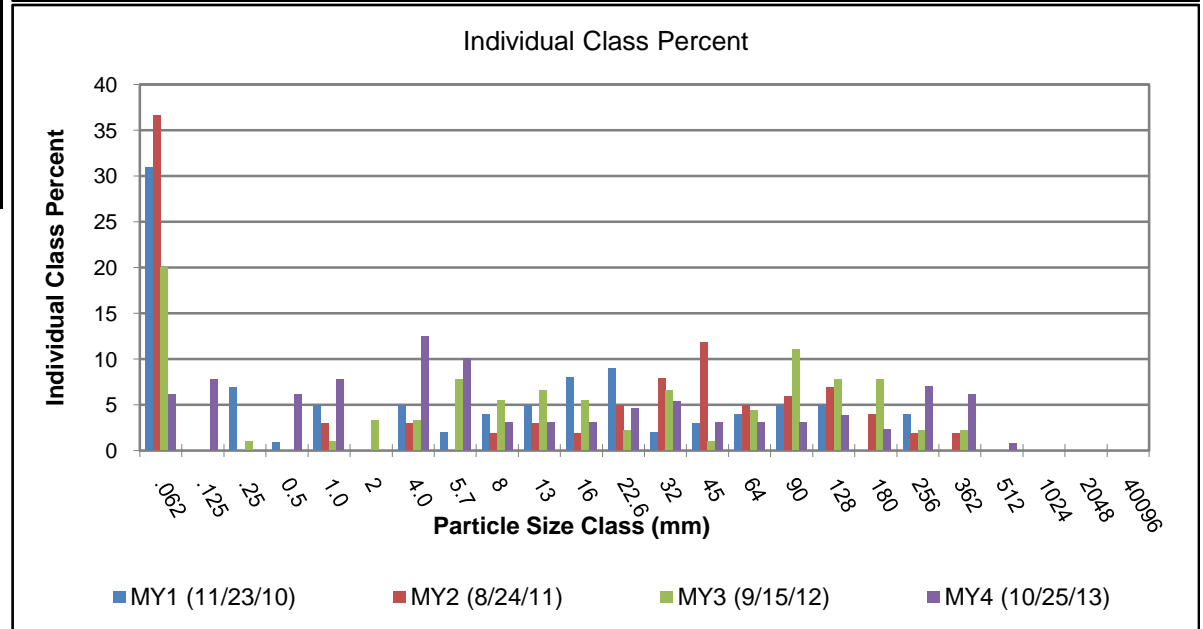
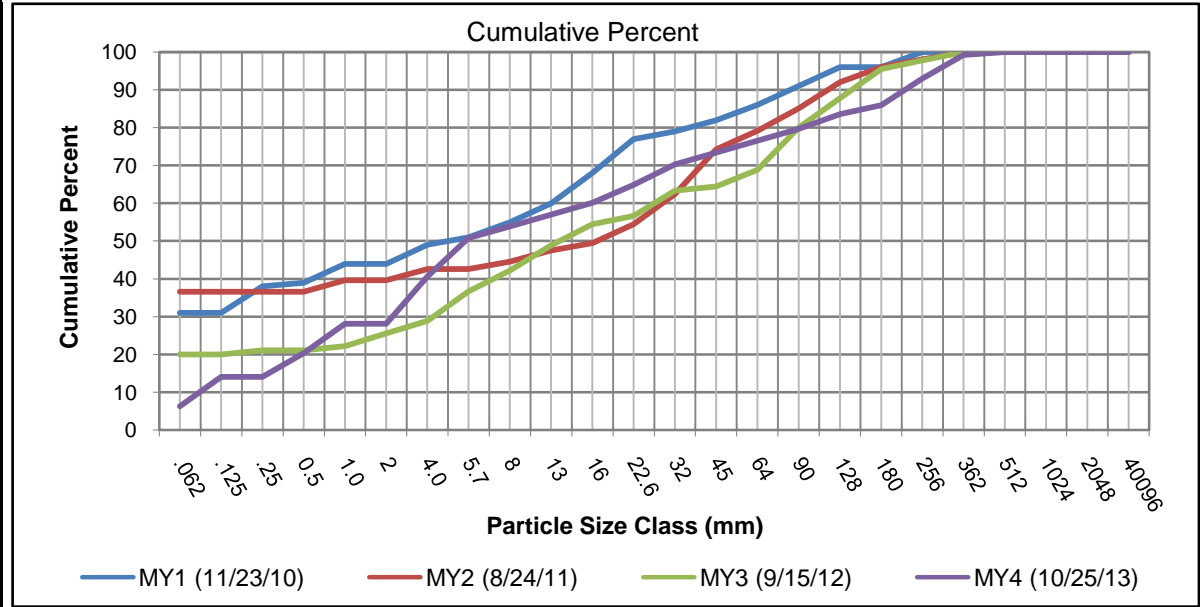


Figure 7.8 Pebble Count Plot: X-Sec 8 -- MY4-2013 -- UT to Bear Creek Stream Restoration (EEP Project #92347)

Cross Section Eight-Southern UT			2013		
Descript.	Material	Size (mm)	Total #	Class %	Cum %
Silt/Clay	Silt/Clay	.062	8	6	6
Sand	Very Fine Sand	.125	10	8	14
	Fine Sand	.25		0	14
	Medium Sand	0.5	8	6	20
	Coarse Sand	1.0	10	8	28
	Very Course Sand	2		0	28
Gravel	Very Fine Gravel	4.0	16	13	41
	Fine Gravel	5.7	13	10	51
	Fine Gravel	8	4	3	54
	Medium Gravel	13	4	3	57
	Medium Gravel	16	4	3	60
	Coarse Gravel	22.6	6	5	65
	Coarse Gravel	32	7	5	70
	Very Course Gravel	45	4	3	73
	Very Course Gravel	64	4	3	77
Cobble	Small Cobble	90	4	3	80
	Small Cobble	128	5	4	84
	Medium Cobble	180	3	2	86
	Large Cobble	256	9	7	93
Boulder	Small Boulders	362	8	6	99
	Small Boulders	512	1	1	100
	Medium Boulders	1024		0	100
	Large Boulders	2048		0	100
Bedrock	Bedrock	40096		0	100
Total			128		

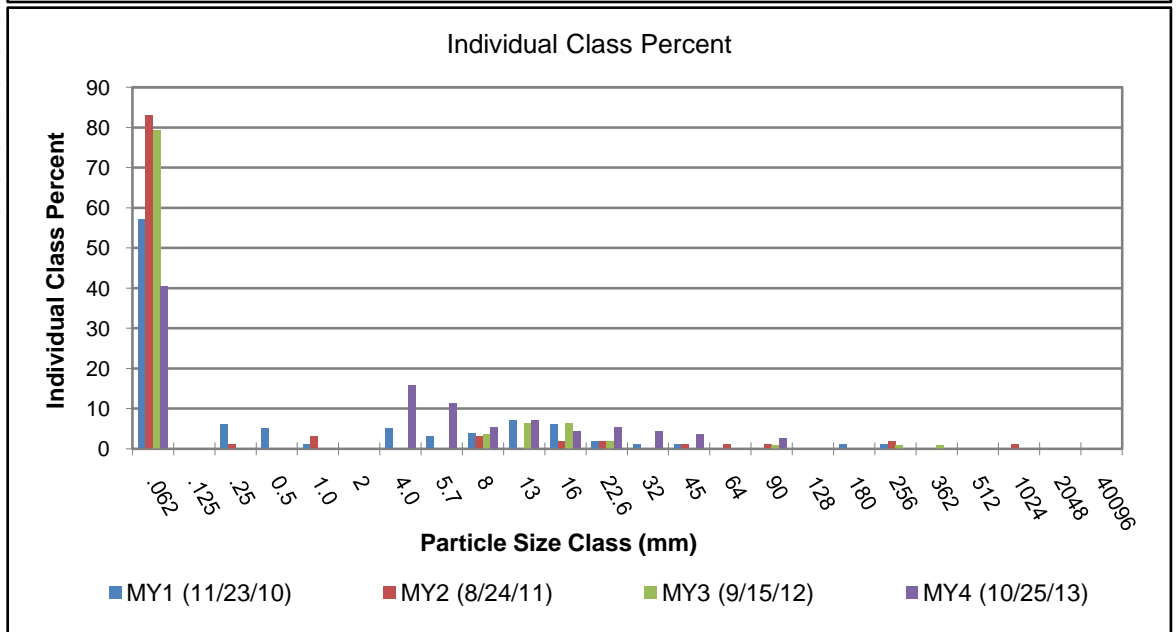
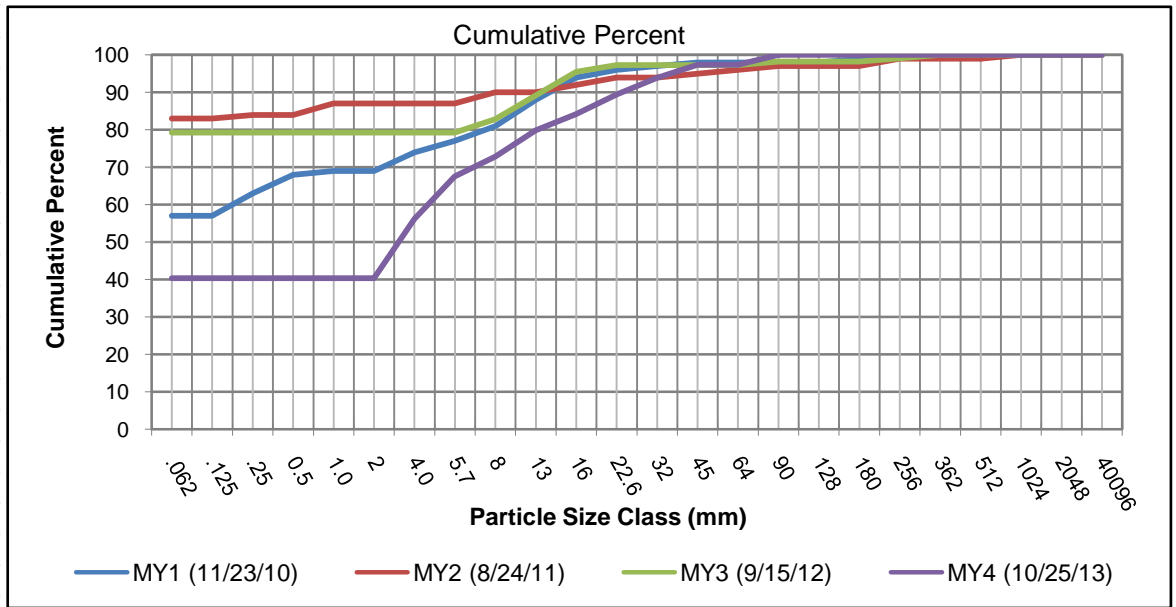


Cross-Section 8

Figure 7.9 Pebble Count Plot: X-Sec 9 -- MY4-2013 -- UT to Bear Creek Stream Restoration (EEP Project #92347)

Cross Section Nine-Southern UT			2013		
Descript.	Material	Size (mm)	Total #	Class %	Cum %
Silt/Clay	Silt/Clay	.062	46	40	40
Sand	Very Fine Sand	.125		0	40
	Fine Sand	.25		0	40
	Medium Sand	0.5		0	40
	Coarse Sand	1.0		0	40
	Very Course Sand	2		0	40
Gravel	Very Fine Gravel	4.0	18	16	56
	Fine Gravel	5.7	13	11	68
	Fine Gravel	8	6	5	73
	Medium Gravel	13	8	7	80
	Medium Gravel	16	5	4	84
	Coarse Gravel	22.6	6	5	89
	Coarse Gravel	32	5	4	94
	Very Course Gravel	45	4	4	97
	Very Course Gravel	64		0	97
Cobble	Small Cobble	90	3	3	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
Bedrock	Bedrock	40096		0	100
Total			114		

Cross-Section 9



e-Table. Raw Pebble Count Survey Data Sheets

Cross Section: 1

Feature: Riffle

Year: Baseline MY1 MY2 MY3 MY4 MY5

Date: NA 11/23/2010 9/15/2012 10/25/2013

Size	Total	Total	Total	Total	Total	Total
.062		75	92	99	75	
.125		1				
.25		1				
0.5		2				
1.0		0	1			
2		0			7	
4.0		2	1		5	
5.7		3			2	
8		0			2	
13		2	1			
16		1	2		2	
22.6		2			3	
32		2		1	2	
45		0	1			
64		1	1			
90		3			2	
128		1	1		2	
180		4			3	
256						
362						
512						
1024						
2048						
40096						
	0	100	100	100	105	0

Cross Section: 2

Feature: Riffle

Year: Baseline MY1 MY2 MY3 MY4 MY5
Date: NA 11/23/2010 9/15/2012 10/25/2013

Size	Total	Total	Total	Total	Total	Total
.062		50	63	89	58	
.125		0	3			
.25		7	1			
0.5		0				
1.0		2				
2		0	1		6	
4.0		2			13	
5.7		0	2		16	
8		1	1		2	
13		6	2	1	7	
16		4	4		2	
22.6		5	9		3	
32		7	2	2	3	
45		0	6		2	
64		8	3	2	1	
90		6	1	5	1	
128		2		1	3	
180					2	
256						
362						
512						
1024						
2048						
40096			2			
	0	100	100	100	119	0

Cross Section: 3

Feature: Pool

Year: Baseline MY1 MY2 MY3 MY4 MY5
Date: NA 11/23/2010 9/16/2012 10/25/2013

Size	Total	Total	Total	Total	Total	Total
.062		28	61	35	38	
.125		0	0	15		
.25		1	13	8		
0.5		6	0	6	10	
1.0		5	7		27	
2		2	0	1	21	
4.0		11	2	2	21	
5.7		3	1		4	
8		4	2	1		
13		6	2	3		
16		3	2	2	1	
22.6		6	1	5	3	
32		6	3	6	1	
45		4	2	5		
64		11	2	2	1	
90		0	3	5	2	
128		4	1	3		
180			1			
256			2			
362						
512				1		
1024						
2048						
40096						

0 100 105 100 129

Cross Section: 4

Feature: Riffle

Year: Baseline MY1 MY2 MY3 MY4 MY5
Date: 4/20/2010 11/23/2010 9/16/2012 10/25/2013

Size	Total	Total	Total	Total	Total	Total
.062	37	36	63	67	20	
.125	1	0	1	24		
.25	2	8	6			
0.5	12	13	2		5	
1.0	5	4	1		10	
2	5	0			13	
4.0	6.0	3			20	
5.7	3	1	3	1	20	
8	0	0		1	12	
13	2	1			7	
16	2	6	2		4	
22.6	3	8		1	2	
32	5	3	3		2	
45	2	6	11	1		
64	7	5	2	2		
90	4	4	3	1	6	
128	3	2	2	2	12	
180	1				3	
256					2	
362					6	
512						
1024						
2048						
40096			1			

100

100

100

100

144

Cross Section: 5

Feature: Pool

Year: Baseline MY1 MY2 MY3 MY4 MY5
Date: NA 11/23/2010 9/16/2012 10/25/2013

Size	Total	Total	Total	Total	Total	Total
.062		7	35	17	17	
.125		0	2			
.25		0	0			
0.5		0	0			
1.0		1	0	1		
2		4	2	3	17	
4.0		9	6	4	38	
5.7		20	3	1	8	
8		12	8		11	
13		10	7	5	9	
16		9	1	5	13	
22.6		5	2	7	10	
32		5	3	8		
45		1	6	9	2	
64		4	5	5		
90		4	2	3		
128		4	3	5	6	
180		2	3	11	4	
256		2	6	16		
362		1	4		6	
512			1			
1024			1			
2048						
40096						

0 100 100 100 141

Cross Section: 6

Feature: Riffle

Year: Baseline MY1 MY2 MY3 MY4 MY5
Date: NA 11/23/2010 9/16/2012 10/25/2013

Size	Total	Total	Total	Total	Total	Total
.062		47	54	67	73	
.125		0	0		6	
.25		4	0		4	
0.5		10	0		4	
1.0		0	0		5	
2		0	0		4	
4.0		0	2	1	8	
5.7		1	0	1	8	
8		3	5	3	9	
13		5	3	1	6	
16		6	10	1	3	
22.6		4	6	4	1	
32		1	5	4	1	
45		7	10	4	2	
64		5	5	3	1	
90		2	1	2	3	
128		5	2	3		
180			2	6	1	
256			1	1	1	
362						
512						
1024						
2048						
40096						

0 100 106 101 140

Cross Section: 7

Feature: Riffle

Year: Baseline MY1 MY2 MY3 MY4 MY5
Date: NA 11/23/2010 9/16/2012 10/25/2013

Size	Total	Total	Total	Total	Total	Total
.062		35	0	44	60	
.125		0	0	1	3	
.25		14	1	1		
0.5		3	21		6	
1.0		1	29		3	
2		0	19			
4.0		6	15	7		
5.7		8	4	1		
8		9	5	7	3	
13		19	4	9	4	
16		12	5	5	2	
22.6		1	3	9	10	
32		1	3	7	13	
45		1	1	4	5	
64		0	0	4	7	
90		1	0		3	
128			1	1	1	
180						
256					2	
362						
512						
1024						
2048						
40096						

0 111 111 100 122

Cross Section: 8

Feature: Riffle

Year: Baseline

MY1

MY2

MY3

MY4

MY5

Date: NA

11/23/2010

9/15/2012

10/25/2013

Size	Total	Total	Total	Total	Total	Total
.062		31	37	18	8	
.125		0			10	
.25		7		1		
0.5		1			8	
1.0		5	3	1	10	
2		0		3		
4.0		5	3	3	16	
5.7		2		7	13	
8		4	2	5	4	
13		5	3	6	4	
16		8	2	5	4	
22.6		9	5	2	6	
32		2	8	6	7	
45		3	12	1	4	
64		4	5	4	4	
90		5	6	10	4	
128		5	7	7	5	
180		0	4	7	3	
256		4	2	2	9	
362			2	2	8	
512					1	
1024						
2048						
40096						

100

101

90

128

Cross Section: 9

Feature: Pool

Year: Baseline MY1 MY2 MY3 MY4 MY5
Date: NA 11/23/2010 9/15/2012 10/25/2013

Size	Total	Total	Total	Total	Total	Total
.062		57	83	88	46	
.125		0				
.25		6	1			
0.5		5				
1.0		1	3			
2		0				
4.0		5			18	
5.7		3			13	
8		4	3	4	6	
13		7		7	8	
16		6	2	7	5	
22.6		2	2	2	6	
32		1			5	
45		1	1		4	
64		0	1			
90		0	1	1	3	
128		0				
180		1				
256		1	2	1		
362				1		
512						
1024			1			
2048						
40096						

100 100 111 114

Table 9.1 Baseline Stream Data Summary
 UT to Bear Creek (NCEEP# 92347) - Northern UT (2,975 feet)

Parameter	Gauge ²	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline						
		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	
Dimension and Substrate - Riffle Only																										
Bankfull Width (ft)	NA				--	15.2	--	--	--	--	--	20.2	--	--	--	--	--	19.0	--	18.3	19.0	18.7	20.3	0.9	4	
Floodprone Width (ft)					--	40.0	--	--	--	--	--	140.0	--	--	--	--	--	100.0	--	100.0	130.0	100.0	220.0	60.0	4	
Bankfull Mean Depth (ft)	NA				--	1.4	--	--	--	--	--	1.4	--	--	--	--	--	1.4	--	1.2	1.4	1.4	1.5	0.1	4	
¹ Bankfull Max Depth (ft)	NA				--	1.7	--	--	--	--	--	1.9	--	--	--	--	--	1.9	--	1.9	2.1	2.2	2.4	0.2	4	
Bankfull Cross Sectional Area (ft ²)	NA				--	20.8	--	--	--	--	--	28.2	--	--	--	--	--	25.8	--	23.0	25.7	25.2	29.5	2.9	4	
Width/Depth Ratio	NA				--	11.0	--	--	--	--	--	14.5	--	--	--	--	--	14.0	--	13.0	14.1	13.9	15.6	1.1	4	
Entrenchment Ratio	NA				--	2.6	--	--	--	--	--	6.9	--	--	--	--	--	5.3	--	4.9	6.9	5.4	11.6	3.2	4	
¹ Bank Height Ratio	NA				--	1.4	--	--	--	--	--	1.0	--	--	--	--	--	1.0	--	1.0	1.0	1.0	1.0	0.0	4	
Profile																										
Riffle Length (ft)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13.9	33.8	35.7	67.0	12.0	21	
Riffle Slope (ft/ft)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.002	0.008	0.006	0.024	0.006	21	
Pool Length (ft)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28.7	58.2	58.7	112.8	18.9	23	
Pool Max depth (ft)					--	2.0	--	--	--	--	--	2.7	--	--	--	--	--	2.7	--	1.8	2.6	2.6	3.7	0.5	23	
Pool Spacing (ft)					25.5	--	--	127.0	--	--	25.0	--	--	104.0	--	--	22.8	114.0	42.6	131.1	103.2	309.1	75.8	22		
Pattern																										
Channel Beltwidth (ft)					41.0	--	--	116.0	--	--	20.0	--	--	77.0	--	--	38.0	--	114.0	28.9	62.5	61.4	112.3	19.4	20	
Radius of Curvature (ft)					21.0	--	--	75.0	--	--	10.2	--	--	13.3	--	--	38.0	--	76.0	31.6	57.5	53.6	98.2	17.5	22	
Rc:Bankfull width (ft/ft)					1.4	--	--	4.9	--	--	0.5	--	--	0.7	--	--	2.0	--	4.0	1.6	2.9	2.7	5.0	0.9	22	
Meander Wavelength (ft)					125.0	--	--	250.0	--	--	94.0	--	--	100.0	--	--	95.0	--	228.0	166.0	227.1	225.8	310.3	34.6	21	
Meander Width Ratio					2.7	--	--	7.7	--	--	1.0	--	--	3.8	--	--	2.0	--	6.0	1.5	3.2	3.1	5.7	1.0	20	
Transport parameters																										
Reach Shear Stress (competency) lb/ft ²								0.53										0.22						0.28		
Max part size (mm) mobilized at bankfull								145										50						80		
Stream Power (transport capacity) W/m ²								3.8										1.15						1.23		
Additional Reach Parameters																										
Rosgen Classification	NA				Degraded E4/F4						C4						C4			C4						
Mean Bankfull Velocity (fps)	NA				4.8						6.2						3.5			3.0						
Bankfull Discharge (cfs)	NA				100						173.7						100			77.0						
Valley length (ft)					2697						--						--			--						
Channel Thalweg length (ft)					2832						--						3132			2975						
Sinuosity (ft)					1.05						1.12						1.13			1.10						
Water Surface Slope (Channel) (ft/ft)	NA				0.0062						0.0077						0.0028			--						
BF slope (ft/ft)	NA				--						--						--			0.003						
³ Bankfull Floodplain Area (acres)					--						--						--			8.19						
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 9.2 Baseline Stream Data Summary
 UT to Bear Creek (NCEEP# 92347) - Southern UT (1,700 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)					--	5.0	--	--	--	--	--	20.2	--	--	--	--	--	8.5	--	7.9	10.7	10.7	13.5	NA	2	
Floodprone Width (ft)					--	14.3	--	--	--	--	--	140.0	--	--	--	--	--	50.0	--	50.0	75.0	75.0	100.0	NA	2	
Bankfull Mean Depth (ft)					--	1.1	--	--	--	--	--	1.4	--	--	--	--	--	0.7	--	0.6	0.6	0.6	0.7	NA	2	
¹ Bankfull Max Depth (ft)					--	1.3	--	--	--	--	--	1.9	--	--	--	--	--	1.1	--	1.2	1.3	1.3	1.4	NA	2	
Bankfull Cross Sectional Area (ft ²)					--	5.2	--	--	--	--	--	28.2	--	--	--	--	--	6.0	--	5.3	6.5	6.5	7.8	NA	2	
Width/Depth Ratio					--	4.7	--	--	--	--	--	14.5	--	--	--	--	--	12.0	--	12.0	17.7	17.7	23.3	NA	2	
Entrenchment Ratio					--	2.9	--	--	--	--	--	6.9	--	--	--	--	--	5.9	--	3.7	8.1	8.1	12.6	NA	2	
¹ Bank Height Ratio					--	1.4	--	--	--	--	--	1.0	--	--	--	--	--	1.0	--	1.0	1.0	1.0	1.0	NA	2	
Profile																										
Riffle Length (ft)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.0	20.9	17.6	40.2	8.9	13	
Riffle Slope (ft/ft)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.004	0.021	0.019	0.046	0.011	13	
Pool Length (ft)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.7	30.9	29.5	53.0	12.8	30	
Pool Max depth (ft)					--	1.7	--	--	--	--	--	2.7	--	--	--	--	--	1.4	--	0.5	1.7	1.7	3.0	0.5	30	
Pool Spacing (ft)					6.8	--	--	21.5	--	--	25.0	--	--	104.0	--	--	10.2	--	51.0	15.9	49.1	41.8	169.3	34.3	29	
Pattern																										
Channel Beltwidth (ft)					25.0	--	--	36.0	--	--	20.0	--	--	77.0	--	--	34.0	--	51.0	16.1	31.1	28.4	96.7	16.0	26	
Radius of Curvature (ft)					5.0	--	--	30.0	--	--	10.2	--	--	13.3	--	--	17.0	--	34.0	15.4	24.7	23.8	35.6	5.5	28	
Rc:Bankfull width (ft/ft)					1.0	--	--	6.1	--	--	0.5	--	--	0.7	--	--	2.0	--	4.0	1.4	2.3	2.2	3.3	0.5	28	
Meander Wavelength (ft)					40.0	--	--	53.0	--	--	94.0	--	--	100.0	--	--	42.5	--	102.0	58.2	99.5	98.9	176.5	22.2	27	
Meander Width Ratio					5.0	--	--	7.3	--	--	1.0	--	--	3.8	--	--	4.0	--	6.0	1.5	2.9	2.6	9.0	1.5	26	
Transport parameters																										
Reach Shear Stress (competency) lb/ft ²																				0.161					0.39	
Max part size (mm) mobilized at bankfull																				36					100	
Stream Power (transport capacity) W/m ²																				0.94					2.07	
Additional Reach Parameters																										
Rosgen Classification																										Degraded E4/F4
Mean Bankfull Velocity (fps)																										4.2
Bankfull Discharge (cfs)																										22
Valley length (ft)																										1542
Channel Thalweg length (ft)																										1635
Sinuosity (ft)																										1.06
Water Surface Slope (Channel) (ft/ft)																										0.0145
BF slope (ft/ft)																										--
³ Bankfull Floodplain Area (acres)																										3.33
⁴ % of Reach with Eroding Banks																										90
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 Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)

UT to Bear Creek (NCEEP# 92347) - Northern UT (2,975 feet)

	Cross Section 1 (N: Riffle)							Cross Section 2 (N: Riffle)							Cross Section 3 (N: Pool)						
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	100	100	100	100	100			100	100	100	100	100			100	100	100	100	100		
Bankfull Width (ft)	18.5	18.4	18.5	20.1	21.2			18.3	18.6	17.9	20.7	20.8			20.0	21.0	19.0	20.1	20.3		
Floodprone Width (ft)	100.0	100.0	100.0	100.0	100.0			100.0	100.0	100.0	100.0	100.0			100.0	100.0	100.0	100.0	100.0		
Bankfull Mean Depth (ft)	1.4	1.4	1.4	1.2	1.2			1.3	1.3	1.3	1.1	1.2			2.2	2.1	2.2	2.3	2.2		
Bankfull Max Depth (ft)	2.2	2.2	2.2	2.1	2.1			2.1	2.0	2.1	1.8	2.0			3.9	3.8	3.9	4.0	3.7		
Bankfull Cross Sectional Area (ft ²)	26.3	25.8	25.5	23.3	23.4			24.0	23.9	23.3	21.7	22.5			44.2	44.8	42.0	45.9	43.9		
Bankfull Width/Depth Ratio	13.0	13.2	13.4	17.4	17.3			13.9	14.4	13.8	19.8	17.3			9.1	9.9	8.6	8.8	9.0		
Bankfull Entrenchment Ratio	5.4	5.4	5.4	5.0	5.0			5.5	5.4	5.6	4.8	4.8			5.0	4.8	5.3	5.0	5.1		
Bankfull Bank Height Ratio	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0	1.0		
Cross Sectional Area between end pins (ft ²)	75.3	76.9	75.7	71.1	72.8			96.9	96.5	91.4	76.9	78.3			119.5	115.9	105.0	84.2	86.2		
d50 (mm)		0.04	0.03	0.03	0.06				0.06	0.05	0.04	0.9				3.5	0.05	0.13	1.1		
	Cross Section 4 (N: Riffle)							Cross Section 5 (N: Pool)							Cross Section 6 (N: Riffle)						
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	100	100	100	100	100			100	100	100	100	100			100	100	100	100	100		
Bankfull Width (ft)	20.3	19.1	20.9	19.6	20.8			22.9	22.2	24.7	25.3	25.4			18.9	19.1	22.8	20.6	21.3		
Floodprone Width (ft)	100.0	100.0	100.0	100.0	100.0			220.0	220.0	220.0	220.0	220.0			220.0	220.0	220.0	220.0	220.0		
Bankfull Mean Depth (ft)	1.5	1.5	1.4	1.4	1.5			1.5	1.6	1.4	1.4	1.4			1.2	1.1	1.2	1.1	1.2		
Bankfull Max Depth (ft)	2.4	2.3	2.3	2.2	2.4			3.8	3.8	3.7	3.7	3.6			1.9	1.9	2.1	1.9	2.0		
Bankfull Cross Sectional Area (ft ²)	29.5	28.0	29.6	26.9	27.9			33.3	34.9	35.6	34.0	34.6			23.0	21.4	26.2	22.9	24.0		
Bankfull Width/Depth Ratio	14.0	13.1	14.8	14.3	13.9			15.7	14.1	17.1	18.8	18.9			15.6	17.0	19.9	18.6	17.8		
Bankfull Entrenchment Ratio	4.9	5.2	4.8	5.1	4.9			9.6	9.9	8.9	8.7	8.7			11.6	11.6	9.6	10.7	10.3		
Bankfull Bank Height Ratio	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0	1.0		
Cross Sectional Area between end pins (ft ²)	115.9	105.0	84.2	50.4	55.8			66.5	59.5	66.6	61.9	63.0			55.9	56.5	51.8	33.2	38.7		
d50 (mm)		0.37	0.37	0.05	4.2				7.42	6.27	30.83	3.95				0.22	0.06	0.05	0.08		

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 10.2 Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)
UT to Bear Creek (NCEEP# 92347) - Southern UT (1,700 feet)

	Cross Section 7 (S: Riffle)						Cross Section 8 (S: Riffle)						Cross Section 9 (S: Pool)					
Based on fixed baseline bankfull elevation¹	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5
Record elevation (datum) used	100	100	100	100	100		100	100	100	100	100		100	100	100	100	100	
Bankfull Width (ft)	13.7	12.2	11.1	10.4	17.4		13.5	17.0	16.3	8.5	16.0		18.5	21.0	23.6	22.7	22.5	
Floodprone Width (ft)	100.0	100.0	100.0	100.0	100.0		50.0	50.0	50.0	50.0	50.0		115.9	105.0	84.2	100.0	100.0	
Bankfull Mean Depth (ft)	0.4	0.5	0.6	0.6	0.7		0.6	0.5	0.5	0.8	0.9		1.1	1.1	1.0	1.1	1.1	
Bankfull Max Depth (ft)	1.3	1.5	1.5	1.5	1.6		1.4	1.5	1.5	1.4	1.6		2.7	2.9	2.9	3.0	3.0	
Bankfull Cross Sectional Area (ft ²)	6.1	6.0	6.2	6.2	6.9		7.8	8.2	8.9	7.0	9.4		20.7	22.9	23.2	23.8	23.0	
Bankfull Width/Depth Ratio	31.1	24.9	19.9	17.7	24.8		23.3	35.5	30.2	10.3	17.8		16.6	19.3	24.0	21.8	20.5	
Bankfull Entrenchment Ratio	7.3	8.2	9.0	9.6	9.6		3.7	2.9	3.1	5.9	3.1		6.1	5.0	3.6	4.2	4.3	
Bankfull Bank Height Ratio	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Cross Sectional Area between end pins (ft ²)	23.7	24.2	23.1	13.5	21.5		42.6	44.2	46.4	26.2	43.8		95.8	93.9	97.2	59.3	59.3	
d50 (mm)		2.8	1.2	3.1	0.1			4.9	16.7	12.2	5.2			0.05	0.04	0.04	3.2	

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 10.3 Monitoring Data - Stream Reach Morphology Data Summary
UT to Bear Creek (NCEEP# 92347) - Northern UT (2,975 feet)**

Parameter	Baseline						MY-1						MY-2						MY-3						MY-4						MY-5					
	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	Min	Mean	Med	Max	SD ⁴	n	Min	Mean	Med	Max	SD ⁴	n
Dimension and Substrate - Riffle only																																				
Bankfull Width (ft)	18.3	19.0	18.7	20.3	0.9	4	18.4	18.8	18.8	19.1	0.3	4	17.9	20.0	19.7	22.8	2.3	4	19.6	20.3	20.4	20.7	0.5	4	19.6	20.3	20.4	20.7	0.5	4						
Floodprone Width (ft)	100	130	100	220	60	4	100	130	100	220	60	4	100	130	100	220	60	4	100	130	100	220	60	4	100	130	100	220	60	4						
Bankfull Mean Depth (ft)	1.2	1.4	1.4	1.5	0.1	4	1.1	1.3	1.3	1.5	0.1	4	1.2	1.3	1.3	1.4	0.1	4	1.1	1.2	1.1	1.4	0.1	4	1.1	1.2	1.2	1.4	0.1	4						
¹ Bankfull Max Depth (ft)	1.9	2.1	2.2	2.4	0.2	4	1.9	2.1	2.1	2.3	0.2	4	2.1	2.2	2.1	2.3	0.1	4	1.8	2.0	2.0	2.2	0.2	4	1.8	2.0	2.0	2.2	0.2	4						
Bankfull Cross Sectional Area (ft ²)	23.0	25.7	25.2	29.5	2.9	4	21.4	24.8	24.9	28.0	2.8	4	23.3	26.1	25.9	29.6	2.6	4	21.7	23.7	23.1	26.9	2.2	4	21.7	23.7	23.1	26.9	2.2	4						
Width/Depth Ratio	13.0	14.1	13.9	15.6	1.1	4	13.1	14.4	13.8	17.0	1.8	4	13.4	15.5	14.3	19.9	3.0	4	14.3	17.5	18.0	19.8	2.4	4	14.3	17.5	18.0	19.8	2.4	4						
Entrenchment Ratio	4.9	6.9	5.4	11.6	3.2	4	5.2	6.9	5.4	11.6	3.1	4	4.8	6.4	5.5	9.6	2.2	4	4.8	6.4	5.0	10.7	2.9	4	4.8	6.4	5.1	10.7	2.9	4						
¹ Bank Height Ratio	1.0	1.0	1.0	1.0	0.0	4	1.0	1.0	1.0	1.0	0.0	4	1.0	1.0	1.0	1.0	0.0	4	1.0	1.0	1.0	1.0	0.0	4	1.0	1.0	1.0	1.0	0.0	4						
Profile																																				
Riffle Length (ft)	13.9	33.8	35.7	67.0	12.0	21	10	30.3	30.0	54.5	12.1	21	9	31.14	28.5	81.5	14.0	25	20	39.6	34.5	73	18.0	22	14.0	45.5	42.8	117.2	20.5	31						
Riffle Slope (ft/ft)	0.002	0.008	0.006	0.024	0.006	21	0.006	0.013	0.009	0.040	0.006	21	0.005	0.01	0.01	0.05	0.01	25	0.003	0.01	0.01	0.02	0.01	22	0.004	0.01	0.01	0.025	0.006	31						
Pool Length (ft)	28.7	58.2	58.7	112.8	18.9	23	22	35.1	32.5	80	15.5	31	22	36.37	34.5	80	16.3	31	26	45.1	38	83	22.5	31	22.9	45.3	41.8	94.6	15.0	32						
Pool Max depth (ft)	1.8	2.6	2.6	3.7	0.5	23	2.3	3.3	3.3	4.1	0.5	31	1.9	3.1	3.1	3.9	0.5	31	2.15	3.2	3.29	4.05	0.51	29	0.41	1.19	1.29	1.92	0.4	32						
Pool Spacing (ft)	42.6	131	103	309	75.8	22	52	92.3	85.5	172	41.7	30	52	91.4	82.8	174	40.7	31	4	99.0	87.5	179	47.3	28	47.5	91.1	83.8	162.7	30.6	31						
Pattern																																				
Channel Beltwidth (ft)	28.86	62.54	61.35	112.3	19.41	20																														
Radius of Curvature (ft)	31.6	57.53	53.58	98.16	17.48	22																														
Rc:Bankfull width (ft/ft)	1.6	2.9	2.7	4.96	0.88	22																														
Meander Wavelength (ft)	166	227.1	225.8	310.3	34.59	21																														
Meander Width Ratio	1.46	3.16	3.1	5.67	0.98	20																														
Additional Reach Parameters																																				
Rosgen Classification	C4						C4						C5						C4						C4											
Channel Thalweg length (ft)	2975						3041						3036						3064						2960											
Sinuosity (ft)	1.1						1.13						1.13						1.14						1.14											
Water Surface Slope (Channel) (ft/ft)	--						0.003						0.004						0.004						0.003											
BF slope (ft/ft)	0.003						0.003						0.003						0.003						0.003											
³ Ri% / Ru% / P% / G% / S%	29	14	56	1	0		21	16	37	9	0		31	16	44	9	0		29.7	11	47.7	11.5	0		30	11	48	12	0							
³ SC% / Sa% / G% / C% / B% / Be%													56	9	28	6	1		62.22	9.667	17.3	10.65	0.167	0	62	10	17	11	0	0						
³ d16 / d35 / d50 / d84 / d95 /													0.022	0.042	1.1383	36.62	96.18		0.025	2.537	5.188	42.24	96.04		0	3	5	42	96							
² % of Reach with Eroding Banks	3						2						2						1						1											
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

**Table 10.4 Monitoring Data - Stream Reach Morphology Data Summary
UT to Bear Creek (NCEEP# 92347) - Southern UT (1,700 feet)**

Parameter	Baseline						MY-1						MY-2						MY-3						MY-4						MY-5					
	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	Min	Mean	Med	Max	SD ⁴	n	Min	Mean	Med	Max	SD ⁴	n
Dimension and Substrate - Riffle only																																				
Bankfull Width (ft)	13.5	13.6	13.6	13.7	--	2	12.2	14.6	14.6	17.0	--	2	11.1	13.7	13.7	16.3	--	2	4.0	7.2	7.2	10.4	--	2	8.5	9.5	9.5	10.4	1.3	2						
Floodprone Width (ft)	50.0	75.0	75.0	100.0	--	2	50.0	75.0	75.0	100.0	--	2	50.0	75.0	75.0	100.0	--	2	50.0	75.0	75.0	100.0	--	2	50.0	75.0	75.0	100.0	35.4	2						
Bankfull Mean Depth (ft)	0.4	0.5	0.5	0.6	--	2	0.5	0.5	0.5	0.5	--	2	0.5	0.6	0.6	0.6	--	2	0.6	0.7	0.7	0.8	--	2	0.6	0.7	0.7	0.8	0.1	2						
¹ Bankfull Max Depth (ft)	1.3	1.3	1.3	1.4	--	2	1.5	1.5	1.5	1.5	--	2	1.5	1.5	1.5	1.5	--	2	1.4	1.4	1.4	1.5	--	2	1.4	1.5	1.5	1.5	0.1	2						
Bankfull Cross Sectional Area (ft ²)	6.1	6.9	6.9	7.8	--	2	6.0	7.1	7.1	8.2	--	2	6.2	7.5	7.5	8.9	--	2	6.2	6.6	6.6	7.0	--	2	6.2	6.6	6.6	7.0	0.6	2						
Width/Depth Ratio	23.3	27.2	27.2	31.1	--	2	24.9	30.2	30.2	35.5	--	2	19.9	25.0	25.0	30.2	--	2	10.3	14.0	14.0	17.7	--	2	10.3	14.0	14.0	17.7	5.2	2						
Entrenchment Ratio	3.7	5.5	5.5	7.3	--	2	2.9	5.6	5.6	8.2	--	2	3.1	6.0	6.0	9.0	--	2	5.9	7.7	7.7	9.6	--	2	5.9	7.8	7.8	9.6	2.6	2						
¹ Bank Height Ratio	1.0	1.0	1.0	1.0	--	2	1.0	1.0	1.0	1.0	--	2	1.0	1.0	1.0	1.0	--	2	1.0	1.0	1.0	1.0	--	2	1.0	1.0	1.0	1.0	0.0	2						
Profile																																				
Riffle Length (ft)	9.0	20.9	17.6	40.2	8.9	13	3.5	10.67	10	24	4.4	27	3.5	11.45	9.75	29	4.85	28	5	15.87	16	31	6.877	23	12.7	48.7	30.9	222.3	51.4	19						
Riffle Slope (ft/ft)	0.004	0.021	0.019	0.046	0.011	13	0.010	0.033	0.037	0.078	0.014	27	0.002	0.03	0.02	0.13	0.018	28	0.004	0.077	0.022	1.006	0.091	23	0.00	0.08	0.02	1.01	0.09	19						
Pool Length (ft)	7.7	30.9	29.5	53.0	12.8	30	7.0	14.7	14.5	25.0	6.9	48	4	14.73	13	34.5	7.398	49	7	19.54	19	40	10.29	39	3.84	20.7	20.0	44.9	9.1	34						
Pool Max depth (ft)	0.5	1.7	1.7	3.0	0.5	30	1.4	1.9	1.9	2.9	0.4	47	1.32	2.1	2.07	3.18	0.396	48	0.911	2.191	2.117	4.037	0.536	39	0.1	0.67	0.58	3.21	0.4	33						
Pool Spacing (ft)	15.9	49.1	41.8	169.3	34.3	29	9.5	33.71	32	112	18.12	47	6.5	33.04	29.25	113.5	17.83	48	4	42.95	33	183	27.78	38	2.5	50.6	41.9	227.6	43.8	33						
Pattern																																				
Channel Beltwidth (ft)	16.1	31.1	28.4	96.7	16.0	26																														
Radius of Curvature (ft)	15.4	24.7	23.8	35.6	5.5	28																														
Rc:Bankfull width (ft/ft)	1.4	2.3	2.2	3.3	0.5	28																														
Meander Wavelength (ft)	58.2	99.5	98.9	176.5	22.2	27																														
Meander Width Ratio	1.5	2.9	2.6	9.0	1.5	26																														
Additional Reach Parameters																																				
Rosgen Classification	C4						C4						C4						C4						C4											
Channel Thalweg length (ft)	1700						1741						1737						1724						1694											
Sinuosity (ft)	1.10						1.13						1.13						1.12						1.12											
Water Surface Slope (Channel) (ft/ft)	--						0.01						0.01						0.01						0.01											
BF slope (ft/ft)	0.01						0.01						0.01						0.009						0.01											
³ Ri% / Ru% / P% / G% / S%	16	12	55	0	0		17	16	42	6	0		22	17	50	11	0		23	21	49	7	0		23	21	49	7	0							
³ SC% / Sa% / G% / C% / B% / Be%													40	23	28	8	1	0	48	3	38	11	1	0	45	12	33	9	1	0						
³ d16 / d35 / d50 / d84 / d95 /													0.16	0.3	6.0	30.96	78		0.03	1.8	5.1	46.9	79		0.03	1.81	6.3	46.91	79							
² % of Reach with Eroding Banks	1						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

APPENDIX E.

HYDROLOGIC DATA

Table 12	Verification of Bankfull Events
Figure 8	Monthly Rainfall Data at SILR Station
Figure 9.1-9.2	Daily Precipitation and Monitoring Well Graphs
Table 13.0	Wetland Hydrology Criteria Attainment
e-Tables	Raw data: Precipitation and Monitoring Wells

Table 12. Bankfull Verification

UT Bear Creek (Weaver/McLeod) - EEP# 92347 - 2013 (MY-4)

Date of Data Collection	SILR Precip or Tick Cr Stream Gage Date of Occurrence	Evaluation Method	Photo # (if available)
30-Apr-13	Feb 22-23, 2013: 1.0" precip at SILR rain gage and 3.25' stage at Tick Creek gage.	SILR precip data from NC CRONOS and Tick Cr stage data from USGS	NA
30-Apr-13	Apr 28-29, 2013: 1.5" precip at SILR rain gage and 3.33' stage at Tick Creek gage.	SILR precip and Tick Cr stage data; crest gauge evaluation; and wrack line observation	next page below Table 13
17-Oct-13	May 20, 2013: 0.9" precip at SILR rain gage and 3.37' stage at Tick Creek gage.	SILR precip and Tick Cr stage data; both water table gages approx 3.0 in above ground level	NA
17-Oct-13	Jun 7, 2013: 1.8" precip at SILR rain gage and 3.72' stage at Tick Creek gage.	SILR precip and Tick Cr stage data; both water table gages 4 to 5 inches above ground level	NA
17-Oct-13	Jun 28-July 1, 2013: 2.2" precip (4 days) at SILR gage & 4.23' stage at Tick Cr gage.	SILR precip and Tick Cr stage data; both water table gages 6+ inches above ground level	NA
17-Oct-13	July 2-3, 2013: 1.7" precip at SILR gage & 4.05' stage at Tick Cr gage.	SILR precip and Tick Cr stage data; both water table gages 6+ inches above ground level	NA

Figure 8. Monthly Total Precipitation (2013) and 30-yr Climate Normal Percentiles.
 UT Bear Creek (Weaver/McLeod) #92347, Chatham County NC -- 2013 (MY4)

Month	2013	1981-2010 Climate Normals, inch		
	Monthly Total, inch	25 percentile	median 50 percentile	75 percentile
JAN	2.97	2.03	3.80	5.28
FEB	3.10	2.28	3.34	4.74
MAR	2.77	2.78	3.92	6.06
APR	3.75	1.86	3.72	4.66
MAY	2.59	2.34	3.81	4.91
JUN	7.28	1.80	3.72	5.35
JUL	4.84	2.92	3.84	5.48
AUG	3.86	2.47	3.73	5.28
SEP	1.88	1.96	3.74	6.57
OCT	1.66	1.99	3.15	4.73
NOV	2.11	2.02	3.06	4.67
DEC	4.18	2.39	3.21	4.16
Year	40.99	26.84	43.04	61.89
SILR Siler City Airport -- 2013 Monthly Rainfall Totals				
Siler City Sta. 317924 -- 30-yr Climate Normal Percentiles				

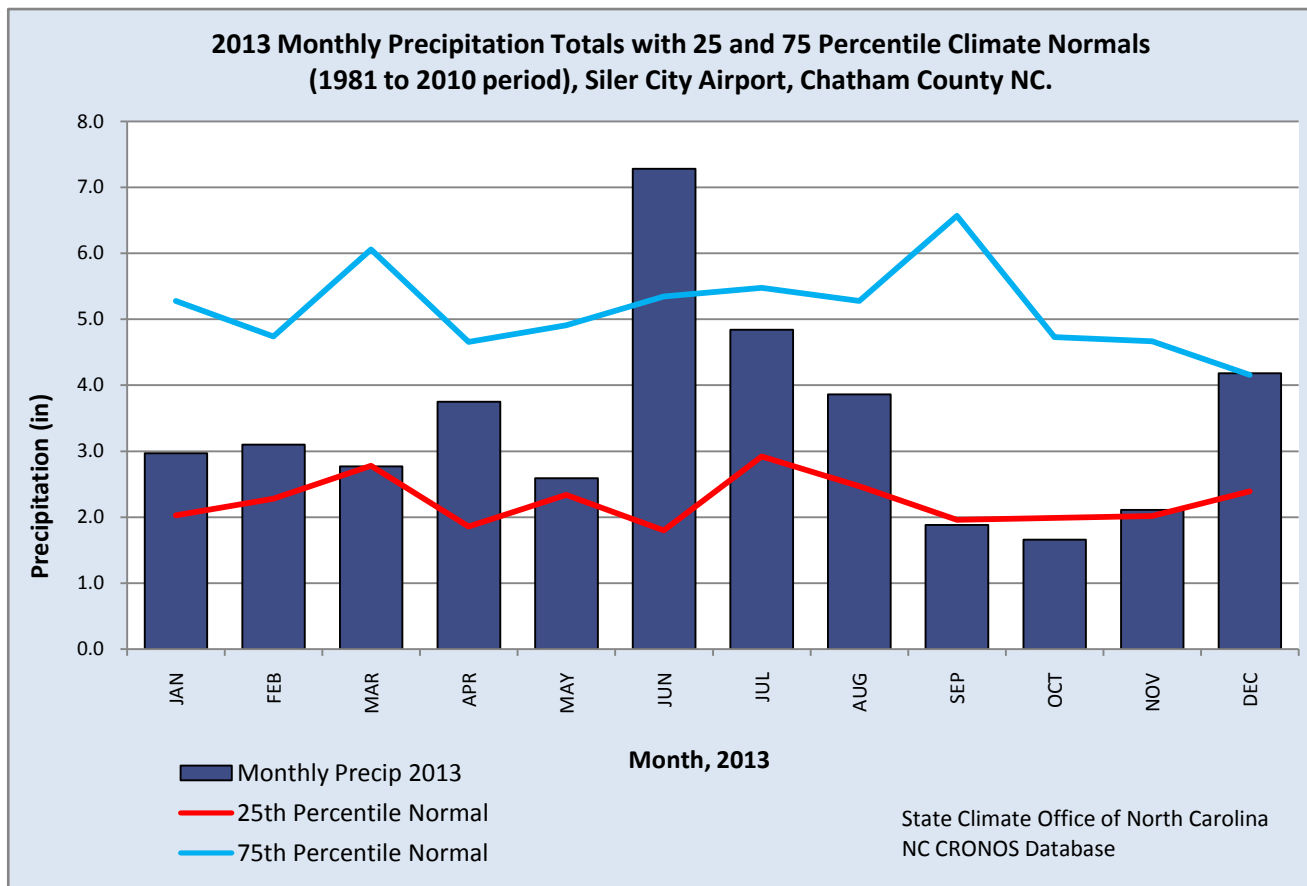


Figure 8.1 UT Bear Creek (EWeaver/McLeod) EEP #92347 -- 2013 (MY4)
Groundwater Monitoring Gauge 9BEA457

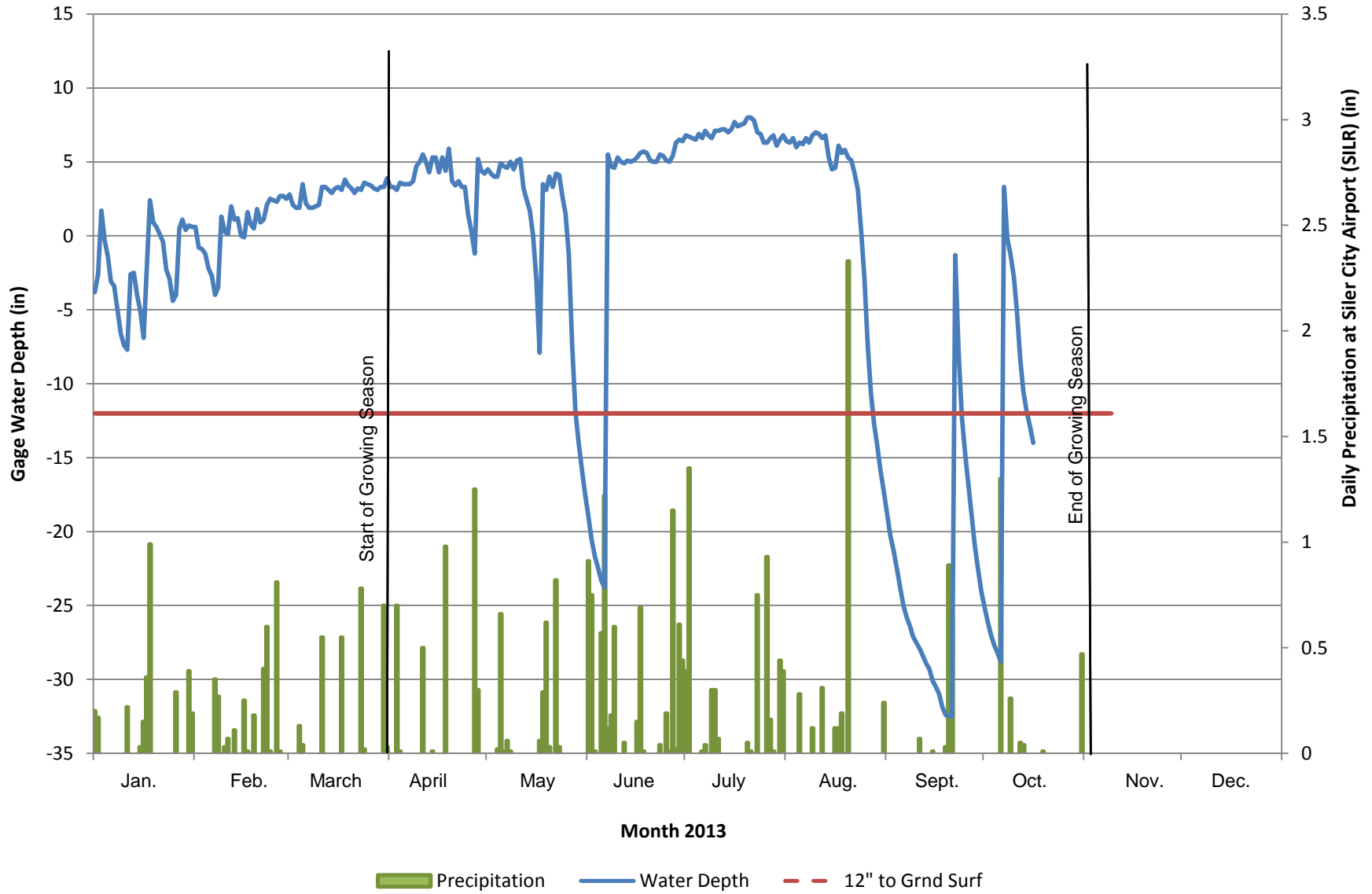
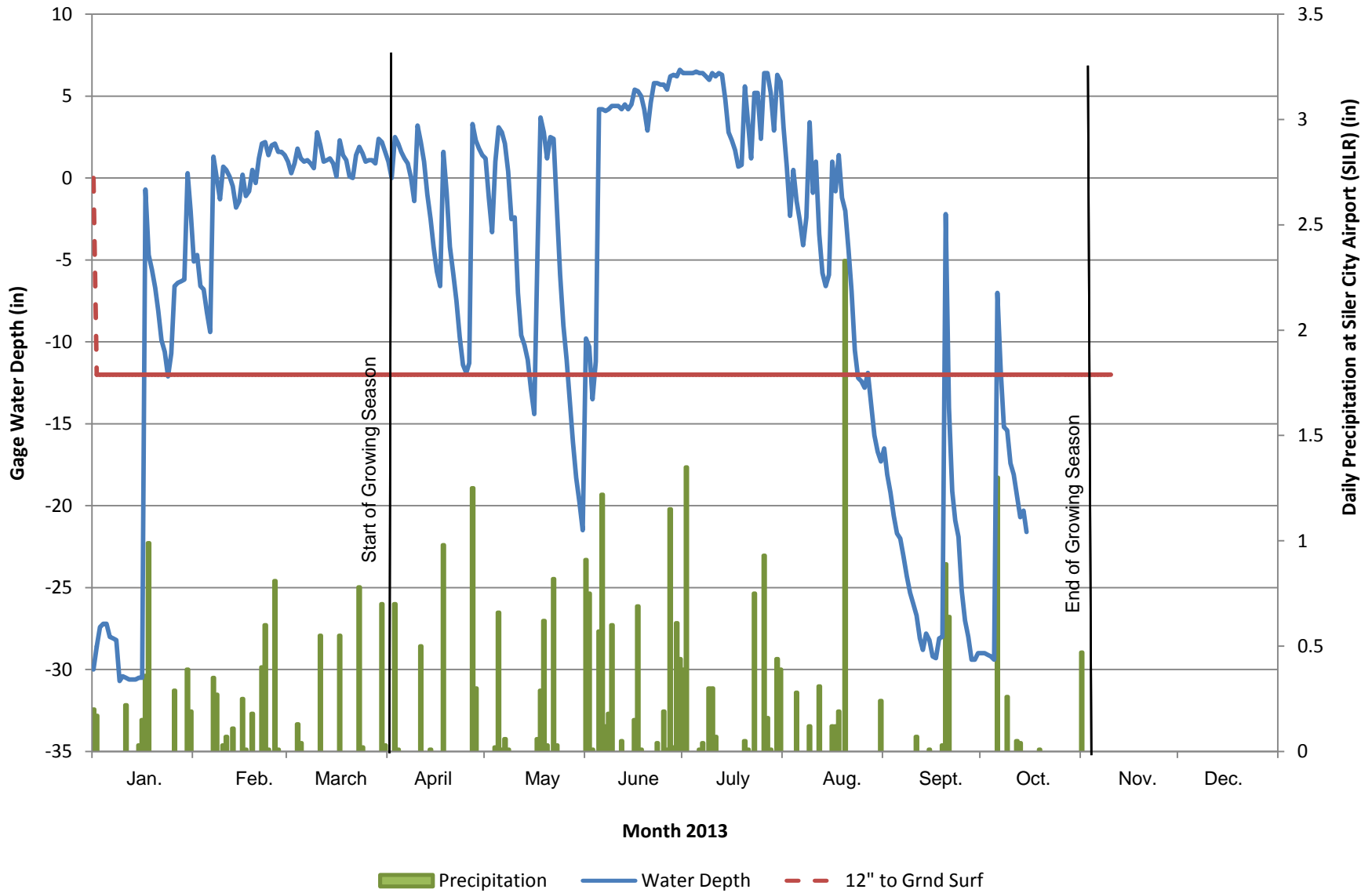


Figure 8.2. UT Bear Creek (Weaver/McLeod) EEP #92347) -- 2013 (MY4)
Groundwater Monitoring Gauge 138BDBD7



e-Table: Raw Data: Groundwater Gages in Wetland, SILR Rain Gage, and Tick Cr Stream Gage.

Wetland WT Gage Height: Blue = WT within 12" from surface
 Daily Precip at SILR Sta #K5W8: Yellow = 1.5 in or more in 24 hr
 Stream Stage at Tick Cr Gage # 02102800: Yellow = 3.2 ft or more
 (High Precip/Stage may correlate with bankfull flow at project site)

Date	RDS Water Table Gages in Wetland, North Trib (in)		Daily Precip (in) at SILR Airport gage (10 mi NW)	Stream Gage Height (ft) at Tick Creek (3.5 mi N)
	09BEA457 (lower, E)	138BDBD7 (upper, W)		
1/1/2013	-3.8	-30.0	0.20	2.13
1/2/2013	-2.6	-28.6	0.17	2.27
1/3/2013	1.7	-27.4	0	2.27
1/4/2013	-0.3	-27.2	0	2.18
1/5/2013	-1.4	-27.2	0	2.14
1/6/2013	-3.1	-28.0	0	2.12
1/7/2013	-3.4	-28.1	0	2.10
1/8/2013	-5.0	-28.2	0	2.09
1/9/2013	-6.6	-30.7	0	2.03
1/10/2013	-7.4	-30.4	0	1.99
1/11/2013	-7.7	-30.5	0.22	2.01
1/12/2013	-2.6	-30.6	0	2.02
1/13/2013	-2.5	-30.6	0	2.02
1/14/2013	-4.0	-30.6	0	2.02
1/15/2013	-5.1	-30.5	0.03	2.01
1/16/2013	-6.9	-30.5	0.15	2.02
1/17/2013	-2.4	-0.7	0.36	2.43
1/18/2013	2.4	-4.7	0.99	3.03
1/19/2013	0.9	-5.6	0	2.48
1/20/2013	0.6	-6.7	0	2.35
1/21/2013	0.1	-8.1	0	2.27
1/22/2013	-0.4	-9.9	0	2.21
1/23/2013	-2.3	-10.6	0	2.17
1/24/2013	-2.9	-12.1	0	2.16
1/25/2013	-4.4	-10.7	0	2.14
1/26/2013	-4.0	-6.6	0.29	2.16
1/27/2013	0.5	-6.4	0	2.20
1/28/2013	1.1	-6.3	0	2.18
1/29/2013	0.4	-6.2	0	2.16
1/30/2013	0.7	0.3	0.39	2.15
1/31/2013	0.6	-2.0	0.19	2.51
2/1/2013	0.6	-5.1	0	2.34
2/2/2013	-0.8	-4.7	0	2.24

Date	RDS Water Table Gages in Wetland, North Trib (in)		Daily Precip (in) at SILR	Stream Gage Height (ft)
	09BEA457 (lower, E)	138BDBD7 (upper, W)	Airport gage (10 mi NW)	at Tick Creek (3.5 mi N)
2/3/2013	-0.9	-6.6	0	2.21
2/4/2013	-1.2	-6.8	0	2.18
2/5/2013	-2.2	-8.2	0	2.16
2/6/2013	-2.7	-9.4	0	2.13
2/7/2013	-4.0	1.3	0.35	2.13
2/8/2013	-3.5	0.0	0.27	2.68
2/9/2013	1.3	-1.3	0	2.44
2/10/2013	0.3	0.7	0.03	2.31
2/11/2013	0.1	0.5	0.07	2.28
2/12/2013	2.0	0.1	0	2.28
2/13/2013	1.1	-0.5	0.11	2.24
2/14/2013	1.2	-1.8	0	2.21
2/15/2013	0.0	-1.4	0	2.19
2/16/2013	-0.1	0.2	0.25	2.22
2/17/2013	1.6	-1.1	0.01	2.31
2/18/2013	0.8	-0.8	0	2.23
2/19/2013	0.5	0.5	0.18	2.22
2/20/2013	1.8	-0.3	0	2.28
2/21/2013	0.9	1.2	0	2.23
2/22/2013	1.1	2.1	0.40	2.34
2/23/2013	2.1	2.2	0.60	3.25
2/24/2013	2.5	1.4	0.01	2.82
2/25/2013	2.4	2.0	0	2.51
2/26/2013	2.3	2.1	0.81	3.10
2/27/2013	2.7	1.6	0.01	2.91
2/28/2013	2.7	1.6	0	2.56
3/1/2013	2.5	1.4	0	2.44
3/2/2013	2.8	1.0	0	2.37
3/3/2013	2.1	0.3	0	2.32
3/4/2013	1.9	0.9	0	2.28
3/5/2013	1.9	1.8	0.13	2.26
3/6/2013	3.5	1.2	0.04	2.32
3/7/2013	2.2	1.0	0	2.26
3/8/2013	1.9	1.1	0	2.22
3/9/2013	1.9	0.9	0	2.21
3/10/2013	2.0	0.6	0	2.19
3/11/2013	2.1	2.8	0	2.18
3/12/2013	3.3	2.0	0.55	2.58
3/13/2013	3.3	1.0	0	2.49
3/14/2013	3.1	1.1	0	2.35

Date	RDS Water Table Gages in Wetland, North Trib (in)		Daily Precip (in) at SILR	Stream Gage Height (ft)
	09BEA457 (lower, E)	138BDBD7 (upper, W)	Airport gage (10 mi NW)	at Tick Creek (3.5 mi N)
3/15/2013	2.9	1.2	0	2.28
3/16/2013	3.2	0.9	0	2.26
3/17/2013	3.3	0.1	0	2.23
3/18/2013	3.1	2.3	0.55	2.22
3/19/2013	3.8	1.4	0	2.69
3/20/2013	3.4	1.1	0	2.42
3/21/2013	3.2	0.1	0	2.34
3/22/2013	2.9	0.0	0	2.27
3/23/2013	3.2	1.4	0	2.24
3/24/2013	3.1	1.9	0.78	2.57
3/25/2013	3.6	1.5	0.02	2.76
3/26/2013	3.5	1.0	0	2.47
3/27/2013	3.4	1.1	0	2.37
3/28/2013	3.2	1.1	0	2.32
3/29/2013	3.1	0.9	0	2.28
3/30/2013	3.3	2.4	0	2.26
3/31/2013	3.3	2.2	0.70	2.36
4/1/2013	3.9	1.6	0.03	2.52
4/2/2013	3.3	1.0	0	2.39
4/3/2013	3.3	0.0	0	2.32
4/4/2013	3.1	2.5	0.70	2.43
4/5/2013	3.6	2.1	0.01	3.06
4/6/2013	3.5	1.6	0	2.57
4/7/2013	3.5	1.2	0	2.44
4/8/2013	3.5	0.9	0	2.38
4/9/2013	3.7	0.0	0	2.34
4/10/2013	4.7	-1.4	0	2.30
4/11/2013	5.0	3.2	0	2.28
4/12/2013	5.5	2.2	0.50	2.75
4/13/2013	5.0	1.0	0	2.51
4/14/2013	4.3	-1.0	0	2.37
4/15/2013	5.3	-2.5	0.01	2.31
4/16/2013	5.3	-4.2	0	2.28
4/17/2013	4.3	-5.7	0	2.26
4/18/2013	5.3	-6.6	0	2.25
4/19/2013	4.4	1.6	0.98	2.30
4/20/2013	5.9	-0.9	0	2.56
4/21/2013	3.7	-4.2	0	2.33
4/22/2013	3.4	-5.8	0	2.26
4/23/2013	3.7	-7.5	0	2.23

Date	RDS Water Table Gages in Wetland, North Trib (in)		Daily Precip (in) at SILR	Stream Gage Height (ft)
	09BEA457 (lower, E)	138BDBD7 (upper, W)	Airport gage (10 mi NW)	at Tick Creek (3.5 mi N)
4/24/2013	3.3	-9.7	0	2.22
4/25/2013	3.3	-11.4	0	2.20
4/26/2013	1.4	-11.9	0	2.17
4/27/2013	0.3	-11.3	0	2.15
4/28/2013	-1.2	3.3	1.25	2.19
4/29/2013	5.2	2.3	0.30	3.33
4/30/2013	4.4	1.8	0	2.62
5/1/2013	4.2	1.4	0	2.44
5/2/2013	4.5	1.2	0	2.36
5/3/2013	4.2	-1.2	0	2.31
5/4/2013	4.0	-3.3	0	2.26
5/5/2013	4.0	1.0	0.02	2.23
5/6/2013	4.9	3.1	0.66	2.50
5/7/2013	4.7	2.8	0.01	3.06
5/8/2013	4.6	2.1	0.06	2.54
5/9/2013	5.0	0.4	0.01	2.41
5/10/2013	4.5	-2.5	0	2.32
5/11/2013	5.1	-2.4	0	2.25
5/12/2013	5.2	-7.0	0	2.22
5/13/2013	3.2	-9.6	0	2.19
5/14/2013	2.4	-10.2	0	2.16
5/15/2013	1.7	-11.1	0	2.14
5/16/2013	0.0	-12.9	0	2.12
5/17/2013	-3.0	-14.4	0	2.10
5/18/2013	-7.9	-4.4	0.06	2.13
5/19/2013	3.5	3.7	0.29	2.19
5/20/2013	3.1	2.8	0.62	3.37
5/21/2013	4.0	1.2	0.03	2.86
5/22/2013	3.3	2.5	0	2.48
5/23/2013	4.2	2.4	0.82	2.80
5/24/2013	4.1	-1.8	0.03	2.72
5/25/2013	2.6	-5.9	0	2.42
5/26/2013	1.5	-9.0	0	2.30
5/27/2013	-1.3	-11.1	0	2.24
5/28/2013	-7.3	-13.7	0	2.22
5/29/2013	-11.8	-16.1	0	2.18
5/30/2013	-14.0	-18.3	0	2.15
5/31/2013	-15.8	-19.8	0	2.12
6/1/2013	-17.5	-21.5	0	2.09
6/2/2013	-19.0	-9.8	0.91	2.08

Date	RDS Water Table Gages in Wetland, North Trib (in)		Daily Precip (in) at SILR	Stream Gage Height (ft)
	09BEA457 (lower, E)	138BDBD7 (upper, W)	Airport gage (10 mi NW)	at Tick Creek (3.5 mi N)
6/3/2013	-20.6	-10.3	0.75	2.18
6/4/2013	-21.7	-13.5	0.01	2.21
6/5/2013	-22.5	-11.2	0	2.14
6/6/2013	-23.3	4.2	0.57	2.16
6/7/2013	-23.8	4.2	1.22	3.72
6/8/2013	5.5	4.1	0.12	3.45
6/9/2013	4.7	4.2	0.18	2.64
6/10/2013	4.6	4.4	0.60	2.74
6/11/2013	5.3	4.4	0	2.68
6/12/2013	5.0	4.4	0	2.42
6/13/2013	4.9	4.2	0.05	2.33
6/14/2013	5.1	4.5	0	2.27
6/15/2013	5.0	4.2	0	2.24
6/16/2013	5.1	4.5	0	2.22
6/17/2013	5.3	5.4	0.15	2.22
6/18/2013	5.6	5.3	0.69	2.34
6/19/2013	5.7	5.0	0.01	2.60
6/20/2013	5.6	4.2	0	2.29
6/21/2013	5.1	2.9	0	2.20
6/22/2013	5.0	4.6	0	2.15
6/23/2013	5.0	5.8	0	2.16
6/24/2013	5.5	5.8	0.04	2.15
6/25/2013	5.4	5.7	0	2.13
6/26/2013	5.1	5.7	0.19	2.14
6/27/2013	5.0	5.4	0.01	2.21
6/28/2013	5.4	6.2	1.15	2.20
6/29/2013	6.3	6.3	0.02	3.30
6/30/2013	6.5	6.2	0.61	3.06
7/1/2013	6.4	6.6	0.44	4.23
7/2/2013	6.8	6.4	0.39	3.07
7/3/2013	6.7	6.4	1.35	4.05
7/4/2013	6.6	6.4	0	3.32
7/5/2013	6.5	6.4	0	2.71
7/6/2013	6.9	6.5	0	2.52
7/7/2013	6.6	6.4	0.01	2.42
7/8/2013	7.1	6.4	0.04	2.35
7/9/2013	6.8	6.2	0	2.31
7/10/2013	6.6	6.0	0.30	2.27
7/11/2013	7.1	6.4	0.30	2.29
7/12/2013	7.1	6.2	0.07	2.48

Date	RDS Water Table Gages in Wetland, North Trib (in)		Daily Precip (in) at SILR	Stream Gage Height (ft)
	09BEA457 (lower, E)	138BDBD7 (upper, W)	Airport gage (10 mi NW)	at Tick Creek (3.5 mi N)
7/13/2013	7.2	6.4	0	2.34
7/14/2013	7.2	6.3	0	2.29
7/15/2013	7.0	4.8	0	2.24
7/16/2013	7.2	2.8	0	2.20
7/17/2013	7.7	2.3	0	2.18
7/18/2013	7.4	1.7	0	2.17
7/19/2013	7.5	0.7	0	2.14
7/20/2013	7.6	0.8	0	2.12
7/21/2013	8.0	5.6	0.05	2.11
7/22/2013	8.0	3.5	0.01	2.10
7/23/2013	7.8	1.2	0	2.08
7/24/2013	7.0	5.2	0.75	2.06
7/25/2013	6.9	5.2	0	2.17
7/26/2013	6.3	2.4	0	2.17
7/27/2013	6.3	6.4	0.93	2.12
7/28/2013	6.6	6.4	0.16	2.21
7/29/2013	6.8	5.2	0.01	2.28
7/30/2013	6.1	2.9	0	2.18
7/31/2013	6.5	6.3	0.44	2.12
8/1/2013	6.8	5.9	0.39	2.27
8/2/2013	6.4	3.1	0	2.22
8/3/2013	6.3	0.7	0	2.17
8/4/2013	6.6	-2.3	0	2.13
8/5/2013	6.0	0.5	0	2.05
8/6/2013	6.3	-1.4	0.28	1.97
8/7/2013	6.2	-2.6	0	1.96
8/8/2013	6.6	-4.1	0	1.92
8/9/2013	6.3	-2.4	0	1.89
8/10/2013	6.8	3.4	0.12	1.90
8/11/2013	7.0	-0.9	0	2.02
8/12/2013	6.9	1.0	0	2.00
8/13/2013	6.6	-3.4	0.31	2.13
8/14/2013	6.8	-5.8	0	2.07
8/15/2013	5.3	-6.6	0	1.95
8/16/2013	4.5	-5.9	0	1.90
8/17/2013	4.6	1.0	0.12	1.88
8/18/2013	6.1	-0.8	0.12	1.91
8/19/2013	5.6	1.4	0.19	1.92
8/20/2013	5.8	-1.2	0	1.99
8/21/2013	5.3	-2.0	2.33	2.01

Date	RDS Water Table Gages in Wetland, North Trib (in)		Daily Precip (in) at SILR	Stream Gage Height (ft)
	09BEA457 (lower, E)	138BDBD7 (upper, W)	Airport gage (10 mi NW)	at Tick Creek (3.5 mi N)
8/22/2013	5.1	-4.4	0	2.14
8/23/2013	4.2	-6.9	0	2.08
8/24/2013	3.1	-10.5	0	2.01
8/25/2013	0.3	-12.2	0	1.94
8/26/2013	-2.9	-12.4	0	1.93
8/27/2013	-7.4	-12.8	0	1.90
8/28/2013	-10.7	-11.9	0	1.87
8/29/2013	-12.8	-13.8	0	1.87
8/30/2013	-14.2	-15.7	0	1.88
8/31/2013	-15.9	-16.7	0	1.88
9/1/2013	-17.3	-17.3	0.24	1.89
9/2/2013	-18.8	-16.5	0	1.92
9/3/2013	-20.3	-18.1	0	1.92
9/4/2013	-21.3	-19.2	0	1.91
9/5/2013	-22.5	-20.6	0	1.91
9/6/2013	-23.8	-21.7	0	1.89
9/7/2013	-25.0	-22.0	0	1.89
9/8/2013	-25.8	-23.1	0	1.89
9/9/2013	-26.4	-24.3	0	1.87
9/10/2013	-27.1	-25.3	0	1.85
9/11/2013	-27.5	-26.0	0	1.83
9/12/2013	-27.9	-26.7	0.07	1.79
9/13/2013	-28.4	-28.1	0	1.70
9/14/2013	-28.9	-28.8	0	1.68
9/15/2013	-29.3	-27.8	0	1.68
9/16/2013	-30.1	-28.2	0.01	1.71
9/17/2013	-30.5	-29.2	0	1.71
9/18/2013	-31.0	-29.3	0	1.71
9/19/2013	-31.9	-28.1	0	1.71
9/20/2013	-32.4	-28.0	0.03	1.70
9/21/2013	-32.5	-2.2	0.89	1.72
9/22/2013	-32.5	-14.0	0.64	2.04
9/23/2013	-1.3	-19.1	0	1.80
9/24/2013	-7.8	-20.9	0	1.73
9/25/2013	-12.2	-21.9	0	1.70
9/26/2013	-14.7	-25.2	0	1.65
9/27/2013	-16.8	-27.0	0	1.62
9/28/2013	-18.9	-28.0	0	1.61
9/29/2013	-21.0	-29.4	0	1.60
9/30/2013	-22.6	-29.4	0	1.60

Date	RDS Water Table Gages in Wetland, North Trib (in)		Daily Precip (in) at SILR Airport gage (10 mi NW)	Stream Gage Height (ft) at Tick Creek (3.5 mi N)
	09BEA457 (lower, E)	138BDBD7 (upper, W)		
10/1/2013	-24.0	-29.0	0	1.60
10/2/2013	-25.1	-29.0	0	1.61
10/3/2013	-26.1	-29.0	0	1.63
10/4/2013	-27.0	-29.1	0	1.64
10/5/2013	-27.7	-29.2	0	1.64
10/6/2013	-28.2	-29.4	0	1.66
10/7/2013	-28.8	-7.0	1.3	1.93
10/8/2013	3.3	-11.7	0	2.18
10/9/2013	-0.2	-15.2	0	2.04
10/10/2013	-1.3	-15.4	0.26	1.91
10/11/2013	-2.8	-17.4	0	1.87
10/12/2013	-5.1	-18.1	0	1.82
10/13/2013	-8.3	-19.4	0.05	1.77
10/14/2013	-10.6	-20.7	0.04	1.76
10/15/2013	-11.9	-20.3	0	1.76
10/16/2013	-12.9	-21.6	0	1.76
10/17/2013	-14.0		0	1.78
10/18/2013			0	1.91
10/19/2013			0	1.96
10/20/2013			0.01	2.00
10/21/2013			0	2.01
10/22/2013			0	1.93
10/23/2013			0	1.74
10/24/2013			0	1.72
10/25/2013			0	1.71
10/26/2013			0	1.73
10/27/2013			0	1.78
10/28/2013			0	1.85
10/29/2013			0	1.90
10/30/2013			0	1.95
10/31/2013			0	1.98
11/1/2013			0.47	2.04

Wetland WT Gage Height: Blue = WT within 12" from surface
Daily Precip at SILR Sta #K5W8: Yellow = 1.5 in or more in 24 hr
Stream Stage at Tick Cr Gage # 02102800: Yellow = 3.2 ft or more
(High Precip/Stage may correlate with bankfull flow at project site)

Table 13. Wetland Gauge Attainment Data					
UT Bear Creek (Weaver/McLeod) EEP# 92347 - 2013 (MY-4)					
Gauge	Success Criteria Achieved/Max Consecutive Days during Growing Season (Percent of 216-day Growing Season in Chatham County)				
	Year 1 (2010)	Year 2 (2011)	Year 3 (2012)	Year 4 (2013)	Year 5 (2014)
09BEA457	No/21 days (9.7%)	Yes/37 days (17.1%)	Yes/28 days (13.0%)	Yes/82 days (38.0%)	
138BDBD7	No/20 days (9.2%)	Yes/43 days (19.9%)	Yes/30 days (13.8%)	Yes/80 days (37.0%)	



North Trib - Matted vegetation and wrack lines on floodplain, 30 Apr 2013



South Trib - Matted vegetation and wrack lines on floodplain, 30 Apr 2013