

Monitoring Report

Monitoring Year 1 of 5

FINAL

Project Name: Junes Branch Stream Restoration

EEP Contract No.: 003979

EEP Project No.: 95027

Jackson County, NC

Data Collected: January 2015

Date Submitted: February 2015



Submitted to:



NCDENR-EEP, 1652 Mail Service Center Raleigh NC 27699-1652

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Prepared for:



Prepared by:



EQUINOX

balance through proper planning

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1.0 PROJECT SUMMARY

1.1. Goals

The project goals address stressors identified in the Targeted Local Watershed (TLW) and include the following:

- Improve water quality within the restored channel reaches and downstream watercourses through:
 - reducing turbidity by stabilizing existing stream banks and altering stream channel dimension, pattern and profile
 - reducing nutrient loads and fecal coliform bacteria from adjacent agricultural fields by fencing the riparian area to keep livestock out of the stream and restoring a wooded riparian buffer
- Improve local aquatic and terrestrial habitat and diversity within the restored channels and their vicinity through:
 - reducing water temperatures by planting native vegetation in the riparian zone and creating shade
 - improving habitat complexity by restoring the stream profile to stable riffle/pool complex and step/pool complexes
 - improving terrestrial habitat by excluding livestock and creating a native riparian buffer
 - improving aquatic habitat by establishing tree canopy to provide organic material such as woody debris and leaf packs to stream
 - removing invasive exotic species and planting native vegetation in the riparian buffer
- Improve flood flow attenuation on-site and downstream through:
 - raising the bed or creating bankfull benches to allow for overbank flows every 1-2 years and will improve the connection to the active floodplain

1.2. Success Criteria

1.2.1. Morphological Parameters and Channel Stability

Restored and enhanced streams shall be in compliance with the standards set forth in the USACE 2003 Stream Mitigation Guidelines and should demonstrate morphologic stability to be considered successful. Stability does not equate to an absence of change, but rather to sustainable rates of change or stable patterns of variation. Restored streams often demonstrate some level of initial adjustment in the several months that follow construction and some change/variation subsequent to that is also to be expected. However, the observed change should not be unidirectional such that it represents a robust trend. If some trend is evident, it should be very modest or indicate migration to a stable form.

Dimension- Cross-section measurements should indicate little change from the as-built cross-sections. If changes do occur, they will be evaluated to determine whether the adjustments are associated with increased stability or whether they indicate movement towards an unstable condition.

Pattern and Profile- Measurements and calculated values should indicate stability with little deviation from as-built conditions and established morphological ranges for the restored stream type. Pool depths may vary from year to year, but the majority should maintain depths sufficient to be observed as distinct features in the profile. The pools should maintain their depth with flatter water surface slopes, while the riffles should remain shallower and steeper. Pattern measurements will not be collected unless conditions seem to indicate that a detectable change appears to have occurred based on profile and/or dimension measurements.

Substrate- Calculated D_{50} and D_{84} values should indicate coarser size class distribution of bed materials in riffles and finer size class distribution in pools. The majority of riffle pebble counts

should indicate maintenance or coarsening of substrate distributions. Generally, it is anticipated that the bed material will coarsen over time.

Sediment Transport- Depositional features should be consistent with a stable stream that is effectively managing its sediment load. Point bar and inner berm features, if present, should develop without excessive encroachment of the channel. Isolated development of robust (i.e. comprised of coarse material and/or vegetation actively diverting flow) mid-channel or lateral bars will be acceptable. Likewise, development of a higher number of mid-channel or lateral bars that are minor in terms of their permanency such that profile measurements do not indicate systemic aggradation will be acceptable, but trends in the development of robust mid-channel or alternating bar features will be considered a destabilizing condition and may require intervention or have success implications.

Surface Water Hydrology-Monitoring of stream surface water stages should indicate recurrence of bankfull flow on average every 1 to 2 years. At a minimum, throughout the monitoring period, the surface water stage should achieve bankfull or greater elevations at least twice. The bankfull events must occur during separate monitoring years.

1.2.2. Vegetation

Riparian vegetation monitoring shall be conducted for a minimum of five years to ensure that success criteria are met per USACE guidelines. Accordingly, success criteria will consist of a minimum survival of 320 stems per acre by the end of the Year 3 monitoring period and a minimum of 260 stems per acre at the end of Year 5. If monitoring indicates either that the specified survival rate is not being met or the development of detrimental conditions (i.e., invasive species, diseased vegetation), appropriate corrective actions will be developed and implemented.

1.3. Project Setting and Background

The Junes Branch Restoration Site (Site) is located in central Jackson County approximately 2 miles east of Sylva, NC (Figure 1). The site encompasses 5.8 acres of formerly agricultural land and includes portions of Bumgarner Branch and three unnamed tributaries that for purposes of the project are referred to as Junes Branch, Higdon Branch, and Doris Branch. The site is located within the Little Tennessee River Basin, United States Geological Survey (USGS) 14-digit Hydrologic Unit 06010203020010, and the North Carolina Division of Water Quality (NCDWQ sub basin 04-04-02). The site watershed is characteristic of the Blue Ridge region with moderate rainfall with annual precipitation averaging 52.9 inches. Elevation within the site ranges from 2,200 feet at the northwestern extent, to 2,150 feet along Junes Branch. The drainage area of Bumgarner Branch at the downstream end of the Site is 1.03 square miles (668 acres). Land use within the watershed is predominately forested (68%) with the remaining land use composed of low-density residential (21%) and agricultural (11%). Additional information regarding project setting and background is found in the Final Mitigation Plan (EBX 2013)

1.4. Project Approach

Channel restoration involving improved pattern, dimension, and longitudinal profile was completed on all four stream reaches. A Priority I approach was applied to all four reaches of the project (Rosgen 1996; NCSRI 2004).

1.5. Project Performance

Monitoring Year 1 (MY1) data was collected during January 2015. Monitoring activities included visual assessment of all reaches and the surrounding easement, fourteen permanent photo stations, five permanent vegetation monitoring plots, 3,274 feet of longitudinal profile, fifteen cross-sections, and fifteen pebble counts.

Generally, visual assessment of the project as a whole indicates that the streams are performing as desired and, with the exception of several small bare areas, vegetation is becoming well established throughout the easement. Summary tables and permanent photo station photos associated with the visual assessment are located in Appendix B. Visual assessment of the stream was performed to document signs of instability, such as eroding banks, structural instability, or excessive sedimentation. No indication of instability was observed during visual assessment (Table 5 and Figure 2). Structures are intact and performing as designed. Several pools at the upstream end of Junes branch have deposits of fine sediment, but these deposits are expected to clear with high flows. Herbaceous vegetation has become well established in both the wetland fringes along the stream as well as upland areas. Planted stems were difficult to assess during the leaf-off condition; however, two bare areas were noted along the Junes Branch reach totaling 0.07 acres (Table 6, Figure 2). Additionally, one small area of encroachment (mowing) was noted at the private driveway crossing. EBX will be discussing the issue with the landowner to prevent further encroachment and remedial action will take place to repair the vegetation.

Monitoring of permanent vegetation monitoring plots (n = 5) was completed during January 2015. Summary tables and photographs associated with MY1 monitoring are located in Appendix C. MY1 monitoring data indicates that all vegetation monitoring plots are on track to meet the MY3 interim success criteria of 320 stems per acre. Stem densities ranged from 445 to 769 stems per acre with a mean of 615 stems per acre across all plots. A total of 12 species documented within the monitoring plots. When volunteer stems are included, densities ranged between 607 and 2,752 stems per acre with a mean of 1,246 stems per acre across all plots. As stated above, visual assessment of the easement indicates that herbaceous vegetation has become well established throughout the project.

Geomorphic data for MY1 was collected during January 2015. Summary tables, cross-section plots, and longitudinal profiles related to stream morphology are located in Appendix D. With the exception of XS-3, noticeable change in the cross-section data between MY0 and MY1 were limited to pools (Appendix B, Table 11a). Deposits of finer material in pools led to decreased pool depths. The only noticeable change at a riffle cross-section was at XS-3 where downcutting of the channel was evident with an increase in max and mean depths of 0.5 and 0.1 feet, respectively. Generally, longitudinal profile data (Appendix B, Table 11b) indicated relatively little change in riffle and pool dimensions between MY0 and MY1. Some settling of riffles was noted on all reaches; however, this is expected between MY0 and MY1 and does not indicate instability. On Doris Branch, fine sediment accumulation in pools resulted in a drop in mean pool max depth from 1.6 feet in MY0 to 1.1 feet in MY1. Initial substrate monitoring was performed during MY1. As expected pebble counts indicate that riffles are coarser than pools and the riffle D₅₀ fell into the coarse gravel size class for all Bumgarner I and II, fine gravel for Junes and Doris Branch, and medium gravel for Higdon Branch. Substrate will be monitored in future years for shifts in composition. Documented shifts in stream morphology do not exceed expectations between MY0 and MY1 as the constructed stream adjusts to conditions at the site. The project is meeting success criteria regarding stable dimension, pattern, and profile as well as substrate and sediment transport.

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

2.0 METHODS

Visual assessment of the stream was performed at the beginning of the monitoring period. Permanent photo station photos were collected during the initial visual assessment during leaf-off conditions. Additional photos of vegetation or stream problem areas were documented with photographs throughout the project area.

Geomorphic measurements were taken during low flow conditions using a Nikon NPR 332 Total Station. Three-dimensional coordinates associated with cross-section and profile data were collected in the field and geo-referenced (NAD83 State Plane feet FIPS 3200). Morphological data was limited to 15 cross-sections, and 3,050 feet of longitudinal profile. Survey data was imported into CAD, ArcGIS, and Excel for data processing and analysis. Channel substrate was characterized using a Wolman Pebble Count outlined in the Harrelson et al (1994) and processed using Microsoft Excel.

Vegetation success is being monitored using 5 permanent monitoring plots. Vegetation monitoring follows the CVS-EEP Level 2 Protocol for Recording Vegetation, version 4.2 (Lee et al. 2008) and includes analysis of composition and density of planted species. Data is processed using the CVS data entry tool. In the field, the four corners of each plot were permanently marked with rebar and photos of each plot are taken from the origin each monitoring year.

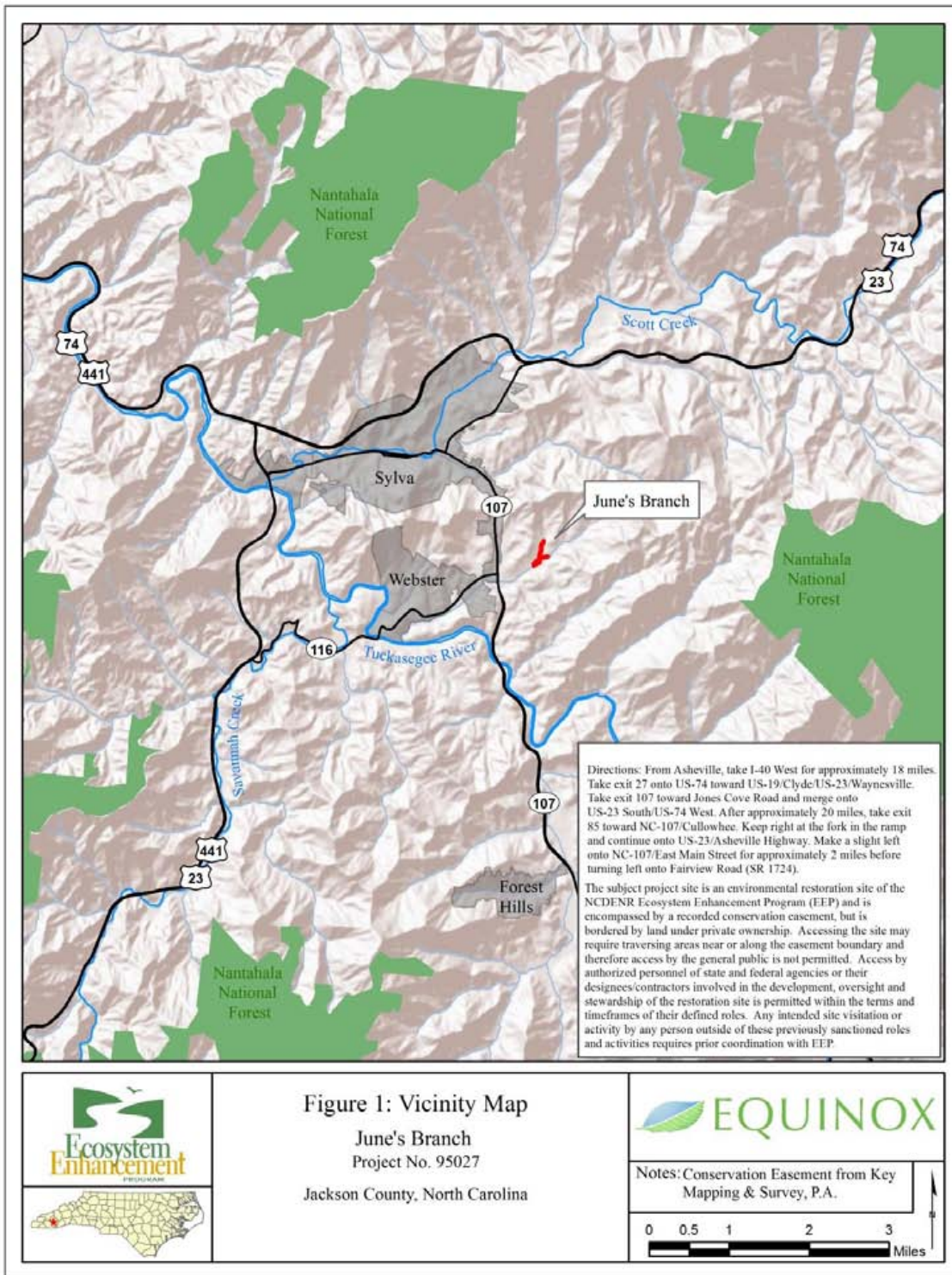
Precipitation data was collected using an Onset HOBO Data Logging Rain Gauge. Bankfull events were documented with crest gauges. During quarterly visits to the site, the height of the corkline was recorded and cross-referenced with known bankfull elevations at each crest gauge.

3.0 REFERENCES

- Environmental Banc and Exchange. 2013. Junes Branch Stream Restoration, Final Mitigation Plan, Jackson County, North Carolina. NCEEP Project No. 95027
- Lee, M.T.,R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2008. CVS-EEP Protocol for Recording Vegetation. Version 4.2. <http://cvs.bio.unc.edu/methods.htm>; accessed November 2008.
- NCSRI (North Carolina Stream Restoration Institute). 2004. Stream Restoration: A Natural Channel Design Handbook. North Carolina Stream Restoration Institute and North Carolina Sea Grant. Raleigh. <http://www.bae.ncsu.edu/programs/extension/wqg/srp/guidebook.html>
- Rosgen, D. 1996. Applied River Morphology. Wildland Hydrology. Pagosa Springs, Colorado.

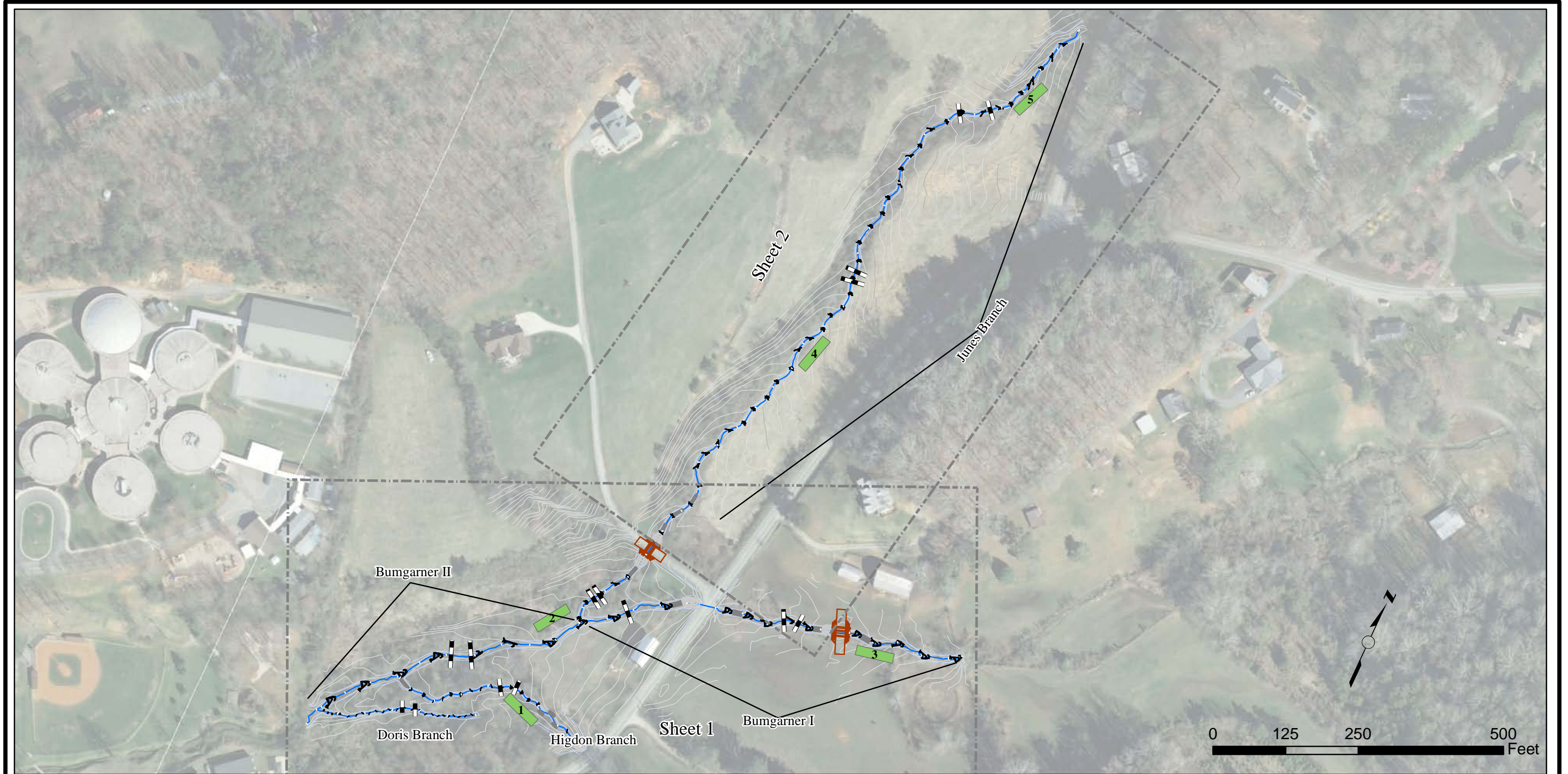
Appendix A
General Tables and Figures

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Figure 2. Integrated Current Condition Plan View Draft





Prepared for	<p>Junes Branch Stream Restoration Project Monitoring Year 1 Sylva, Jackson County, NC NCEEP Contract No. 003979 NCEEP Project No.: 95027 January 2015 Overview</p>	<table border="0"> <tr> <td></td> <td>Cross-Section</td> <td></td> <td>Hook-Log Run</td> <td></td> <td>Log Vane with Hook</td> </tr> <tr> <td></td> <td>Thalweg</td> <td></td> <td>Hook Run</td> <td></td> <td>Log Sill</td> </tr> <tr> <td></td> <td>Top of Bank</td> <td></td> <td>Boulder-Arch</td> <td></td> <td>Log Sill no Baffle</td> </tr> <tr> <td></td> <td>Contour- Major</td> <td></td> <td>Boulder-Arch with Log</td> <td></td> <td>Brush Toe</td> </tr> <tr> <td></td> <td>Contour- Minor</td> <td></td> <td>Armored Riffle</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Vegetation Plot</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Sheet Boundary</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Cross-Section		Hook-Log Run		Log Vane with Hook		Thalweg		Hook Run		Log Sill		Top of Bank		Boulder-Arch		Log Sill no Baffle		Contour- Major		Boulder-Arch with Log		Brush Toe		Contour- Minor		Armored Riffle				Vegetation Plot						Sheet Boundary					<p>Notes: 1) Baseline Data Provided by Kee Mapping 2) Orthoimagery provided by NOneMap (2010)</p>	<p>Prepared by</p> 
	Cross-Section		Hook-Log Run		Log Vane with Hook																																									
	Thalweg		Hook Run		Log Sill																																									
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Figure 2. Integrated Current Condition Plan View








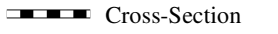
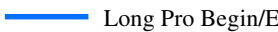
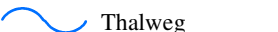
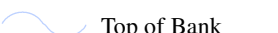
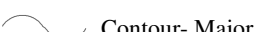









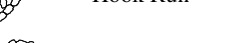
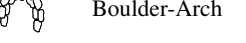
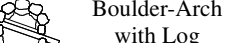
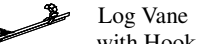

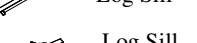
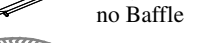

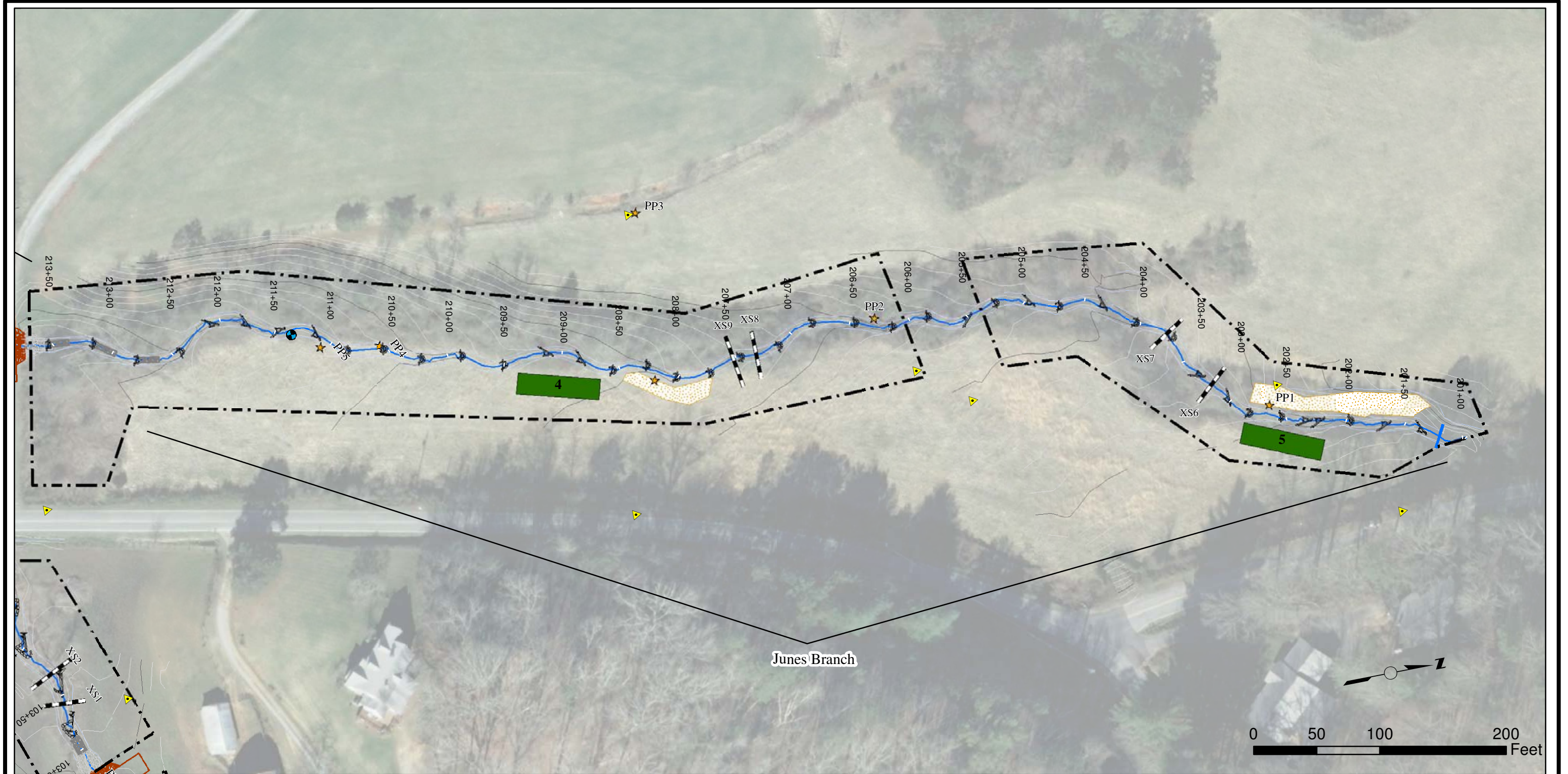


<p>Prepared for</p> 	<p>Junes Branch Stream Restoration Project Monitoring Year 1 Sylva, Jackson County, NC NCEEP Contract No. 003979 NCEEP Project No.: 95027 January 2015 Sheet 1 of 2</p>	<ul style="list-style-type: none">  Rain Gauge  Crest Gauge  Photo Point  Control Point  Cross-Section  Long Pro Begin/End  Thalweg  Top of Bank  Contour- Major  Contour- Minor 	<ul style="list-style-type: none">  Easement  Bare Area  Encroachment  Low Stem Density Vegetation Plot Success  Criteria Met  Criteria Unmet 	<ul style="list-style-type: none">  Hook-Log Run  Hook Run  Boulder-Arch  Boulder-Arch with Log  Armored Riffle 	<ul style="list-style-type: none">  Log Vane with Hook  Log Sill  Log Sill no Baffle  Brush Toe 	<p>Notes: 1) Baseline Data Provided by Kee Mapping 2) Orthoimagery provided by NCOneMap (2010)</p>	<p>Prepared by</p> 
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Figure 2. Integrated Current Condition Plan View



<p>Prepared for</p> 	<p>Junes Branch Stream Restoration Project Monitoring Year 1 Sylva, Jackson County, NC NCEEP Contract No. 003979 NCEEP Project No.: 95027 January 2015 Sheet 2 of 2</p>	<ul style="list-style-type: none"> Rain Gauge Crest Gauge Photo Point Control Point Cross-Section Long Pro Begin/End Thalweg Top of Bank Contour- Major Contour- Minor 	<ul style="list-style-type: none"> Easement Bare Area Encroachment Low Stem Density Vegetation Plot Success Criteria Met Criteria Unmet 	<ul style="list-style-type: none"> Hook-Log Run Hook Run Boulder-Arch Boulder-Arch with Log Armored Riffle 	<ul style="list-style-type: none"> Log Vane with Hook Log Sill Log Sill no Baffle Brush Toe 	<p>Notes: 1) Baseline Data Provided by Kee Mapping 2) Orthoimagery provided by NCOneMap (2010)</p>	<p>Prepared by</p> 
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Table 1. Project Components and Mitigation Credits
Junes Branch / Project Number 95027

Mitigation Credits									
	Stream		Riparian Wetland		Non-riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Totals	3,162	-	-	-	-	-	-	-	-
Project Components									
Project Component -or- Reach ID	Stationing/Location		Existing Footage/Acreage		Approach (PI, PII etc.)	Restoration -or- Restoration Equivalent	Restoration Footage or Acreage	Mitigation Ratio	
Bumgarner Branch 1	100+21 - 107+49		610		PI	R	631	1:1	
Bumgarner Branch 2	107+49 - 112+92		550		PI	R	501	1:1	
June's Branch	200+97 - 215+77		1311		PI	R	1374	1:1	
Higdun Branch	300+45 - 304+27		530		PI	R	376	1:1	
Doris Branch	400+00 - 402+88		260		PI	R	280	1:1	
Component Summation									
Restoration Level	Stream (linear feet)	Riparian Wetland (acres)		Non-riparian Wetland (acres)	Buffer (square feet)	Upland (acres)			
		Riverine	Non-Riverine						
Restoration	3,162	-	-	-	-	-			
Enhancement	-	-	-	-	-	-			
Enhancement I	-	-	-	-	-	-			
Enhancement II	-	-	-	-	-	-			
Creation	-	-	-	-	-	-			
Preservation	-	-	-	-	-	-			
High Quality Preservation	-	-	-	-	-	-			
BMP Elements									
Element	Location	Purpose/Function			Notes				
FB	Entire Site	Protect Stream							

¹BR = 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 Junes Branch / Project Number 95027		
Activity or Report	Data Collection Complete	Completion or Delivery
Mitigation Plan	Aug-12	April-2013
Final Design - Construction Plans	N/A	April-2013
Construction	N/A	June-2014
Temporary S&E Mix Applied to Entire Project Area		May-14
Permanent Seed Mix Applied		May-14
Containerized and B&B Plantings		May-14
Baseline Monitoring Document (Year 0 Monitoring - Baseline)	July-2014	July-2014
Year 1 Monitoring	Jan - 2015	Feb - 2015
Year 2 Monitoring		
Year 3 Monitoring		
Year 4 Monitoring		
Year 5 Monitoring		

Table 3. Project Contacts	
Junes Branch Stream Restoration Site – EEP Project # 95027	
Prime Contractor	Environmental Banc & Exchange, LLC 909 Capability Drive, Suite 3100 Raleigh, North Carolina 27606 David Godley (919) 829-9909
Designer	Wolf Creek Engineering 12-1/2 Wall St., Suite C Asheville, North Carolina 28801 Grant Ginn (828) 449-1930 ext 102
Construction Contractor	Northstate Environmental 2889 Lowery Street Winston Salem, North Carolina 27101 Darrell Westmoreland (336) 725-2010
Planting Contractor	Northstate Environmental 2889 Lowery Street Winston Salem, North Carolina 27101 Darrell Westmoreland (336) 725-2010
As-built Surveys	Kee Mapping and Surveying PO Box 2566 Asheville, North Carolina 28802 Phillip B. Key (828) 575-9021
Seeding Mix Source	Green Resource 5204 Highgreen Court Colfax, North Carolina 27235 (336) 855-6363
Bare Root Seedlings	Dykes & Son Nursery 825 Maude Etter Road McMinnville, Tennessee (931) 668-8833
Live Stakes	Foggy Mountain Nursery 797 Helton Creek Road Lansing, North Carolina 28643 (336) 384-5323
Monitoring Performers (Y0-Y1)- 2014-2015	Equinox 37 Haywood St. Asheville, North Carolina 28801 Hunter Terrell (828) 253-6856

Table 4. Project Baseline Information and Attributes					
Project Information					
Project Name	Junes Branch				
County	Jackson County				
Project Area (acres)	5.8 ac.				
Project Coordinates (latitude and longitude)	35.357378° N and longitude 83.191391° W				
Project Watershed Summary Information					
Physiographic Province	Blue Ridge				
River Basin	Little Tennessee				
USGS Hydrologic Unit 8-digit	6010203	USGS Hydrologic Unit 14-digit	6010203020010		
DWQ Sub-basin	4/4/2002				
Project Drainage Area (acres)	668				
Project Drainage Area Percentage of Impervious Area	<5%				
CGIA Land Use Classification	2.01.03 Hay and Pasture Land				
Reach Summary Information					
Parameters	Bumgarner Br. I	Bumgarner Br. II	Junes Br.	Higdon Br.	Doris Br.
Length of reach (linear feet)	610	550	1311	530	260
Valley classification (Rosgen)	II	II	II	II	II
Drainage area	0.93	1.03	0.23	0.08	0.01
NCDWQ stream identification score	40	40	38	38	29.5
NCDWQ Water Quality Classification	C	C	-	-	-
Morphological Description (stream type) (Rosgen)	E	G	G	E	G
Evolutionary trend (Rosgen)	C	F	F	E	G
Underlying mapped soils	CwA, WtB	CwA, WtB	WtB	CwA	CwA
Drainage class	Somewhat Poorly Drained- Mod. Well Drained	Somewhat Poorly Drained- Mod. Well Drained	Mod. Well Drained	Somewhat Poorly Drained	Somewhat Poorly Drained
Soil Hydric status	Non-Hydric	Non-Hydric	Non-Hydric	Non-Hydric	Non-Hydric
Slope	2.20%	2.20%	2.30%		
FEMA classification	N/A	N/A	N/A	N/A	N/A
Native vegetation community	Agricultural	Agricultural	Agricultural	Agricultural	Agricultural
Percent composition of exotic invasive vegetation	30%	30%	30%	40%	40%
Wetland Summary Information					
Parameters	Wetland 1	Wetland 2			
Size of Wetland (acres)	0.03	0.13			
Wetland Type (non-riparian, riparian riverine or riparian non-riverine)	Riparian	Riparian			
	Non-Riverine	Non-Riverine			
Mapped Soil Series	CwA	CwA			
Drainage class	Somewhat Poorly Drained	Somewhat Poorly Drained			
Soil Hydric Status	Hydric	Hydric			
Source of Hydrology	Seep	Seep			
Hydrologic Impairment	None	Dredging/Ditching			
Native vegetation community	Scrub-Shrub	Forested			
Percent composition of exotic invasive vegetation	2%	42%			
Regulatory Considerations					
Regulation	Applicable?	Resolved?	Supporting Documentation		
Waters of the United States – Section 404	Yes	Resolved	Action ID #2012-01101		
Waters of the United States – Section 401	Yes	Resolved	NCDWR Project # 20120748		
Endangered Species Act	No	Yes	ERTR		
Historic Preservation Act	No	Yes	ERTR		
Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA)	No	N/A			
FEMA Floodplain Compliance	N/A	N/A			
Essential Fisheries Habitat	N/A	N/A			

Appendix B
Visual Assessment Data

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**Table 5. Visual Stream Morphology Stability Assessment
Junes Branch / Project No. 95027 - Bumgarner Branch I
Assessed Length 631 feet**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	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. <u>Aggradation</u> - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars).			0	0	100%			
		2. <u>Degradation</u> - Evidence of downcutting.			0	0	100%			
	2. Riffle Condition	1. <u>Texture/Substrate</u> - Riffle maintains coarser substrate.	13	13			100%			
	3. Meander Pool Condition	1. <u>Depth</u> Sufficient (Max Pool Depth : Mean Bankfull Depth \geq 1.6).	13	13			100%			
		2. <u>Length</u> appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	N/A	N/A			N/A			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	13	13			100%			
2. Thalweg centering at downstream of meander bend (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 <u>NOT</u> include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	N/A	N/A	N/A
	3. Mass Wasting	Bank slumping, calving, or collapse.			0	0	100%	N/A	N/A	N/A
Totals					0	0	100%	N/A	N/A	N/A
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	14	14			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	14	14			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	14	14			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does <u>NOT</u> exceed 15%.	14	14			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio \geq 1.6. Rootwads/logs providing some cover at base-flow.	14	14			100%			

N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment
Junes Branch / Project No. 95027 - Bumgarner II
Assessed Length 543 feet**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	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. <u>Aggradation</u> - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars).			0	0	100%			
		2. <u>Degradation</u> - Evidence of downcutting.			0	0	100%			
	2. Riffle Condition	1. <u>Texture/Substrate</u> - Riffle maintains coarser substrate.	7	7			100%			
	3. Meander Pool Condition	1. <u>Depth</u> Sufficient (Max Pool Depth : Mean Bankfull Depth \geq 1.6).	8	8			100%			
		2. <u>Length</u> appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	2	2			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	8	8			100%			
2. Thalweg centering at downstream of meander bend (Glide).		8	8			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 <u>NOT</u> include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	N/A	N/A	N/A
	3. Mass Wasting	Bank slumping, calving, or collapse.			0	0	100%	N/A	N/A	N/A
Totals					0	0	100%	N/A	N/A	N/A
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	7	7			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	7	7			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	7	7			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does <u>NOT</u> exceed 15%.	7	7			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio \geq 1.6. Rootwads/logs providing some cover at base-flow.	7	7			100%			

N/A - Item does not apply.

Table 5 cont'd. Visual Stream Morphology Stability Assessment
Junes Branch / Project No. 95027 - Junes
Assessed Length 1,375 feet

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	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. <u>Aggradation</u> - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars).			0	0	100%			
		2. <u>Degradation</u> - Evidence of downcutting.			0	0	100%			
	2. Riffle Condition	1. <u>Texture/Substrate</u> - Riffle maintains coarser substrate.	45	45			100%			
	3. Meander Pool Condition	1. <u>Depth</u> Sufficient (Max Pool Depth : Mean Bankfull Depth \geq 1.6).	45	45			100%			
		2. <u>Length</u> appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	N/A	N/A			N/A			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	45	45			100%			
2. Thalweg centering at downstream of meander bend (Glide).		45	45			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 <u>NOT</u> include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	N/A	N/A	N/A
	3. Mass Wasting	Bank slumping, calving, or collapse.			0	0	100%	N/A	N/A	N/A
Totals					0	0	100%	N/A	N/A	N/A
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	45	45			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	45	45			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	45	45			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does <u>NOT</u> exceed 15%.	45	45			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio \geq 1.6. Rootwads/logs providing some cover at base-flow.	45	45			100%			

N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment
 Junes Branch / Project No. 95027 - Higdon
 Assessed Length 376 feet**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	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. <u>Aggradation</u> - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars).			0	0	100%			
		2. <u>Degradation</u> - Evidence of downcutting.			0	0	100%			
	2. Riffle Condition	1. <u>Texture/Substrate</u> - Riffle maintains coarser substrate.	18	18		100%				
	3. Meander Pool Condition	1. <u>Depth</u> Sufficient (Max Pool Depth : Mean Bankfull Depth \geq 1.6).	18	18		100%				
		2. <u>Length</u> appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	3	3		100%				
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	18	18		100%				
2. Thalweg centering at downstream of meander bend (Glide).		18	18	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 <u>NOT</u> include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	N/A	N/A	N/A
	3. Mass Wasting	Bank slumping, calving, or collapse.			0	0	100%	N/A	N/A	N/A
Totals					0	0	100%	N/A	N/A	N/A
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	15	15		100%				
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	15	15		100%				
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	15	15		100%				
	3. Bank Protection	Bank erosion within the structures extent of influence does <u>NOT</u> exceed 15%.	15	15		100%				
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio \geq 1.6. Rootwads/logs providing some cover at base-flow.	15	15		100%				

N/A - Item does not apply.

Table 5 cont'd. Visual Stream Morphology Stability Assessment
Junes Branch / Project No. 95027 - Doris
Assessed Length 288 feet

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	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. <u>Aggradation</u> - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars).			0	0	100%			
		2. <u>Degradation</u> - Evidence of downcutting.			0	0	100%			
	2. Riffle Condition	1. <u>Texture/Substrate</u> - Riffle maintains coarser substrate.	23	23			100%			
		3. Meander Pool Condition	1. <u>Depth</u> Sufficient (Max Pool Depth : Mean Bankfull Depth \geq 1.6).	23	23					
	2. <u>Length</u> appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).		N/A	N/A			N/A			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	23	23			100%			
2. Thalweg centering at downstream of meander bend (Glide).		23	23			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 <u>NOT</u> include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	N/A	N/A	N/A
	3. Mass Wasting	Bank slumping, calving, or collapse.			0	0	100%	N/A	N/A	N/A
Totals					0	0	100%	N/A	N/A	N/A
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	23	23			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	23	23			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	23	23			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does <u>NOT</u> exceed 15%.	23	23			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio \geq 1.6. Rootwads/logs providing some cover at base-flow.	23	23			100%			

N/A - Item does not apply.

**Table 6. Vegetation Condition Assessment
Junés Branch / Project No. 95027**

Planted Acreage: 5.81					
Vegetation Category	Definitions	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas	Very limited cover of both woody and herbaceous material.	N/A	2	0.07	1%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	N/A	0	0.00	0%
Totals			2	0.07	1%
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	N/A	0	0.00	0%
Cumulative Totals			2	0.07	1%
Easement Acreage: 5.81					
Vegetation Category	Definitions	CCPV Depiction	Number of Polygons	Combined Acreage	% of Easement Acreage
4. Invasive Areas of Concern	Areas or points (if too small to render as polygons at map scale).	Cross Hatch (Red - Dense/Yellow - Present)	0	0.00	0%
5. Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale).	N/A	1	0.02	<1%

N/A - Item does not apply.



Junes Branch – Permanent Photo Station 1
Station 202+60 - Downstream



Junes Branch – Permanent Photo Station 1
Station 202+60 - Upstream



Junes Branch – Permanent Photo Station 2
Station 206+30 - Downstream



Junes Branch – Permanent Photo Station 2
Station 206+30 - Upstream



Junes Branch – Permanent Photo Station 3
Looking South/Downstream Junes Branch



Junes Branch – Permanent Photo Station 3
Looking South/Downstream - Upstream



Junes Branch – Permanent Photo Station 4
Station 210+60 - Downstream



Junes Branch – Permanent Photo Station 4
Station 210+60 - Upstream



Junes Branch – Permanent Photo Station 5
Station 211+10 - Upstream



Junes Branch – Permanent Photo Station 6
Station 214+00 - Downstream



Junes Branch – Permanent Photo Station 6
Station 214+00 - Upstream



Bumgarner Branch I – Permanent Photo Station 7
Station 100+21 - Downstream



Bumgarner Branch I – Permanent Photo Station 8
Station 102+70 - Downstream



Bumgarner Branch I – Permanent Photo Station 8
Station 102+70- Upstream



Bumgarner Branch I – Permanent Photo Station 9
Station 105+25 - Downstream



Bumgarner Branch I – Permanent Photo Station 9
Station 105+25 – Upstream



Bumgarner Branch I – Permanent Photo Station 10
Looking Upstream from Confluence with Junes Branch



Junes Branch – Permanent Photo Station 10
Looking Upstream from Confluence with Bumgarner Branch



Bumgarner Branch II – Permanent Photo Station 11
Looking Upstream from Confluence with Higdon Branch



Higdon Creek – Permanent Photo Station 11
Looking Upstream from Confluence with Bumgarner Branch II



Bumgarner Branch II – Permanent Photo Station 12
Looking Upstream from Confluence with Doris Branch



Doris Creek – Permanent Photo Station 12
Looking Upstream from Confluence with Bumgarner Branch II



Higdon Creek – Permanent Photo Station 13
Station 302+80 - Downstream



Higdon Creek – Permanent Photo Station 13
Station 302+80 - Upstream



Doris Creek – Permanent Photo Station 14
Station 400+00 - Downstream

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Appendix C
Vegetation Plot Data

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Table 7. Vegetation Plot Criteria Attainment		
Junes Branch / Project No. 95027		
Vegetation Plot ID	Vegetation Survival Threshold Met?	Tract Mean
1	Yes	100%
2	Yes	
3	Yes	
4	Yes	
5	Yes	



Junes Branch - Vegetation Monitoring Plot 1
January 15, 2015



Junes Branch - Vegetation Monitoring Plot 2
January 15, 2015



Junes Branch - Vegetation Monitoring Plot 3
January 15, 2015



Junes Branch - Vegetation Monitoring Plot 4
January 15, 2015



Junes Branch - Vegetation Monitoring Plot 5
January 15, 2015

Table 8. CVS Vegetation Plot Metadata Junes Branch / Project No. 95027	
Report Prepared By	Owen Carson
Date Prepared	1/19/2015 8:10
database name	Equinox_2014_A_Junes_MY1.mdb
database location	Z:\ES\NRI&M\EBX Monitoring\Junes\MY1-2014\Data\Veg
computer name	FIELDTECH3-PC
file size	61181952
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT-----	
Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Proj, planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Proj, total stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc.).
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
ALL Stems by Plot and spp	A matrix of the count of total living stems of each species (planted and natural volunteers combined) for each plot; dead and missing stems are excluded.
PROJECT SUMMARY	
Project Code	95027
project Name	Junes Branch
Description	
River Basin	Little Tennessee
length(ft)	
stream-to-edge width (ft)	
area (sq m)	
Required Plots (calculated)	
Sampled Plots	5

Table 9. Planted and Total Stem Counts (Species by Plot with Annual Means)
Junes Branch/Project No. 95027

			Current Plot Data (MY1 2015)															Annual Means					
Scientific Name	Common Name	Species Type	Plot 1			Plot 2			Plot 3			Plot 4			Plot 5			MY1 (2015)			MY0 (2014)		
			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
<i>Betula nigra</i>	River Birch	Tree	5	5	5							1	1	1				6	6	6	11	11	11
<i>Carpinus caroliniana var. caroliniana</i>	Coastal American Hornbeam	Tree				1	1	1				3	3	3	1	1	1	5	5	5	4	4	4
<i>Cornus florida</i>	Flowering Dogwood	Tree										3	3	3				3	3	3	3	3	3
<i>Fraxinus pennsylvanica</i>	Green Ash	Tree	9	9	9				2	2	2	4	4	4	5	5	5	20	20	20	21	21	21
<i>Hamamelis virginiana var. virginiana</i>	American witchhazel	Tree	1	1	1	2	2	2				1	1	1	1	1	1	5	5	5	5	5	5
<i>Juglans nigra</i>	Black Walnut	Tree													1	1	1	1	1	1	1	1	1
<i>Liriodendron tulipifera var. tulipifera</i>	Tulip-tree, Yellow Poplar, Whitewood	Tree	1	1	1							2	2	2	3	3	3	6	6	6	7	7	7
<i>Platanus occidentalis var. occidentalis</i>	Sycamore, Plane-tree	Tree	1	1	1	6	6	6	9	9	9	1	1	1				17	17	17	17	17	17
<i>Prunus serotina var. serotina</i>	Black Cherry	Tree													1	1	1	1	1	1	3	3	3
<i>Quercus</i>	Oak	Tree	1	1	1	1	1	1				2	2	2	2	2	2	6	6	6	6	6	6
<i>Quercus rubra var. rubra</i>	Northern Red Oak	Tree	1	1	1	1	1	1				4	4	4				6	6	6	5	5	5
<i>Salix nigra</i>	Black Willow	Tree						57			20					1				78			
Unknown		Shrub or Tree																			4	4	4
Stem count			19	19	19	11	11	68	11	11	31	21	21	21	14	14	15	76	76	154	87	87	87
size (ares)			1			1			1			1			1			5			5		
size (ACRES)			0.02			0.02			0.02			0.02			0.02			0.12			0.12		
Species count			7	7	7	5	5	6	2	2	3	9	9	9	7	7	8	11	11	12	12	12	12
Stems per ACRE			769	769	769	445	445	2752	445	445	1255	850	850	850	567	567	607	615	615	1246	704	704	704

¹PnoLS: No livestock included in tally; P-all: All planted stems included in tally.

Appendix D
Stream Geomorphology Data

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Table 11a. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters - Cross-Sections) Junes Branch / Project No. 95027 - Bumgarner I (631 feet)																		
	Cross-Section 1 Riffle						Cross-Section 2 Pool						Cross-Section 3 Riffle					
Dimension	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5
Record Elevation (datum) Used	2,153.11	2,153.11					2,152.68	2,152.68					2,145.60	2,145.60				
Bankfull Width (ft)	13.3	13.4					13.4	13.1					15.8	16.8				
Floodprone Width (ft)	>79	>79					>124	>124					>42	>42.37				
Bankfull Mean Depth (ft)	0.9	0.8					1.5	1.1					0.8	0.9				
Bankfull Max Depth (ft)	1.5	1.3					2.9	1.9					1.2	1.7				
Bankfull Cross Sectional Area (ft ²)	11.7	11.3					20.6	14.0					12.2	14.5				
Bankfull Width/Depth Ratio	15.2	15.8					8.7	12.3					20.4	19.4				
Bankfull Entrenchment Ratio	>5.9	>5.9					>9.3	>9.5					>2.7	>2.5				
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0					1.0	1.0				
Cross Sectional Area between End Pins (ft ²)	33.8	27.9					43.1	35.6					28.4	31				
d50 (mm)	N/A	27					N/A	N/A					N/A	16				

N/A - Item does not apply.

Table 11a cont'd. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters - Cross-Sections) Junes Branch / Project No. 95027 - Bumgarner II (543 feet)													
	Cross-Section 4 Pool						Cross-Section 5 Riffle						
Dimension	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5	
Record Elevation (datum) Used	2,140.17	2,140.17					2,139.81	2,139.81					
Bankfull Width (ft)	16.5	16.1					16.3	15.7					
Floodprone Width (ft)	>50	>50					>48	>48					
Bankfull Mean Depth (ft)	1.4	1.2					0.7	0.9					
Bankfull Max Depth (ft)	2.6	2.4					1.2	1.3					
Bankfull Cross Sectional Area (ft ²)	23.0	18.9					11.9	13.4					
Bankfull Width/Depth Ratio	11.9	13.7					22.2	18.4					
Bankfull Entrenchment Ratio	>3.0	>3.1					>3.0	>3.1					
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0					
Cross Sectional Area between End Pins (ft ²)	31.9	26.1					28.0	27.6					
d50 (mm)	N/A	N/A					N/A	25					

N/A - Item does not apply.

Table 11a cont'd. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters - Cross-Sections) Junes Branch / Project No. 95027 - Junes (1375 feet)																		
Dimension	Cross-Section 6 Rifle						Cross-Section 7 Pool						Cross-Section 8 Rifle					
	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5
Record Elevation (datum) Used	2,172.66	2,172.66					2,171.35	2,171.35					2,163.28	2,163.28				
Bankfull Width (ft)	8.6	8.8					8.2	8.8					9.6	10.8				
Floodprone Width (ft)	>94	>94					>111	>111					>53	>53				
Bankfull Mean Depth (ft)	0.4	0.5					1.0	0.7					0.7	0.6				
Bankfull Max Depth (ft)	0.7	0.9					2.1	1.6					1.2	1.1				
Bankfull Cross Sectional Area (ft ²)	3.7	4.1					8.6	6.1					6.4	6.4				
Bankfull Width/Depth Ratio	19.7	18.9					7.9	12.7					14.3	18.2				
Bankfull Entrenchment Ratio	>11.0	>10.7					>13.5	>12.6					>5.5	>4.9				
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0					1.0	1.0				
Cross Sectional Area between End Pins (ft ²)	24.9	17.8					25.8	24.4					38.6	39.6				
d50 (mm)	N/A	1.4					N/A	N/A					N/A	4.7				

N/A - Item does not apply.

Table 11a cont'd. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters - Cross-Sections) Junes Branch / Project No. 95027 - Junes (1375 feet)																		
Dimension	Cross-Section 9 Pool						Cross-Section 10 Pool						Cross-Section 11 Rifle					
	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5
Record Elevation (datum) Used	2,162.64	2,162.64					2,144.35	2,144.35					2,143.99	2,143.99				
Bankfull Width (ft)	10.5	11.1					11.0	10.9					9.8	9.0				
Floodprone Width (ft)	>56	>56					>39	>39					>38	>38				
Bankfull Mean Depth (ft)	1.0	0.8					0.8	0.7					0.6	0.6				
Bankfull Max Depth (ft)	2.0	1.8					1.7	1.5					1.2	1.0				
Bankfull Cross Sectional Area (ft ²)	10.5	8.4					9.0	7.9					5.8	5.2				
Bankfull Width/Depth Ratio	10.4	14.7					13.4	15.0					16.5	15.9				
Bankfull Entrenchment Ratio	>5.3	>5					>3.5	>3.5					>3.9	>4.2				
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0					1.0	1.0				
Cross Sectional Area between End Pins (ft ²)	46.1	44.3					32.4	31.0					23.7	23.2				
d50 (mm)	N/A	N/A					N/A	N/A					N/A	12				

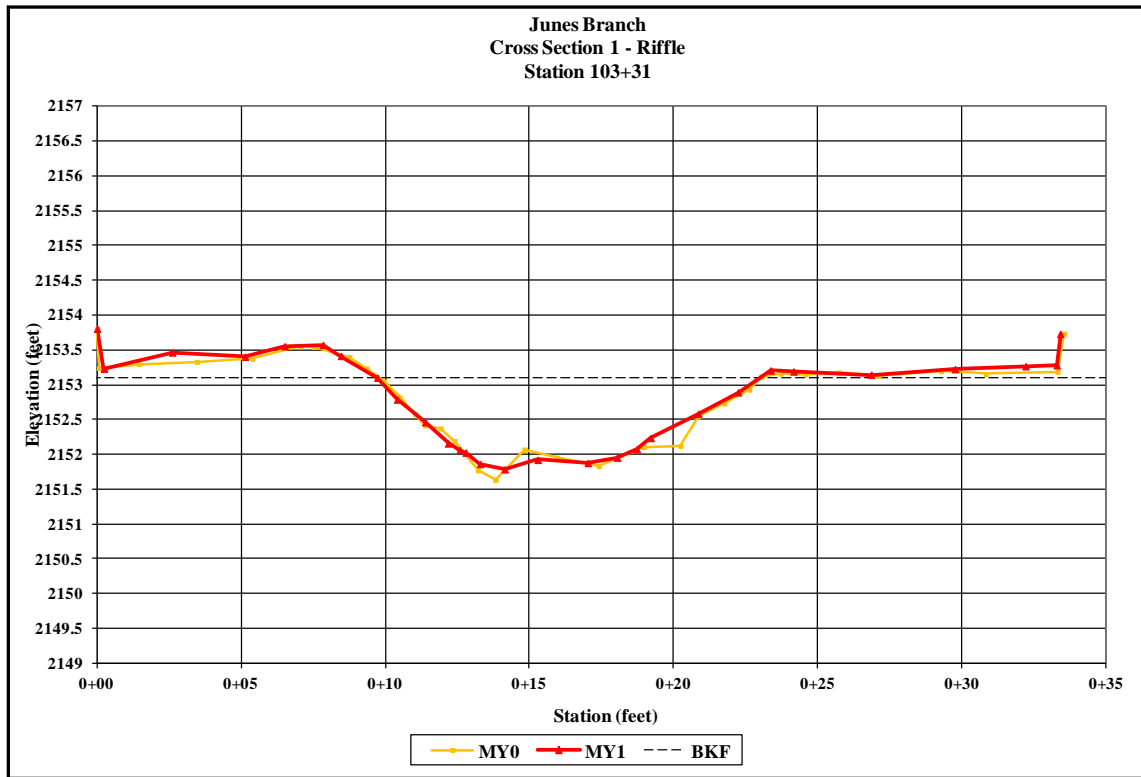
N/A - Item does not apply.

Table 11a. cont'd. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters - Cross-Sections) Junes Branch / Project No. 95027 -Higdon Branch (376 feet)												
	Cross-Section 12 Rifle						Cross-Section 13 Pool					
Dimension	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5
Record Elevation (datum) Used	2,140.85	2,140.85					2,140.14	2,140.14				
Bankfull Width (ft)	6.6	8.1					8.0	7.2				
Floodprone Width (ft)	>40	>40					>30	>30				
Bankfull Mean Depth (ft)	0.4	0.3					0.7	0.6				
Bankfull Max Depth (ft)	0.7	0.7					1.7	1.1				
Bankfull Cross Sectional Area (ft ²)	2.5	2.6					5.9	4.0				
Bankfull Width/Depth Ratio	17.6	24.7					10.8	13.0				
Bankfull Entrenchment Ratio	>6.0	>4.9					>3.7	>4.1				
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0				
Cross Sectional Area between End Pins (ft ²)	15.9	15.3					20.0	16.8				
d50 (mm)	N/A	15					N/A	N/A				

N/A - Item does not apply.

Table 11a. cont'd Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters - Cross-Sections) Junes Branch / Project No. 95027 -Doris Branch (288 feet)												
	Cross-Section 14 Rifle						Cross-Section 15 Pool					
Dimension	Base	MY1	MY2	MY3	MY4	MY5	Base	MY1	MY2	MY3	MY4	MY5
Record Elevation (datum) Used	2,138.93	2,138.93					2,138.74	2,138.74				
Bankfull Width (ft)	6.2	6.6					11.6	11.7				
Floodprone Width (ft)	>23	>23					>21	>21				
Bankfull Mean Depth (ft)	0.4	0.4					0.8	0.7				
Bankfull Max Depth (ft)	0.7	0.7					2.3	1.7				
Bankfull Cross Sectional Area (ft ²)	2.3	2.4					9.4	8.3				
Bankfull Width/Depth Ratio	16.7	18.2					14.3	16.5				
Bankfull Entrenchment Ratio	>3.8	>3.5					>1.8	>1.8				
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0				
Cross Sectional Area between End Pins (ft ²)	11.5	10.7					18.7	16.3				
d50 (mm)	N/A	0.062					N/A	N/A				

N/A - Item does not apply.



Left Descending Bank



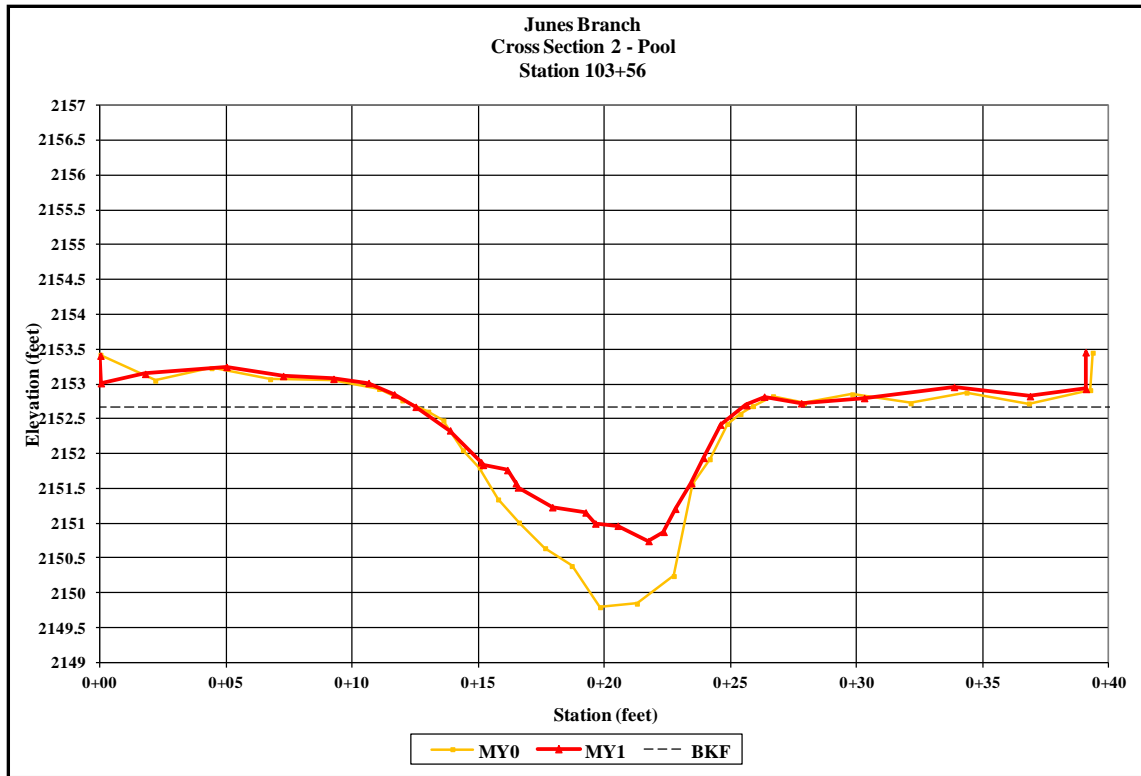
Right Descending Bank



Upstream



Downstream



Left Descending Bank



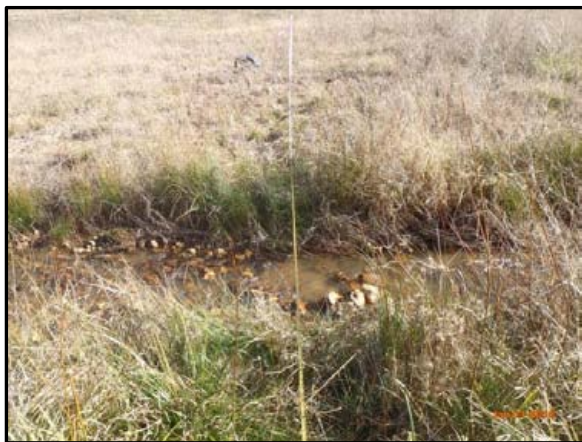
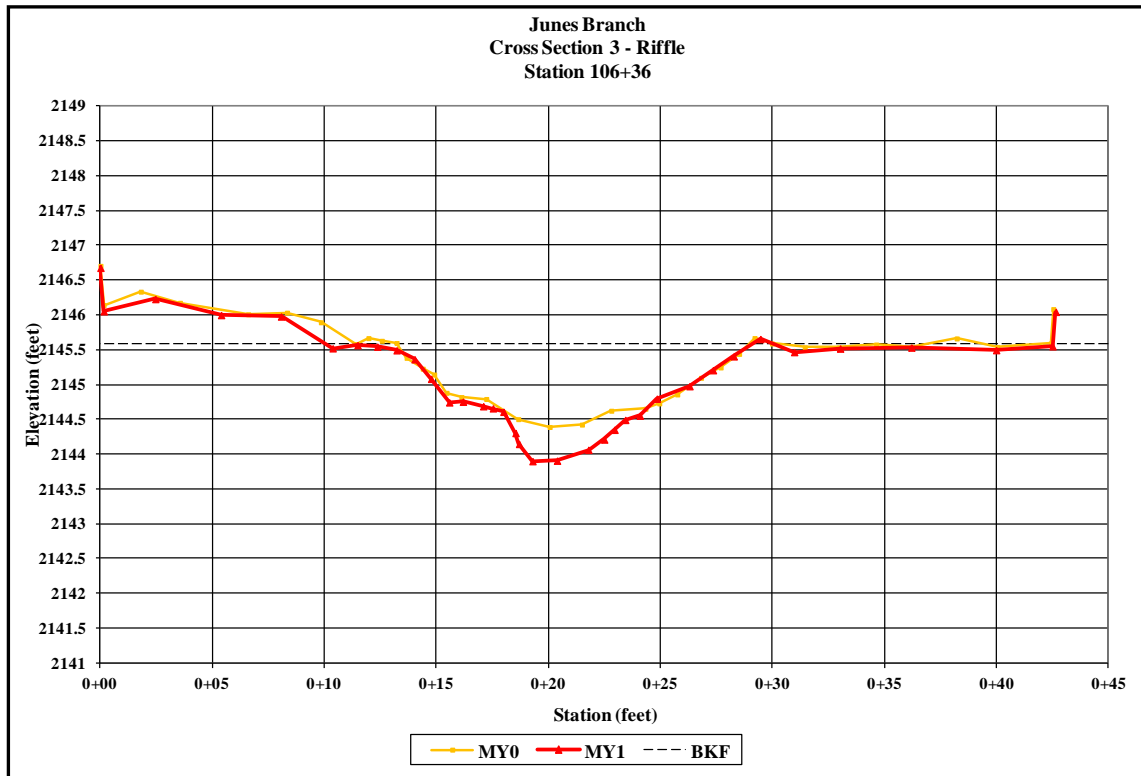
Right Descending Bank



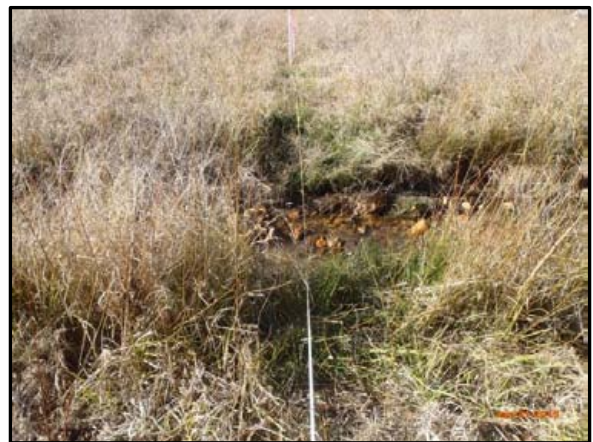
Upstream



Downstream



Left Descending Bank



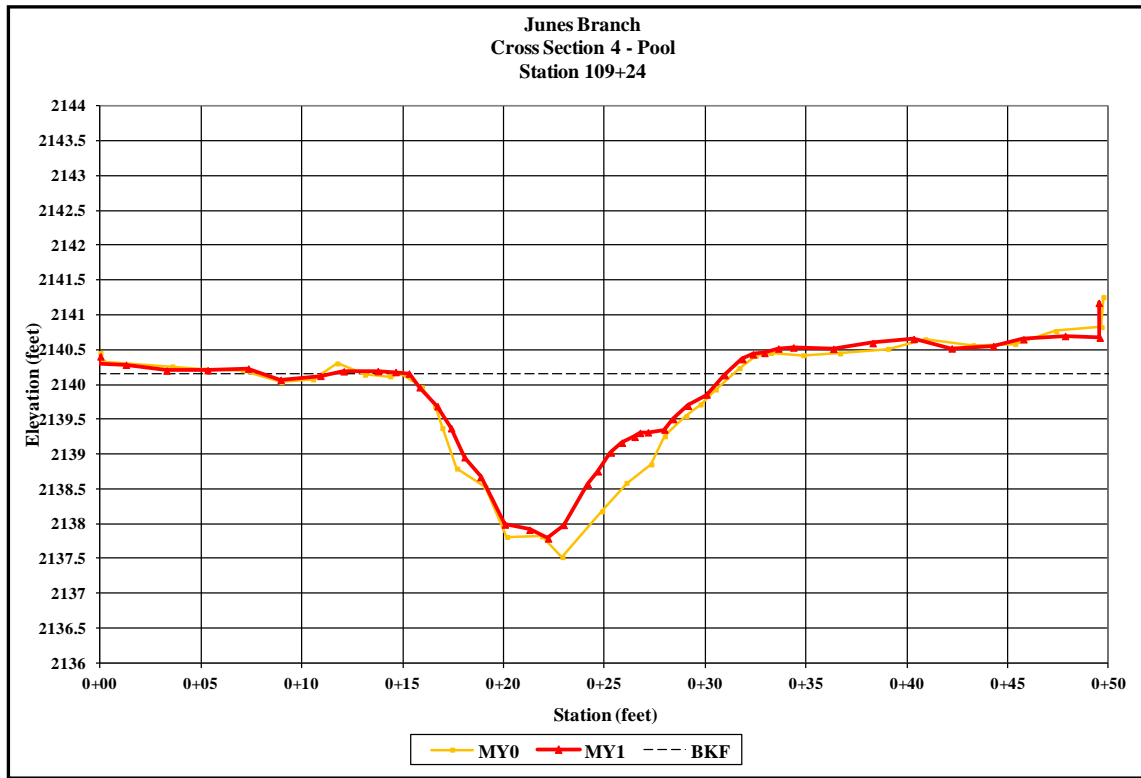
Right Descending Bank



Upstream



Downstream



Left Descending Bank



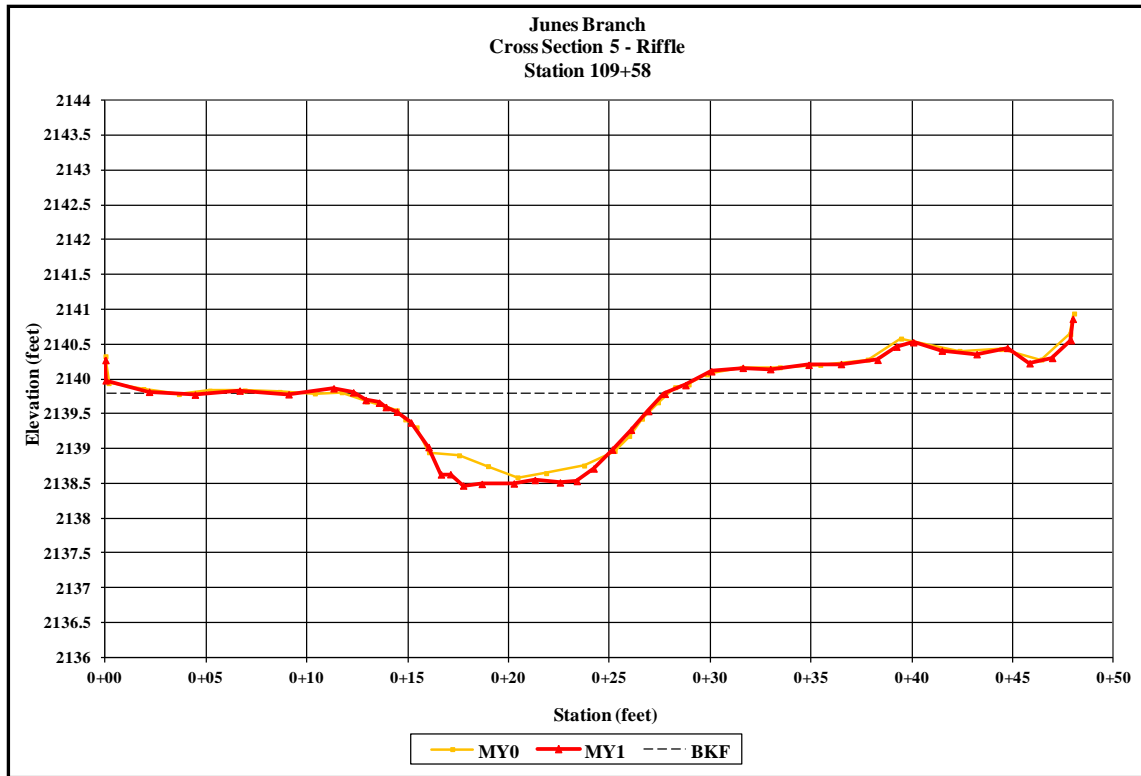
Right Descending Bank



Upstream



Downstream



Left Descending Bank



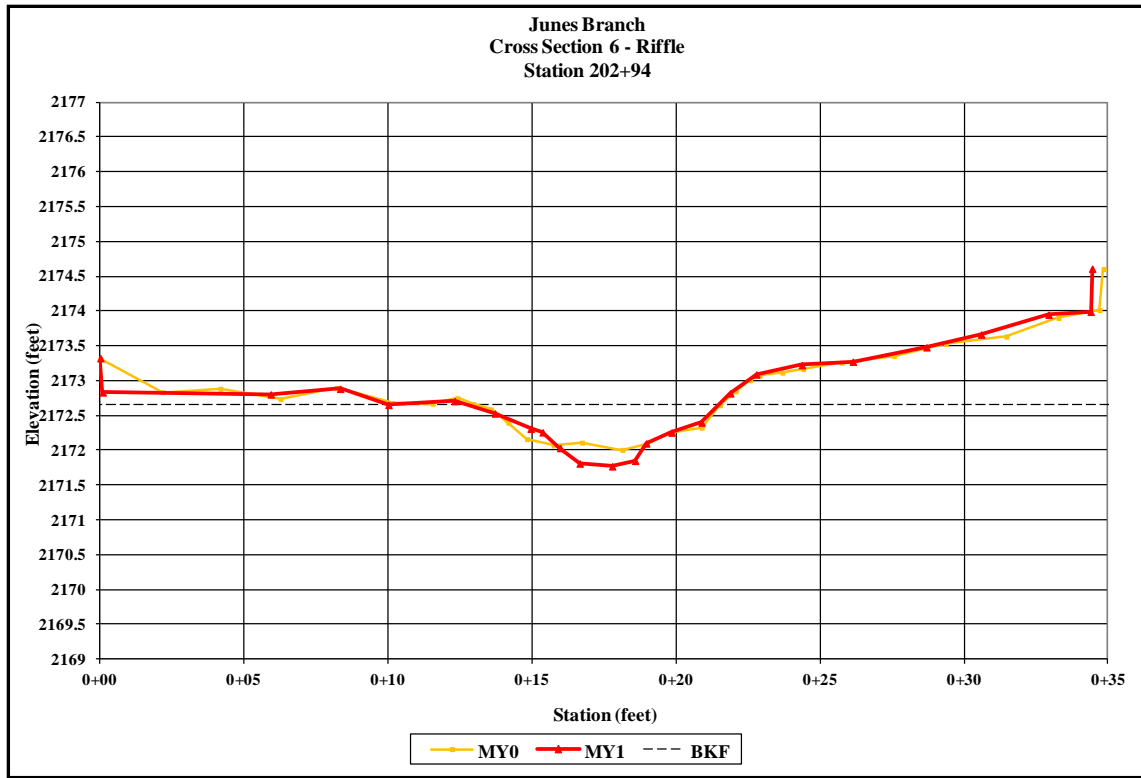
Right Descending Bank



Upstream



Downstream



Left Descending Bank



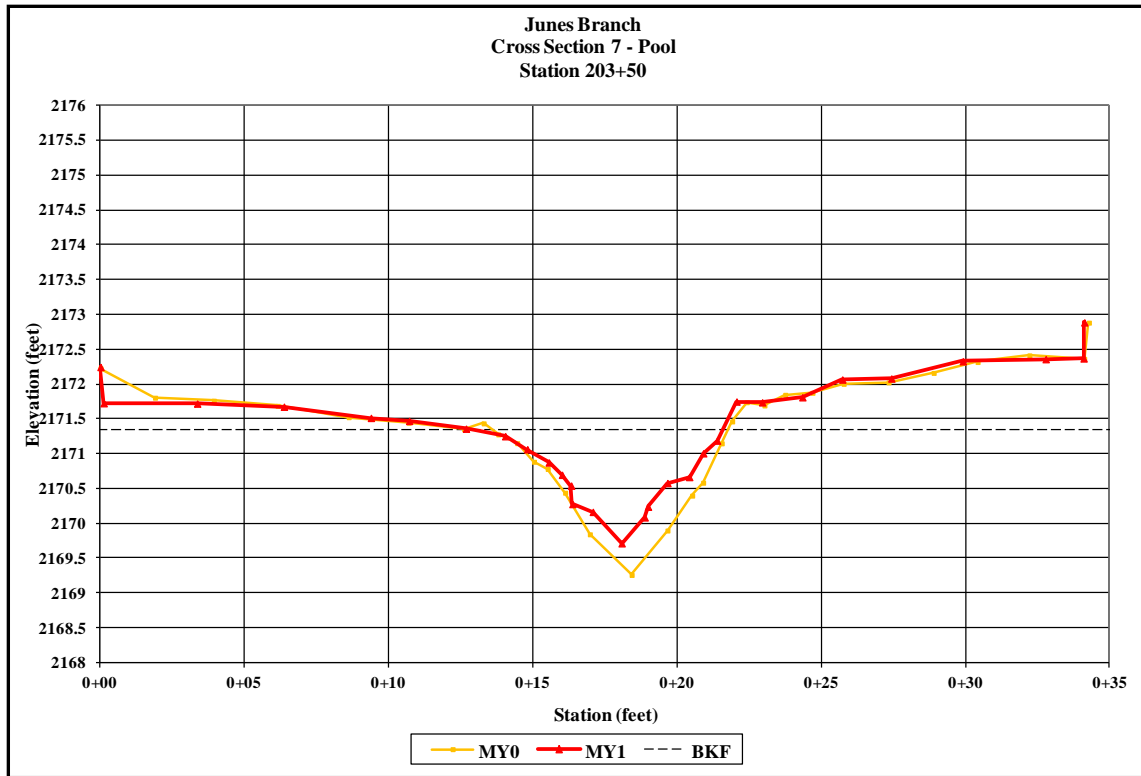
Right Descending Bank



Upstream



Downstream



Left Descending Bank



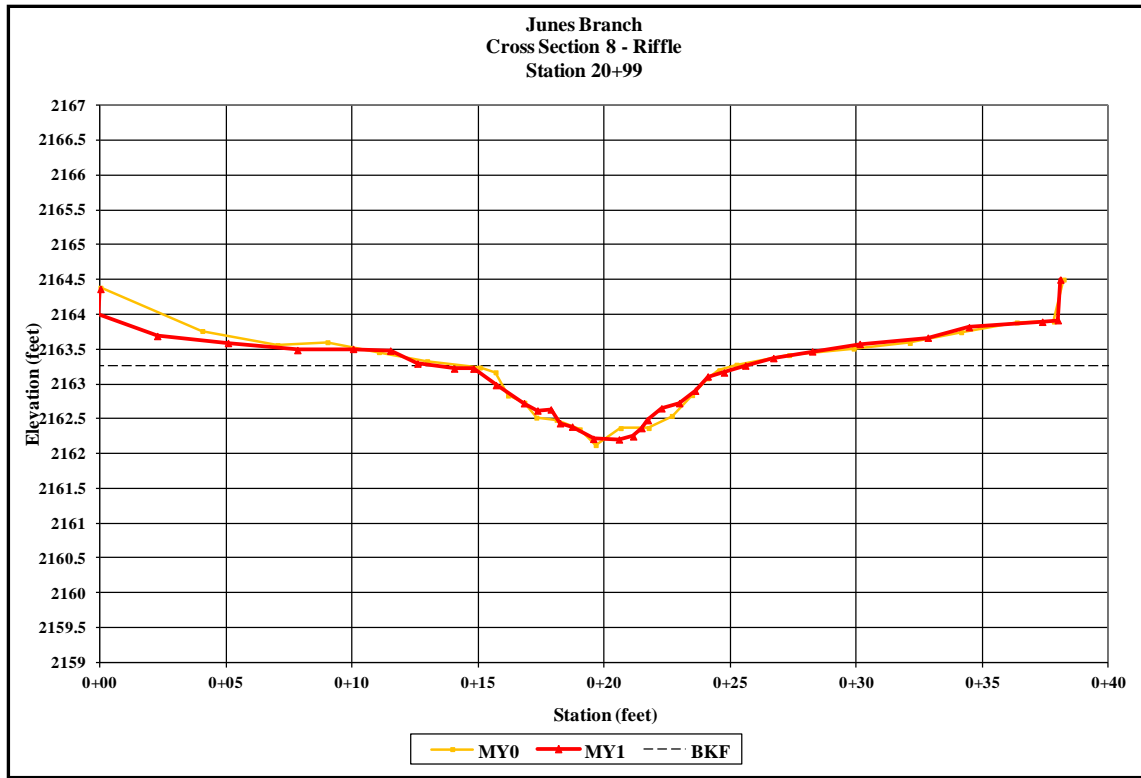
Right Descending Bank



Upstream



Downstream



Left Descending Bank



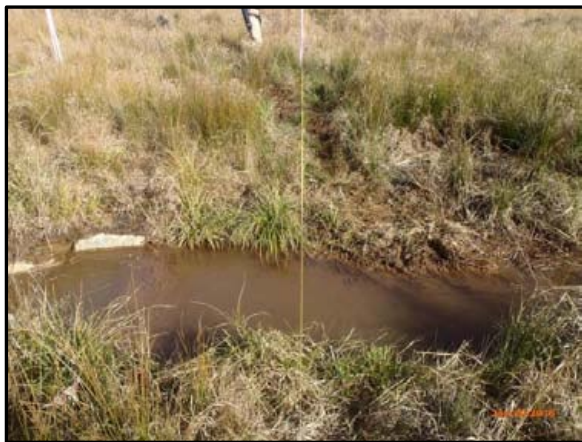
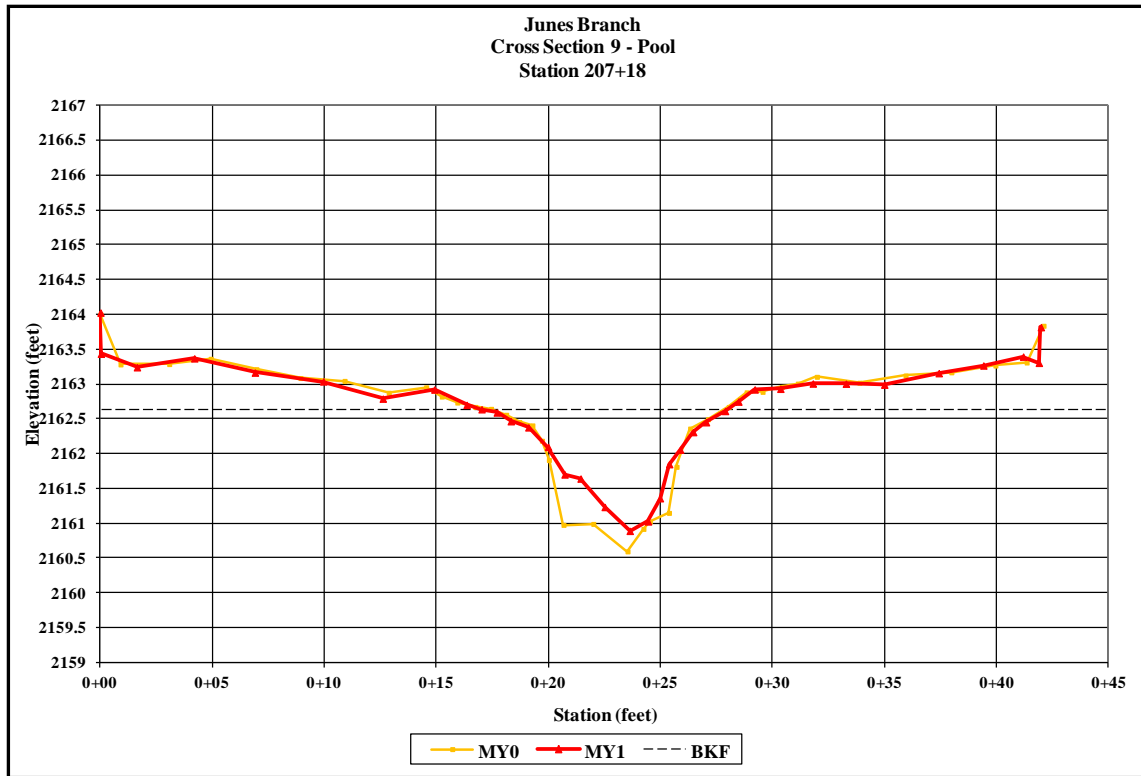
Right Descending Bank



Upstream



Downstream



Left Descending Bank



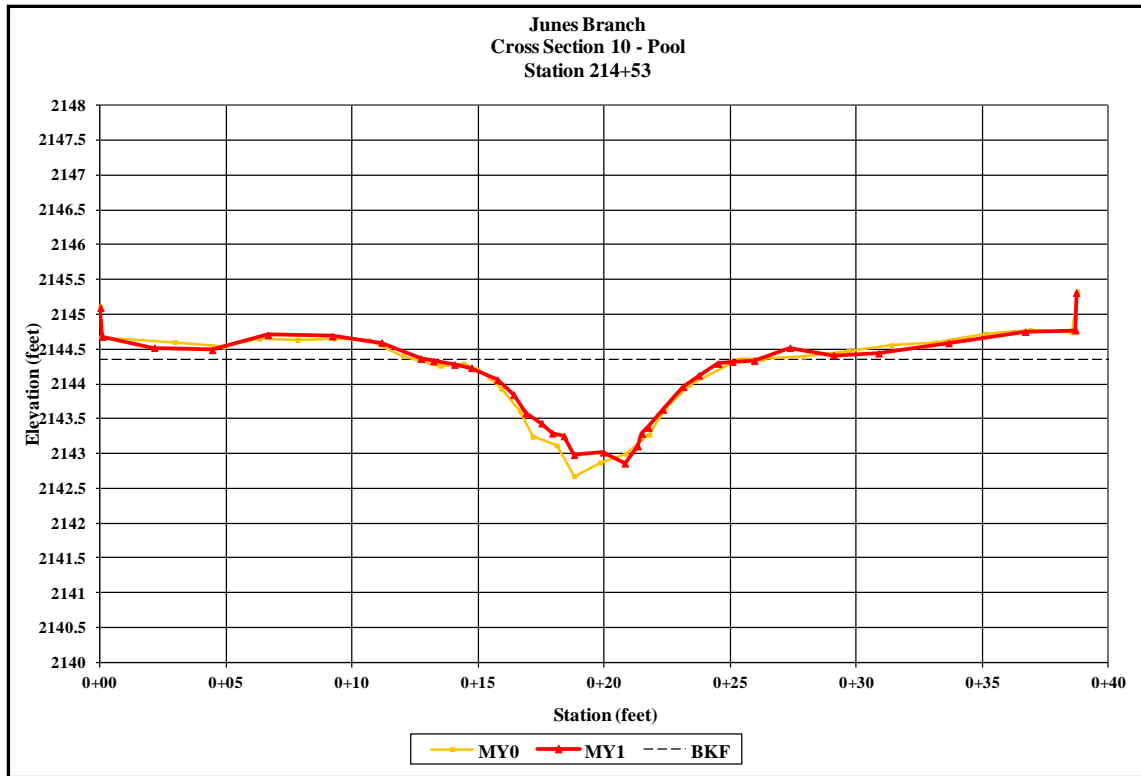
Right Descending Bank



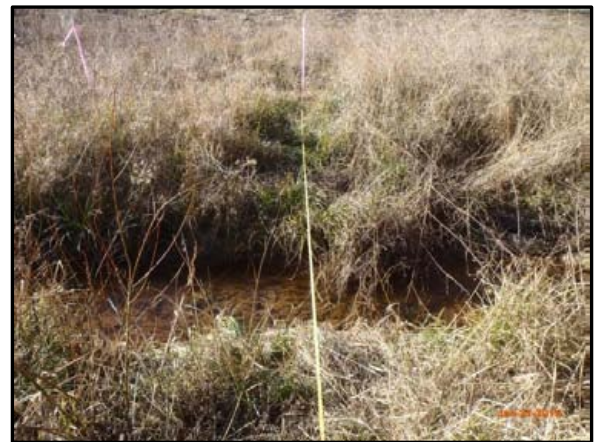
Upstream



Downstream



Left Descending Bank



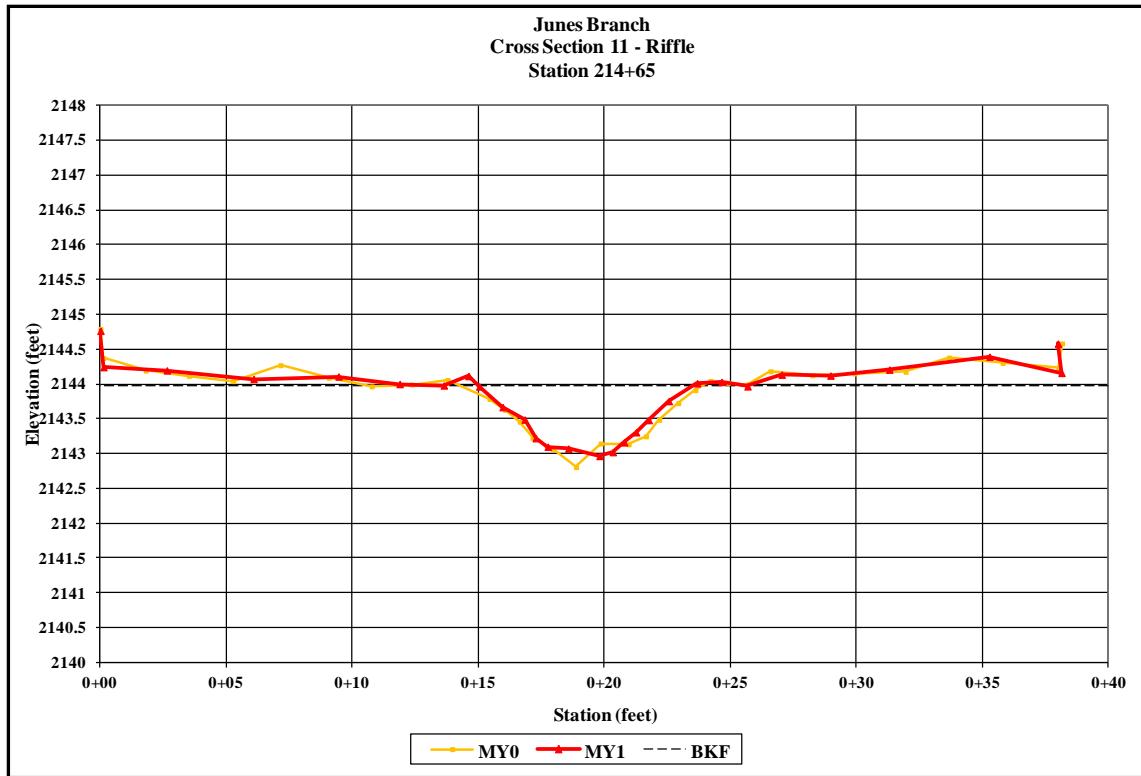
Right Descending Bank



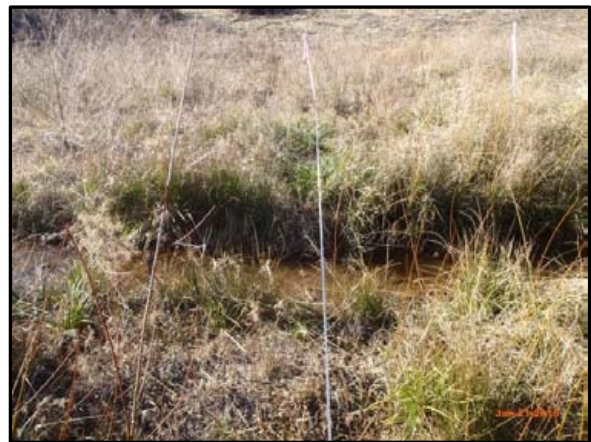
Upstream



Downstream



Left Descending Bank



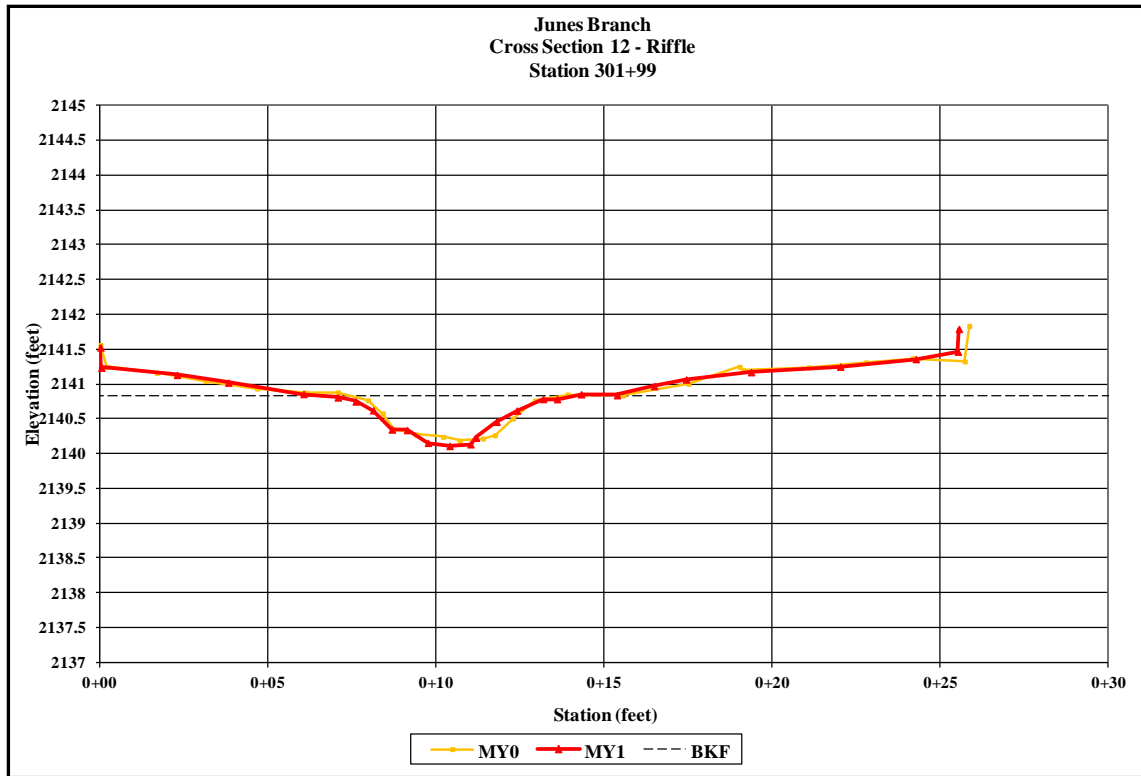
Right Descending Bank



Upstream



Downstream



Left Descending Bank



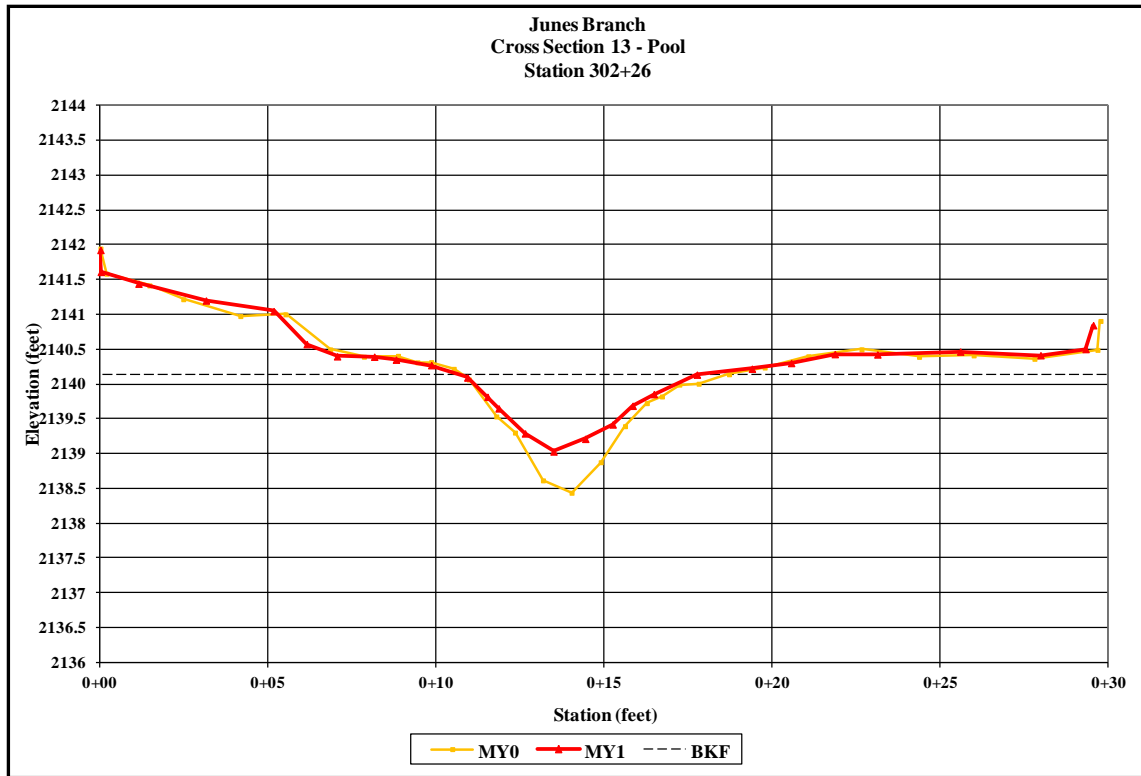
Right Descending Bank



Upstream



Downstream



Left Descending Bank



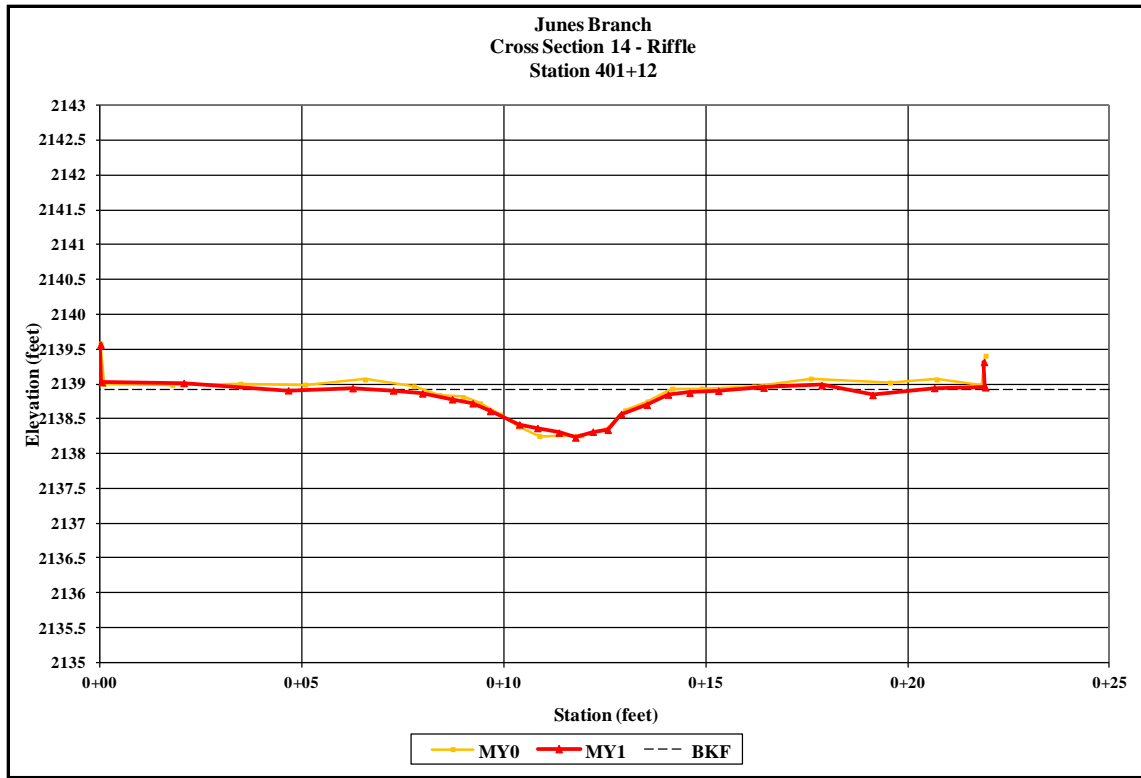
Right Descending Bank



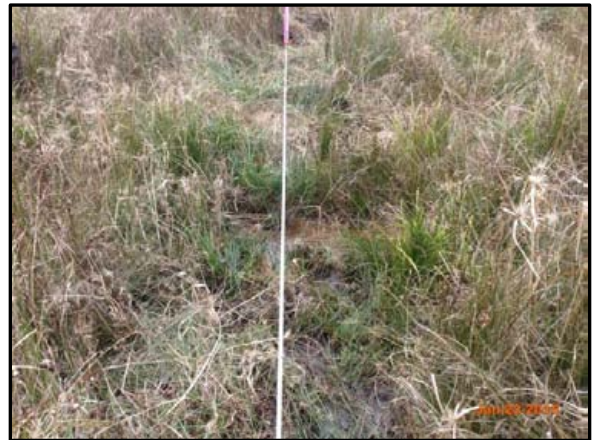
Upstream



Downstream



Left Descending Bank



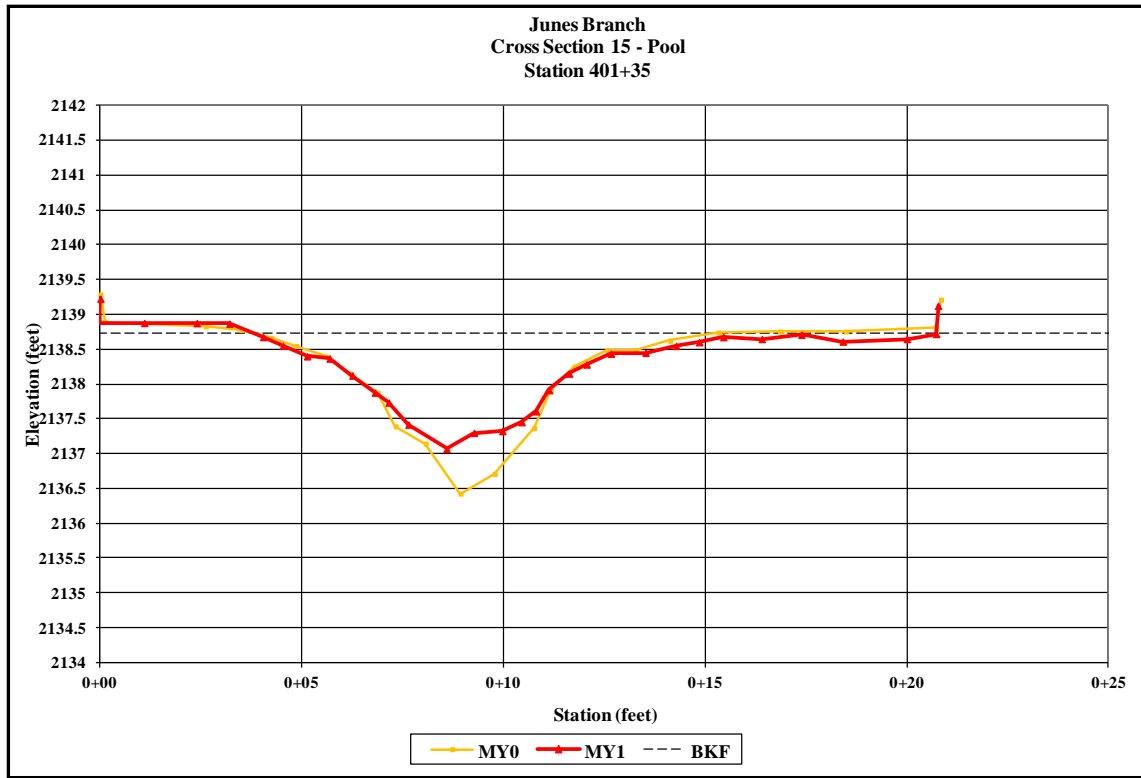
Right Descending Bank



Upstream



Downstream



Left Descending Bank



Right Descending Bank



Upstream



Downstream

**Table 11b. Monitoring Data - Stream Reach Data Summary
Junes Branch / Project No. 95027 - Bumgarner II (543 feet)**

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5					
	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n
Bankfull Width (ft)	-	16.3	-	-	N/A	1	-	15.7	-	-	N/A	1																								
Floodprone Width (ft)	-	>47	-	-	N/A	1	-	>48	-	-	N/A	1																								
Bankfull Mean Depth (ft)	-	0.7	-	-	N/A	1	-	0.9	-	-	N/A	1																								
Bankfull Max Depth (ft)	-	1.2	-	-	N/A	1	-	1.3	-	-	N/A	1																								
Bankfull Cross-Sectional Area (ft ²)	-	11.9	-	-	N/A	1	-	13.4	-	-	N/A	1																								
Width/Depth Ratio	-	22.2	-	-	N/A	1	-	18.4	-	-	N/A	1																								
Entrenchment Ratio	-	>3	-	-	N/A	1	-	>3.1	-	-	N/A	1																								
Bank Height Ratio	-	1.0	-	-	N/A	1	-	1.0	-	-	N/A	1																								
Profile																																				
Riffle Length (ft)	3.1	29	32.3	38.6	12	7	27.2	34.5	34.5	42.0	5.5	6																								
Riffle Slope (ft/ft)	0.016	0.026	0.020	0.064	0.017	7	0.015	0.017	0.016	0.021	0.002	6																								
Pool Length (ft)	12.1	17.8	19.2	22.4	4	7	9.1	13.9	12.7	25.2	5.6	7																								
Pool Max Depth (ft)	2.3	2.9	3.1	3.4	0.4	7	2.2	2.7	2.7	3.2	0.4	7																								
Pool Spacing (ft)	61.5	70.2	69.9	80.2	6	6	60.7	66.7	66.4	74.5	5.1	6																								
Pattern																																				
Channel Belt Width (ft)	25.4	28.0	26.2	26.2	3.8	3																														
Radius of Curvature (ft)	39.5	54.4	54.4	69.3	N/A	2																														
Rc: Bankfull Width (ft/ft)	3.1	4.3	4.3	5.5	N/A	2																														
Meander Wavelength (ft)	109.3	123.2	65.2	134.6	12.8	3																														
Meander Width Ratio	2.0	2.2	2.1	2.6	0.3	3																														
Additional Reach Parameters																																				
Rosgen Classification	Bc						Bc																													
Channel Thalweg Length (ft)	543						522																													
Sinuosity (ft)	1.07						1.06																													
Water Surface Slope (Channel) (ft/ft)	0.0140						0.0151																													
Bankfull Slope (ft/ft)	0.0152						0.0154																													
Ri% / Ru% / P% / G% / S%	45%	18%	28%	8%	0%		50%	16%	24%	10%	0%																									
SC% / SA% / G% / C% / B% / Be%*																																				
d16 / d35 / d50 / d84 / d95 (mm)																																				
% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

N/A - Information does not apply.
 Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step
 SC = Silt-Clay / SA = Sand / G = Gravel / C = Cobble / B = Boulder / Be = Bedrock
 - Information unavailable

**Table 11b. Monitoring Data - Stream Reach Data Summary
Junes Branch / Project No. 95027 - Higdon Branch (376 feet)**

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5					
	Min	Mean ¹	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n
Bankfull Width (ft)	-	8.0	-	-	N/A	1	-	8.1	-	-	N/A	1																								
Floodprone Width (ft)	-	>40	-	-	N/A	1	-	>40	-	-	N/A	1																								
Bankfull Mean Depth (ft)	-	0.4	-	-	N/A	1	-	0.3	-	-	N/A	1																								
Bankfull Max Depth (ft)	-	0.7	-	-	N/A	1	-	0.7	-	-	N/A	1																								
Bankfull Cross-Sectional Area (ft ²)	-	2.5	-	-	N/A	1	-	2.6	-	-	N/A	1																								
Width/Depth Ratio	-	17.6	-	-	N/A	1	-	24.7	-	-	N/A	1																								
Entrenchment Ratio	-	>6	-	-	N/A	1	-	>4.9	-	-	N/A	1																								
Bank Height Ratio	-	1.0	-	-	N/A	1	-	1.0	-	-	N/A	1																								
Profile																																				
Riffle Length (ft)	2.5	7.7	7.6	15	2.9	13	6.5	9.8	9.1	15.6	2.9	13																								
Riffle Slope (ft/ft)	0.002	0.021	0.017	0.047	0.012	13	0.007	0.021	0.019	0.040	0.011	13																								
Pool Length (ft)	4.6	8.1	8.4	11	1.8	14	2.5	6.1	6.3	9.1	1.7	14																								
Pool Max Depth (ft)	1.3	1.7	1.7	2	0.2	13	1.2	1.5	1.4	2.0	0.3	12																								
Pool Spacing (ft)	13.1	18.6	17.5	26.6	3.8	13	14.6	20.3	19.0	31.2	4.5	12																								
Pattern																																				
Channel Belt Width (ft)	9.1	10.6	10.6	12.1	2.1	2																														
Radius of Curvature (ft)	16.2	19.7	20.1	22.9	3.4	3																														
Rc: Bankfull Width (ft/ft)	2.0	2.5	2.5	2.9	0.4	3																														
Meander Wavelength (ft)	11.8	31.1	31.5	39.5	9.3	7																														
Meander Width Ratio	1.1	1.3	1.3	1.5	N/A	2																														
Additional Reach Parameters																																				
Rosgen Classification	Bc						Bc																													
Channel Thalweg Length (ft)	382						370																													
Sinuosity (ft)	1.06						1.05																													
Water Surface Slope (Channel) (ft/ft)	0.020						0.0191																													
Bankfull Slope (ft/ft)	0.018						0.0156																													
Ri% / Ru% / P% / G% / S%	42%	1%	47%	7%	2%		51%	5%	34%	11%	0%																									
SC% / SA% / G% / C% / B% / Be%*																																				
d16 / d35 / d50 / d84 / d95 (mm)																																				
% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

N/A - Information does not apply.
 Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step
 SC = Silt-Clay / SA = Sand / G = Gravel / C = Cobble / B = Boulder / Be = Bedrock
¹Corrected Values
 - Information unavailable

**Table 11b. Monitoring Data - Stream Reach Data Summary
Junes Branch / Project No. 95027 - Doris Branch (288 feet)**

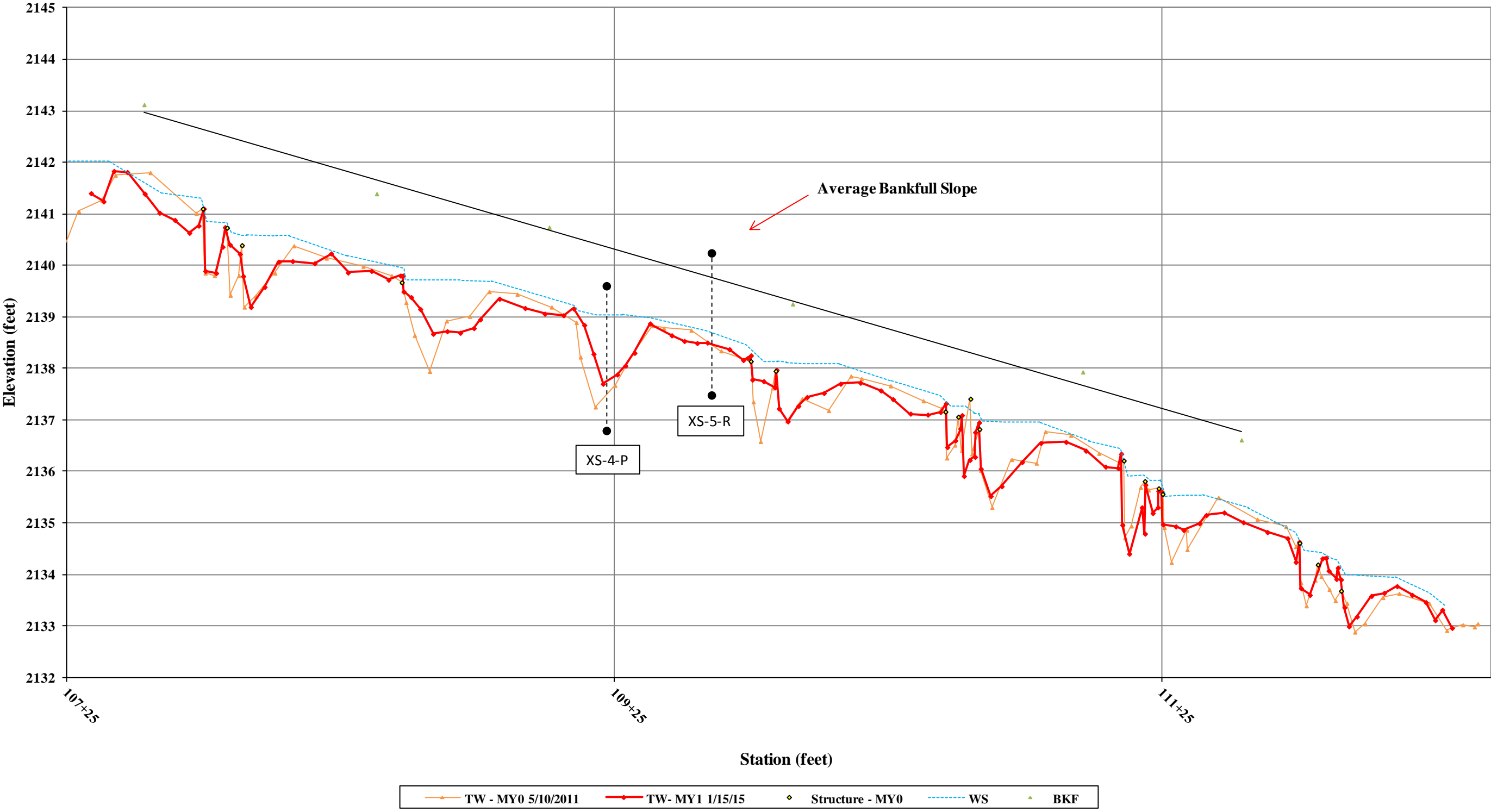
Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5					
	Min	Mean ¹	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n
Dimension & Substrate - Riffle																																				
Bankfull Width (ft)	-	6.2	-	-	N/A	1	-	6.6	-	-	N/A	1																								
Floodprone Width (ft)	-	>23	-	-	N/A	1	-	>23	-	-	N/A	1																								
Bankfull Mean Depth (ft)	-	0.4	-	-	N/A	1	-	0.4	-	-	N/A	1																								
Bankfull Max Depth (ft)	-	0.7	-	-	N/A	1	-	0.7	-	-	N/A	1																								
Bankfull Cross-Sectional Area (ft ²)	-	2.3	-	-	N/A	1	-	2.4	-	-	N/A	1																								
Width/Depth Ratio	-	16.7	-	-	N/A	1	-	18.2	-	-	N/A	1																								
Entrenchment Ratio	-	>3.8	-	-	N/A	1	-	>3.5	-	-	N/A	1																								
Bank Height Ratio	-	1.0	-	-	N/A	1	-	1.0	-	-	N/A	1																								
Profile																																				
Riffle Length (ft)	2.5	6.1	6.3	11.4	2.5	18	3.7	6.5	6.5	11.3	2.0	18																								
Riffle Slope (ft/ft)	0.011	0.022	0.013	0.036	0.008	18	0.002	0.023	0.020	0.055	0.014	18																								
Pool Length (ft)	2.4	3.7	3.5	6.6	1	19	2.5	3.8	3.8	5.3	0.8	19																								
Pool Max Depth (ft)	1.2	1.6	1.6	2.3	0.3	18	0.7	1.1	1.1	1.5	0.2	19																								
Pool Spacing (ft)	7.2	12.4	12.6	19.9	2.9	18	7.5	12.4	13.3	18.4	3.0	18																								
Pattern																																				
Channel Belt Width (ft)	9.4	9.9	10.0	10.3	0.5	3																														
Radius of Curvature (ft)	7.9	12.0	12.0	16.1	5.8	2																														
Rc: Bankfull Width (ft/ft)	3.1	4.3	4.3	5.5	N/A	2																														
Meander Wavelength (ft)	16.6	22.6	24.5	27.1	4.5	6																														
Meander Width Ratio	2.0	2.1	2.1	2.2	0.1	3																														
Additional Reach Parameters																																				
Rosgen Classification	Bc						Bc																													
Channel Thalweg Length (ft)	288						274																													
Sinuosity (ft)	1.06						1.06																													
Water Surface Slope (Channel) (ft/ft)	0.018						0.019																													
Bankfull Slope (ft/ft)	0.018						0.020																													
Ri% / Ru% / P% / G% / S%	48%	8%	31%	12%	1%		51%	6%	32%	11%	0%																									
SC% / SA% / G% / C% / B% / Be%*																																				
d16 / d35 / d50 / d84 / d95 (mm)																																				
% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

N/A - Information does not apply.
 Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step
 SC = Silt-Clay / SA = Sand / G = Gravel / C = Cobble / B = Boulder / Be = Bedrock
¹Corrected Values
 - Information unavailable

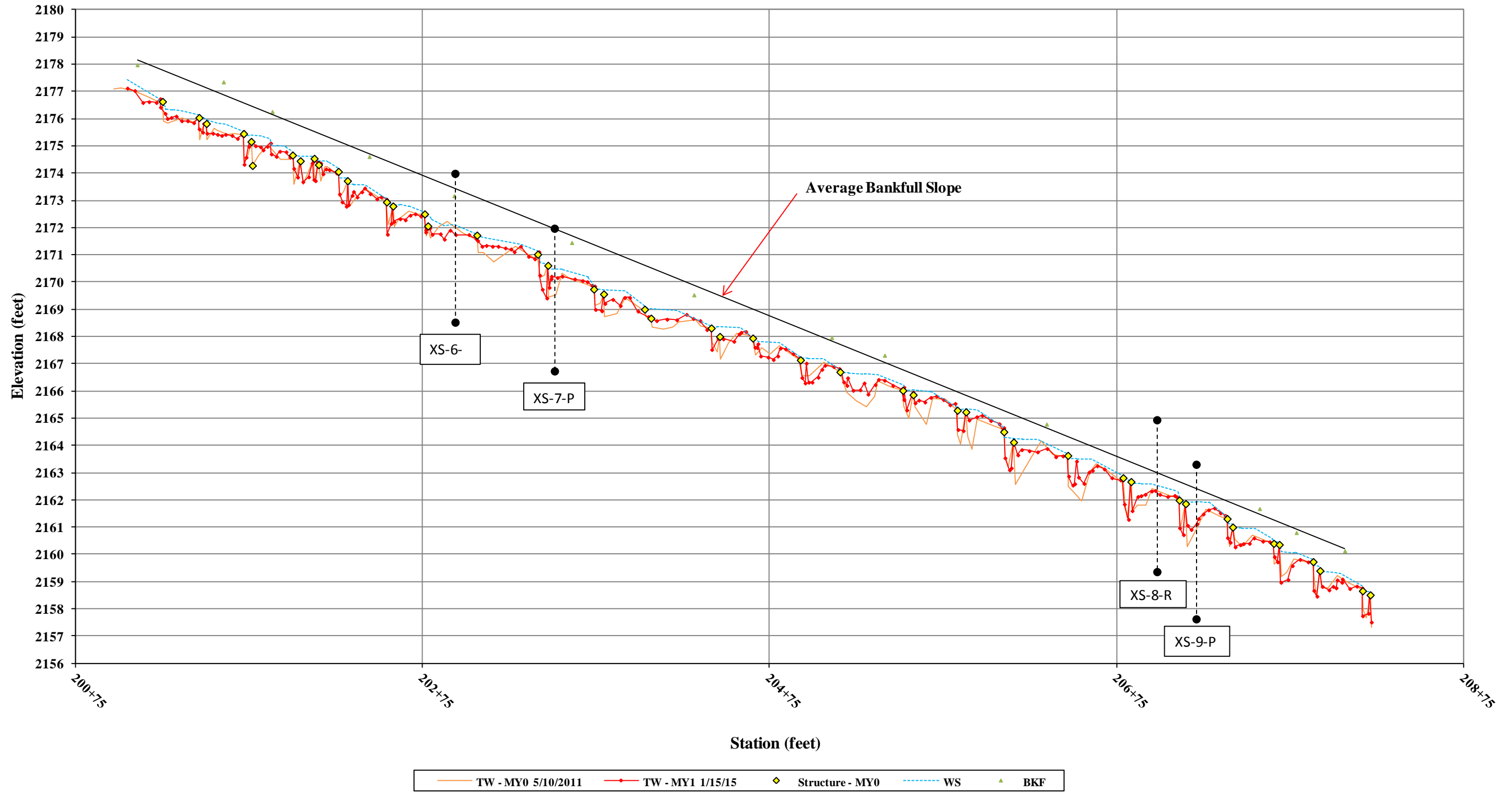
**Bumgarner Branch I
Longitudinal Profile
Staioning 100+37 to 107+27**



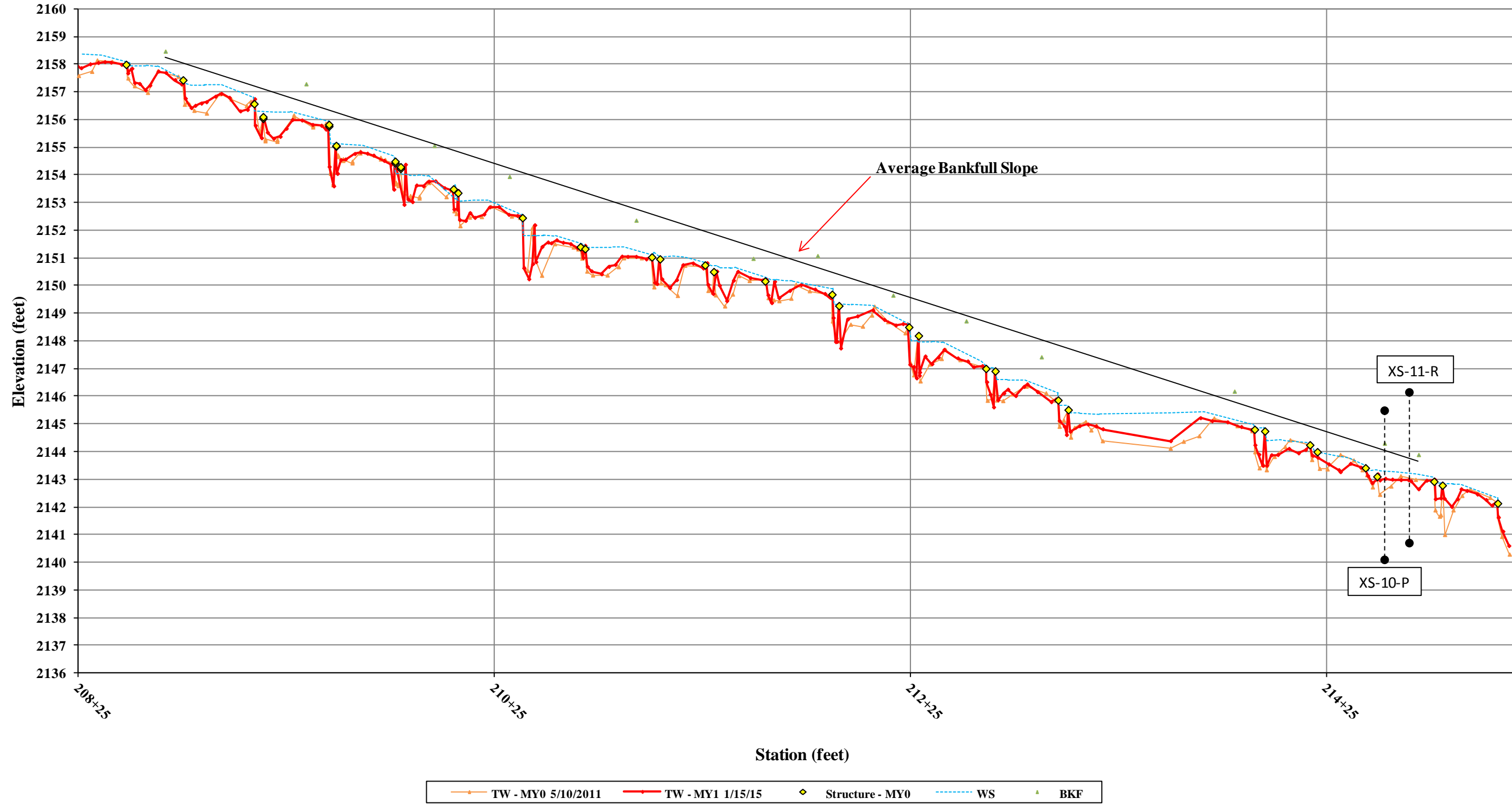
**Bumgarner Branch II
Longitudinal Profile
Staioning 107+27 to 112+35**



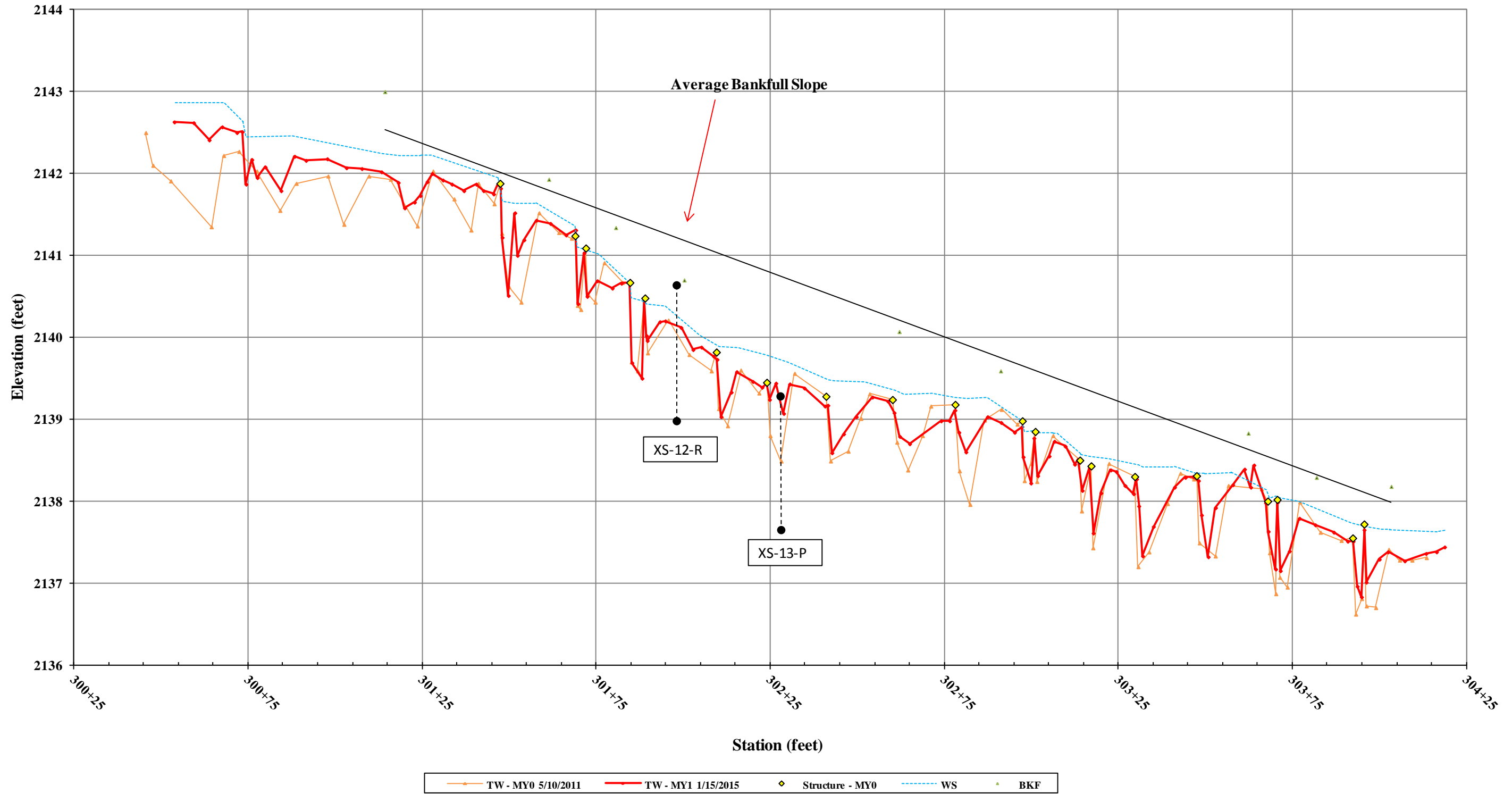
**Junes Branch - Sheet 1
Longitudinal Profile
Staioning 200+97 to 215+15**



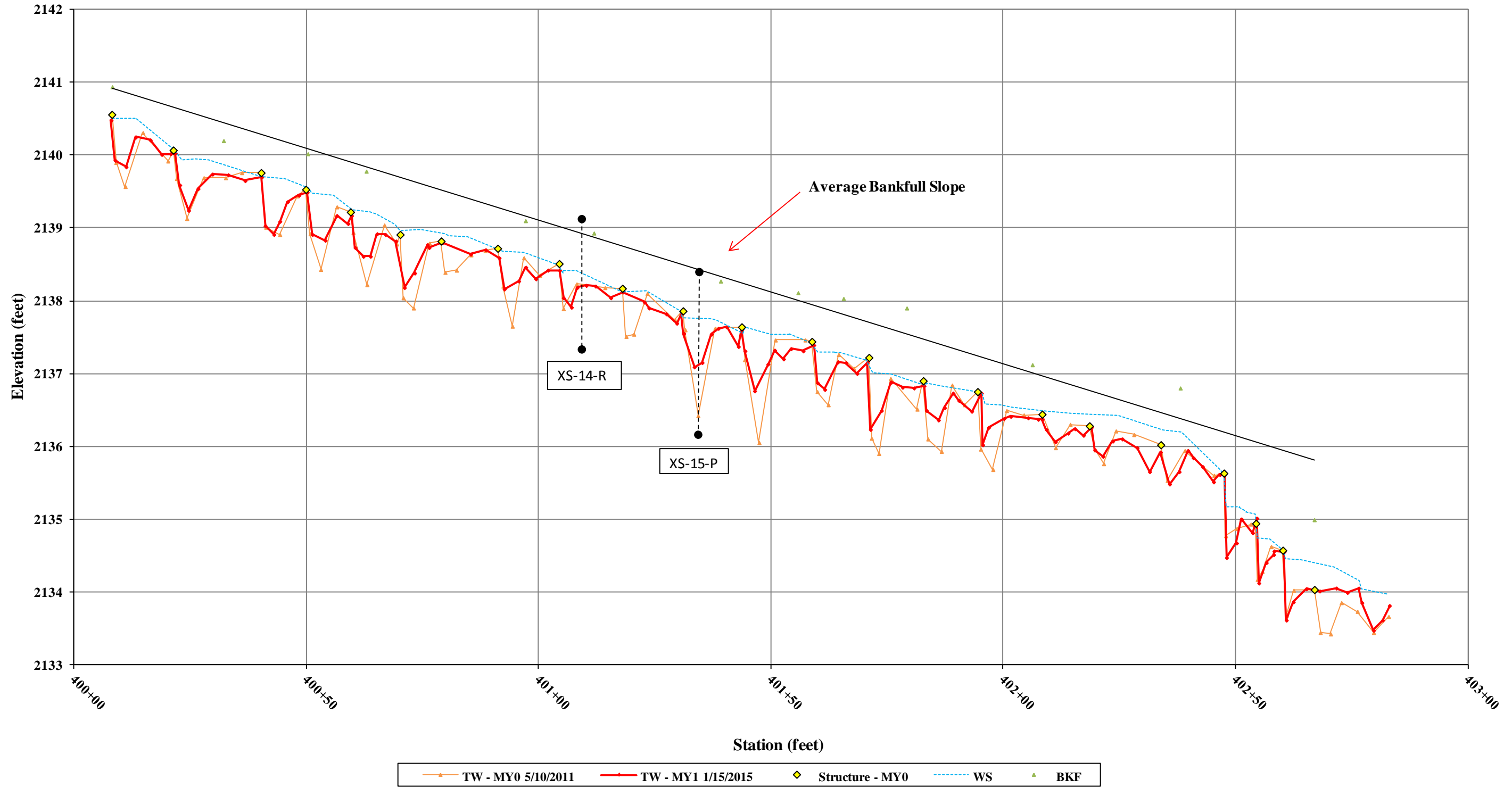
**Junes Branch - Sheet 2
Longitudinal Profile
Staioning 200+97 to 215+15**



**Hidgon Branch
Longitudinal Profile
Staioning 300+46 to 304+22**

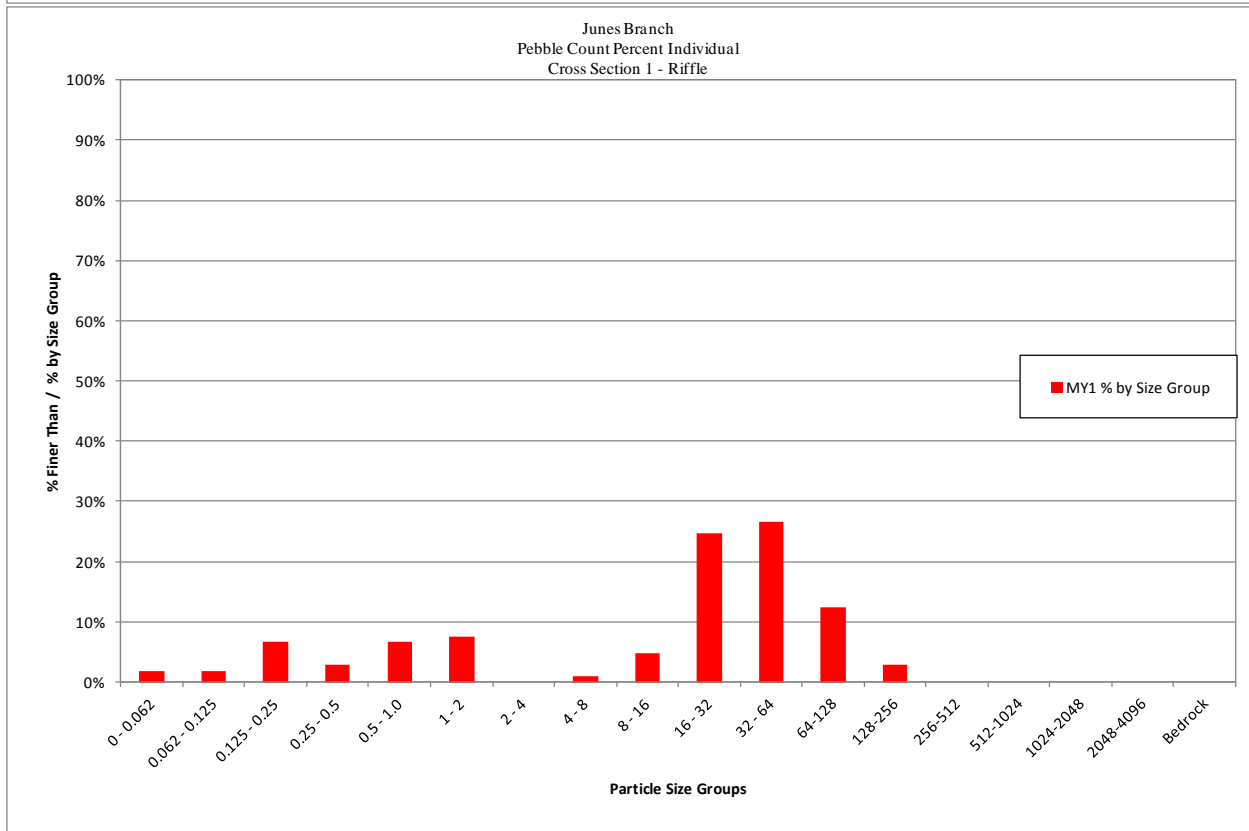
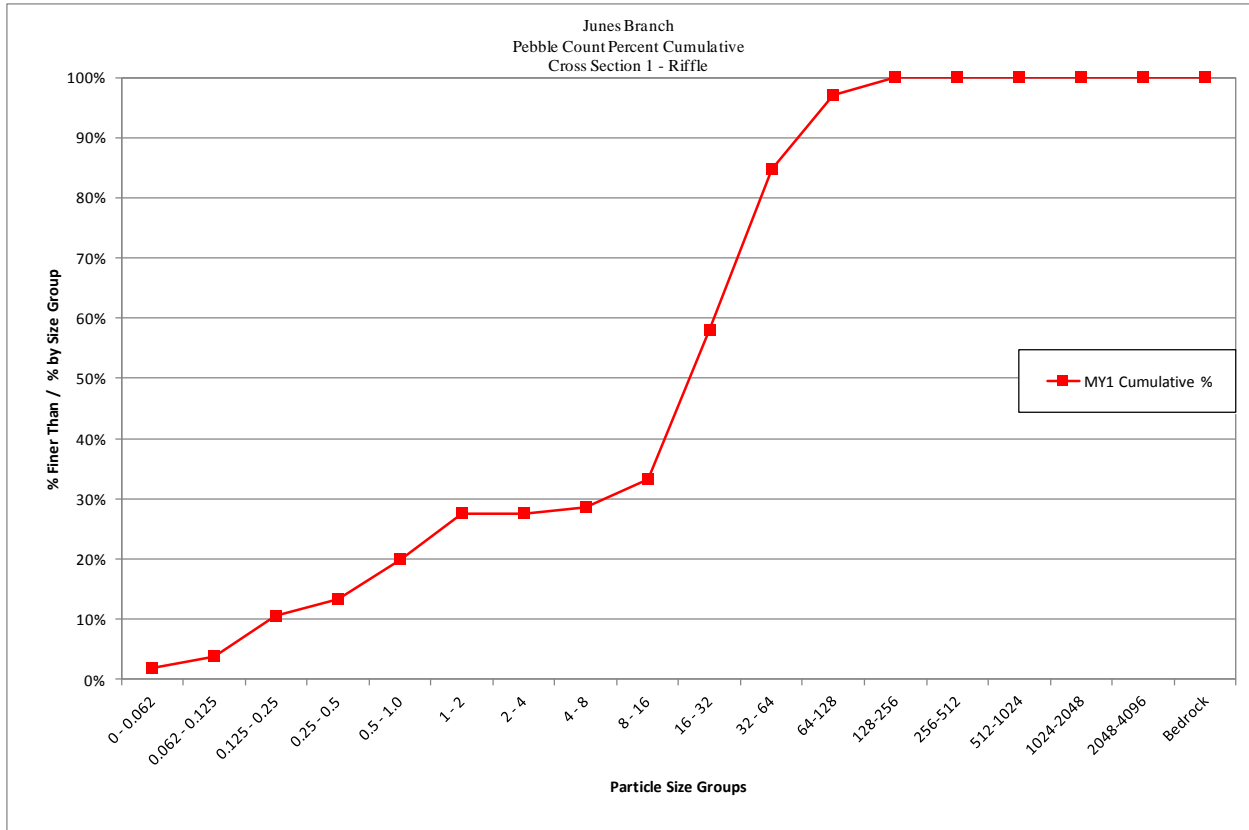


**Doris Branch
Longitudinal Profile
Staioning 400+00 to 402+82**

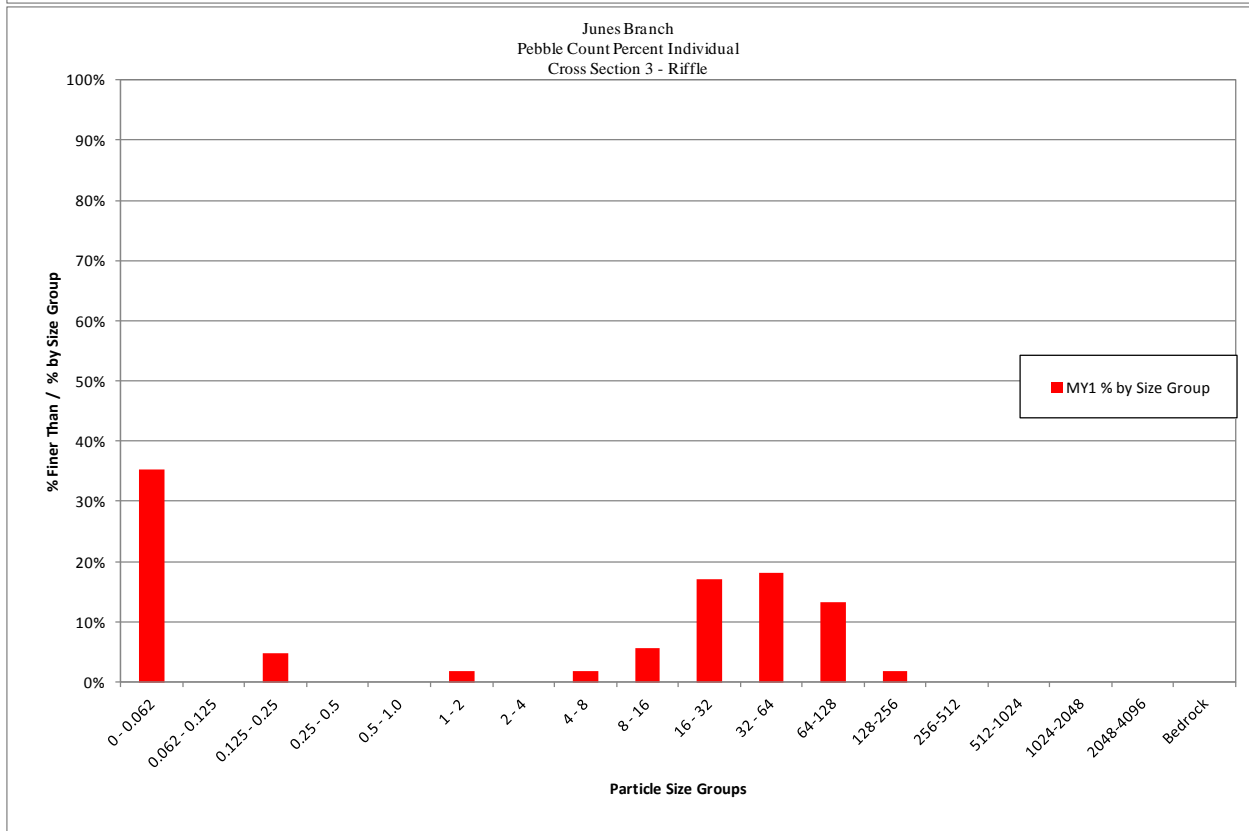
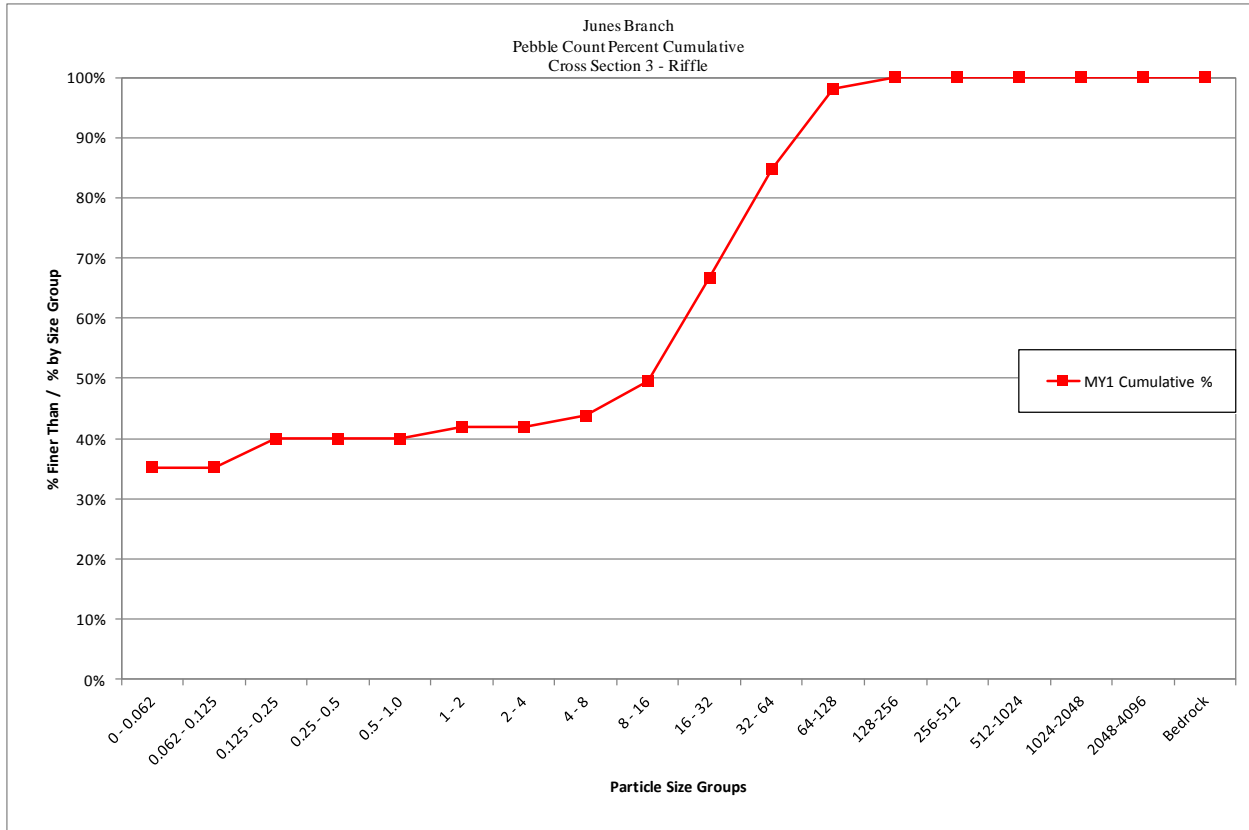


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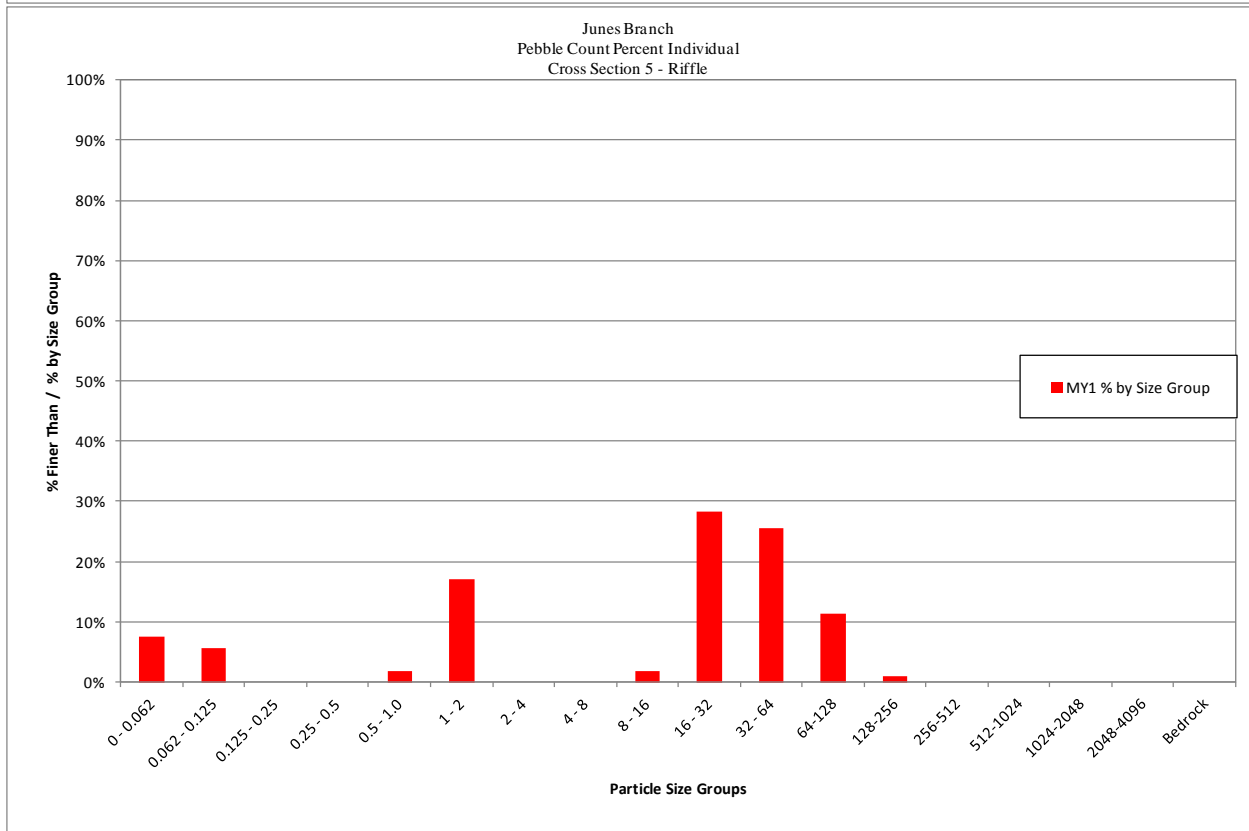
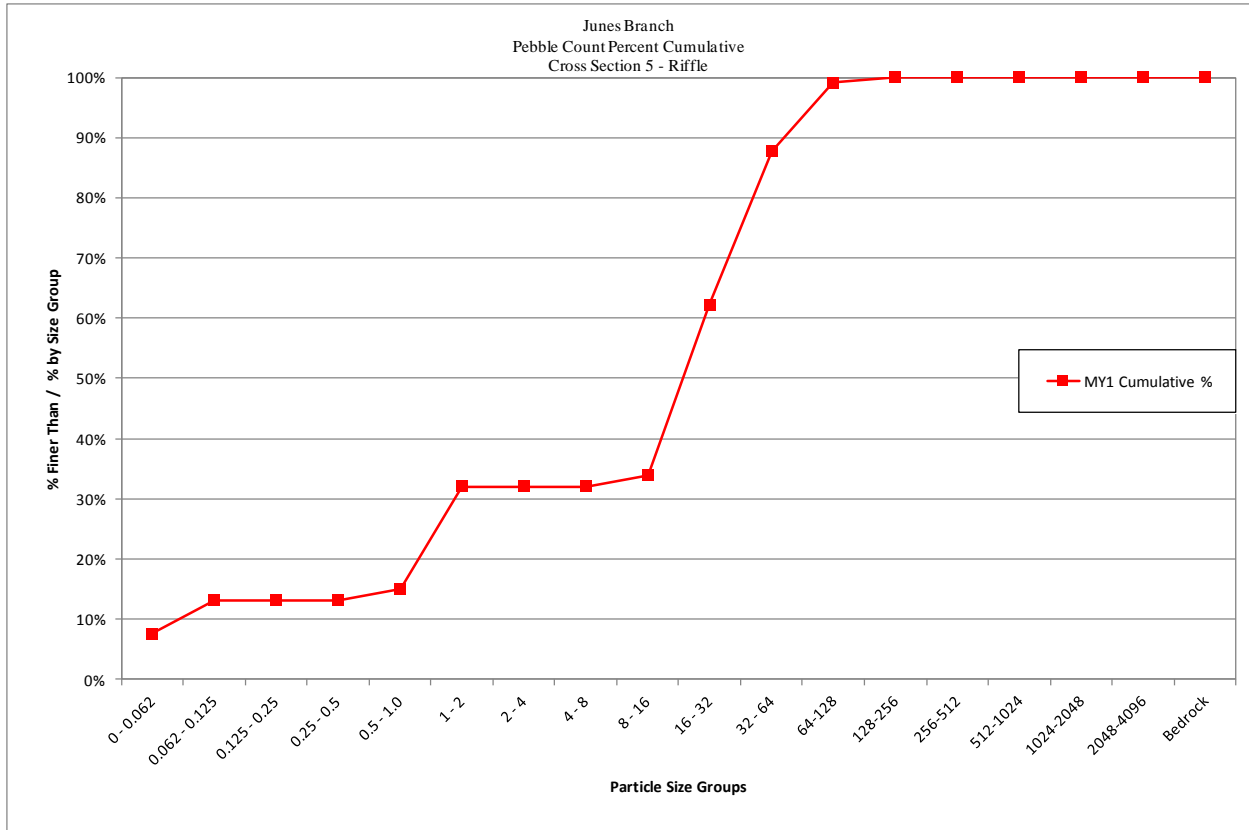
Junes Branch			
Cross Section 1 - Riffle			
Monitoring Year - 2015; MY1			
Bed Surface Material Particle Size Class (mm)	Number	% Individual	% Cumulative
0 - 0.062	2	1.9%	2%
0.062 - 0.125	2	1.9%	4%
0.125 - 0.25	7	6.7%	10%
0.25 - 0.5	3	2.9%	13%
0.5 - 1.0	7	6.7%	20%
1 - 2	8	7.6%	28%
2 - 4	0	0.0%	28%
4 - 8	1	1.0%	29%
8 - 16	5	4.8%	33%
16 - 32	26	24.8%	58%
32 - 64	28	26.7%	85%
64-128	13	12.4%	97%
128-256	3	2.9%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	105	100%	100%
		Summary Data	
		D50	27
		D84	63
		D95	98



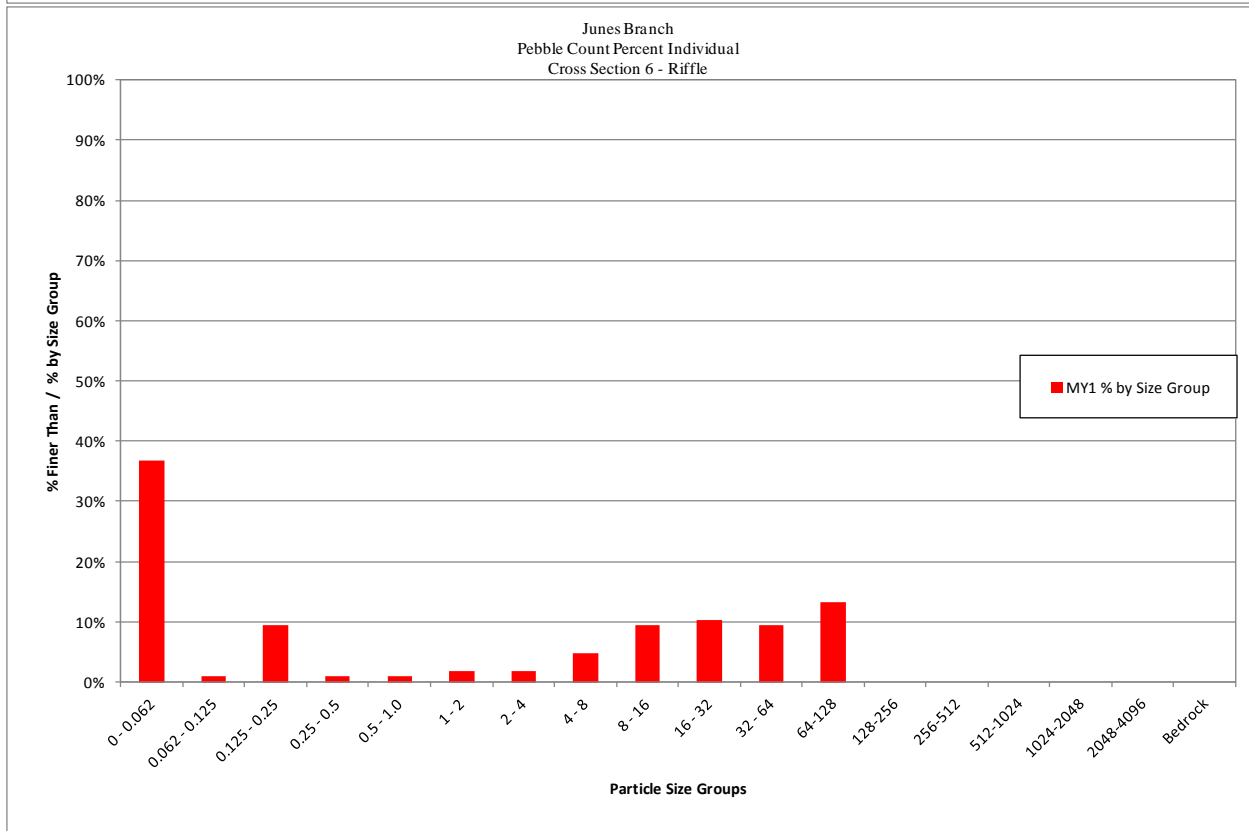
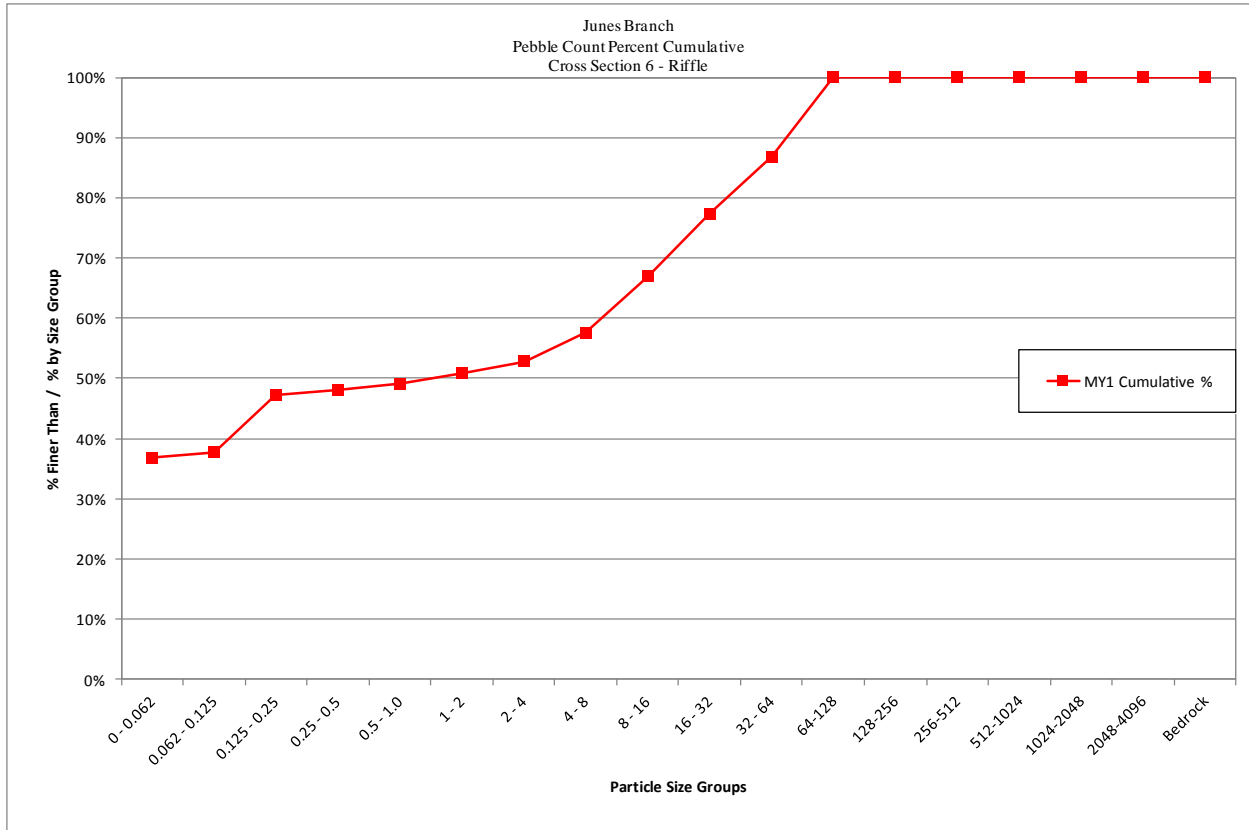
Junes Branch			
Cross Section 3 - Riffle			
Monitoring Year - 2015; MY1			
Bed Surface Material Particle Size Class (mm)	Number	% Individual	% Cumulative
0 - 0.062	37	35.2%	35%
0.062 - 0.125	0	0.0%	35%
0.125 - 0.25	5	4.8%	40%
0.25 - 0.5	0	0.0%	40%
0.5 - 1.0	0	0.0%	40%
1 - 2	2	1.9%	42%
2 - 4	0	0.0%	42%
4 - 8	2	1.9%	44%
8 - 16	6	5.7%	50%
16 - 32	18	17.1%	67%
32 - 64	19	18.1%	85%
64-128	14	13.3%	98%
128-256	2	1.9%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	105	100%	100%
		Summary Data	
		D50	16
		D84	62
		D95	87



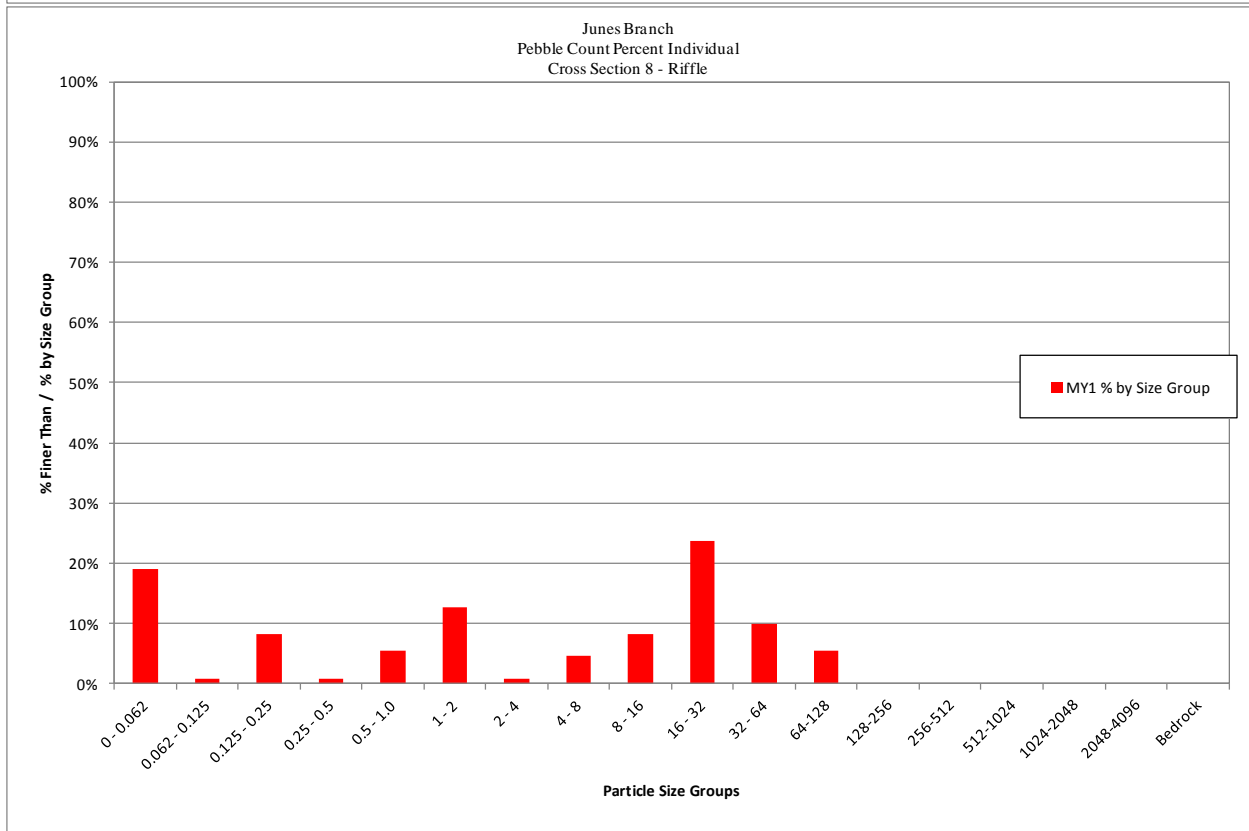
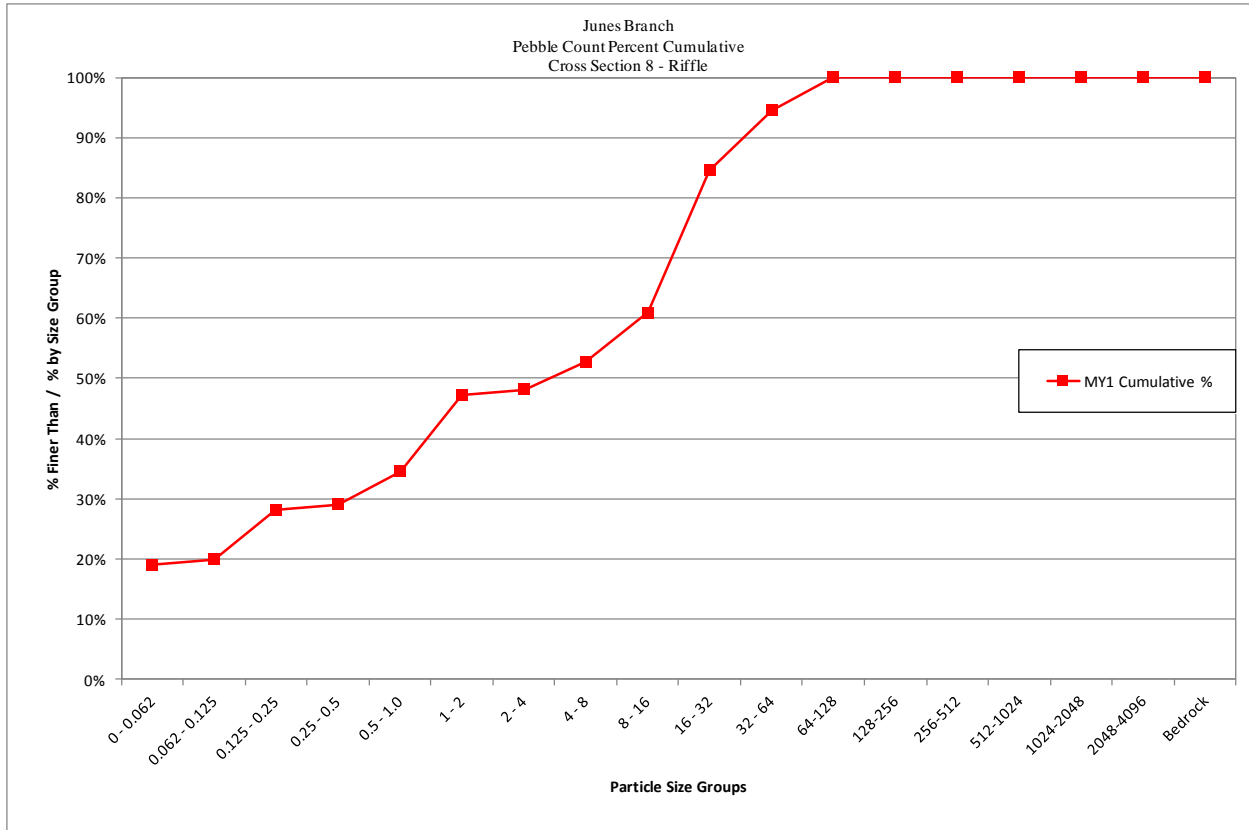
Junes Branch			
Cross Section 5 - Riffle			
Monitoring Year - 2015; MY1			
Bed Surface Material Particle Size Class (mm)	Number	% Individual	% Cumulative
0 - 0.062	8	7.5%	8%
0.062 - 0.125	6	5.7%	13%
0.125 - 0.25	0	0.0%	13%
0.25 - 0.5	0	0.0%	13%
0.5 - 1.0	2	1.9%	15%
1 - 2	18	17.0%	32%
2 - 4	0	0.0%	32%
4 - 8	0	0.0%	32%
8 - 16	2	1.9%	34%
16 - 32	30	28.3%	62%
32 - 64	27	25.5%	88%
64-128	12	11.3%	99%
128-256	1	0.9%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	106	100%	100%
		Summary Data	
		D50	25
		D84	56
		D95	95



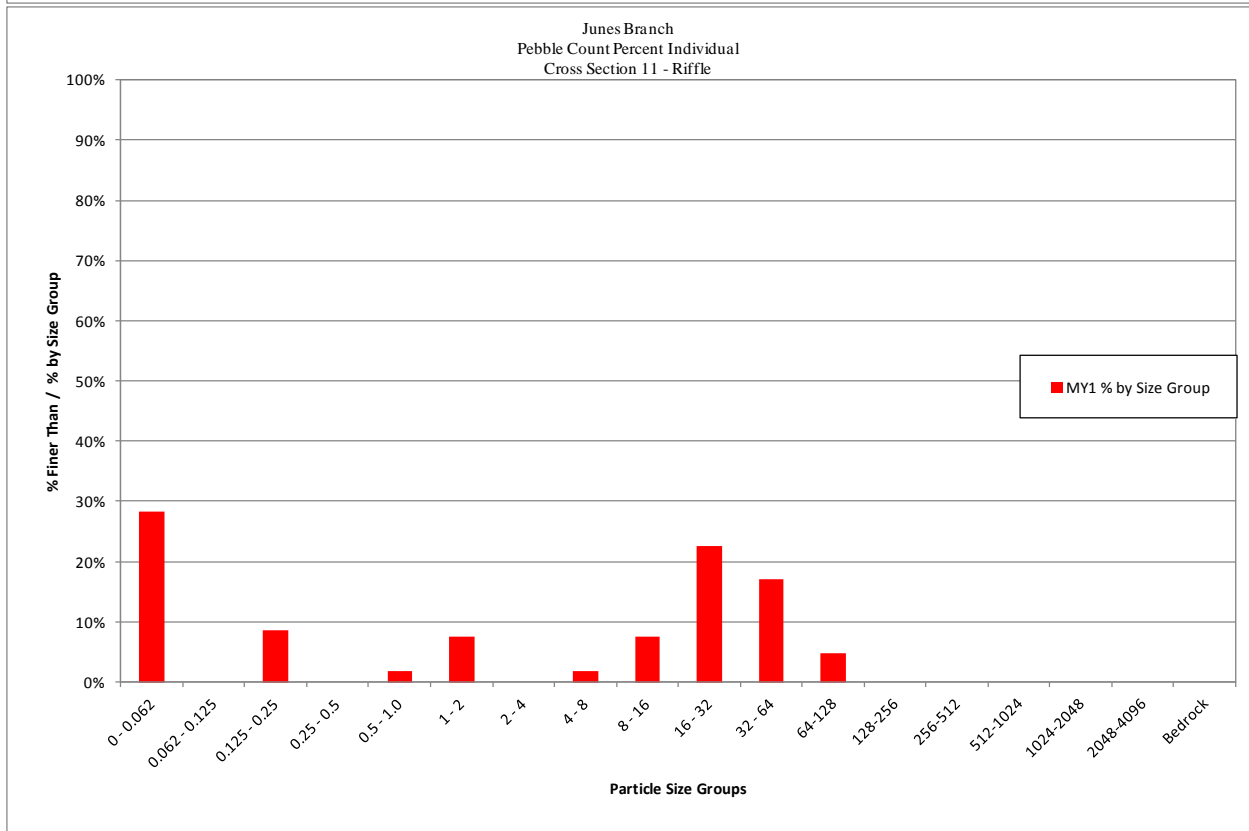
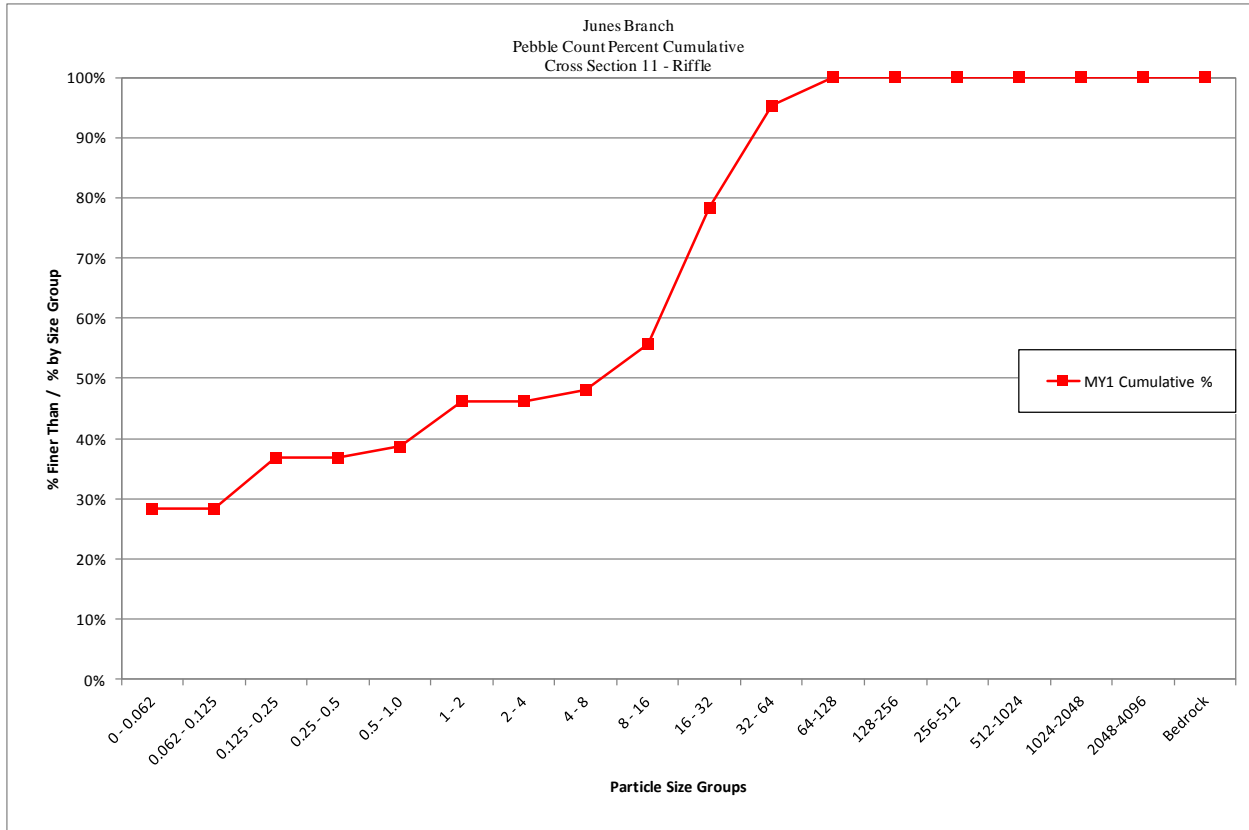
Junes Branch			
Cross Section 6 - Riffle			
Monitoring Year - 2015; MY1			
Bed Surface Material Particle Size Class (mm)	Number	% Individual	% Cumulative
0 - 0.062	39	36.8%	37%
0.062 - 0.125	1	0.9%	38%
0.125 - 0.25	10	9.4%	47%
0.25 - 0.5	1	0.9%	48%
0.5 - 1.0	1	0.9%	49%
1 - 2	2	1.9%	51%
2 - 4	2	1.9%	53%
4 - 8	5	4.7%	58%
8 - 16	10	9.4%	67%
16 - 32	11	10.4%	77%
32 - 64	10	9.4%	87%
64-128	14	13.2%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	106	100%	100%
		Summary Data	
		D50	1.4
		D84	52
		D95	86



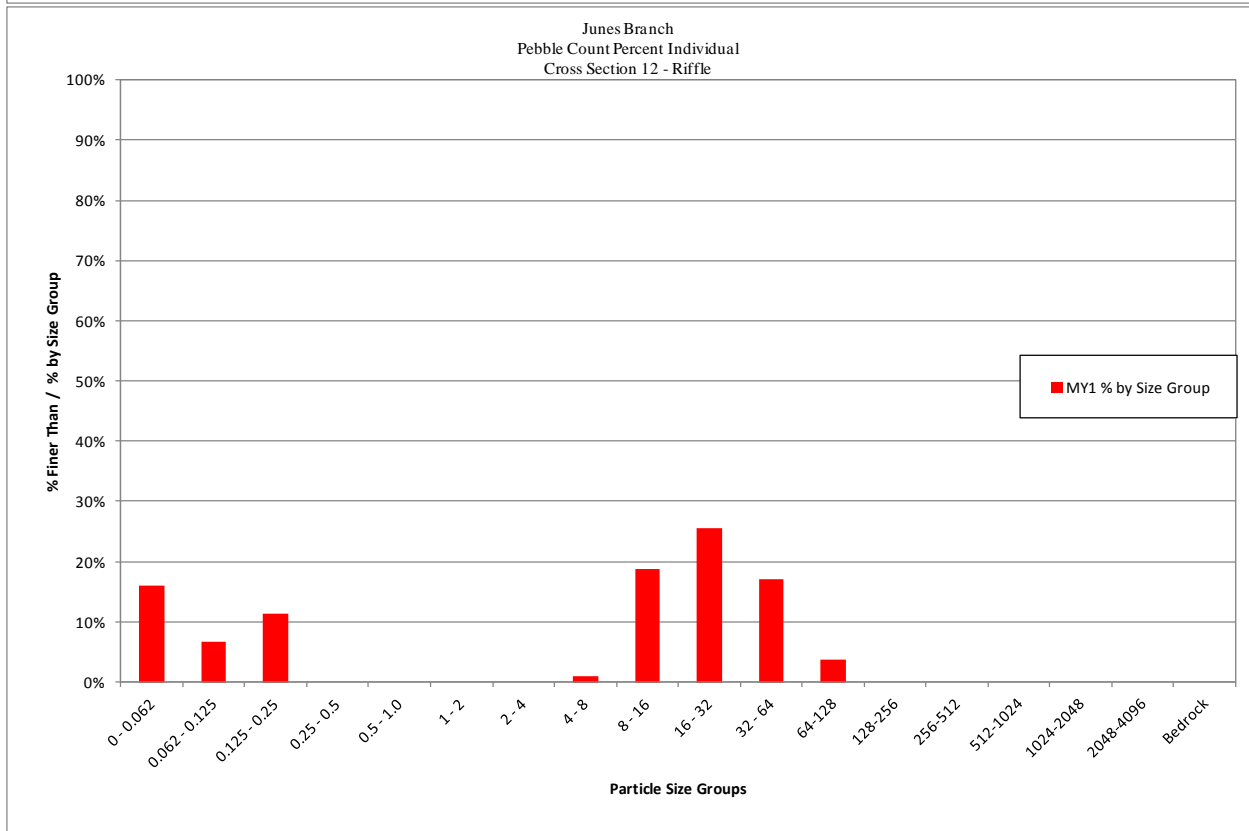
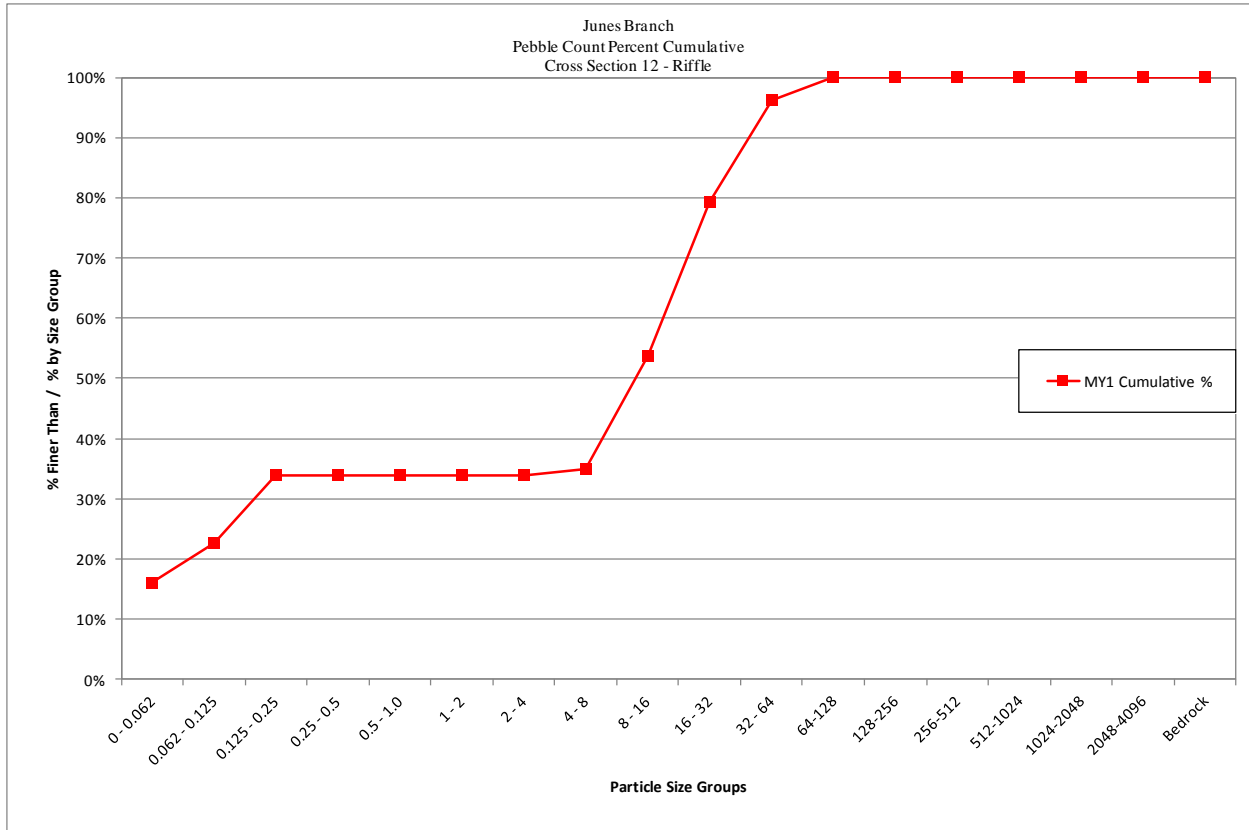
Junes Branch			
Cross Section 8 - Riffle			
Monitoring Year - 2015; MY1			
Bed Surface Material Particle Size Class (mm)	Number	% Individual	% Cumulative
0 - 0.062	21	19.1%	19%
0.062 - 0.125	1	0.9%	20%
0.125 - 0.25	9	8.2%	28%
0.25 - 0.5	1	0.9%	29%
0.5 - 1.0	6	5.5%	35%
1 - 2	14	12.7%	47%
2 - 4	1	0.9%	48%
4 - 8	5	4.5%	53%
8 - 16	9	8.2%	61%
16 - 32	26	23.6%	85%
32 - 64	11	10.0%	95%
64-128	6	5.5%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	110	100%	100%
		Summary Data	
		D50	4.7
		D84	32
		D95	66



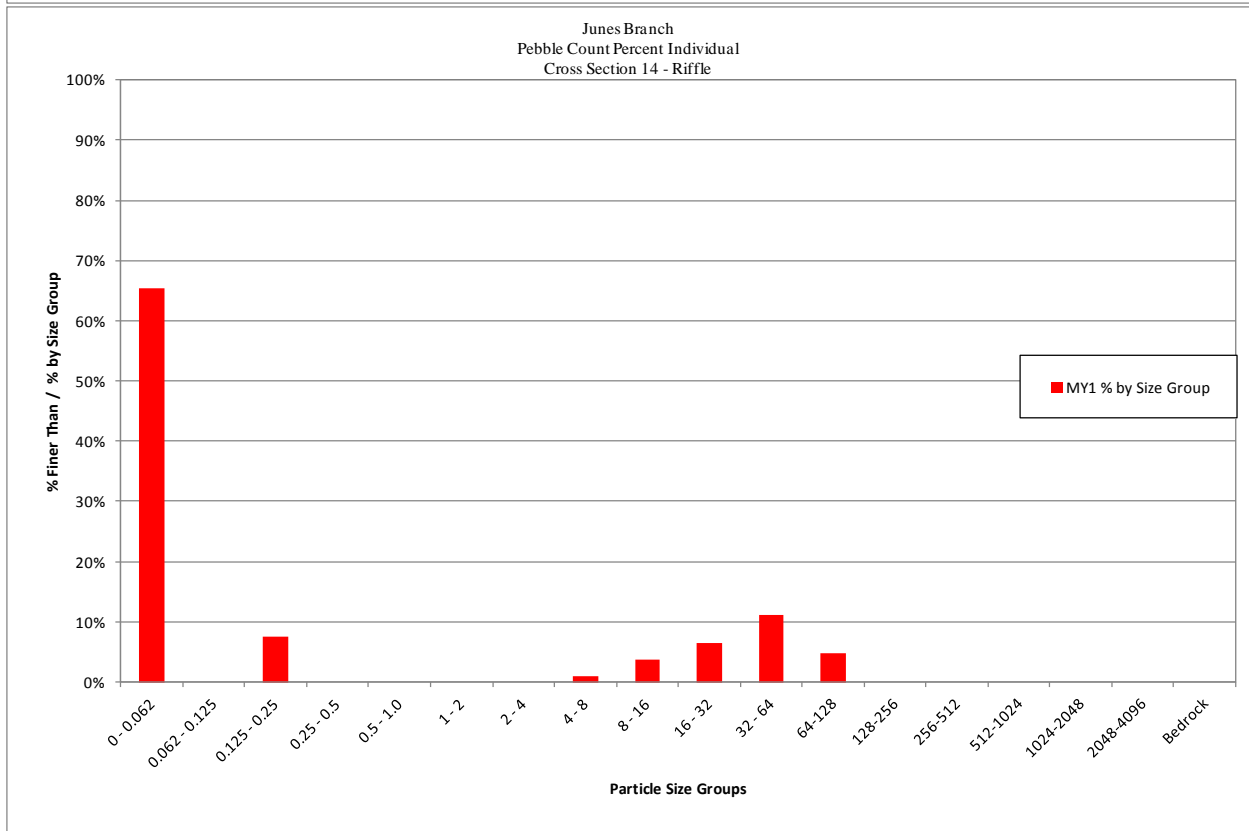
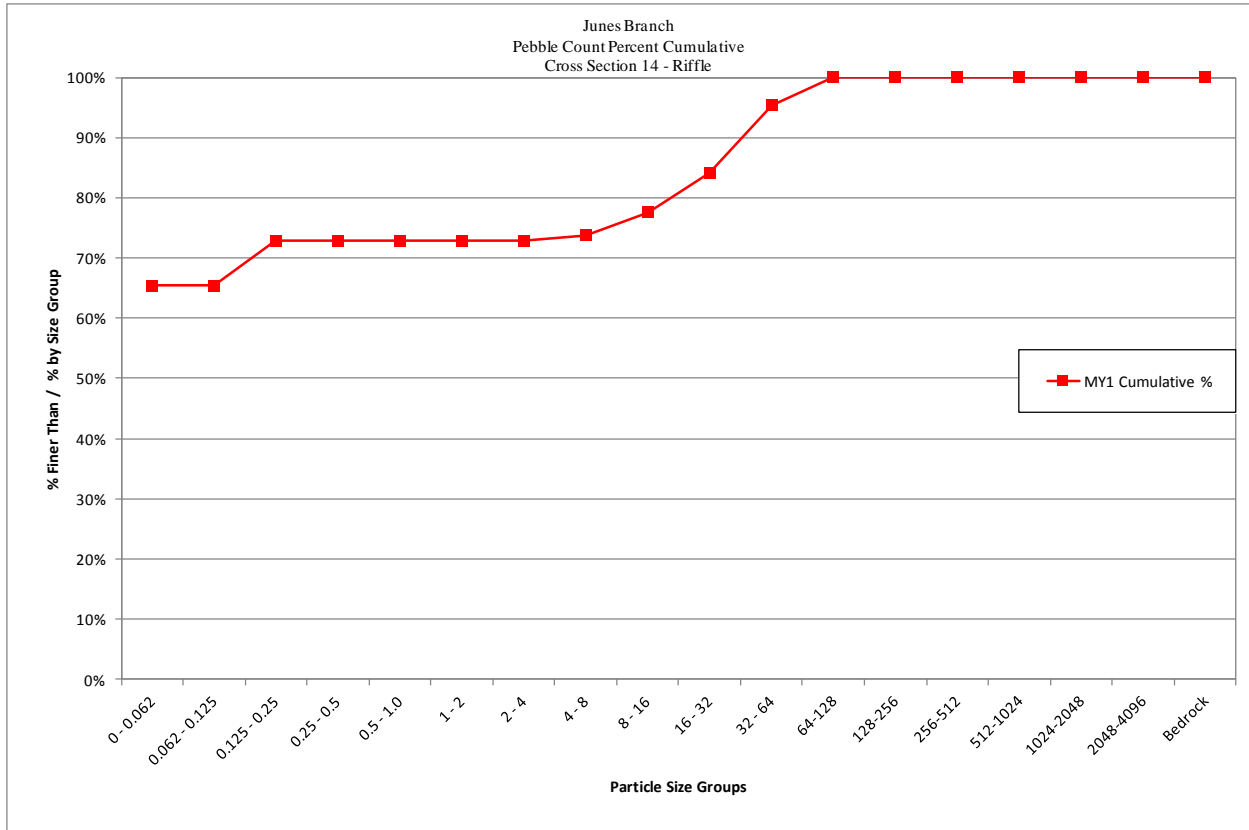
Junes Branch			
Cross Section 11 - Riffle			
Monitoring Year - 2015; MY1			
Bed Surface Material Particle Size Class (mm)	Number	% Individual	% Cumulative
0 - 0.062	30	28.3%	28%
0.062 - 0.125	0	0.0%	28%
0.125 - 0.25	9	8.5%	37%
0.25 - 0.5	0	0.0%	37%
0.5 - 1.0	2	1.9%	39%
1 - 2	8	7.5%	46%
2 - 4	0	0.0%	46%
4 - 8	2	1.9%	48%
8 - 16	8	7.5%	56%
16 - 32	24	22.6%	78%
32 - 64	18	17.0%	95%
64-128	5	4.7%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	106	100%	100%
		Summary Data	
		D50	12
		D84	39
		D95	63



Junes Branch			
Cross Section 12 - Riffle			
Monitoring Year - 2015; MY1			
Bed Surface Material Particle Size Class (mm)	Number	% Individual	% Cumulative
0 - 0.062	17	16.0%	16%
0.062 - 0.125	7	6.6%	23%
0.125 - 0.25	12	11.3%	34%
0.25 - 0.5	0	0.0%	34%
0.5 - 1.0	0	0.0%	34%
1 - 2	0	0.0%	34%
2 - 4	0	0.0%	34%
4 - 8	1	0.9%	35%
8 - 16	20	18.9%	54%
16 - 32	27	25.5%	79%
32 - 64	18	17.0%	96%
64-128	4	3.8%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	106	100%	100%
		Summary Data	
		D50	15
		D84	37
		D95	58



Junes Branch			
Cross Section 14 - Riffle			
Monitoring Year - 2015; MY1			
Bed Surface Material Particle Size Class (mm)	Number	% Individual	% Cumulative
0 - 0.062	70	65.4%	65%
0.062 - 0.125	0	0.0%	65%
0.125 - 0.25	8	7.5%	73%
0.25 - 0.5	0	0.0%	73%
0.5 - 1.0	0	0.0%	73%
1 - 2	0	0.0%	73%
2 - 4	0	0.0%	73%
4 - 8	1	0.9%	74%
8 - 16	4	3.7%	78%
16 - 32	7	6.5%	84%
32 - 64	12	11.2%	95%
64-128	5	4.7%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	107	100%	100%
		Summary Data	
		D50	0.062
		D84	32
		D95	62



Appendix E

Hydrologic Data

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**Table 12. Verification of Bankfull Events
Junes Branch / Project No. 95027**

Date of Data Collection	Date of Occurrence	Method	Feet Above Bankfull Elevation	Photo # (if available)
No Bankfull MY0				
No Bankfull MY1				

Figure 3. Daily Precipitation Totals for the Junes Branch Restoration Project

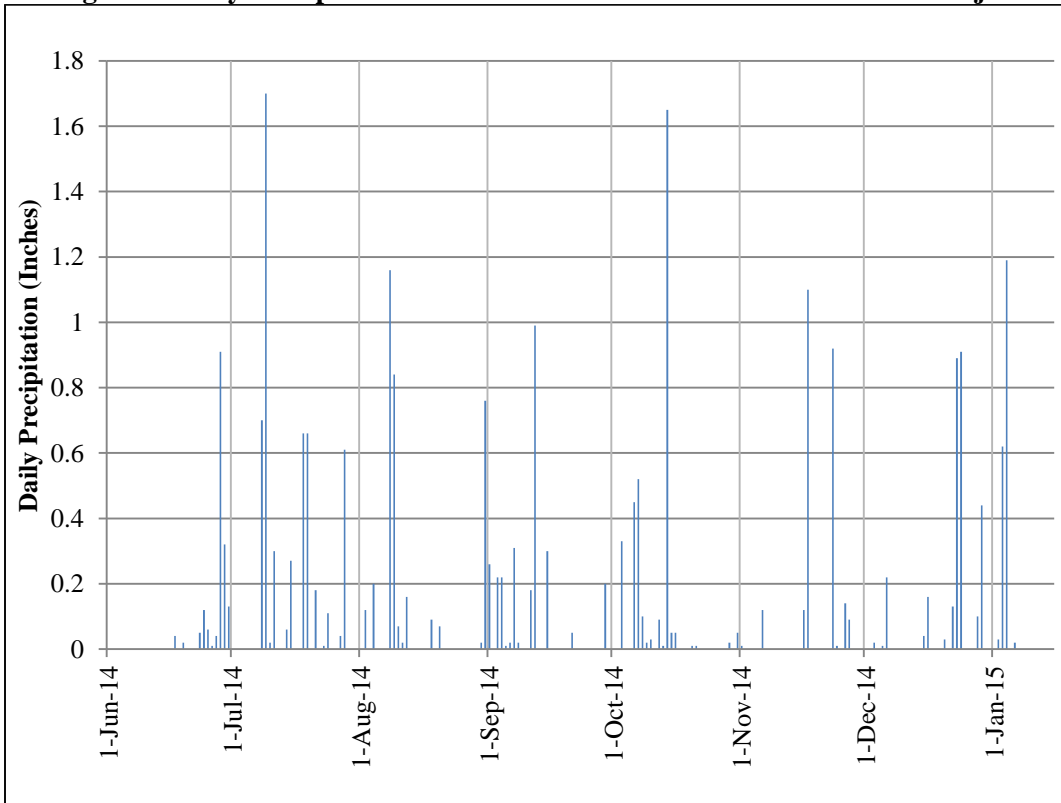


Figure 4. Monthly Precipitation Data Compared to 30th and 70th Percentiles for Jackson County

