Newfound Creek Stream Restoration
2012 Final Monitoring Report
Monitoring Year One

Ecosystem Enhancement Program Project Number 92497

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NCDENR-Ecosystem Enhancement Program
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Ecosystem Enhancement PROGRAM

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2012 Final Monitoring Report
Monitoring Year One

Ecosystem Enhancement Program Project Number 92497

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June 17, 2013

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1.0 EXECUTIVE SUMMARY/PROJECT ABSTRACT

The overall restoration strategy/approach was to restore and enhance the site through the use of pattern changes and in-stream structures that will provide grade control, enhance stability, promote efficient sediment transport, and produce/enhance in-stream habitat. A buffer was planted along the stream banks to help stabilize the banks. The buffer is also intended to enhance water quality through root filtration and shading, while also providing habitat for amphibians, reptiles, small mammals, and birds.

The goals of the project include:

- Reducing erosion from within the project study area.
- Restoring a channel that is able to properly transport watershed flows and sediment loads efficiently.
- Improving aquatic habitat.
- Enhancing wildlife habitat.
- Improving overall water quality.

The objectives of the proposed project include:

- Stabilizing eroding stream banks and headcuts.
- Restoring the stream channels to a proper dimension, pattern, and profile.
- Providing the stream channels with adequate flood prone area.
- Establishing a more diverse bed morphology with riffle-pool sequences supported by in-stream structures, and by providing a source for woody debris and leaf litter by planting a native riparian buffer.
- Creating riparian corridors.
- Reducing direct inputs of nutrients and fecal coliform by excluding livestock from the stream channels and providing livestock with alternative sources of drinking water.
- Reducing nutrient and sediment inputs to the stream from the agricultural fields by providing a native riparian buffer.

As an important part of this project, North Carolina Ecosystem Enhancement Program (NCEEP) contracted with the Buncombe Soil and Water Conservation District (SWCD) to prepare a Farm Conservation Plan that identified and implemented agricultural and livestock Best Management Practices (BMPs) important for improving water quality. The farm plan and associated BMPs are intended to address water quality issues along Newfound Creek and unnamed tributaries through practices such as livestock exclusion, stabilizing heavy use areas, and enabling alternative watering systems, which will all help to ensure the long-term success of the Newfound Creek Stream Restoration Project. This farm plan included BMPs related to livestock watering (21 tanks and 2 drilled wells), fencing (21,000 linear feet), and stock trails (4,000 linear feet). All installed BMPs meet the standards and specifications of either the US Department of Agriculture Natural Resources Conservation Service Technical Guide or the Soil and Water Conservation Commission standards.

The Newfound Creek Stream Restoration site is located off of Browntown Road in western Buncombe County, North Carolina, in the Newfound Community near the town of Leicester (Figure 1). Newfound Creek and its unnamed tributaries are located in the French Broad River Basin, US Geological Survey (USGS) cataloging unit 06010105, hydrologic unit 06010105090020, and NC Division of Water Quality (NCDWQ) subbasin 04-03-02. The total watershed area is 10.3 square miles and is characterized by steep slopes leading to a broad bottomland valley. The dominant land use in the watershed is forest, primarily on the surrounding ridges and steep slopes. As the slopes decrease, agricultural land uses increase. The majority of the valley floor has been cleared and is being used for agricultural and residential practices. The land uses directly adjacent to the project site are agricultural and residential. The conservation easement is bordered by agricultural fields that support beef cattle and row crops (mainly tomatoes). Prior to restoration, farming activities occurred right up to the streambank (including cattle access to the channel). Drainage ditches around the row crops discharged directly into Newfound Creek, and appeared to carry a large sediment load. Marjorie Lynn Brown owns all of the land bordering the conservation easement.

The project consists of a portion of Newfound Creek and six unnamed tributaries situated within 25.33 acres of Permanent Conservation Easement held by the State of North Carolina. The restored portion of Newfound Creek and six unnamed tributaries total 11,020 linear feet (Figure 2). The tributaries identified for this project are designated as: Tributary 3, Tributary 4, Tributary 5, Tributary 6, Tributary 7, and Tributary 8. Tributaries 3 through 6 and 8 flow directly into Newfound Creek. Tributary 7 flows into Round Hill Branch upstream of its confluence with Newfound Creek. The stream restoration project design was broken into 29 reaches (Figure 3). The six unnamed tributaries and mainstem (upstream and downstream of Newfound Road) will be used for monitoring purposes.

Tributaries 1 and 2 are located on an adjacent property and were initially considered for inclusion in the project. These tributaries were subsequently dropped from the project and do not enter the current Project Study Area. The original numbering of tributaries used in the early stages of project development has been maintained throughout the life of the project for consistency.

2012 Monitoring Year (MY) 1 monitoring indicates that the planted woody vegetation is doing fair at the site. The site-wide average stem count is 431 stems/acre. Four of the 14 planted plots are not meeting the success criteria of 320 stems/acre at MY3 (plots 2, 4, 6, and 12). Two of the plots are barely meeting the criteria (plots 5 and 7). The streamside and floodplain zones are generally in better health than upland areas. Tributaries with steep slopes seem to be the most problematic. For example, the slopes along Tributary 8 are generally in poor condition and appear to support only herbaceous growth. Streamside survival appears to be the most successful. The banks of some of the smaller tributaries have filled in with a dense mat of Juncus. This is most notable within Tributary 4, Reach B and G and Tributary 7, Reach B.

Chinese privet (*Ligustrum sinense*) was noted along Tributaries 4 and 5. While it is not problematic at this time, left untreated, it may encroach the entire site. The presence and abundance of privet will be monitored each year and any notable changes will be documented.

In MY1 the Newfound Creek Stream Restoration project is functioning well and has continued to improve and evolve since construction. The majority of the bed features appear stable with well-developed pools in the meander bends and long riffles in the straight reaches. Structures appear to be holding grade throughout the project. The main channel does have a few areas of raw bank that have been noted for future re-assessment.

Overall, the site is doing well. The fences that were constructed to exclude cattle are all in good condition. It was noted that the cross lines at the upper crossing on the mainstem at station 3+25 were down and the gate was open at the time of the field survey. However, no evidence of cows within the easement was observed. It appeared as if the adjacent pasture was no longer used for grazing.

Summary information/data related to the occurrence of such things as beaver or encroachment, and statistics related to performance of various project and monitoring elements can be found in the Newfound Creek Stream Restoration Mitigation Report (2012) 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

All monitoring methodologies follow the June 2012 *Procedural Guidance and Content Requirements for EEP Monitoring Reports* provided by EEP (EEP 2012). Photographs were taken at high resolution using a Nikkon Coolpix 8.0 megapixel digital camera. Coordinate information was collected in 2012 during the As-Built survey using a Topcon GTS 225 Total Station by Kee Mapping and Surveying. Stream and vegetation problem areas were noted in the field on As-Built Plan Sheets (URS 2012). Permanent photo station photographs were taken from locations established during initial monitoring set-up, recorded by Kee Mapping and Surveying, and are shown on As-Built Plan Sheets.

2.1 STREAM METHODOLOGY

The methods used to generate the data in this report are standard fluvial geomorphology techniques as described in *Applied River Morphology* (Rosgen 1996) and related publications from US Forest Service and the interagency Stream Mitigation Guidelines (USACE 2003). URS' field morphology survey was conducted using a VRS Total Station and the data were analyzed and displayed using the Reference Reach Spreadsheet, Version 4.2T (Mecklenburg 2006). The entirety of the Newfound Creek Stream Restoration site was surveyed during MY 1. A total of 10,388 linear feet of survey was conducted across the eight reaches. Newfound Creek upstream of Browntown Road included 2,587 linear feet; Newfound Creek downstream of Browntown Road included 2,516 linear feet; Tributary 3 included 1,204 linear feet; Tributary 4 included 1,911 linear feet; Tributary 5 included 630 linear feet; Tributary 6 included 732 linear feet; Tributary 7 included 430 linear feet, and Tributary 8 included 378 linear feet. The longitudinal stationing was taken directly from the VRS Total Station data. Pebble counts were conducted by sampling a total of 100 pebbles from the feature of the cross section (the entire riffle or pool). According to the most recent guidance issued in Rosgen courses, the pebble count was concentrated within the wetted perimeter of the channel and did not include the banks. Photographs were taken at each of the 28 cross sections. A photo was taken from the left bank towards the right bank and from the right bank towards the left bank. Bankfull curve

relationships were derived from *Bankfull Hydraulic Geometry Relationships for North Carolina Stream* (Harmon *et al* 1999).

2.2 VEGETATION METHODOLOGY

According to the 2008, Version 4.2 CVS-EEP Protocol for Recording Vegetation (Lee *et al* 2008), the Newfound Creek Stream Restoration Project requires the monitoring of 14 vegetation plots. These plots were established during initial monitoring set-up in 2012 and are shown on the As-Built Plan Sheets.

Vegetation monitoring methods followed the 2008, Version 4.2 CVS-EEP Protocol for Recording Vegetation (http://cvs.bio.unc.edu/methods.htm). Vegetation plot photographs were collected at the southwest corner of each vegetation plot. Vegetation monitoring plots were re-marked in the field by replacing all old flagging with new flagging. URS placed orange flagging at the southwest corner of each vegetation plot and blue flagging at the remaining corners. Planted stems were flagged in white. Volunteer/natural regeneration stems were inventoried, but not flagged. Monitoring taxonomy follows 'Flora of the Carolinas, Virginia, Georgia, and Surrounding Areas' (Weakley 2007). Stem height was measured with a folding one-meter rule. Diameter at breast height (when applicable) was measured with calipers.

3.0 REFERENCES

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1.5, adopted June 8, 2012. NCDENR, NCEEP. 47pp.

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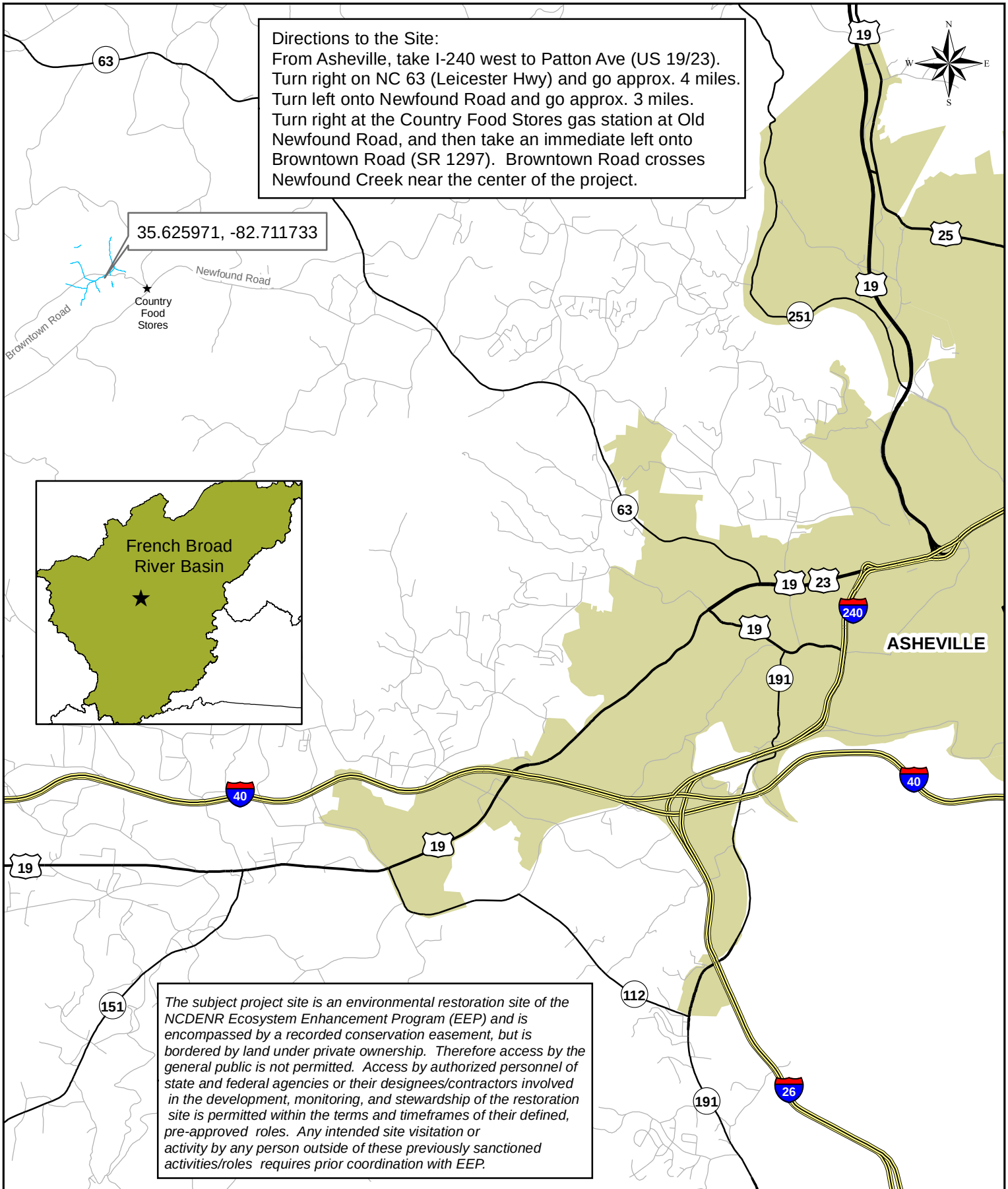
Weakley, A.S. 2007. Flora of the Carolinas, Virginia, Georgia, and surrounding Areas. Working Draft as of 11 January 2007. UNC Herbarium. North Carolina Botanical Garden. UNC at Chapel Hill.

NC CRONOS. 2013. NC Climate Retrieval and Observations Network of the Southeast. State Climate Office of North Carolina. Station NC-BC-14 – Leicester 2 SE. http://www.nc-climate.ncsu.edu/cronos.

Appendices for Project Background, Condition, and Performance Data

Appendix A: Project Vicinity Map and Background Tables



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. 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, monitoring, and stewardship of the restoration site is permitted within the terms and timeframes of their defined, pre-approved roles. Any intended site visitation or activity by any person outside of these previously sanctioned activities/roles requires prior coordination with EEP.

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Prepared For:
NC Ecosystem Enhancement Program

Project: Newfound Creek Stream Restoration
Buncombe County, NC
CU 06010105

Project Number: 92497

Date: June 2013

Legend
- Project Reach
- Interstate
- US Hwy
- NC Hwy
- Local Road
- Municipal Boundary

Figure 1
Project Vicinity

0 1 2 Miles

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Enhancement Program
Ecosystem Enhancement Program

Project: Newfound Creek
Stream Restoration
Buncombe County, NC
CU 06010105

Project Number: 92497

Date: June 2013

Legend
- Project Reach
- Conservation Easement
- Municipal Boundary

Figure 2
Project Site
0 250 500 1,000 Feet
North Carolina 2010 Ortho Imagery

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NC Ecosystem Enhancement Program

Project: Newfound Creek Stream Restoration
Buncombe County, NC
CU 06010105

Project Number: 92497

Date: June 2013

Legend
Wetland
Conservation Easement

Figure 3
Restoration Reaches
0 250 500 1,000 Feet
North Carolina 2010 Ortho Imagery

Table 1: Project Components and Mitigation Credits

Newfound Creek Stream Restoration Project									
EEP Project Number 92497									
Mitigation Credits									
	Stream		Riparian Wetland		Non-riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Totals	**7,998**			**0.35**					

Project Components

Project Component -or- Reach ID	Stationing/Location	Existing Footage or Acreage	Approach (Restoration, Enhancement, etc.)	Level (P1, P2, P3, EI, EII etc)	Restoration Footage or Acreage	Mitigation Ratio
Mainstem A	0+00 - 2+95	450	Enhancement	E I	295	1.5 to 1
Mainstem B/C	2+95 - 20+10	1,050	Restoration	P2	1,715	1 to 1
Mainstem D	20+10 - 20+90	500	Enhancement	E I	80	1.5 to 1
Mainstem D/E	21+80 - 29+15	1,300	Enhancement	E I	735	1.5 to 1
Mainstem F	29+15 - 45+00	1,100	Restoration	P2	1,585	1 to 1
Tributary 3A	0+00 - 2+95	300	Enhancement	E I	295	1.5 to 1
Tributary 3B	3+73 - 11+25	760	Restoration	P2	752	1 to 1
Tributary 4B	0+00 - 2+25	225	Restoration	P2	225	1 to 1
Tributary 4C	2+25 - 5+25	350	Enhancement	E I	300	1.5 to 1
Tributary 4D	5+25 - 9+70	425	Enhancement	E II	445	2.5 to 1
Tributary 4E	9+70 - 12+35	250	Enhancement	E I	265	1.5 to 1
Tributary 4G	13+10 - 18+32	340	Restoration	P2	522	1 to 1
Tributary 5A	0+00 - 2+25	225	Enhancement	E II	225	2.5 to 1
Tributary 5B	2+25 - 4+25	200	Restoration	P2	200	1 to 1
Tributary 5C	4+25 - 5+00	75	Enhancement	E II	75	2.5 to 1
Tributary 5D	5+00 - 6+75	175	Enhancement	E I	175	1.5 to 1
Tributary 6A	0+00 - 3+15	300	Enhancement	E II	315	2.5 to 1
Tributary 6B	3+55 - 7+18	300	Restoration	P2	363	1 to 1

Tributary 7A	0+00	0	Enhancement	E II	100	2.5 to 1
Tributary 7B	0+00 - 3+80	400	Enhancement	E I	380	1.5 to 1
Tributary 8A	-2+15 - 0+15	100	Enhancement	E II	200	2.5 to 1
Tributary 8B	0+15 - 3+42	460	Restoration	P3	357	1 to 1
Tributary 8C	13+45 - 14+75	120	Enhancement	E II	130	2.5 to 1
Wetland A		0.26	Enhancement		0.26	2 to 1
Wetland B/C		0.46	Enhancement		0.44	2 to 1

Component Summation

Mitigation Component	Stream (linear feet)	Riparian Wetland (acres)		Non-riparian Wetland (acres)	Buffer (square feet)	Upland (acres)
		Riverine	Non-Riverine			
Restoration	5,719.00					
Enhancement*		0.70				
Enhancement I	2,525.00					
Enhancement II	1,490.00					
Creation						
Preservation*						
High Quality Preservation						
Totals	9,734	0.70				

*indicative of a Restoration Equivalent (RE) mitigation class

BMP Elements

Element	Location	Purpose/Function	Notes

BMP Elements

BR = Bioretention Cell; SF = Sand Filter; SW = Stormwater Wetland; WDP = Wet Detention Pond; DDP = Dry Detention Pond; FS = Filter Strip; S = Grassed Swale; LS = Level Spreader; NI = Natural Infiltration Area; FB = Forested Buffer

Table 2: Project Activity and Reporting History

Newfound Creek Stream Restoration Project EEP Project Number 92497		
Elapsed Time Since Grading Complete: **1 yrs 4 months** **Elapsed Time Since Planting Complete:** **1 yrs 3 months** **Number of Reporting Years:** **1**		
Activity or Deliverable	**Data Collection Complete**	**Completion or Delivery**
Restoration Plan	February 2007	June 2008
Final Design – Construction Plans	February 2007	July 2007
Construction	N/A	October 2011
Planting	N/A	January 2012
Mitigation Report / As-built	January 2012	July 2012
Year O (baseline) Monitoring	N/A	N/A
Year 1 Monitoring	February 2013	April 2013
Year 2 Monitoring		
Year 3 Monitoring		
Year 4 Monitoring		
Year 5 Monitoring		

Table 3: Project Contacts Table

Newfound Creek Stream Restoration EEP Project Number 92497	
Designer	URS Corporation - North Carolina 1600 Perimeter Park Drive, Suite 400 Morrisville, NC 27560
Primary project design POC	Kathleen McKeithan 919-461-1597
Construction Contractor	Eagle Wood, Inc. PO Box 1046 Denver, NC 28037
Construction contractor POC	Bill Anderson 704-483-5853
Survey Contractor	Kee Mapping and Surveying PO Box 2566 Asheville, NC 28802
Survey contractor POC	Brad Kee 828-645-8275
Planting Contractor	Carolina Wetlands Services 550 Westinghouse Blvd Charlotte, NC 28273
Planting contractor POC	Gregg Antemann 704-527-1177
Seeding Contractor	Carolina Wetlands Services 550 Westinghouse Blvd Charlotte, NC 28273
Contractor point of contact	Gregg Antemann 704-527-1177
Seed Mix Sources	Green Resource, Colfax NC 336-855-6363
Nursery Stock Suppliers	Cumberland Mountain Nursery 357 Middle Ridge Road Beersheba Springs, TN 37305 931-692-2164
Monitoring Performers	URS Corporation - North Carolina 1600 Perimeter Park Drive, Suite 400 Morrisville, NC 27560
Stream Monitoring POC	Kathleen McKeithan 919-461-1597
Vegetation Monitoring POC	Susan Westberry 910-343-5994
Wetland Monitoring POC	Susan Westberry 910-343-5994

Table 4: Project Attribute Table

Newfound Creek Stream Restoration EEP Project Number 92497								
Project Information								
Project Name	Newfound Creek Stream Restoration							
County	Buncombe							
Project Area (acres)	25.33							
Project Coordinates (latitude and longitude)	35.625971, -82.711733							
Project Watershed Summary Information								
Physiographic Province	Mountain							
River Basin	French Broad							
USGS Hydrologic Unit 8-digit	06010105							
USGS Hydrologic Unit 14-digit	06010105090020							
DWQ Sub-basin	04-03-02							
Project Drainage Area (acres)	6,620							
Project Drainage Area Percentage of Impervious Area	U							
CGIA Land Use Classification	U							
Reach Summary Information								
Parameters	Mainstem Part I	Mainstem Part II	Tributary 3	Tributary 4	Tributary 5	Tributary 6	Tributary 7	Tributary 8
Length of Reach (linear feet)	2,090	2,320	1,047	1,757	675	678	480	687
Valley Classification	VIII	VIII	VIII	II	II	VIII	VIII	VIII
Drainage Area (acres)	6,620		70	70	45	51	32	26
NCDWQ Stream Identification Score	44		31.5	33.5	40.5	38	33	32.5
NCDWQ Water Quality Classification	C	C	C	C	C	C	C	C

Parameters	Mainstem Part I	Mainstem Part II	Tributary 3	Tributary 4	Tributary 5	Tributary 6	Tributary 7	Tributary 8
Morphological Description (stream type)	C4/1	B4/1	G5/F5	A5/G5/B5/E 5	E4b/G4/B4 /E4	B4/E5	E5	G5/E5
Evolutionary Trend	C–>C	B->C	G/F->B	A/G/B/E->E	E/G/B/E- >Eb	B/E->E	E->E	G/E->E
Underlying Mapped Soils	French Loam, 0-3%	French Loam, 0-3%	Tate Loam 2-8%	Evard-Cowee Complex 30-50%	Evard-Cowee Complex 30-50%	Tate Loam 2-8%	Tate Loam 8-15%	Tate Loam 8-15%
Drainage Class	Somewhat Poorly	Somewhat Poorly	Well Drained	Well Drained	Well Drained	Well Drained	Well Drained	Well Drained
Soil Hydric Status	Hydric B	Hydric B	Non-Hydric	Non-Hydric	Non-Hydric	Non-Hydric	Non-Hydric	Non-Hydric
Slope	0.0076	0.0054	0.024	0.0373	0.0625	0.0387	0.0416	0.0499
FEMA Classification	Detailed Study	Detailed Study	N/A	N/A	N/A	N/A	N/A	N/A
Native Vegetation Community	Agriculture	Agriculture	Agriculture	Agriculture/ Livestock pasture grass	Forest/ Livestock pasture grass	Agriculture/ Livestock pasture grass	Livestock pasture grass	Livestock pasture grass

Wetland Summary Information

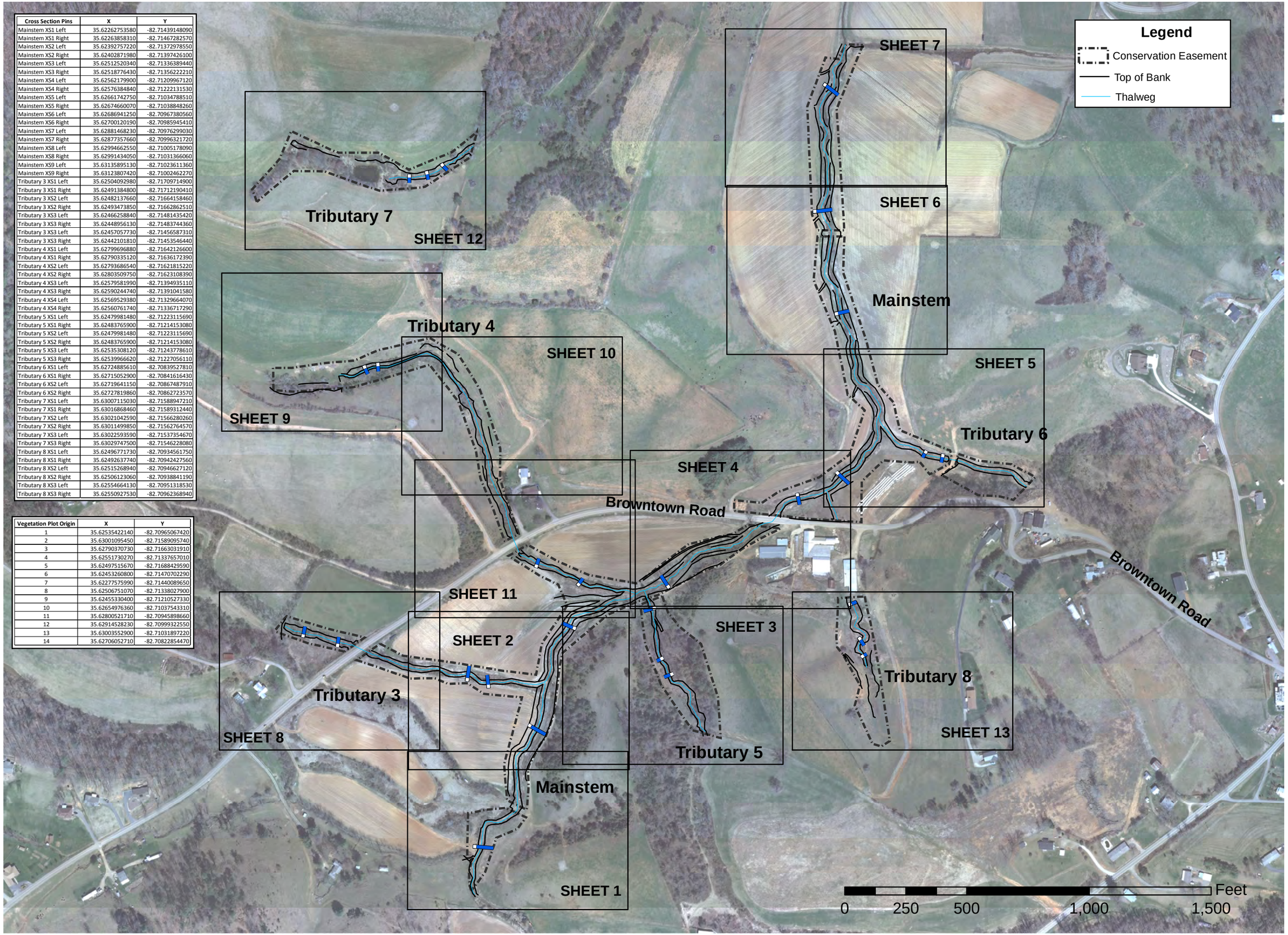
Parameters	Wetland A	Wetland B/C
Size of Wetland (acres)	0.26	0.44
Wetland Type (non-riparian, riparian riverine or riparian non-riverine)	Riparian Riverine	Riparian Riverine
Mapped Soil Series	Tate Loam, 8-15%	Tate Loam, 8-15%
Drainage Class	Very Deep, Well Drained	Very Deep, Well Drained
Soil Hydric Status	Non-Hydric	Non-Hydric
Source of Hydrology	Seep	Stream Channel
Hydrologic Impairment	None	Pond Berm

Native Vegetation Community	Scrub-Shrub	Emergent	
Percent Composition of Exotic Invasive Vegetation	U	U	
Regulatory Considerations			
Regulation	Applicable?	Resolved?	Supporting Documentation
Waters of the United States - Section 404	Yes	Jul-07	Restoration Plan
Waters of the United States - Section 401	Yes	Feb-07	Restoration Plan
Endangered Species Act	Yes	Jul-07	Restoration Plan
Historic Preservation Act	Yes	Jul-07	Restoration Plan
Coastal Zone Management Act (CZMA)/Coastal Area Management Act (CAMA)	N/A	N/A	N/A
FEMA Floodplain Compliance	Yes	Ongoing	LOMR submitted November 2012
Essential Fisheries Habitat	Yes	Jan-07	Restoration Plan

Appendix B: Visual Assessment Data

Cross Section Pins	X	Y
Mainstem XS1 Left	35.62262753580	-82.71439148090
Mainstem XS1 Right	35.62263858310	-82.71467282570
Mainstem XS2 Left	35.62392757220	-82.71372978550
Mainstem XS2 Right	35.62402871980	-82.71397426100
Mainstem XS3 Left	35.62512520340	-82.71336389440
Mainstem XS3 Right	35.62518776430	-82.71356222210
Mainstem XS4 Left	35.62562179900	-82.71209967120
Mainstem XS4 Right	35.62576384840	-82.71222131530
Mainstem XS5 Left	35.62661742750	-82.71034788510
Mainstem XS5 Right	35.62674660070	-82.71038848260
Mainstem XS6 Left	35.62686941250	-82.70967380560
Mainstem XS6 Right	35.62700120190	-82.70985945410
Mainstem XS7 Left	35.62881468230	-82.70976299030
Mainstem XS7 Right	35.62877357660	-82.70996321720
Mainstem XS8 Left	35.62994662550	-82.71005178090
Mainstem XS8 Right	35.62991434050	-82.71031366060
Mainstem XS9 Left	35.63135895130	-82.71023611360
Mainstem XS9 Right	35.63123807420	-82.71002462270
Tributary 3 XS1 Left	35.62504092980	-82.71709714900
Tributary 3 XS1 Right	35.62491384800	-82.71712190410
Tributary 3 XS2 Left	35.62482137660	-82.71664158460
Tributary 3 XS2 Right	35.62493473850	-82.71662862510
Tributary 3 XS3 Left	35.62466258840	-82.71481435420
Tributary 3 XS3 Right	35.62448956130	-82.71483744360
Tributary 3 XS3 Left	35.62457057730	-82.71456587310
Tributary 3 XS3 Right	35.62442101810	-82.71453546440
Tributary 4 XS1 Left	35.62799696880	-82.71642126600
Tributary 4 XS1 Right	35.62790335120	-82.71636172390
Tributary 4 XS2 Left	35.62793686540	-82.71621815220
Tributary 4 XS2 Right	35.62803509750	-82.71623108390
Tributary 4 XS3 Left	35.62579581990	-82.71394935110
Tributary 4 XS3 Right	35.62590244740	-82.71391041580
Tributary 4 XS4 Left	35.62569529380	-82.71329664070
Tributary 4 XS4 Right	35.62560761740	-82.71336717290
Tributary 5 XS1 Left	35.62479981480	-82.71223115690
Tributary 5 XS1 Right	35.62483765900	-82.71214153080
Tributary 5 XS2 Left	35.62479981480	-82.71223115690
Tributary 5 XS2 Right	35.62483765900	-82.71214153080
Tributary 5 XS3 Left	35.62535308120	-82.71243778610
Tributary 5 XS3 Right	35.62539966620	-82.71227056110
Tributary 6 XS1 Left	35.62724885610	-82.70839527810
Tributary 6 XS1 Right	35.62715052900	-82.70841616430
Tributary 6 XS2 Left	35.62719641150	-82.70867487910
Tributary 6 XS2 Right	35.62727819860	-82.70862723570
Tributary 7 XS1 Left	35.63007115030	-82.71588947210
Tributary 7 XS1 Right	35.63016868460	-82.71589312440
Tributary 7 XS2 Left	35.63021042590	-82.71566280260
Tributary 7 XS2 Right	35.63011499850	-82.71562764570
Tributary 7 XS3 Left	35.63022593590	-82.71537354670
Tributary 7 XS3 Right	35.63029747500	-82.71546228080
Tributary 8 XS1 Left	35.62496771730	-82.70934561750
Tributary 8 XS1 Right	35.62492637740	-82.70942427560
Tributary 8 XS2 Left	35.62515268940	-82.70946627120
Tributary 8 XS2 Right	35.62506123060	-82.70938841190
Tributary 8 XS3 Left	35.62554664130	-82.70951318530
Tributary 8 XS3 Right	35.62550927530	-82.70962368940

Vegetation Plot Origin	X	Y
1	35.62535422140	-82.70965067420
2	35.63001095450	-82.71589095740
3	35.62790370730	-82.71663031910
4	35.62551730270	-82.71337657010
5	35.62497515670	-82.71688429590
6	35.62453260800	-82.71470702290
7	35.62277575990	-82.71440089650
8	35.62506751070	-82.71338027900
9	35.62455330400	-82.71210527330
10	35.62654976360	-82.71037543310
11	35.62800521710	-82.70945898660
12	35.62914528230	-82.70999322550
13	35.63003552900	-82.71031897220
14	35.62706052710	-82.70822854470



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Buncombe County, NC
CU 06010105

Monitoring Year:

1 (2012)

Project Number:

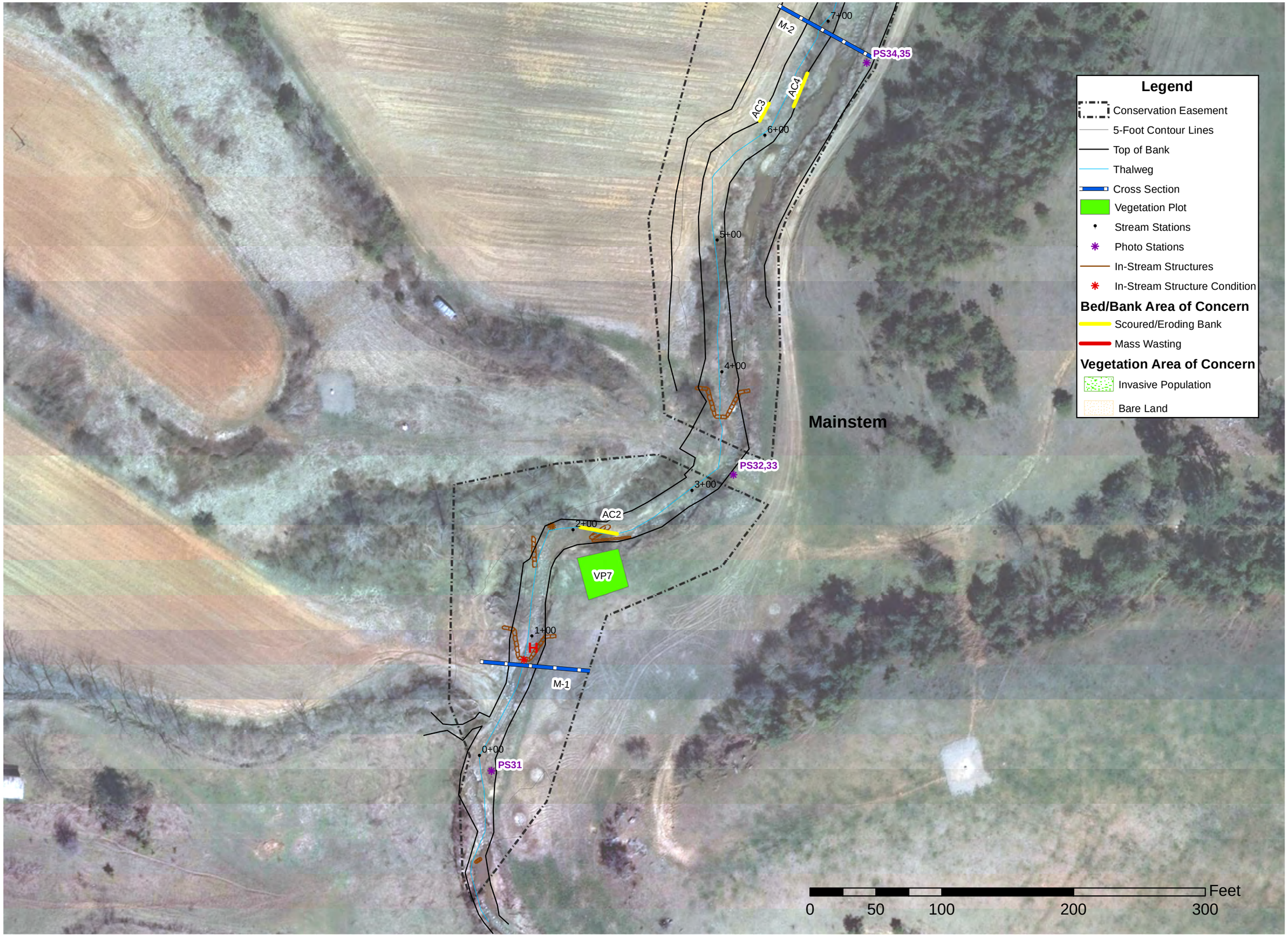
92497

Date:

June 2013

2010 Aerial Orthophotography (Source: NCOneMap)

Figure 4a
Current Condition Plan View Overview



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Date:
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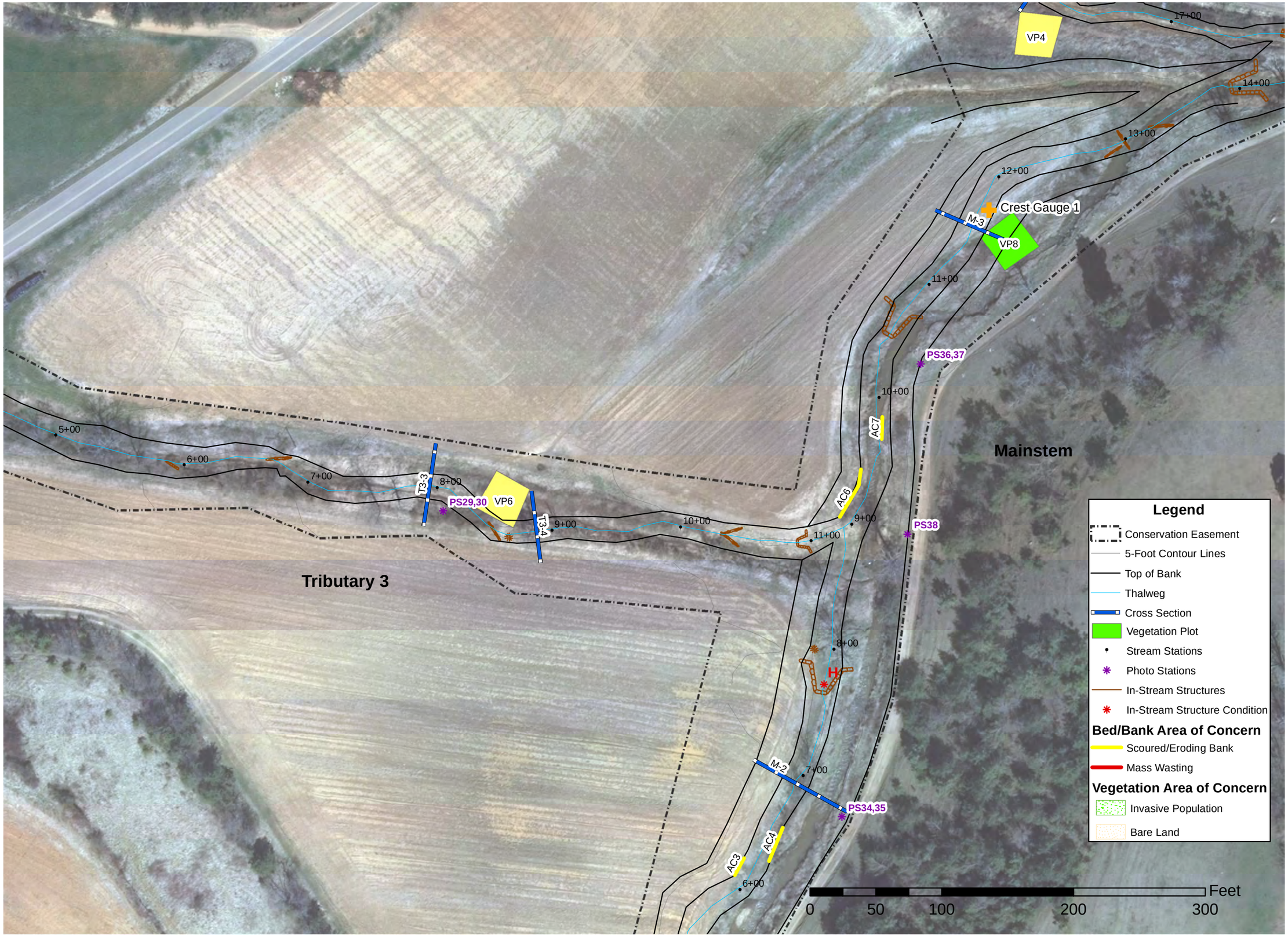
2010 Aerial
Orthophotography
(Source: NCOneMap)

Figure 4b
Current Condition
Plan View
Sheet 1



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Orthophotography
(Source: NCOneMap)

Figure 4c
Current Condition
Plan View
Sheet 2

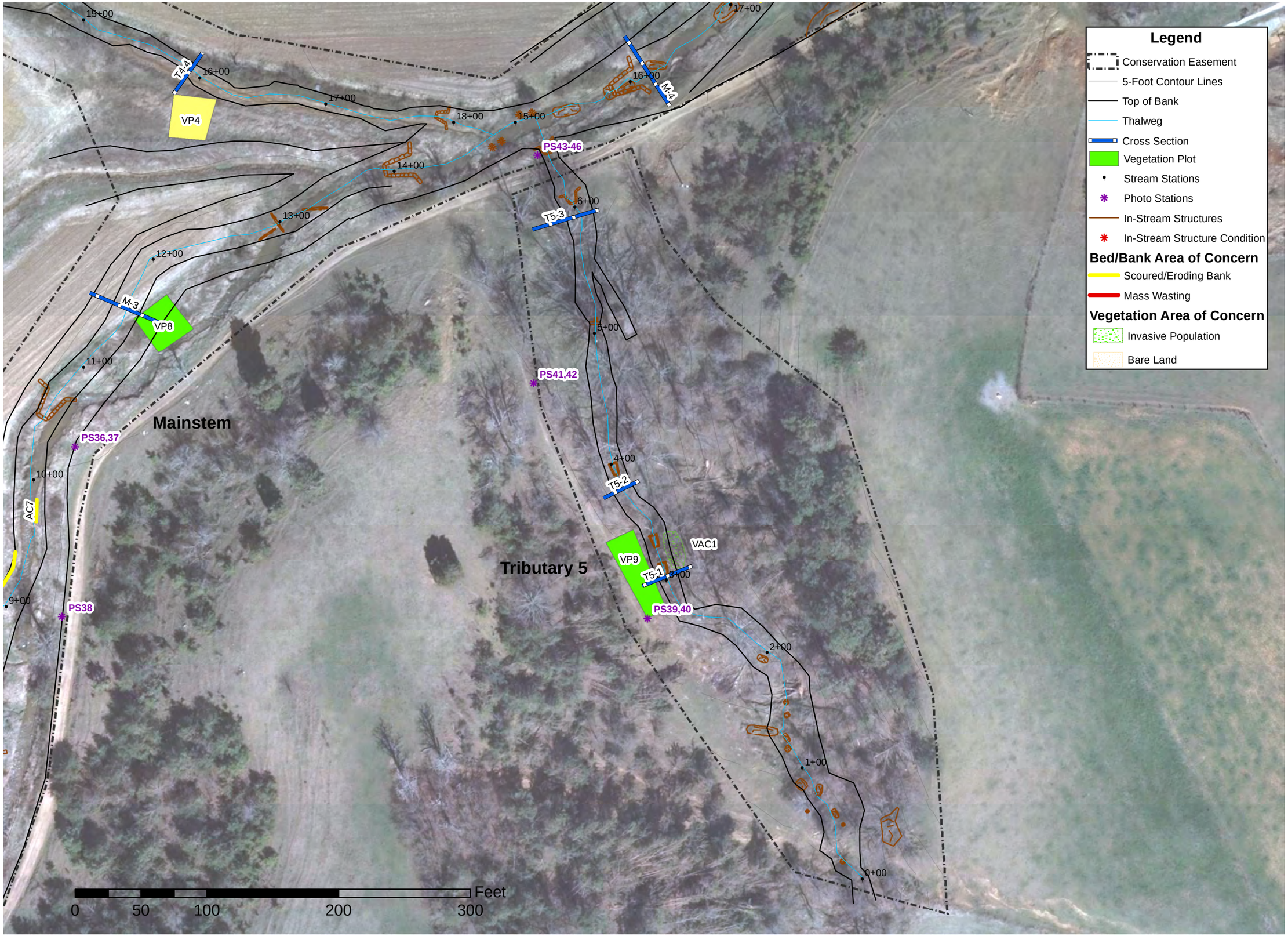

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Figure 4d
Current Condition
Plan View
Sheet 3

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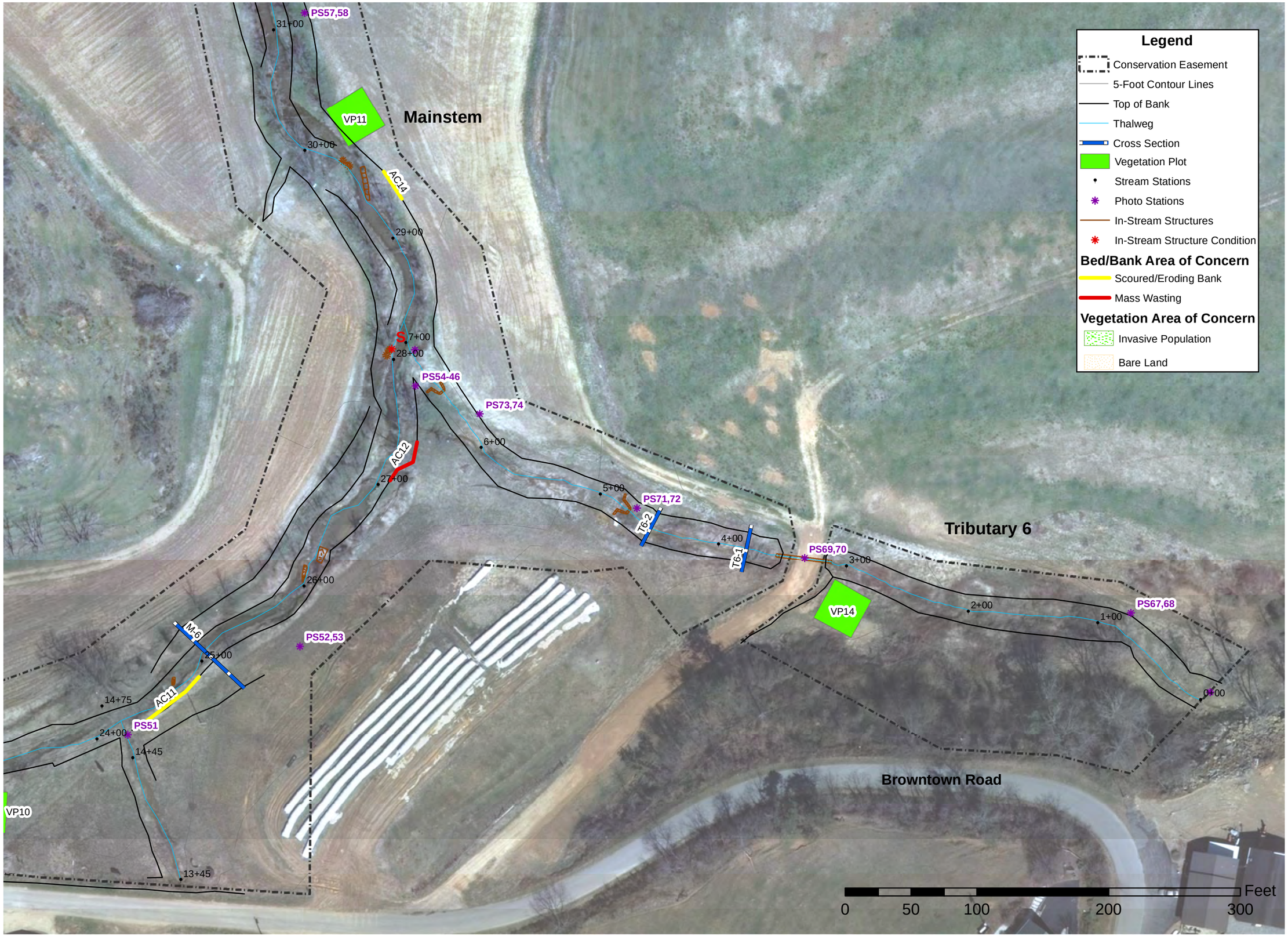
Figure 4e
Current Condition
Plan View
Sheet 4



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Orthophotography
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Figure 4f
Current Condition
Plan View
Sheet 5

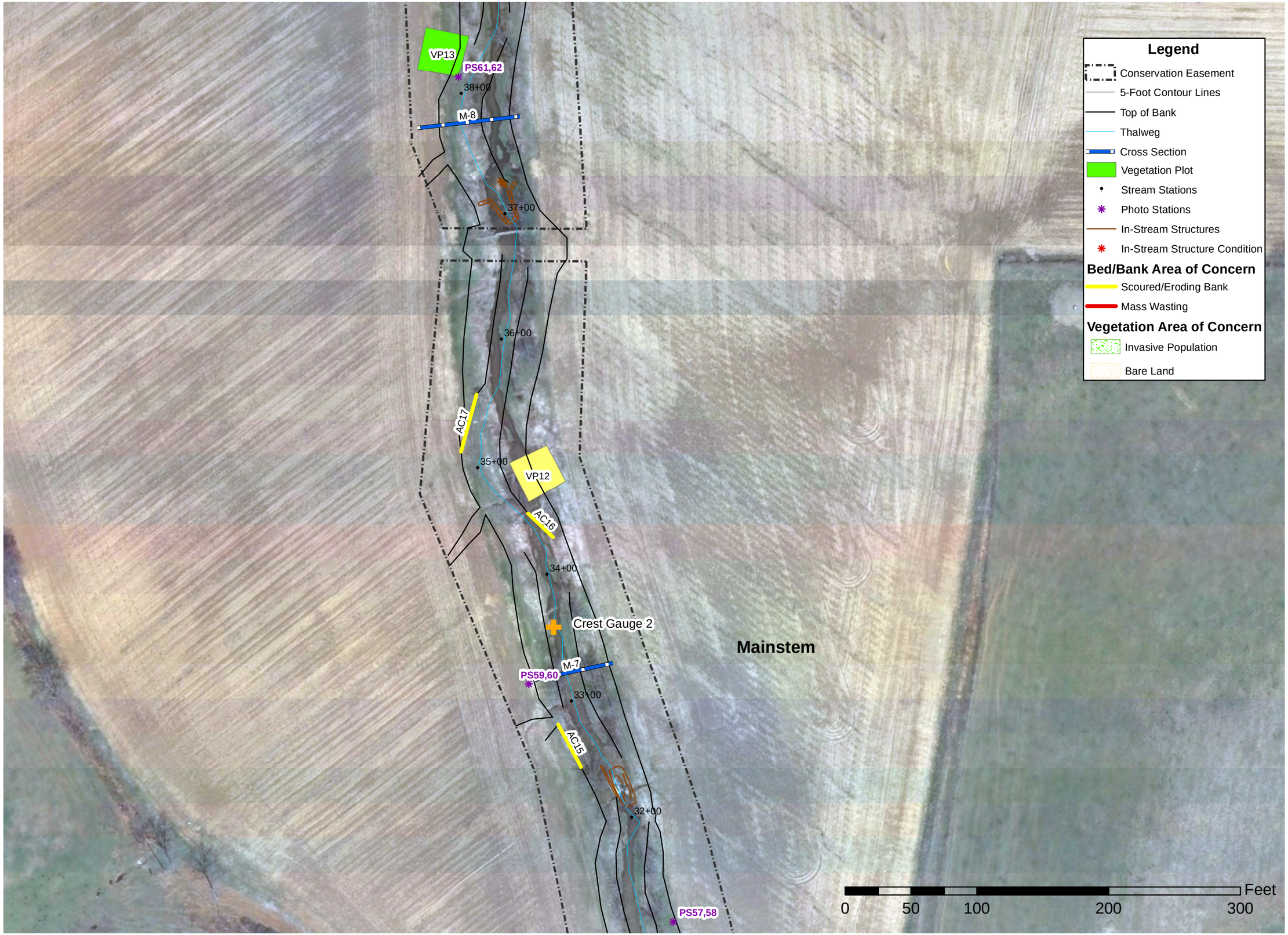

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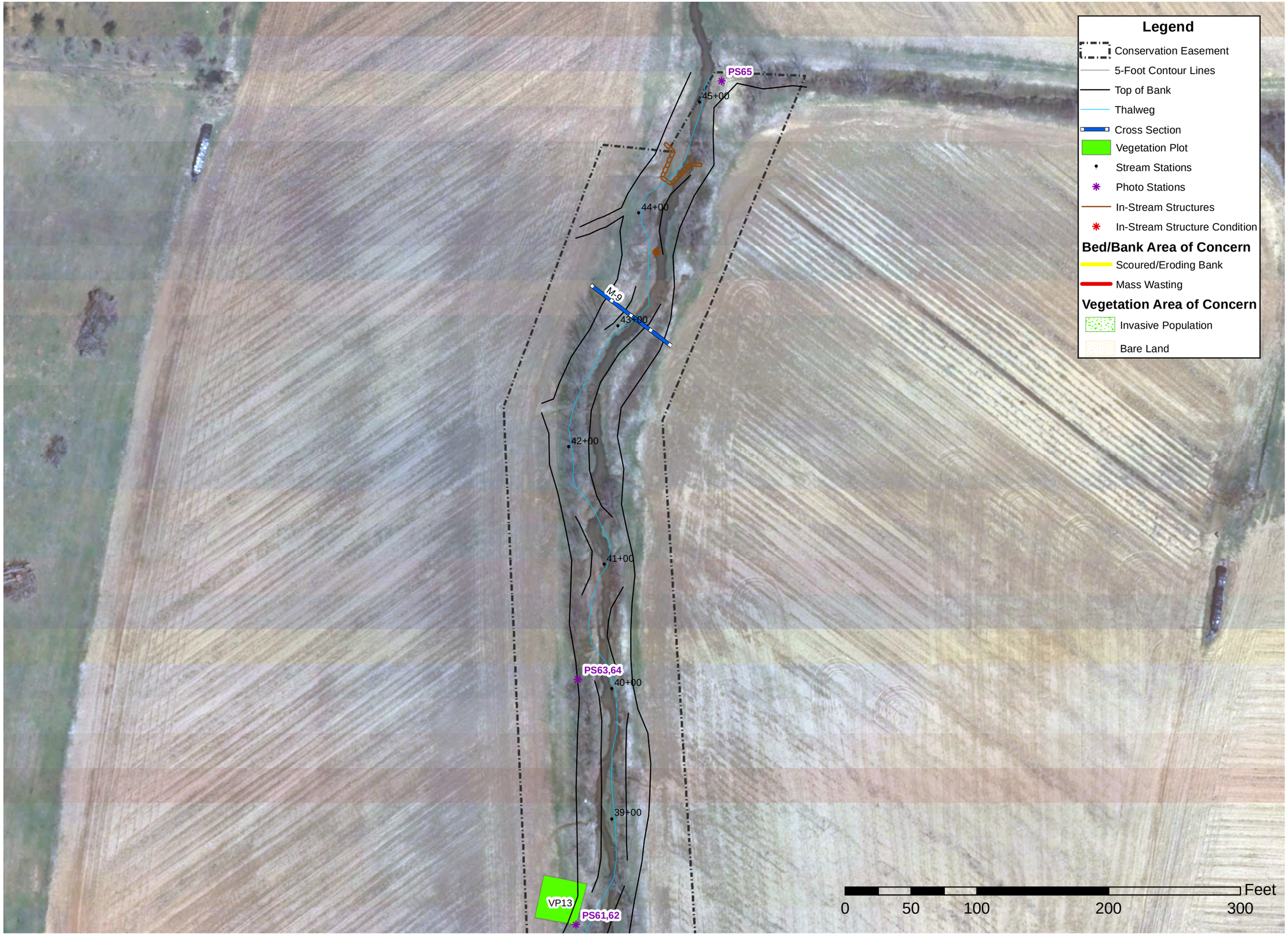
Figure 4g
Current Condition
Plan View
Sheet 6



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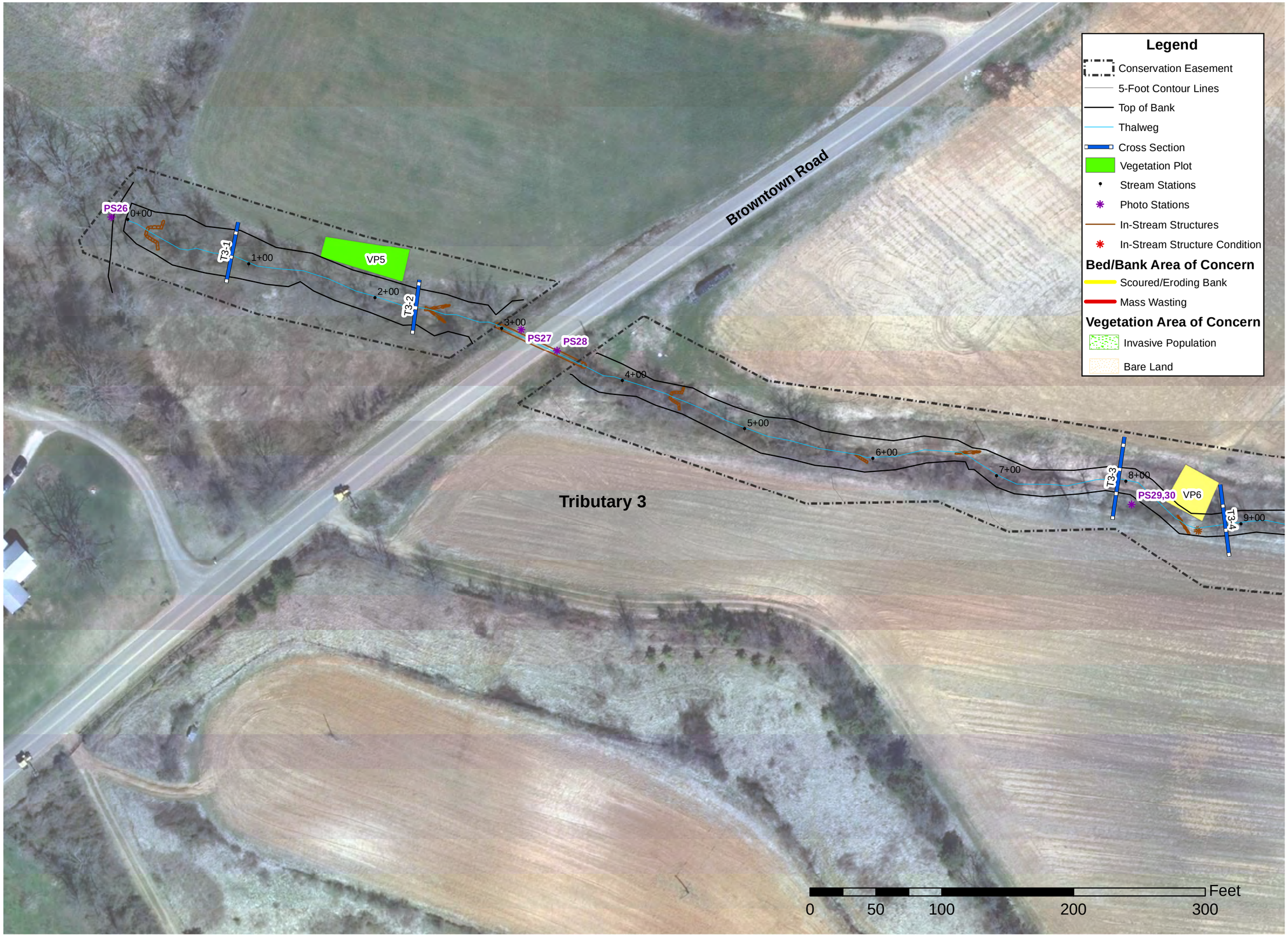
Orthophotography
(Source: NCOneMap)

Figure 4h
Current Condition
Plan View
Sheet 7



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2010 Aerial
Orthophotography
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Figure 4i
Current Condition
Plan View
Sheet 8

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2010 Aerial
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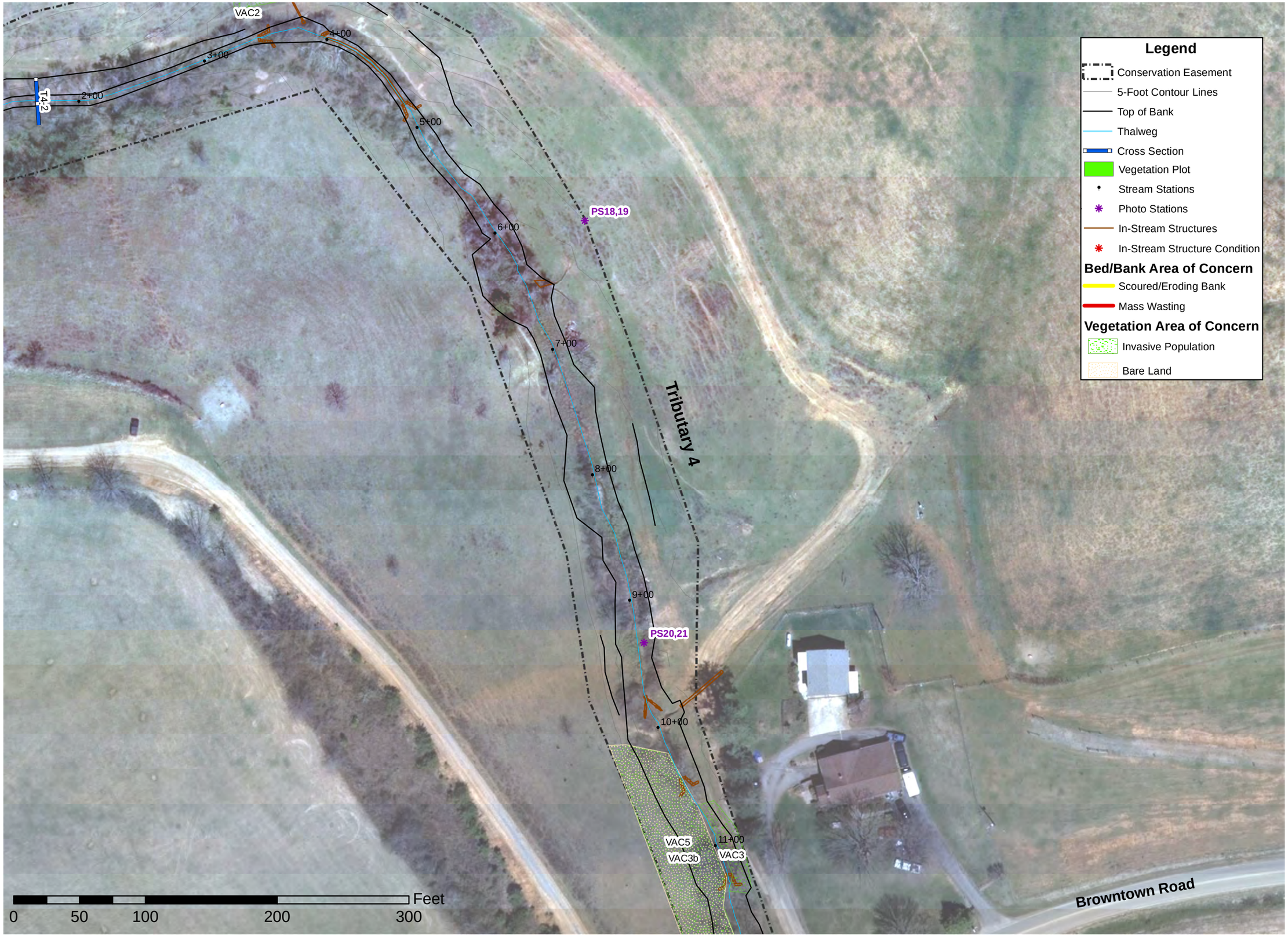
(Source: NCOneMap)

Figure 4j
Current Condition
Plan View
Sheet 9



Legend

- Conservation Easement
- 5-Foot Contour Lines
- Top of Bank
- Thalweg
- Cross Section
- Vegetation Plot
- Stream Stations
- Photo Stations
- In-Stream Structures
- In-Stream Structure Condition

Bed/Bank Area of Concern

- Scoured/Eroding Bank
- Mass Wasting

Vegetation Area of Concern

- Invasive Population
- Bare Land

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Figure 4k
Current Condition
Plan View
Sheet 10

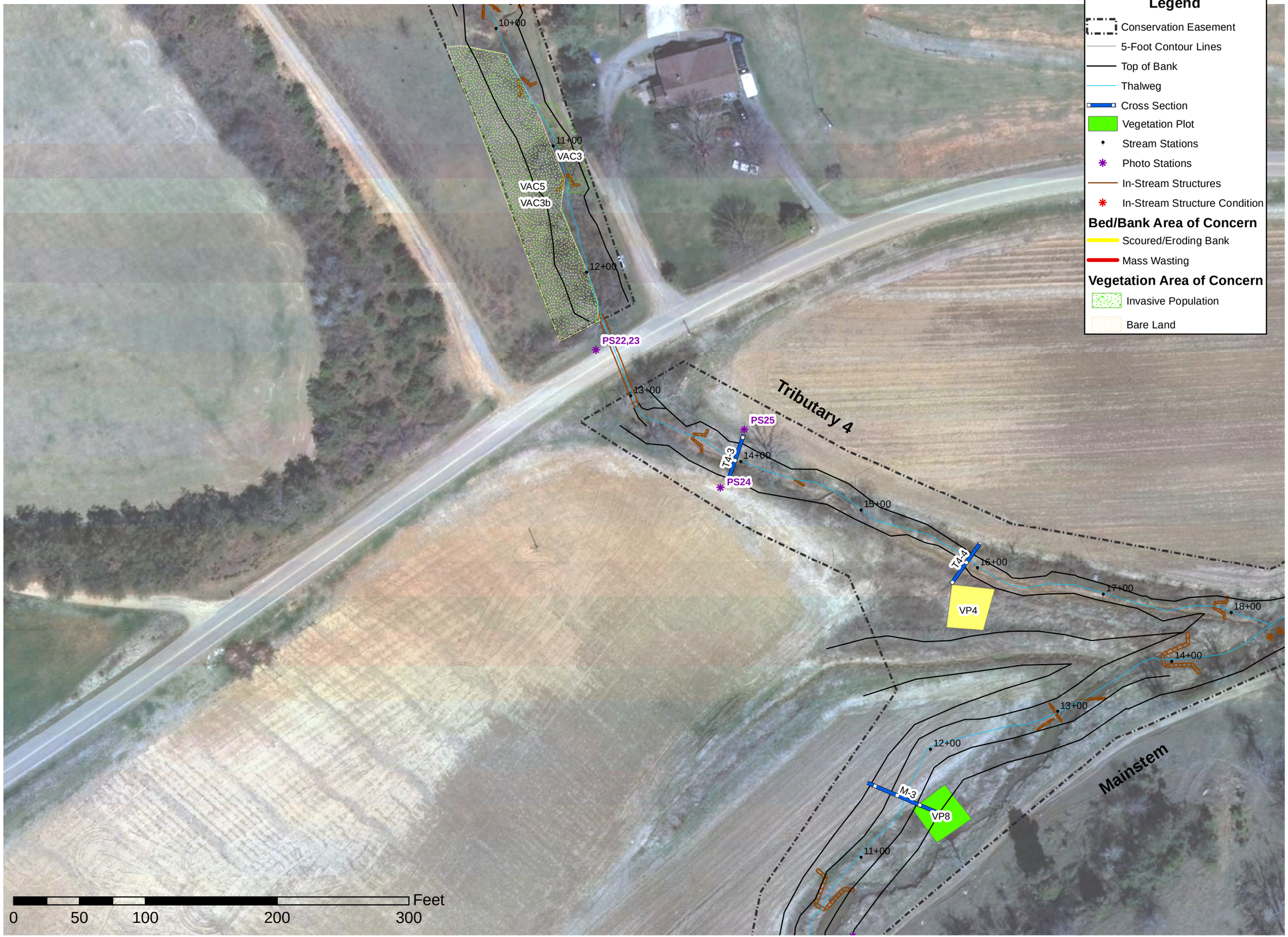

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Figure 4I
Current Condition
Plan View
Sheet 11

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Figure 4m
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Plan View
Sheet 12

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Figure 4n
Current Condition
Plan View
Sheet 13

Table 5a: Visual Stream Morphology Stability Assessment Table – Tributary 3

Newfound Creek Stream Restoration EEP Project Number 92497										
Reach ID - Reach 3 - Tributary 3										
Assessed Length - 1204										
Major Channel Category	**Channel Sub-Category**	**Metric**	**Number Stable, Performing as Intended**	**Total Number in As-built**	**Number of Unstable Segments**	**Amount of Unstable Footage**	**% Stable, Performing as Intended**	**Number with Stabilizing Woody Vegetation**	**Footage with Stabilizing Woody Vegetation**	**Adjusted % for Stabilizing Woody Vegetation**
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	19	19			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	15	15			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	15	15			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	15	15			100%			
		2. Thalweg centering at downstream of meander (Glide)	15	15			100%			

2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	9	9			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	5	5			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	8	8			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	9	9			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	8	8			100%			

Table 5b: Visual Stream Morphology Stability Assessment Table – Tributary 4

Newfound Creek Stream Restoration EEP Project Number 92497										
Reach ID - Reach 4 - Tributary 4 **Assessed Length - 1911**										
Major Channel Category	**Channel Sub-Category**	**Metric**	**Number Stable, Performing as Intended**	**Total Number in As-built**	**Number of Unstable Segments**	**Amount of Unstable Footage**	**% Stable, Performing as Intended**	**Number with Stabilizing Woody Vegetation**	**Footage with Stabilizing Woody Vegetation**	**Adjusted % for Stabilizing Woody Vegetation**
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	24	24			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	12	12			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	12	12			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	12	12			100%			
		2. Thalweg centering at downstream of meander (Glide)	12	12			100%			

2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	13	13			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	12	12			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	13	13			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	13	13			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	13	13			100%			

Table 5c: Visual Stream Morphology Stability Assessment Table – Tributary 5

Newfound Creek Stream Restoration EEP Project Number 92497										
Reach ID - Reach 5 - Tributary 5 **Assessed Length - 630**										
Major Channel Category	**Channel Sub-Category**	**Metric**	**Number Stable, Performing as Intended**	**Total Number in As-built**	**Number of Unstable Segments**	**Amount of Unstable Footage**	**% Stable, Performing as Intended**	**Number with Stabilizing Woody Vegetation**	**Footage with Stabilizing Woody Vegetation**	**Adjusted % for Stabilizing Woody Vegetation**
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	7	7			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	3	3			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	3	3			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	3	3			100%			
		2. Thalweg centering at downstream of meander (Glide)	3	3			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and			0	0	100%	0	0	100%

		erosion								
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	6	6			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	5	5			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	5	5			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	6	6			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	5	5			100%			

Table 5d: Visual Stream Morphology Stability Assessment Table – Tributary 6

Newfound Creek Stream Restoration EEP Project Number 92497										
Reach ID - Reach 6 - Tributary 6 **Assessed Length - 732**										
Major Channel Category	**Channel Sub-Category**	**Metric**	**Number Stable, Performing as Intended**	**Total Number in As-built**	**Number of Unstable Segments**	**Amount of Unstable Footage**	**% Stable, Performing as Intended**	**Number with Stabilizing Woody Vegetation**	**Footage with Stabilizing Woody Vegetation**	**Adjusted % for Stabilizing Woody Vegetation**
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	5	5			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	3	3			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	3	3			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	3	3			100%			
		2. Thalweg centering at downstream of meander (Glide)	3	3			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor			0	0	100%	0	0	100%

		growth and/or scour and erosion								
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	3	3			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	2	2			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	2	2			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	3	3			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	2	2			100%			

Table 5e: Visual Stream Morphology Stability Assessment Table – Tributary 7

Newfound Creek Stream Restoration EEP Project Number 92497										
Reach ID - Reach 7 - Tributary 7 **Assessed Length - 580**										
Major Channel Category	**Channel Sub-Category**	**Metric**	**Number Stable, Performing as Intended**	**Total Number in As-built**	**Number of Unstable Segments**	**Amount of Unstable Footage**	**% Stable, Performing as Intended**	**Number with Stabilizing Woody Vegetation**	**Footage with Stabilizing Woody Vegetation**	**Adjusted % for Stabilizing Woody Vegetation**
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	3	3			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	1	1			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	1	1			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	1	1			100%			
		2. Thalweg centering at downstream of meander (Glide)	1	1			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and			0	0	100%	0	0	100%

		erosion								
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	2	2			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	2	2			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	2	2			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	2	2			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	2	2			100%			

Table 5f: Visual Stream Morphology Stability Assessment Table – Tributary 8

Newfound Creek Stream Restoration EEP Project Number 92497										
Reach ID - Reach 8 - Tributary 8 **Assessed Length - 378**										
Major Channel Category	**Channel Sub-Category**	**Metric**	**Number Stable, Performing as Intended**	**Total Number in As-built**	**Number of Unstable Segments**	**Amount of Unstable Footage**	**% Stable, Performing as Intended**	**Number with Stabilizing Woody Vegetation**	**Footage with Stabilizing Woody Vegetation**	**Adjusted % for Stabilizing Woody Vegetation**
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	9	9			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	3	3			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	3	3			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	3	3			100%			
		2. Thalweg centering at downstream of meander (Glide)	3	3			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and			0	0	100%	0	0	100%

		erosion								
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	5	5			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	5	5			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	5	5			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	5	5			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	5	5			100%			

Table 5g: Visual Stream Morphology Stability Assessment Table – Mainstem Upstream of Browntown Road

Newfound Creek Stream Restoration EEP Project Number 92497										
Reach ID - Reach 1 - Mainstem, Upstream of Browntown Rd. **Assessed Length - 2586.5**										
Major Channel Category	**Channel Sub-Category**	**Metric**	**Number Stable, Performing as Intended**	**Total Number in As-built**	**Number of Unstable Segments**	**Amount of Unstable Footage**	**% Stable, Performing as Intended**	**Number with Stabilizing Woody Vegetation**	**Footage with Stabilizing Woody Vegetation**	**Adjusted % for Stabilizing Woody Vegetation**
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	19	19			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	10	10			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	10	10			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	10	10			100%			
		2. Thalweg centering at downstream of meander (Glide)	10	10			100%			

2. Bank	**1. Scoured/ Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion		5	170	97%	0	0	97%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.		1	20	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse		1	30	99%	0	0	99%
			Totals	7	220	96%	0	0	96%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	18	18		100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	7	7		100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	8	8		100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	18	18		100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	6	8		75%			

Table 5h: Visual Stream Morphology Stability Assessment Table – Mainstem Downstream of Browntown Road

Newfound Creek Stream Restoration

EEP Project Number 92497

Reach ID - Reach 2 - Mainstem, Downstream of Browntown Rd.

Assessed Length - 2515

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. Degradation - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	20	20			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	14	14			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	14	14			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	14	14			100%			
		2. Thalweg centering at downstream of meander (Glide)	14	14			100%			

2. Bank	**1. Scoured/ Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			3	100	98%	0	0	98%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			2	120	98%	1	40	98%
	3. Mass Wasting	Bank slumping, calving, or collapse			3	110	98%	0	0	98%
				Totals	8	330	93%	1	40	94%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	21	21			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	2	2			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	5	5			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	20	21			95%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	5	5			100%			

Table 6: Vegetation Condition Assessment Table

Newfound Creek Stream Restoration EEP Project Number 92497						
Planted Acreage 20.8						
Vegetation Category	**Definitions**	**Mapping Threshold**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Planted Acreage**
1. Bare Areas	Very limited cover of both woody and herbaceous material.	0.1 acres	Beige dot pattern	2	0.40	1.6%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1 acres	N/A	0	0.00	0.0%
			Total	2	0.40	1.6%
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 acres	N/A	0	0.00	0.0%
			Cumulative Total	2	0.40	1.6%
Easement Acreage 25.3						
Vegetation Category	**Definitions**	**Mapping Threshold**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Easement Acreage**
4. Invasive Areas of Concern	Presence of Chinese privet.	1000 SF	Green dot pattern	4	14.20	56.1%
5. Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale).	none	N/A	0	0.00	0.0%

Stream Station Photos


PS1, Tributary 8 facing downstream


PS2, Tributary 8 facing upstream


PS3, Tributary 8 facing downstream


PS4, Tributary 8 facing upstream


PS5, Tributary 8 facing east


PS6, Tributary 8 facing upstream

PS7, Tributary 7 facing upstream

PS8, Tributary 7 facing downstream

PS9, Tributary 7 facing upstream

PS10, Tributary 7 facing downstream

PS11, Tributary 7 facing upstream

PS12, Tributary 7 facing downstream

PS13, Tributary 4 facing downstream

PS14, Tributary 4 facing upstream

PS15, Tributary 4 facing downstream

PS16, Tributary 4 facing upstream

PS17, Tributary 4 facing downstream

PS18, Tributary 4 facing upstream


PS19, Tributary 4 facing downstream


PS20, Tributary 4 facing upstream


PS21, Tributary 4 facing downstream


PS22, Tributary 4 facing upstream


PS23, Tributary 4 facing downstream


PS24, Tributary 4 facing upstream


PS25, Tributary 4 facing downstream


PS26, Tributary 3 facing downstream


PS27, Tributary 3 facing upstream


PS28, Tributary 3 facing downstream


PS29, Tributary 3 facing upstream


PS30, Tributary 3 facing downstream

PS31, Mainstem facing downstream

PS32, Mainstem facing upstream

PS33, Mainstem facing downstream

PS34, Mainstem facing upstream

PS35, Mainstem facing downstream

PS36, Mainstem facing upstream

PS37, Mainstem facing downstream

PS38, Tributary 3 facing upstream at confluence

PS39, Tributary 5 facing upstream

PS40, Tributary 5 facing downstream

PS41, Tributary 5 facing upstream

PS42, Tributary 5 facing downstream

PS43, Tributary 5 facing upstream at road crossing

PS44, Tributary 4 facing upstream at confluence

PS45, Mainstem facing upstream

PS46, Mainstem facing downstream

PS47, Mainstem facing upstream

PS48, Mainstem facing downstream


PS49, Mainstem facing downstream


PS50, Mainstem facing downstream


PS51, Tributary 8 facing upstream


PS52, Mainstem facing upstream


PS53, Mainstem facing downstream


PS54, Mainstem facing upstream

PS55, Mainstem facing downstream

PS56, Tributary 6 facing upstream

PS57, Mainstem facing upstream

PS58, Mainstem facing downstream

PS59, Mainstem facing upstream

PS60, Mainstem facing downstream

PS61, Mainstem facing upstream

PS62, Mainstem facing downstream

PS63, Mainstem facing upstream

PS64, Mainstem facing downstream

PS65, Mainstem facing upstream

PS66, Tributary 6 facing downstream

PS67, Tributary 6 facing upstream

PS68, Tributary 6 facing downstream

PS69, Tributary 6 facing upstream

PS70, Tributary 6 facing downstream

PS71, Tributary 6 facing upstream

PS72, Tributary 6 facing downstream


PS73, Tributary 6 facing upstream


PS74, Tributary 6 facing downstream


PS75, Tributary 6 facing upstream

Vegetation Plot Photos

VP1

VP2

VP3

VP4

VP5

VP6

VP7


VP8


VP9


VP10

VP11


VP12

VP13

VP14

Appendix C: Vegetation Plot Data

Table 7: Vegetation Plot Success by Project Asset Type – CVS Generated Table

Newfound Creek Stream Restoration

EEP Project Number 92497

Wetland/Stream Vegetation Totals

(per acre)

Plot #	Stream/ Wetland Stems[2]	Volunteers[3]	Total[4]	Success Criteria Met?
1	405	0	405	Yes
2	283	0	283	No
3	688	0	728	Yes
4	162	0	162	No
5	324	0	324	Yes, barely
6	283	0	283	No
7	324	0	445	Yes, barely
8	486	0	688	Yes
9	728	0	809	Yes
10	364	0	405	Yes
11	405	0	405	Yes
12	202	0	202	No
13	486	0	486	Yes
14	405	0	405	Yes
Project Avg	**396**	**0**	**431**	**Yes**

Riparian Buffer Vegetation Totals

(per acre)

Plot #	Riparian Buffer Stems[1]	Success Criteria Met?
1	324	Yes, barely
2	243	No
3	567	Yes
4	162	No
5	324	Yes, barely
6	243	No
7	283	No
8	486	Yes
9	567	Yes
10	364	Yes
11	405	Yes
12	202	No
13	486	Yes
14	405	Yes
Project Avg	**361**	**Yes**

Table 8: CVS Stem Count Total and Planted with/without Livestakes by Plot and Species – CVS Generated Table

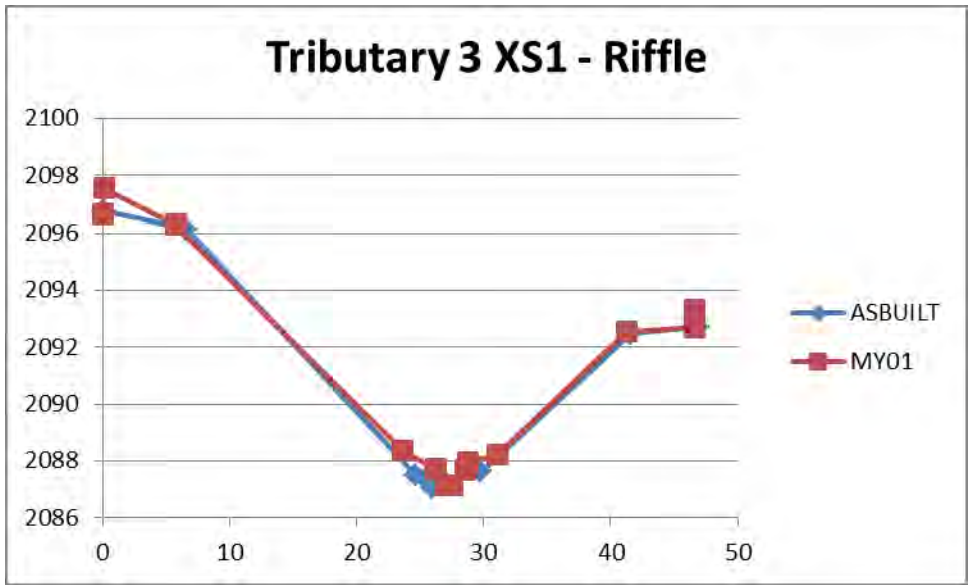
			Current Plot Data (MY1 2013)																				
			92497-01-0001			92497-01-0002			92497-01-0003			92497-01-0004			92497-01-0005			92497-01-0006			92497-01-0007		
Scientific Name	Common Name	Species Type	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer floridanum	Southern Sugar Maple, Florida Maple	Tree	2	2	2				1	1	1							1	1	1			
Acer negundo	boxelder	Tree							2	2	2				4	4	4						
Alnus serrulata	hazel alder	Shrub																1	1	1	1	1	1
Betula nigra	river birch	Tree																					
Carpinus caroliniana	American hornbeam	Tree	1	1	1							1	1	1				1	1	1			
Carya ovata	shagbark hickory	Tree	1	1	1										1	1	1						
Celtis laevigata	sugarberry	Tree										2	2	2							3	3	3
Corylus cornuta	beaked hazelnut	Shrub Tree							1	1	1												
Diospyros virginiana	common persimmon	Tree							3	3	3												
Euonymus americanus																					2	2	2
Fraxinus pennsylvanica	green ash	Tree																					
Hamamelis virginiana	American witchhazel	Tree							3	3	3												
Ilex opaca	American holly	Tree	1	1	1				2	2	2												
Juglans nigra	black walnut	Tree	1	1	1										1	1	1						
Platanus occidentalis	American sycamore	Tree	1	1	1										2	2	2						
Quercus michauxii	swamp chestnut oak	Tree																1	1	1	1	1	1
Quercus pagoda	cherrybark oak	Tree				3	3	3	1	1	1	1	1	1				2	2	2	2	2	2
Rhododendron maximum	great laurel	Shrub	1	1	1																		
Salix nigra	black willow	Tree				3	3	3														1	1
Sambucus canadensis	Common Elderberry	Shrub				1	1	1															
Ulmus americana	American elm	Tree	1	1	1				2	2	2							1	1	1	1	1	1
Unknown		Shrub or Tree																					
Viburnum dentatum	southern arrowwood	Shrub	1	1	1				3	3	3												
		Stem count	10	10	10	7	7	7	18	18	18	4	4	4	8	8	8	7	7	7	10	11	11
		size (ares)	1			1			1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.02			0.02		
		Species count	9	9	9	3	3	3	9	9	9	3	3	3	4	4	4	6	6	6	6	7	7
		Stems per ACRE	404.7	404.7	404.7	283.3	283.3	283.3	728.4	728.4	728.4	161.9	161.9	161.9	323.7	323.7	323.7	283.3	283.3	283.3	404.7	445.2	445.2

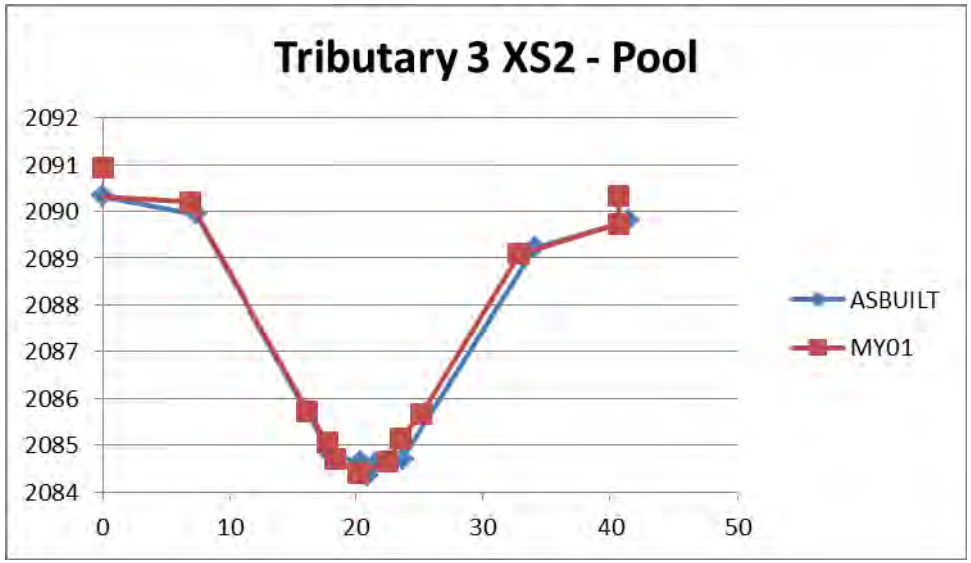
Scientific Name	Common Name	Species Type	Current Plot Data (MY1 2013)																					Annual Means		
			92497-01-0008			92497-01-0009			92497-01-0010			92497-01-0011			92497-01-0012			92497-01-0013			92497-01-0014			MY1 (2013)		
Acer floridanum	Southern Sugar Maple, Florida Maple	Tree	PnoLS	P-all	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 negundo	boxelder	Tree										2	2	2				1	1	1				7	7	7
Alnus serrulata	hazel alder	Shrub																			1	1	1	7	7	7
Betula nigra	river birch	Tree				2	2	2																4	4	4
Carpinus caroliniana	American hornbeam	Tree	2	2	2	2	2	2										1	1	1	4	4	4	9	9	9
Carya ovata	shagbark hickory	Tree	2	2	2	1	1	1	2	2	2				1	1	1				1	1	1	10	10	10
Celtis laevigata	sugarberry	Tree																						2	2	2
Corylus cornuta	beaked hazelnut	Shrub Tree	1	1	1	3	3	3	1	1	1	2	2	2				5	5	5				17	17	17
Diospyros virginiana	common persimmon	Tree	1	1	1	1	1	1	1	1	1													4	4	4
Euonymus americanus																								3	3	3
Fraxinus pennsylvanica	green ash	Tree	1	1	1																			3	3	3
Hamamelis virginiana	American witchhazel	Tree										1	1	1				3	3	3				4	4	4
Ilex opaca	American holly	Tree				3	3	3																6	6	6
Juglans nigra	black walnut	Tree																						3	3	3
Platanus occidentalis	American sycamore	Tree																						2	2	2
Quercus michauxii	swamp chestnut oak	Tree	4	4	4	3	3	3	1	1	1	3	3	3				1	1	1	1	1	1	16	16	16
Quercus pagoda	cherrybark oak	Tree				1	1	1				1	1	1	2	2	2							6	6	6
Rhododendron maximum	great laurel	Shrub	3	3	3	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1				18	18	18
Salix nigra	black willow	Tree				2	2	2																3	3	3
Sambucus canadensis	Common Elderberry	Shrub		2	2																			3	6	6
Ulmus americana	American elm	Tree		1	1																			1	2	2
Unknown		Shrub or Tree							3	3	3				1	1	1				3	3	3	12	12	12
Viburnum dentatum	southern arrowwood	Shrub				1	1	1																1	1	1
		Stem count																						4	4	4
		size (ares)	14	17	17	20	20	20	10	10	10	10	10	10	5	5	5	12	12	12	10	10	10	145	149	149
		size (ACRES)	1			1			1			1			1			1			1			14		
		Species count	0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.35		
		Stems per ACRE	7	9	9	11	11	11	6	6	6	6	6	6	4	4	4	6	6	6	5	5	5	23	23	23
			566.6	688	688	809.4	809.4	809.4	404.7	404.7	404.7	404.7	404.7	404.7	202.3	202.3	202.3	485.6	485.6	485.6	404.7	404.7	404.7	419.1	430.7	430.7

Appendix D: Stream Survey Data

Figure 5: Tributary 3 Cross Sections with Annual Overlays

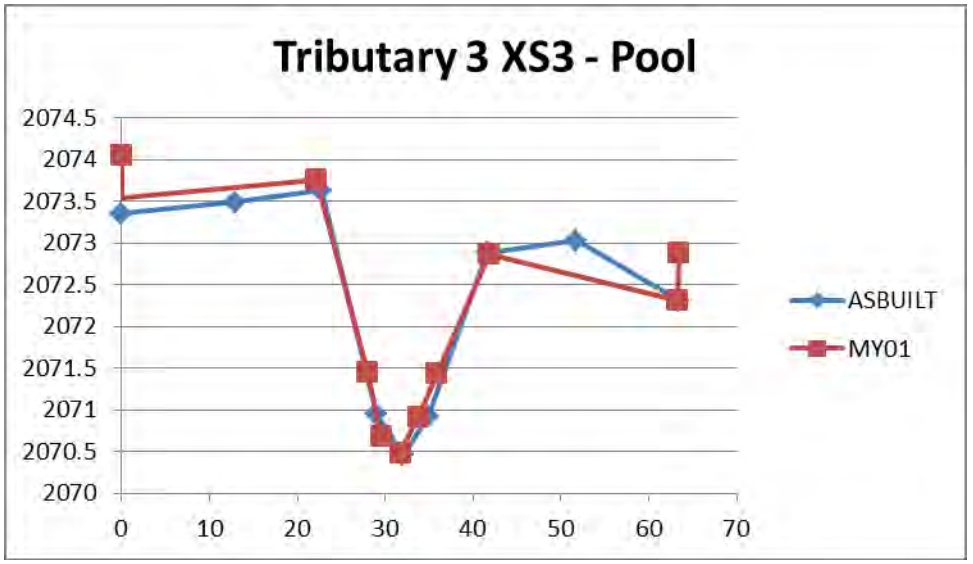
ASBUILT	KEE	MY01	URS
Tributary 3 XS1			
0	2096.764	0	2096.678
6.64	2096.131	0.105457	2097.552
24.6529	2087.482	5.761818	2096.29
25.4366	2087.369	23.58258	2088.366
25.9175	2087.063	26.21041	2087.707
26.8671	2087.339	27.04911	2087.157
29.8202	2087.638	27.58302	2087.126
41.6271	2092.484	28.59084	2087.7
46.9124	2092.703	28.77096	2087.969
		31.05538	2088.223
		41.2499	2092.559
		46.64571	2092.709
		46.63127	2093.336
Tributary 3 XS2			
0	2090.317	0	2090.924
7.354	2089.936	-0.17308	2090.328
18.0729	2084.797	6.885057	2090.205
20.3719	2084.635	16.20086	2085.728
20.9011	2084.336	17.75093	2085.069
21.6502	2084.633	18.41579	2084.698
23.7004	2084.707	20.20437	2084.412
34.0896	2089.226	22.56896	2084.647
41.4772	2089.798	23.57483	2085.153
		25.18898	2085.668
		32.85297	2089.089
		40.71531	2089.739
		40.66453	2090.328





Tributary 3 XS3

0	2073.351	0	2074.051
12.952	2073.495	-0.03881	2073.546
22.6985	2073.63	22.10291	2073.758
28.9878	2070.945	27.95557	2071.452
32.0163	2070.465	29.4829	2070.69
34.9207	2070.913	31.68889	2070.494
41.591	2072.885	33.81575	2070.92
51.7449	2073.032	35.82517	2071.438
63.3994	2072.308	41.79222	2072.867
		63.28317	2072.315
		63.38285	2072.884



Tributary 3 XS4

0	2071.724	0	2071.656
12.6823	2071.343	0.14677	2071.656
22.1933	2071.141	16.15844	2071.333
27.8129	2068.965	25.04563	2070.282
30.3905	2068.369	27.31203	2069.4
31.6451	2068.833	29.84358	2069.306
38.3287	2071.229	31.85192	2069.188
46.6571	2070.919	33.84062	2069.79
54.8194	2070.735	39.57313	2071.489
		54.6651	2070.705
		54.50359	2071.484

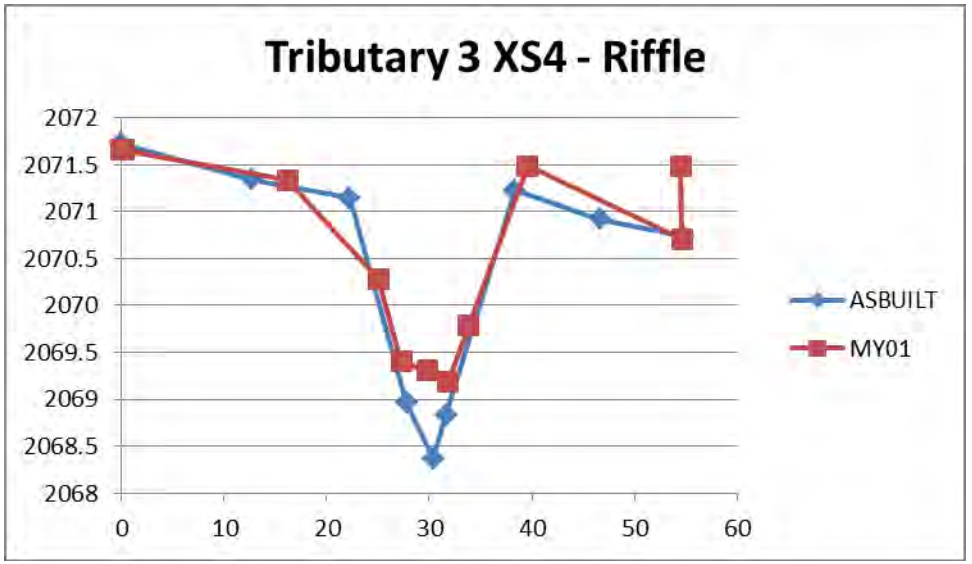
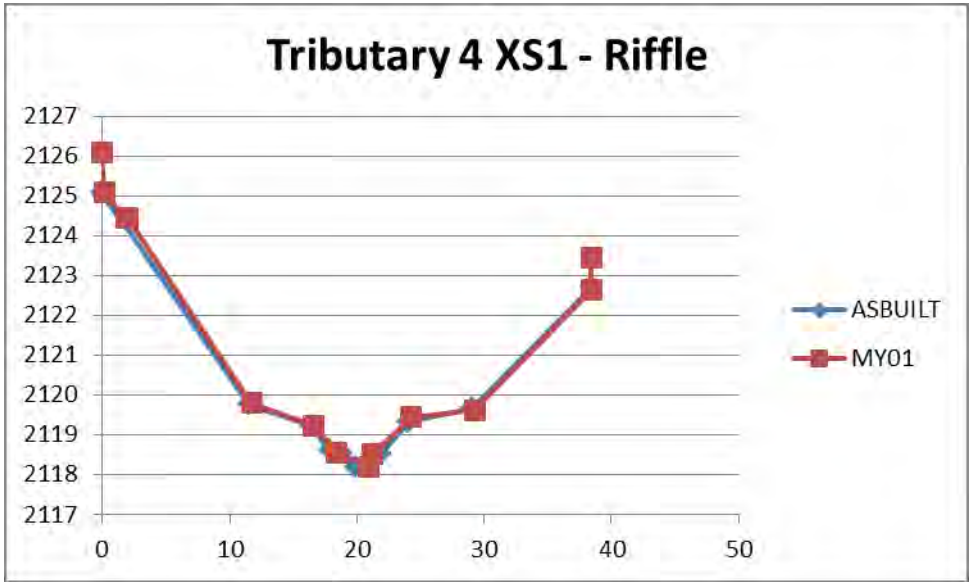
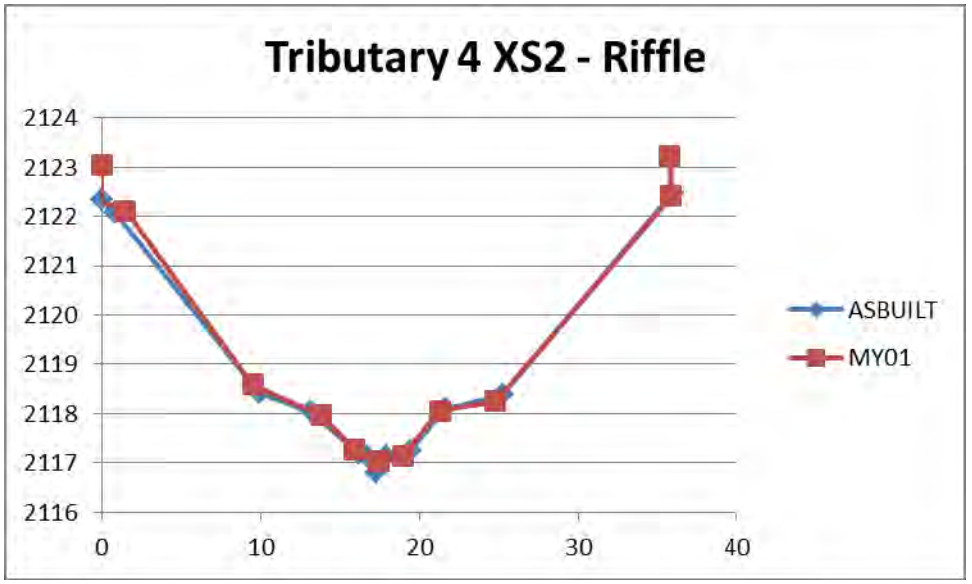


Figure 6: Tributary 4 Cross Sections with Annual Overlays

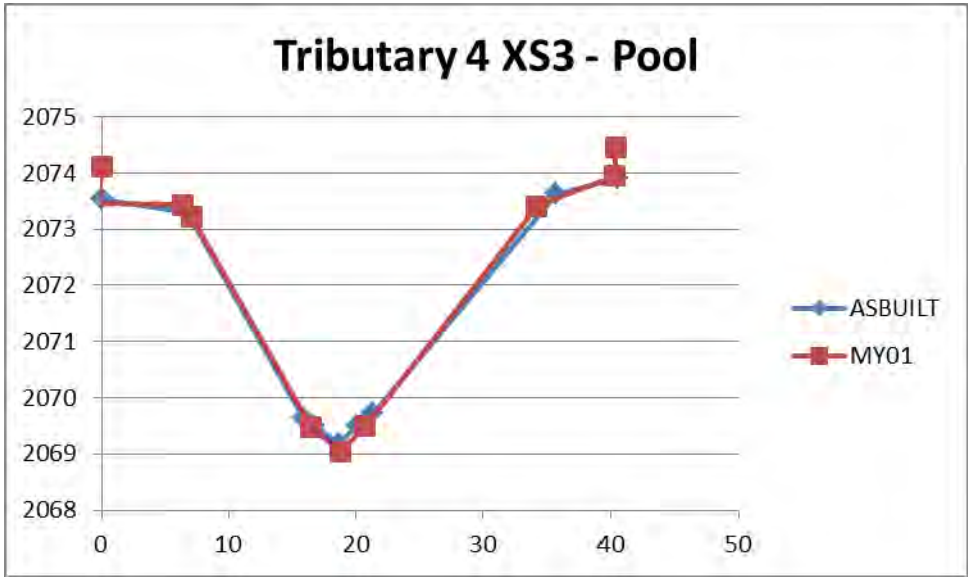
ASBUILT	KEE	MY01	URS
Tributary 4 XS1			
0	2125.088	0	2126.104
11.5109	2119.772	0.215386	2125.097
16.3437	2119.241	1.997277	2124.443
17.8751	2118.608	11.70829	2119.815
18.7881	2118.567	16.54796	2119.25
19.9274	2118.19	18.40678	2118.573
21.2336	2118.513	20.92575	2118.21
21.8528	2118.52	21.25663	2118.529
24.0685	2119.342	24.24425	2119.454
29.0385	2119.684	29.25399	2119.631
38.4749	2122.718	38.41854	2122.645
		38.43441	2123.47
Tributary 4 XS2			
0	2122.342	0	2123.046
0.8774	2122.071	-0.01685	2122.294
9.9427	2118.425	1.50208	2122.114
13.1583	2118.039	9.538081	2118.588
16.2575	2117.185	13.8415	2117.968
16.7109	2117.141	15.94177	2117.257
17.3258	2116.808	17.43979	2117.048
17.9615	2117.142	18.97572	2117.136
19.4388	2117.249	21.31461	2118.055
21.6126	2118.095	24.79897	2118.256
25.264	2118.382	35.84622	2122.41
35.9667	2122.48	35.76429	2123.237





Tributary 4 XS3

0	2073.531	0	2074.116
6.713	2073.303	-0.16896	2073.456
15.875	2069.633	6.410163	2073.432
16.7022	2069.501	7.093794	2073.225
18.642	2069.181	16.51426	2069.473
20.1439	2069.5	18.82204	2069.044
21.3602	2069.723	20.71916	2069.488
35.7631	2073.628	34.26652	2073.413
40.42	2073.901	40.28983	2073.942
		40.36187	2074.466



Tributary 4 XS4

0	2067.418	0	2067.956
9.0065	2067.141	0.023171	2067.414
13.6894	2065.575	8.75727	2067.159
14.6259	2065.182	13.30672	2065.679
16.5262	2065.571	15.70544	2065.359
17.753	2065.614	17.65132	2065.677
21.7288	2066.85	23.2549	2067.079
29.8366	2067.517	38.02008	2068.011
38.1695	2067.994	38.05953	2068.857

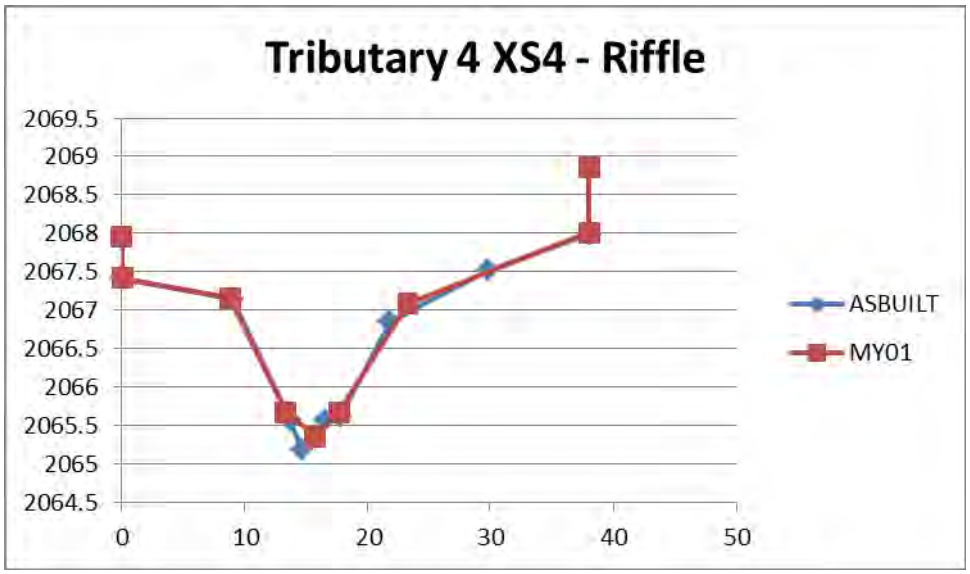
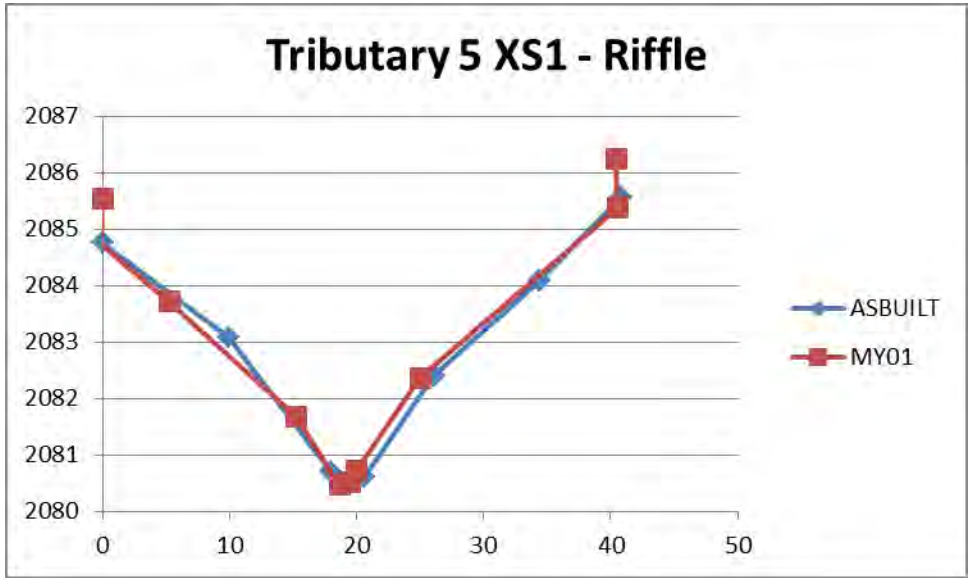
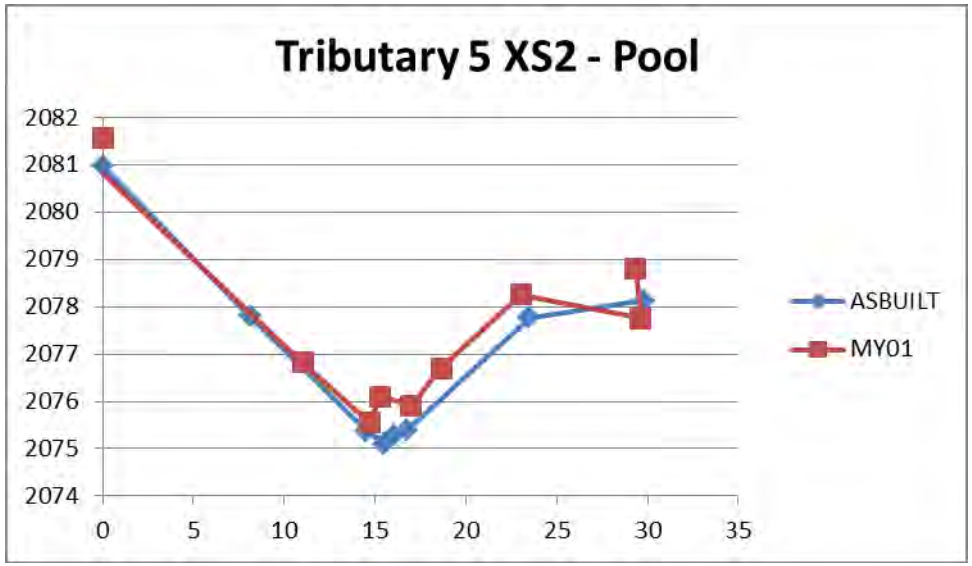


Figure 7: Tributary 5 Cross Sections with Annual Overlays

ASBUILT	KEE	MY01	URS
Tributary 5 XS1			
0	2084.768	0	2085.543
9.9361	2083.083	-0.09483	2084.734
17.9744	2080.71	5.253615	2083.716
19.1036	2080.467	15.27134	2081.677
20.6072	2080.618	18.66319	2080.471
26.1441	2082.408	19.53187	2080.529
34.3842	2084.085	19.97088	2080.713
40.8249	2085.581	25.03929	2082.373
		40.55632	2085.38
		40.42989	2086.259



Tributary 5 XS2			
0	2080.978	0	2081.575
8.1352	2077.799	-0.17065	2080.873
14.512	2075.366	11.01095	2076.821
15.5091	2075.095	14.72771	2075.547
16.0631	2075.285	15.26556	2076.101
16.7233	2075.389	16.96556	2075.918
23.4744	2077.77	18.62666	2076.703
29.8109	2078.129	23.00408	2078.257
		29.62962	2077.754
		29.34921	2078.799



Tributary 5 XS3

0	2069.74	0	2070.401
11.6367	2069.116	0.259123	2069.636
27.1749	2068.078	13.46513	2068.989
37.3558	2065.506	28.11415	2068.191
38.0937	2065.141	36.02051	2066.172
38.713	2065.439	36.92337	2065.45
48.0923	2068.717	37.87496	2065.146
52.6765	2069.258	38.62884	2065.136
		40.32828	2066.38
		47.76763	2068.708
		52.34227	2069.255
		52.45814	2069.78

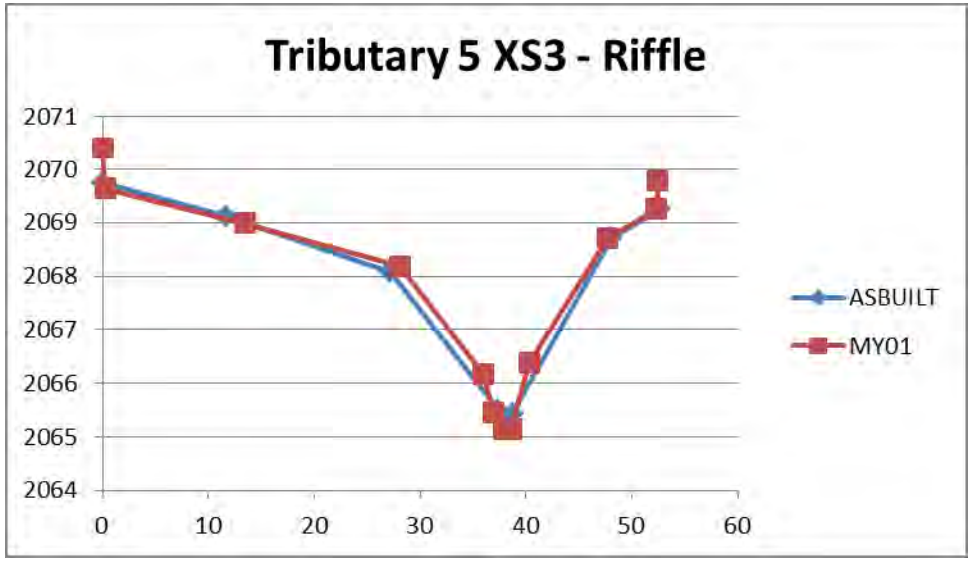
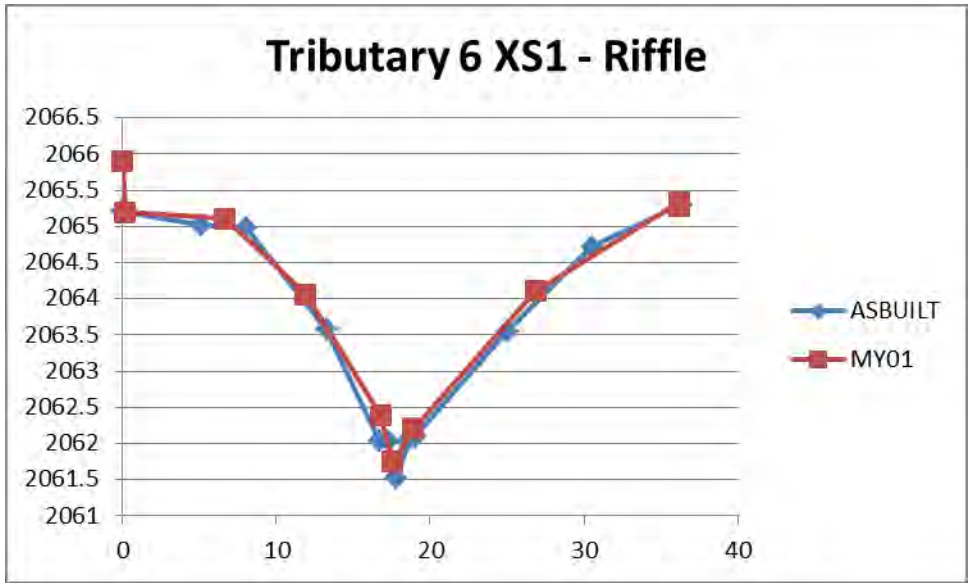


Figure 8: Tributary 6 Cross Sections with Annual Overlays

ASBUILT	KEE	MY01	URS
Tributary 6 XS1			
0	2065.207	0	2065.902
5.1102	2065.021	0.170586	2065.194
8.0812	2064.969	6.664301	2065.102
13.2725	2063.57	11.8903	2064.059
16.6861	2062.04	16.75593	2062.392
17.2919	2062.031	17.56684	2061.746
17.8299	2061.514	18.88507	2062.204
18.5677	2062.035	26.86961	2064.102
19.0027	2062.096	36.21422	2065.336
25.013	2063.542	36.18303	2065.282
30.5069	2064.721		
36.3639	2065.302		



Tributary 6 XS2			
0	2062.443	0	2063.1
3.6619	2062.296	-0.05545	2062.538
8.9382	2060.953	5.603016	2062.007
13.9563	2059.068	15.21326	2058.837
15.038	2059.075	16.06051	2058.761
15.7537	2058.611	16.70657	2059.114
16.7229	2059.046	25.87305	2062.229
17.6075	2059.169	32.98836	2062.97
23.0162	2061.227	32.86977	2063.495
27.891	2062.558		
33.0173	2062.884		

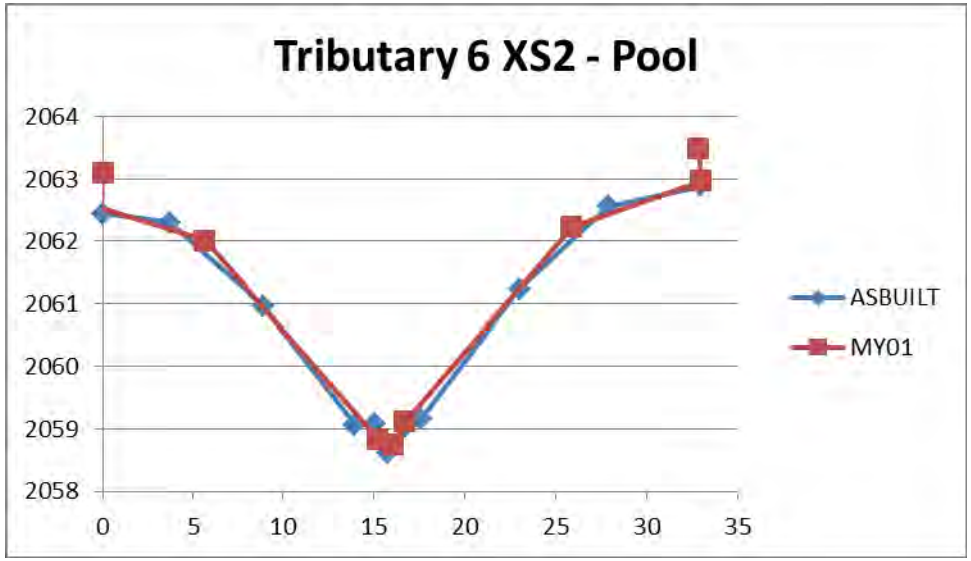
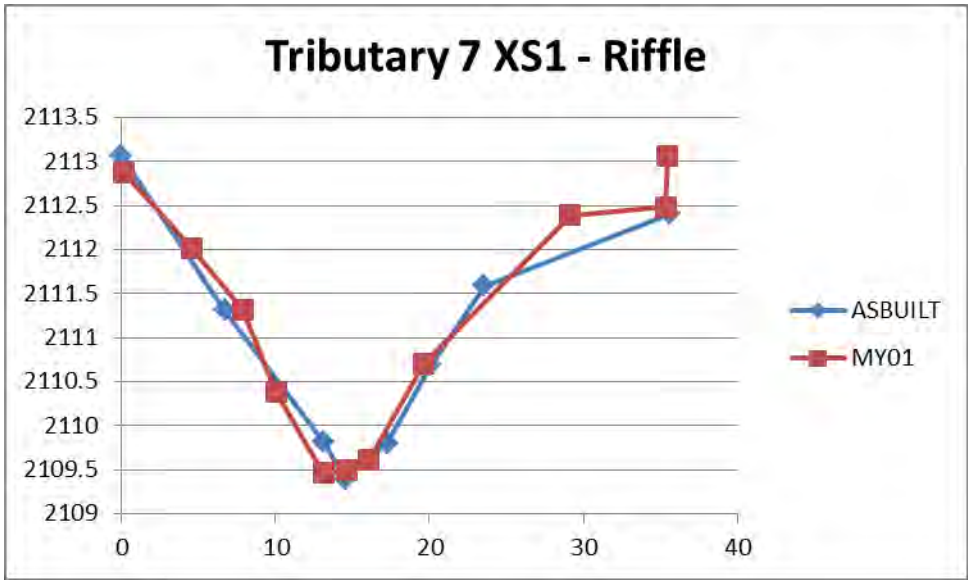
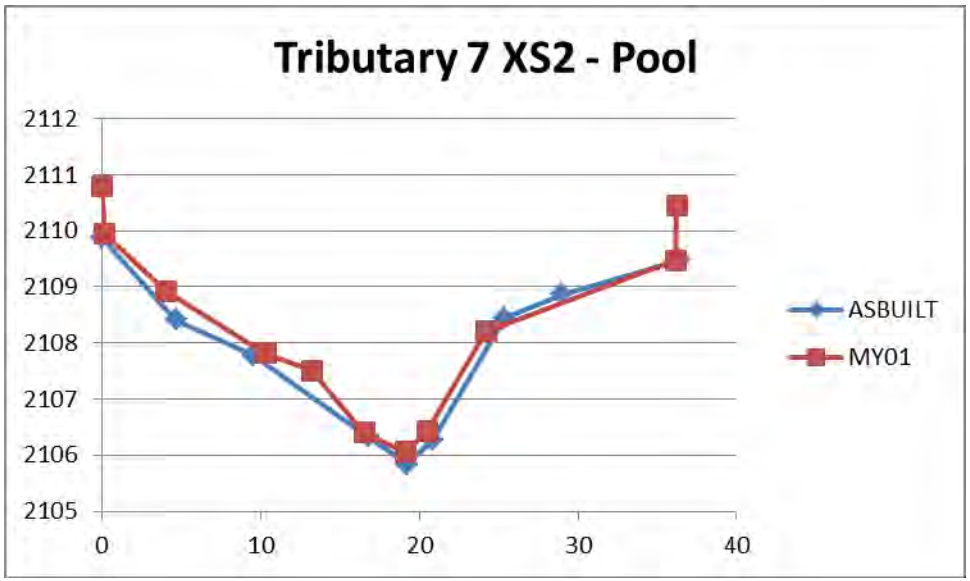


Figure 9: Tributary 7 Cross Sections with Annual Overlays

ASBUILT	KEE	MY01	URS
Tributary 7 XS1		**0**	**2113.942**
0	2113.059	0.170173	2112.874
6.692	2111.314	4.511866	2112.02
13.0981	2109.82	7.856649	2111.319
14.5224	2109.394	10.02741	2110.392
17.2525	2109.808	13.08877	2109.466
20.0815	2110.685	14.64164	2109.497
23.5637	2111.59	16.08365	2109.616
35.5953	2112.404	19.63806	2110.706
		29.12924	2112.389
		35.34868	2112.488
		35.4668	2113.071



Tributary 7 XS2			
0	2109.889	0	2110.796
4.6974	2108.411	0.211658	2109.939
9.5241	2107.785	4.05761	2108.926
16.8032	2106.327	10.34199	2107.815
19.2671	2105.839	13.23446	2107.511
20.8651	2106.278	16.54584	2106.401
25.3761	2108.449	19.11315	2106.054
29.0252	2108.868	20.51627	2106.428
36.412	2109.489	24.18848	2108.202
		36.12938	2109.478
		36.24324	2110.439



Tributary 7 XS3

0	2107.563	0	2108.508
4.896	2106.438	0.345399	2107.64
9.9297	2105.445	12.83133	2104.846
16.0263	2104.034	16.15852	2104.064
16.6955	2103.969	17.74054	2103.859
17.6171	2103.434	18.39397	2104.057
18.6981	2103.957	23.03811	2104.367
23.5854	2104.338	33.878	2104.465
37.031	2104.53	36.91019	2104.677
		36.86137	2105.709

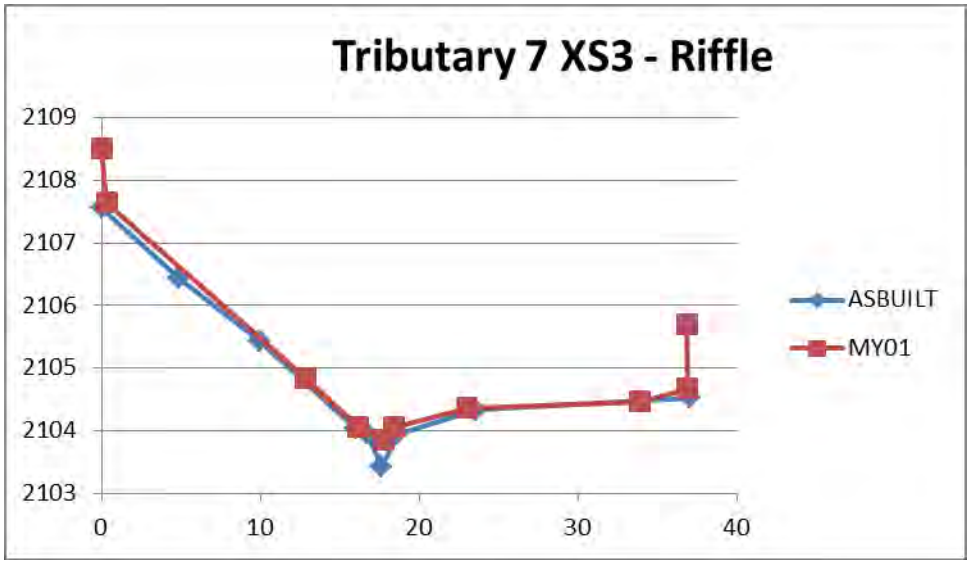
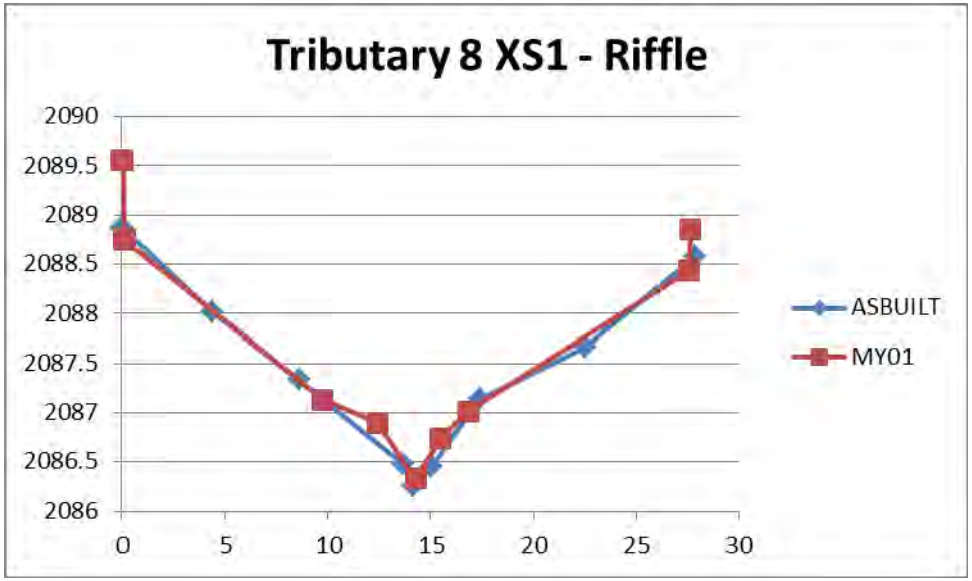


Figure 10: Tributary 8 Cross Sections with Annual Overlays

ASBUILT	KEE	MY01	URS
Tributary 8 XS1			
0	2088.866	0	2089.558
4.3722	2088.015	0.087444	2088.745
8.5766	2087.338	9.741953	2087.133
13.6451	2086.481	12.37684	2086.896
14.178	2086.255	14.26524	2086.33
15.03	2086.449	15.49935	2086.739
17.3791	2087.138	16.83794	2087.014
22.5153	2087.659	27.57021	2088.431
27.9271	2088.582	27.67419	2088.855



Tributary 8 XS2			
0	2085.87	0	2086.916
6.5793	2085.503	0.132401	2085.886
13.5852	2084.891	7.155253	2085.435
17.2138	2083.882	14.05323	2084.826
20.4788	2082.949	15.40979	2085.075
20.913	2082.603	18.92978	2083.029
21.5218	2083.027	20.26776	2082.6
21.9434	2083.014	21.0948	2082.951
26.5054	2084.724	28.05334	2085.07
29.8083	2085.333	40.13351	2086.397
35.4288	2085.921	40.00668	2086.981
40.5595	2086.596		

Tributary 8 XS3

0	2080.628	0	2081.126
9.0582	2077.766	0.283333	2080.397
16.5234	2076.258	9.103866	2078.007
17.2599	2075.81	16.1319	2076.581
18.3059	2076.27	18.47925	2076.159
19.3278	2076.216	20.09282	2076.003
20.6701	2076.328	26.8312	2077.65
28.9041	2078.314	35.37581	2080.549
35.6205	2080.635	35.42574	2081.159

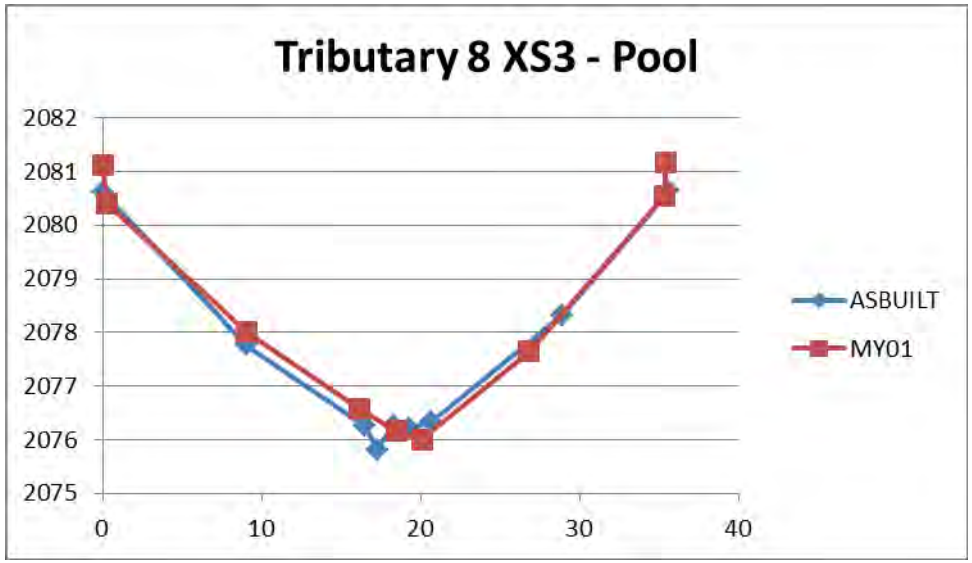
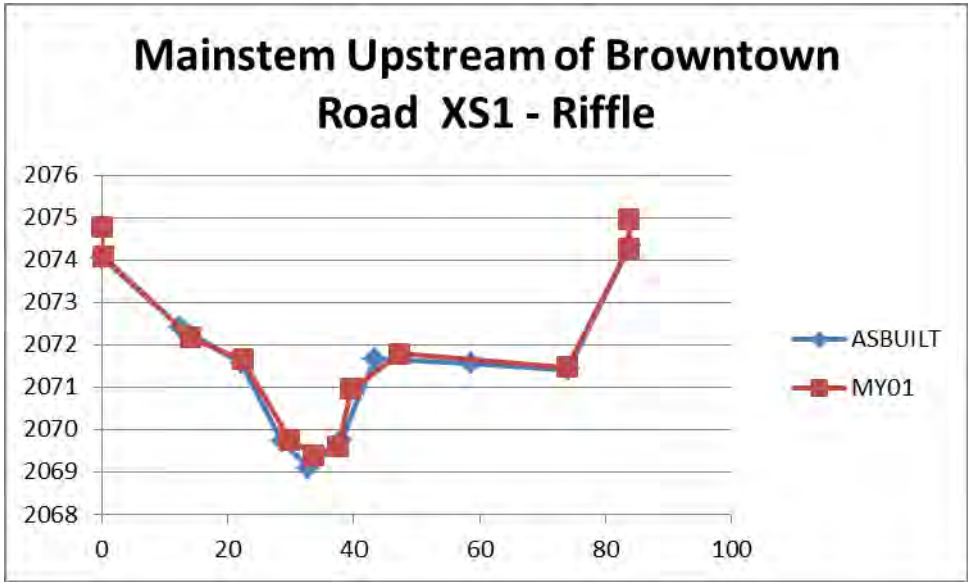
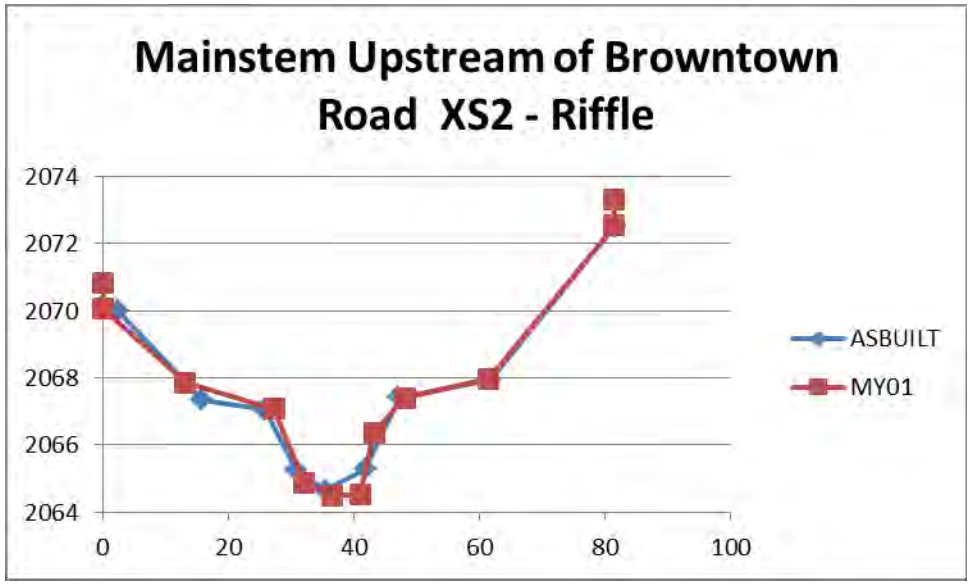


Figure 11: Mainstem – Upstream of Browntown Road Cross Sections with Annual Overlays

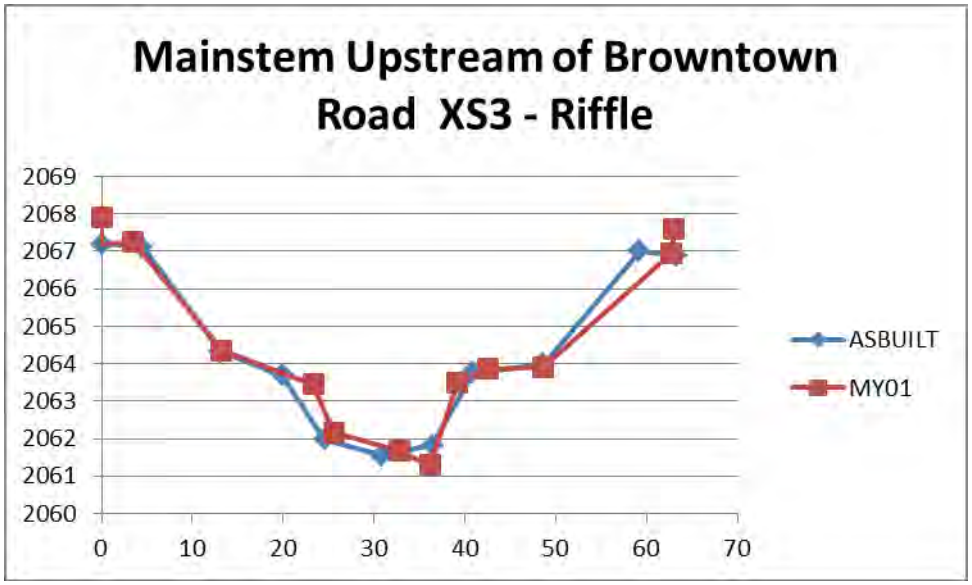
ASBUILT	KEE	MY01	URS
Mainstem Upstream of Browntown Road XS1			
0	2074.062	0	2074.785
12.4161	2072.436	0.190642	2074.106
22.2392	2071.571	14.18439	2072.185
28.7208	2069.726	22.42869	2071.657
32.9903	2069.114	29.84485	2069.777
38.2432	2069.779	33.76136	2069.414
43.2398	2071.676	37.6735	2069.624
58.6085	2071.571	39.72002	2070.966
74.0392	2071.416	47.25424	2071.795
83.8001	2074.363	73.78605	2071.482
		83.56627	2074.263
		83.68641	2074.963
Mainstem Upstream of Browntown Road XS2			
0	2070.132	0	2070.824
2.6192	2069.988	0.162032	2070.062
15.8434	2067.338	13.22128	2067.865
25.86	2067.062	27.30757	2067.067
30.8474	2065.253	32.09822	2064.854
35.4955	2064.659	36.64648	2064.494
41.829	2065.279	40.96082	2064.526
47.2124	2067.417	43.20298	2066.361
61.8097	2067.952	48.13507	2067.409
81.5124	2072.516	61.48845	2067.97
		81.41545	2072.532
		81.36586	2073.318





Mainstem Upstream of Browntown Road XS3

0	2067.19	0	2067.909
4.4327	2067.123	-0.08434	2067.195
13.0977	2064.323	3.500402	2067.247
19.916	2063.687	13.19118	2064.349
24.5923	2061.976	23.30554	2063.452
30.8506	2061.55	25.55423	2062.158
36.445	2061.819	32.85302	2061.676
40.9076	2063.75	36.14812	2061.285
48.6652	2064	39.15416	2063.495
59.2229	2067	42.57862	2063.867
63.2372	2066.886	48.61612	2063.903
		62.74341	2066.95
		63.01939	2067.611



Mainstem Upstream of Browntown Road XS4

0	2063.374	0	2064.138
4.6347	2063.354	-0.12245	2063.357
16.0365	2061.006	5.074076	2063.31
29.2988	2058.193	14.48287	2061.309
34.0709	2057.426	22.82143	2059.81
41.3221	2058.018	29.05834	2058.238
49.4528	2062.263	31.31254	2057.991
63.2853	2068.569	42.56595	2058.514
		49.59962	2061.979
		62.79528	2068.506
		63.06256	2069.027

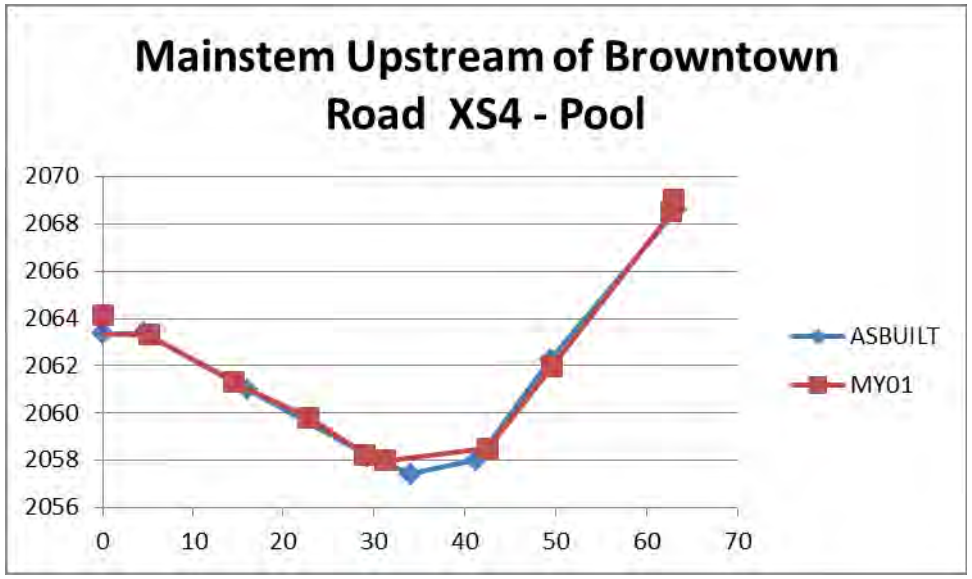
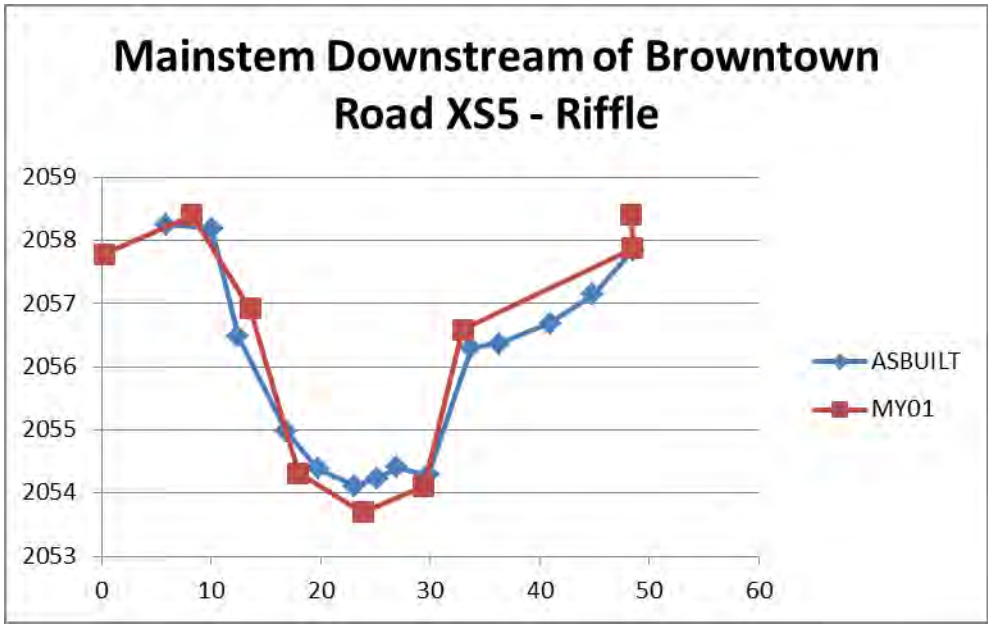


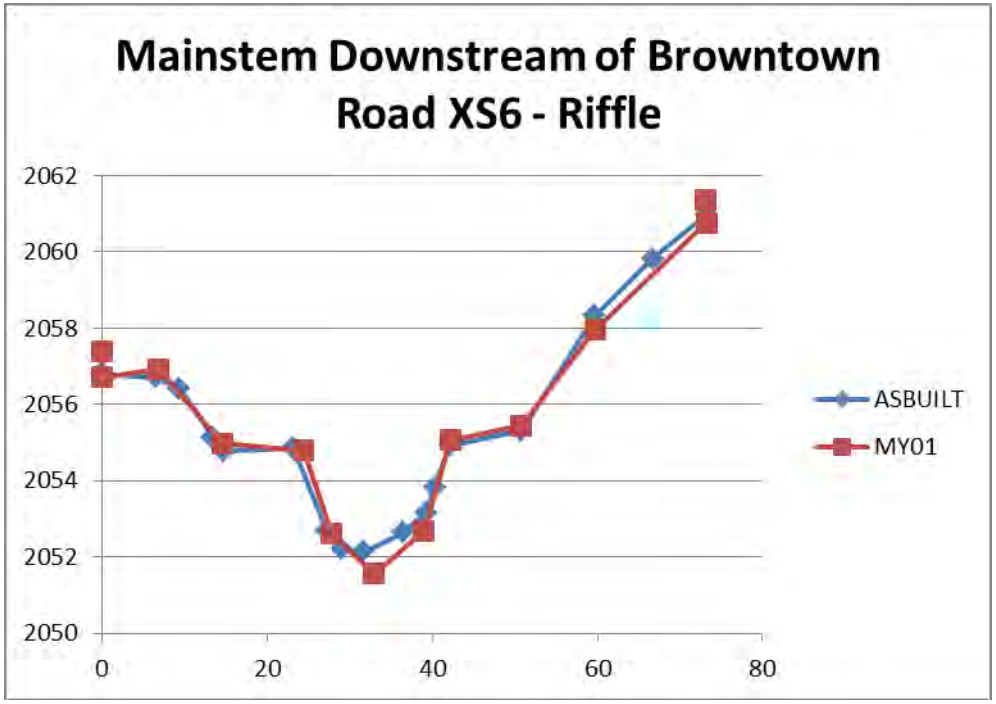
Figure 12: Mainstem – Downstream of Browntown Road Cross Sections with Annual Overlays

ASBUILT	KEE	MY01	URS
Mainstem Downstream of Browntown Road XS5			
0	2057.925	0	2058.401
5.9297	2058.253	0.254092	2057.789
10.0609	2058.19	8.244269	2058.402
12.4738	2056.482	13.5959	2056.927
16.821	2054.986	17.94469	2054.32
19.7434	2054.383	23.86181	2053.693
23.0883	2054.108	29.37834	2054.11
25.1727	2054.237	32.94966	2056.588
26.9522	2054.404	48.48176	2057.877
29.8047	2054.287	48.36411	2058.401
33.7347	2056.304		
36.2155	2056.369		
40.9048	2056.694		
44.8342	2057.144		
48.5411	2057.842		



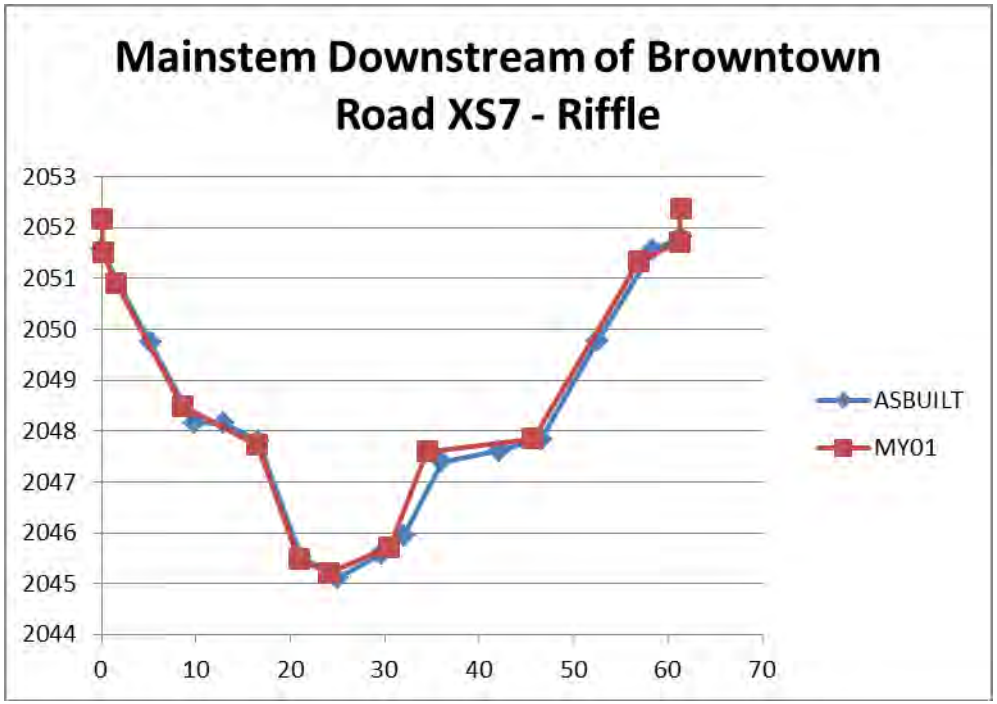
Mainstem Downstream of Browntown Road

XS6			
0	2056.814	0	2057.39
6.562	2056.708	0.112307	2056.706
9.399	2056.419	6.911837	2056.926
13.4204	2055.146	14.57364	2054.986
14.7415	2054.769	24.47848	2054.802
23.2017	2054.869	27.87139	2052.611
27.2717	2052.676	32.98629	2051.573
29.04	2052.228	39.04444	2052.692
31.7226	2052.141	42.16157	2055.055
36.4605	2052.636	50.80796	2055.443
39.2248	2053.157	59.75799	2057.96
40.361	2053.832	73.23866	2060.761
42.1732	2054.926	73.13256	2061.374
50.8334	2055.319		
59.6708	2058.317		
66.6759	2059.827		
73.2022	2060.98		



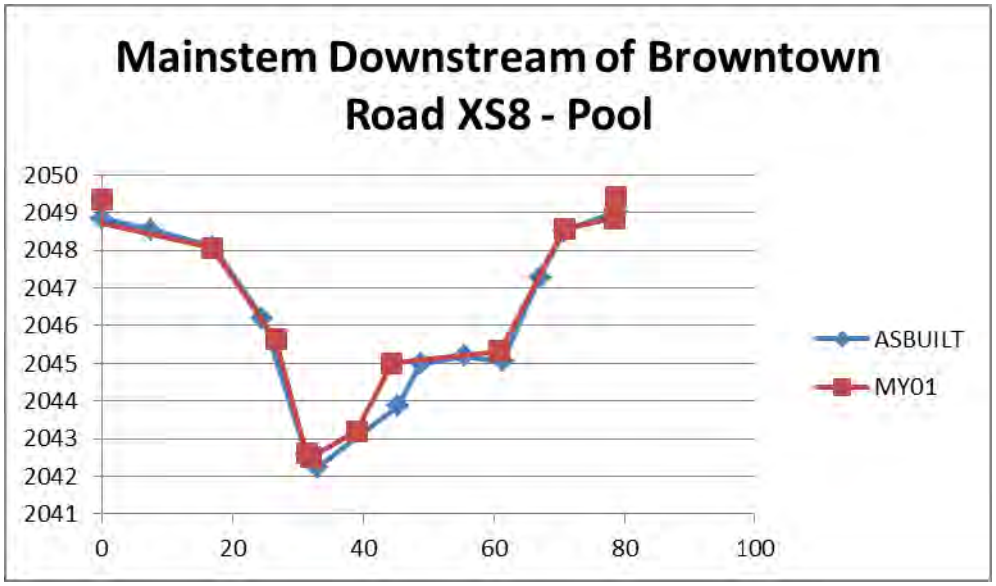
Mainstem Downstream of Browntown Road XS7

0	2051.554	0	2052.17
5.1556	2049.744	0.1247	2051.503
9.8014	2048.158	1.509069	2050.912
12.9772	2048.153	8.539784	2048.494
16.5994	2047.808	16.47183	2047.72
21.1335	2045.515	20.93557	2045.474
25.0671	2045.109	24.0987	2045.217
29.5685	2045.574	30.45494	2045.717
32.0625	2045.948	34.47064	2047.599
36.0525	2047.394	45.66642	2047.851
42.0455	2047.612	56.89481	2051.324
46.57	2047.834	61.22601	2051.717
52.5161	2049.769	61.36053	2052.365
58.4578	**2051.562**		
61.4321	2051.812		



Mainstem Downstream of Browntown Road XS8

0	2048.851	0	2049.361
7.5733	2048.535	-0.04791	2048.724
16.9398	2048.108	16.89786	2048.074
24.6471	2046.195	26.70138	2045.624
31.3548	2042.574	31.34884	2042.598
32.9069	2042.22	31.977	2042.495
45.272	2043.858	39.02618	2043.196
48.8273	2044.981	44.37094	2044.998
55.4931	2045.185	60.87859	2045.334
61.299	2045.054	70.69437	2048.572
67.0118	2047.282	78.42116	2048.846
70.679	2048.508	78.55905	2049.427
78.7178	2049.012		



Mainstem Downstream of Browntown Road XS9

0	2047.164	0	2047.797
15.4834	2047.018	0.009257	2047.009
24.6158	2044.23	13.40299	2047.136
32.5523	2043.681	24.92259	2044.42
35.2546	2042.431	32.25916	2044.081
43.075	2041.533	36.23346	2041.526
47.45	2042.533	42.09675	2041.506
52.3752	2044.295	47.05227	2041.701
60.7911	2044.733	50.80105	2043.939
69.811	2047.474	60.25823	2044.807
76.7954	2047.415	69.37373	2047.438
		76.64137	2047.492
		76.71794	2048.107

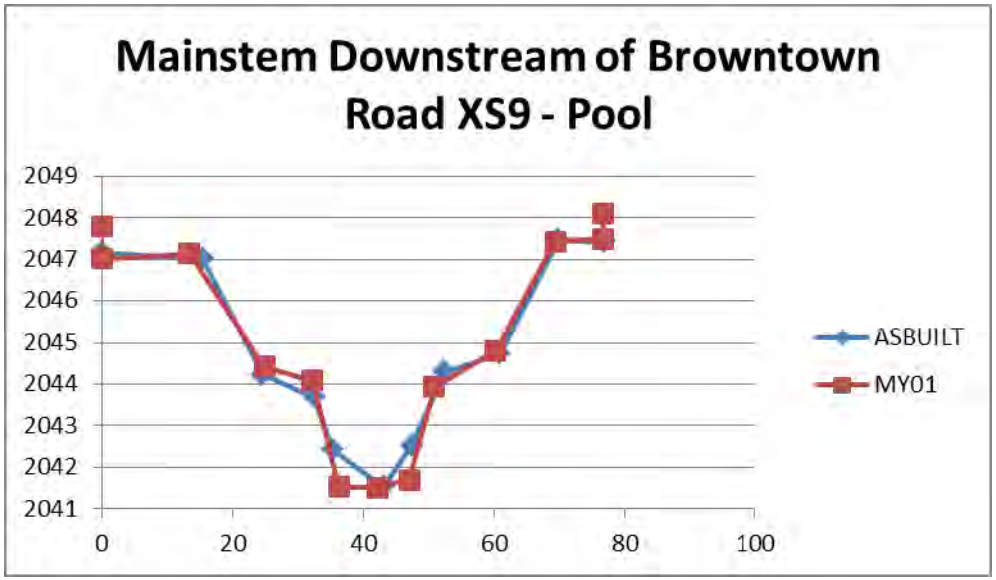


Figure 13: Tributary 3 Longitudinal Profile with Annual Overlays

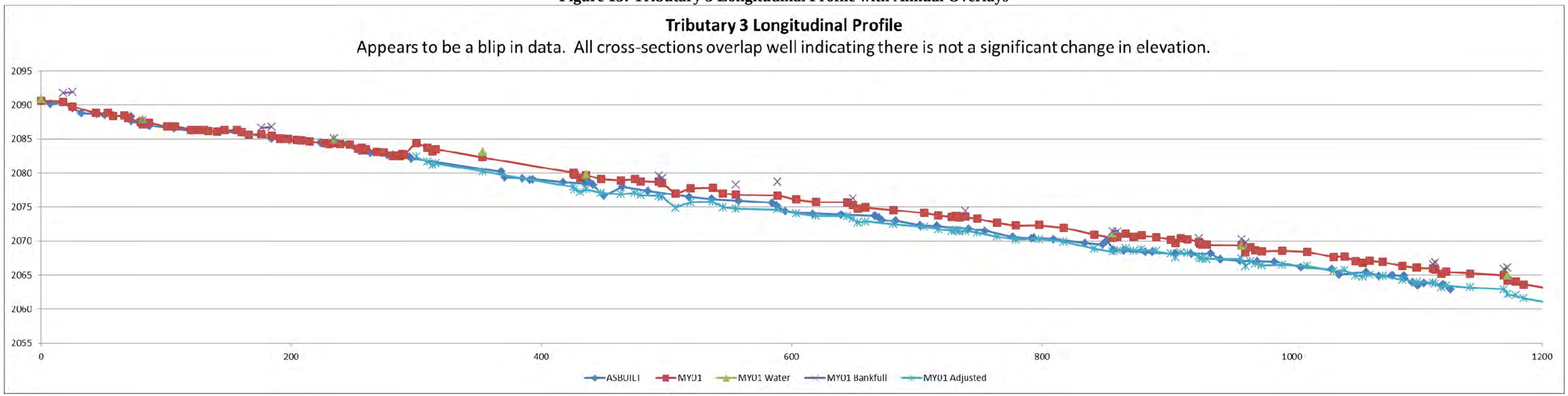


Figure 14: Tributary 4 Longitudinal Profile with Annual Overlays

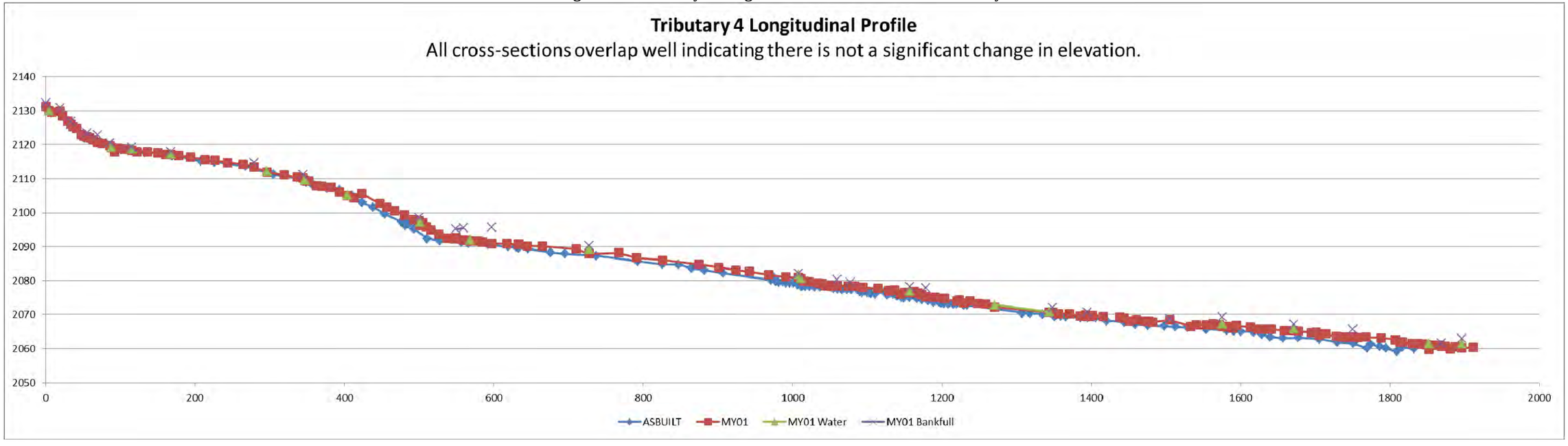


Figure 15: Tributary 5 Longitudinal Profile with Annual Overlays

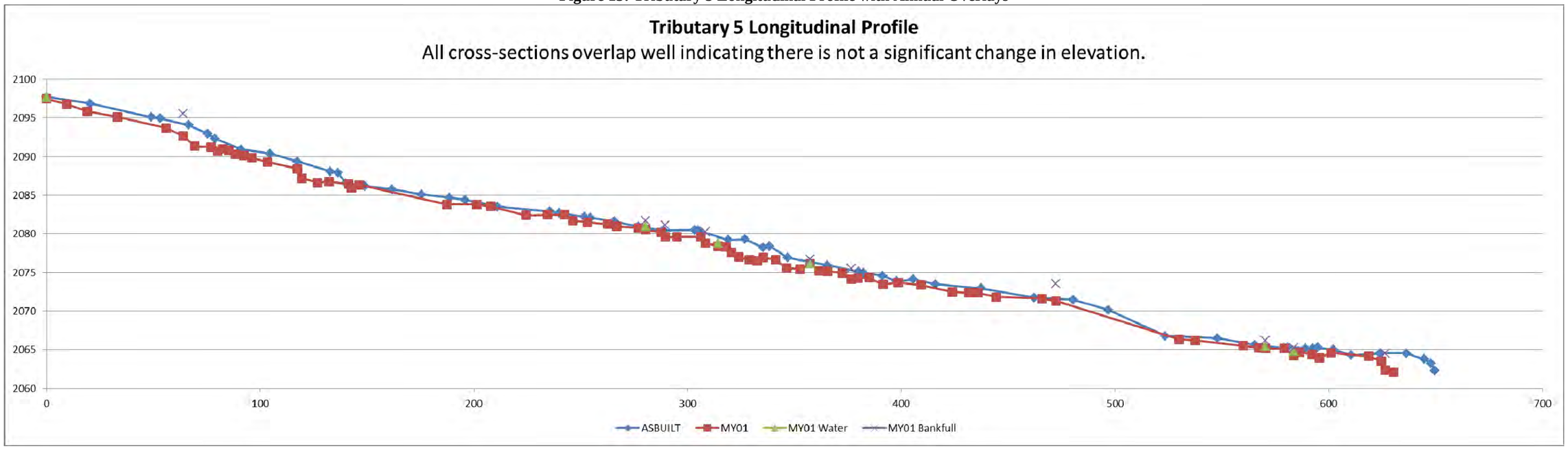


Figure 16: Tributary 6 Longitudinal Profile with Annual Overlays

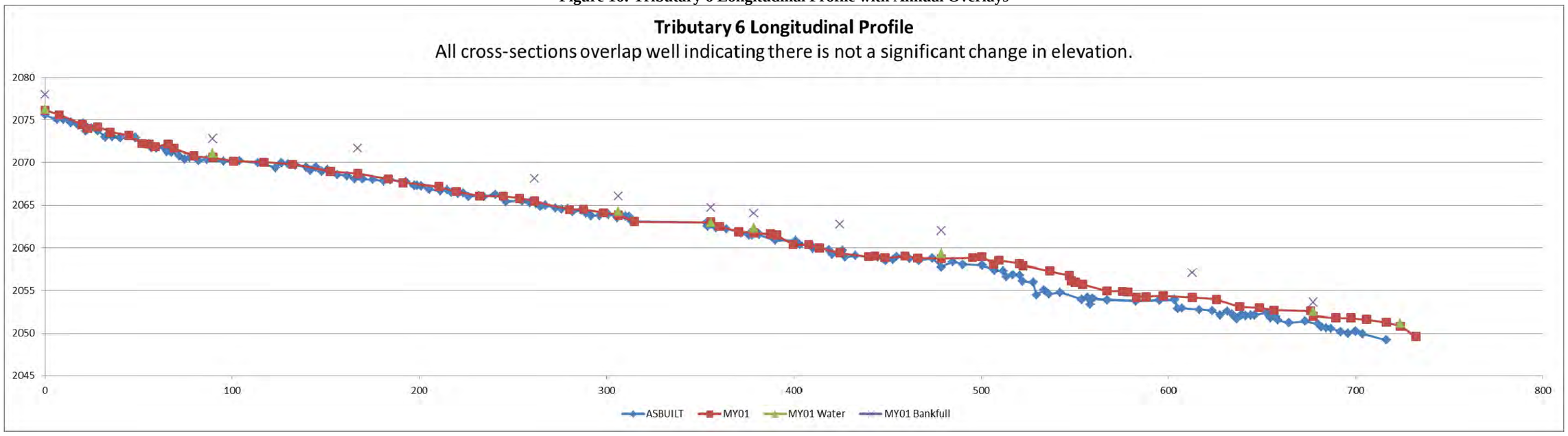


Figure 17: Tributary 7 Longitudinal Profile with Annual Overlays

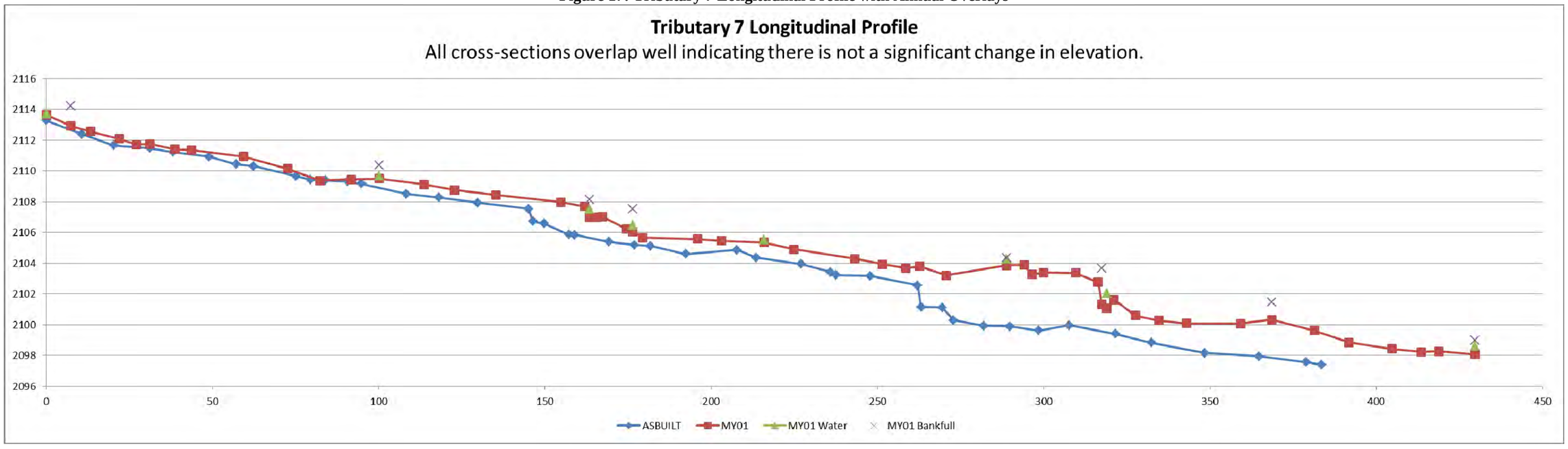


Figure 18: Tributary 8 Longitudinal Profile with Annual Overlays

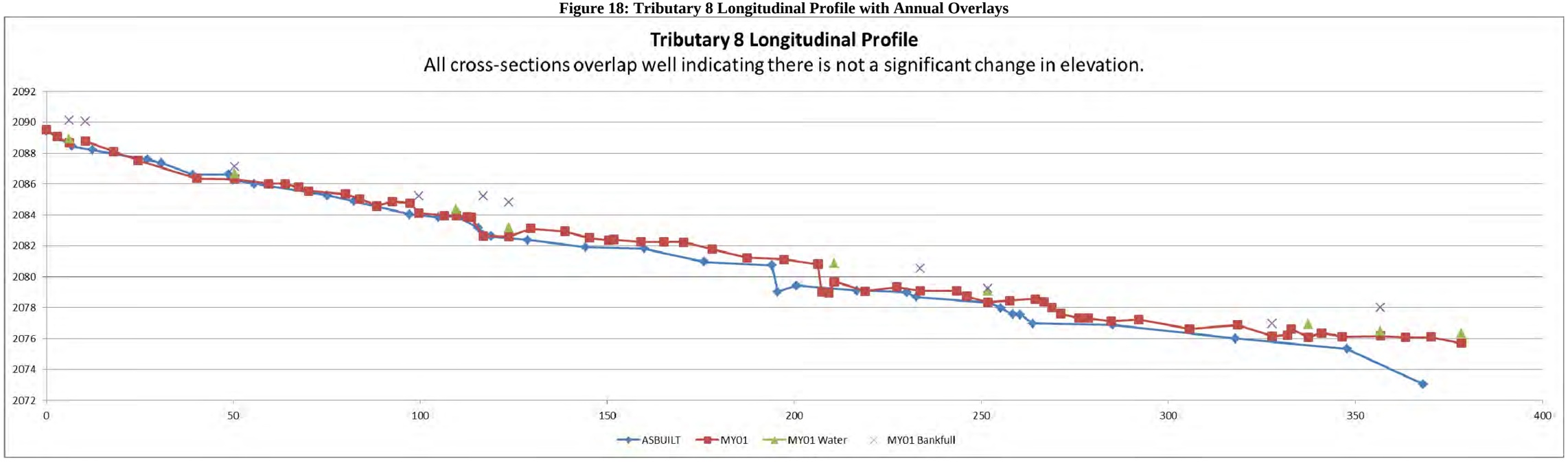


Figure 19: Mainstem – Upstream of Browntown Road Longitudinal Profile with Annual Overlays

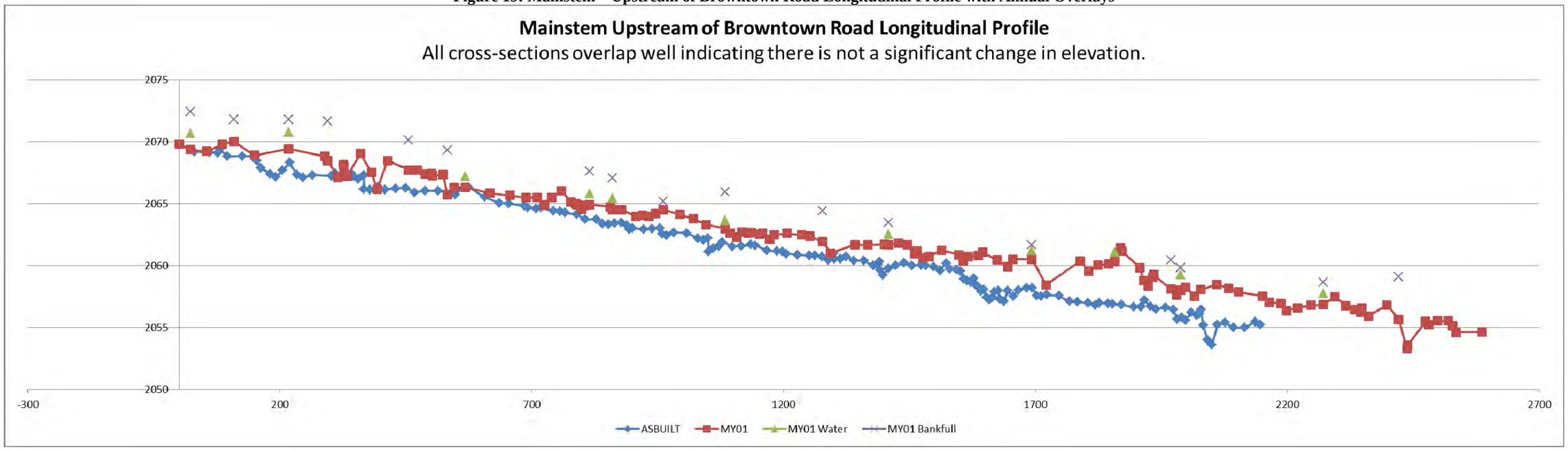


Figure 20: Mainstem – Downstream of Browntown Road Longitudinal Profile with Annual Overlays

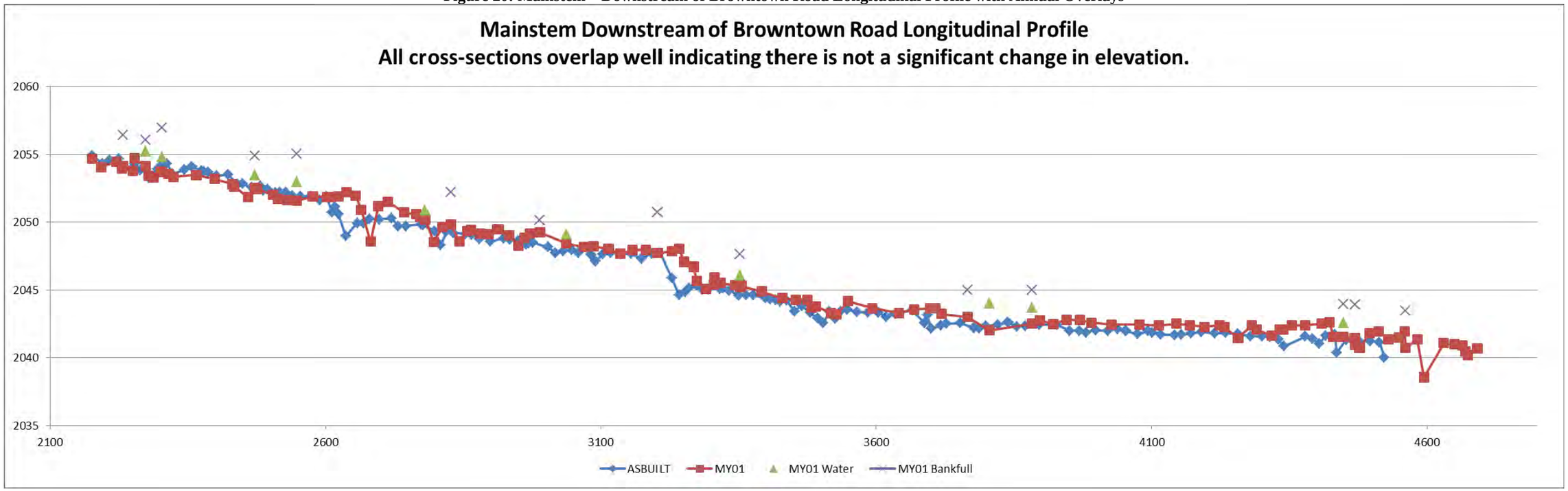


Figure 21: Upstream of Browntown Road Pebble Count Plots with Annual Overlays

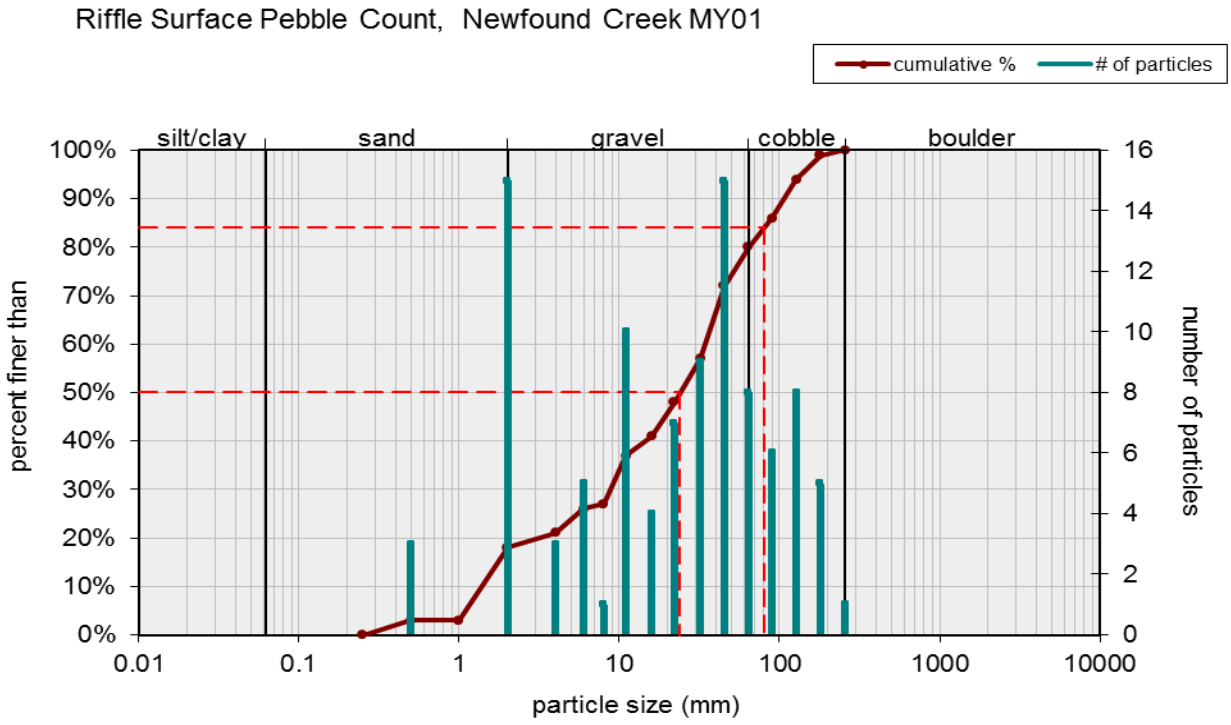


Figure 22: Downstream of Browntown Road Pebble Count Plots with Annual Overlays

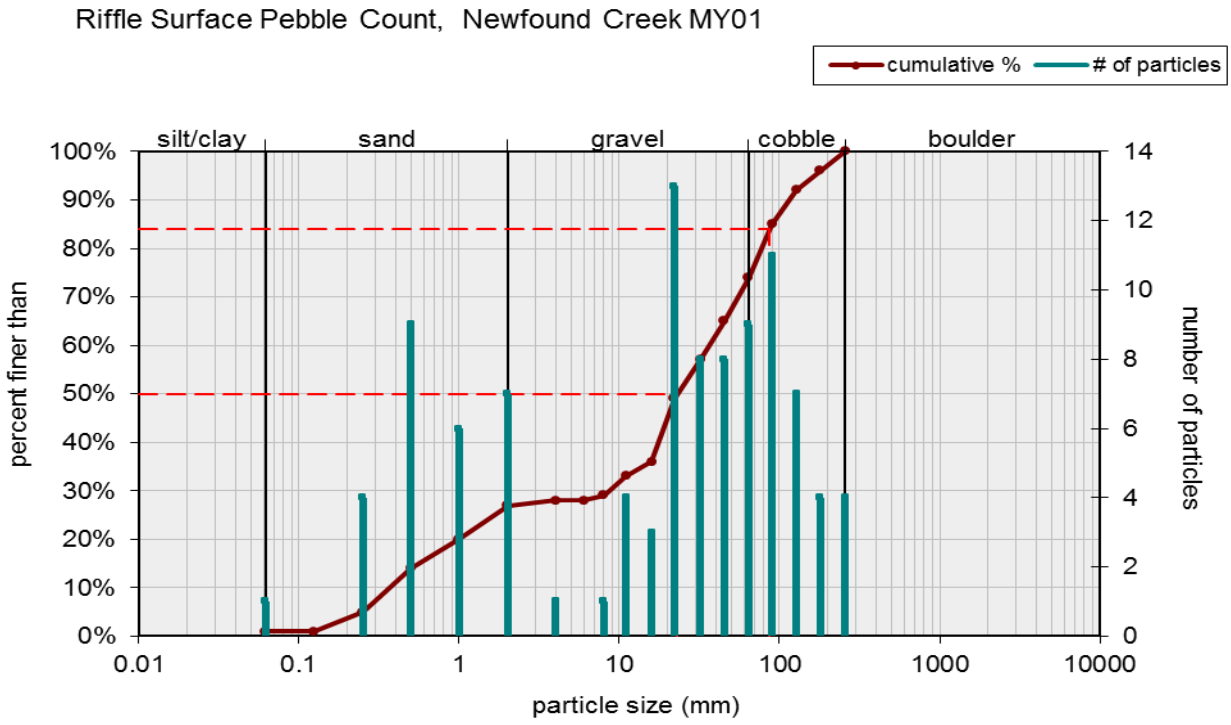


Table 9a: Baseline Stream Data Summary – Tributary 3

Newfound Creek Stream Restoration

EEP Project Number 92497

Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 3 (1060 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate		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)				8.4	6.9	10.5	11.4	15.9	3.6	5	7.3	8.2	8.2	9.1	--	2		8.4							
Floodprone Width (ft)					10	29.7	35.0	60	23.5	5	17.5	21.4	21.4	25.3	--	2		18							
Bankfull Mean Depth (ft)				0.6	0.7	0.9	0.9	1.1	0.1	5	0.8	0.95	1.0	1.1	--	2		0.8							
[1]Bankfull Max Depth (ft)					1.1	1.5	1.7	2.3	0.5	5	1.3	1.55	1.6	1.8	--	2		1.7							
Bankfull Cross Sectional Area (ft^2)				4.8	6.8	9.5	10.9	15	3.6	5	6.1	8.3	8.3	10.5	--	2		8.3							
Width/Depth Ratio					6.9	11.7	11.8	16.7	4.1	5	8.3	8.7	8.7	9.1	--	2		10							
Entrenchment Ratio					1.4	2.6	3.1	4.7	1.5	5	2.1	2.6	2.6	3.1	--	2		2.1							
[1]Bank Height Ratio					1	2.9	4.0	6.9	2.4	**5**	**0.8**	1.0	**1.0**	**1.2**	--	**2**		**1**							
Profile																									
Riffle Length (ft)																									
Riffle Slope (ft/ft)											0.009	0.005	0.005	0.001	--	2		0.048							
Pool Length (ft)																									
Pool Max depth (ft)					1.1	1.1	1.1	1.2	--	2	2.9	2.94	2.9	2.9	--			1.7							
Pool Spacing (ft)					175	385	387.5	600	--	3	100	150	150.0	200	--	2	10.6	89.5	168.4						
Pattern																									
Channel Beltwidth (ft)					20	31.7	30.0	40		3	20	32.5	45	70			25	32.5	40						
Radius of Curvature (ft)					180	180	180.0	180		1	51	102	153	255			22	43.5	65						
Rc:Bankfull width (ft/ft)					**17.1**	**17.1**	**17.1**	**17.1**		**1**	**6.2**	**12.4**	**19**	**31.1**			**2.6**	**5.2**	**7.7**						
Meander Wavelength (ft)					20	146.7	145.0	270		3	100	135	170	240			40	120	200						
Meander Width Ratio					1.9	3.0	2.9	3.8		3	2.4	3.925	5	8.5			3	3.9	4.8						
Transport parameters																									
Reach Shear Stress (competency) lb/f^2							1.3											1.3							
Max part size (mm) mobilized at bankfull																									

Stream Power (transport capacity) W/m^2				53.4		27.8	
Additional Reach Parameters							
Rosgen Classification				G5/F5	E4b	B5	
Bankfull Velocity (fps)			3.9	3.7		2.3	
Bankfull Discharge (cfs)			18.8	36			
Valley length (ft)				1140	121		
Channel Thalweg length (ft)				1060	130	1197	
Sinuosity (ft)				1.01	1.07	1.05	
Water Surface Slope (Channel) (ft/ft)				0.024	0.0625	0.023	
BF slope (ft/ft)				**0.024**	**0.0625**	**0.023**	
[3]Bankfull Floodplain Area (acres)							
[4]% of Reach with Eroding Banks				**100**	**0**		
Channel Stability or Habitat Metric				**Moderate BEHI**	**Low-Very Low BEHI**		
Biological or Other							

Table 9b: Baseline Stream Data Summary – Tributary 4

Newfound Creek Stream Restoration EEP Project Number 92497																									
Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 4 (1590 feet)																									
Parameter	**Gauge[2]**	**Regional Curve**			**Pre-Existing Condition**						**Reference Reach(es) Data**						**Design**			**Monitoring Baseline**					
Dimension and Substrate		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)				8.4	4	6.9	7.5	11	--	3	7.3	8.2	8.2	9.1	--	2		6							
Floodprone Width (ft)					6	9.8	10.7	15.4	--	3	17.5	21.4	21.4	25.3	--	2		14							
Bankfull Mean Depth (ft)				0.6	0.8	0.9	0.9	1	--	3	0.8	0.95	1.0	1.1	--	2		0.7							
[1]Bankfull Max Depth (ft)					1.1	1.2	1.3	1.4	--	3	1.3	1.55	1.6	1.8	--	2		1.1							
Bankfull Cross Sectional Area (ft^2)				4.8	3.1	5.7	5.8	8.5	--	3	6.1	8.3	8.3	10.5	--	2		4							
Width/Depth Ratio					5.2	8.4	9.7	14.2	--	3	8.3	8.7	8.7	9.1	--	2		8.5							
Entrenchment Ratio					1.4	1.4	1.5	1.5	--	3	2.1	2.6	2.6	3.1	--	2		2.3							
[1]Bank Height Ratio					1.9	2.5	2.5	3.1	--	**3**	**0.8**	1.0	**1.0**	**1.2**	--	**2**		**1**							
Profile																									
Riffle Length (ft)																									
Riffle Slope (ft/ft)											0.009	0.005	0.005	0.001	--	2		0.074							
Pool Length (ft)																									
Pool Max depth (ft)											2.9	2.94	2.9	2.9	--			1.4							
Pool Spacing (ft)											100	150	150.0	200	--	2	7.6	63.8	120						
Pattern																									
Channel Beltwidth (ft)					25	32.5	32.5	40	--	2	20	32.5	45	70			25	32.5	40						
Radius of Curvature (ft)					109	144.5	144.5	180	--	2	51	102	153	255			25	32.5	40						
Rc:Bankfull width (ft/ft)					**15.8**	21.0	21.0	**26.1**	--	2	**6.2**	**12.4**	**19**	**31.1**			**4.2**	**5.5**	**6.7**						
Meander Wavelength (ft)					800	1025.0	1025.0	1250	--	2	100	135	170	240			40	145	250						
Meander Width Ratio					3.6	4.7	4.7	5.8	--	2	2.4	3.925	5	8.5			4.2	5.45	6.7						
Transport parameters																									
Reach Shear Stress (competency) lb/f^2					1.6												1.4								
Max part size (mm) mobilized at bankfull																									

Stream Power (transport capacity) W/m^2				55.1		59.3	
Additional Reach Parameters							
Rosgen Classification				A5/G5/B5/E5	E4b	E5	
Bankfull Velocity (fps)			3.9	4.1		6.4	
Bankfull Discharge (cfs)			18.8	24			
Valley length (ft)				2080	121		
Channel Thalweg length (ft)				2093	130	2107	
Sinuosity (ft)				1.01	1.07	1.01	
Water Surface Slope (Channel) (ft/ft)				0.0376	0.0625	0.0371	
BF slope (ft/ft)				**0.0376**	**0.0625**	**0.0371**	
[3]Bankfull Floodplain Area (acres)							
[4]% of Reach with Eroding Banks				**100**	**0**		
Channel Stability or Habitat Metric				**10% Very High BEHI 90% Moderate BEHI**	**Low-Very Low BEHI**		
Biological or Other							

Table 9c: Baseline Stream Data Summary – Tributary 5

Newfound Creek Stream Restoration

EEP Project Number 92497

Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 5 (675 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate		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)				7.1	6.5	9.4	10.8	15.0	3.0	6	7.3	8.2	8.2	9.1	--	2		8.2							
Floodprone Width (ft)					18.0	40.3	59.0	100.0	40.0	4	17.5	21.4	21.4	25.3	--	2		21.1							
Bankfull Mean Depth (ft)				0.5	0.8	1.0	1.1	1.3	0.2	6	0.8	0.95	1.0	1.1	--	2		1.0							
[1]Bankfull Max Depth (ft)					1.3	2.2	3.6	5.8	1.8	6	1.3	1.55	1.6	1.8	--	2		1.6							
Bankfull Cross Sectional Area (ft^2)				3.5	6.1	9.7	10.1	14.0	2.7	6	6.1	8.3	8.3	10.5	--	2		8.3							
Width/Depth Ratio					4.8	9.4	10.3	15.7	3.6	6	8.3	8.7	8.7	9.1	--	2		8.6							
Entrenchment Ratio					1.7	4.3	8.5	15.3	5.4	6	2.1	2.6	2.6	3.1	--	2		2.6							
[1]Bank Height Ratio					1.0	1.3	1.6	2.1	0.5	6	**0.8**	1.0	**1.0**	**1.2**	--	**2**		**1.0**							
Profile																									
Riffle Length (ft)																									
Riffle Slope (ft/ft)											0.009	0.005	0.005	0.001	--	2		0.095							
Pool Length (ft)																									
Pool Max depth (ft)											2.9	2.94	2.9	2.9	--			2.9							
Pool Spacing (ft)											100	150	150.0	200	--	2	100	132	164						
Pattern																									
Channel Beltwidth (ft)					10.0	32.0	40.0	70.0	23.1	5	20	32.5	45	70			25	52.5	80						
Radius of Curvature (ft)					51.0	128.0	153.0	255.0	110.8	3	51	102	153	255			10	32.5	55						
Rc:Bankfull width (ft/ft)					5.4	15.4	16.3	27.2	11.0	3	**6.2**	**12.4**	**19**	**31.1**			**1.2**	**4.0**	**6.7**						
Meander Wavelength (ft)					100.0	156.7	170.0	240.0	73.7	3	100	135	170	240			50	140	230						
Meander Width Ratio					1.1	4.3	4.3	7.5	4.5	2	2.4	3.925	5	8.5			3	6.4	9.8						
Transport parameters																									
Reach Shear Stress (competency) lb/f^2					3.4												3.5								
Max part size (mm) mobilized at bankfull					287.6												279.1								

Stream Power (transport capacity) W/m^2				232		206	
Additional Reach Parameters							
Rosgen Classification				E4b/G4/B4/E4	E4b	E4b	
Bankfull Velocity (fps)			3.8	6.2		6.3	
Bankfull Discharge (cfs)			13.3	59			
Valley length (ft)				630	121		
Channel Thalweg length (ft)				674.9	130	670	
Sinuosity (ft)				1.07	1.07	1	
Water Surface Slope (Channel) (ft/ft)				0.0625	0.0625	0.0630	
BF slope (ft/ft)				**0.0625**	**0.0625**	**0.0630**	
[3]Bankfull Floodplain Area (acres)							
[4]% of Reach with Eroding Banks				**50**	**0**		
Channel Stability or Habitat Metric				**Very Low to Moderate BEHI**	**Low-Very Low BEHI**		
Biological or Other							

Table 9d: Baseline Stream Data Summary – Tributary 6

Newfound Creek Stream Restoration

EEP Project Number 92497

Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 6 (600 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate		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)				7.5	7.4	9.5	10.2	12.9	3.0	3	7.3	8.2	8.2	9.1	--	2		9.0							
Floodprone Width (ft)					13.7	15.2	16.0	18.2	2.6	3	17.5	21.4	21.4	25.3	--	2		23.2							
Bankfull Mean Depth (ft)				0.5	0.9	1.0	1.0	1.1	0.1	3	0.8	0.95	1.0	1.1	--	2		1.0							
[1]Bankfull Max Depth (ft)					1.5	1.7	1.7	1.8	0.2	3	1.3	1.55	1.6	1.8	--	2		1.7							
Bankfull Cross Sectional Area (ft^2)				3.9	7.5	9.5	9.8	12.1	2.4	3	6.1	8.3	8.3	10.5	--	2		8.5							
Width/Depth Ratio					7.4	9.5	10.6	13.8	3.7	3	8.3	8.7	8.7	9.1	--	2		8.6							
Entrenchment Ratio					1.4	1.6	1.6	1.8	0.2	3	2.1	2.6	2.6	3.1	--	2		2.6							
[1]Bank Height Ratio					2.0	2.1	2.1	2.2	0.1	3	**0.8**	1.0	**1.0**	**1.2**	--	**2**		**1.0**							
Profile																									
Riffle Length (ft)																									
Riffle Slope (ft/ft)											0.009	0.005	0.005	0.001	--	2		0.055							
Pool Length (ft)																									
Pool Max depth (ft)											2.9	2.94	2.9	2.9	--			3.2							
Pool Spacing (ft)											100	150	150.0	200	--	2	110	145	180						
Pattern																									
Channel Beltwidth (ft)					20.0	25.0	25.0	30.0	7.1	2	20	32.5	45	70			30	35	40						
Radius of Curvature (ft)					110.0	146.0	146.0	182.0	50.9	2	51	102	153	255			60	60	60						
Rc:Bankfull width (ft/ft)					11.6	15.4	15.4	19.1	5.3	2	**6.2**	**12.4**	**19**	**31.1**			**6.7**	**6.7**	**6.7**						
Meander Wavelength (ft)					100.0	156.7	150.0	200.0	51.3	3	100	135	170	240			40	120	200						
Meander Width Ratio					2.1	2.7	2.7	3.2	0.8	2	2.4	3.925	5	8.5			3.3	4.15	5						
Transport parameters																									
Reach Shear Stress (competency) lb/f^2					2.2												2.15								
Max part size (mm) mobilized at bankfull					177.3												173.1								

Stream Power (transport capacity) W/m^2				11.6		102.9	
Additional Reach Parameters							
Rosgen Classification				B4/E5	E4b	E4b	
Bankfull Velocity (fps)			3.8	5.1		5.3	
Bankfull Discharge (cfs)			14.8	48			
Valley length (ft)				650	121		
Channel Thalweg length (ft)				663	130	700	
Sinuosity (ft)				1.02	1.07	1.08	
Water Surface Slope (Channel) (ft/ft)				0.0387	0.0625	0.0366	
BF slope (ft/ft)				**0.0387**	**0.0625**	**0.0366**	
[3]Bankfull Floodplain Area (acres)							
[4]% of Reach with Eroding Banks				**50**	**0**		
Channel Stability or Habitat Metric				**Low to Moderate BEHI**	**Low-Very Low BEHI**		
Biological or Other							

Table 910e: Baseline Stream Data Summary – Tributary 7

Newfound Creek Stream Restoration

EEP Project Number 92497

Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 7 (400 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate		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)				8.4	5.5	5.8	5.9	6.2		3	7.3	8.2	8.2	9.1	--	2		5.8							
Floodprone Width (ft)					10.4	13.8	13.3	16.1		3	17.5	21.4	21.4	25.3	--	2		13.8							
Bankfull Mean Depth (ft)				0.6	0.5	0.6	0.6	0.7		3	0.8	0.95	1.0	1.1	--	2		0.6							
[1]Bankfull Max Depth (ft)					1.0	1.1	1.1	1.2		3	1.3	1.55	1.6	1.8	--	2		1.1							
Bankfull Cross Sectional Area (ft^2)				4.8	3.0	3.4	3.5	3.9		3	6.1	8.3	8.3	10.5	--	2		5.8							
Width/Depth Ratio					8.5	10.1	10.6	12.6		3	8.3	8.7	8.7	9.1	--	2		9.7							
Entrenchment Ratio					1.7	2.4	2.3	2.9		3	2.1	2.6	2.6	3.1	--	2		2.4							
[1]Bank Height Ratio					1.0	1.6	1.9	2.8		3	**0.8**	1.0	**1.0**	**1.2**	--	**2**		**1.0**							
Profile																									
Riffle Length (ft)																									
Riffle Slope (ft/ft)											0.009	0.005	0.005	0.001	--	2									
Pool Length (ft)																									
Pool Max depth (ft)											2.9	2.94	2.9	2.9	--			1.2							
Pool Spacing (ft)											100	150	150.0	200	--	2	36.7	76.7	116.7						
Pattern																									
Channel Beltwidth (ft)					20.0	20.0	20.0	20.0		1	20	32.5	45	70			20	30	40						
Radius of Curvature (ft)					175.0	175.0	175.0	175.0		1	51	102	153	255			30	30	30						
Rc:Bankfull width (ft/ft)					30.0	30.0	30.0	30.0		1	**6.2**	**12.4**	**19**	**31.1**			**5.1**	**5.1**	**5.1**						
Meander Wavelength (ft)					130.0	152.5	152.5	175.0		2	100	135	170	240			150	162.5	175						
Meander Width Ratio					3.4	3.4	3.4	3.4		1	2.4	3.925	5	8.5			3.4	4.25	5.1						
Transport parameters																									
Reach Shear Stress (competency) lb/f^2					1.3												1.52								
Max part size (mm) mobilized at bankfull																									

Stream Power (transport capacity) W/m^2				30.7		53.8	
Additional Reach Parameters							
Rosgen Classification				E5	E4b	E5	
Bankfull Velocity (fps)			3.9	3.5		3.6	
Bankfull Discharge (cfs)			18.8	12			
Valley length (ft)				740	121		
Channel Thalweg length (ft)				793	130	796.5	
Sinuosity (ft)				1.07	1.07	1.08	
Water Surface Slope (Channel) (ft/ft)				0.0446	0.0625	0.0414	
BF slope (ft/ft)				**0.0446**	**0.0625**	**0.0414**	
[3]Bankfull Floodplain Area (acres)							
[4]% of Reach with Eroding Banks				**50%**	**0**		
Channel Stability or Habitat Metric				**Upper: Very Low BEHI, Lower: High BEHI**	**Low-Very Low BEHI**		
Biological or Other							

Table 9f: Baseline Stream Data Summary – Tributary 8

Newfound Creek Stream Restoration

EEP Project Number 92497

Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 8 (680 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate		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)				5.8	5.2	7.4	7.7	10.2	2.3	4	7.3	8.2	8.2	9.1	--	2		5.8							
Floodprone Width (ft)					9.4	49.2	54.9	100.3	45.7	4	17.5	21.4	21.4	25.3	--	2		100.0							
Bankfull Mean Depth (ft)				0.4	0.5	0.6	0.7	0.8	0.2	4	0.8	0.95	1.0	1.1	--	2		0.4							
[1]Bankfull Max Depth (ft)					0.8	1.1	1.2	1.5	0.3	4	1.3	1.55	1.6	1.8	--	2		0.5							
Bankfull Cross Sectional Area (ft^2)				2.4	2.4	4.5	5.2	7.9	2.4	4	6.1	8.3	8.3	10.5	--	2		2.4							
Width/Depth Ratio					11.1	12.9	13.7	16.2	2.4	4	8.3	8.7	8.7	9.1	--	2		16.0							
Entrenchment Ratio					1.8	5.8	6.0	10.1	4.5	4	2.1	2.6	2.6	3.1	--	2		17.2							
[1]Bank Height Ratio					1.4	2.4	2.7	3.9	1.1	4	**0.8**	1.0	**1.0**	**1.2**	--	**2**		**1.0**							
Profile																									
Riffle Length (ft)																									
Riffle Slope (ft/ft)											0.009	0.005	0.005	0.001	--	2		0.0553							
Pool Length (ft)																									
Pool Max depth (ft)											2.9	2.94	2.9	2.9	--			0.7							
Pool Spacing (ft)											100	150	150.0	200	--	2	36.5	76.25	116						
Pattern																									
Channel Beltwidth (ft)					20.0	20.0	20.0	20.0		1	20	32.5	45	70			20	35	50						
Radius of Curvature (ft)											51	102	153	255			15	15	15						
Rc:Bankfull width (ft/ft)											**6.2**	**12.4**	**19**	**31.1**			**2.6**	**2.6**	**2.6**						
Meander Wavelength (ft)					100.0	100.0	100.0	100.0		1	100	135	170	240			40	85	130						
Meander Width Ratio					2.7	2.7	2.7	2.7		1	2.4	3.925	5	8.5			3.4	6	8.6						
Transport parameters																									
Reach Shear Stress (competency) lb/f^2					1.6												1.4								
Max part size (mm) mobilized at bankfull																									

Stream Power (transport capacity) W/m^2				67.6		25.2	
Additional Reach Parameters							
Rosgen Classification				G5/E5	E4b	E5	
Bankfull Velocity (fps)			3.6	4.8		3.0	
Bankfull Discharge (cfs)			8.7	22			
Valley length (ft)				277	121		
Channel Thalweg length (ft)				277	130	575	
Sinuosity (ft)				1	1.07	1.05	
Water Surface Slope (Channel) (ft/ft)				0.0499	0.0625	0.0553	
BF slope (ft/ft)				**0.0499**	**0.0625**	**0.0553**	
[3]Bankfull Floodplain Area (acres)							
[4]% of Reach with Eroding Banks				**85%**	**0**		
Channel Stability or Habitat Metric				**Low to High BEHI**	**Low-Very Low BEHI**		
Biological or Other							

Table 9g: Baseline Stream Data Summary – Mainstem Upstream of Browntown Road

Newfound Creek Stream Restoration

EEP Project Number 92497

Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: Main above Browntown Road (2000 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate		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)				44.6	27.2	33.8	38.5	49.7	9.4	5			39.6			1		32.0							
Floodprone Width (ft)					165.0	182.5	182.5	200.0	14.4	4	164	164	164.0	164		2		182.5							
Bankfull Mean Depth (ft)				2.3	1.6	2.3	2.1	2.6	0.5	4			1.9			1		1.7							
[1]Bankfull Max Depth (ft)					3.9	4.3	4.3	4.6	0.3	5			4.7			1		3.4							
Bankfull Cross Sectional Area (ft^2)				103.4	62.8	69.7	68.4	74.0	4.4	5			74.9			1		80.0							
Width/Depth Ratio					10.4	19.1	24.9	39.4	11.7	5			21.0			1		19.0							
Entrenchment Ratio					3.8	5.3	5.2	6.6	1.4	5			4.1			1		5.7							
[1]Bank Height Ratio					1.0	1.3	1.3	1.5	0.2	5	**0.9**	1.0	1.0	**1.1**		**2**		**1.0**							
Profile																									
Riffle Length (ft)											25.5	29	29.25	33		3									
Riffle Slope (ft/ft)											0.019	0.0235	0.0235	0.028		2		0.0228							
Pool Length (ft)											34.0	35.3	35.5	37.0		3									
Pool Max depth (ft)					3.8	5.0	4.9	5.9	0.8	5	3.0	3.0	3.05	3.1		2		4.2							
Pool Spacing (ft)					50.0	268.3	317.5	585.0	175.2	6	50	152	140	230		3	40.4	113.2	185.9						
Pattern																									
Channel Beltwidth (ft)					60.0	87.5	105.0	150.0	41.9	4	120	185	185	250		2	80	115	150						
Radius of Curvature (ft)					25.0	74.8	77.5	130.0	40.2	5	138	174.5	175	211		2	32	86	140						
Rc:Bankfull width (ft/ft)					0.7	2.2	2.3	3.8	1.2	5	**3.5**	4.4	4	**5.3**		2	**1**	**2.7**	**4.4**						
Meander Wavelength (ft)					250.0	420.0	450.0	650.0	153.6	6	200	310	310	420		2	90	220	350						
Meander Width Ratio					1.8	2.6	3.1	4.4	1.2	4	3	4.65	5	6.3		2	2.5	3.6	4.7						
Transport parameters																									
Reach Shear Stress (competency) lb/f^2					1												1.4								
Max part size (mm) mobilized at bankfull					78.0												110.7								

Stream Power (transport capacity) W/m^2					275.4				266.7			
Additional Reach Parameters												
Rosgen Classification					C4/1		C4		C4/1			
Bankfull Velocity (fps)				5.6	8.3				7.2			
Bankfull Discharge (cfs)				579	579							
Valley length (ft)					1950		279					
Channel Thalweg length (ft)					2000		287		2065			
Sinuosity (ft)					1.03		1.03		1.06			
Water Surface Slope (Channel) (ft/ft)					0.0076		0.0054		0.0074			
BF slope (ft/ft)					**0.0076**		**0.0054**		**0.0074**			
[3]Bankfull Floodplain Area (acres)												
[4]% of Reach with Eroding Banks					**90%**		**0**					
Channel Stability or Habitat Metric					**Moderate BEHI**		**Low BEHI**					
Biological or Other												

Table 9h: Baseline Stream Data Summary – Mainstem Downstream of Browntown Road

Newfound Creek Stream Restoration

EEP Project Number 92497

Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: Main below Browntown Road (2400 feet)

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate		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)				45.2	58.2	86.6	86.6	114.9		2	25.3	32.65	32.7	40		2		35.0							
Floodprone Width (ft)					150.0	175.0	175.0	200.0		2	200	200.0	200.0	200		1		175.0							
Bankfull Mean Depth (ft)				2.3	1.1	1.2	1.3	1.4	0.2	4	2.5	2.6	2.6	2.7		2		2.3							
[1]Bankfull Max Depth (ft)					3.2	4.0	4.0	4.7		2	4.3	4.4	4.4	4.5		2		4.0							
Bankfull Cross Sectional Area (ft^2)				105.8	78.6	114.3	114.3	150.0		2	68.8	84.1	84.1	99.3		2		90.0							
Width/Depth Ratio					46.9	69.8	69.8	92.7		2	9.3	12.7	12.7	16.1		2		15.0							
Entrenchment Ratio					1.7	2.0	2.0	2.3		2	5	6.5	6.5	7.9		2		5.0							
[1]Bank Height Ratio					0.7	0.8	0.8	0.8		2	**0.9**	1.0	1.0	**1.1**		**2**		**1.0**							
Profile																									
Riffle Length (ft)											53.5	56.1	56.1	58.7		2									
Riffle Slope (ft/ft)											0.009	0.010	0.010	0.011		2		0.0182							
Pool Length (ft)											30.0	30.0	30.0	30.0		1									
Pool Max depth (ft)					0.8	2.3	2.3	3.7		2	2.9	3.8	3.8	4.6		2		5.8							
Pool Spacing (ft)					205.0	513.3	552.5	900.0	296.6	6	205	552.5	552.5	900		2	44.2	123.8	203.3						
Pattern																									
Channel Beltwidth (ft)					50.0	125.0	125.0	200.0	106.1	2	500	435.0	435.0	370		2	30	80	130						
Radius of Curvature (ft)					91.0	120.5	120.5	150.0	41.7	2	15.3	149.2	149.2	283		1	35	87.5	140						
Rc:Bankfull width (ft/ft)					1.1	1.4	1.4	1.7	0.4	2	**3.5**	6.1	6.1	**8.7**		1	**1**	**2.7**	**4.4**						
Meander Wavelength (ft)					1100.0	1350.0	1350.0	1600.0	353.6	2	200.0	925.0	925.0	1650.0		2	100	200	300						
Meander Width Ratio					0.6	1.5	1.5	2.3	1.2	2	3.0	26.8	26.8	50.6		2	0.9	2.3	3.7						
Transport parameters																									
Reach Shear Stress (competency) lb/f^2					0.5												1								
Max part size (mm) mobilized at bankfull					37.9												78.0								

Stream Power (transport capacity) W/m^2				201.2		218.6	
Additional Reach Parameters							
Rosgen Classification				B4/1	C4	C4/1	
Bankfull Velocity (fps)			5.6	8.3		6.6	
Bankfull Discharge (cfs)			594.2	579			
Valley length (ft)				2110	205		
Channel Thalweg length (ft)				2406	234	2215	
Sinuosity (ft)				1.14	1.14	1.05	
Water Surface Slope (Channel) (ft/ft)				0.0054	0.0063	0.0059	
BF slope (ft/ft)				**0.0054**	**0.0063**	**0.0059**	
[3]Bankfull Floodplain Area (acres)							
[4]% of Reach with Eroding Banks				**90%**	**0**		
Channel Stability or Habitat Metric				**Moderate to High BEHI**	**Low to Moderate BEHI**		
Biological or Other							

Table 10a: Baseline Stream Data Summary (Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions) – Tributary 3

Newfound Creek Stream Restoration EEP Project Number 92497 Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 3 (1060 feet)																													
Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
[1]Ri% / Ru% / P% / G% / S%	93	1	5	1	0			6	5	30	5	0			65	5	25	5				65	5	25	5			
[1]SC% / Sa% / G% / C% / B% / Be%	3	79	13	5	0			9	15	41	16	19																
[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	0.3	0.4	0.5	2.8	64			0.6	4.9	13	300	650	boulder	boulder														
[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10	25	25	25	20						100														100				
[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0	12.5	12.5	25	50							100														100			

Table 10b: Baseline Stream Data Summary (Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions) – Tributary 4

Newfound Creek Stream Restoration EEP Project Number 92497 Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 4 (1590 feet)																													
Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
[1]Ri% / Ru% / P% / G% / S%	90	2	8	2	0			6	5	30	5	0			40	5	20	5	30			55	5	25	5	10		
[1]SC% / Sa% / G% / C% / B% / Be%								9	15	41	16	19																
[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)								0.6	4.9	13	300	650	boulder	boulder														
[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10	33	33	33							100														100				
[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0		33	33	33							100														100			

Table 10c: Baseline Stream Data Summary (Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions) – Tributary 5

Newfound Creek Stream Restoration EEP Project Number 92497 Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 5 (675 feet)																													
Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
[1]Ri% / Ru% / P% / G% / S%	70	5	10	5	10			6	5	30	5	0			45	5	25	5	20			45	5	25	5	20		
[1]SC% / Sa% / G% / C% / B% / Be%	9	15	41	16	19			9	15	41	16	19																
[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	0.6	4.9	13	300	650	boulder	boulder	0.6	4.9	13	300	650	boulder	boulder														
[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10		30	60		10					100														100				
[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0			30	70							100														100			

Table 10d: Baseline Stream Data Summary (Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions) – Tributary 6

Newfound Creek Stream Restoration EEP Project Number 92497 Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 6 (600 feet)																													
Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
[1]Ri% / Ru% / P% / G% / S%								6	5	30	5	0			60	5	30	5				60	5	30	5	0		
[1]SC% / Sa% / G% / C% / B% / Be%								9	15	41	16	19																
[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)								0.6	4.9	13	300	650	boulder	boulder														
[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10	50	50								100														100				
[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0		50	50								100														100			

Table 10e: Baseline Stream Data Summary (Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions) – Tributary 7

Newfound Creek Stream Restoration EEP Project Number 92497 Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 7 (400 feet)																													
Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
[1]Ri% / Ru% / P% / G% / S%	86	2	10	2	0			6	5	30	5	0			80	5	10	5				70	5	20	5	0		
[1]SC% / Sa% / G% / C% / B% / Be%		100						9	15	41	16	19																
[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)								0.6	4.9	13	300	650	boulder	boulder														
[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10		60	40							100														100				
[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0			60	40							100														100			

Table 10f: Baseline Stream Data Summary (Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions) – Tributary 8

Newfound Creek Stream Restoration EEP Project Number 92497 Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 8 (680 feet)																													
Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
[1]Ri% / Ru% / P% / G% / S%			90		10			6	5	30	5	0			73	5	17	5				50	5	30	5	10		
[1]SC% / Sa% / G% / C% / B% / Be%	100							9	15	41	16	19																
[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)								0.6	4.9	13	300	650	boulder	boulder														
[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10										100															100			
[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0											100																	

Table 10g: Baseline Stream Data Summary (Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions) – Mainstem Upstream of Browntown Road

Newfound Creek Stream Restoration EEP Project Number 92497																													
Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: Main above Browntown Road (2000 feet)																													
Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
[1]Ri% / Ru% / P% / G% / S%	80	2.5	15	2.5				6	5	30	5	0			70	5	30	5				60	5	30	5	0		
[1]SC% / Sa% / G% / C% / B% / Be%	1	14	68	15	0	2		1	14	68	15	0	2															
[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	2.5	17	28	63	97	98	75	2.5	17	28	63	97	98	75														
[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10										100															100		
[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0											100														100		

Table 10h: Baseline Stream Data Summary (Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions) – Mainstem Downstream of Browntown Road

Newfound Creek Stream Restoration EEP Project Number 92497																													
Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: Main below Browntown Road (2400 feet)																													
Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
[1]Ri% / Ru% / P% / G% / S%	80	2.5	15	2.5				60	5	30	5	0			70	5	30	5				60	5	30	5	0		
[1]SC% / Sa% / G% / C% / B% / Be%	0	13	58	23	0	6		0	13	58	23	0	6															
[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	6.7	20	30	84	120	80	75	6.7	20	30	84	120	80	75														
[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10		50	50								100														100		
[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0			50	50							100														100		

Table 11a: Monitoring Data – Dimensional Morphology Summary – Tributary 3

Newfound Creek Stream Restoration EEP Project Number 92497																										
Project Name/Number (Newfound Creek Stream Restoration/92497) Segment/Reach: 3 (1060 feet)																										
	Cross Section 1 (Riffle)							**Cross Section 2 (Pool)**							**Cross Section 3 (Pool)**							**Cross Section 4 (Riffle)**						
Based on fixed baseline bankfull elevation	Base	MY1	MY2	MY3	MY4	MY5	MY+	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																												
Bankfull Width (ft)		7.8							9.1							7.9							10.5					
Floodprone Width (ft)		13.5																					100.0					
Bankfull Mean Depth (ft)		0.5							0.8							0.6							0.7					
Bankfull Max Depth (ft)		1.2							1.3							1.0							1.1					
Bankfull Cross Sectional Area (ft^2)		4.0							7.4							4.6							7.4					
Bankfull Width/Depth Ratio		15.2							11.3							13.6							14.7					
Bankfull Entrenchment Ratio		1.7																					5.7					
Bankfull Bank Height Ratio		1.0							1.0							1.0							1.0					
Cross Sectional Area between end pins (ft^2)		81.7							100.9							14.0							12.9					
d50 (mm)		Si							Si							Si							Si					

Table 11b: Monitoring Data – Dimensional Morphology Summary – Tributary 4

Newfound Creek Stream Restoration EEP Project Number 92497																										
Project Name/Number (Newfound Creek Stream Restoration/92497) Segment/Reach: 4 (1590 feet)																										
	Cross Section 1 (Riffle)							**Cross Section 2 (Riffle)**							**Cross Section 3 (Pool)**							**Cross Section 4 (Pool)**						
Based on fixed baseline bankfull elevation	Base	MY1	MY2	MY3	MY4	MY5	MY+	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																												
Bankfull Width (ft)		7.0							7.3							26.5							14.3					
Floodprone Width (ft)		20.5							17.6														40.0+					
Bankfull Mean Depth (ft)		0.6							0.6							2.2							1.0					
Bankfull Max Depth (ft)		1.0							0.9							4.2							1.7					
Bankfull Cross Sectional Area (ft^2)		3.7							4.2							58.4							13.7					
Bankfull Width/Depth Ratio		12.6							12.5							12.0							14.8					
Bankfull Entrenchment Ratio		2.9							2.4														4.2					
Bankfull Bank Height Ratio		1.0							1.0							1.0							1.0					
Cross Sectional Area between end pins (ft^2)		82.8							109.8							64.8							20.6					
d50 (mm)		Si/Sa							Si/Sa							Si/Sa							Si/Sa					

Table 11c: Monitoring Data – Dimensional Morphology Summary – Tributary 5

Newfound Creek Stream Restoration EEP Project Number 92497																				
Project Name/Number (Newfound Creek Stream Restoration/92497) Segment/Reach: 5 (675 feet)																				
	Cross Section 1 (Riffle)							**Cross Section 2 (Pool)**							**Cross Section 3 (Riffle)**						
Based on fixed baseline bankfull elevation	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																					
Bankfull Width (ft)		7.6							7.9							5.1					
Floodprone Width (ft)		18.3														14.0					
Bankfull Mean Depth (ft)		0.6							0.6							0.7					
Bankfull Max Depth (ft)		1.2							1.3							1.2					
Bankfull Cross Sectional Area (ft^2)		5.0							5.2							3.6					
Bankfull Width/Depth Ratio		11.8							12.3							7.2					
Bankfull Entrenchment Ratio		2.4														2.7					
Bankfull Bank Height Ratio		1.0							1.0							1.0					
Cross Sectional Area between end pins (ft^2)		71.6							15.0							56.8					
d50 (mm)		Si/Sa							Si/Sa							Si/Sa					

Table 11d: Monitoring Data – Dimensional Morphology Summary – Tributary 6

Newfound Creek Stream Restoration EEP Project Number 92497														
Project Name/Number (Newfound Creek Stream Restoration/92497) Segment/Reach: 6 (600 feet)														
	Cross Section 1 (Riffle)							**Cross Section 2 (Pool)**						
Based on fixed baseline bankfull elevation	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used														
Bankfull Width (ft)		14.8							19.6					
Floodprone Width (ft)		3.8												
Bankfull Mean Depth (ft)		1.1							1.6					
Bankfull Max Depth (ft)		2.3							3.2					
Bankfull Cross Sectional Area (ft^2)		15.7							32.2					
Bankfull Width/Depth Ratio		14.0							11.9					
Bankfull Entrenchment Ratio		2.6												
Bankfull Bank Height Ratio		1.0							1.0					
Cross Sectional Area between end pins (ft^2)		40.7							44.9					
d50 (mm)		Si/Sa							Si/Sa					

Table 11e: Monitoring Data – Dimensional Morphology Summary – Tributary 7

Newfound Creek Stream Restoration EEP Project Number 92497																					
Project Name/Number (Newfound Creek Stream Restoration/92497) Segment/Reach: 7 (400 feet)																					
	Cross Section 1 (Riffle)							**Cross Section 2 (Pool)**							**Cross Section 3 (Riffle)**						
Based on fixed baseline bankfull elevation	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																					
Bankfull Width (ft)		8.6							9.5							8.2					
Floodprone Width (ft)		15.2														24.2					
Bankfull Mean Depth (ft)		0.6							0.9							0.2					
Bankfull Max Depth (ft)		0.9							1.5							0.5					
Bankfull Cross Sectional Area (ft^2)		5.0							8.1							1.8					
Bankfull Width/Depth Ratio		14.7							11.2							36.6					
Bankfull Entrenchment Ratio		1.8														3.0					
Bankfull Bank Height Ratio		1.0							1.0							1.0					
Cross Sectional Area between end pins (ft^2)		41.1							49.6							7.7					
d50 (mm)		Si							Si							Si					

Table 11f: Monitoring Data – Dimensional Morphology Summary – Tributary 8

Newfound Creek Stream Restoration EEP Project Number 92497																					
Project Name/Number (Newfound Creek Stream Restoration/92497) Segment/Reach: 8 (680 feet)																					
	Cross Section 1 (Riffle)							**Cross Section 2 (Riffle)**							**Cross Section 3 (Pool)**						
Based on fixed baseline bankfull elevation	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																					
Bankfull Width (ft)		8.0							11.4							16.0					
Floodprone Width (ft)		18.9							40.4+												
Bankfull Mean Depth (ft)		0.3							1.1							0.9					
Bankfull Max Depth (ft)		0.8							2.3							1.6					
Bankfull Cross Sectional Area (ft^2)		2.4							12.9							13.9					
Bankfull Width/Depth Ratio		26.3							10.1							18.3					
Bankfull Entrenchment Ratio		2.4							3.5												
Bankfull Bank Height Ratio		1.0							1.0							1.0					
Cross Sectional Area between end pins (ft^2)		24.2							37.3							83.9					
d50 (mm)		Si/Sa							Si/Sa							Si/Sa					

Table 11g: Monitoring Data – Dimensional Morphology Summary – Mainstem

Newfound Creek Stream Restoration

EEP Project Number 92497

Project Name/Number (Newfound Creek Stream Restoration/92497) Segment/Reach: Main (4400 feet) CX #1 - 4 are above Browntown Road

	Cross Section 1 (Riffle)							Cross Section 2 (Riffle)							Cross Section 3 (Riffle)							Cross Section 4 (Pool)							Cross Section 5 (Riffle)						
Based on fixed baseline bankfull elevation	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	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																																			
Bankfull Width (ft)		39.0							19.2							16.3							22.4							18.8						
Floodprone Width (ft)		80.6							66.1							48.3														175.0						
Bankfull Mean Depth (ft)		0.8							1.7							1.4							1.2							2.1						
Bankfull Max Depth (ft)		2.2							2.6							2.2							1.8							2.9						
Bankfull Cross Sectional Area (ft^2)		29.7							32.0							23.0							28.0							38.8						
Bankfull Width/Depth Ratio		51.2							11.5							11.6							17.9							9.1						
Bankfull Entrenchment Ratio		2.1							3.4							3.0														9.3						
Bankfull Bank Height Ratio		1.0							1.0							1.0							1.0							1.0						
Cross Sectional Area between end pins (ft^2)		198.1							186.3							171.2							153.4							72.0						
d50 (mm)									24																											

	Cross Section 6 (Riffle)							Cross Section 7 (Riffle)							Cross Section 8 (Pool)							Cross Section 9 (Pool)													
Based on fixed baseline bankfull elevation	Base	MY1	MY2	MY3	MY4	MY5	MY+	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																																			
Bankfull Width (ft)		17.3							23.4							35.1							20.1													

Floodprone Width (ft)		175.0							49.8																											
Bankfull Mean Depth (ft)		2.1							1.3							1.3							1.9													
Bankfull Max Depth (ft)		3.2							2.5							3.1							2.6													
Bankfull Cross Sectional Area (ft^2)		36.7							31.4							44.4							37.2													
Bankfull Width/Depth Ratio		8.2							17.4							27.7							10.8													
Bankfull Entrenchment Ratio		16.1							2.1																											
Bankfull Bank Height Ratio		1.0							1.0							1.0							1.0													
Cross Sectional Area between end pins (ft^2)		109.5							203.2							191.8							159.2													
d50 (mm)									23																											

Table 12a: Monitoring Data – Stream Reach Data Summary – Tributary 3

Newfound Creek Stream Restoration

EEP Project Number 92497

	Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 3 (1060 feet)																																	
Parameter	**Baseline**						**MY-1**						**MY-2**						**MY- 3**						**MY- 4**						**MY- 5**					
Dimension and Substrate	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
Bankfull Width (ft)							7.8	9.2	9.2	10.5		2																								
Floodprone Width (ft)							13.5	36.8	36.8	60		2																								
Bankfull Mean Depth (ft)							0.5	0.6	0.6	0.7		2																								
[1]Bankfull Max Depth (ft)							1.1	1.2	1.2	1.2		2																								
Bankfull Cross Sectional Area (ft^2)							4	5.7	5.7	7.4		2																								
Width/Depth Ratio							14.7	15.0	15.0	15.2		2																								
Entrenchment Ratio							1.7	3.7	3.7	5.7		2																								
[1]Bank Height Ratio							**1.0**	1.0	1.0	**1.0**		**2**																								
Profile																																		
Riffle Length (ft)							6.8	37.7	57.5	108.1		19																								
Riffle Slope (ft/ft)							0.000	0.021	0.048	0.095		19																								
Pool Length (ft)							2.8	11.2	23.5	44.2		19																								
Pool Max depth (ft)							1.1	1.2	1.2	1.2		2																								
Pool Spacing (ft)							22.4	62.7	87.3	152.2		19																								
Pattern																																		
Channel Beltwidth (ft)																																		
Radius of Curvature (ft)																																		
Rc:Bankfull width (ft/ft)																																		
Meander Wavelength (ft)																																		
Meander Width Ratio																																		
Additional Reach Parameters																																		
Rosgen Classification							B5 (above Browntown)/C5 (below)																													
Channel Thalweg length (ft)							1204																											
Sinuosity (ft)							1.06																											
Water Surface Slope (Channel) (ft/ft)							0.023																											

BF slope (ft/ft)							**0.023**																													
[3]Ri% / Ru% / P% / G% / S%							**60**	**5**	**30**	**5**	**0**																									
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks							**0**																													
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Table 12b: Monitoring Data – Stream Reach Data Summary – Tributary 4

Newfound Creek Stream Restoration

EEP Project Number 92497

Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 4 (1590 feet)

Parameter	**Baseline**						**MY-1**						**MY-2**						**MY- 3**						**MY- 4**						**MY- 5**					
Dimension and Substrate	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
Bankfull Width (ft)							7	7.2	7.2	7.3		2																								
Floodprone Width (ft)							17.6	19.1	19.1	20.5		2																								
Bankfull Mean Depth (ft)							0.6	0.6	0.6	0.6		2																								
[1]Bankfull Max Depth (ft)							0.9	1.0	1.0	1		2																								
Bankfull Cross Sectional Area (ft^2)							3.7	4.0	4.0	4.2		2																								
Width/Depth Ratio							12.5	12.6	12.6	12.6		2																								
Entrenchment Ratio							2.4	2.7	2.7	2.9		2																								
[1]Bank Height Ratio							**1.0**	1.0	1.0	**1.0**		2																								
Profile																																				
Riffle Length (ft)							4.8	78.0	214.0	423.1		17																								
Riffle Slope (ft/ft)							0.000	0.027	0.049	0.097		17																								
Pool Length (ft)							4	14.3	35.05	66.1		22																								
Pool Max depth (ft)							4.2	4.2	23.1	42		1																								
Pool Spacing (ft)							13.4	81.1	229.9	446.3		22																								
Pattern																																				
Channel Beltwidth (ft)																																				
Radius of Curvature (ft)																																				
Rc:Bankfull width (ft/ft)																																				

Meander Wavelength (ft)																																				
Meander Width Ratio																																				
Additional Reach Parameters																																				
Rosgen Classification							C5																													
Channel Thalweg length (ft)							1911																													
Sinuosity (ft)							1.27																													
Water Surface Slope (Channel) (ft/ft)							0.037																													
BF slope (ft/ft)							**0.037**																													
[3]Ri% / Ru% / P% / G% / S%							**55**	**5**	**25**	**5**	**10**																									
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks							**0**																													
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Table 12c: Monitoring Data – Stream Reach Data Summary – Tributary 5

Newfound Creek Stream Restoration EEP Project Number 92497																																				
	Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 5 (675 feet)																																			
Parameter	**Baseline**						**MY-1**						**MY-2**						**MY- 3**						**MY- 4**						**MY- 5**					
Dimension and Substrate	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
Bankfull Width (ft)							5.1	6.4	6.4	7.6		2																								
Floodprone Width (ft)							14	16.2	16.2	18.3		2																								
Bankfull Mean Depth (ft)							0.6	0.7	0.7	0.7		2																								
[1]Bankfull Max Depth (ft)							1.2	1.2	1.2	1.2		2																								
Bankfull Cross Sectional Area (ft^2)							3.6	4.3	4.3	5.0		2																								
Width/Depth Ratio							7.2	9.5	9.5	11.8		2																								
Entrenchment Ratio							2.4	2.6	2.6	2.7		2																								
[1]Bank Height Ratio							**1.0**	1.0	1.0	**1.0**		2																								
Profile																																				
Riffle Length (ft)							10.8	108.4	149.2	287.6		5																								

Riffle Slope (ft/ft)							0.026	0.079	0.093	0.160		5																										
Pool Length (ft)							2.7	7.7	9.7	16.7		7																										
Pool Max depth (ft)							1.3	1.3	1.3	1.3		1																										
Pool Spacing (ft)							18.8	56.1	112.8	206.8		7																										
Pattern																																						
Channel Beltwidth (ft)																																						
Radius of Curvature (ft)																																						
Rc:Bankfull width (ft/ft)																																						
Meander Wavelength (ft)																																						
Meander Width Ratio																																						
Additional Reach Parameters																																						
Rosgen Classification							E4b																															
Channel Thalweg length (ft)							800.6																															
Sinuosity (ft)							1.36																															
Water Surface Slope (Channel) (ft/ft)							0.044																															
BF slope (ft/ft)							**0.044**																															
[3]Ri% / Ru% / P% / G% / S%							**45**	**5**	**25**	**5**	**20**																											
[3]SC% / Sa% / G% / C% / B% / Be%																																						
[3]d16 / d35 / d50 / d84 / d95 /																																						
[2]% of Reach with Eroding Banks							**0**																															
Channel Stability or Habitat Metric																																						
Biological or Other																																						

Table 12d: Monitoring Data – Stream Reach Data Summary – Tributary 6

Newfound Creek Stream Restoration **EEP Project Number 92497**																																						
	Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 6 (600 feet)																																					
Parameter	**Baseline**							**MY-1**						**MY-2**						**MY- 3**						**MY- 4**						**MY- 5**						
Dimension and Substrate	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		
Bankfull Width (ft)							14.8	14.8	14.8	14.8		1																										
Floodprone Width (ft)							38	38.0	38.0	38		1																										

Bankfull Mean Depth (ft)							1.1	1.1	1.1	1.1		1																									
[1]Bankfull Max Depth (ft)							2.3	2.3	2.3	2.3		1																									
Bankfull Cross Sectional Area (ft^2)							15.7	15.7	15.7	15.7		1																									
Width/Depth Ratio							14	14.0	14.0	14		1																									
Entrenchment Ratio							2.6	2.6	2.6	2.6		1																									
[1]Bank Height Ratio							**1.0**	1.0	1.0	**1.0**		1																									
Profile																																					
Riffle Length (ft)							12.3	80.6	156.9	301.5		8																									
Riffle Slope (ft/ft)							0.018	0.040	0.1	0.086		8																									
Pool Length (ft)							8.3	13.5	14.1	19.9		5																									
Pool Max depth (ft)							3.2	3.2	3.2	3.2		1																									
Pool Spacing (ft)							21.7	131.5	196.3	370.9		5																									
Pattern																																					
Channel Beltwidth (ft)																																					
Radius of Curvature (ft)																																					
Rc:Bankfull width (ft/ft)																																					
Meander Wavelength (ft)																																					
Meander Width Ratio																																					
Additional Reach Parameters																																					
Rosgen Classification							C4b																														
Channel Thalweg length (ft)							732																														
Sinuosity (ft)							1.09																														
Water Surface Slope (Channel) (ft/ft)							0.036																														
BF slope (ft/ft)							**0.036**																														
[3]Ri% / Ru% / P% / G% / S%							**60**	**5**	**30**	**5**	**0**																										
[3]SC% / Sa% / G% / C% / B% / Be%																																					
[3]d16 / d35 / d50 / d84 / d95 /																																					
[2]% of Reach with Eroding Banks							**0**																														
Channel Stability or Habitat Metric																																					
Biological or Other																																					

Table 12e: Monitoring Data – Stream Reach Data Summary – Tributary 7

Newfound Creek Stream Restoration EEP Project Number 92497																																		
	Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 7 (400 feet)																																	
Parameter	**Baseline**						**MY-1**						**MY-2**						**MY- 3**						**MY- 4**						**MY- 5**					
Dimension and Substrate	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
Bankfull Width (ft)							8.2	8.4	8.4	8.6		2																								
Floodprone Width (ft)							15.2	19.7	19.7	24.2		2																								
Bankfull Mean Depth (ft)							0.2	0.4	0.4	0.6		2																								
[1]Bankfull Max Depth (ft)							0.5	0.7	0.7	0.9		2																								
Bankfull Cross Sectional Area (ft^2)							1.8	3.4	3.4	5		2																								
Width/Depth Ratio							14.7	25.7	25.7	36.6		2																								
Entrenchment Ratio							1.8	2.4	2.4	3		2																								
[1]Bank Height Ratio							**1.0**	1.0	1.0	**1.0**		2																								
Profile																																		
Riffle Length (ft)							5.3	37.1	97.15	189		6																								
Riffle Slope (ft/ft)							0	0.033	0.047	0.093		6																								
Pool Length (ft)							3.6	21.5	39.25	74.9		5																								
Pool Max depth (ft)							1.5	1.5	1.5	1.5		1																								
Pool Spacing (ft)							23.4	98.7	111.9	200.3		5																								
Pattern																																		
Channel Beltwidth (ft)																																		
Radius of Curvature (ft)																																		
Rc:Bankfull width (ft/ft)																																		
Meander Wavelength (ft)																																		
Meander Width Ratio																																		
Additional Reach Parameters																																		
Rosgen Classification							C5																											
Channel Thalweg length (ft)							579.5																											
Sinuosity (ft)							1.59																											
Water Surface Slope (Channel) (ft/ft)							0.026																											

BF slope (ft/ft)									0.026																										
[3]Ri% / Ru% / P% / G% / S%							70	5	20	5	0																								
[3]SC% / Sa% / G% / C% / B% / Be%																																			
[3]d16 / d35 / d50 / d84 / d95 /																																			
[2]% of Reach with Eroding Banks									0																										
Channel Stability or Habitat Metric																																			
Biological or Other																																			

Table 12f: Monitoring Data – Stream Reach Data Summary – Tributary 8

Newfound Creek Stream Restoration EEP Project Number 92497																																			
	Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: 8 (680 feet)																																		
Parameter	**Baseline**						**MY-1**						**MY-2**						**MY- 3**						**MY- 4**						**MY- 5**					
Dimension and Substrate	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
Bankfull Width (ft)							8	9.7	9.7	11.4		2																								
Floodprone Width (ft)							18.9	29.7	29.7	40.4		2																								
Bankfull Mean Depth (ft)							0.3	0.7	0.7	1.1		2																								
[1]Bankfull Max Depth (ft)							0.8	1.6	1.6	2.3		2																								
Bankfull Cross Sectional Area (ft^2)							2.4	7.7	7.7	12.9		2																								
Width/Depth Ratio							10.1	18.2	18.2	26.3		2																								
Entrenchment Ratio							2.4	3.0	3.0	3.5		2																								
[1]Bank Height Ratio							**1.0**	1.0	1.0	**1.0**		2																								
Profile																																			
Riffle Length (ft)							4	21.2	20.45	36.9																										
Riffle Slope (ft/ft)							0.000	0.032	0.044	0.087																										
Pool Length (ft)							3	8.8	9.45	15.9																										
Pool Max depth (ft)							1.6	1.6	1.6	1.6		1																								
Pool Spacing (ft)							22.8	47.5	43.4	64																										
Pattern																																			
Channel Beltwidth (ft)																																			
Radius of Curvature (ft)																																			
Rc:Bankfull width (ft/ft)																																			

Meander Wavelength (ft)																																						
Meander Width Ratio																																						
Additional Reach Parameters																																						
Rosgen Classification							C5																															
Channel Thalweg length (ft)							378.4																															
Sinuosity (ft)							1.30																															
Water Surface Slope (Channel) (ft/ft)							0.037																															
BF slope (ft/ft)							**0.037**																															
[3]Ri% / Ru% / P% / G% / S%							**70**	**5**	**20**	**5**	**0**																											
[3]SC% / Sa% / G% / C% / B% / Be%																																						
[3]d16 / d35 / d50 / d84 / d95 /																																						
[2]% of Reach with Eroding Banks							**0**																															
Channel Stability or Habitat Metric																																						
Biological or Other																																						

Table 12g: Monitoring Data – Stream Reach Data Summary – Mainstem Upstream of Browntown Road

Newfound Creek Stream Restoration **EEP Project Number 92497**																																						
	Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: Main above Browntown Road (2000 feet)																																					
Parameter	**Baseline**						**MY-1**						**MY-2**						**MY- 3**						**MY- 4**						**MY- 5**							
Dimension and Substrate	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		
Bankfull Width (ft)							16.3	24.8	19.2	39		3																										
Floodprone Width (ft)							48.3	65.0	66.1	80.6		3																										
Bankfull Mean Depth (ft)							0.8	1.3	1.4	1.7		3																										
[1]Bankfull Max Depth (ft)							2.2	2.3	2.2	2.6		3																										
Bankfull Cross Sectional Area (ft^2)							23	28.2	29.7	32		3																										
Width/Depth Ratio							11.5	24.8	11.6	51.2		3																										
Entrenchment Ratio							2.1	2.8	3.0	3.4		3																										
[1]Bank Height Ratio							1	1.0	1.0	1		3																										
Profile																																						
Riffle Length (ft)							2.6	79.3	226.5	450.3		16																										

Riffle Slope (ft/ft)							0.000	0.003	0.028	0.056		16																								
Pool Length (ft)							11.1	52.2	100.7	190.3		14																								
Pool Max depth (ft)							1.8	1.8	1.8	1.8		1																								
Pool Spacing (ft)							54	172.3	252.2	450.3		14																								
Pattern																																				
Channel Beltwidth (ft)																																				
Radius of Curvature (ft)																																				
Rc:Bankfull width (ft/ft)																																				
Meander Wavelength (ft)																																				
Meander Width Ratio																																				
Additional Reach Parameters																																				
Rosgen Classification							C4/1																													
Channel Thalweg length (ft)							2586.5																													
Sinuosity (ft)							1.36																													
Water Surface Slope (Channel) (ft/ft)							0.0059																													
BF slope (ft/ft)							**0.0059**																													
[3]Ri% / Ru% / P% / G% / S%							**60**	**5**	**30**	**5**	**0**																									
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks							**96%**																													
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Table 12h: Monitoring Data – Stream Reach Data Summary – Mainstem Downstream of Browntown Road

Newfound Creek Stream Restoration **EEP Project Number 92497**																																				
	Project Name/Number (Newfound Creek Stream Restoration/92497) - Segment/Reach: Main below Browntown Road (2400 feet)																																			
Parameter	**Baseline**						**MY-1**						**MY-2**						**MY- 3**						**MY- 4**						**MY- 5**					
Dimension and Substrate	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
Bankfull Width (ft)							17.3	19.8	18.8	23.4		3																								
Floodprone Width (ft)							49.8	133.3	175.0	175		3																								

Bankfull Mean Depth (ft)							1.3	1.8	2.1	2.1		3																									
[1]Bankfull Max Depth (ft)							2.5	2.9	2.9	3.2		3																									
Bankfull Cross Sectional Area (ft^2)							31.4	35.6	36.7	38.8		3																									
Width/Depth Ratio							8.2	11.6	9.1	17.4		3																									
Entrenchment Ratio							2.1	9.2	9.3	16.1		3																									
[1]Bank Height Ratio							1	1.0	1.0	1		3																									
Profile																																					
Riffle Length (ft)							3.2	73.4	128.5	253.7		18																									
Riffle Slope (ft/ft)							0.000	0.015	0.039	0.077		18																									
Pool Length (ft)							16.2	47.0	97.7	179.2		18																									
Pool Max depth (ft)							2.6	2.9	2.9	3.1		2																									
Pool Spacing (ft)							19.4	145.7	242.8	466.1		18																									
Pattern																																					
Channel Beltwidth (ft)																																					
Radius of Curvature (ft)																																					
Rc:Bankfull width (ft/ft)																																					
Meander Wavelength (ft)																																					
Meander Width Ratio																																					

Additional Reach Parameters																																						
Rosgen Classification							C4/1																															
Channel Thalweg length (ft)							2515.5																															
Sinuosity (ft)							1.28																															
Water Surface Slope (Channel) (ft/ft)							0.0056																															
BF slope (ft/ft)							**0.0056**																															
[3]Ri% / Ru% / P% / G% / S%							**60**	**5**	**30**	**5**	**0**																											
[3]SC% / Sa% / G% / C% / B% / Be%																																					
[3]d16 / d35 / d50 / d84 / d95 /																																					
[2]% of Reach with Eroding Banks							**93**																															
Channel Stability or Habitat Metric																																					
Biological or Other																																					

Appendix E: Hydrology Data

Table 13: Verification of Bankfull Events

Newfound Creek Stream Restoration EEP Project Number 92497			
Date of Data Collection	Date of Occurrence	Method	Photo # (if available)
02/06/13 & 02/07/13	Unknown	Site photographs (wrack lines)	44, 177, 183
02/26/13	Approx. January 15 and January 28, 2013	Proximal USGS gauge resource – Pigeon River	Figure 23
02/26/13	Approx. January 15 and January 28, 2013	Proximal USGS gauge resource – Ivy River	Figure 24

Two crest gauges were installed along the mainstem of the site on February 7, 2013. One is located upstream of Browntown Road, and one is located downstream of Browntown Road. Crest gauges will be checked during site assessments each spring and during monitoring events each fall.

Potential bankfull occurrences for the past year (January 31, 2012 to January 31, 2013) were extrapolated based on USGS stream gauge discharge data for the Pigeon River near Hepco, NC (03459500) and the Ivy River near Marshall, NC (03453000). The USGS gauge plots are shown below (Figures 23 & 24). The Pigeon River gauge is located in Haywood County and has a drainage area of 350 square miles. The Ivy River gauge is located in Madison County and has a drainage area of 158 square miles.

An estimate of the number of bankfull events between January 31, 2012 and January 31, 2013 was made by comparing the stream discharges from the USGS data in cubic feet per second (cfs) against the bankfull discharge estimated from the drainage area on the Mountain Regional Curve. According to the regional curve, a bankfull event occurs on a stream with a 350 square mile drainage area when the discharge is about 10,000 cfs. This discharge was reached twice during the past year at the Pigeon River location – once on or around January 15, 2013 and again on or around January 28, 2013. A bankfull event occurs on a stream with a 158 square mile drainage area when the discharge is about 4,000 cfs. This discharge was reached twice during the past year at the Ivy River location – once on or around January 15, 2013 and again on or around January 28, 2013. Data are consistent between gauges.

Rainfall data are presented in Figure 25.

Photo 44. Sand overwash and wrack lines along top of bank on mainstem

Photo 177. Sand overwash and wrack lines along top of bank on mainstem

Photo 183. Wrack lines more than five feet above top of bank on mainstem

Figure 23: USGS Proximal Gauge Pigeon River near Hepco, NC

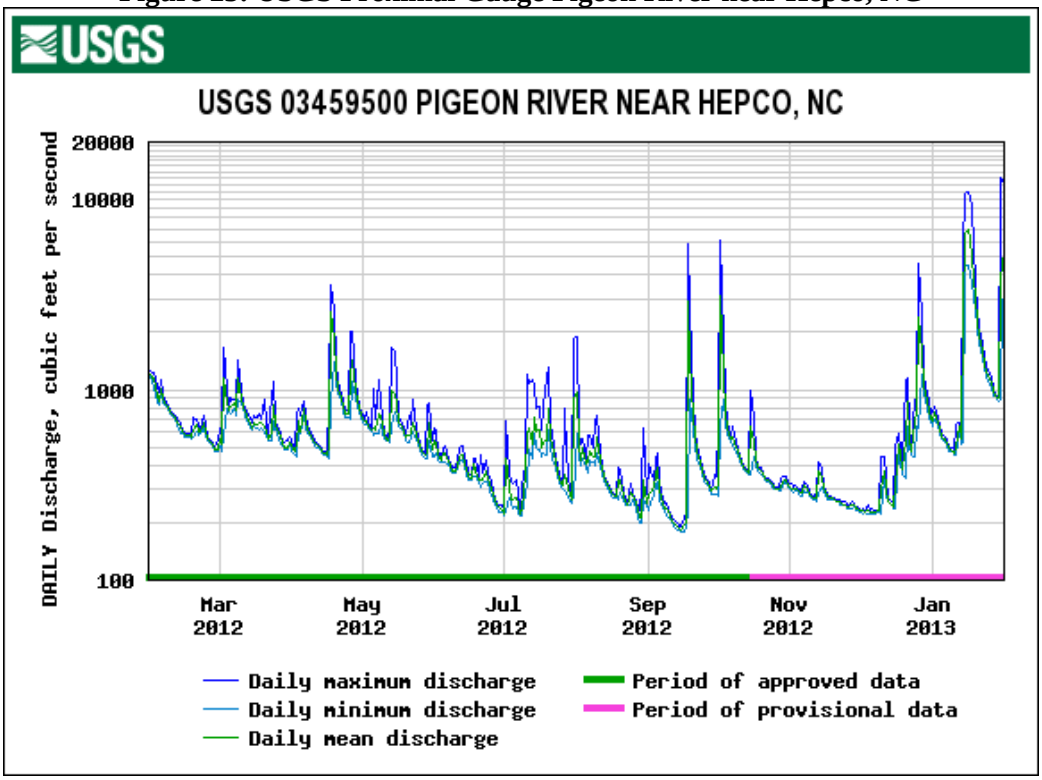


Figure 24: USGS Proximal Gauge Ivy River near Marshall, NC

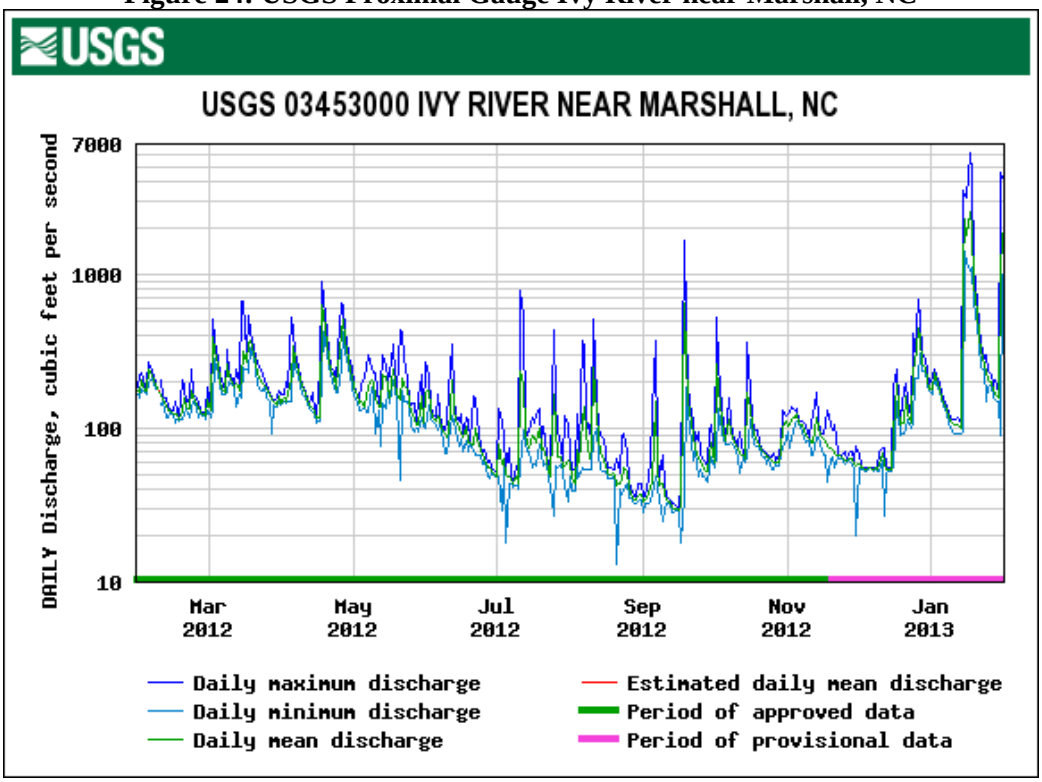


Figure 25: Newfound Creek 30-70 Percentile Graph for Rainfall in 2012, Leicester, NC