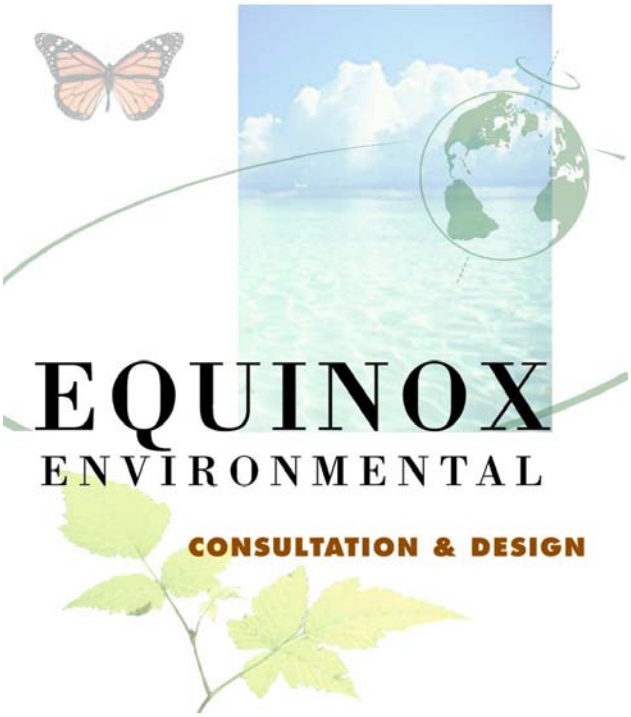
Glade Creek
Stream Restoration
NCEEP Project Number: 854
Monitoring Year 1
2011 Final Report

Submitted to
North Carolina Ecosystem Enhancement Program
North Carolina Department of Environment and Natural Resources
January 2012

1652 Mail Service Center
Raleigh, NC 27699

Monitoring Firm



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Glade Creek Stream Restoration
2011 Monitoring Report (MY 1)

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Appendices

1.0 EXECUTIVE SUMMARY / PROJECT ABSTRACT

The goals and objectives stated in the Glade Creek Restoration Plan (NCEEP 2007) are as follows:

Project Goals

- Rapidly stabilize the channel of Glade Creek relative to natural processes;
- Rapidly stabilize and preserve the channel of the Unnamed Tributary relative to natural processes;
- Restore and rehabilitate channel features and aquatic habitat in Glade Creek and the Unnamed Tributary;
- Rehabilitate the riparian buffer along both streams; and
- Preserve the existing wetlands onsite.

Project Objectives

- Restore approximately 2,430 linear feet of stream channel on Glade Creek;
- Restore approximately 275 linear feet of the Unnamed Tributary;
- Preserve 570 linear feet of the Unnamed Tributary; and
- Preserve the existing 0.33 acre wetlands within the project site.

The monitoring year one (MY1) vegetation plot data indicate that the project is well on track to meet the established criterion for planted stem density, which is a minimum survival of 320 planted stems per acre at the end of the year three monitoring period. The average living stem densities for planted stems in MY1 is 580 stems per acre and all plots are on track to meet the year three interim success criteria. Due to dead or missing stems there was an approximately 18% decrease in total stem densities between MY0 and MY1. Problems with vegetation consist of approximately 15 patches of high threat invasive plant species that span the project extent. The dominant species noted for the site is multiflora rose *Rosa multiflora* and oriental bittersweet *Celastrus orbiculatus* with additional species comprised of Japanese honeysuckle *Lonicera japonica*, Japanese barberry *Berberis thunbergii*, and Japanese spiraea *Spiraea japonica*.

Stream longitudinal profiles have remained stable among monitoring years. Stream issues observed during MY1 were minimal and consisted of one area of bed aggradation. No bankfull events have been documented since construction completion.

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 mitigation and restoration plan documents available on EEP's website. All raw data supporting tables and figures in the appendices is available from EEP upon request.

2.0 Methodology

The stream monitoring methodologies utilized in MY1 were intended to replicate those employed during the previous monitoring year and are based on standard guidance and procedures documents (Rosgen 1996 and USACE 2003). Vegetation monitoring data were collected following the standard CVS-EEP Protocol for Recording Vegetation, Level II (Lee et al. 2008).

3.0 References

Lee, M.T., R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2008. CVS-EEP Protocol for Recording Vegetation. Version 4.2.

NCEEP (North Carolina Ecosystem Enhancement Program). December 2007. Restoration Plan. Glade Creek Stream Restoration. Alleghany County, North Carolina. Raleigh, NC.

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

USACE (U.S. Army Corps of Engineers). 2003. Stream Mitigation Guidelines. USACOE, USEPA, NCWRC, NCDENR-DWQ. Wilmington District.

Appendix A
Project Vicinity Map and Background Tables

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

Glade Creek
Stream Restoration Site

Directions: The project site is located in Alleghany County, North Carolina, approximately 4 miles southeast of the town of Sparta. From the south and east, the site can be accessed by exiting Interstate 77 North at the US 21 Bypass exit in Elkin. Proceed on US 21 towards Sparta for 23.1 miles to Dewitt Road. Turn left on Dewitt Road and travel 0.7 miles to the site entrance on the left at 541 Dewitt Road.

Figure 1 - Vicinity Map

Glade Creek
Stream Restoration Site
Project No. 854

Alleghany County, North Carolina

N

EQUINOX ENVIRONMENTAL CONSULTATION & DESIGN

Ecosystem Enhancement PROGRAM

0 1,500 3,000 6,000 Feet

7.5 Minute Series
Glade Valley Quadrangle

Table 1a. Project Components Glade Creek / Project No. 854								
Project Component or Reach ID	**Existing Feet/Acres**	**Restoration Level**	**Approach**	**Footage or Acreage**	**Stationing**	**Buffer Acres**	**BMP Elements**	**Comment**
Glade Creek	2,569 lf	R	P2	2,513 lf*	0+00 - 25+58			
Unnamed Tributary Downstream	300 lf	R	P2	265 lf	0+00 - 2+65			
Unnamed Tributary Upstream	784 lf	P		784 lf	Not Established			
Wetlands	0.26 ac	P		0.26 ac	N/A			

*Excludes the 45 linear feet of stream associated with the private drive access location.

Non-Applicable

Table 1b. Component Summations Glade Creek / Project No. 854							
Restoration Level	**Stream (lf)**	**Riparian Wetland (Ac)**		**Non-Riparian (Ac)**	**Upland (Ac)**	**Buffer (Ac)**	**BMP**
		Riverine	**Non-Riverine**				
Restoration	2,778	0.0	0.0				
Enhancement		0.0	0.0				
Enhancement I	0						
Enhancement II	0						
Creation		0.0	0.0				
Preservation	784	0.26	0.0				
HQ Preservation	0	0.0	0.0				
		0.26	0.0				
Totals	**3,562**	**0.26**		**0**	**0**	**0**	**0**

*Excludes the 45 linear feet of stream associated with the private drive access location.

Non-Applicable

Table 2. Project Activity and Reporting History Glade Creek / Project No. 854		
Activity or Report	**Data Collection Complete**	**Completion or Delivery**
Mitigation Plan	June 2007	Dec 2007
Final Design - Construction Plans	Aug 2007	Dec 2008
Construction	N/A	April 2011
Temporary S&E mix applied to entire project area	N/A	Sept - Nov 2010 March - April 2011
Permanent seed mix applied	N/A	Sept - Nov 2010 March - April 2011
Planting	May 2011	May 2011
Baseline Monitoring Document (Year 0 Monitoring - Baseline)	May 2011	Dec 2011
Year 1 Monitoring	Dec 2011	TBD
Year 2 Monitoring		
Year 3 Monitoring		
Year 4 Monitoring		
Year 5 Monitoring		

N/A - Item does not apply.

Table 3. Project Contacts Glade Creek / Project No. 854	
Designer Primary Project Design POC	Biohabitats Southeast Bioregion Inc. 8218 Creedmoor Road, Suite 200 Raleigh, North Carolina 27613 Kevin Nunnery (919) 518-0313
Construction Contractor Construction Contractor POC	Yadkin Valley Construction 2961 Old 60 Highway Ronda, North Carolina 28670 Terry Benton (336) 984-2219
Planting Contractor Planting Contractor POC	Foggy Mountain Nursery 2251 Ed Little Road Creston, North Carolina 28615 Glen Sullivan (336) 384-5323
Seeding Contractor Seeding Contractor POC	Yadkin Valley Construction 2961 Old 60 Highway Ronda, North Carolina 28670 Terry Benton (336) 984-2219
Seed Mix Sources	Hanes Geo (336) 747-1600
Nursery Stock Suppliers	Foggy Mountain Nursery Glen Sullivan (336) 384-5323
Monitoring Performers (Y0) - 2011	Equinox Environmental Consultation & Design, Inc. 37 Haywood Street, Suite 100 Asheville, North Carolina 28801
Stream Monitoring POC	Win Taylor (828) 253-6856
Vegetation Monitoring POC	Win Taylor (828) 253-6856
Monitoring Performers (Y1) - 2011	Equinox Environmental Consultation & Design, Inc. 37 Haywood Street, Suite 100 Asheville, North Carolina 28801
Stream Monitoring POC	Win Taylor (828) 253-6856
Vegetation Monitoring POC	Win Taylor (828) 253-6856
Monitoring Performers (Y2) - 2012	
Stream Monitoring POC	
Vegetation Monitoring POC	
Monitoring Performers (Y3)- 2013	
Stream Monitoring POC	
Vegetation Monitoring POC	
Monitoring Performers (Y4)- 2014	
Stream Monitoring POC	
Vegetation Monitoring POC	
Monitoring Performers (Y5)- 2015	
Stream Monitoring POC	
Vegetation Monitoring POC	

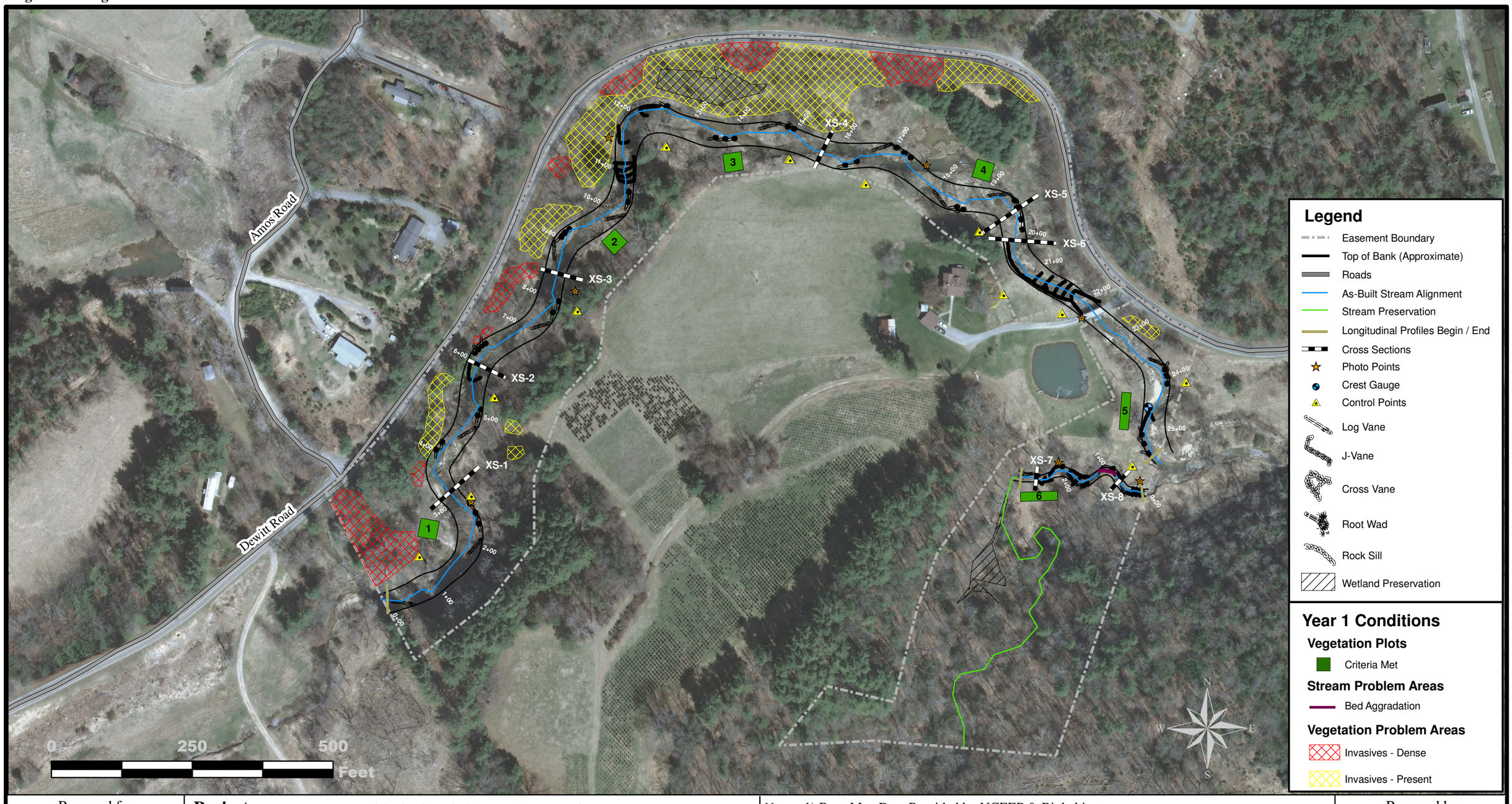
Table 4. Project Baseline Information and Attributes Glade Creek / Project No. 854			
Project Information			
Project Name	Glade Creek		
County	Alleghany		
Project Area (acres)	15.86		
Project Coordinates (latitude and longitude)	Latitude 36.468090 / Longitude -81.066384		
Project Watershed Summary Information			
Physiographic Province	Blue Ridge		
River Basin	New River		
USGS Hydrologic Unit 8-dgit	05050001		
USGS Hydrologic Unit 14-dgit	05050001000801		
NCDWQ Sub-Basin	05-07-03		
Project Drainage Area (acres)	3,443		
Project Drainage Area Percentage of Impervious Cover	<1%		
CGIA Land Use Classification	Deciduous Forest Land		
Reach Summary Information			
Parameters	**Glade Creek**	**UT-Lower**	**UT-Upper**
Length of Reach (linear feet)	2,558	265	784
Valley Classification	-	-	-
Drainage Area (acres)	2,922	521	520
NCDWQ Stream Identification Score	59	50.5	50.5
NCDWQ Water Quality Classification	C-Tr	C-Tr	C-Tr
Morphological Description (stream type)	C	C	-
Evolutionary Trend	-	-	-
Underlying Mapped Soils	Alluvial	Alluvial	Alluvial
Drainage Class	-	-	-
Soil Hydric Status	-	-	-
Slope	0.0075	0.0075	0.0075
FEMA Classification	-	-	-
Native Vegetatation Community	Northern Hardwood Forest & Rich Cove Forest		
Percent Composition of Exotic Invasive Vegetation	14.5%		
Wetland Summary Information			
Parameters	**Wetland 1 (Glade Ck)**	**Wetland 2 (UT)**	
Size of Wetland (acres)	0.178	0.085	
Wetland Type	Riparian	Riparian	
Soil Series	Toxaway		
Soil Hydric Status	Hydric		
Source of Hydrology	-	-	
Hydrologic Impairment	-	-	
Native Vegetatation Community	High Elevation Seep		
Percent Composition of Exotic Invasive Vegetation	100%	0%	
Regulatory Considerations			
Regulation	**Applicable?**	**Resolved?**	**Supporting Documentation**
Waters of the United States - Section 404	Yes	N/A	-
Waters of the United States - Section 401	Yes	N/A	-
Endangered Species	No	N/A	N/A
Historic Preservation Act	No	N/A	N/A
Coastal Zone Management Act (CZMA) Coastal Area Management Act (CAMA)	No	N/A	N/A
FEMA Floodplain Compliance	No	N/A	N/A
Essential Fisheries Habitat	No	N/A	N/A

- Information unavailable.

N/A - Item does not apply.

Appendix B
Visual Assessment Data

Figure 2. Integrated Current Condition Plan View



Prepared for Ecosystem Enhancement Program	**Project:** Glade Creek Stream Restoration Year 1 Monitoring Alleghany County, North Carolina	Notes: 1) Base Map Data Provided by NCEEP & Biohabitats 2) 2010 Aerial Photo	Prepared by EQUINOX ENVIRONMENTAL CONSULTATION & DESIGN
	Sheet 1 of 1		
	Date	Project Number	
	January 2012	NCEEP # 854	

Table 5. Visual Stream Morphology Stability Assessment
Glade Creek / Project No. 854 - Glade Creek
Assessed Length 2,558 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. 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.	17	17			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6).	17	17			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	17	17			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	17	17			100%			
		2. Thalweg centering at downstream of meander bend (Glide).	16	16			100%			
2. Bank	1. Scoured / Eroding	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	N/A	N/A	N/A
	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%	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.	40	40			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	13	13			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%.	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.	22	22			100%			

N/A - Item does not apply.

Table 5. Visual Stream Morphology Stability Assessment
Glade Creek / Project No. 854 - Unnamed Tributary - Downstream
Assessed Length 265 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. 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.	4	4			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6).	4	5			80%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	4	5			80%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	5	5			100%			
		2. Thalweg centering at downstream of meander bend (Glide).	5	5			100%			
2. Bank	1. Scoured / Eroding	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	N/A	N/A	N/A
	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%	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.	13	13			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	6	6			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	6	6			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does NOT exceed 15%.	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.	6	6			100%			

N/A - Item does not apply.

Table 6. Vegetation Condition Assessment Glade Creek / Project No. 854 Planted Acreage 4.31					
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	0	0	0%
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	0%
		Totals	0	0	0%
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	0%
		Cumulative Totals	0	0	0%
Easement Acreage 15.86					
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)	15	2.31	15%
5. Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale).	N/A	0	0.00	0%

N/A - Item does not apply.

Glade Creek – Permanent Photo Station 1
Looking Upstream

Glade Creek – Permanent Photo Station 2
Looking Upstream

Glade Creek – Permanent Photo Station 3
Looking Upstream

Glade Creek – Permanent Photo Station 4
Looking Upstream

Glade Creek – Permanent Photo Station 5
Looking Upstream

Glade Creek – Permanent Photo Station 5
Looking Downstream

Unnamed Tributary Lower – Permanent Photo Station 6
Looking Upstream

Unnamed Tributary Lower – Permanent Photo Station 7
Looking Upstream

Appendix C
Vegetation Plot Data

Table 7. Vegetation Plot Criteria Attainment Glade Creek / Project No. 854		
Vegetation Plot ID	**Vegetation Survival Threshold Met?**	**Tract Mean**
1	Yes	100%
2	Yes	
3	Yes	
4	Yes	
5	Yes	
6	Yes	

Vegetation Monitoring Plot 1
Monitoring Year 1 – September 21, 2011

Vegetation Monitoring Plot 2
Monitoring Year 1 – September 21, 2011

Vegetation Monitoring Plot 3
Monitoring Year 1 – September 21, 2011

Vegetation Monitoring Plot 4
Monitoring Year 1 – September 21, 2011

Vegetation Monitoring Plot 5
Monitoring Year 1 – September 21, 2011

Vegetation Monitoring Plot 6
Monitoring Year 1 – September 21, 2011

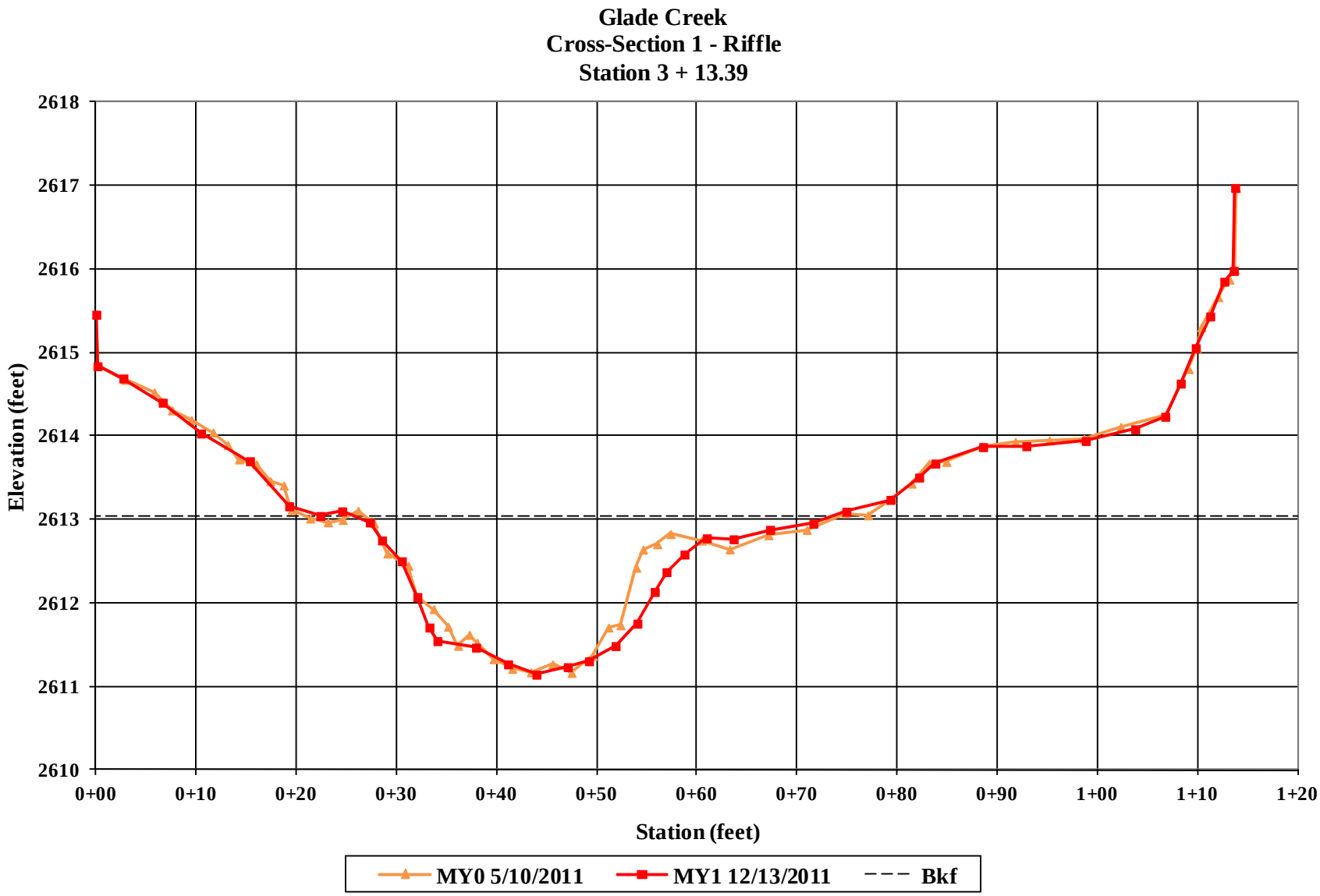
Table 8. CVS Vegetation Plot Metadata Glade Creek / Project No. 854	
Report Prepared By	William Carson
Date Prepared	9/29/2011 15:35
Database Name	Equinox-2011-A-GladeCreek-MY1.mdb
Database Location	Z:\ES\NRI&M\EEP Monitoring\Glade Creek\Glade-MY1-2011\Data\Veg
Computer Name	D16TNK71
File Size	48082944
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT	
Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Project Planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Project 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 Species	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 Species	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Species	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 Species	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	854
Project Name	Glade Creek
Description	
River Basin	New
Length(ft)	
Stream-to-Edge Width (ft)	
Area (sq m)	
Required Plots (calculated)	
Sampled Plots	6

Table 9. Planted and Total Stem Counts (Species by Plot with Annual Means)
Glade Creek / Project No. 854

			Current Plot Data (MY1 2011)																		Annual Means					
			E854-01-0001			E854-01-0002			E854-01-0003			E854-01-0004			E854-01-0005			E854-01-0006			MY1 (2011)			MY0 (2011)		
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	PnoLS	P-all	T
Alnus serrulata	Hazel alder	Shrub Tree												7									7			
Aronia arbutifolia	Red chokeberry	Shrub	2	2	2	4	4	4	2	2	2	2	2	2	1	1	1				11	11	11	11	11	11
Betula nigra	River birch	Tree							1	1	1										1	1	1			
Callicarpa americana	American beautyberry	Shrub	1	1	1																1	1	1	4	4	4
Calycanthus floridus	Eastern sweetshrub	Shrub				3	3	3							1	1	1				4	4	4	3	3	3
Carpinus caroliniana	American hornbeam	Shrub Tree				2	2	2	2	2	2	2	2	2				2	2	2	8	8	8	13	13	13
Cephalanthus occidentalis	Common buttonbush	Shrub Tree				2	2	2													2	2	2	3	3	3
Cercis canadensis	Eastern redbud	Shrub Tree	3	3	3				1	1	1				1	1	1	2	2	2	7	7	7	7	7	7
Diospyros virginiana	Common persimmon	Tree				1	1	1	1	1	1				3	3	3				5	5	5	5	5	5
Hamamelis virginiana	American witchhazel	Shrub Tree	1	1	1	1	1	1							1	1	1				3	3	3	3	3	3
Hydrangea arborescens	Wild hydrangea	Shrub	1	1	1																1	1	1	8	8	8
Kalmia latifolia	Mountain laurel	Shrub Tree	2	2	2													1	1	1	3	3	3	3	3	3
Lindera benzoin	Northern spicebush	Shrub Tree																						4	4	4
Liriodendron tulipifera	Tuliptree	Tree	2	2	2				1	1	1	1	1	1				1	1	1	5	5	5	5	5	5
Malus angustifolia	Southern crabapple	Shrub Tree	1	1	1	1	1	1	1	1	1							3	3	3	6	6	6	6	6	6
Platanus occidentalis	American sycamore	Tree	2	2	2	3	3	3	2	2	2	3	3	3	1	1	1	3	3	3	14	14	14	14	14	14
Quercus rubra	Northern red oak	Tree	3	3	3	1	1	1	1	1	1	1	1	1	3	3	3	3	3	3	12	12	12	12	12	12
Rhododendron	Rhododendron	Shrub							1	1	1	2	2	2							3	3	3	3	3	3
Salix	Willow	Shrub Tree														3	3					3	3		3	3
Unknown		Unknown																						2	2	2
Stem Count			18	18	18	18	18	18	13	13	13	11	11	18	11	14	14	15	15	15	86	89	96	106	109	109
Size (ares)			1			1			1			1			1			1			6			6		
Size (ACRES)			0.02			0.02			0.02			0.02			0.02			0.02			0.15			0.15		
Species Count			10	10	10	9	9	9	10	10	10	6	6	7	7	8	8	7	7	7	16	17	18	17	18	18
Stems per ACRE			**728.4**	**728.4**	**728.4**	**728.4**	**728.4**	**728.4**	**526.1**	**526.1**	**526.1**	**445.2**	**445.2**	**728.4**	**445.2**	**566.6**	**566.6**	**607**	**607**	**607**	**580**	**600.3**	**647.5**	**714.9**	**735.2**	**735.2**

Exceeds requirements by 10%

Appendix D
Stream Survey Data

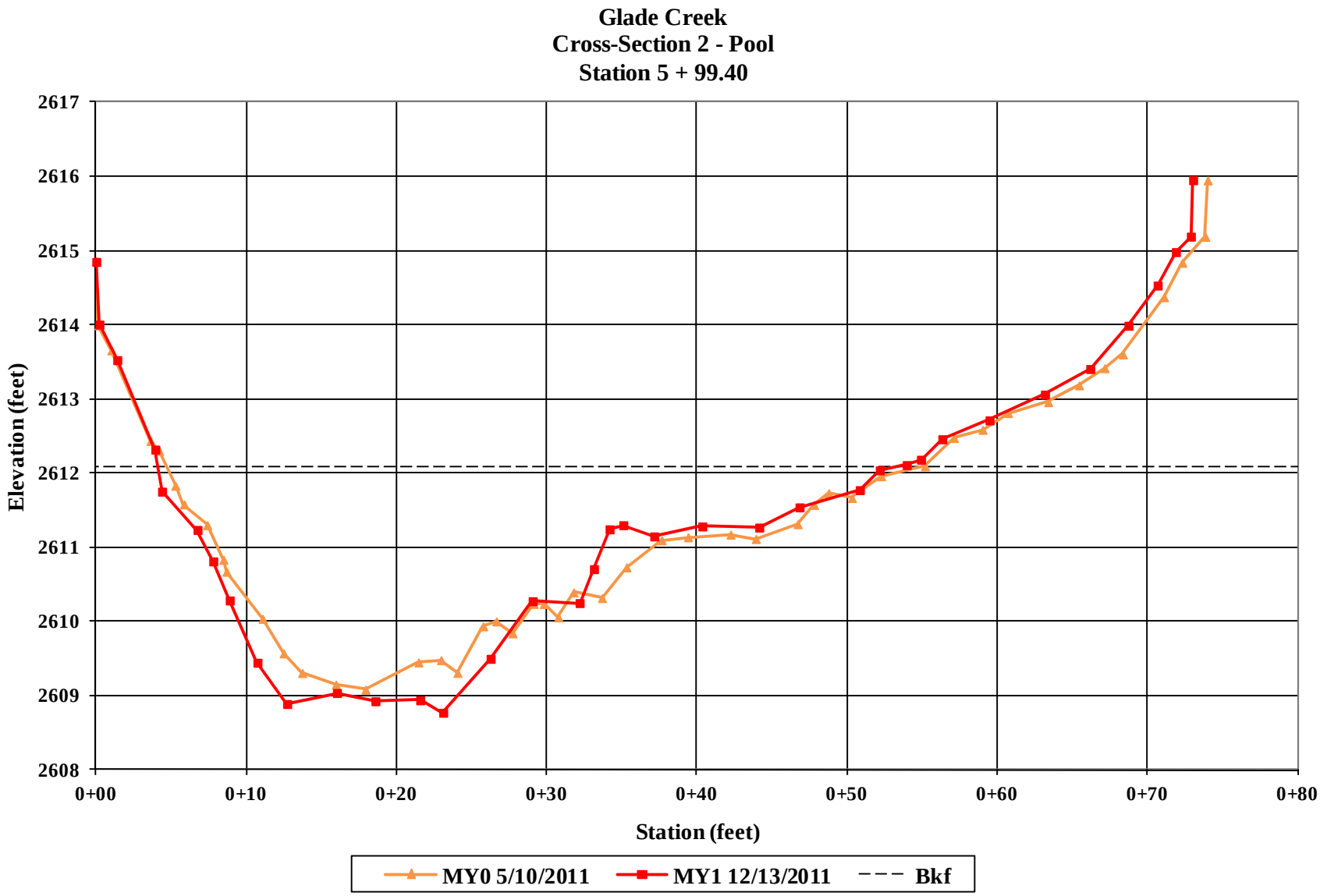

Glade Creek
Cross-Section 1 - Riffle
Station 3 + 13.39
Elevation (feet)
2618
2617
2616
2615
2614
2613
2612
2611
2610
0+00
0+10
0+20
0+30
0+40
0+50
0+60
0+70
0+80
0+90
1+00
1+10
1+20
Station (feet)
MY0 5/10/2011
MY1 12/13/2011
Bkf

Glade Creek – Cross-Section 1 – Riffle
(Looking at Left Bank Descending)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 1 – Riffle
(Looking at Right Bank Descending)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 1 – Riffle
(Looking Downstream)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 1 – Riffle
(Looking Upstream)
Monitoring Year 1 – December 13, 2011

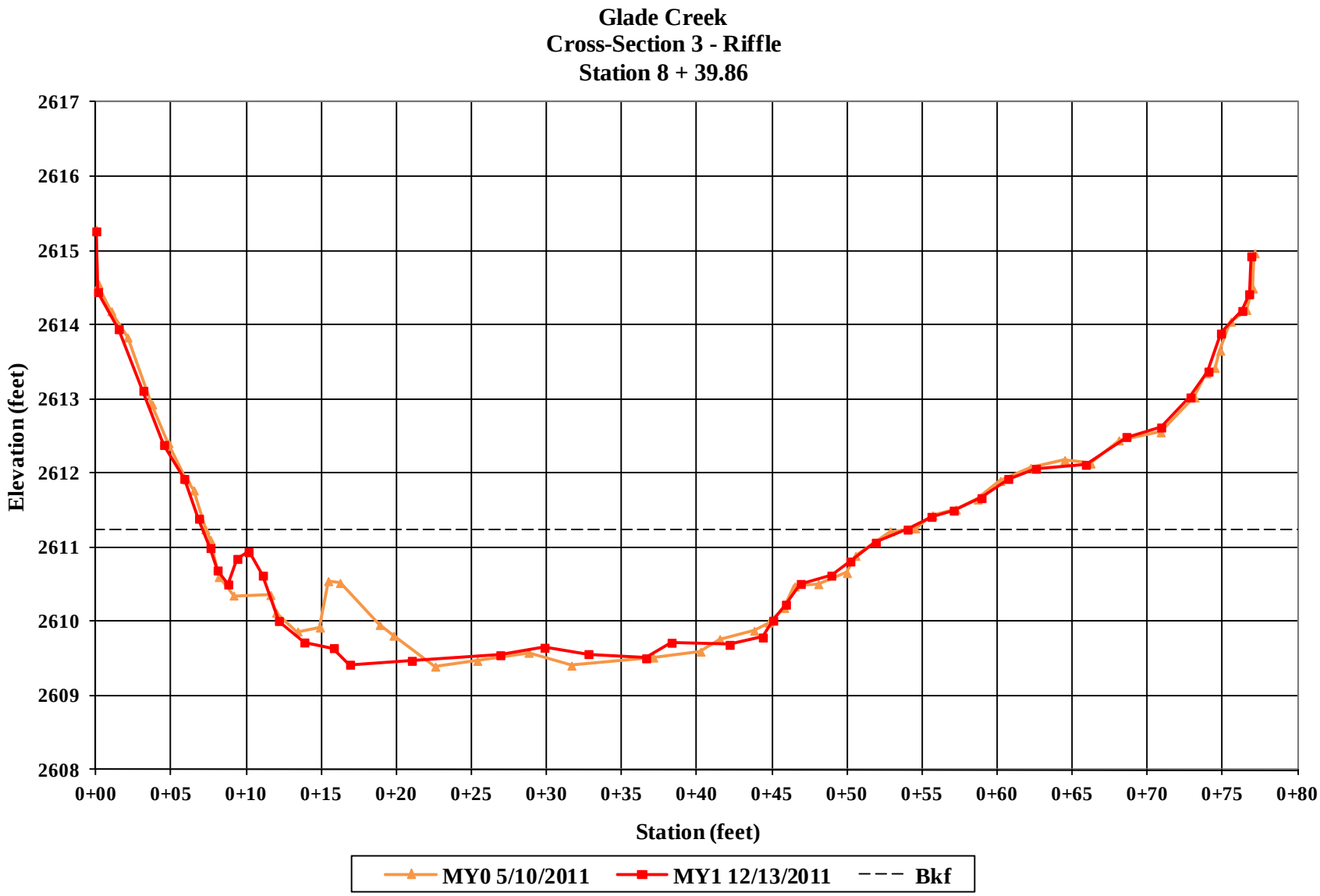

Glade Creek
Cross-Section 2 - Pool
Station 5 + 99.40
Elevation (feet)
2617
2616
2615
2614
2613
2612
2611
2610
2609
2608
0+00
0+10
0+20
0+30
0+40
0+50
0+60
0+70
0+80
Station (feet)
MY0 5/10/2011
MY1 12/13/2011
Bkf

Glade Creek – Cross-Section 2 – Pool
(Looking at Left Bank Descending)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 2 – Pool
(Looking at Right Bank Descending)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 2 – Pool
(Looking Downstream)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 2 – Pool
(Looking Upstream)
Monitoring Year 1 – December 13, 2011

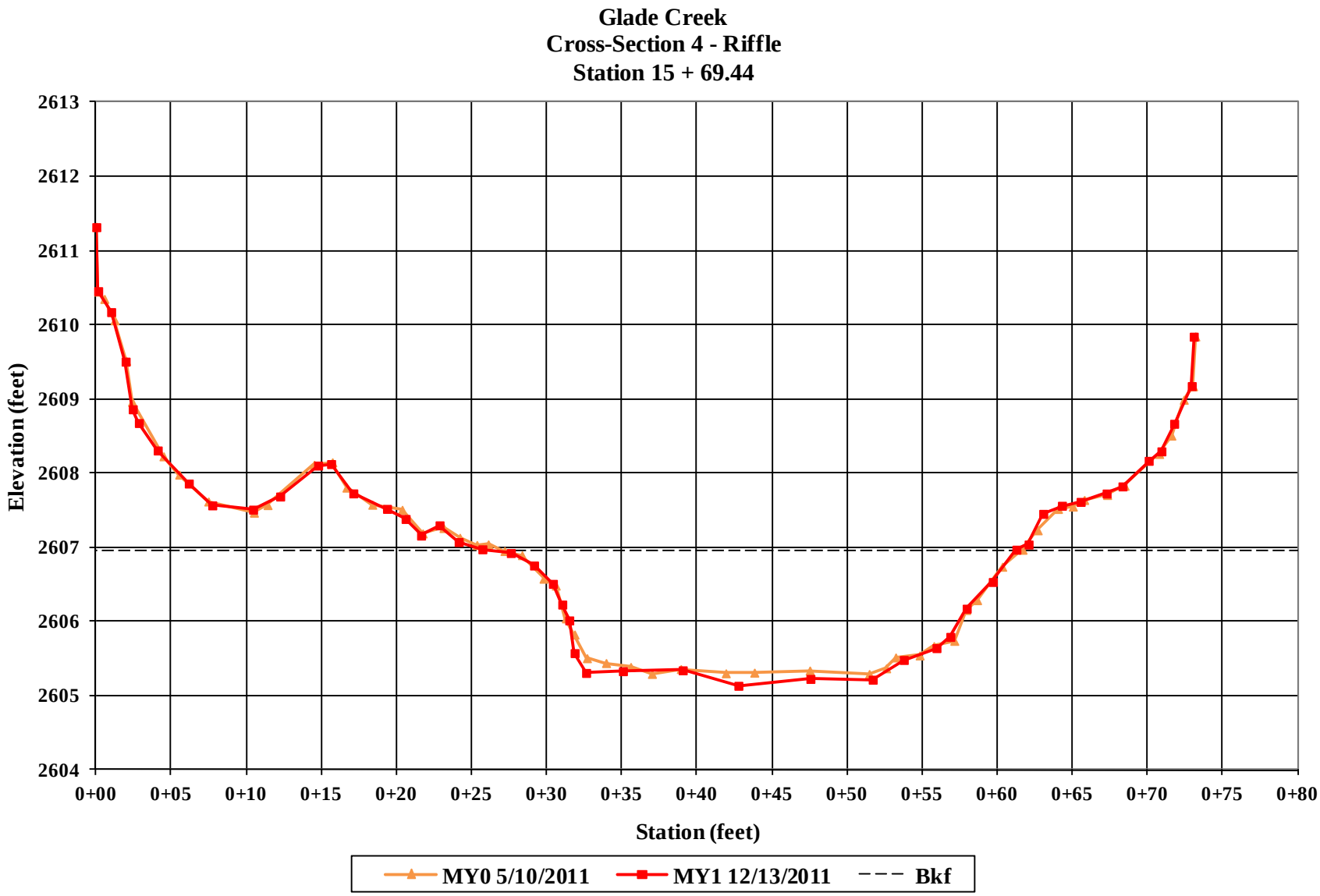

Glade Creek
Cross-Section 3 - Riffle
Station 8 + 39.86
Elevation (feet)
2617
2616
2615
2614
2613
2612
2611
2610
2609
2608
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
0+75
0+80
Station (feet)
MY0 5/10/2011
MY1 12/13/2011
Bkf

Glade Creek – Cross-Section 3 – Riffle
(Looking at Left Bank Descending)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 3 – Riffle
(Looking at Right Bank Descending)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 3 – Riffle
(Looking Downstream)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 3 – Riffle
(Looking Upstream)
Monitoring Year 1 – December 13, 2011

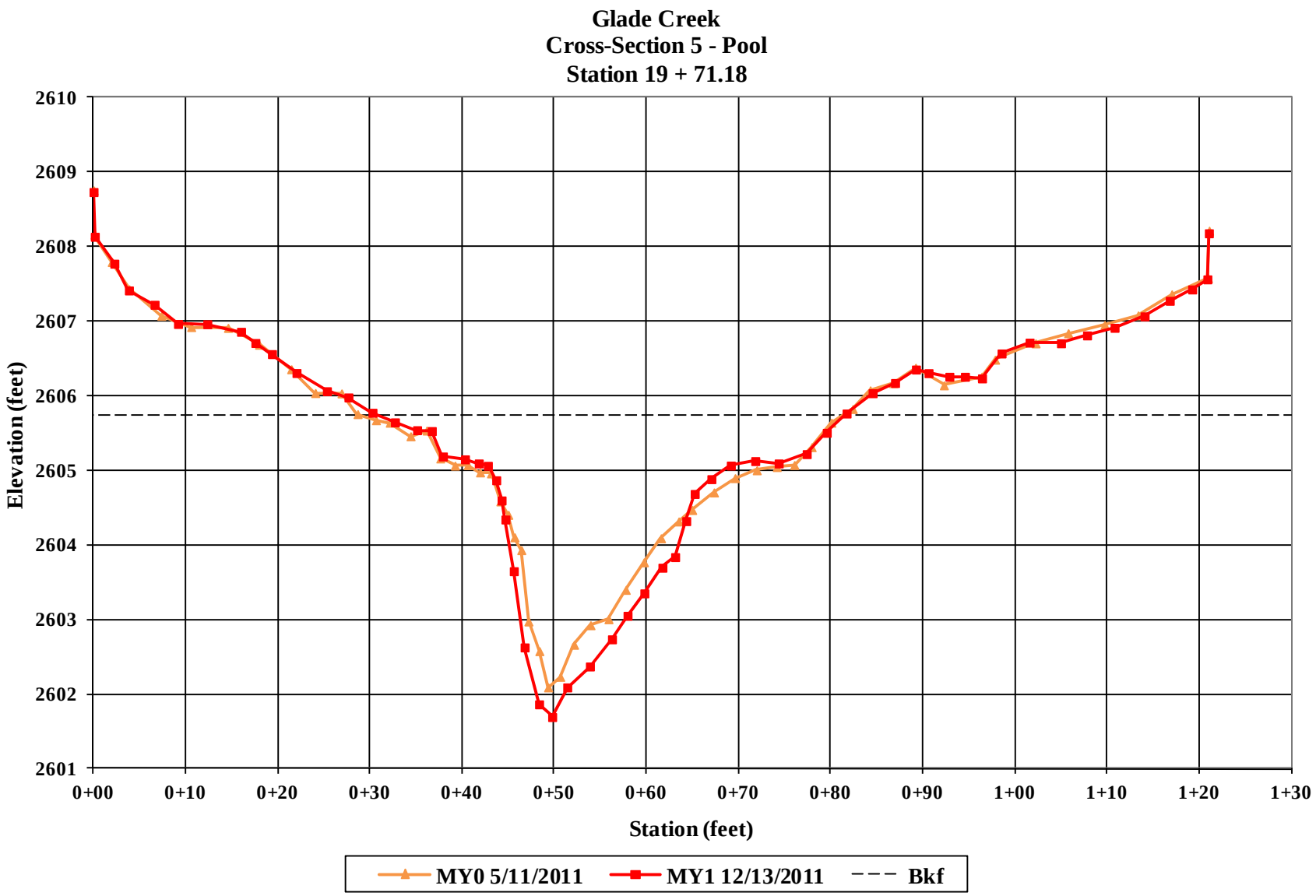

Glade Creek
Cross-Section 4 - Riffle
Station 15 + 69.44
Elevation (feet)
2613
2612
2611
2610
2609
2608
2607
2606
2605
2604
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
0+75
0+80
Station (feet)
MY0 5/10/2011
MY1 12/13/2011
Bkf

Glade Creek – Cross-Section 4 – Riffle
(Looking at Left Bank Descending)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 4 – Riffle
(Looking at Right Bank Descending)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 4 – Riffle
(Looking Downstream)
Monitoring Year 1 – December 13, 2011

Glade Creek – Cross-Section 4 – Riffle
(Looking Upstream)
Monitoring Year 1 – December 13, 2011

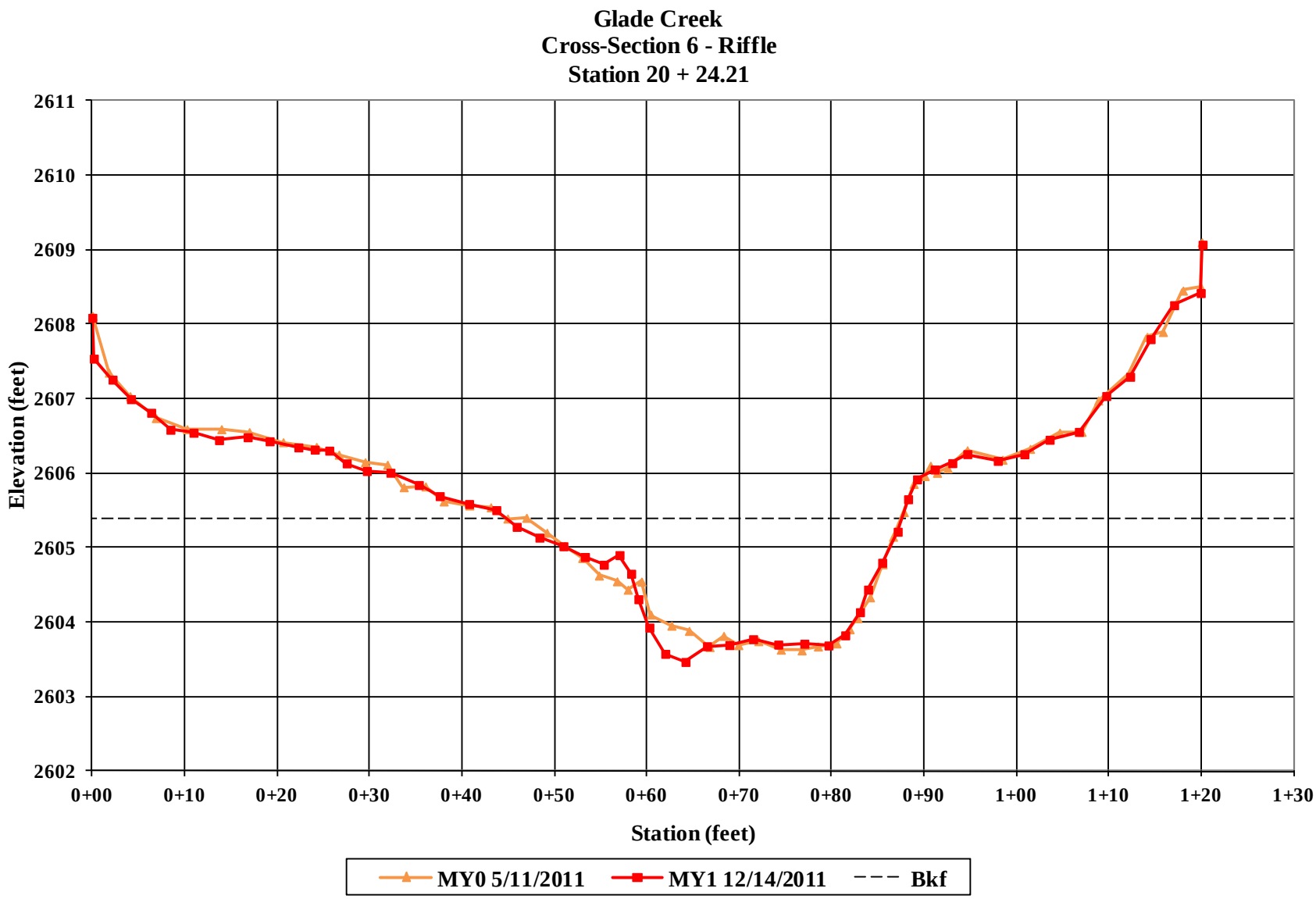

Glade Creek
Cross-Section 5 - Pool
Station 19 + 71.18
Elevation (feet)
2610
2609
2608
2607
2606
2605
2604
2603
2602
2601
0+00
0+10
0+20
0+30
0+40
0+50
0+60
0+70
0+80
0+90
1+00
1+10
1+20
1+30
Station (feet)
MY0 5/11/2011
MY1 12/13/2011
Bkf

Glade Creek – Cross-Section 5 – Pool
(Looking at Left Bank Descending)
Monitoring Year 1 – December 14, 2011

Glade Creek – Cross-Section 5 – Pool
(Looking at Right Bank Descending)
Monitoring Year 1 – December 14, 2011

Glade Creek – Cross-Section 5 – Pool
(Looking Downstream)
Monitoring Year 1 – December 14, 2011

Glade Creek – Cross-Section 5 – Pool
(Looking Upstream)
Monitoring Year 1 – December 14, 2011

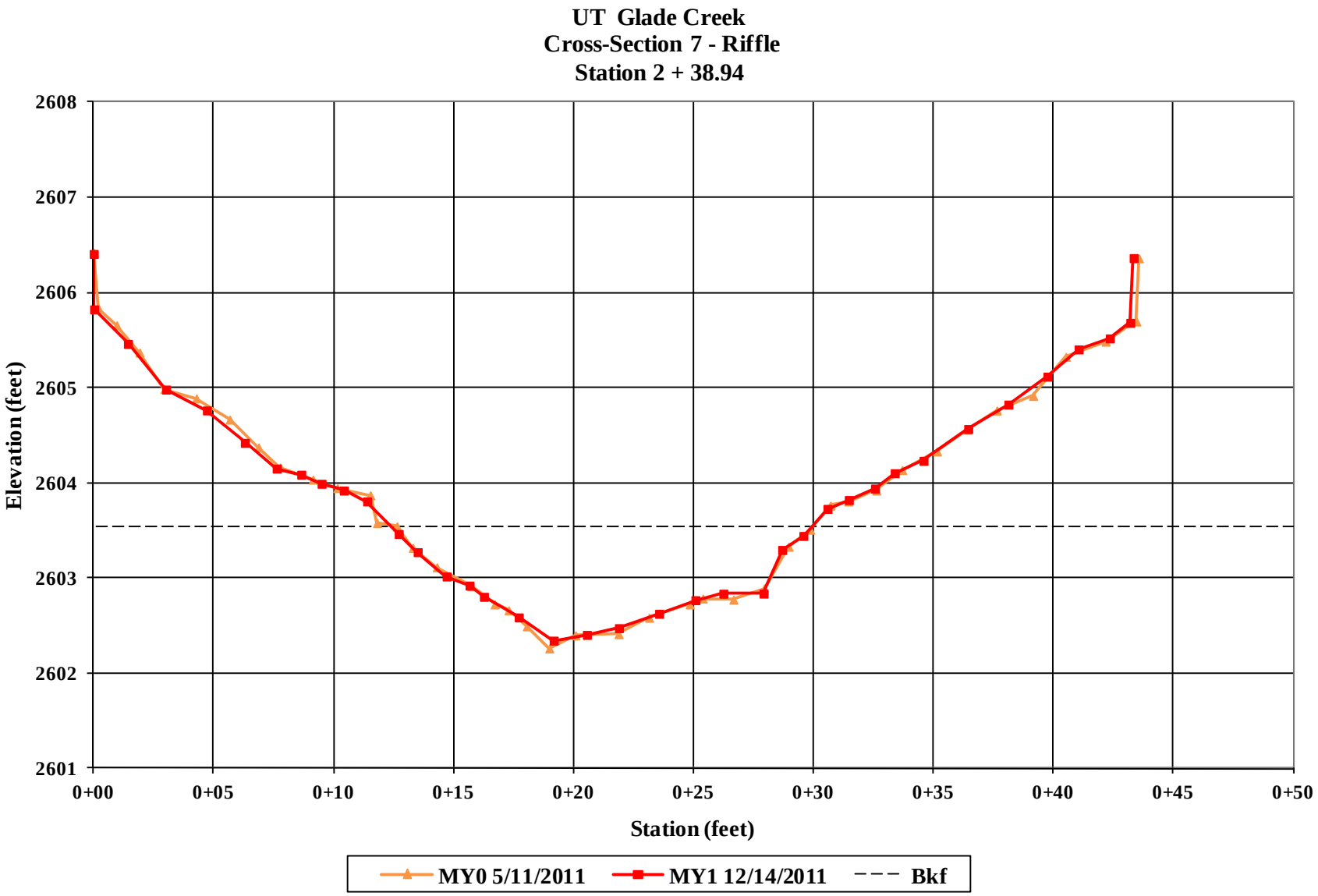

Glade Creek
Cross-Section 6 - Riffle
Station 20 + 24.21
Elevation (feet)
2611
2610
2609
2608
2607
2606
2605
2604
2603
2602
0+00
0+10
0+20
0+30
0+40
0+50
0+60
0+70
0+80
0+90
1+00
1+10
1+20
1+30
Station (feet)
MY0 5/11/2011
MY1 12/14/2011
Bkf

Glade Creek – Cross-Section 6 – Riffle
(Looking at Left Bank Descending)
Monitoring Year 1 – December 14, 2011

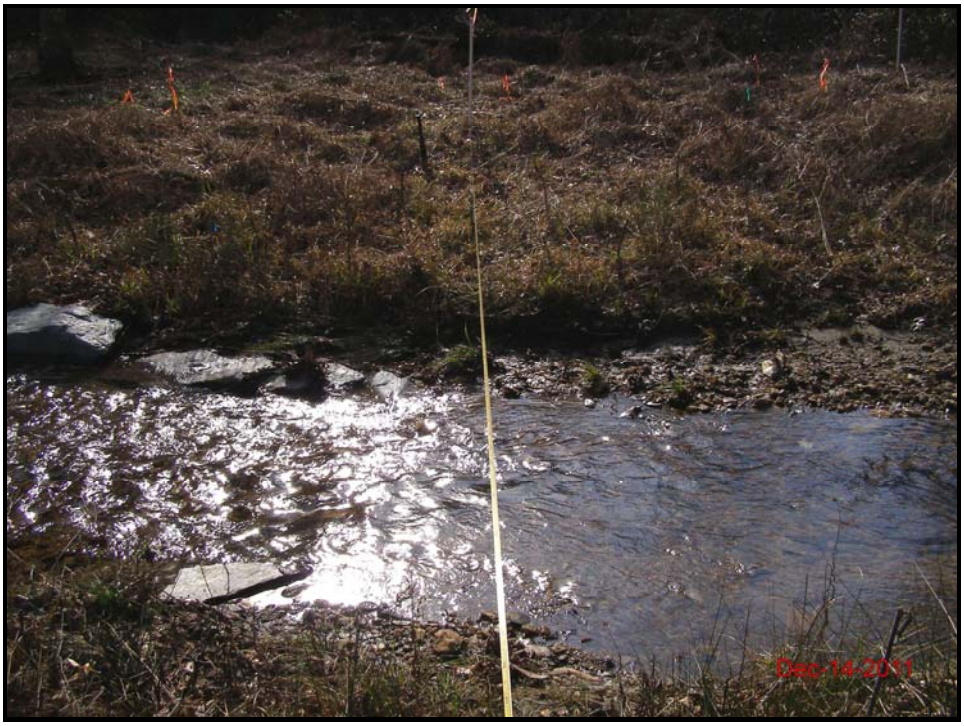
Glade Creek – Cross-Section 6 – Riffle
(Looking at Right Bank Descending)
Monitoring Year 1 – December 14, 2011

Glade Creek – Cross-Section 6 – Riffle
(Looking Downstream)
Monitoring Year 1 – December 14, 2011

Glade Creek – Cross-Section 6 – Riffle
(Looking Upstream)
Monitoring Year 1 – December 14, 2011


UT Glade Creek
Cross-Section 7 - Riffle
Station 2 + 38.94
Elevation (feet)
2608
2607
2606
2605
2604
2603
2602
2601
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
Station (feet)
MY0 5/11/2011
MY1 12/14/2011
Bkf

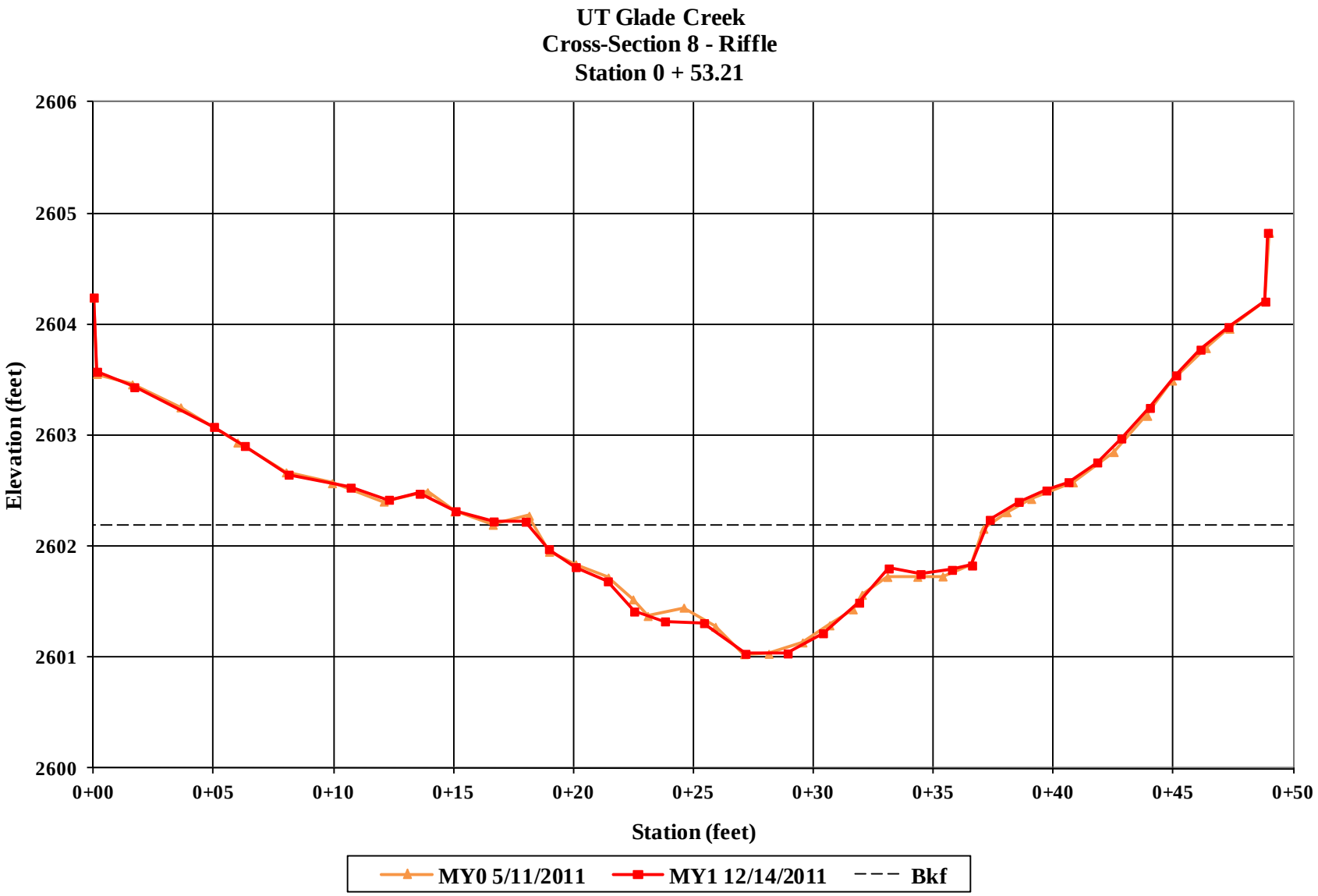
Unnamed Tributary Downstream – Cross-Section 7 – Riffle
(Looking at Left Bank Descending)
Monitoring Year 1 – December 14, 2011



Unnamed Tributary Downstream – Cross-Section 7 – Riffle
(Looking at Right Bank Descending)
Monitoring Year 1 – December 14, 2011

Unnamed Tributary Downstream – Cross-Section 7 – Riffle
(Looking Downstream)
Monitoring Year 1 – December 14, 2011

Unnamed Tributary Downstream – Cross-Section 7 – Riffle
(Looking Upstream)
Monitoring Year 1 – December 14, 2011


UT Glade Creek
Cross-Section 8 - Riffle
Station 0 + 53.21
Elevation (feet)
2606
2605
2604
2603
2602
2601
2600
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
Station (feet)
MY0 5/11/2011
MY1 12/14/2011
Bkf

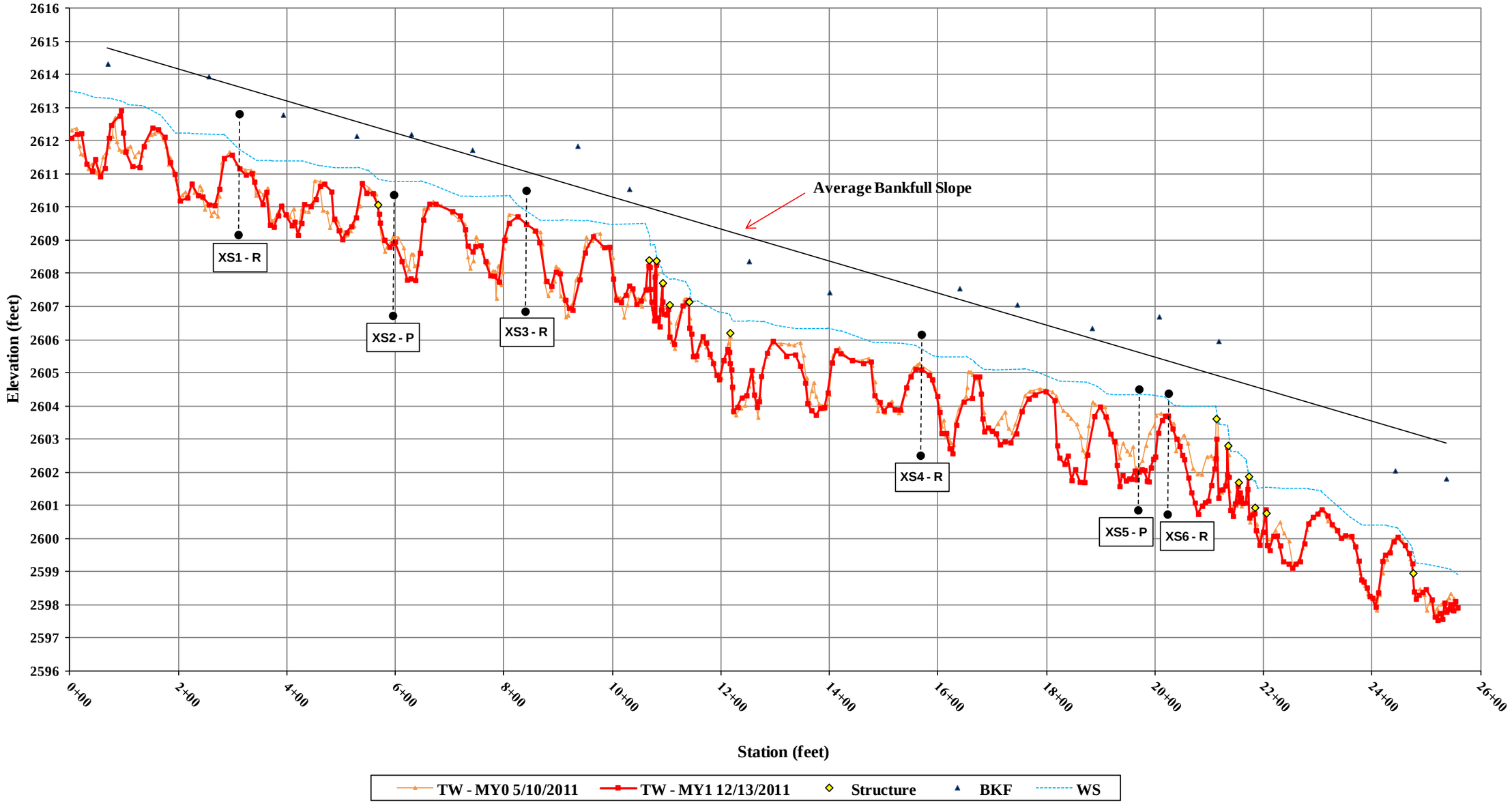
Unnamed Tributary Downstream – Cross-Section 8 – Riffle
(Looking at Left Bank Descending)
Monitoring Year 1 – December 14, 2011

Unnamed Tributary Downstream – Cross-Section 8 – Riffle
(Looking at Right Bank Descending)
Monitoring Year 1 – December 14, 2011

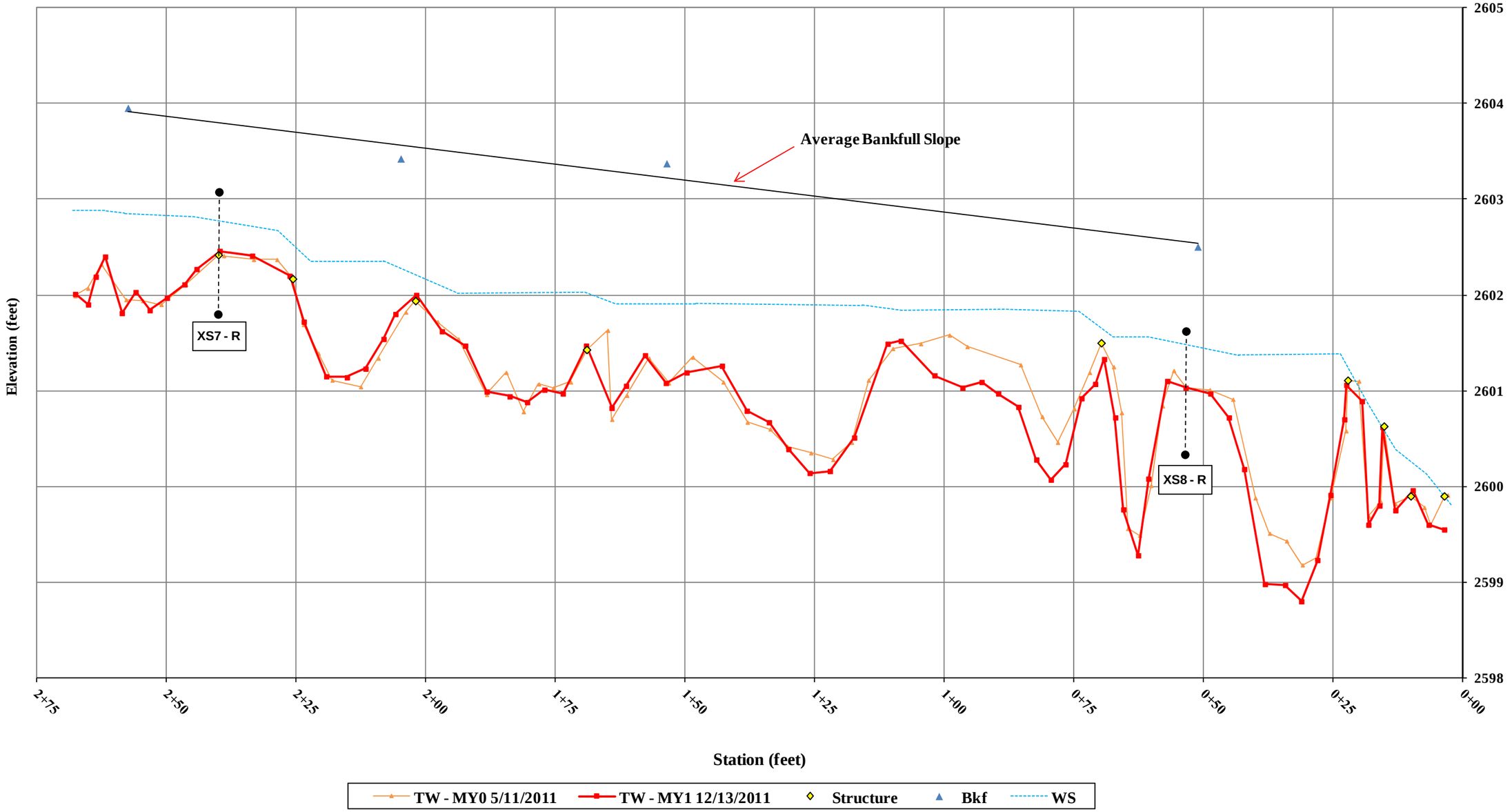
Unnamed Tributary Downstream – Cross-Section 8 – Riffle
(Looking Downstream)
Monitoring Year 1 – December 14, 2011

Unnamed Tributary Downstream – Cross-Section 8 – Riffle
(Looking Upstream)
Monitoring Year 1 – December 14, 2011

Glade Creek Mainstem
Longitudinal Profile
Staioning 0+03 - 25+57

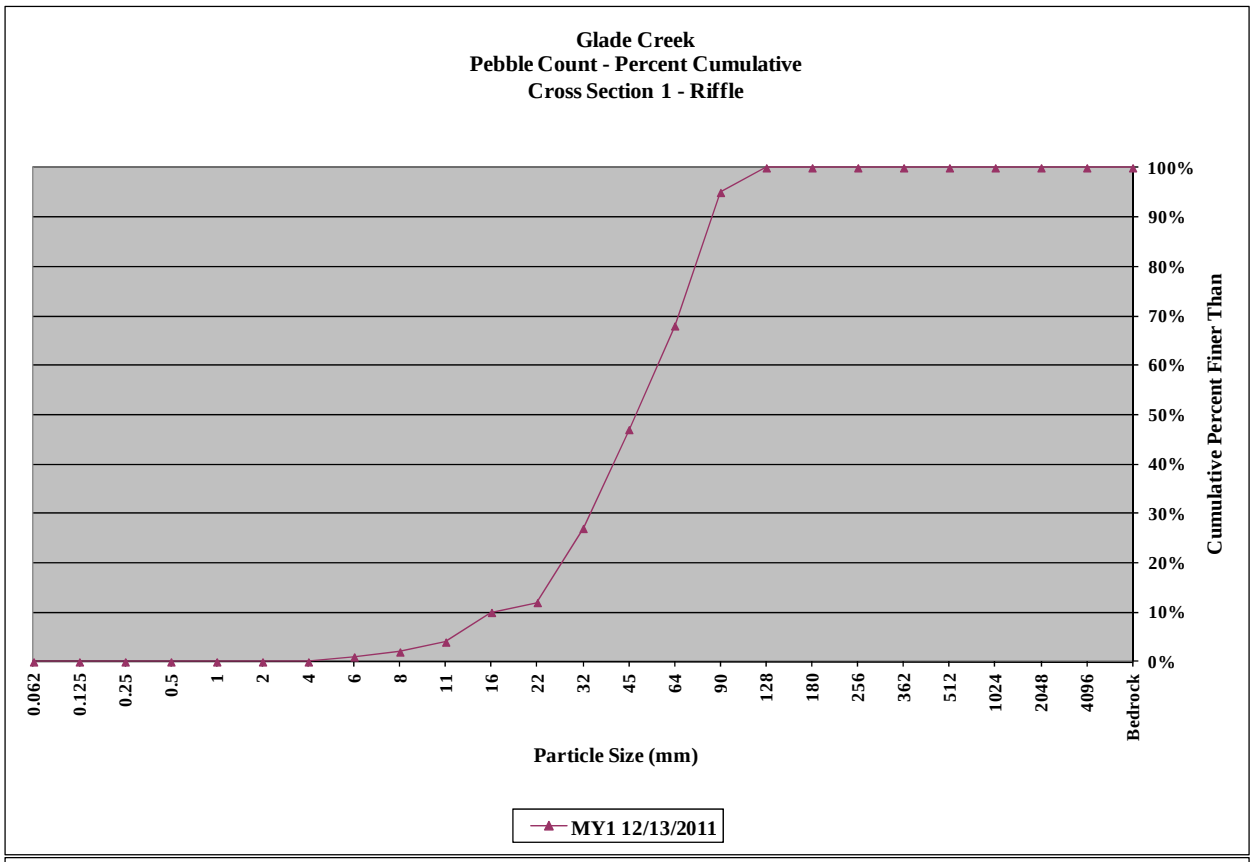


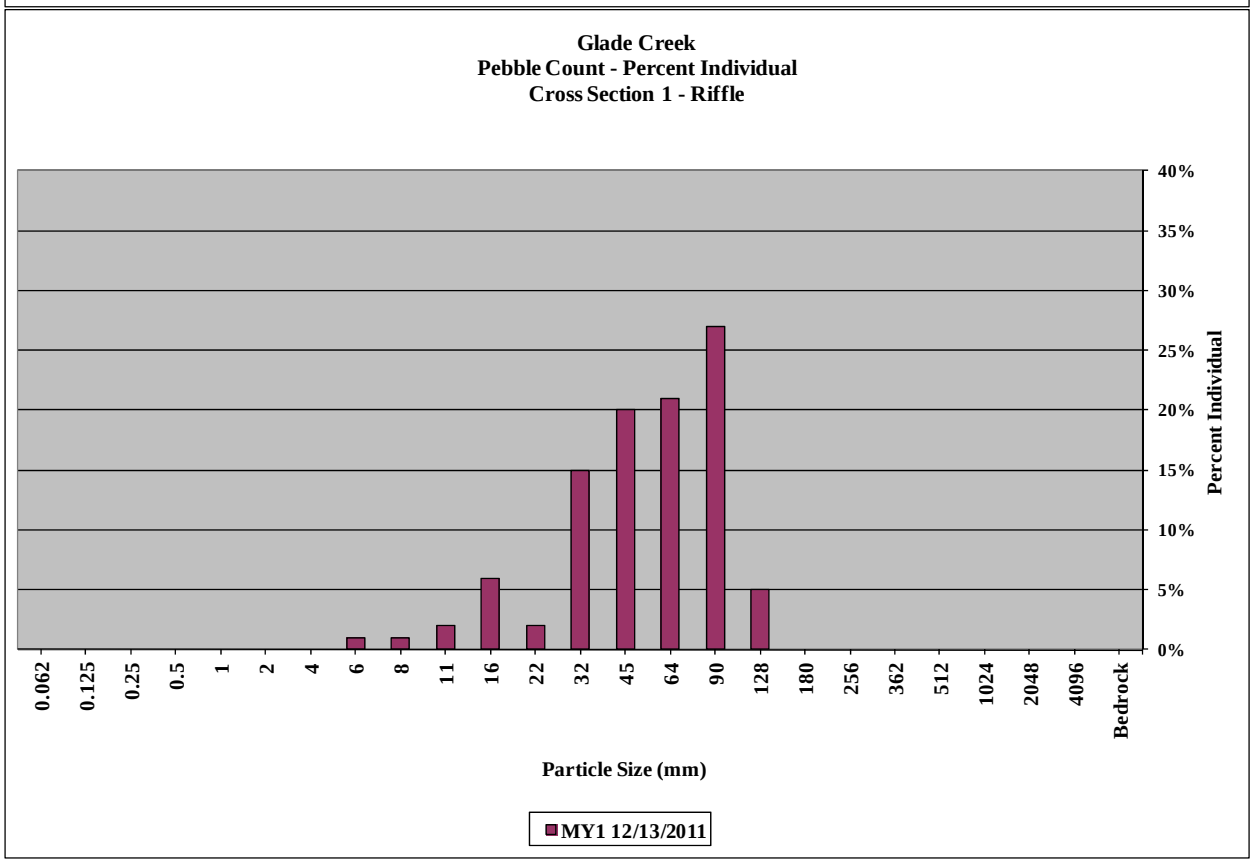
Glade Creek Tributary
Longitudinal Profile
Station 0+03 - 2+67



Glade Creek / Project No. 854 Glade Creek - Cross-Section 1 - Riffle Pebble Count Summary					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/Clay	silt/clay	0.062	0	0%	0%
Sand	very fine sand	0.125	0	0%	0%
	fine sand	0.25	0	0%	0%
	medium sand	0.50	0	0%	0%
	coarse sand	1.00	0	0%	0%
	very coarse sand	2.00	0	0%	0%
Gravel	very fine gravel	4.0	0	0%	0%
	fine gravel	5.7	1	1%	1%
	fine gravel	8.0	1	1%	2%
	medium gravel	11.3	2	2%	4%
	medium gravel	16.0	6	6%	10%
	coarse gravel	22.3	2	2%	12%
	coarse gravel	32	15	15%	27%
	very coarse gravel	45	20	20%	47%
	very coarse gravel	64	21	21%	68%
Cobble	small cobble	90	27	27%	95%
	medium cobble	128	5	5%	100%
	large cobble	180	0	0%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	362	0	0%	100%
	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

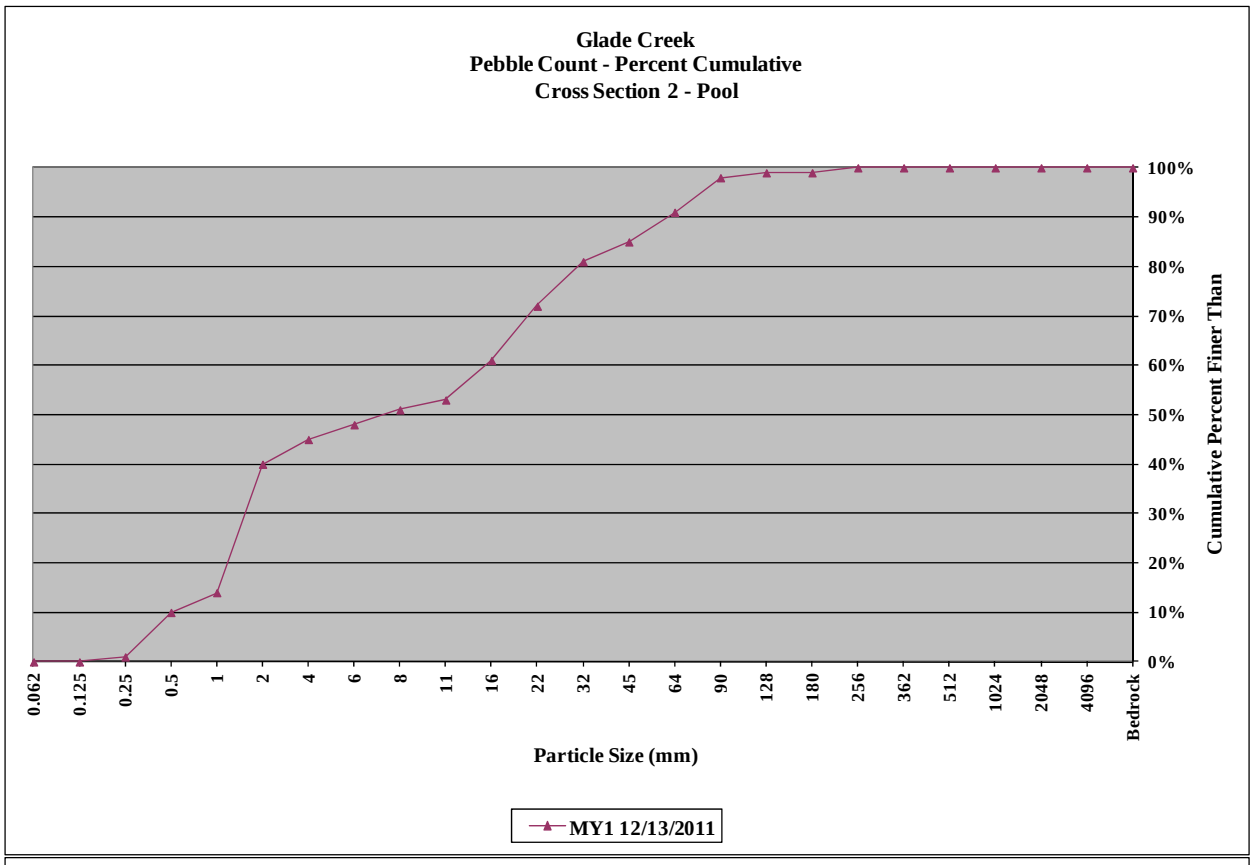
Summary Data	
D50	47
D84	78
D95	90

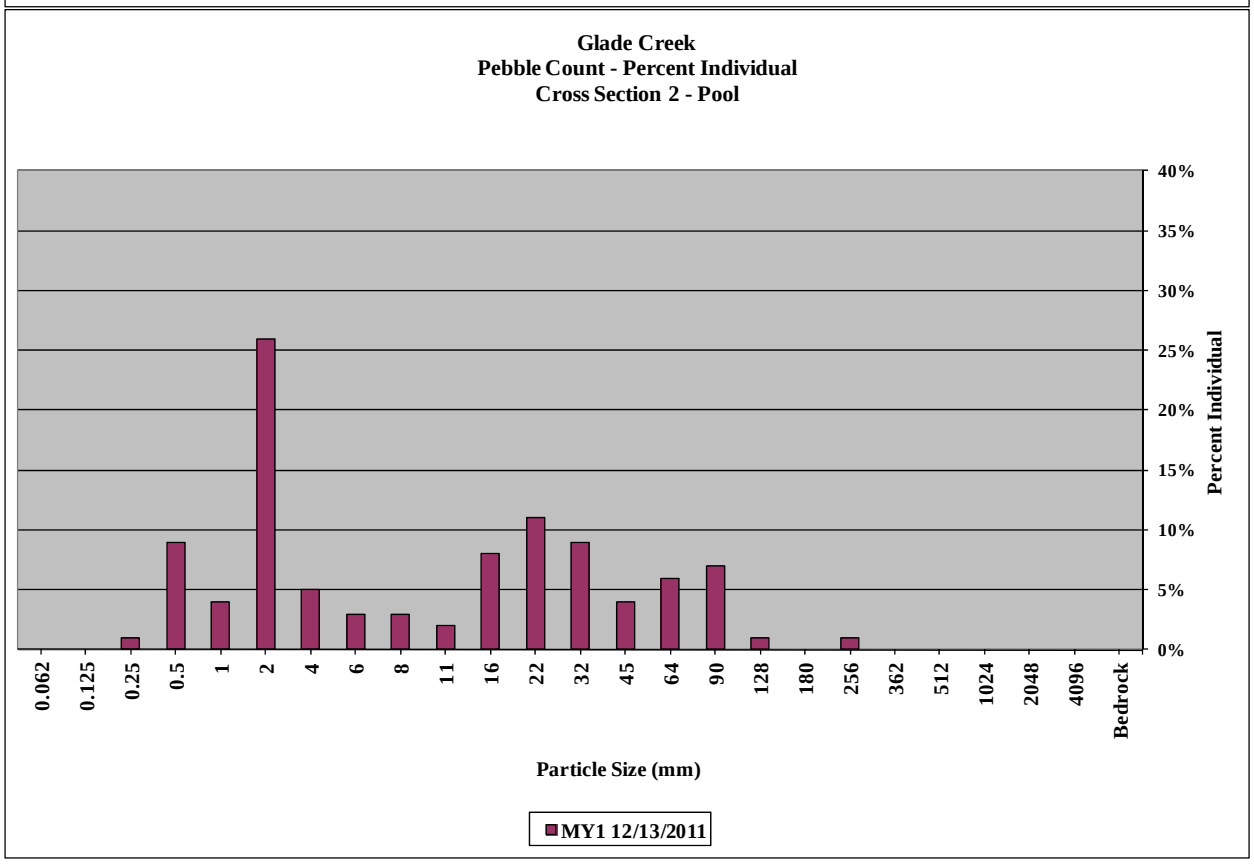

Glade Creek
Pebble Count - Percent Cumulative
Cross Section 1 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Cumulative Percent Finer Than
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/13/2011


Glade Creek
Pebble Count - Percent Individual
Cross Section 1 - Riffle
40%
35%
30%
25%
20%
15%
10%
5%
0%
Percent Individual
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/13/2011

Glade Creek / Project No. 854 Glade Creek - Cross-Section 2 - Pool Pebble Count Summary					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/Clay	silt/clay	0.062	0	0%	0%
Sand	very fine sand	0.125	0	0%	0%
	fine sand	0.25	1	1%	1%
	medium sand	0.50	9	9%	10%
	coarse sand	1.00	4	4%	14%
	very coarse sand	2.00	26	26%	40%
Gravel	very fine gravel	4.0	5	5%	45%
	fine gravel	5.7	3	3%	48%
	fine gravel	8.0	3	3%	51%
	medium gravel	11.3	2	2%	53%
	medium gravel	16.0	8	8%	61%
	coarse gravel	22.3	11	11%	72%
	coarse gravel	32	9	9%	81%
	very coarse gravel	45	4	4%	85%
	very coarse gravel	64	6	6%	91%
Cobble	small cobble	90	7	7%	98%
	medium cobble	128	1	1%	99%
	large cobble	180	0	0%	99%
	very large cobble	256	1	1%	100%
Boulder	small boulder	362	0	0%	100%
	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

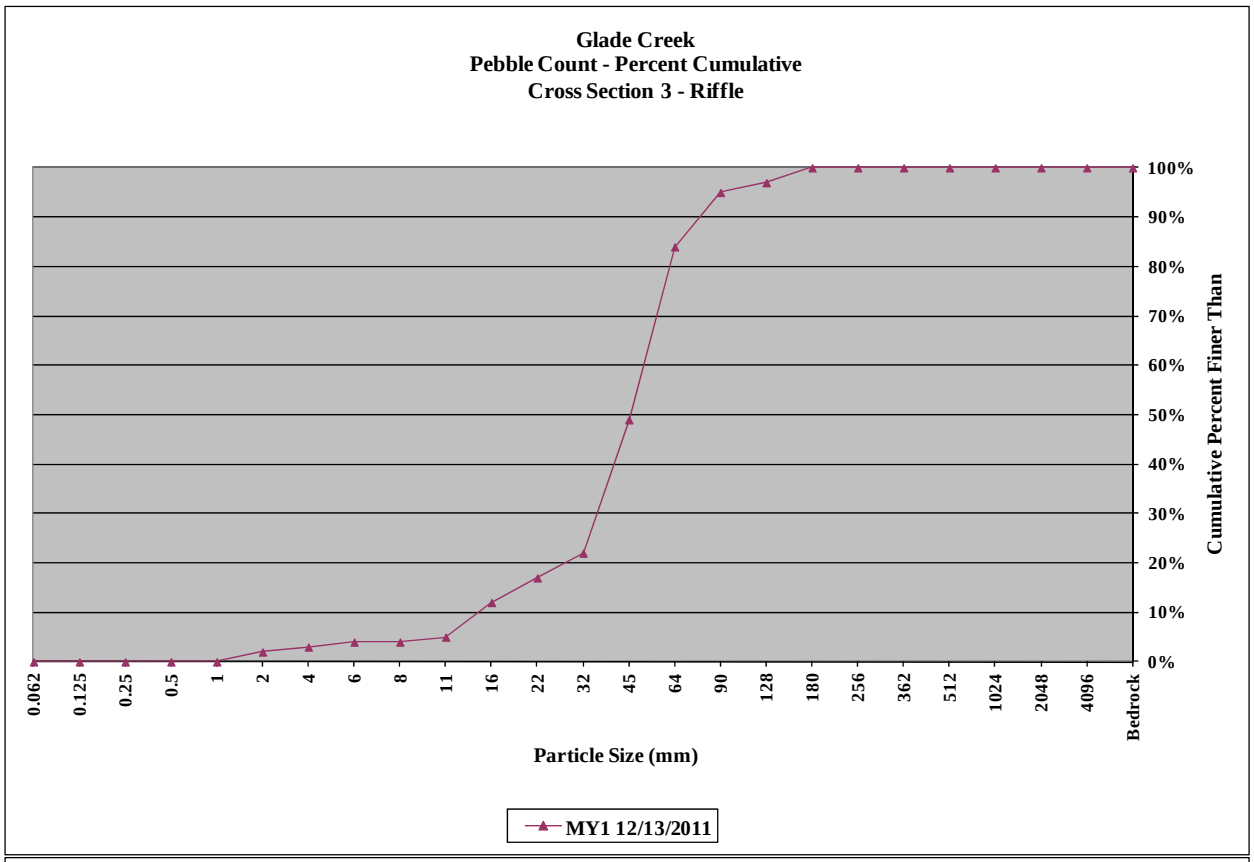
Summary Data	
D50	7.3
D84	41
D95	78

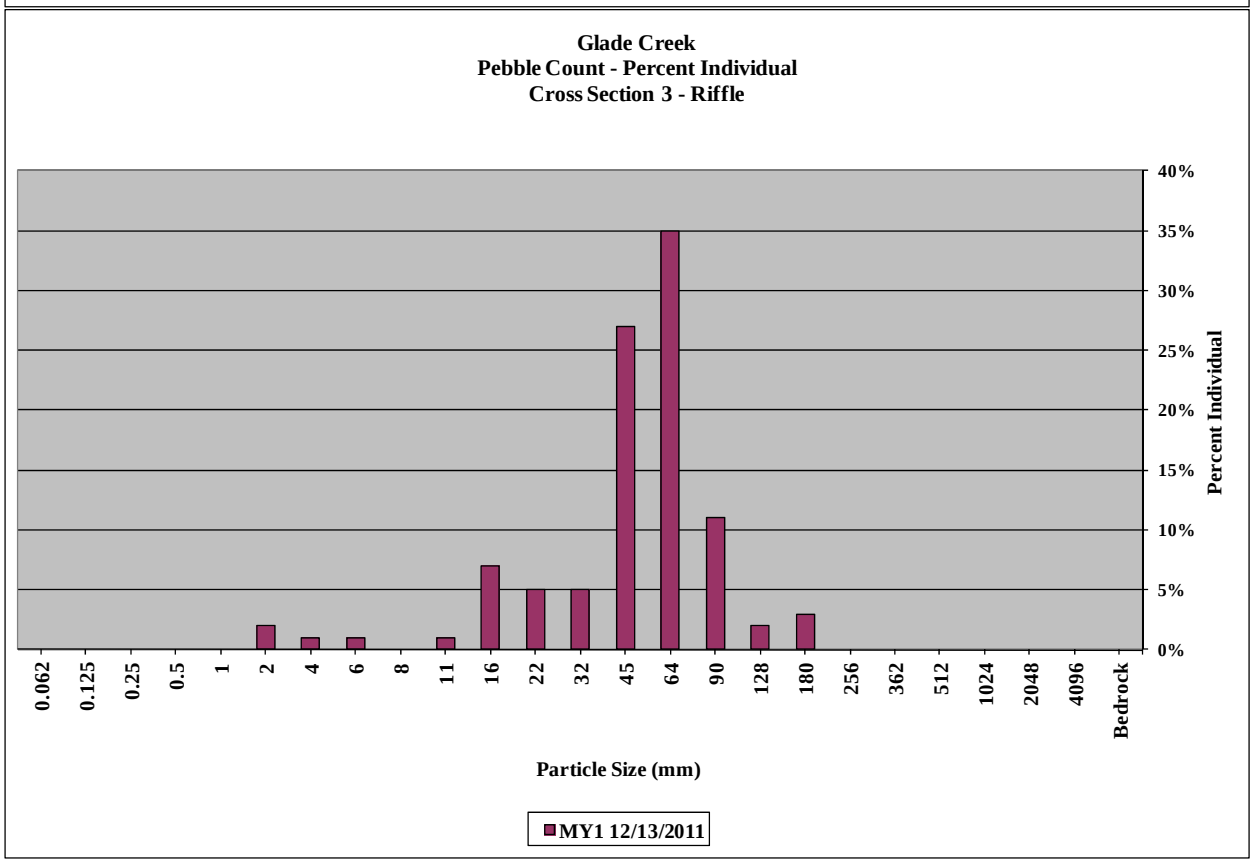

Glade Creek
Pebble Count - Percent Cumulative
Cross Section 2 - Pool
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Cumulative Percent Finer Than
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/13/2011


Glade Creek
Pebble Count - Percent Individual
Cross Section 2 - Pool
40%
35%
30%
25%
20%
15%
10%
5%
0%
Percent Individual
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/13/2011

Glade Creek / Project No. 854 Glade Creek - Cross-Section 3 - Riffle Pebble Count Summary					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/Clay	silt/clay	0.062	0	0%	0%
Sand	very fine sand	0.125	0	0%	0%
	fine sand	0.25	0	0%	0%
	medium sand	0.50	0	0%	0%
	coarse sand	1.00	0	0%	0%
	very coarse sand	2.00	2	2%	2%
Gravel	very fine gravel	4.0	1	1%	3%
	fine gravel	5.7	1	1%	4%
	fine gravel	8.0	0	0%	4%
	medium gravel	11.3	1	1%	5%
	medium gravel	16.0	7	7%	12%
	coarse gravel	22.3	5	5%	17%
	coarse gravel	32	5	5%	22%
	very coarse gravel	45	27	27%	49%
	very coarse gravel	64	35	35%	84%
Cobble	small cobble	90	11	11%	95%
	medium cobble	128	2	2%	97%
	large cobble	180	3	3%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	362	0	0%	100%
	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

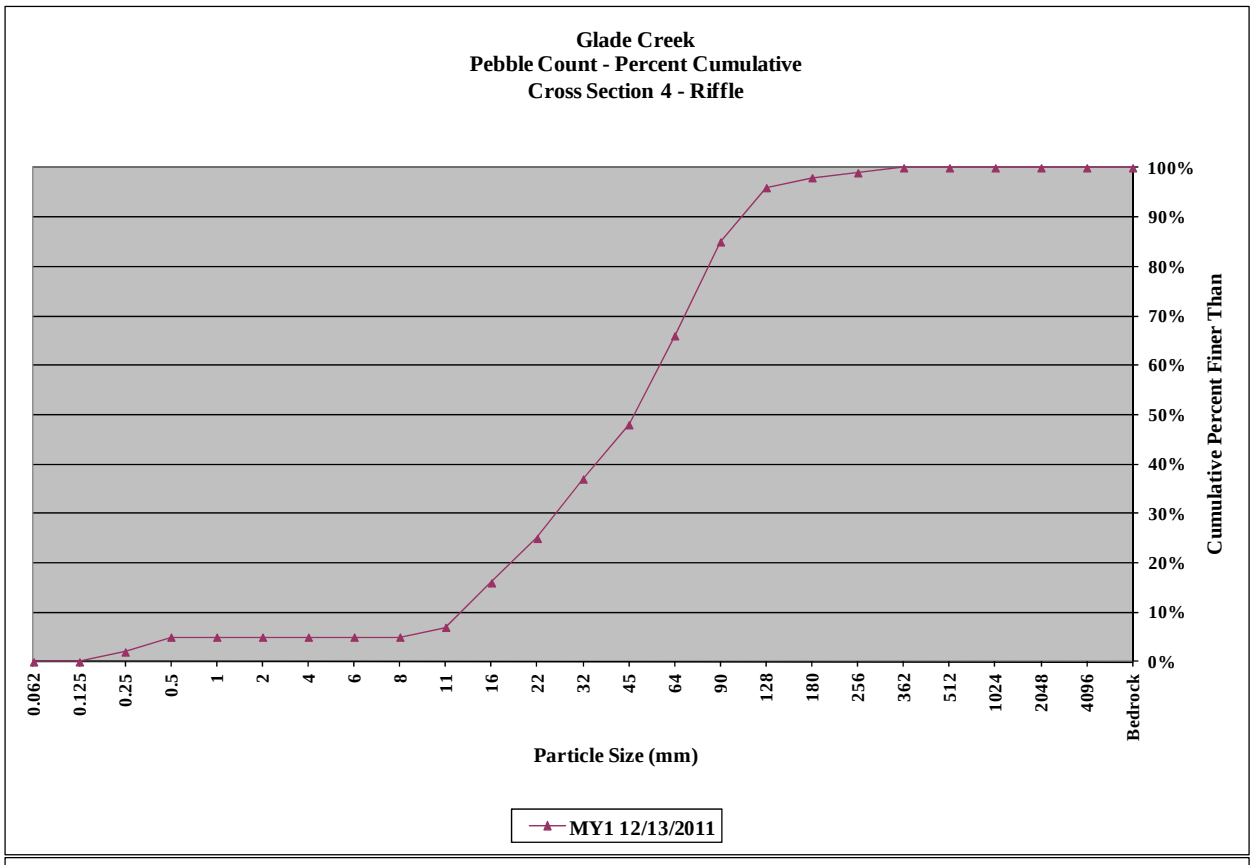
Summary Data	
D50	45
D84	64
D95	90

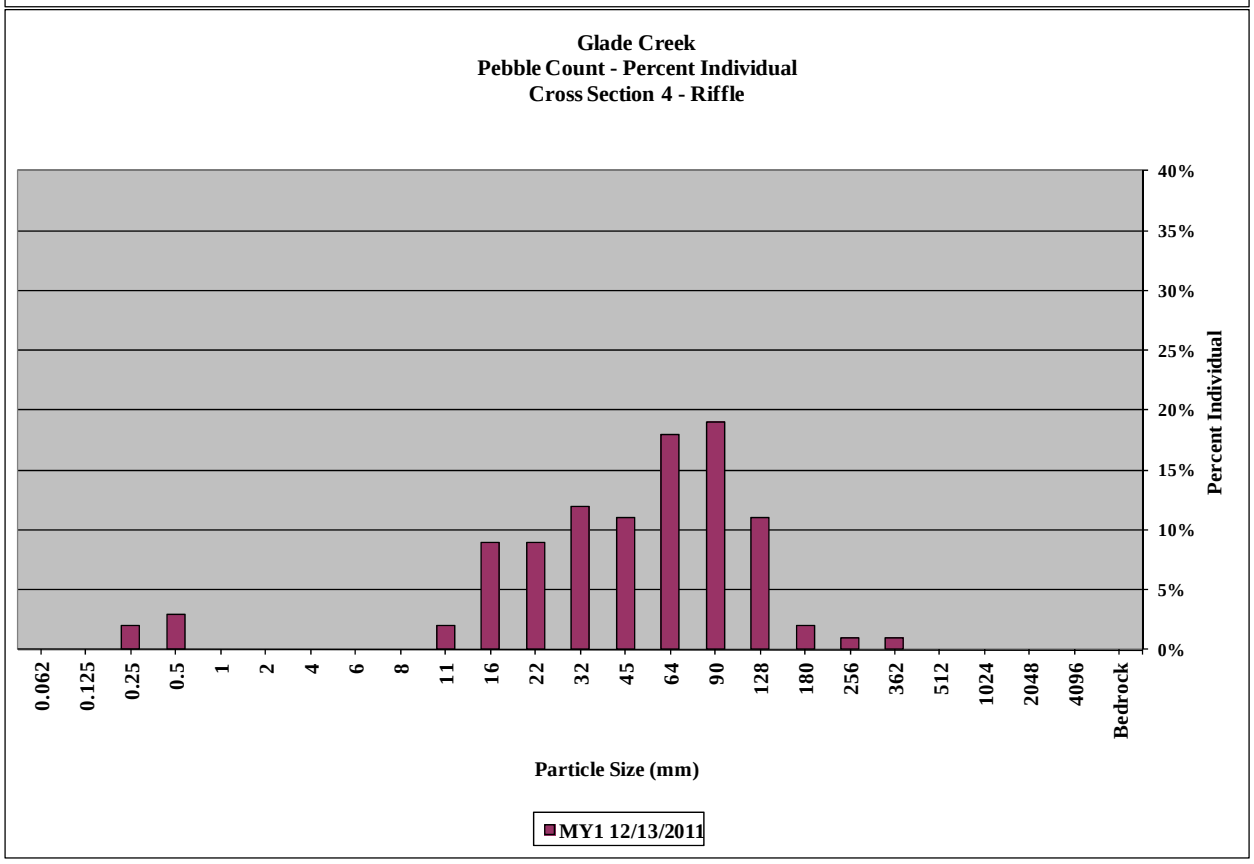

Glade Creek
Pebble Count - Percent Cumulative
Cross Section 3 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Cumulative Percent Finer Than
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/13/2011


Glade Creek
Pebble Count - Percent Individual
Cross Section 3 - Riffle
40%
35%
30%
25%
20%
15%
10%
5%
0%
Percent Individual
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/13/2011

Glade Creek / Project No. 854 Glade Creek - Cross-Section 4 - Riffle Pebble Count Summary					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/Clay	silt/clay	0.062	0	0%	0%
Sand	very fine sand	0.125	0	0%	0%
	fine sand	0.25	2	2%	2%
	medium sand	0.50	3	3%	5%
	coarse sand	1.00	0	0%	5%
	very coarse sand	2.00	0	0%	5%
Gravel	very fine gravel	4.0	0	0%	5%
	fine gravel	5.7	0	0%	5%
	fine gravel	8.0	0	0%	5%
	medium gravel	11.3	2	2%	7%
	medium gravel	16.0	9	9%	16%
	coarse gravel	22.3	9	9%	25%
	coarse gravel	32	12	12%	37%
	very coarse gravel	45	11	11%	48%
	very coarse gravel	64	18	18%	66%
Cobble	small cobble	90	19	19%	85%
	medium cobble	128	11	11%	96%
	large cobble	180	2	2%	98%
	very large cobble	256	1	1%	99%
Boulder	small boulder	362	1	1%	100%
	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

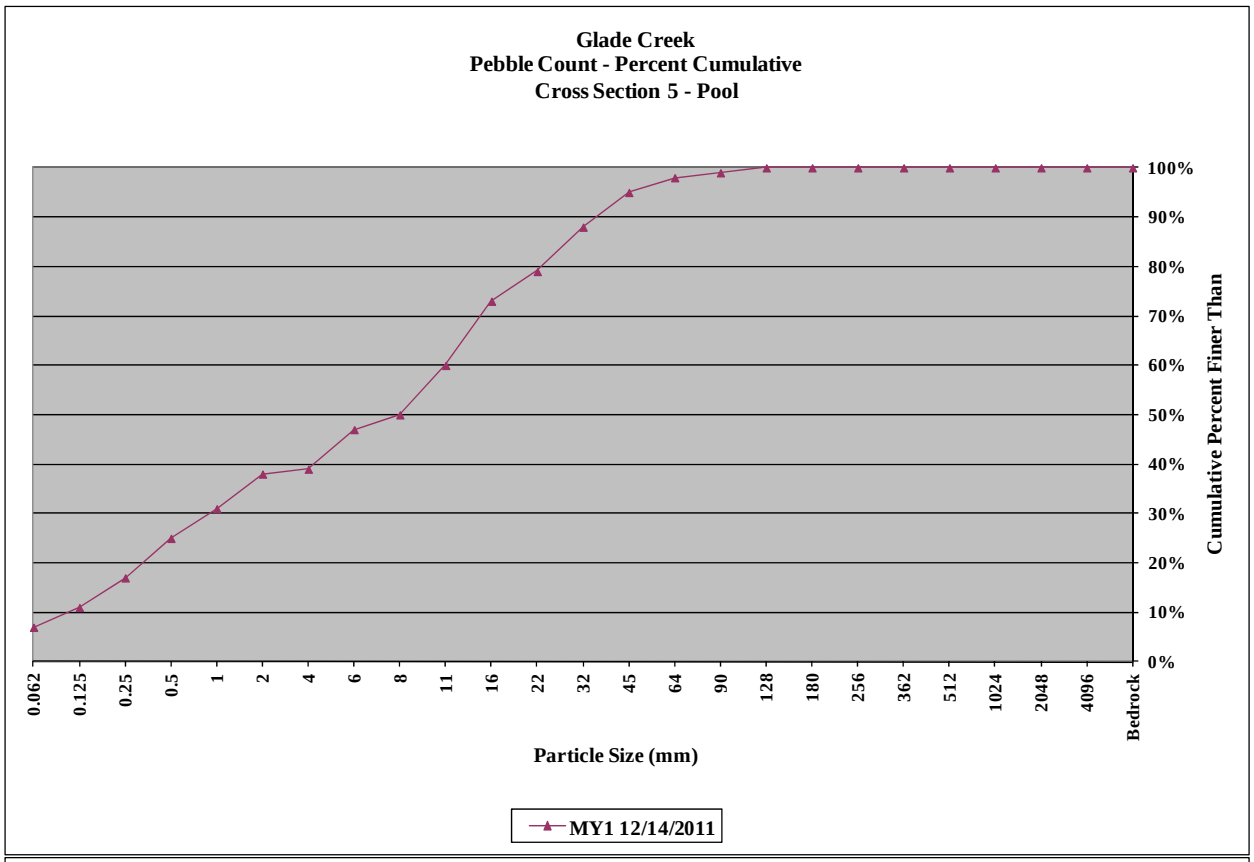
Summary Data	
D50	47
D84	88
D95	120

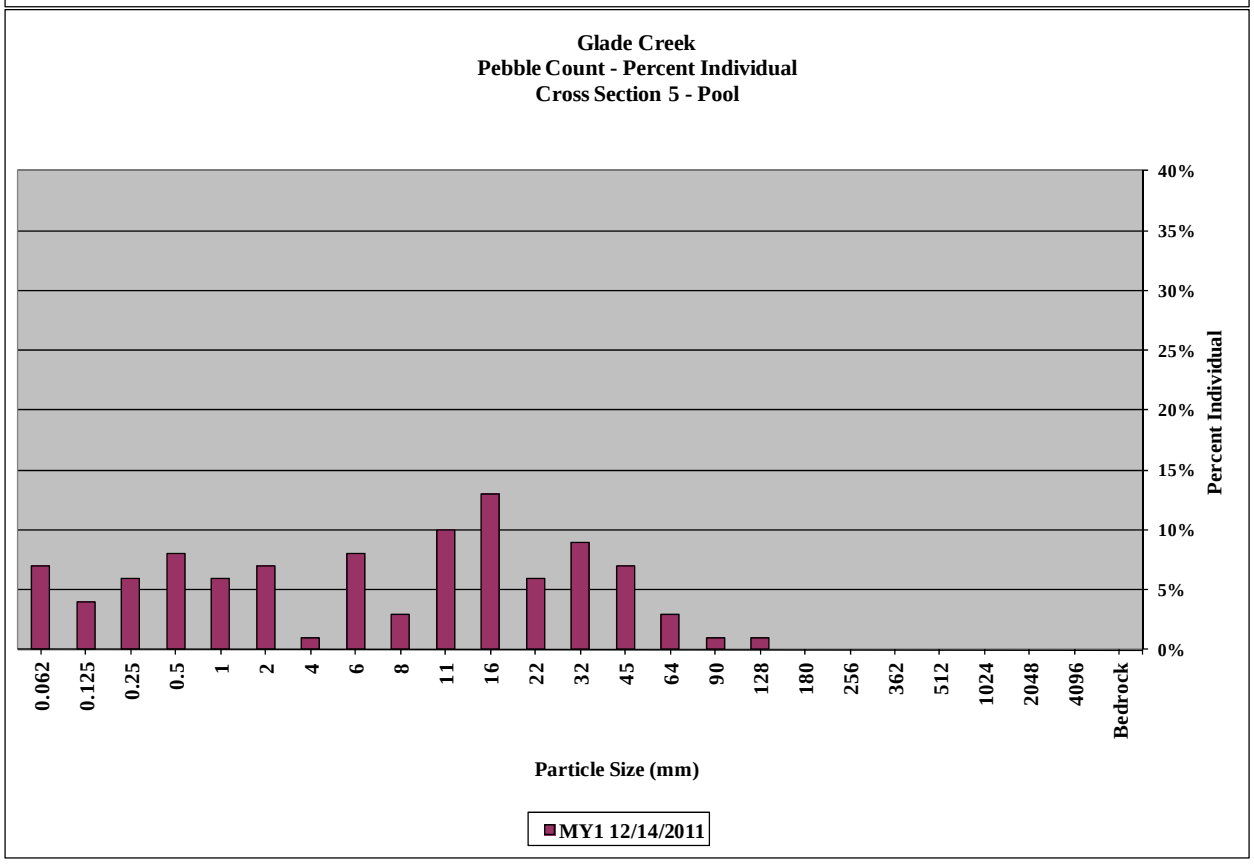

Glade Creek
Pebble Count - Percent Cumulative
Cross Section 4 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Cumulative Percent Finer Than
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/13/2011


Glade Creek
Pebble Count - Percent Individual
Cross Section 4 - Riffle
40%
35%
30%
25%
20%
15%
10%
5%
0%
Percent Individual
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/13/2011

Glade Creek / Project No. 854 Glade Creek - Cross-Section 5 - Pool Pebble Count Summary					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/Clay	silt/clay	0.062	7	7%	7%
Sand	very fine sand	0.125	4	4%	11%
	fine sand	0.25	6	6%	17%
	medium sand	0.50	8	8%	25%
	coarse sand	1.00	6	6%	31%
	very coarse sand	2.00	7	7%	38%
Gravel	very fine gravel	4.0	1	1%	39%
	fine gravel	5.7	8	8%	47%
	fine gravel	8.0	3	3%	50%
	medium gravel	11.3	10	10%	60%
	medium gravel	16.0	13	13%	73%
	coarse gravel	22.3	6	6%	79%
	coarse gravel	32	9	9%	88%
	very coarse gravel	45	7	7%	95%
	very coarse gravel	64	3	3%	98%
Cobble	small cobble	90	1	1%	99%
	medium cobble	128	1	1%	100%
	large cobble	180	0	0%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	362	0	0%	100%
	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

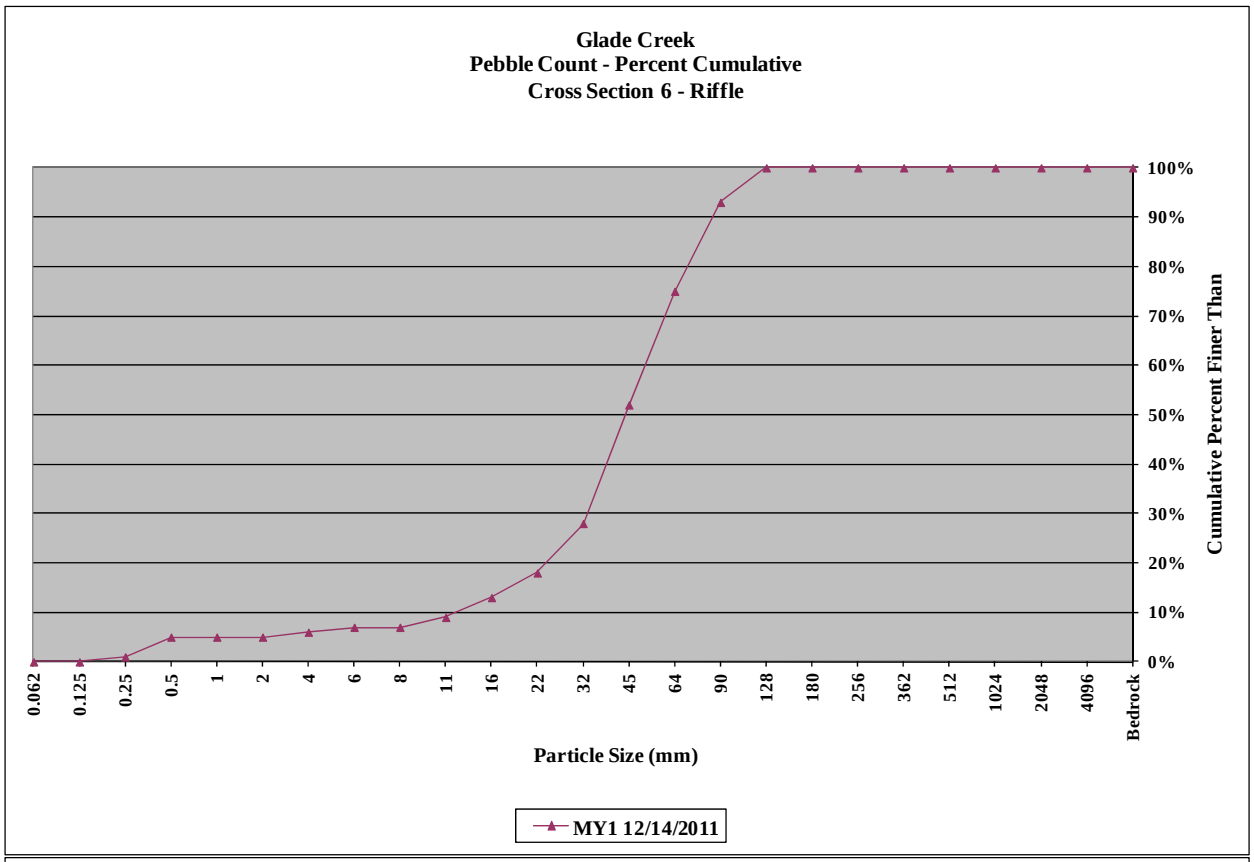
Summary Data	
D50	8
D84	27
D95	45

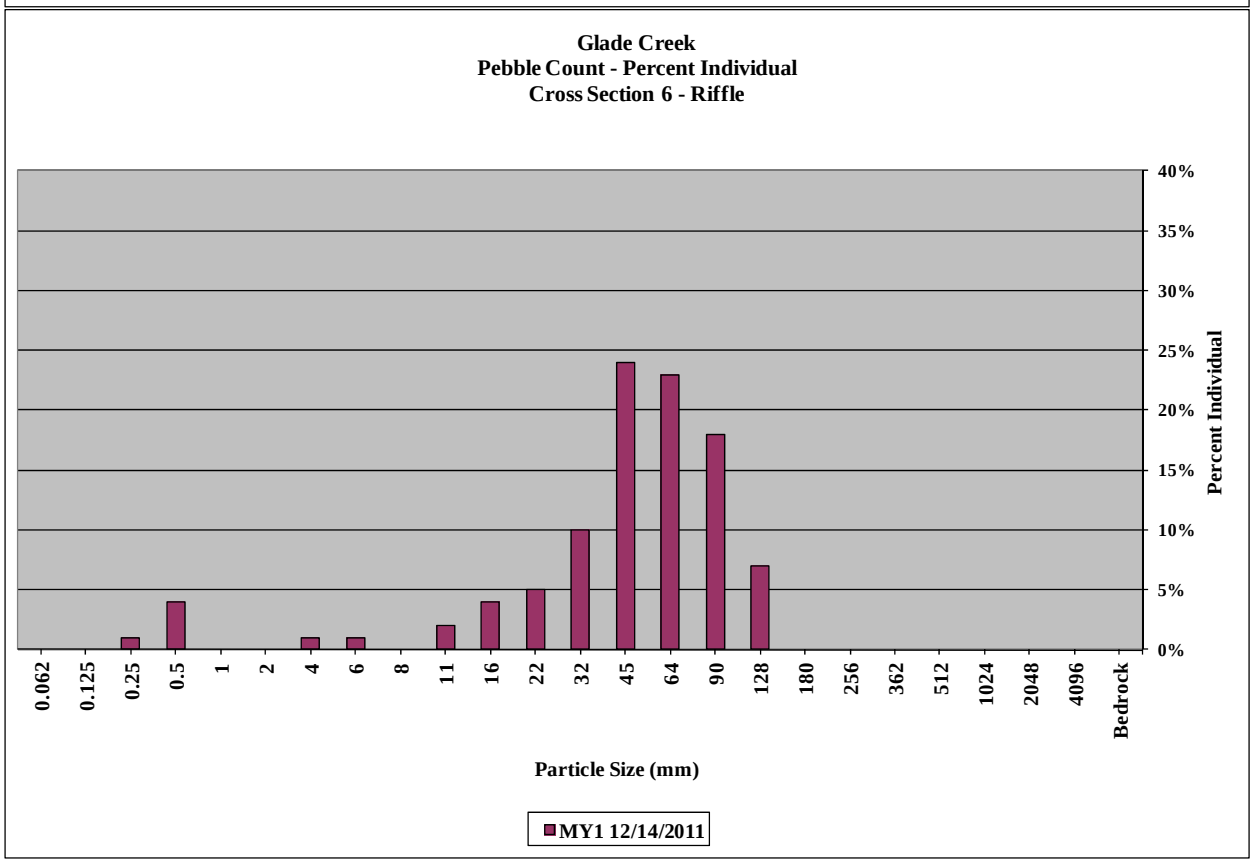

Glade Creek
Pebble Count - Percent Cumulative
Cross Section 5 - Pool
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Cumulative Percent Finer Than
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/14/2011


Glade Creek
Pebble Count - Percent Individual
Cross Section 5 - Pool
40%
35%
30%
25%
20%
15%
10%
5%
0%
Percent Individual
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/14/2011

Glade Creek / Project No. 854 Glade Creek - Cross-Section 6 - Riffle Pebble Count Summary					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/Clay	silt/clay	0.062	0	0%	0%
Sand	very fine sand	0.125	0	0%	0%
	fine sand	0.25	1	1%	1%
	medium sand	0.50	4	4%	5%
	coarse sand	1.00	0	0%	5%
	very coarse sand	2.00	0	0%	5%
Gravel	very fine gravel	4.0	1	1%	6%
	fine gravel	5.7	1	1%	7%
	fine gravel	8.0	0	0%	7%
	medium gravel	11.3	2	2%	9%
	medium gravel	16.0	4	4%	13%
	coarse gravel	22.3	5	5%	18%
	coarse gravel	32	10	10%	28%
	very coarse gravel	45	24	24%	52%
	very coarse gravel	64	23	23%	75%
Cobble	small cobble	90	18	18%	93%
	medium cobble	128	7	7%	100%
	large cobble	180	0	0%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	362	0	0%	100%
	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

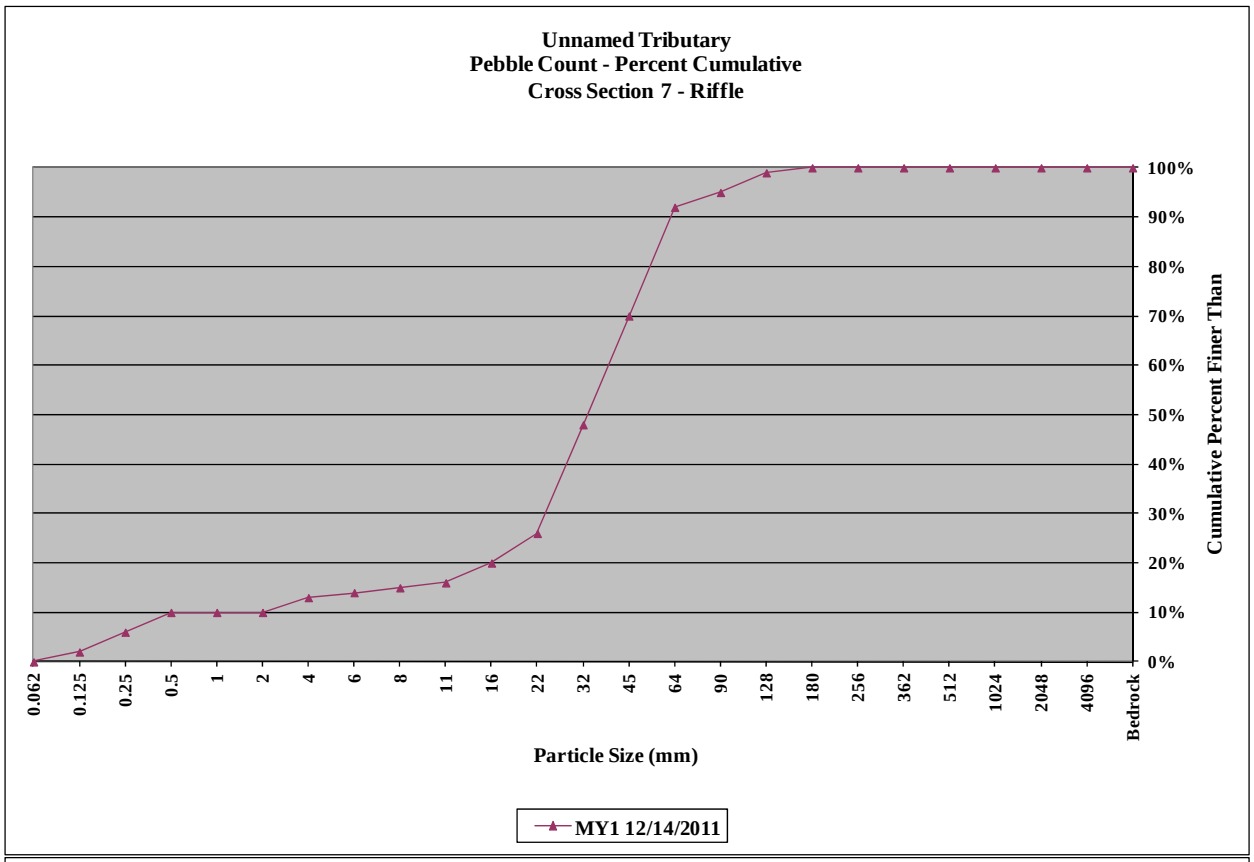
Summary Data	
D50	44
D84	76
D95	100

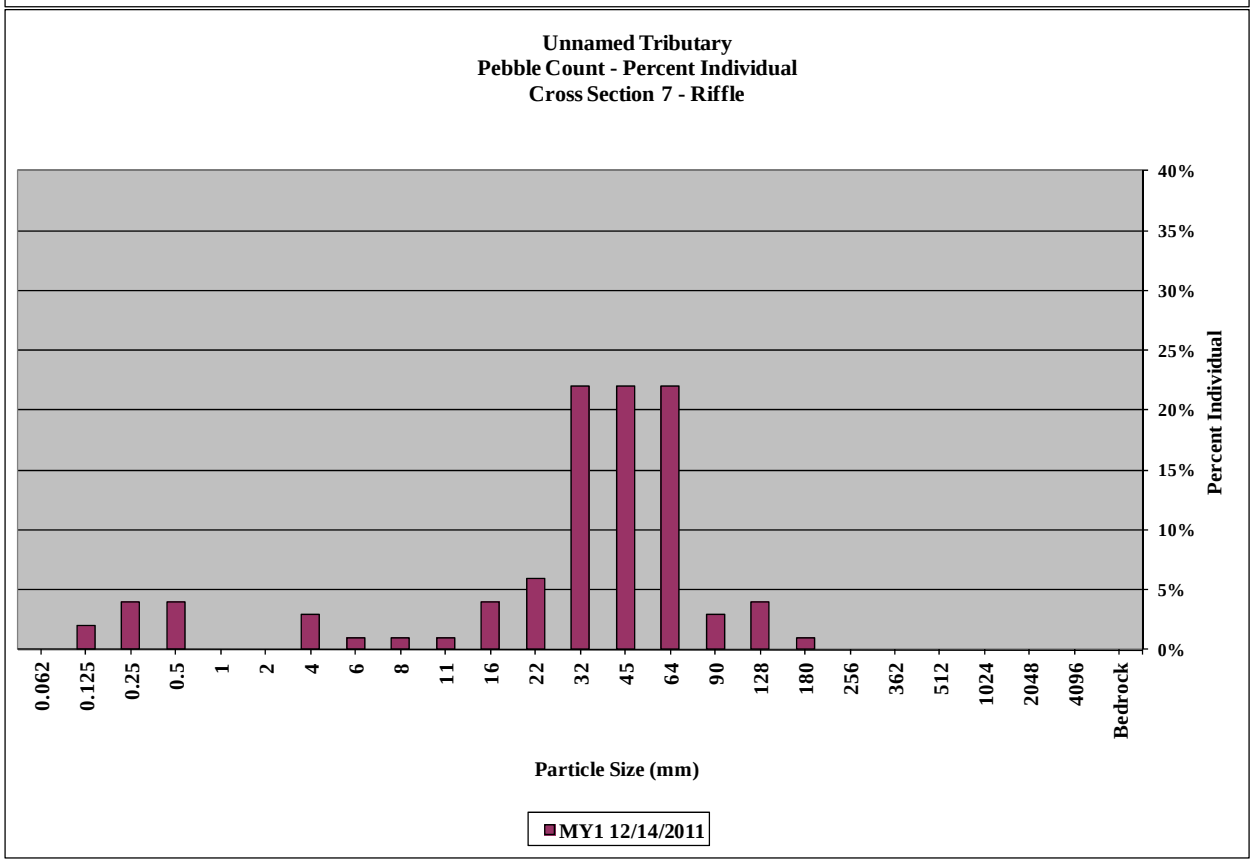

Glade Creek
Pebble Count - Percent Cumulative
Cross Section 6 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Cumulative Percent Finer Than
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/14/2011


Glade Creek
Pebble Count - Percent Individual
Cross Section 6 - Riffle
40%
35%
30%
25%
20%
15%
10%
5%
0%
Percent Individual
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/14/2011

Glade Creek / Project No. 854 Unnamed Tributary - Cross-Section 7 - Riffle Pebble Count Summary					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/Clay	silt/clay	0.062	0	0%	0%
Sand	very fine sand	0.125	2	2%	2%
	fine sand	0.25	4	4%	6%
	medium sand	0.50	4	4%	10%
	coarse sand	1.00	0	0%	10%
	very coarse sand	2.00	0	0%	10%
Gravel	very fine gravel	4.0	3	3%	13%
	fine gravel	5.7	1	1%	14%
	fine gravel	8.0	1	1%	15%
	medium gravel	11.3	1	1%	16%
	medium gravel	16.0	4	4%	20%
	coarse gravel	22.3	6	6%	26%
	coarse gravel	32	22	22%	48%
	very coarse gravel	45	22	22%	70%
	very coarse gravel	64	22	22%	92%
Cobble	small cobble	90	3	3%	95%
	medium cobble	128	4	4%	99%
	large cobble	180	1	1%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	362	0	0%	100%
	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

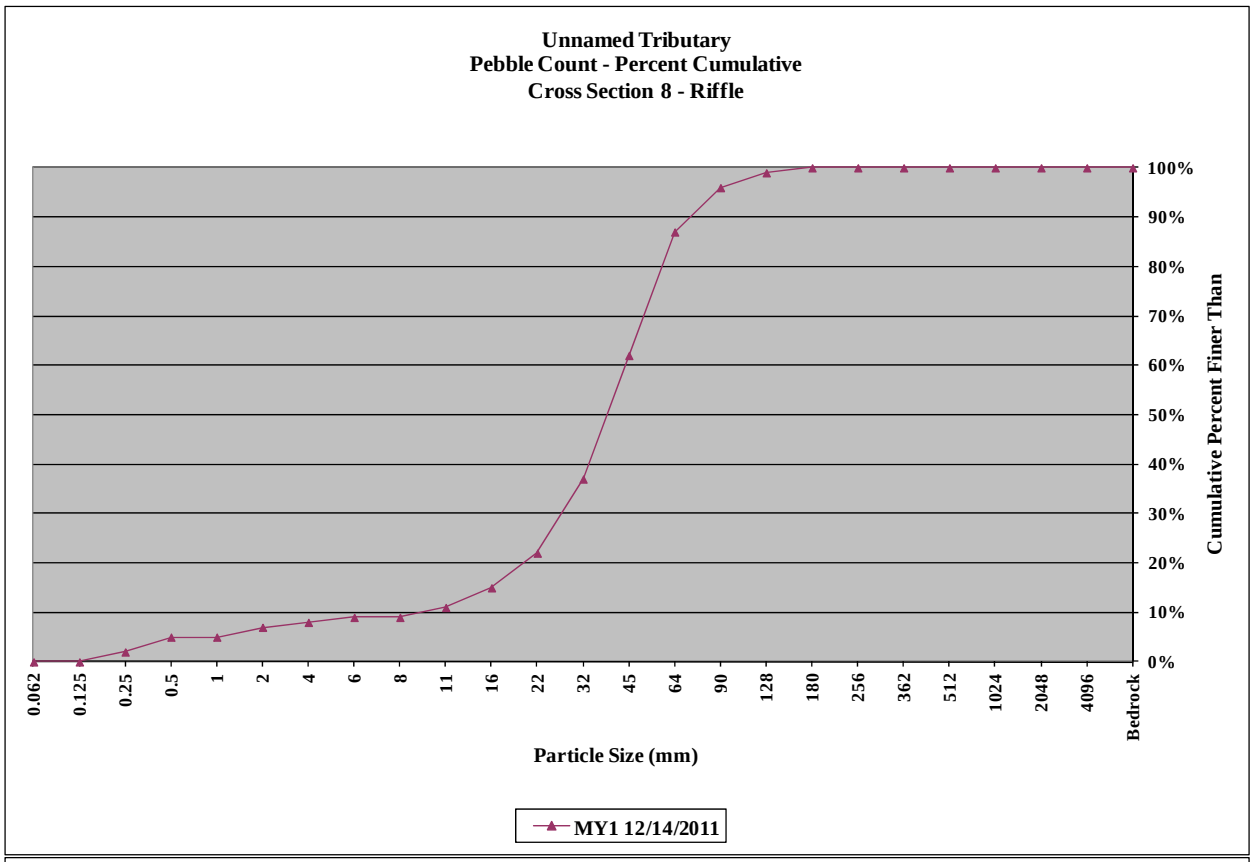
Summary Data	
D50	33
D84	56
D95	90


Unnamed Tributary
Pebble Count - Percent Cumulative
Cross Section 7 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Cumulative Percent Finer Than
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/14/2011


Unnamed Tributary
Pebble Count - Percent Individual
Cross Section 7 - Riffle
40%
35%
30%
25%
20%
15%
10%
5%
0%
Percent Individual
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/14/2011

Glade Creek / Project No. 854 Unnamed Tributary - Cross-Section 8 - Riffle Pebble Count Summary					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/Clay	silt/clay	0.062	0	0%	0%
Sand	very fine sand	0.125	0	0%	0%
	fine sand	0.25	2	2%	2%
	medium sand	0.50	3	3%	5%
	coarse sand	1.00	0	0%	5%
	very coarse sand	2.00	2	2%	7%
Gravel	very fine gravel	4.0	1	1%	8%
	fine gravel	5.7	1	1%	9%
	fine gravel	8.0	0	0%	9%
	medium gravel	11.3	2	2%	11%
	medium gravel	16.0	4	4%	15%
	coarse gravel	22.3	7	7%	22%
	coarse gravel	32	15	15%	37%
	very coarse gravel	45	25	25%	62%
	very coarse gravel	64	25	25%	87%
Cobble	small cobble	90	9	9%	96%
	medium cobble	128	3	3%	99%
	large cobble	180	1	1%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	362	0	0%	100%
	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

Summary Data	
D50	38
D84	61
D95	87


Unnamed Tributary
Pebble Count - Percent Cumulative
Cross Section 8 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Cumulative Percent Finer Than
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/14/2011

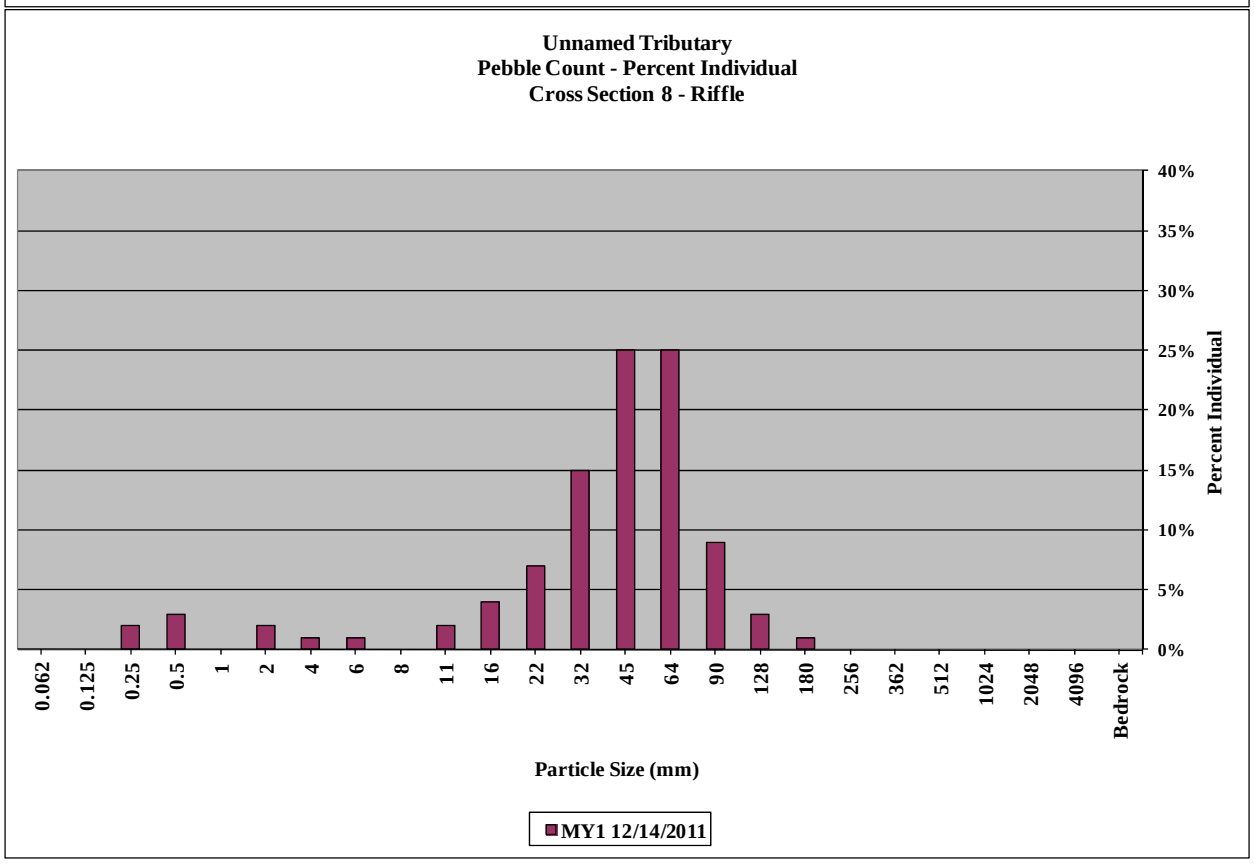

Unnamed Tributary
Pebble Count - Percent Individual
Cross Section 8 - Riffle
40%
35%
30%
25%
20%
15%
10%
5%
0%
Percent Individual
0.062
0.125
0.25
0.5
1
2
4
6
8
11
16
22
32
45
64
90
128
180
256
362
512
1024
2048
4096
Bedrock
Particle Size (mm)
MY1 12/14/2011

Table 10a. Baseline Stream Data Summary
Glade Creek / Project No. 854 - Glade Creek (2,558 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			Monitoring Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	-	44.7	-	-	-	-	-	30.7	-	-	-	-	-	34.0	-	35.2	43.2	44.9	47.7	5.9	4
Floodprone Width (ft)				-	45	-	-	-	-	-	70	-	-	-	-	-	>76	-	68.8	89.1	89.0	109.4	22.5	4
Bankfull Mean Depth (ft)	-	-	-	-	1.41	-	-	-	-	-	1.90	-	-	-	-	-	1.56	-	0.9	1.2	1.2	1.3	0.2	4
Bankfull Max Depth (ft)				-	2.3	-	-	-	-	-	2.5	-	-	-	-	-	2.2	-	1.7	1.8	1.9	1.9	0.1	4
Bankfull Cross Sectional Area (ft^2)	-			-	63.0	-	-	-	-	-	57.4	-	-	-	-	-	53.0	-	41.6	49.1	46.3	62.2	9.1	4
Width/Depth Ratio				-	31.7	-	-	-	-	-	16.4	-	-	-	-	-	22.0	-	27.6	39.0	36.9	62.2	11.3	4
Entrenchment Ratio				-	6.0	-	-	-	-	-	2.3	-	-	-	-	-	>2.2	-	1.5	2.1	2.2	2.6	0.5	4
Bank Height Ratio				1.2	-	-	3.0	-	-	-	1.0	-	-	-	-	-	1.0	-	1.0	1.0	1.0	1.0	0.0	4
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.6	35.3	31.8	54.9	13.1	18
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	0.011	0.010	0.025	0.006	18
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2	41.7	44.6	74.9	22.8	30
Pool Max Depth (ft)				-	5.7	-	-	-	-	-	3.1	-	-	-	-	-	4.4	-	3.2	4.1	4.1	5.6	0.7	31
Pool Spacing (ft)				110	-	-	228	-	7	-	224	-	-	-	-	91	-	155	10.7	84.5	98.5	162.5	51.0	29
Pattern																								
Channel Belt Width (ft)				77	-	-	184	-	8	90	-	-	104	-	-	55	-	134	59.3	76.7	74.5	92.1	11.22	12
Radius of Curvature (ft)				34	-	-	118	-	8	76	-	-	135	-	-	53	-	172	41.7	57.9	50.3	101.0	17.80	15
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Meander Wavelength (ft)				66	-	-	403	-	10	-	350	-	-	-	-	136	-	261	163.9	223.6	230.7	259.1	28.34	13
Meander Width Ratio				3.6	-	-	18.7	-	-	2.9	-	-	3.4	-	-	1.6	-	4.0	1.6	1.8	1.7	2.1	0.26	4
Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2				0.41						-						0.39			0.36					
Max Part Size (mm) Mobilized at Bankfull				11						-						10			21					
Stream Power (Transport Capacity) W/m^2				-						-						-								
Additional Reach Parameters																								
Rosgen Classification				C_E4/F4/G4						C4						C4			C					
Bankfull Velocity (fps)	-			3.3						N/A						3.8								
Bankfull Discharge (cfs)	267-352			200						375						200								
Valley Length (ft)				2,180						-						2,180								
Channel Thalweg Length (ft)				2,569						-						2,555			2,558					
Sinuosity				1.18						1.10						1.17			1.17					
Water Surface Slope (Channel) (ft/ft)				-						-						-			0.0055					
Bankfull Slope (ft/ft)				0.005						0.014						0.004			0.0050					
Bankfull Floodplain Area (acres)				-						-						-								
% of Reach with Eroding Banks				-						-														
Channel Stability or Habitat Metric				-						-														
Biological or Other				-						-														

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

Table 10a. Baseline Stream Data Summary
Glade Creek / Project No. 854 - Unnamed Tributary (265 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			Monitoring Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	-	12.6	-	-	-	-	-	30.7	-	-	-	-	-	12.0	-	17.3	18.1	18.1	18.9	N/A	2
Floodprone Width (ft)				13	-	-	25	-	-	-	70	-	-	-	-	-	>44	-	33.5	37.7	37.7	41.8	N/A	2
Bankfull Mean Depth (ft)	-	-	-	-	0.8	-	-	-	-	-	1.9	-	-	-	-	-	0.7	-	0.7	0.8	0.8	0.8	N/A	2
Bankfull Max Depth (ft)				-	1.0	-	-	-	-	-	2.5	-	-	-	-	-	1.0	-	1.2	1.3	1.3	1.3	N/A	2
Bankfull Cross Sectional Area (ft^2)		-		-	9.9	-	-	-	-	-	57.4	-	-	-	-	-	8.2	-	12.7	13.0	13.0	13.2	N/A	2
Width/Depth Ratio				-	16.0	-	-	-	-	-	16.4	-	-	-	-	-	18.0	-	22.7	25.5	25.5	28.3	N/A	2
Entrenchment Ratio				1.1	-	-	2.0	-	-	-	2.3	-	-	-	-	-	>2.2	-	1.9	2.1	2.1	2.2	N/A	2
Bank Height Ratio				-	≥2.0	-	-	-	-	-	1.0	-	-	-	-	-	1.0	-	1.0	1.0	1.0	1.0	N/A	2
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	10.3	10.3	14.6	4.0	6
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	0.017	0.015	0.034	0.011	6
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	13.3	10.8	29.5	8.5	9
Pool Max Depth (ft)				-	3.5	-	-	-	-	-	3.1	-	-	-	-	-	2.2	-	1.8	2.7	2.6	3.4	0.5	7
Pool Spacing (ft)				-	-	-	-	-	-	-	224	-	-	-	-	31	-	56	5.5	34.1	31.5	59.8	20.8	7
Pattern																								
Channel Belt Width (ft)				57	-	-	79	-	7	90	-	-	104	-	-	30	-	45	28.6	34.3	36.1	37.1	3.51	5
Radius of Curvature (ft)				17	-	-	71	-	10	76	-	-	135	-	-	27	-	33	17.1	19.8	19.5	22.5	2.21	5
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Meander Wavelength (ft)				66	-	-	93	-	6	-	350	-	-	-	-	75	-	84	66.4	77.7	82.7	83.9	9.78	3
Meander Width Ratio				4.5	-	-	6.3	-	-	2.9	-	-	3.4	-	-	2.5	-	3.8	1.9	2.0	2.0	2.1	N/A	2.0
Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2					0.52						-						0.17			0.30				
Max Part Size (mm) Mobilized at Bankfull					15						-						3			65				
Stream Power (Transport Capacity) W/m^2					-						-						-							
Additional Reach Parameters																								
Rosgen Classification					C4						C4						C4			C				
Bankfull Velocity (fps)		-			2						N/A						2.4							
Bankfull Discharge (cfs)		76 - 98			20						375						20							
Valley Length (ft)					175						-						226							
Channel Thalweg Length (ft)					300						-						275			264				
Sinuosity					1.71						1.10						1.22			1.17				
Water Surface Slope (ft/ft)					-						-						-			0.0064				
Bankfull Slope (ft/ft)					0.011						0.014						0.006			0.0058				
Bankfull Floodplain Area (acres)					-						-						-							
% of Reach with Eroding Banks					-						-													
Channel Stability or Habitat Metric					-						-													
Biological or Other					-						-													

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

Table 10b. Baseline Stream Data Summary
(Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions)
Glade Creek / Project No. 854 - Glade Creek (2,558 feet)

Parameter	Pre-Existing Condition							Reference Reach Data							Design							Monitoring Baseline						
Ri% / Ru% / P% / G% / S%	-	-	-	-	-			-	-	-	-	-			-	-	-	-	-	-	-	25%	9%	49%	16%	2%		
SC% / Sa% / G% / C% / B% / Be%	-	-	-	-	-	-		-	-	-	-	-	-															
d16 / D35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	0.136	0.87	12.5	114	-	-	-	0.17	29	58	180	300	-	-														
Entrenchment Class <1.5 / 1.5 - 1.99 / 2 - 4.9 / 5.0 - 9.9 / >10	-	-	-	-	-			-	-	-	-	-																
Incision Class <1.2 / 1.2 - 1.49 / 1.5 - 1.99 / >2.0	-	-	-	-				-	-	-	-																	

- Information unavailable.
Non-Applicable.

Table 10b. Baseline Stream Data Summary
(Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions)
Glade Creek / Project No. 854 - Dye Branch-Downstream (265 feet)

Parameter	Pre-Existing Condition							Reference Reach Data							Design							Monitoring Baseline						
Ri% / Ru% / P% / G% / S%	-	-	-	-	-			-	-	-	-	-			-	-	-	-	-	-	-	24%	11%	47%	16%	2%		
SC% / Sa% / G% / C% / B% / Be%	-	-	-	-	-	-		-	-	-	-	-	-															
d16 / D35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	0.3	11	27	85	115.0	-	-	0.17	29	58	180	300	-	-														
Entrenchment Class <1.5 / 1.5 - 1.99 / 2 - 4.9 / 5.0 - 9.9 / >10	-	-	-	-	-			-	-	-	-	-																
Incision Class <1.2 / 1.2 - 1.49 / 1.5 - 1.99 / >2.0	-	-	-	-				-	-	-	-																	

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

Table 11a. Baseline Morphology & Hydraulic Monitoring Summary Glade Creek / Project No. 854 - Glade Creek (2,558 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	2,613	2,613					2,612	2,612					2,611	2,611				
Bankfull Width (ft)	47.7	48.8					50.4	49.3					47.6	47.6				
Floodprone Width (ft)	109.0	109.4					69.1	69.1					70.4	70.4				
Bankfull Mean Depth (ft)	0.9	0.9					1.6	1.7					1.3	1.3				
Bankfull Max Depth (ft)	1.9	1.9					3.0	3.3					1.9	1.9				
Bankfull Cross Sectional Area (ft^2)	41.6	45.6					78.3	83.0					62.2	64.1				
Bankfull Width/Depth Ratio	54.7	52.2					32.5	29.3					36.5	35.3				
Bankfull Entrenchment Ratio	2.3	2.2					1.4	1.4					1.5	1.5				
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0					1.0	1.0				
Cross Sectional Area between End Pins (ft^2)	41.8	45.6					78.3	83.0					62.2	64.1				
d50 (mm)	N/A	47					N/A	7.3					N/A	45				
	Cross-Section 4 Riffle						Cross-Section 5 Pool						Cross-Section 6 Riffle					
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
Record Elevation (datum) Used	2,607	2,607					2,606	2,606					2,605	2,605				
Bankfull Width (ft)	35.2	36.3					53.2	51.5					42.1	42.9				
Floodprone Width (ft)	68.8	68.8					117.9	117.9					107.6	107.6				
Bankfull Mean Depth (ft)	1.3	1.3					1.3	1.5					1.1	1.1				
Bankfull Max Depth (ft)	1.7	1.9					3.7	4.1					1.8	1.9				
Bankfull Cross Sectional Area (ft^2)	44.9	46.9					68.7	75.0					47.7	49.0				
Bankfull Width/Depth Ratio	27.6	28.1					41.1	35.3					37.2	37.5				
Bankfull Entrenchment Ratio	2.0	1.9					2.2	2.3					2.6	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)	44.9	46.9					68.7	75.0					47.7	49.0				
d50 (mm)	N/A	47					N/A	8					N/A	44				

N/A - Item does not apply.

Table 11a. Baseline Morphology & Hydraulic Monitoring Summary Glade Creek / Project No. 854 - Unnamed Tributary (264 feet)												
	Cross-Section 7 Riffle						Cross-Section 8 Riffle					
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
Record Elevation (datum) Used	2,604	2,604					2,602	2,602				
Bankfull Width (ft)	17.3	17.5					18.9	19.1				
Floodprone Width (ft)	33.5	33.5					41.8	41.8				
Bankfull Mean Depth (ft)	0.8	0.7					0.7	0.7				
Bankfull Max Depth (ft)	1.3	1.2					1.2	1.2				
Bankfull Cross Sectional Area (ft^2)	13.2	13.0					12.7	13.0				
Bankfull Width/Depth Ratio	22.7	23.6					28.3	28.1				
Bankfull Entrenchment Ratio	1.9	1.9					2.2	2.2				
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0				
Cross Sectional Area between End Pins (ft^2)	13.2	13.0					12.7	13.0				
d50 (mm)	N/A	33					N/A	38				

N/A - Item does not apply.

Table 11b. Monitoring Data - Stream Reach Data Summary
Glade Creek / Project No. 854 - Glade Creek (2,558 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5					
Dimension & Substrate - Riffle	**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)	35.2	43.2	44.9	47.7	5.91	4	36.3	43.9	45.3	48.8	5.67	4																								
Floodprone Width (ft)	68.8	89.1	89.0	109.4	22.48	4	68.8	89.1	89.0	109.4	22.48	4																								
Bankfull Mean Depth (ft)	0.9	1.2	1.2	1.3	0.19	4	0.9	1.2	1.2	1.3	0.19	4																								
Bankfull Max Depth (ft)	1.7	1.8	1.9	1.9	0.10	4	1.9	1.9	1.9	1.9	0.00	4																								
Bankfull Cross-Sectional Area (ft^2)	41.6	49.1	46.3	62.2	9.08	4	45.6	51.4	48.0	64.1	8.58	4																								
Width/Depth Ratio	27.6	39.0	36.9	54.7	11.34	4	28.1	38.3	36.4	52.2	10.11	4																								
Entrenchment Ratio	1.5	2.1	2.2	2.6	0.47	4	1.5	2.0	2.1	2.5	0.43	4																								
Bank Height Ratio	1.0	1.0	1.0	1.0	0.00	4	1.0	1.0	1.0	1.0	0.00	4																								
Profile																																				
Riffle Length (ft)	14.6	35.3	31.8	54.9	13.12	18	11.0	30.2	25.4	58.0	14.94	19																								
Riffle Slope (ft/ft)	0.002	0.011	0.010	0.025	0.006	18	0.002	0.010	0.010	0.020	0.005	19																								
Pool Length (ft)	7.2	41.7	44.6	74.9	22.75	30	7.7	40.2	43.1	76.8	23.59	30																								
Pool Max Depth (ft)	3.2	4.1	4.1	5.6	0.65	31	2.8	4.0	3.9	5.4	0.65	30																								
Pool Spacing (ft)	10.7	84.5	98.5	162.5	51.03	29	9.3	84.2	81.2	155.4	53.03	29																								
Pattern																																				
Channel Belt Width (ft)	59.3	76.7	74.5	92.1	11.22	12																														
Radius of Curvature (ft)	41.7	57.9	50.3	101.0	17.81	15																														
Rc: Bankfull Width (ft/ft)	0.84	0.92	0.92	1.00	N/A	2																														
Meander Wavelength (ft)	163.9	223.6	230.7	259.1	28.34	13																														
Meander Width Ratio	1.6	1.8	1.7	2.1	0.26	4																														
Additional Reach Parameters																																				
Rosgen Classification	C						C4																													
Channel Thalweg Length (ft)	2,548						2,558																													
Sinuosity (ft)	1.17						1.18																													
Water Surface Slope (Channel) (ft/ft)	0.0055						0.0054																													
Bankfull Slope (ft/ft)	0.0050						0.0050																													
Ri% / Ru% / P% / G% / S%	25%	9%	49%	16%	2%		23%	12%	48%	15%	2%																									
SC% / SA% / G% / C% / B% / Be%*							1%	14%	65%	20%	<1%	0%																								
d16 / d35 / d50 / d84 / d95 (mm)																																				
% of Reach with Eroding Banks	0%						0%																													
Channel Stability or Habitat Metric	N/A						N/A																													
Biological or Other	N/A						N/A																													

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
*Percentages based on riffle and pool pebble counts.

Table 11b. Monitoring Data - Stream Reach Data Summary
Glade Creek / Project No. 854 - Unnamed Tributary (265 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5					
Dimension & Substrate - Riffle	**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)	17.3	18.1	18.1	18.9	N/A	2	17.5	18.3	18.3	19.1	N/A	2																								
Floodprone Width (ft)	33.5	37.7	37.7	41.8	N/A	2	33.5	37.7	37.7	41.8	N/A	2																								
Bankfull Mean Depth (ft)	0.7	0.8	0.8	0.8	N/A	2	0.7	0.7	0.7	0.7	N/A	2																								
Bankfull Max Depth (ft)	1.2	1.3	1.3	1.3	N/A	2	1.2	1.2	1.2	1.2	N/A	2																								
Bankfull Cross-Sectional Area (ft^2)	12.7	13.0	13.0	13.2	N/A	2	13.0	13.0	13.0	13.0	N/A	2																								
Width/Depth Ratio	22.7	25.5	25.5	28.3	N/A	2	23.6	25.9	25.9	28.1	N/A	2																								
Entrenchment Ratio	1.9	2.1	2.1	2.2	N/A	2	1.9	2.1	2.1	2.2	N/A	2																								
Bank Height Ratio	1.0	1.0	1.0	1.0	N/A	2	1.0	1.0	1.0	1.0	N/A	2																								
Profile																																				
Riffle Length (ft)	5.8	10.3	10.3	14.6	4.0	6	3.6	10.1	10.5	16.0	4.9	6																								
Riffle Slope (ft/ft)	0.001	0.017	0.015	0.034	0.011	6	0.001	0.013	0.011	0.024	0.009	6																								
Pool Length (ft)	3.6	13.3	10.8	29.5	8.5	9	3.2	13.4	14.1	26.8	7.8	9																								
Pool Max Depth (ft)	1.8	2.7	2.6	3.4	0.5	7	2.1	2.7	2.6	3.3	0.4	6																								
Pool Spacing (ft)	5.5	34.1	31.5	59.8	20.8	7	5.3	30.7	35.2	54.6	17.4	8																								
Pattern																																				
Channel Belt Width (ft)	28.6	34.3	36.1	37.1	3.5	5																														
Radius of Curvature (ft)	17.1	19.8	19.5	22.5	2.2	5																														
Rc: Bankfull Width (ft/ft)	N/A	N/A	N/A	N/A	N/A	N/A																														
Meander Wavelength (ft)	66.4	77.7	82.7	83.9	9.8	3																														
Meander Width Ratio	1.9	2.0	2.0	2.1	N/A	N/A																														
Additional Reach Parameters																																				
Rosgen Classification	C						C4																													
Channel Thalweg Length (ft)	263						264																													
Sinuosity (ft)	1.17						1.18																													
Water Surface Slope (Channel) (ft/ft)	0.0064						0.0068																													
Bankfull Slope (ft/ft)	0.0058						0.0066																													
Ri% / Ru% / P% / G% / S%	24%	11%	47%	16%	2%		24%	15%	47%	12%	2%																									
SC% / SA% / G% / C% / B% / Be%*							0%	8%	81%	11%	0%	0%																								
d16 / d35 / d50 / d84 / d95 (mm)																																				
% of Reach with Eroding Banks	0%						0%																													
Channel Stability or Habitat Metric	N/A						N/A																													
Biological or Other	N/A						N/A																													

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
*Percentages based on riffle and pool pebble counts.