Annual Monitoring Report

Mill Dam Creek Restoration Site
Yadkin River Basin - 03040101
Monitoring Year 02
DEQ Contract 6898
DMS Project Number 97136

DWR #: 18-1349
USACE Action ID: 2016-01335
Yadkin County, North Carolina

Prepared for:
NC Department of Environmental Quality
Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699

Data Collected: July 2021
Date Submitted: December 2021

Monitoring and Design Firm

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PROJECT SUMMARY

The Mill Dam Creek Restoration Site (MDCRS) was completed in March 2020 and restored and enhanced a total of 13,505 linear feet of stream. The MDCRS is a riparian system in the Upper Yadkin Pee-Dee River Basin (3040101 8-digit cataloging unit) in Yadkin County, North Carolina. The site's natural hydrologic regime had been substantially modified through the relocation and straightening of the existing stream channels, livestock impacts, and clearing of riparian buffer. This completed project will restore streams impacted by pasture and agriculture to a stable headwater ecosystem with a functional riparian buffer and floodplain access.

The MDCRS is protected by a 40.2 acre permanent conservation easement, held by the State of North Carolina. The site is located approximately 0.5 miles north of East Bend, NC. Specifically, the site is 0.2 mile north on Shady Grove Church Road (SR-1538) from its intersection with Shoals Road (SR-1546).

The North Carolina Ecosystem Enhancement Program (NCEEP) published the Upper Yadkin Pee-Dee River Basin Restoration Priorities (RBRP) in 2009. The project's 14 digit CU (03040101110070, Grassy Creek and Horne Creek) was identified as a Targeted Local Watershed (TLW) in the RBRP. The goals and priorities for the MDCRS are based on the information presented in the Upper Yadkin Pee-Dee River Basin Restoration Priorities: maintaining and enhancing water quality, restoring hydrology, and improving fish and wildlife habitat (NCEEP, 2009). The project will support the following basin priorities:

- Managing stormwater runoff
- Reducing fecal coliform inputs
- Improving/restoring riparian buffers
- Reducing sediment loading
- Improving stream stability
- Reducing nutrient loading
- Excluding livestock and implementing other agricultural BMP's
- Protecting high-resource value waters, including water supply watershed designated waters

The project is also located in the Ararat River Local Watershed Plan (LWP) study area. The Ararat River was designated a LWP Study Area due to poor water quality and aquatic habitat degradation issues, as well as the presence of good candidate sites for stream restoration in rural catchments (NCEEP, 2009). The stressors within the Ararat River LWP are erosion and sedimentation, missing or degraded riparian buffers, stormwater runoff, and nutrient and fecal coliform "hot spots" (NCEEP, 2013).

The goals for the project are to:

- Restore channelized and livestock-impacted streams to stable C and B type channels.
- Restore a forested riparian buffer to provide bank stability, filtration, and shading.

The project goals will be addressed through the following objectives:

- Relocate or stabilize channelized and/or incised streams to connect to a floodplain or floodprone area.
- Install a cross-section sized to the bankfull discharge.
- Create bedform diversity with pools, riffles, and habitat structures
- Fence out livestock to reduce nutrient, bacterial, and sediment impacts from adjacent grazing and farming practices to the project tributaries
- Plant the site with native trees and shrubs and an herbaceous seed mix.

Project construction was completed in December 2019 and project planting was completed in March 2020. The 13,505 linear feet of streams at MDCRS were enhanced and restored by re-meandering the stream and by tying the bankfull elevation to the historic floodplain where feasible. The entire site was planted to

establish a forested riparian buffer. The site was constructed as designed with only minor modifications from the design plan. These modifications generally consisted of slight adjustments in the alignment and spacing of riffles/pools due to bedrock encountered during construction. Several areas of additional bank stabilization were also installed. On February 6, 2020, shortly after construction was completed and before woody stems had been planted, the site received over 6 inches of rain in a 24 hour period. This storm caused significant damage to portions of the site and required repairs to be completed in March 2020. These repairs mainly involved repair of bank erosion through the installation of live lifts, removal of aggradation from the stream channel, and regrading areas of floodplain scour. Approximately 500 cubic yards of topsoil were also brought in and placed on the floodplain in areas of severe floodplain scour.

The monitoring components were installed in March/April 2020. Five automatically recording pressure transducer stream gauges that take a reading every 10 minutes were installed: one each in the upper third of T1A, T5A, and T8A to document flow within those reaches, and two on UTHC to record the occurrence of bankfull events. Cameras were installed in the vicinity of each of the flow gauges and set to record a short video once a day to provide additional verification of flow. Two automatically recording pressure transducer groundwater monitoring gauges were installed within pre-existing wetlands on the site to monitor wetland hydrology and ensure the existing wetlands on the site are not adversely affected by the restoration project. One of these gauges is located in the vicinity of the pre-existing wetland on the left bank of T7 and the other is located within the pre-existing wetland on the right bank of T8. To determine the success of the planted mitigation areas, eighteen 10 m x 10 m permanent vegetation monitoring plots were established. An additional twelve 10 m x 10 m random temporary vegetation monitoring plots are sampled during each monitoring year as well. The locations of the planted stems relative to the origin were recorded within the permanent plots and the species and height of each planted stem were recorded for all plots. Any volunteers found within the plots were grouped into size categories by species, but separate from the planted stems. Twelve permanent photo reference points were established and are taken annually. Thirty-two permanent cross-sections (24 riffle cross-sections and 8 pool cross-sections) were also established and a detailed longitudinal profile of the stream was taken. Wolman pebble counts were performed at all of the riffle cross-sections. The cross-section measurements are repeated in monitoring years 1, 2, 3, 5, and 7, but the longitudinal profile will only be repeated if there are concerns about bed elevation adjustments. Reports will be submitted to DMS each year.

SUCCESS CRITERIA

Vegetative success criteria for the stream mitigation is 260 woody stems/acre after five years, and 210 woody stems/acre after seven years. Trees in each plot must average seven feet in height at Year 5 and ten feet in height at Year 7. Volunteer species must be present for a minimum of two growing seasons and must be a species from the approved planting list to count toward vegetative success. A single species may not account for more than 50% of the required number of stems within any plot.

A minimum of four bankfull events must also be recorded during the monitoring period. All project streams must show a minimum of 30 continuous days of flow within a calendar year (assuming normal precipitation) A “normal” year is based on NRCS climatological data for Yadkin County with the 30th and 70th percentile thresholds as the range of normal, as documented in the USACE Technical Report “Accessing and Using Meteorological Data to Evaluate Wetland Hydrology, April 2000.”

Bank height ratios (BHR) should not exceed 1.2 and the entrenchment ratios (ER) should be 2.2 or greater. BHR and ER at any measured riffle cross-section should not change more than 10% from the previous condition during any given monitoring interval (e.g. no more than 10% between years 1 and 2, 2 and 3, 3 and 5, or 5 and 7). Visual assessments will also be used to identify problem areas.

MONITORING RESULTS

The MY02 vegetation monitoring was conducted between July 20 and 22, 2021. 28 of the 30 vegetation monitoring plots had greater than 260 woody stems/acre. The average stem density across all the surveyed plots is 858 planted stems/acre. Including volunteers, the site averaged 978 stems/acre. A supplemental planting of the wetland located at the top of T3 was completed on October 25, 2021. Due to the prolonged periods of saturation in this area, as well as the rapid growth of the herbaceous vegetation in MY01, the majority of the planted woody stems in this wetland did not survive (as seen in VP6). Thirty one-gallon size containerized trees were planted within this area. Species were chosen that could best tolerate extended periods of saturation, including buttonbush (*Cephalanthus occidentalis*) which was not part of the original planting plan, but which is native to Yadkin County and one of the few commercially available OBL, woody stems that is native to this area. Please see Appendix C – Vegetation Plot Data for a complete list of the species and quantities that were planted. It is believed that these larger stems that are more tolerant of saturated conditions will ensure that this area has adequate woody vegetation to achieve the success criteria.

As documented in the MY01 report, additional heavy precipitation events took place in 2020 after the repair work in March 2020. These events cause isolated areas of bank erosion, the movement of a boulder sill and one step pool structure to begin piping. In July 2021, shortly after the 2021 monitoring fieldwork, these areas, totaling approximately 400 linear feet were repaired by sloping back the eroding banks, reapplying coir matting, and installing new live stakes. The piping step pool was repaired by re-grading the area around the sill to prevent water from bypassing it and the damaged boulder sill was repaired by replacing the boulder that had washed downstream. Please see the Current Conditions Plan View in Appendix B – Visual Assessment Data for more information on where these repairs occurred. The cross-sections were surveyed for MY02 between July 20 and 22, 2021. None of the 32 cross-sections had a bank height ratio greater than 1.2 or an entrenchment ratio less than 2.2. Between MY00 and MY01, some of the pools widened slightly, while a few of the riffles lowered slightly. These changes were a result of the normal settling that occurs after construction, and after the unusually large number of high rainfall events that the site experienced in 2020. These cross-sections remained stable between MY01 and MY02 and did not show signs of continued widening or down cutting. The one exception to this was XS8. This cross-section is in one of the outer bends that was damaged during the heavy rains of 2020. It was repaired in 2021, just before the MY02 cross-section surveys. As part of these repairs, the outer bank was sloped back and so it appears in the survey as if the pool has continued to widen. KCI will continue to monitor this cross-section closely for signs of instability, but it is not anticipated that it will widen further.

During 2021, the stream gauge on UTHC-1 recorded 11 bankfull events, while the stream gauge on UTHC-3 recorded 6 bankfull events. All three of the reaches being monitored for flow demonstrated more than 30 consecutive days of flow during 2021. The gauge on T1A recorded a maximum of 121 consecutive days. The gauge on T5A recorded flow for 322 consecutive days (the entire period of record for 2021) and the gauge on T8A recorded a maximum of 167 consecutive days. The gauge data was further verified by the cameras on site. Based on the video recordings obtained from the cameras, T1A had a maximum of 97 consecutive days of flow, T5A had a maximum of 116 consecutive days of flow, and T8A had a maximum of 180 consecutive days of flow. The differences between the number of days of flow documented by the cameras versus the gauges is largely due to extended periods of time during which the cameras were obscured by vegetation during the growing season and periods of time when the stream flow was at levels too low for the gauges to record.

Overall the site is functioning as designed with no major problem areas or threats to project success identified during MY02.

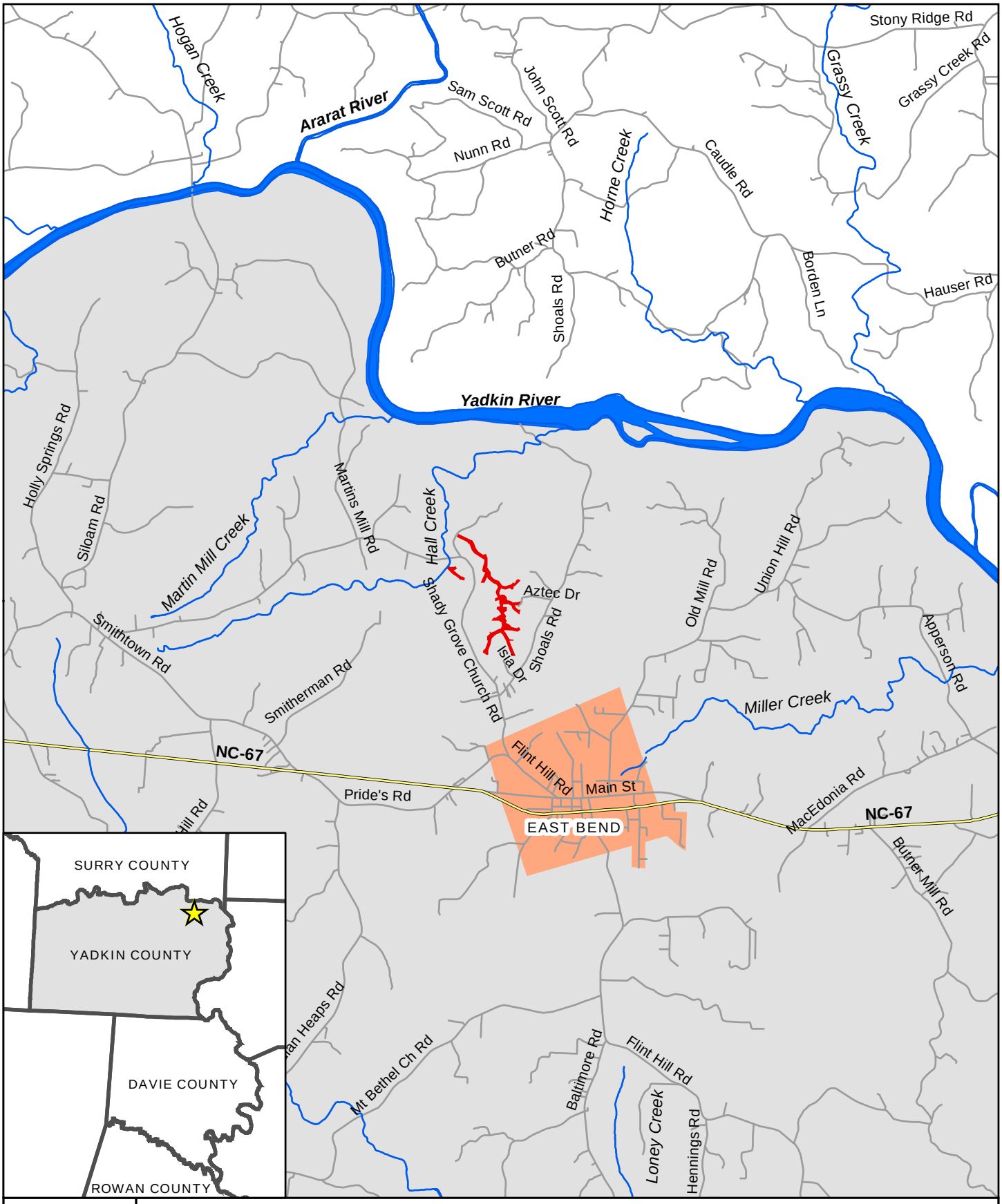
REFERENCES

NCDENR, Ecosystem Enhancement Program. 2009. Upper Yadkin Pee-Dee River Basin Restoration Priorities 2009. Raleigh, NC. https://files.nc.gov/ncdeq/Mitigation%20Services/Watershed_Planning/Yadkin_River_Basin/2009%20Upper%20Yadkin%20RBRP_Final%20Final%2C%2026feb%2709.pdf

NCDEQ, Division of Mitigation Services. June 2017. "As-built Baseline Monitoring Report Format, Data and Content Requirement." https://files.nc.gov/ncdeq/Mitigation%20Services/Document%20Management%20Library/Guidance%20and%20Template%20Documents/6_AB_Baseline__Rep_Templ_June%202017.pdf

NCIRT. October 24, 2016. "Wilmington District Stream and Wetland Compensatory Mitigation Update." https://saw-reg.usace.army.mil/PN/2016/Wilmington-District-Mitigation-Update.pdf

USACE, Sprecher, S. W.; Warne, A. G. 2000. "Accessing and Using Meteorological Data to Evaluate Wetland Hydrology." https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/ADA378910.xhtml



KCI

Figure 1. Vicinity Map, Mill Dam Creek, Yadkin County, NC

Project Easement
Cities and Towns
Streams
Major Rivers
Roads
State Highway

N

0 0.5 1 Miles

APPENDIX A

Background Tables

Table 1. Project Components and Mitigation Credits
Mill Dam Creek Restoration Site, DMS Project #97136

Mitigation Credits

	Stream		Riparian Wetland		Non-riparian Wetland		Buffer		Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE	R	RE		
Linear Feet/Acres	7,166	6,340								
Credits	7,166.000	3,124.666								
TOTAL CREDITS	**10,290.666**									

Project Components

Project Component -or- Reach ID	Stationing/ Location	Existing Footage/ Acreage	Restoration Footage or Acreage	Creditable Footage or Acreage	Restoration Level	Approach (PI, PII etc.)	Mitigation Ratio (X:1)	Mitigation Credits	Notes/Comments
UTHC1 Top	10+00-22+81	1,333	1,281	1,249	R	P2 10+00-11+50, then P1	1	1,249.000	Crossing Exception STA 20+51 – 20+83
UTHC1 Bottom	22+81-27+39	541	457	438	R	P1, then P2 24+50-27+39	1	438.000	Crossing Exception STA 25+72 – 25+91
UTHC2	27+39-42+32	1,494	1,493	1,493	EI	N/A	1.5	995.333	
UTHC3	42+32-55+57	1,411	1,325	1,240	R	P1 except P2 42+32-44+00 and 53+50-55+57	1	1,240.000	Utility Exception STA54+07 – 54+49 Crossing Exception STA 55+14 – 55+57
UTHC4-1	55+57-58+53	1,840	297	297	EI	N/A	1.5	198.000	
UTHC4-2	58+53-63+75		521	521	EII	N/A	2.5	208.400	
UTHC4-3	63+75-68+55		481	419	EI	N/A	1.5	279.333	Crossing Exception STA 63+75 -64+37
UTHC4-4	68+55-73+97		542	497	EII	N/A	2.5	199.800	Utility Exception STA 68+55 – 69+00
T1	100+00-107+51	764	751	734	R	P2 100+00-101+80, then P1	1	734.000	Crossing Exception STA 104+00-104+16
T1A	150+00-157+95	746	795	795	R	P2	1	795.000	

Project Component -or- Reach ID	Stationing/ Location	Existing Footage/ Acreage	Restoration Footage or Acreage	Creditable Footage or Acreage	Restoration Level	Approach (PI, PII etc.)	Mitigation Ratio (X:1)	Mitigation Credits	Notes/Comments
T2-1	200+00-204+98	499	498	498	EII	N/A	2.5	199.200	
T2-2	204+98-207+63	232	265	265	R	P2	1	265.000	
T3	300+00-303+69	378	369	369	R	P1/P2	1	369.000	
T4	400+00-401+51	151	151	151	R	P1	1	151.000	
T5	1000+00-1012+13	1,205	1,213	1,182	EII	N/A	2.5	472.800	Crossing Exception STA 1003+59-1003+90
T5A	1200+00-1200+65	65	65	65	EII	N/A	2.5	26.000	
T5B	1300+00-1304+38	438	438	438	EII	N/A	2.5	175.200	
T6-1	600+00-603+22	325	322	259	EII	N/A	2.5	103.600	Crossing Exception STA 602+59 – 603+22
T6-2	603+22-609+80	621	658	658	R	P1	1	658.000	
T6A-1	650+00-650+60	60	60	60	EII	N/A	2.5	24.000	
T6A-2	650+60-651+61	97	101	101	R	P1	1	101.000	
T7-1	700+00-701+65	165	165	165	EII	N/A	2.5	66.000	
T7-2	701+65-705+13	335	348	348	R	P1	1	348.000	
T8-1	800+00-804+45	445	445	445	EII	N/A	2.5	178.000	
T8-2	804+45-808+94	486	448	426	R	P1	1	426.000	Crossing Exception STA 808+20 – 808+42
T8A	850+00-852+63	258	263	263	R	P1	1	263.000	
T9	900+00-901+29	133	129	129	R	P1, then P2 900+71-901+29	1	129.000	
TOTAL		**14,024**	**13,882**	**13,505**				**10,290.666**	

Component Summation					
Restoration Level	**Stream (linear feet)**	**Riparian Wetlands (Acres)**		**Non-Riparian Wetlands (Acres)**	**Buffer (square feet)**
		Riverine	Non-Riverine		
Restoration	7,166				
Enhancement					
Enhancement I	2,209				
Enhancement II	4,130				
Creation					
Preservation					
High Quality Preservation					

Table 2. Project Activity & Reporting History
Mill Dam Creek Restoration Site, DMS Project #97136

Activity or Report	Data Collection Complete	Actual Completion or Delivery
Mitigation Plan		Dec. 7, 2018
Final Design - Construction Plans		Jan. 14, 2019
Construction Grading Completed		Dec. 12, 2019
Repairs from Storm Damage		March 26, 2020
Planting Completed		March 26, 2020
Baseline Monitoring/Report	April 2020	May 2020
Vegetation Monitoring	*April 24, 2020*	
Stream Survey	*April 16, 2020*	
Invasive Species Treatment		December 2, 2020
Year 1 Monitoring	December 2020	December 2020
Vegetation Monitoring	*October 28, 2020*	
Stream Survey	*December 22, 2020*	
Repairs from Storm Damage		July 23, 2021
Supplemental Planting		October 25, 2021
Year 2 Monitoring	November 2021	December 2021
Vegetation Monitoring	*July 22, 2021*	
Stream Survey	*July 22, 2021*	

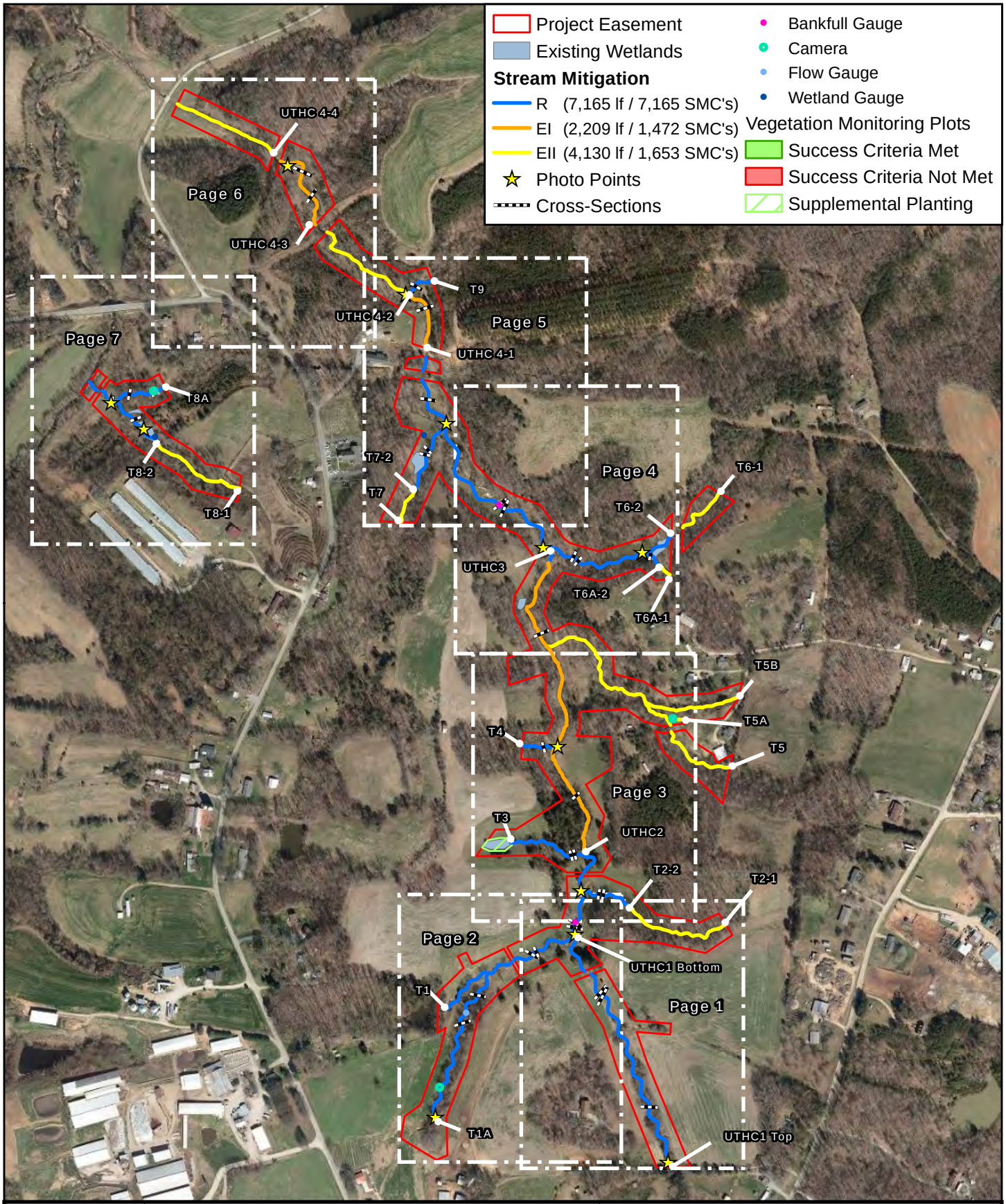
Table 3. Project Contacts **Mill Dam Creek Restoration Site, DMS Project #97136**	
Design Firm	KCI Associates of North Carolina 4505 Falls of Neuse Road Suite 400 Raleigh, NC 27609 Contact: Mr. Tim Morris Phone: (919) 278-2512 Fax: (919) 783-9266
Construction Contractor	Carolina Environmental Contracting, Inc. PO Box 1905 Mount Airy, NC 27030 Contact: Mr. Wayne Taylor Phone: (336)320-3849
Planting Contractor	Shenandoah Habitats 1983 Jefferson Highway Waynesboro, VA 22980 Contact: Mr. David Coleman Phone: (540) 941-0067
Monitoring Performers	
	KCI Associates of North Carolina 4505 Falls of Neuse Road Suite 400 Raleigh, NC 27609 Contact: Mr. Adam Spiller Phone: (919) 278-2514 Fax: (919) 783-9266

Table 4. Project Information Mill Dam Creek Restoration Site, DMS Project #97136			
Project Name	Mill Dam Creek Restoration Site		
County	Yadkin County		
Project Area	40.2 acres		
Project Coordinates (lat. and long.)	36.2390 °N, 80.5201°W		
Planted Acreage (acres of woody stems planted)	29.2 acres		
Project Watershed Summary Information			
Physiographic Province	Piedmont		
River Basin	Yadkin		
USGS Hydrologic Unit 8-digit	030401014	**USGS Hydrologic Unit 14-digit**	03010101110070
DWQ Sub-basin	03-07-02		
Project Drainage Area (acres)	400 acres		
Project Drainage Area Percentage of Impervious Area	3%		
CGIA Land Use Classification	Forest (45%), Pasture/Farmland (39%), Low-density Residential Development (15%), and Roads (1%)		
Existing Reach Summary Information			
Parameters	**All Reaches Combined**		
Length of reach (linear feet)	14,024		
Valley confinement	Partially confined to confined		
Drainage area (acres)	400 acres		
Perennial, Intermittent, Ephemeral	Intermittent – Perennial		
NCDWQ Water Quality Classification	C (Aquatic Life, Secondary Recreation)		
Rosgen Stream Classification (Existing / Proposed)	F4/G4/C4/B4		
Evolutionary trend (Simon)	Stage III		
FEMA classification	Zone AE at confluence of T8 and Hall Creek, otherwise none		
Existing Wetland Summary Information			
Parameters	**WA, WB, WE, WG, WK**	**WC**	**WH, WI , WJ**
Size of Wetland (acres)	0.23	0.10	0.10
Wetland Type	Riparian Non-riverine	Riparian Non-riverine	Riparian Non-riverine
Mapped Soil Series	Fairview	Fairview	Siloam
Drainage class	Well drained	Well drained	Well drained
Soil Hydric Status	Non-Hydric	Non-Hydric	Non-Hydric
Source of Hydrology	Groundwater	Groundwater	Groundwater
Restoration or Enhancement Method	N/A (Preservation)	Areas of erosion to stabilize	N/A (Preservation)

Regulatory Considerations			
Regulation	**Applicable?**	**Resolved?**	**Supporting Documentation**
Waters of the United States – Section 404	Yes	NWP 27	Preliminary JD
Waters of the United States – Section 401	Yes	NWP 27	Preliminary JD
Endangered Species Act	Yes	Yes	USFWS
Historic Preservation Act	No	Yes	NCSHPO
Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA)	No	N/A	N/A
FEMA Floodplain Compliance	No	Yes	N/A
Essential Fisheries Habitat	No	N/A	N/A

APPENDIX B

Visual Assessment Data



Current Conditions Plan View
Mill Dam Creek Restoration Site
DMS Project #97136
Yadkin County, NC
Overview Page

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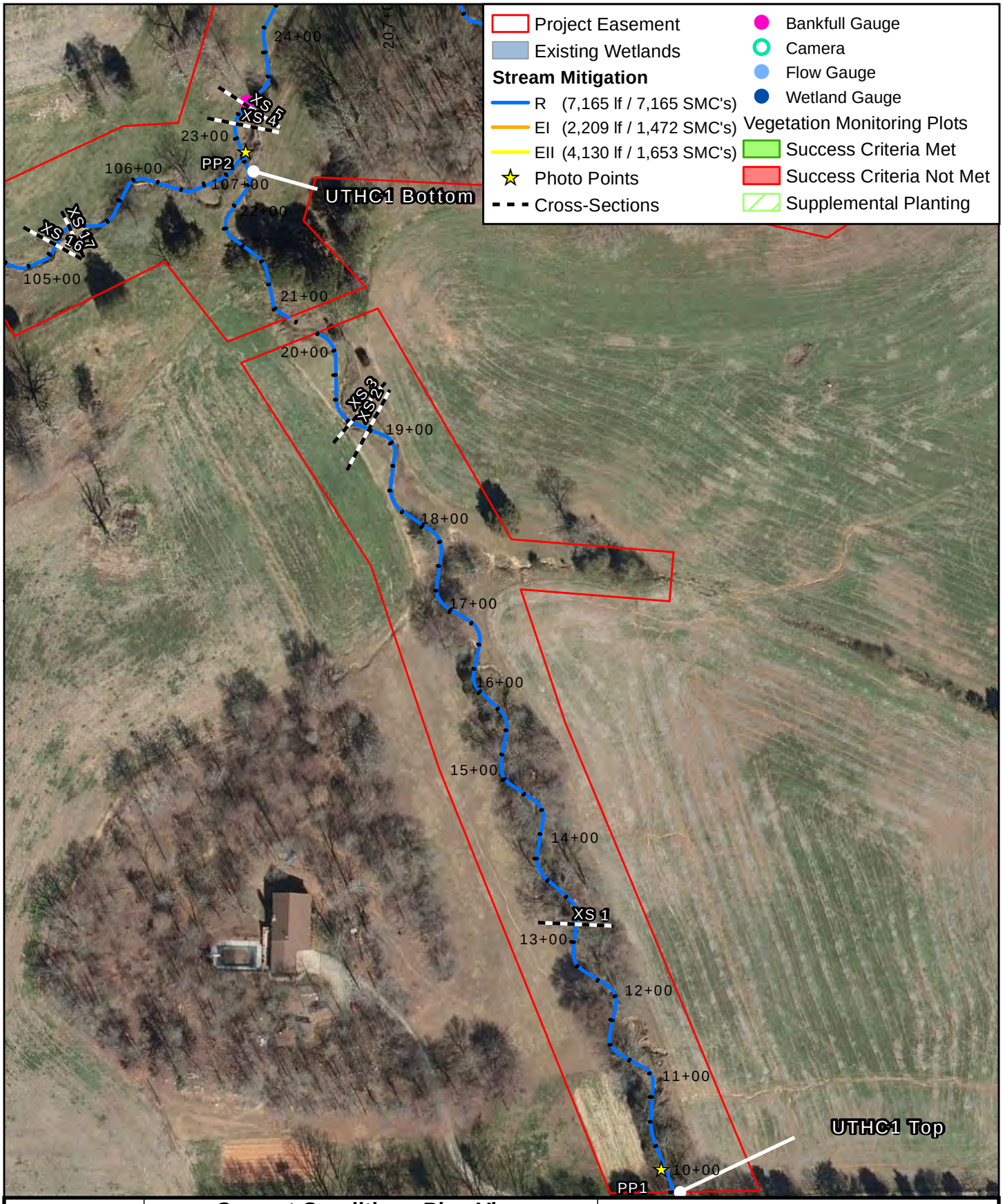
Image Source: NC OneMap Orthoimagery, 2015.



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Current Conditions Plan View
Mill Dam Creek Restoration Site
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Yadkin County, NC
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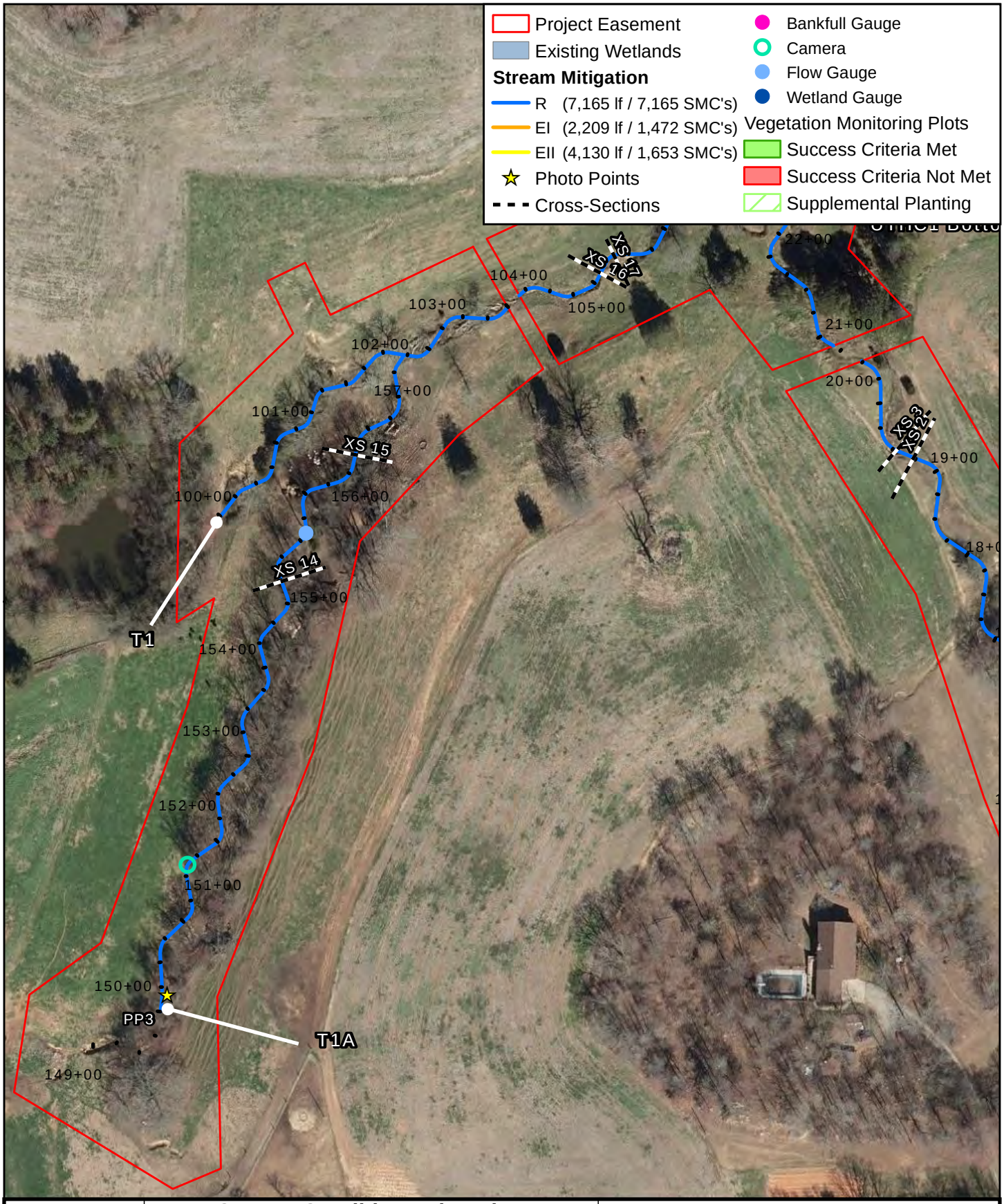

Current Conditions Plan View
Mill Dam Creek Restoration Site
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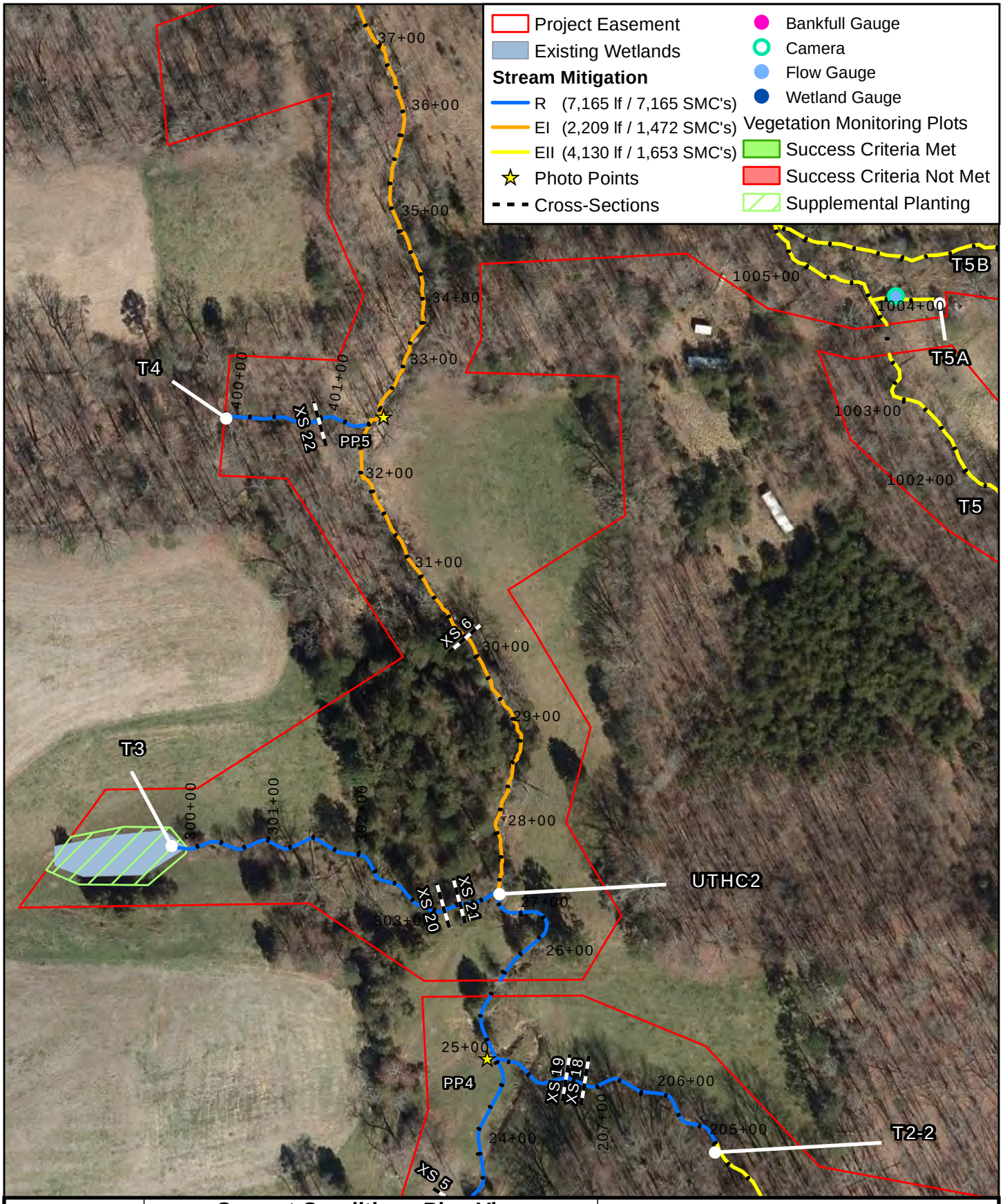

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Current Conditions Plan View
Mill Dam Creek Restoration Site
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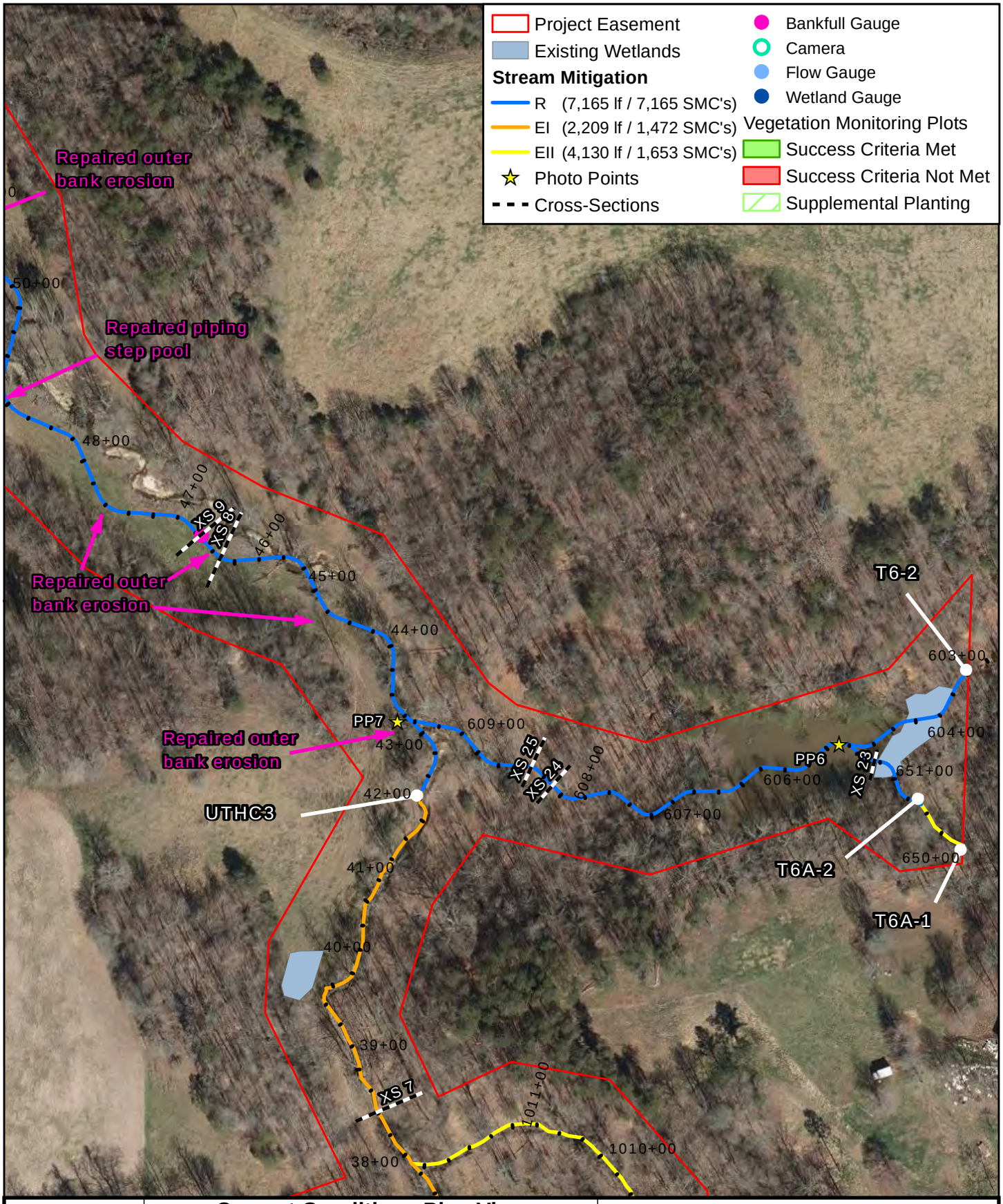

Current Conditions Plan View
Mill Dam Creek Restoration Site
DMS Project #97136
Yadkin County, NC
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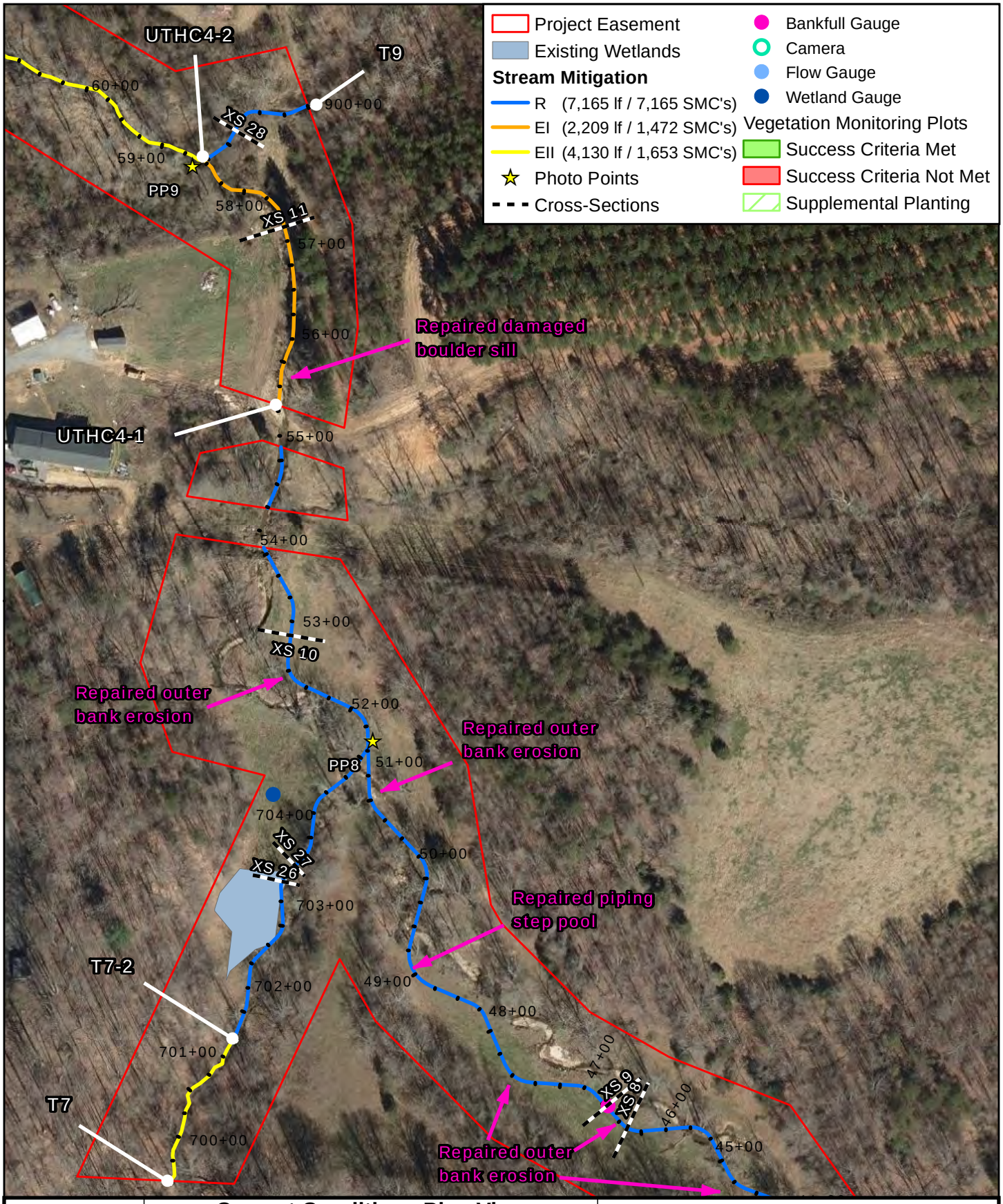

Current Conditions Plan View
Mill Dam Creek Restoration Site
DMS Project #97136
Yadkin County, NC
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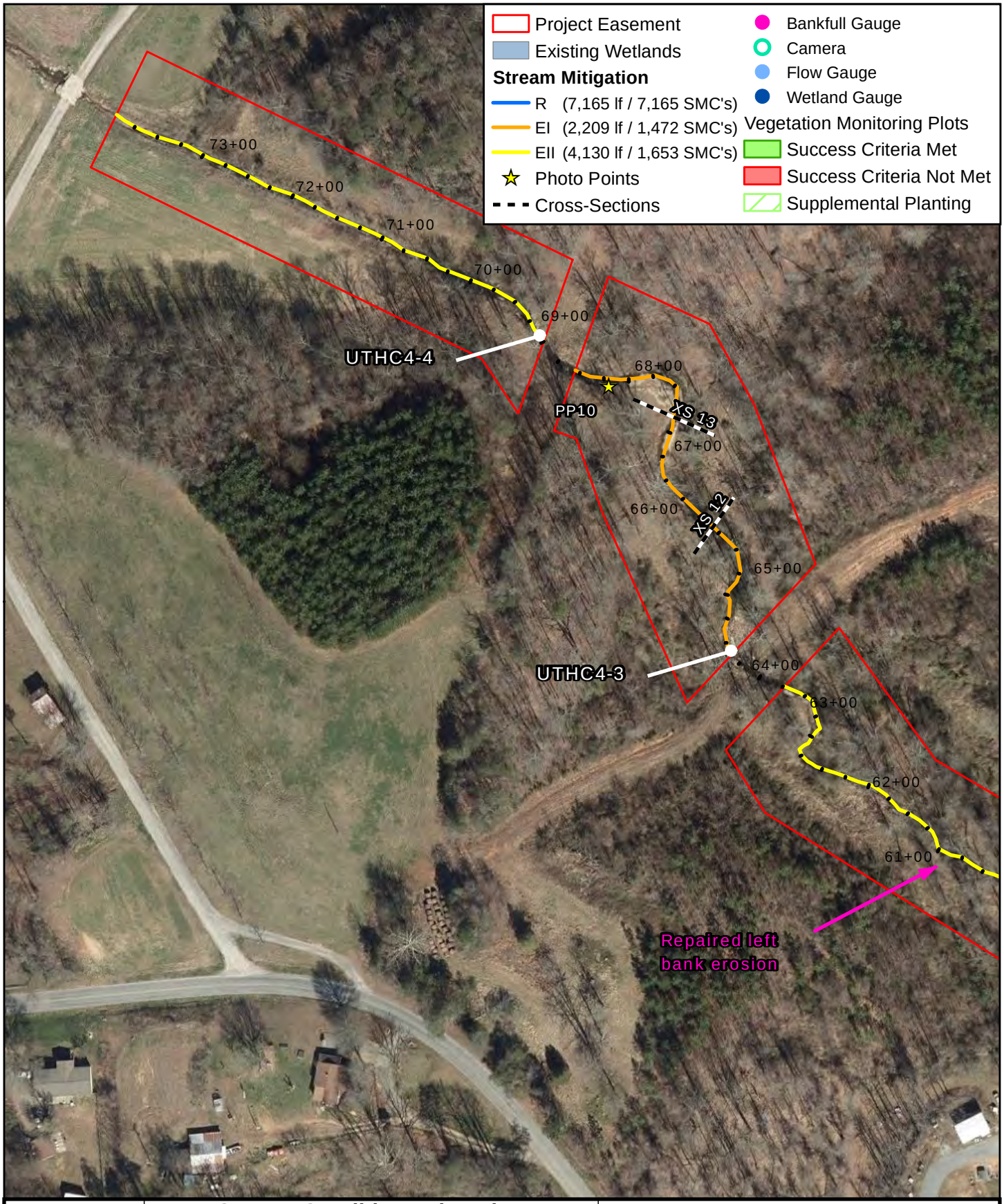

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Current Conditions Plan View
Mill Dam Creek Restoration Site
DMS Project #97136
Yadkin County, NC
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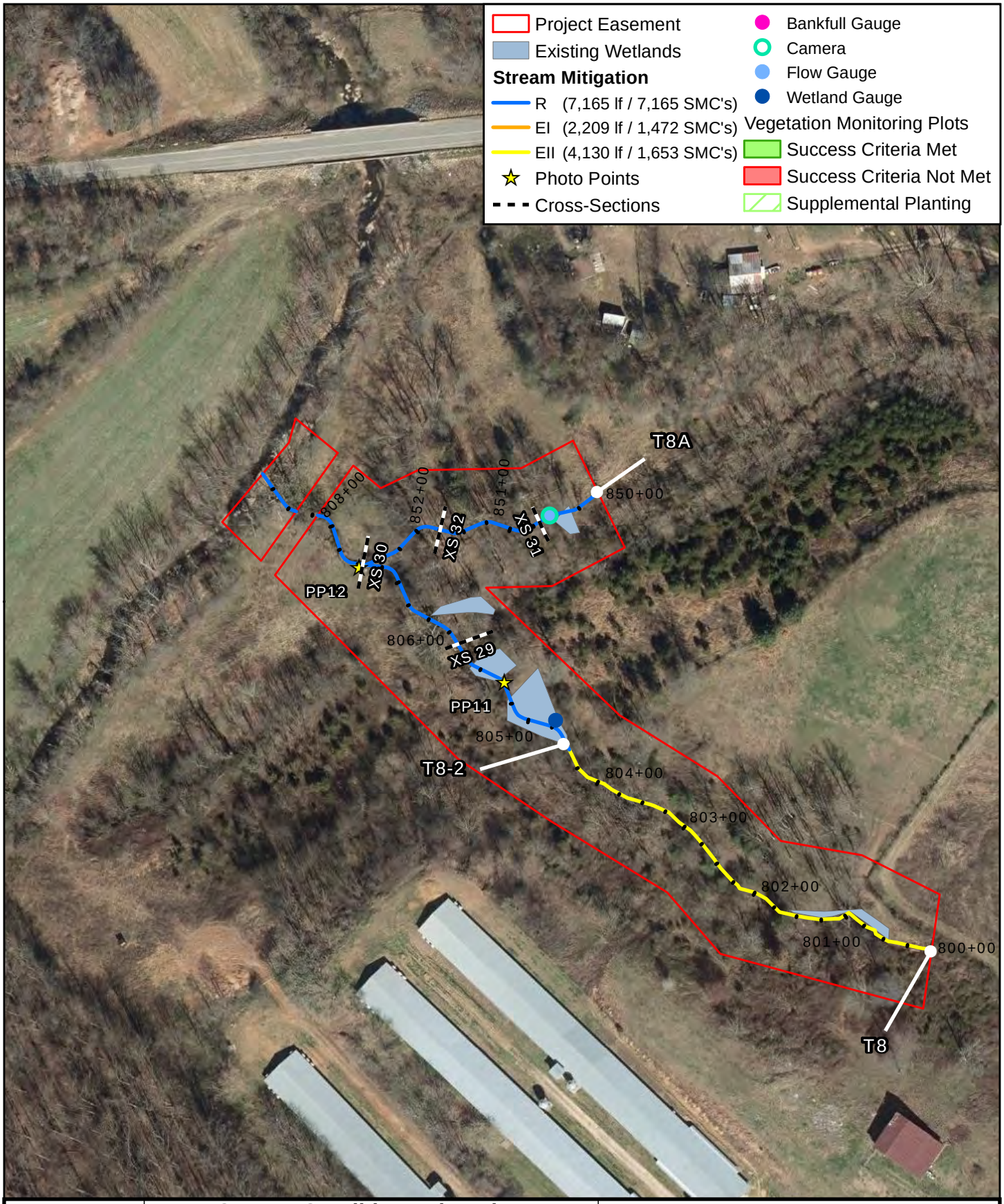

Current Conditions Plan View
Mill Dam Creek Restoration Site
DMS Project #97136
Yadkin County, NC
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N

0 100 200 Feet

Image Source: NC OneMap Orthoimagery, 2015.

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **UTHC1**

Assessed Length **1,739**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. 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	30	30			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	29	29			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	29	29			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	29	29			100%
		2. Thalweg centering at downstream of meander (Glide)	29	29			100%
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	22	22			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	22	22			100%
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	22	22			100%
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	22	22			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%

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **UTHC2**

Assessed Length **1,494**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. 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	8	8			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	8	8			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	8	8			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	8	8			100%
		2. Thalweg centering at downstream of meander (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%
	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%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	0	0			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	0	0			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	0	0			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	0	0			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	0	0			

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **UTHC3**

Assessed Length **1,325**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. 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	18	18			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	17	17			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	17	17			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	17	17			100%
		2. Thalweg centering at downstream of meander (Glide)	17	17			100%
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%
	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%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	8	8			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	8	8			100%
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	8	8			100%
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	8	8			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	8	8			100%

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **UTHC4-1**

Assessed Length **297**

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

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **UTHC4-3**

Assessed Length **419**

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

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T1**

Assessed Length **751**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. 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	16	16			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	16	16			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	16	16			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	16	16			100%
		2. Thalweg centering at downstream of meander (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%
	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%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	8	8			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	8	8			100%
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	8	8			100%
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	8	8			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	8	8			100%

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T1A**

Assessed Length **795**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. 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	16	16			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	16	16			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	16	16			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	16	16			100%
		2. Thalweg centering at downstream of meander (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%
	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%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	11	11			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	11	11			100%
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	11	11			100%
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	11	11			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	11	11			100%

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T2-2**

Assessed Length **265**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. 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	8	8			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	7	7			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	7	7			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	7	7			100%
		2. Thalweg centering at downstream of meander (Glide)	7	7			100%
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%
	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%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	5	5			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	5	5			100%
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	5	5			100%
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	5	5			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	5	5			100%

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T3**

Assessed Length **369**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. 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	13	13			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	12	12			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	12	12			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	12	12			100%
		2. Thalweg centering at downstream of meander (Glide)	12	12			100%
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%
	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%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	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 not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	14	14			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	14	14			100%

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T4**

Assessed Length **151**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%
		2. Degradation - Evidence of downcutting			0	0	100%
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	7	7			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	7	7			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	7	7			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	7	7			100%
		2. Thalweg centering at downstream of meander (Glide)	7	7			100%
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%
	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%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	6	6			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%. (See guidance for this table in EEP monitoring guidance document)	6	6			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	6	6			100%

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T6-2**

Assessed Length **658**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. 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	15	15			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	15	15			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	15	15			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	15	15			100%
		2. Thalweg centering at downstream of meander (Glide)	15	15			100%
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%
	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%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	16	16			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	16	16			100%
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	16	16			100%
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	16	16			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	16	16			100%

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T6A-2**

Assessed Length **101**

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

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T7-2**

Assessed Length **348**

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

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T8-2**

Assessed Length **448**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. 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	10	10			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	10	10			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	10	10			100%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	10	10			100%
		2. Thalweg centering at downstream of meander (Glide)	10	10			100%
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	12	12			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	12	12			100%
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	12	12			100%
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	12	12			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	12	12			100%

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T8A**

Assessed Length **262**

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

Table 5 **Visual Stream Morphology Stability Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project #97136

Reach ID **T9**

Assessed Length **129**

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

Table 6 **Vegetation Condition Assessment** Assesment Date: 11/18/2021

Mill Dam Creek Stream Restoration Site, DMS Project # 97136

Planted Acreage **29.5**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas	Very limited cover of both woody and herbaceous material.	0.1 acres	Pattern and Color	0	0.00	0.0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1 acres	Pattern and Color	0	0.00	0.0%
			Total	0	0.00	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.	0.25 acres	Pattern and Color	0	0.00	0.0%
			Cumulative Total	0	0.00	0.0%
Easement Acreage	**20.6**					
Vegetation Category	**Definitions**	**Mapping Threshold**	**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).	1000 SF	Pattern and Color	0	0.00	0.0%
5. Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale).	none	Pattern and Color	0	0.00	0.0%

Photo Reference Photos

PP1 – MY00 – 4/17/20

PP1 – MY02 – 9/30/21

PP2 – MY00 – 4/17/20

PP2 – MY02 – 9/30/21

PP3 – MY00 – 4/17/20

PP3 – MY02 – 9/30/21

PP4 – MY00 – 4/17/20

PP4 – MY02 – 9/30/21

PP5 – MY00 – 4/17/20

PP5 – MY02 – 9/30/21

PP6 – MY00 – 4/16/20

PP6 – MY02 – 9/30/21

PP7 – MY00 – 4/16/20

PP7 – MY02 – 9/30/21

PP8 – MY00 – 4/16/20

PP8 – MY02 – 9/30/21

PP9 – MY00 – 4/17/20

PP9 – MY02 – 9/30/21

PP10 – MY00 – 4/17/20

PP10 – MY02 – 9/30/21

PP11 – MY00 – 4/16/20

PP11 – MY02 – 9/30/21

PP12 – MY00 – 4/16/20

PP12 – MY02 – 9/30/21

Vegetation Monitoring Plot Photos

Vegetation Plot 1 – MY00 – 4/17/20

Vegetation Plot 1 – MY02 – 7/20/21

Vegetation Plot 2 – MY00 – 4/17/20

Vegetation Plot 2 – MY02 – 7/20/21

Vegetation Plot 3 – MY00 – 4/17/20

Vegetation Plot 3 – MY02 - 7/20/21

Vegetation Plot 4 – MY00 – 4/17/20

Vegetation Plot 4 – MY02 – 7/20/21

Vegetation Plot 5 – MY00 – 4/17/20

Vegetation Plot 05 – MY02 – 7/20/21

Vegetation Plot 6 – MY00 – 4/17/20

Vegetation Plot 6 – MY02 – 7/20/21

Vegetation Plot 7 – MY00 – 4/17/20

Vegetation Plot 7 – MY02 – 7/20/21

Vegetation Plot 8 – MY00 – 4/17/20

Vegetation Plot 8 – MY02 – 7/20/21

Vegetation Plot 9 – MY00 – 4/16/20

Vegetation Plot 9 – MY02 – 7/20/21

Vegetation Plot 10 – MY00 – 4/16/20

Vegetation Plot 10 – MY02 –7/20/21

Vegetation Plot 11 – MY00 – 4/16/20

Vegetation Plot 11 – MY02 – 7/21/21

Vegetation Plot 12 – MY00 – 4/16/20

Vegetation Plot 12 – MY02 – 7/21/21

Vegetation Plot 13 – MY00 – 4/16/20

Vegetation Plot 13 – MY02 – 7/21/21

Vegetation Plot 14 – MY00 – 4/17/20

Vegetation Plot 14 – MY02 – 7/21/21

Vegetation Plot 15 – MY00 – 4/17/20

Vegetation Plot 15 – MY02 – 7/21/21

Vegetation Plot 16 – MY00 – 4/17/20

Vegetation Plot 16 – MY02 – 7/21/21

Vegetation Plot 17 – MY00 – 4/16/20

Vegetation Plot 17 – MY02 – 7/21/21

Vegetation Plot 18 – MY00 – 4/16/20

Vegetation Plot 18 – MY02 – 7/21/21

Vegetation Plot R1 – MY02 – 7/22/21

Vegetation Plot R2 – MY02 – 7/22/21

Vegetation Plot R3 – MY02 – 7/22/21

Vegetation Plot R4 – MY02 – 7/22/21

Vegetation Plot R5 – MY02 – 7/22/21

Vegetation Plot R6 – MY02 – 7/22/21

Vegetation Plot R7 – MY02 – 7/22/21

Vegetation Plot R8 – MY02 – 7/22/21

Vegetation Plot R9 – MY02 – 7/22/21

Vegetation Plot R10 – MY02 – 7/22/21

Vegetation Plot R11 – MY02 – 7/22/21

Vegetation Plot R12 – MY02 – 7/22/21

Repair Area Photos

Damaged boulder sill – 12/18/20

Repaired boulder sill – 7/23/21

STA 46+25 – 12/18/20

STA 46+25 – 7/23/21

STA 61+00 – 12/18/20

STA 61+00 after repair – 7/23/21

APPENDIX C

Vegetation Plot Data

Table 7. Species and Quantity – 2021 Supplemental Planting Mill Dam Creek Restoration Site, DMS Project #97136		
Species	Quantity	Size
Eastern Sycamore (*Platanus occidentalis*)	5	1 gallon
River Birch (*Betula nigra*)	5	1 gallon
Buttonbush (*Cephalanthus occidentalis*)	5	1 gallon
Black Willow (*Salix nigra*)	5	1 gallon
Silky Dogwood (*Cornus amommum*)	5	1 gallon
Willow Oak (*Quercus phellos*)	3	1 gallon
Pin Oak (*Quercus palustris*)	2	1 gallon

Table 8. Stem Count by Plot and Species
Mill Dam Creek Restoration Site, DMS Project #97136

	Current Plot Data (MY02 2021)													
	Plot 01		Plot 02		Plot 03		Plot 04		Plot 05		Plot 06		Plot 07	
Species	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
American Holly (*Ilex opaca*)														
American Hornbeam (*Carpinus caroliniana*)														
American Sycamore (*Platanus occidentalis*)	2	2	5	5	2	2	6	6	2	2			1	1
Black Walnut (*Juglans nigra*)						2								
Black Willow (*Salix nigra*)														
Boxelder (*Acer negundo*)				1										
Eastern Red Cedar (*Juniperus virginiana*)														
Elderberry (*Sambucus canadensis*)														
Northern Red Oak (*Quercus rubra*)														
Oak (*Quercus sp.*)														
Persimmon (*Diospyros virginiana*)		2												
Pin Oak (*Quercus palustris*)													11	11
Red Maple (*Acer rubrum*)														
River Birch (*Betula nigra*)	6	6	5	5	2	2	5	5	4	4			5	5
Southern Red Oak (*Quercus falcata*)														
Swamp Chestnut Oak (*Quercus michauxii*)			1	1	1	1	1	1					1	1
Tulip Poplar (*Liriodendron tulipifera*)	1	1			4	5	2	2	4	4			2	2
White Oak (*Quercus alba*)													1	1
Willow Oak (*Quercus phellos*)	8	8	11	11	8	8	5	5	11	11			3	3
Unknown														
Stem count	17	19	22	23	17	20	19	19	21	21	0	0	24	24
size (ares)	1		1		1		1		1		1		1	
size (ACRES)	0.025		0.025		0.025		0.025		0.025		0.025		0.025	
Species count	4	5	4	5	5	6	5	5	4	4	0	0	7	7
Stems per ACRE	688	769	890	931	688	809	769	769	850	850	0	0	971	971

Table 8. Stem Count by Plot and Species
Mill Dam Creek Restoration Site, DMS Project #97136

	Current Plot Data (MY02 2021)													
	Plot 08		Plot 09		Plot 10		Plot 11		Plot 12		Plot 13		Plot 14	
Species	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
American Holly (*Ilex opaca*)														
American Hornbeam (*Carpinus caroliniana*)														
American Sycamore (*Platanus occidentalis*)	2	7		2	6	8	1	2		1		1	5	5
Black Walnut (*Juglans nigra*)												1		
Black Willow (*Salix nigra*)							1	3			3	3		
Boxelder (*Acer negundo*)				1										
Eastern Red Cedar (*Juniperus virginiana*)														
Elderberry (*Sambucus canadensis*)		1												
Northern Red Oak (*Quercus rubra*)		1												
Oak (*Quercus sp.*)														
Persimmon (*Diospyros virginiana*)											1	1		
Pin Oak (*Quercus palustris*)			2	2			1	1			5	5		
Red Maple (*Acer rubrum*)														
River Birch (*Betula nigra*)	1	1	5	5	7	7					1	1		
Southern Red Oak (*Quercus falcata*)														
Swamp Chestnut Oak (*Quercus michauxii*)														
Tulip Poplar (*Liriodendron tulipifera*)	7	7	1	1			3	3	8	10	4	5	6	6
White Oak (*Quercus alba*)			2	2					4	5	3	3		
Willow Oak (*Quercus phellos*)	8	8	7	7	3	3	5	5	8	8	4	4	20	20
Unknown														
Stem count	18	25	17	20	16	18	11	14	20	24	21	24	31	31
size (ares)	1		1		1		1		1		1		1	
size (ACRES)	0.025		0.025		0.025		0.025		0.025		0.025		0.025	
Species count	4	6	5	7	3	3	5	5	3	4	7	9	3	3
Stems per ACRE	728	1,012	688	809	647	728	445	567	809	971	850	971	1,255	1,255

Table 8. Stem Count by Plot and Species
Mill Dam Creek Restoration Site, DMS Project #97136

	Current Plot Data (MY02 2021)													
	Plot 15		Plot 16		Plot 17		Plot 18		Plot R1		Plot R2		Plot R3	
Species	**Planted**	**Total**	**Planted**	**Total**	**Planted**	**Total**	**Planted**	**Total**	**Planted**	**Total**	**Planted**	**Total**	**Planted**	**Total**
American Holly (*Ilex opaca*)														
American Hornbeam (*Carpinus caroliniana*)														
American Sycamore (*Platanus occidentalis*)	9	9			5	7	11	25	5	5	6	6	11	11
Black Walnut (*Juglans nigra*)		1						2						
Black Willow (*Salix nigra*)						2					12	12		
Boxelder (*Acer negundo*)								3		3		1		
Eastern Red Cedar (*Juniperus virginiana*)														
Elderberry (*Sambucus canadensis*)														
Northern Red Oak (*Quercus rubra*)														
Oak (*Quercus sp.*)														
Persimmon (*Diospyros virginiana*)									5	5				
Pin Oak (*Quercus palustris*)														
Red Maple (*Acer rubrum*)														
River Birch (*Betula nigra*)	8	8	9	9					1	1			1	1
Southern Red Oak (*Quercus falcata*)														
Swamp Chestnut Oak (*Quercus michauxii*)	2	2	1	1					2	2				
Tulip Poplar (*Liriodendron tulipifera*)	3	3	1	1	1	1	5	5	4	4	2	2	2	2
White Oak (*Quercus alba*)														
Willow Oak (*Quercus phellos*)	10	10	10	10	4	4	14	14	3	3	3	3	2	2
Unknown														
Stem count	32	33	21	21	10	14	30	49	20	23	23	24	16	16
size (ares)	1		1		1		1		1		1		1	
size (ACRES)	0.025		0.025		0.025		0.025		0.025		0.025		0.025	
Species count	5	6	4	4	3	4	3	5	6	7	4	5	4	4
Stems per ACRE	1,295	1,335	850	850	405	567	1,214	1,983	809	931	931	971	647	647

Table 8. Stem Count by Plot and Species
Mill Dam Creek Restoration Site, DMS Project #97136

	Current Plot Data (MY02 2021)													
	Plot R4		Plot R5		Plot R6		Plot R7		Plot R8		Plot R9		Plot R10	
Species	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
American Holly (*Ilex opaca*)														
American Hornbeam (*Carpinus caroliniana*)														
American Sycamore (*Platanus occidentalis*)	3	3	2	2	14	14	57	57	2	2	24	24	1	1
Black Walnut (*Juglans nigra*)		2								3				
Black Willow (*Salix nigra*)					16	16			6	6	1	1		
Boxelder (*Acer negundo*)				4		1		1						1
Eastern Red Cedar (*Juniperus virginiana*)														
Elderberry (*Sambucus canadensis*)														
Northern Red Oak (*Quercus rubra*)														
Oak (*Quercus sp.*)														
Persimmon (*Diospyros virginiana*)					1	1								
Pin Oak (*Quercus palustris*)			1	1					2	2				
Red Maple (*Acer rubrum*)														
River Birch (*Betula nigra*)			1	1	4	4	5	5			4	4	2	2
Southern Red Oak (*Quercus falcata*)							1	1						
Swamp Chestnut Oak (*Quercus michauxii*)							2	2	1	1	1	1	1	1
Tulip Poplar (*Liriodendron tulipifera*)	1	1	8	8	2	2	3	3	2	2	1	1	4	4
White Oak (*Quercus alba*)							1	1			1	1		
Willow Oak (*Quercus phellos*)	2	2	5	5	2	2	4	4			9	9	1	1
Unknown														
Stem count	6	8	17	21	39	40	73	74	13	16	41	41	9	10
size (ares)	1		1		1		1		1		1		1	
size (ACRES)	0.025		0.025		0.025		0.025		0.025		0.025		0.025	
Species count	3	4	5	6	6	7	7	8	5	6	7	7	5	6
Stems per ACRE	243	324	688	850	1,578	1,619	2,954	2,995	526	647	1,659	1,659	364	405

Table 8. Stem Count by Plot and Species
Mill Dam Creek Restoration Site, DMS Project #97136

	Current Plot Data (MY02 2021)				Annual Means					
	Plot R11		Plot R12		MY02 (2021)		MY01 (2020)		MY00 (2020)	
Species	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
American Holly (*Ilex opaca*)								1		
American Hornbeam (*Carpinus caroliniana*)								2		
American Sycamore (*Platanus occidentalis*)	4	4	18	18	204	232	159	207	88	88
Black Walnut (*Juglans nigra*)				2		13		6		4
Black Willow (*Salix nigra*)					39	43	14	14	5	5
Boxelder (*Acer negundo*)		17		4		37		20		
Eastern Red Cedar (*Juniperus virginiana*)								1		
Elderberry (*Sambucus canadensis*)						1		2		
Northern Red Oak (*Quercus rubra*)						1		1		1
Oak (*Quercus sp.*)									206	206
Persimmon (*Diospyros virginiana*)									1	1
Pin Oak (*Quercus palustris*)					22	22	20	20		
Red Maple (*Acer rubrum*)								8		
River Birch (*Betula nigra*)					76	76	83	85	107	107
Southern Red Oak (*Quercus falcata*)					1	1		5		
Swamp Chestnut Oak (*Quercus michauxii*)					14	14	15	15	20	20
Tulip Poplar (*Liriodendron tulipifera*)	3	3	4	4	88	92	99	109	172	172
White Oak (*Quercus alba*)					12	13	10	12		
Willow Oak (*Quercus phellos*)	8	8	2	2	180	180	220	223	30	30
Unknown									89	89
Stem count	15	32	24	30	636	725	620	731	718	723
size (ares)	1		1		30		30		30	
size (ACRES)	0.025		0.025		0.741		0.741		0.741	
Species count	3	4	3	5	9	13	8	17	9	11
Stems per ACRE	607	1,295	971	1,214	858	978	836	986	969	975

APPENDIX D

Stream Measurement and Geomorphology Data

Table 9a. UTHC-1 Data Summary **Mill Dam Creek Restoration Site, DMS Project #97136**							
Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle				Min	Mean	Max	n
Bankfull Width (ft)	5.8 – 10.6	9.0 – 10.0	6.5 – 9	6.0	7.6	8.9	3
Floodprone Width (ft)	9.0 – 27.3	13 – 21	50	59.1	64.6	68.3	3
Bankfull Mean Depth (ft)	0.4 – 0.8	1.1 – 1.2	0.5 – 0.7	0.6	0.7	0.7	3
Bankfull Max Depth (ft)	0.4 – 1.2	1.3 – 1.5	0.8 – 1.0	1.0	1.1	1.2	3
Bankfull Cross-Sectional Area (ft^2)	2.8 – 4.5	10.4 – 10.7	3.4 – 6.1	4.5	5.1	5.5	3
Width/Depth Ratio	7.6 – 28.2	8 – 10	12.4 – 13.4	8.2	11.6	14.4	3
Entrenchment Ratio	1.2 – 2.6	1.3 – 2.3	5.6 – 7.7	6.6	8.7	11.0	3
Bank Height Ratio	1.0 – 10.4	1.0	1.0	1.0	1.0	1.0	3
Pattern							
Channel Beltwidth (ft)	*	45	26 – 61	26 – 61			
Radius of Curvature (ft)	*	13 – 42	18 – 27	18 – 27			
Rc:Bankfull width (ft/ft)	*	1.3 – 4.4	2.0 – 4.1	2.0 – 4.1			
Meander Wavelength (ft)	*	93 – 136	54 – 125	54 – 125			
Meander Width Ratio	*	4.5 – 5.0	4.0 – 7.5	4.0 – 7.5			
Riffle Length (ft)	*			4.2	27.2	40.9	30
Riffle Slope (ft/ft)	0.024 – 0.033	0.013 – 0.028	0.018 – 0.046	0.011	0.024	0.059	30
Pool Length (ft)	*			9.8	61.1	161.9	28
Pool Spacing (ft)	*	30 – 59	48 – 70	31.3	59.3	118.6	27
SC% / Sa% / G% / C% / B% /Be%	2/18/51/28/0/0			1/19/51/26/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	1.3/18/37/97/130	Gravel	Gravel	1.3/9.7/31/91/147			
Channel length (ft)	1,874		1,739	1,739			
Drainage Area (acres)	114	Variable	114	114			
Rosgen Classification	F4	B4c	C4	C4			
Sinuosity	1.2	1.2	1.2	1.2			
Water Surface Slope (ft/ft)	0.021	0.013	0.025	0.026			

* : no data shown due to channelization / lack of bed diversity

Table 9b. UTHC3 Baseline Stream Data Summary **Mill Dam Creek Restoration Site, DMS Project #97136**							
Parameter	Pre-Existing Condition	Reference Reach(es) Data (SF)	Design	As-built			
Dimension - Riffle				Min	Mean	Max	n
Bankfull Width (ft)	8.5 – 14.1	9.0 – 10.0	12	10.9	11.3	11.7	2
Floodprone Width (ft)	17.1	13 – 21	68	69.4	72.6	75.8	2
Bankfull Mean Depth (ft)	0.8 – 1.6	1.1 – 1.2	0.9	1.0	1.1	1.1	2
Bankfull Max Depth (ft)	1.1 – 2.0	1.3 – 1.5	1.5	1.4	1.5	1.7	2
Bankfull Cross-Sectional Area (ft^2)	8.5 – 12.5	10.4 – 10.7	11.4	10.6	12.0	13.3	2
Width/Depth Ratio	17	8 – 10	12.7	10.2	10.7	11.1	2
Entrenchment Ratio	1.2	1.3 – 2.3	5.7	5.9	6.5	7.0	2
Bank Height Ratio	3.2	1.0	1.0	1.0	1.0	1.0	2
Pattern							
Channel Beltwidth (ft)	*	45	39 – 57	39 – 57			
Radius of Curvature (ft)	*	13 – 42	24 – 36	24 – 36			
Rc:Bankfull width (ft/ft)	*	1.3 – 4.4	24 – 36	24 – 36			
Meander Wavelength (ft)	*	93 – 136	111 – 173	111 – 173			
Meander Width Ratio	*	4.5 – 5.0	3.3 – 4.8	3.3 – 4.8			
Profile							
Riffle Length (ft)	*			18.2	46.0	85.8	18
Riffle Slope (ft/ft)	0.015	0.013 – 0.028	0.0007 – 0.032	0.003	0.015	0.040	18
Pool Length (ft)	*			15.9	26.6	49.1	17
Pool Spacing (ft)	*	30 – 59	52 – 101	48.8	75.5	113.5	16
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	3/15/57/19/0/6			0/13/48/37/1/0			
d16 / d35 / d50 / d84 / d95 (mm)	2.7/15/26/40/92	Gravel	Gravel	2.5/23/48/125/165			
Channel length (ft)	1,411		1,325	1,325			
Drainage Area (acres)	297	Variable	297	297			
Rosgen Classification	F4	B4c	C4	C4			
Sinuosity	1.2	1.2	1.2	1.2			
Water Surface Slope (ft/ft)	0.014	0.013	0.015	0.015			

* : no data shown due to channelization / lack of bed diversity

Table 9c. T1 Baseline Stream Data Summary **Mill Dam Creek Restoration Site, DMS Project #97136**							
Parameter	Pre-Existing Condition	Reference Reach(es) Data (SF)	Design	As-built			
Dimension – Riffle							
Bankfull Width (ft)	4.1 – 7.5		6.5	6.5			
Floodprone Width (ft)	6.0 – 32.8		35	48.4			
Bankfull Mean Depth (ft)	0.5 – 0.7		0.5	0.6			
Bankfull Max Depth (ft)	0.8 – 1.0		0.8	1.2			
Bankfull Cross-Sectional Area (ft^2)	2.7 – 3.8		3.4	3.9			
Width/Depth Ratio	6.2 – 14.9	12 – 18	12.4	10.9			
Entrenchment Ratio	1.5 – 4.4	2.2+	5.4	7.5			
Bank Height Ratio	1.0 – 4.5	1.0 – 1.1	1.0	1.0			
Pattern							
Channel Beltwidth (ft)	*		23 – 41	23 – 41			
Radius of Curvature (ft)	*		15 – 22	15 – 22			
Rc:Bankfull width (ft/ft)	*		2.2 – 3.4	2.2 – 3.4			
Meander Wavelength (ft)	*		60 – 83	60 – 83			
Meander Width Ratio	*		3.5 – 6.3	3.5 – 6.3			
Profile							
Riffle Length (ft)	*			7.8	22.0	42.2	16
Riffle Slope (ft/ft)	0.019 – 0.028		0.015 – 0.60	0.002	0.022	0.035	16
Pool Length (ft)	*			3.5	12.6	20.1	16
Pool Spacing (ft)	*		25 – 63	24.4	41.3	58.4	15
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	31/21/44/4/1/0			2/15/66/17/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	0.13/0.37/3/38/66	Gravel	Gravel	1.9/8.8/22/67/94			
Channel length (ft)	764		751	751			
Drainage Area (acres)	43	Variable	43	43			
Rosgen Classification	B4, C4, G4	B4c	C4b	C4b			
Sinuosity	1.1	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	0.026	N/A	0.026	0.025			

* : no data shown due to channelization / lack of bed diversity

Table 9d. T1A Baseline Stream Data Summary **Mill Dam Creek Restoration Site, DMS Project #97136**							
Parameter	Pre-Existing Condition	Reference Reach(es) Data (SF)	Design	As-built			
Dimension - Riffle				Min	Mean	Max	n
Bankfull Width (ft)	7.1		5.5	5.4	5.6	5.8	2
Floodprone Width (ft)	7.7		35	44.5	49.4	54.4	2
Bankfull Mean Depth (ft)	0.4		0.5	0.3	0.4	0.4	2
Bankfull Max Depth (ft)	0.5		0.7	0.7	0.7	0.7	2
Bankfull Cross-Sectional Area (ft^2)	2.8		2.5	1.8	2.1	2.3	2
Width/Depth Ratio	18.2	12 – 18	12.1	14.1	15.0	15.9	2
Entrenchment Ratio	1.1	2.2+	6.4	7.7	8.9	10.1	2
Bank Height Ratio	19.6	1.0 – 1.1	1.0	1.0	1.0	1.0	2
Pattern							
Channel Beltwidth (ft)	*		20 – 28	20 – 28			
Radius of Curvature (ft)	*		15 – 22	15 – 22			
Rc:Bankfull width (ft/ft)	*		2.3 – 3.4	2.3 – 3.4			
Meander Wavelength (ft)	*		72 – 84	72 – 84			
Meander Width Ratio	*		3.6 – 5.1	3.6 – 5.1			
Profile							
Riffle Length (ft)				1.4	20.7	51.8	16
Riffle Slope (ft/ft)	0.025		0.020 – 0.062	0.000	0.025	0.046	16
Pool Length (ft)				4.9	14.7	27.2	16
Pool Spacing (ft)	*		32 – 58	32.8	44.7	65.8	15
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	31/51/12/6/0/0			5/19/62/14/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	0.062/0.072/0.13/2.9/71	Gravel	Gravel	0.7/5.8/20/59/99			
Channel length (ft)	746		795	795			
Drainage Area (acres)	29	Variable	29	29			
Rosgen Classification	F4	B4c	C4b	C4b			
Sinuosity	1.1	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	0.022	N/A	0.030	0.030			

* : no data shown due to channelization / lack of bed diversity

Table 9e. T2-2 Baseline Stream Data Summary **Mill Dam Creek Restoration Site, DMS Project #97136**							
Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle							
Bankfull Width (ft)	3.1		4.5	4.7			
Floodprone Width (ft)	4		22	24.1			
Bankfull Mean Depth (ft)	0.5		0.4	0.5			
Bankfull Max Depth (ft)	0.8		0.6	0.9			
Bankfull Cross-Sectional Area (ft^2)	1.5		1.7	2.3			
Width/Depth Ratio	6.3	12 – 18	12.0	9.9			
Entrenchment Ratio	1.3	2.2+	4.9	5.1			
Bank Height Ratio	3.3	1.0 – 1.1	1.0	1.0			
Pattern							
Channel Beltwidth (ft)	*		N/A	N/A			
Radius of Curvature (ft)	*		N/A	N/A			
Rc:Bankfull width (ft/ft)	*		N/A	N/A			
Meander Wavelength (ft)	*		N/A	N/A			
Meander Width Ratio	*		N/A	N/A			
Profile				Min	Mean	Max	n
Riffle Length (ft)				1.6	13.2	40.9	8
Riffle Slope (ft/ft)	0.04		0.024-0.063	0.023	0.049	0.099	8
Pool Length (ft)				3.6	14.8	31.4	7
Pool Spacing (ft)	*		21 – 34	24.1	37.8	55.6	6
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	11/14/63/13/0/0			14/30/27/30/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	0.26/13/21/58/84	Gravel	Gravel	0.1/0.7/6/87/130			
Channel length (ft)	232		265	265			
Drainage Area (acres)	16	Variable	16	16			
Rosgen Classification	G4	B4c	C4b	C4b			
Sinuosity	1.1	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	0.038	N/A	0.042	0.040			

* : no data shown due to channelization / lack of bed diversity

Table 9f. T3 Baseline Stream Data Summary **Mill Dam Creek Restoration Site, DMS Project #97136**							
Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle							
Bankfull Width (ft)	3.5		4.5	4.7			
Floodprone Width (ft)	4.2		18	19.2			
Bankfull Mean Depth (ft)	0.3		0.4	0.4			
Bankfull Max Depth (ft)	0.4		0.6	0.7			
Bankfull Cross-Sectional Area (ft^2)	1.1		1.7	1.9			
Width/Depth Ratio	11.3	12 – 18	12.0	11.6			
Entrenchment Ratio	1.2	2.2+	4.0	4.1			
Bank Height Ratio	3.3	1.0 – 1.1	1.0	1.0			
Pattern							
Channel Beltwidth (ft)	*		N/A	N/A			
Radius of Curvature (ft)	*		N/A	N/A			
Rc:Bankfull width (ft/ft)	*		N/A	N/A			
Meander Wavelength (ft)	*		N/A	N/A			
Meander Width Ratio	*		N/A	N/A			
Profile				Min	Mean	Max	n
Riffle Length (ft)				2.2	13.3	25.7	13
Riffle Slope (ft/ft)	0.058		0.051 – 0.074	0.032	0.058	0.125	13
Pool Length (ft)				3.4	9.5	20.7	12
Pool Spacing (ft)	*		20 – 30	22.8	28.2	46.7	11
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	28/5/38/27/4			6/11/71/13/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	0.062/3.1/25/130/240	Gravel	Gravel	1.7/7.8/28/61/84			
Channel length (ft)	378		369	369			
Drainage Area (acres)	7	Variable	7	7			
Rosgen Classification	G4	B4c	C4b	C4b			
Sinuosity	1.1	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	0.059	N/A	0.059	0.057			

* : no data shown due to channelization / lack of bed diversity

Table 9g. T4 Baseline Stream Data Summary **Mill Dam Creek Restoration Site, DMS Project #97136**							
Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle							
Bankfull Width (ft)	2.5		4.5	4.0			
Floodprone Width (ft)	4.7		16	18.7			
Bankfull Mean Depth (ft)	0.3		0.6	0.5			
Bankfull Max Depth (ft)	0.4		0.6	0.8			
Bankfull Cross-Sectional Area (ft^2)	0.7		1.7	1.9			
Width/Depth Ratio	9.4	12 – 18	12.0	8.3			
Entrenchment Ratio	1.9	2.2+	3.6	4.7			
Bank Height Ratio	6.9	1.0 – 1.1	1.0	1.0			
Pattern							
Channel Beltwidth (ft)	*		N/A	N/A			
Radius of Curvature (ft)	*		N/A	N/A			
Rc:Bankfull width (ft/ft)	*		N/A	N/A			
Meander Wavelength (ft)	*		N/A	N/A			
Meander Width Ratio	*		N/A	N/A			
Profile				Min	Mean	Max	n
Riffle Length (ft)				7.9	13.4	22.2	7
Riffle Slope (ft/ft)	0.1		0.102 – 0.103	0.039	0.11	0.23	7
Pool Length (ft)				3.2	5.4	11.0	7
Pool Spacing (ft)	*		24 – 27	9.5	19.5	26.5	6
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	12/65/13/8/2/0			0/15/77/8/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	0.11/0.16/0.21/4.3/120	Gravel	Gravel	2.2/9.6/15/48/76			
Channel length (ft)	151		151	151			
Drainage Area (acres)	3	Variable	3	3			
Rosgen Classification	B4	B4c	C4b	C4b			
Sinuosity	1.0	1.1 – 1.3	1.0	1.0			
Water Surface Slope (ft/ft)	0.089	N/A	0.113	0.109			

* : no data shown due to channelization / lack of bed diversity

Table 9h. T6-2 Baseline Stream Data Summary
Mill Dam Creek Restoration Site, DMS Project #97136

Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle							
Bankfull Width (ft)	4.4		5.5	5.6			
Floodprone Width (ft)	5.4		24	27.4			
Bankfull Mean Depth (ft)	0.6		0.5	0.5			
Bankfull Max Depth (ft)	0.7		0.7	1.0			
Bankfull Cross-Sectional Area (ft^2)	2.6		2.5	2.6			
Width/Depth Ratio	7.5	12 – 18	12.1	11.9			
Entrenchment Ratio	1.1	2.2+	4.4	4.9			
Bank Height Ratio	4.4	1.0 – 1.1	1.0	1.0			
Pattern							
Channel Beltwidth (ft)	*		N/A	N/A			
Radius of Curvature (ft)	*		N/A	N/A			
Rc:Bankfull width (ft/ft)	*		N/A	N/A			
Meander Wavelength (ft)	*		N/A	N/A			
Meander Width Ratio	*		N/A	N/A			
Profile				Min	Mean	Max	n
Riffle Length (ft)				15.4	25.1	37.9	15
Riffle Slope (ft/ft)	0.02		0.020 – 0.063	0.007	0.033	0.070	15
Pool Length (ft)				5.9	14.1	22.7	15
Pool Spacing (ft)	*		32 – 47	28.8	42.9	50.9	14
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	7/33/60/0/0/0			1/16/53/30/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	0.19/1.6/4.1/13/27	Gravel	Gravel	1.7/16/38/93/140			
Channel length (ft)	621		658	658			
Drainage Area (acres)	29	Variable	29	29			
Rosgen Classification	G4	B4c	C4b	C4b			
Sinuosity	1.0	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	0.041	N/A	0.034	0.037			

* : no data shown due to channelization / lack of bed diversity

Table 9i. T6A-2 Baseline Stream Data Summary Mill Dam Creek Restoration Site, DMS Project #97136							
Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle							
Bankfull Width (ft)	**		4.5	4.4			
Floodprone Width (ft)	**		24	25.3			
Bankfull Mean Depth (ft)	**		0.4	0.4			
Bankfull Max Depth (ft)	**		0.6	0.6			
Bankfull Cross-Sectional Area (ft^2)	**		1.7	1.7			
Width/Depth Ratio	**	12 – 18	12.0	11.0			
Entrenchment Ratio	**	2.2+	5.3	5.8			
Bank Height Ratio	**	1.0 – 1.1	1.0	1.0			
Pattern							
Channel Beltwidth (ft)	**		N/A	N/A			
Radius of Curvature (ft)	**		N/A	N/A			
Rc:Bankfull width (ft/ft)	**		N/A	N/A			
Meander Wavelength (ft)	**		N/A	N/A			
Meander Width Ratio	**		N/A	N/A			
Profile				Min	Mean	Max	n
Riffle Length (ft)	**			9.3	14.8	24.0	3
Riffle Slope (ft/ft)	**		0.087 – 0.099	0.056	0.091	0.118	3
Pool Length (ft)	**			14.2	16.7	19.5	3
Pool Spacing (ft)	**		22 – 23	29.4	30.0	30.6	2
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	**			0/14/70/16/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	**	Gravel	Gravel	2.6/25/36/64/85			
Channel length (ft)	97		101	101			
Drainage Area (acres)	9	Variable	9	9			
Rosgen Classification	**	B4c	C4b	C4b			
Sinuosity	**	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	**	N/A	0.091	0.095			

** Existing conditions are ponded

Table 9j. T7-2 Baseline Stream Data Summary
Mill Dam Creek Restoration Site, DMS Project #97136

Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle							
Bankfull Width (ft)	3.2		6.5	10.1			
Floodprone Width (ft)	4.6		28	47.4			
Bankfull Mean Depth (ft)	0.8		0.5	0.4			
Bankfull Max Depth (ft)	1.1		0.8	1.0			
Bankfull Cross-Sectional Area (ft^2)	2.4		3.4	4.3			
Width/Depth Ratio	4.1	12 – 18	12.4	23.9			
Entrenchment Ratio	1.4	2.2+	4.3	4.7			
Bank Height Ratio	1.7	1.0 – 1.1	1.0	1.0			
Pattern							
Channel Beltwidth (ft)	*		20 – 24	20 – 24			
Radius of Curvature (ft)	*		15 – 22	15 – 22			
Rc:Bankfull width (ft/ft)	*		2.3 – 3.4	2.3 – 3.4			
Meander Wavelength (ft)	*		85 – 88	85 – 88			
Meander Width Ratio	*		3.1 – 3.7	3.1 – 3.7			
Profile				Min	Mean	Max	n
Riffle Length (ft)				4.5	32.4	68.1	6
Riffle Slope (ft/ft)	0.032		0.017 – 0.043	0.015	0.025	0.029	6
Pool Length (ft)				4.9	12.5	19.7	6
Pool Spacing (ft)	*		36 – 57	45.7	54.6	86.6	5
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	3/18/62/16/1/0			0/20/62/17/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	1.2/7.9/22/66/89	Gravel	Gravel	0.8/8.5/17/67/110			
Channel length (ft)	335		348	348			
Drainage Area (acres)	41	Variable	41	41			
Rosgen Classification	G4	B4c	C4b	C4b			
Sinuosity	1.1	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	0.033	N/A	0.024	0.022			

* : no data shown due to channelization / lack of bed diversity

Table 9k. T8-2 Baseline Stream Data Summary
Mill Dam Creek Restoration Site, DMS Project #97136

Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle				Min	Mean	Max	n
Bankfull Width (ft)	3.6		5.5	5.5	5.6	5.7	2
Floodprone Width (ft)	4.1		25	34.8	39.1	43.4	2
Bankfull Mean Depth (ft)	0.7		0.5	0.6	0.6	0.6	2
Bankfull Max Depth (ft)	0.9		0.7	1.0	1.0	1.0	2
Bankfull Cross-Sectional Area (ft^2)	2.4		2.5	3.2	3.3	3.4	2
Width/Depth Ratio	5.5	12 – 18	12.1	9.1	9.6	10.1	2
Entrenchment Ratio	1.1	2.2+	4.4	6.3	7.0	7.6	2
Bank Height Ratio	2.5	1.0 – 1.1	1.0	1.0	1.0	1.0	2
Pattern							
Channel Beltwidth (ft)	*		N/A	N/A			
Radius of Curvature (ft)	*		N/A	N/A			
Rc:Bankfull width (ft/ft)	*		N/A	N/A			
Meander Wavelength (ft)	*		N/A	N/A			
Meander Width Ratio	*		N/A	N/A			
Profile							
Riffle Length (ft)				9.3	23.3	31.9	10
Riffle Slope (ft/ft)	0.041		0.043 – 0.050	0.033	0.048	0.063	10
Pool Length (ft)				7.9	13.4	16.6	10
Pool Spacing (ft)	*		32 - 45	34.1	42.2	53.6	9
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	18/27/40/14/0/0			4/17/52/27/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	0.13/2.2/8.5/81/140	Gravel	Gravel	0.7/14/37/95/135			
Channel length (ft)	486		448	448			
Drainage Area (acres)	21	Variable	21	21			
Rosgen Classification	G4	B4c	C4b	C4b			
Sinuosity	1.1	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	0.044	N/A	0.045	0.048			

* : no data shown due to channelization / lack of bed diversity

Table 9l. T8A Baseline Stream Data Summary
Mill Dam Creek Restoration Site, DMS Project #97136

Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle				Min	Mean	Max	n
Bankfull Width (ft)	3.1		4.5	4.7	5.7	6.6	2
Floodprone Width (ft)	4.1		20	21.6	44.7	67.9	2
Bankfull Mean Depth (ft)	0.3		0.4	0.4	0.5	0.5	2
Bankfull Max Depth (ft)	0.9		0.6	0.9	1.0	1.1	2
Bankfull Cross-Sectional Area (ft^2)	1.0		1.7	2.6	2.7	2.9	2
Width/Depth Ratio	5.5	12 – 18	12.0	8.6	11.9	15.2	2
Entrenchment Ratio	1.1	2.2+	4.4	4.6	7.4	10.3	2
Bank Height Ratio	2.7	1.0 – 1.1	1.0	1.0	1.0	1.0	2
Pattern							
Channel Beltwidth (ft)	*		N/A	N/A			
Radius of Curvature (ft)	*		N/A	N/A			
Rc:Bankfull width (ft/ft)	*		N/A	N/A			
Meander Wavelength (ft)	*		N/A	N/A			
Meander Width Ratio	*		N/A	N/A			
Profile							
Riffle Length (ft)				12.3	22.7	42.7	7
Riffle Slope (ft/ft)	0.044		0.019 – 0.062	0.027	0.053	0.10	7
Pool Length (ft)				6.3	12.4	22.4	6
Pool Spacing (ft)	*		28 – 38	27.7	40.3	66.1	5
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	100/0/0/0/0/0			4/17/54/25/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	0.062/0.062/0.062/0.062/0.062	Gravel	Gravel	1.8/23/32/84/135			
Channel length (ft)	258		262	262			
Drainage Area (acres)	7	Variable	7	7			
Rosgen Classification	G4	B4c	C4b	C4b			
Sinuosity	1.1	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	0.052	N/A	0.044	0.047			

* : no data shown due to channelization / lack of bed diversity

Table 9m. T9 Baseline Stream Data Summary
Mill Dam Creek Restoration Site, DMS Project #97136

Parameter	Pre-Existing Condition	Reference Reach(es) Data	Design	As-built			
Dimension - Riffle							
Bankfull Width (ft)	2.9		5.5	4.1			
Floodprone Width (ft)	5.5		22	29.6			
Bankfull Mean Depth (ft)	0.7		0.5	0.7			
Bankfull Max Depth (ft)	0.9		0.7	0.9			
Bankfull Cross-Sectional Area (ft^2)	2.0		2.5	2.8			
Width/Depth Ratio	4.3	12 – 18	12.1	6.0			
Entrenchment Ratio	1.9	2.2+	4.0	7.2			
Bank Height Ratio	1.7	1.0 – 1.1	1.0	1.0			
Pattern							
Channel Beltwidth (ft)	*		N/A	N/A			
Radius of Curvature (ft)	*		N/A	N/A			
Rc:Bankfull width (ft/ft)	*		N/A	N/A			
Meander Wavelength (ft)	*		N/A	N/A			
Meander Width Ratio	*		N/A	N/A			
Profile				Min	Mean	Max	n
Riffle Length (ft)				10.5	22.8	31.7	4
Riffle Slope (ft/ft)	0.031		0.037	0.033	0.039	0.056	4
Pool Length (ft)				3.9	6.2	7.7	3
Pool Spacing (ft)	*		34 – 36	37.02	39.1	41.1	2
Substrate and Transport Parameters							
SC% / Sa% / G% / C% / B% /Be%	26/66/8/0/0/0			3/7/59/31/0/0			
d16 / d35 / d50 / d84 / d95 (mm)	0.062/0.13/0.15/0.23/3.7	Gravel	Gravel	12/32/42/90/150			
Channel length (ft)	133		129	129			
Drainage Area (acres)	29	Variable	29	29			
Rosgen Classification	B4	B4c	C4b	C4b			
Sinuosity	1.0	1.1 – 1.3	1.1	1.1			
Water Surface Slope (ft/ft)	0.039	N/A	0.042	0.038			

* : no data shown due to channelization / lack of bed diversity

Table 10. Cross Section Dimensional Morphology Summary
Mill Dam Creek Restoration Site, DMS Project #97136

Dimension and Substrate	Cross-Section 1 (Riffle) Station 13+50, UTHC-1							Cross-Section 2 (Riffle) Station 19+25, UTHC-1							Cross-Section 3 (Pool) Station 19+50, UTHC-1						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	948.8	948.8	948.9					931.0	930.9	930.7					930.3	930.1	930.0				
Bankfull Width (ft)	6.0	6.6	6.1					8.0	7.0	7.8					8.4	7.8	8.2				
Floodprone Width (ft)	66.3	66.6	67.4					68.3	70.7	69.6					---	---	---				
Bankfull Mean Depth (ft)	0.7	0.7	0.7					0.7	0.8	0.7					0.9	0.9	0.9				
Bankfull Max Depth (ft)	1.2	1.2	1.3					1.2	1.4	1.3					1.7	1.7	1.7				
Cross-Sectional Area (ft2) based on AB BKF area	4.5	4.5	4.5					5.3	5.3	5.3					7.4	7.4	7.4				
Cross-Sectional Area (ft2) based on AB BKF elevation	4.5	4.4	3.8					5.3	6.1	8.3					7.4	9.5	10.1				
Bankfull Width/Depth Ratio	8.2	9.6	8.3					12.1	9.2	11.6					---	---	---				
Bankfull Entrenchment Ratio	11.0	10.1	11.0					8.6	10.1	8.9					---	---	---				
Bankfull Bank Height Ratio	1.0	1.0	1.0					1.0	0.9	0.9					---	---	---				
d50 (mm)	48	48	37.0					24	40	22.0					---	---	---				
	Cross-Section 4 (Pool) Station 23+17, UTHC-1							Cross-Section 5 (Riffle) Station 23+32, UTHC-1							Cross-Section 6 (Riffle) Station 30+20, UTHC-2						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	923.0	922.9	923.0					922.8	922.9	922.9					908.7	908.7	908.7				
Bankfull Width (ft)	13.1	12.1	12.0					8.9	8.6	9.6					22.6	22.8	23.0				
Floodprone Width (ft)	---	---	---					59.1	57.6	57.9					43.0	43.0	41.1				
Bankfull Mean Depth (ft)	1.2	1.3	1.3					0.6	0.6	0.6					2.5	2.4	2.4				
Bankfull Max Depth (ft)	2.2	2.4	2.3					1.0	0.9	0.9					3.7	3.6	3.7				
Cross-Sectional Area (ft2) based on AB BKF area	15.4	15.4	15.4					5.5	5.5	5.5					55.5	55.5	55.5				
Cross-Sectional Area (ft2) based on AB BKF elevation	15.4	16.8	16.6					5.5	4.9	4.7					55.5	55.9	54.9				
Bankfull Width/Depth Ratio	---	---	---					14.4	13.2	16.5					9.2	9.3	9.5				
Bankfull Entrenchment Ratio	---	---	---					6.6	6.7	6.0					1.9	1.9	1.8				
Bankfull Bank Height Ratio	---	---	---					1.0	0.8	0.9					1.0	1.0	1.0				
d50 (mm)	---	---	---					21	38	58					19	31	33.0				
	Cross-Section 7 (Riffle) Station 38+52, UTHC-2							Cross-Section 8 (Pool) Station 46+20, UTHC-3							Cross-Section 9 (Riffle) Station 46+48, UTHC-3						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	883.7	883.7	883.8					871.2	871.2	870.3					871.0	870.9	871.0				
Bankfull Width (ft)	12.9	11.8	11.6					10.4	10.4	10.9					10.9	11.2	11.9				
Floodprone Width (ft)	37.6	38.4	37.6					---	---	---					75.8	76.1	76.0				
Bankfull Mean Depth (ft)	1.3	1.4	1.4					2.0	2.0	1.9					1.0	1.0	0.9				
Bankfull Max Depth (ft)	2.0	2.2	2.1					3.8	3.8	2.8					1.4	1.6	1.6				
Cross-Sectional Area (ft2) based on AB BKF area	16.7	16.7	16.7					20.8	20.8	20.8					10.6	10.6	10.6				
Cross-Sectional Area (ft2) based on AB BKF elevation	16.7	16.6	15.8					20.8	20.8	31.9					10.6	11.4	10.9				
Bankfull Width/Depth Ratio	9.9	8.3	8.0					---	---	---					11.1	11.7	13.2				
Bankfull Entrenchment Ratio	2.9	3.3	3.3					---	---	---					7.0	6.8	6.4				
Bankfull Bank Height Ratio	1.0	1.0	1.0					---	---	---					1.0	1.0	1.0				
d50 (mm)	19	55	66					---	---	---					50	64	58				

Table 10. Cross Section Dimensional Morphology Summary
Mill Dam Creek Restoration Site, DMS Project #97136

Dimension and Substrate	Cross-Section 10 (Riffle) Station 53+10, UTHC-3							Cross-Section 11 (Riffle) Station 57+40, UTHC-4							Cross-Section 12 (Riffle) Station 65+80, UTHC-6						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	861.6	861.7	861.8					853.8	853.9	853.8					845.4	845.4	845.4				
Bankfull Width (ft)	11.7	14.0	11.5					11.9	12.1	12.7					17.6	19.0	20.0				
Floodprone Width (ft)	69.4	69.5	69.3					43.2	43.8	44.2					30.7	17.7	19.8				
Bankfull Mean Depth (ft)	1.1	1.0	1.2					1.4	1.4	1.4					1.7	1.6	1.5				
Bankfull Max Depth (ft)	1.7	1.7	1.8					2.2	2.3	2.4					2.8	2.6	2.6				
Cross-Sectional Area (ft2) based on AB BKF area	13.3	13.3	13.3					17.3	17.3	17.3					30.2	29.7	30.2				
Cross-Sectional Area (ft2) based on AB BKF elevation	13.3	12.1	10.9					17.3	16.0	17.2					30.2	29.7	28.9				
Bankfull Width/Depth Ratio	10.2	14.7	9.9					8.2	8.5	9.4					10.3	12.2	13.2				
Bankfull Entrenchment Ratio	5.9	5.0	6.0					3.6	3.6	3.5					1.7	0.9	1.0				
Bankfull Bank Height Ratio	1.0	1.0	0.9					1.1	1.0	1.0					3.2	1.0	0.9				
d50 (mm)	45	51	47					19	72	52					20	65	39				
	Cross-Section 13 (Riffle) Station 67+20, UTHC-6							Cross-Section 14 (Riffle) Station 155+00, T1A							Cross-Section 15 (Riffle) Station 156+20, T1A						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	847.4	847.2	847.2					943.6	943.6	943.6					938.9	939.1	939.0				
Bankfull Width (ft)	24.9	27.3	27.2					5.4	4.8	4.7					5.8	5.5	6.1				
Floodprone Width (ft)	67.7	68.1	68.8					54.4	54.3	54.7					44.5	46.4	46.4				
Bankfull Mean Depth (ft)	1.6	1.4	1.4					0.3	0.4	0.4					0.4	0.4	0.4				
Bankfull Max Depth (ft)	2.6	3.2	3.1					0.7	0.8	0.7					0.7	0.7	0.7				
Cross-Sectional Area (ft2) based on AB BKF area	38.7	38.7	38.7					1.8	1.8	1.8					2.3	2.3	2.3				
Cross-Sectional Area (ft2) based on AB BKF elevation	38.7	42.1	42.3					1.8	1.9	1.8					2.3	1.7	1.9				
Bankfull Width/Depth Ratio	16.0	19.3	19.1					15.9	12.5	12.4					14.1	12.9	15.6				
Bankfull Entrenchment Ratio	2.7	2.5	2.5					10.1	11.4	11.5					7.7	8.4	7.7				
Bankfull Bank Height Ratio	1.0	0.9	1.1					1.0	1.0	0.9					1.0	0.8	1.0				
d50 (mm)	21	37	47					24	29	32					16	19	48				
	Cross-Section 16 (Riffle) Station 104+80, T1							Cross-Section 17 (Pool) Station 105+10, T1							Cross-Section 18 (Riffle) Station 206+60, T2						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	929.2	929.2	929.2					928.4	928.4	928.4					923.4	923.4	923.4				
Bankfull Width (ft)	6.5	8.6	7.0					8.7	7.8	8.4					4.7	5.8	5.9				
Floodprone Width (ft)	48.4	49.6	47.7					---	---	---					24.1	24.6	24.5				
Bankfull Mean Depth (ft)	0.6	0.4	0.6					1.0	1.1	1.0					0.5	0.4	0.4				
Bankfull Max Depth (ft)	1.2	1.3	1.0					2.3	2.1	2.0					0.9	0.9	0.9				
Cross-Sectional Area (ft2) based on AB BKF area	3.9	3.9	3.9					8.3	8.3	8.3					2.3	2.3	2.3				
Cross-Sectional Area (ft2) based on AB BKF elevation	3.9	3.7	3.4					8.3	8.4	7.7					2.3	1.9	1.9				
Bankfull Width/Depth Ratio	10.9	19.3	12.6					---	---	---					9.9	14.7	15.6				
Bankfull Entrenchment Ratio	7.5	5.7	6.8					---	---	---					5.1	4.3	4.1				
Bankfull Bank Height Ratio	1.0	0.9	0.9					---	---	---					1.0	0.8	1.0				
d50 (mm)	22	27	9.4					---	---	---					6.4	69	21				

Table 10. Cross Section Dimensional Morphology Summary
Mill Dam Creek Restoration Site, DMS Project #97136

Dimension and Substrate	Cross-Section 19 (Pool) Station 206+80, T2							Cross-Section 20 (Riffle) Station 302+80, T3							Cross-Section 21 (Pool) Station 303+30 T3						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	922.6	922.6	922.7					917.7	917.8	917.7					916.6	916.6	916.6				
Bankfull Width (ft)	6.7	6.6	6.2					4.7	4.8	5.1					7.8	7.2	6.8				
Floodprone Width (ft)	---	---	---					19.2	19.0	18.9					---	---	---				
Bankfull Mean Depth (ft)	0.8	0.8	0.9					0.4	0.4	0.4					1.0	1.1	1.1				
Bankfull Max Depth (ft)	1.7	1.9	1.8					0.7	0.7	0.6					1.9	1.8	1.7				
Cross-Sectional Area (ft2) based on AB BKF area	5.6	5.6	5.7					1.9	1.9	1.9					7.7	7.7	7.3				
Cross-Sectional Area (ft2) based on AB BKF elevation	5.6	5.2	5.2					1.9	1.3	2.0					7.7	8.1	7.4				
Bankfull Width/Depth Ratio	---	---	---					11.6	12.3	13.6					---	---	---				
Bankfull Entrenchment Ratio	---	---	---					4.1	3.9	3.7					---	---	---				
Bankfull Bank Height Ratio	---	---	---					1.0	1.0	0.9					---	---	---				
d50 (mm)	---	---	---					28	26	20					---	---	---				
	Cross-Section 22 (Riffle) Station 400+90, T4							Cross-Section 23 (Riffle) Station 651+25, T6A							Cross-Section 24 (Riffle) Station 608+15, T6						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	906.2	906.2	906.3					894.3	894.3	894.6					877.9	878.4	878.4				
Bankfull Width (ft)	4.0	4.4	8.7					4.4	3.5	3.2					5.6	3.8	3.5				
Floodprone Width (ft)	18.7	19.2	19.3					25.3	29.8	32.0					27.4	43.8	46.5				
Bankfull Mean Depth (ft)	0.5	0.4	0.2					0.4	0.5	0.5					0.5	0.7	0.8				
Bankfull Max Depth (ft)	0.8	0.9	0.8					0.6	0.9	1.1					1.0	1.0	1.0				
Cross-Sectional Area (ft2) based on AB BKF area	1.9	1.9	1.9					1.7	1.7	1.7					2.6	2.6	2.6				
Cross-Sectional Area (ft2) based on AB BKF elevation	1.9	1.9	0.9					1.7	1.8	1.1					2.6	0.8	0.9				
Bankfull Width/Depth Ratio	8.3	10.0	38.7					11.0	7.1	5.9					11.9	5.5	4.6				
Bankfull Entrenchment Ratio	4.7	4.4	2.2					5.8	8.5	10.0					4.9	11.6	13.4				
Bankfull Bank Height Ratio	1.0	0.5	0.9					1.0	1.1	1.0					1.0	0.6	0.7				
d50 (mm)	15	12	15					36	35	32					38	15	12				
	Cross-Section 25 (Pool) Station 608+40, T6							Cross-Section 26 (Pool) Station 703+40, T7							Cross-Section 27 (Riffle) Station 703+70, T7						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	877.6	877.7	878.1					868.2	868.0	868.1					867.5	867.6	867.8				
Bankfull Width (ft)	8.4	5.1	6.3					7.2	6.0	6.2					10.1	7.3	5.7				
Floodprone Width (ft)	---	---	---					---	---	---					47.4	47.0	44.0				
Bankfull Mean Depth (ft)	0.6	1.0	0.8					0.6	0.8	0.7					0.4	0.6	0.8				
Bankfull Max Depth (ft)	1.1	1.6	1.7					1.2	1.4	1.3					1.0	1.0	1.2				
Cross-Sectional Area (ft2) based on AB BKF area	5.1	5.1	5.1					4.6	4.6	4.6					4.3	4.3	4.3				
Cross-Sectional Area (ft2) based on AB BKF elevation	5.1	4.4	2.6					4.6	5.8	5.1					4.3	3.5	2.8				
Bankfull Width/Depth Ratio	---	---	---					---	---	---					23.9	12.4	7.5				
Bankfull Entrenchment Ratio	---	---	---					---	---	---					4.7	6.5	7.8				
Bankfull Bank Height Ratio	---	---	---					---	---	---					1.0	0.9	0.9				
d50 (mm)	---	---	---					---	---						17	22	28				

Table 10. Cross Section Dimensional Morphology Summary
Mill Dam Creek Restoration Site, DMS Project #97136

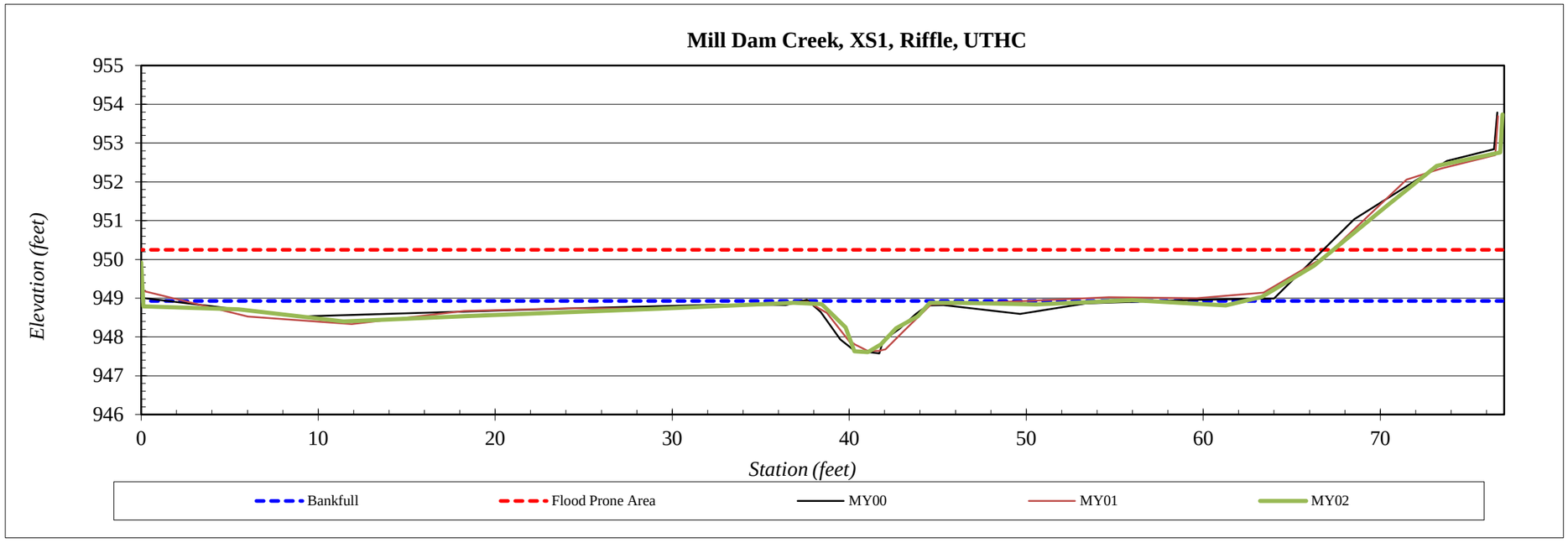
Dimension and Substrate	Cross-Section 28 (Riffle) Station 900+80, T9							Cross-Section 29 (Riffle) Station 806+10, T8							Cross-Section 30 (Riffle) Station 807+45, T8						
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07	
Bankfull Elevation (ft) based on AB BKF area	853.0	853.3	853.3					849.8	849.9	850.0					842.8	842.8	842.9				
Bankfull Width (ft)	4.1	4.7	5.3					5.5	5.5	5.4					5.7	5.8	7.1				
Floodprone Width (ft)	29.6	31.9	31.6					34.8	43.8	40.6					43.4	42.0	42.5				
Bankfull Mean Depth (ft)	0.7	0.6	0.5					0.6	0.6	0.6					0.6	0.6	0.5				
Bankfull Max Depth (ft)	0.9	1.2	1.1					1.0	1.2	1.1					1.0	1.0	1.1				
Cross-Sectional Area (ft2) based on AB BKF area	2.8	2.8	2.8					3.4	3.4	3.4					3.2	3.2	3.2				
Cross-Sectional Area (ft2) based on AB BKF elevation	2.8	1.5	1.5					3.4	2.9	2.6					3.2	3.4	3.0				
Bankfull Width/Depth Ratio	6.0	7.9	9.9					9.1	9.0	8.5					10.1	10.5	15.5				
Bankfull Entrenchment Ratio	7.2	6.7	6.0					6.3	7.9	7.6					7.6	7.2	6.0				
Bankfull Bank Height Ratio	1.0	1.0	0.8					1.0	0.9	0.9					1.0	1.0	1.0				
d50 (mm)	42	6.7	9.3					36	68	83					37	16	55				
	Cross-Section 31 (Riffle) Station 850+60, T8A							Cross-Section 32 (Riffle) Station 851+75, T8A													
	MY00	MY01	MY02	MY03	MY05	MY07		MY00	MY01	MY02	MY03	MY05	MY07								
Bankfull Elevation (ft) based on AB BKF area	850.8	850.9	850.8					845.8	845.6	845.7											
Bankfull Width (ft)	4.7	5.2	5.7					4.8	4.1	4.5											
Floodprone Width (ft)	21.6	21.8	22.0					49.3	49.4	49.3											
Bankfull Mean Depth (ft)	0.5	0.5	0.5					0.4	0.5	0.5											
Bankfull Max Depth (ft)	1.1	1.1	1.2					0.9	1.0	1.0											
Cross-Sectional Area (ft2) based on AB BKF area	2.6	2.6	2.6					2.1	2.1	2.1											
Cross-Sectional Area (ft2) based on AB BKF elevation	2.6	2.3	2.6					2.1	2.8	2.5											
Bankfull Width/Depth Ratio	8.6	10.7	12.6					11.4	8.2	10.0											
Bankfull Entrenchment Ratio	4.6	4.2	3.9					10.2	12.0	10.9											
Bankfull Bank Height Ratio	1.0	1.0	1.0					1.0	1.2	1.0											
d50 (mm)	54	5	6.6					10	54	37											

Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS1
Drainage Area (sq mi):	0.18
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	949.62
0.1	948.48
5.5	948.41
11.4	948.10
18.7	948.24
29.3	948.43
36.9	948.58
38.4	948.55
39.8	947.94
40.3	947.33
41.1	947.31
41.8	947.51
42.6	947.92
43.9	948.24
44.6	948.58
46.1	948.58
50.6	948.53
56.0	948.65
61.3	948.51
63.3	948.73
66.3	949.53
70.4	951.09
73.2	952.11
76.8	952.45
76.9	953.44

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	948.93
Bankfull Cross-Sectional Area:	4.5
Total Cross-Sectional Area:	3.8
Bankfull Width:	6.1
Flood Prone Area Elevation:	950.25
Flood Prone Width:	67.4
Max Depth at Bankfull:	1.3
Mean Depth at Bankfull:	0.7
W / D Ratio:	8.3
Entrenchment Ratio:	11.0
Bank Height Ratio:	1.0
Thalweg Elevation:	947.61

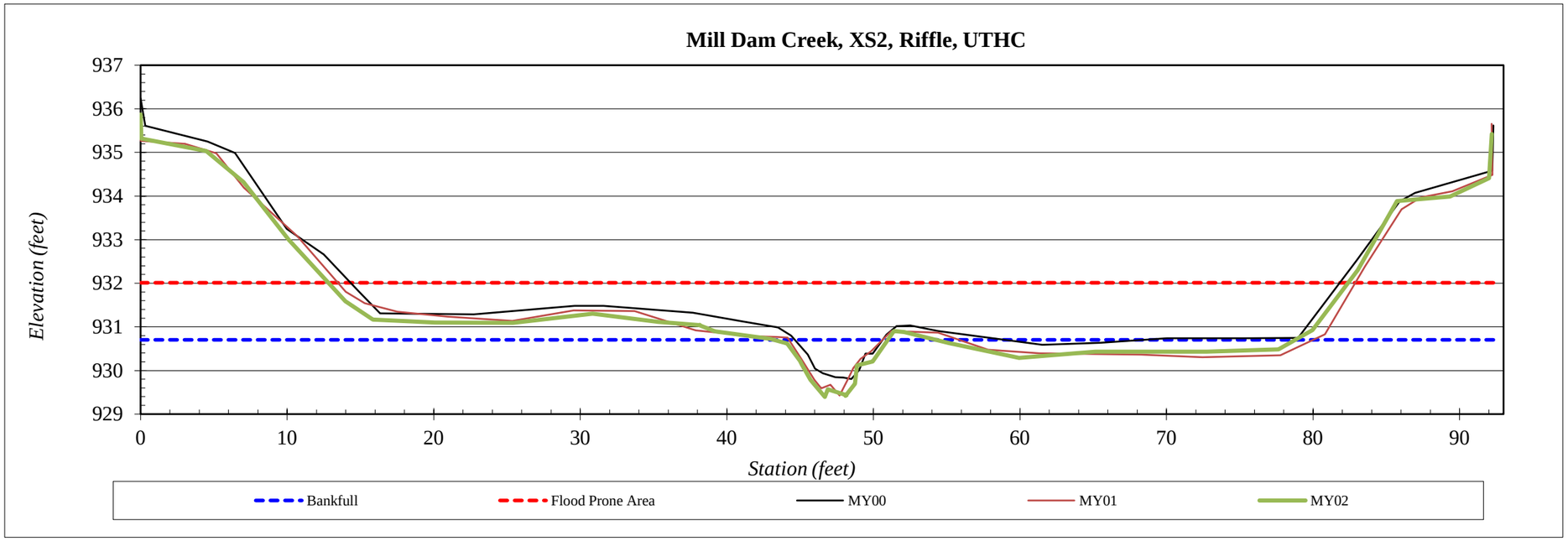


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS2
Drainage Area (sq mi):	0.18
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation	Station	Elevation
0.0	935.87	85.7	933.89
0.1	935.32	89.3	933.99
4.5	935.03	92.0	934.41
7.0	934.32	92.2	935.42
10.1	933.01		
14.0	931.59		
15.9	931.17		
20.1	931.10		
25.4	931.09		
30.8	931.30		
35.3	931.11		
38.2	931.04		
38.2	931.04		
38.2	931.03		
39.2	930.90		
43.0	930.72		
44.1	930.62		
45.0	930.22		
45.1	930.14		
45.7	929.79		
46.7	929.39		
46.9	929.57		
48.2	929.43		
48.1	929.42		
48.8	929.69		
48.9	930.12		
50.0	930.21		
51.4	930.91		
52.1	930.88		
55.2	930.63		
59.9	930.29		
65.1	930.43		
72.7	930.43		
77.6	930.48		
80.0	930.93		
83.0	932.30		

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	930.70
Bankfull Cross-Sectional Area:	5.3
Total Cross-Sectional Area:	8.3
Bankfull Width:	7.8
Flood Prone Area Elevation:	932.01
Flood Prone Width:	69.6
Max Depth at Bankfull:	1.3
Mean Depth at Bankfull:	0.7
W / D Ratio:	11.6
Entrenchment Ratio:	8.9
Bank Height Ratio:	0.9
Thalweg Elevation:	929.39

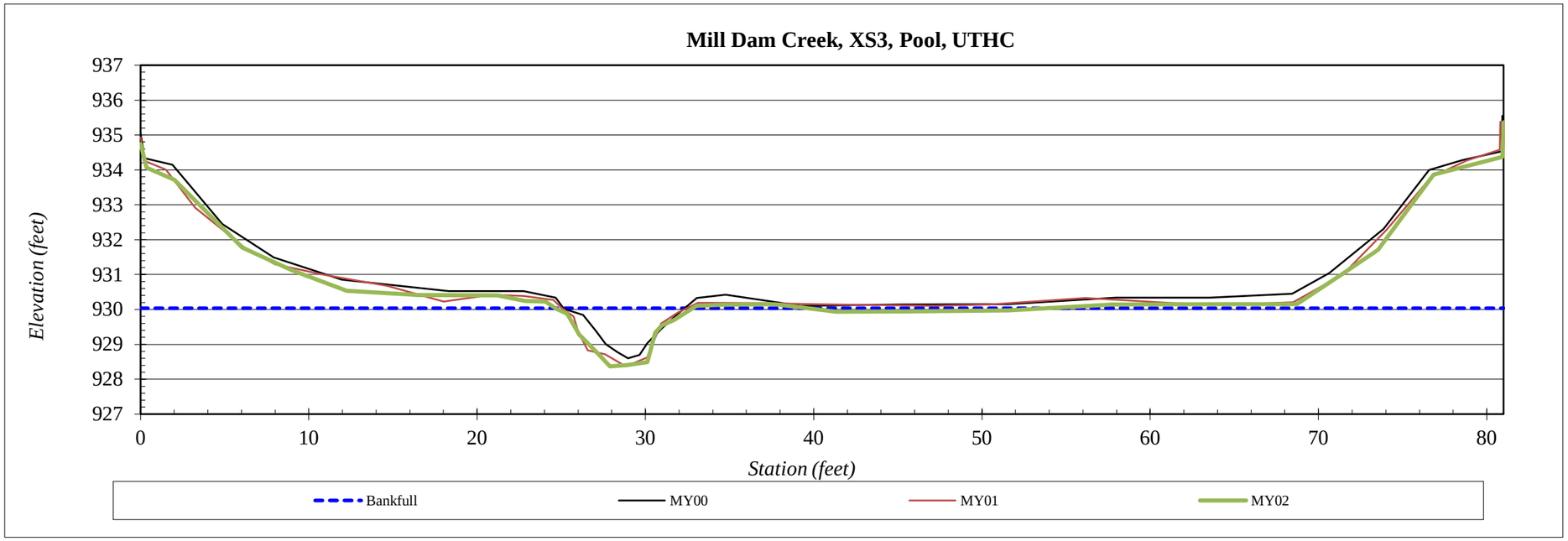


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS3
Drainage Area (sq mi):	0.18
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	934.74
0.4	934.07
2.0	933.72
6.0	931.78
9.0	931.13
12.2	930.54
16.5	930.42
21.2	930.40
22.8	930.24
24.1	930.23
24.7	930.02
25.4	929.88
26.1	929.28
26.6	929.02
27.3	928.67
27.9	928.37
28.9	928.41
30.1	928.49
30.6	929.34
31.0	929.54
31.7	929.70
33.0	930.10
34.4	930.13
37.7	930.15
41.4	929.94
45.7	929.95
51.6	929.98
57.8	930.14
64.1	930.15
68.7	930.15
71.5	931.06
73.5	931.71
76.8	933.87
80.9	934.37
81.0	935.36

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	930.04
Bankfull Cross-Sectional Area:	7.4
Total Cross-Sectional Area:	10.1
Bankfull Width:	8.2
Flood Prone Area Elevation:	---
Flood Prone Width:	---
Max Depth at Bankfull:	1.7
Mean Depth at Bankfull:	0.9
W / D Ratio:	---
Entrenchment Ratio:	---
Bank Height Ratio:	---
Thalweg Elevation:	928.37

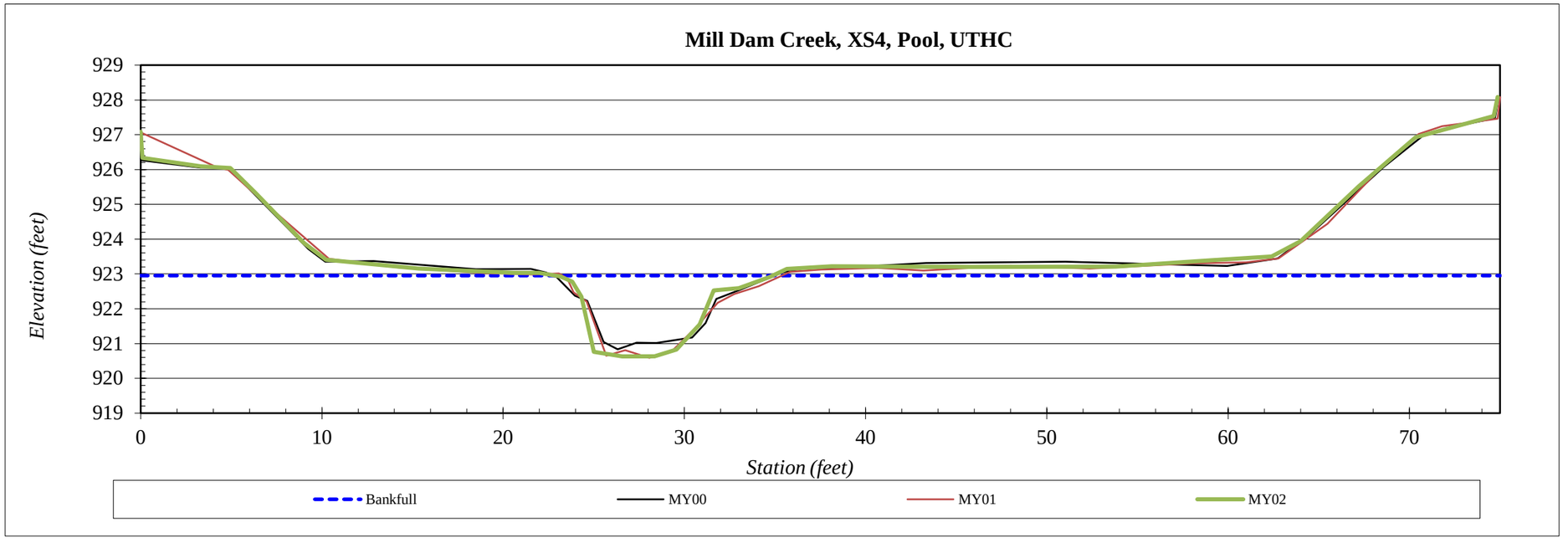


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS4
Drainage Area (sq mi):	0.18
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	927.08
0.1	926.33
3.3	926.09
5.0	926.05
6.3	925.33
9.0	923.88
10.2	923.41
15.3	923.15
20.6	923.03
22.0	923.04
23.1	922.93
23.8	922.78
24.3	922.35
25.0	920.76
26.6	920.64
28.4	920.63
29.6	920.83
30.8	921.55
31.6	922.53
33.0	922.59
34.7	922.91
35.7	923.14
38.1	923.22
45.9	923.20
53.8	923.21
58.9	923.39
62.4	923.50
64.0	923.94
67.2	925.52
70.3	926.93
74.6	927.54
74.9	928.09

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	922.95
Bankfull Cross-Sectional Area:	15.4
Total Cross-Sectional Area:	16.6
Bankfull Width:	12.0
Flood Prone Area Elevation:	---
Flood Prone Width:	---
Max Depth at Bankfull:	2.3
Mean Depth at Bankfull:	1.3
W / D Ratio:	---
Entrenchment Ratio:	---
Bank Height Ratio:	---
Thalweg Elevation:	920.63

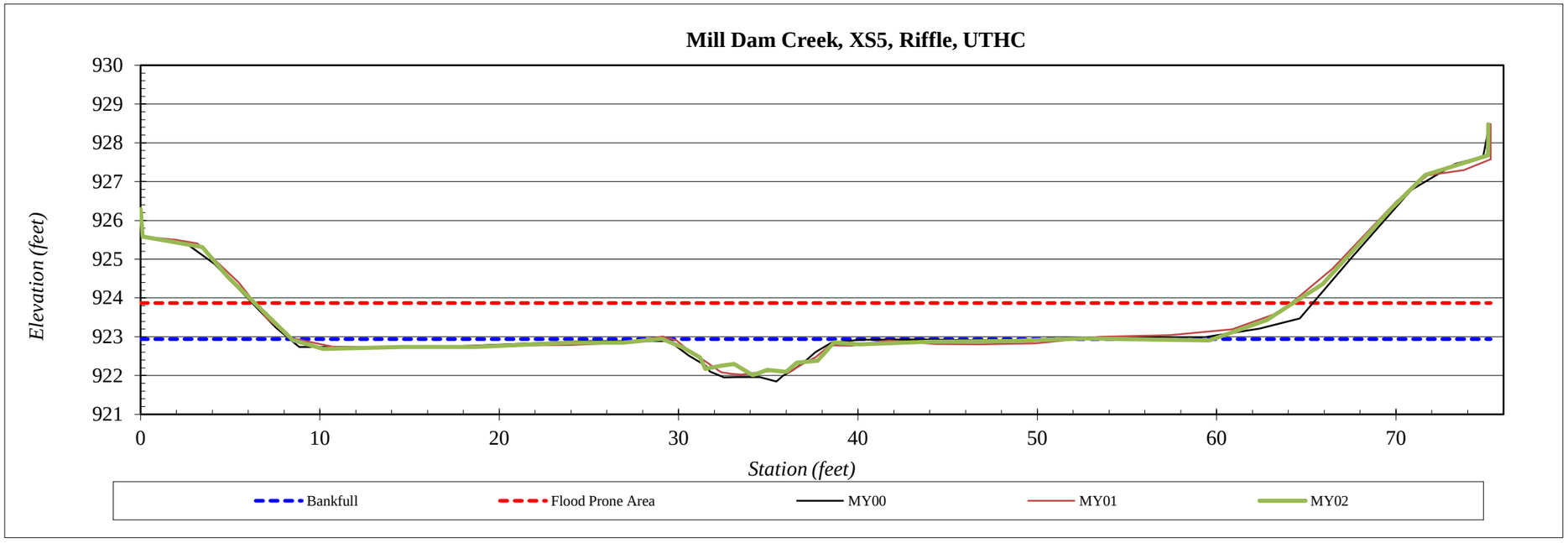


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS5
Drainage Area (sq mi):	0.18
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	926.29
0.1	925.58
3.4	925.31
4.9	924.54
8.5	922.91
10.2	922.69
14.6	922.74
18.7	922.74
23.9	922.85
26.9	922.85
29.1	922.95
30.3	922.72
31.2	922.47
31.5	922.17
32.4	922.26
33.1	922.30
34.1	922.01
34.9	922.15
36.0	922.10
36.6	922.33
37.8	922.38
38.7	922.85
40.1	922.81
43.9	922.88
48.5	922.89
52.6	922.96
59.6	922.91
62.8	923.43
65.9	924.36
69.7	926.30
71.6	927.17
75.1	927.67
75.1	928.48

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	922.94
Bankfull Cross-Sectional Area:	5.5
Total Cross-Sectional Area:	4.7
Bankfull Width:	9.6
Flood Prone Area Elevation:	923.87
Flood Prone Width:	57.9
Max Depth at Bankfull:	0.9
Mean Depth at Bankfull:	0.6
W / D Ratio:	16.5
Entrenchment Ratio:	6.0
Bank Height Ratio:	0.9
Thalweg Elevation:	922.01

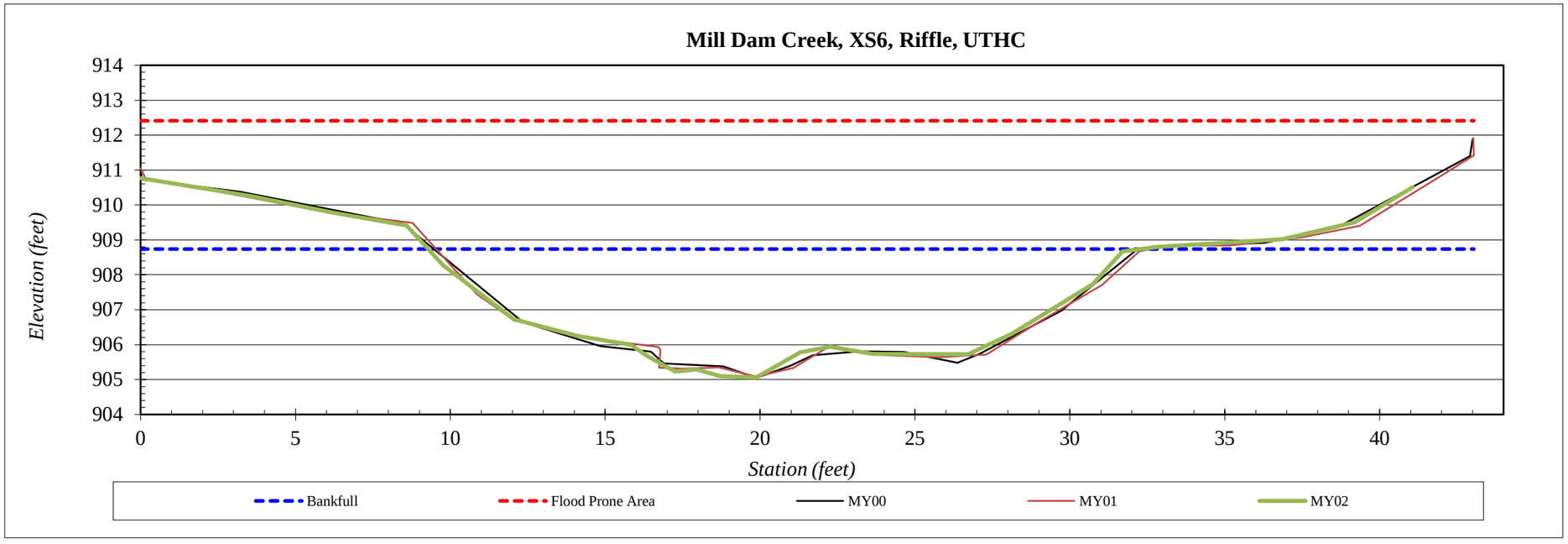


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS6
Drainage Area (sq mi):	0.22
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	910.77
3.6	910.26
6.3	909.77
8.6	909.41
9.8	908.28
12.0	906.73
14.1	906.25
15.8	906.00
16.4	905.67
17.3	905.23
17.9	905.30
18.7	905.09
19.9	905.06
21.3	905.78
22.2	905.94
23.6	905.73
26.7	905.72
28.1	906.31
30.7	907.73
31.7	908.67
32.9	908.80
36.9	909.02
39.2	909.51
41.1	910.51

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	908.74
Bankfull Cross-Sectional Area:	55.5
Total Cross-Sectional Area:	54.9
Bankfull Width:	23.0
Flood Prone Area Elevation:	912.41
Flood Prone Width:	41.1
Max Depth at Bankfull:	3.7
Mean Depth at Bankfull:	2.4
W / D Ratio:	9.5
Entrenchment Ratio:	1.8
Bank Height Ratio:	1.0
Thalweg Elevation:	905.06

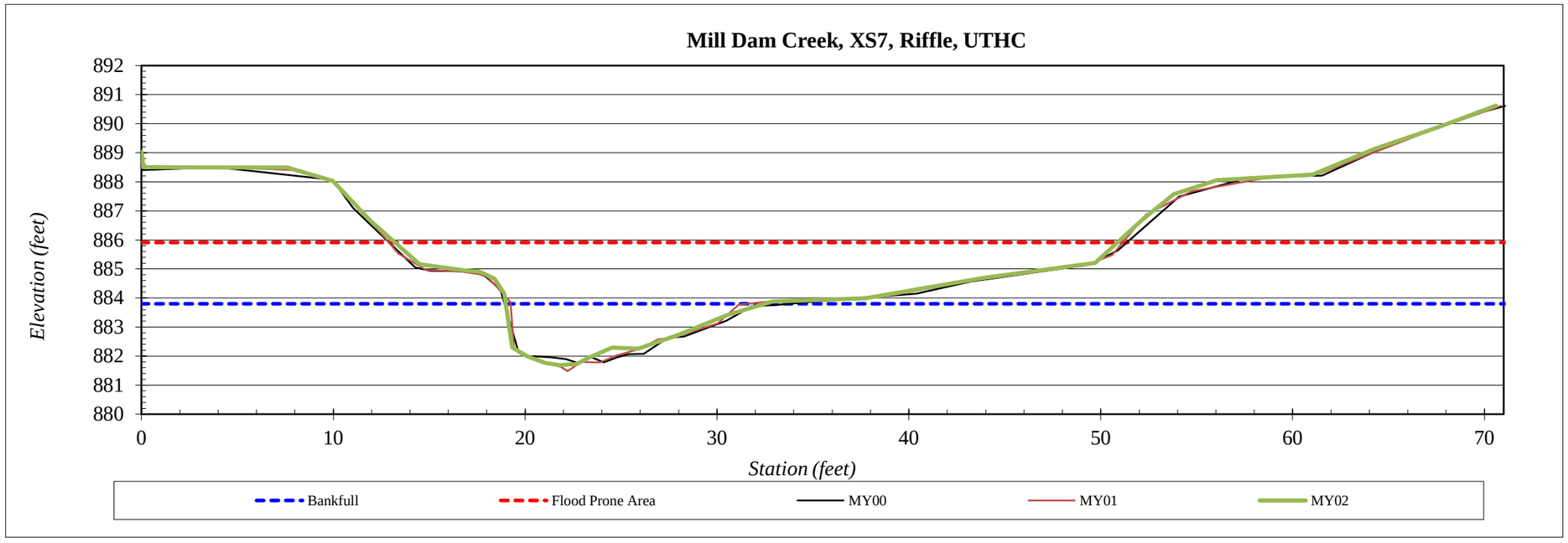


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS7
Drainage Area (sq mi):	0.22
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	889.04
0.1	888.51
3.5	888.50
7.6	888.50
10.0	888.04
11.9	886.66
14.5	885.17
16.9	884.95
17.6	884.91
18.4	884.66
18.9	884.15
19.3	882.30
20.1	881.99
21.1	881.76
21.8	881.69
22.7	881.73
23.3	881.95
24.5	882.29
25.9	882.25
27.9	882.72
30.5	883.41
32.9	883.87
37.7	883.99
43.9	884.69
49.7	885.21
52.1	886.69
53.8	887.57
56.1	888.06
61.0	888.25
64.2	889.13
67.6	889.89
70.6	890.62

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	883.80
Bankfull Cross-Sectional Area:	16.7
Total Cross-Sectional Area:	15.8
Bankfull Width:	11.6
Flood Prone Area Elevation:	885.91
Flood Prone Width:	37.6
Max Depth at Bankfull:	2.1
Mean Depth at Bankfull:	1.4
W / D Ratio:	8.0
Entrenchment Ratio:	3.3
Bank Height Ratio:	1.0
Thalweg Elevation:	881.69

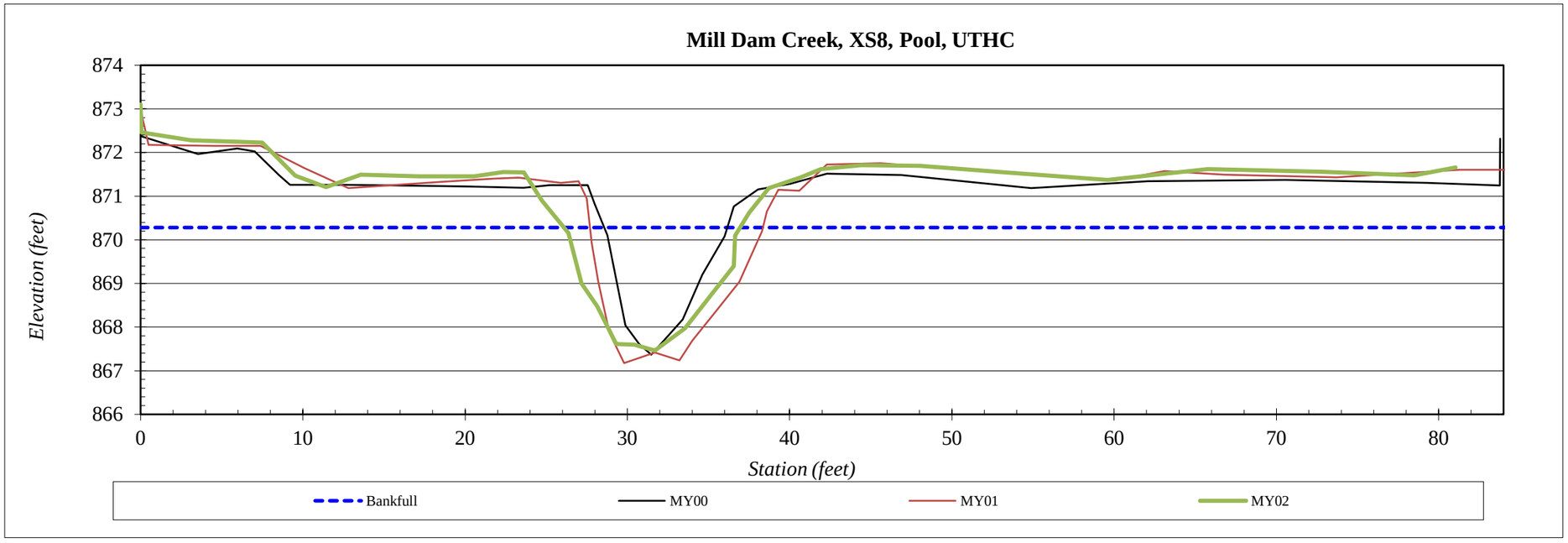


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS8
Drainage Area (sq mi):	1.07
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	873.10
0.0	872.46
3.1	872.28
7.5	872.23
9.5	871.47
11.4	871.21
13.6	871.50
17.1	871.45
20.6	871.46
22.4	871.55
23.6	871.54
24.7	870.90
26.4	870.15
27.2	869.00
28.1	868.48
29.3	867.62
30.4	867.60
31.7	867.46
33.6	867.97
35.1	868.73
36.6	869.40
36.7	870.10
37.5	870.62
38.7	871.19
40.6	871.42
41.9	871.62
44.4	871.71
48.0	871.70
53.3	871.55
59.6	871.37
65.8	871.62
72.7	871.56
78.5	871.48
81.0	871.66

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	870.28
Bankfull Cross-Sectional Area:	20.8
Total Cross-Sectional Area:	31.9
Bankfull Width:	10.9
Flood Prone Area Elevation:	---
Flood Prone Width:	---
Max Depth at Bankfull:	2.8
Mean Depth at Bankfull:	1.9
W / D Ratio:	---
Entrenchment Ratio:	---
Bank Height Ratio:	---
Thalweg Elevation:	867.46

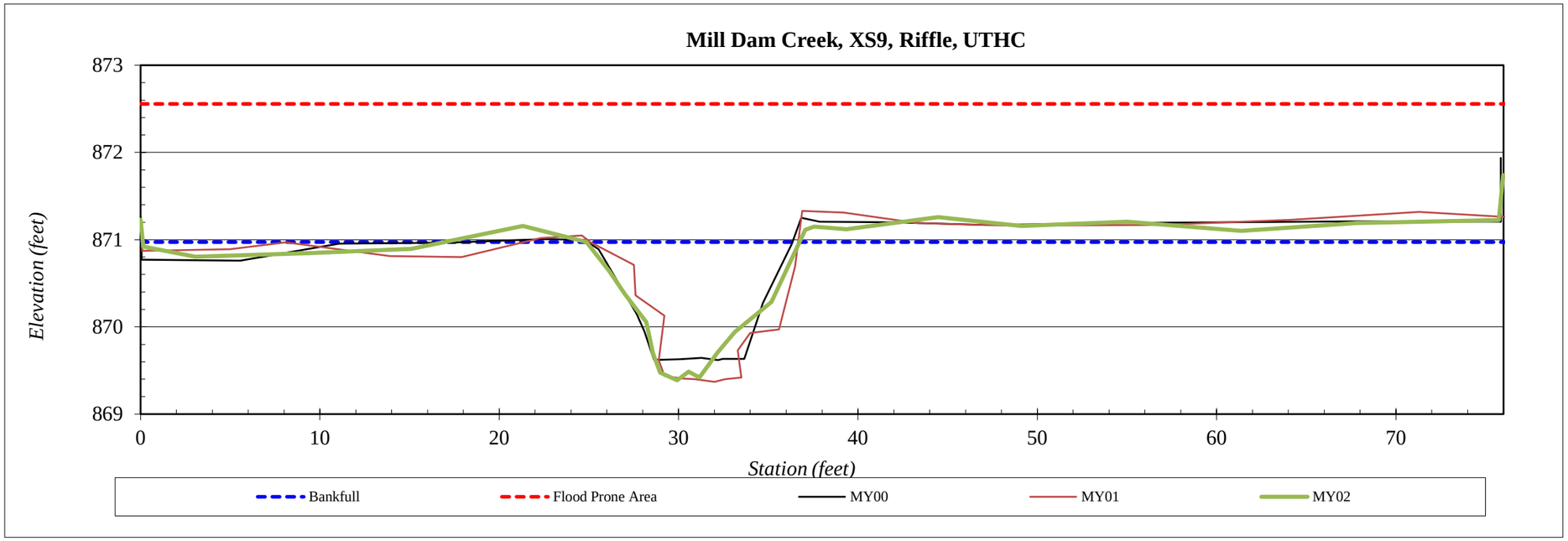


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS9
Drainage Area (sq mi):	0.46
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	871.45
0.2	871.15
3.1	871.03
9.4	871.07
15.1	871.12
21.3	871.38
24.9	871.20
26.1	870.87
27.0	870.60
28.2	870.28
28.6	869.92
29.0	869.70
29.9	869.61
30.6	869.71
31.2	869.65
32.2	869.93
33.1	870.17
35.2	870.51
37.1	871.34
37.5	871.38
39.4	871.35
44.5	871.48
49.1	871.38
55.0	871.43
61.4	871.33
67.8	871.41
75.7	871.45
76.0	871.96

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	870.97
Bankfull Cross-Sectional Area:	10.6
Total Cross-Sectional Area:	10.9
Bankfull Width:	11.9
Flood Prone Area Elevation:	872.56
Flood Prone Width:	76.0
Max Depth at Bankfull:	1.6
Mean Depth at Bankfull:	0.9
W / D Ratio:	13.2
Entrenchment Ratio:	6.4
Bank Height Ratio:	1.0
Thalweg Elevation:	869.39

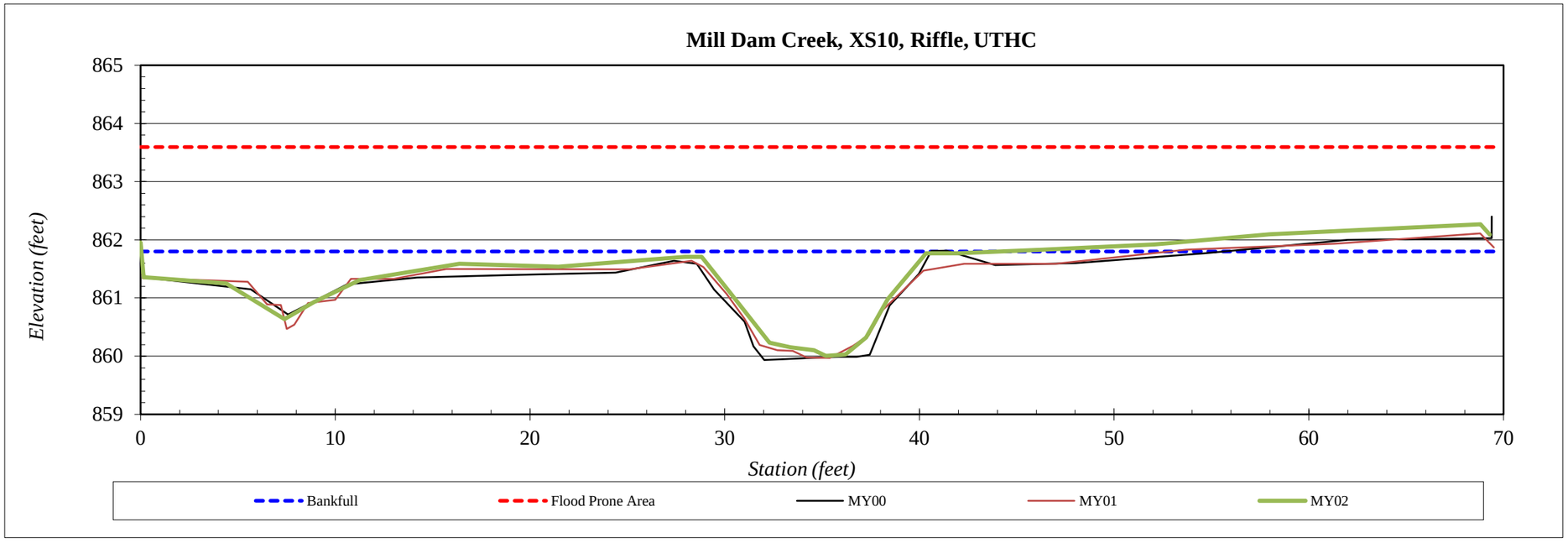


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS10
Drainage Area (sq mi):	0.46
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	861.95
0.2	861.36
4.4	861.25
7.4	860.64
8.9	860.93
11.2	861.31
16.4	861.59
21.5	861.54
27.9	861.71
28.8	861.71
30.3	861.11
32.3	860.23
33.4	860.15
34.6	860.10
35.2	860.01
36.2	860.03
37.3	860.32
38.4	860.98
40.3	861.77
42.0	861.77
46.3	861.83
52.1	861.92
58.0	862.10
68.8	862.27
69.3	862.09

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	861.80
Bankfull Cross-Sectional Area:	13.3
Total Cross-Sectional Area:	10.9
Bankfull Width:	11.5
Flood Prone Area Elevation:	863.59
Flood Prone Width:	69.3
Max Depth at Bankfull:	1.8
Mean Depth at Bankfull:	1.2
W / D Ratio:	9.9
Entrenchment Ratio:	6.0
Bank Height Ratio:	0.9
Thalweg Elevation:	860.01

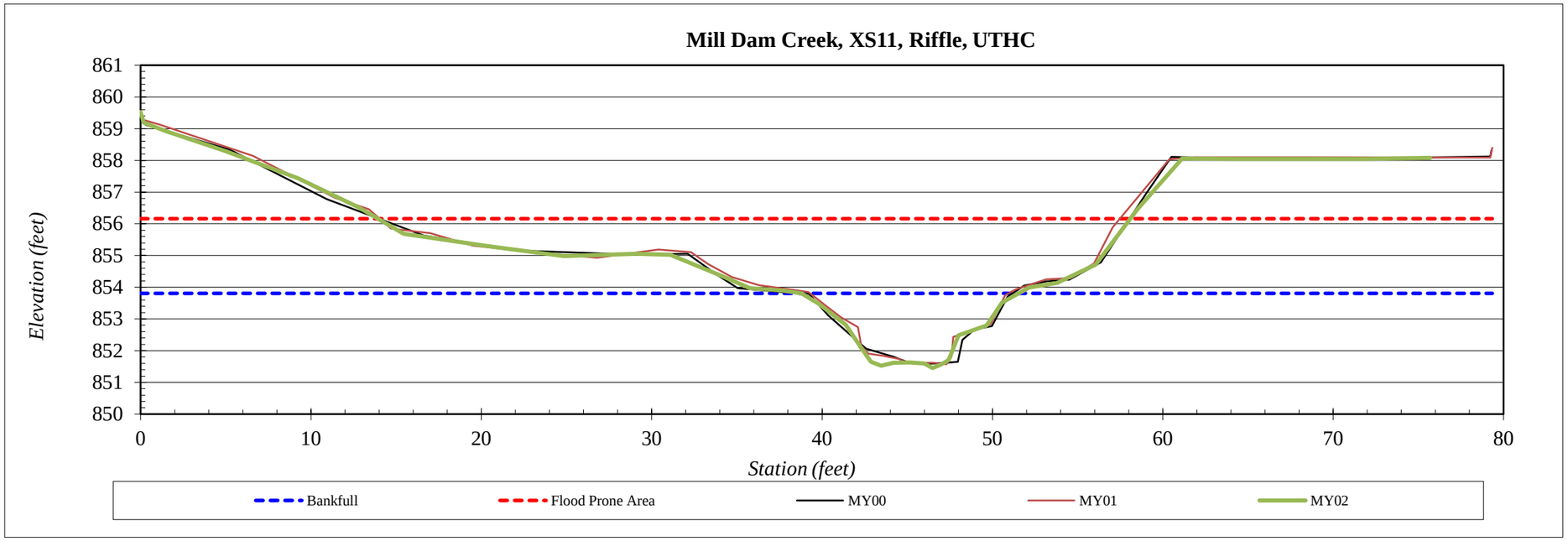


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS11
Drainage Area (sq mi):	0.46
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation	Station	Elevation
0.0	859.52	75.7	858.08
0.2	859.19		
1.5	858.92		
5.0	858.29		
9.3	857.42		
12.8	856.51		
15.4	855.68		
20.4	855.29		
24.8	854.98		
29.1	855.06		
31.1	855.02		
34.1	854.36		
35.8	853.97		
37.6	853.90		
38.8	853.81		
39.8	853.48		
41.4	852.81		
42.3	852.04		
42.9	851.65		
43.5	851.52		
44.2	851.62		
45.2	851.63		
46.0	851.60		
46.5	851.45		
46.9	851.56		
47.4	851.70		
48.0	852.49		
49.7	852.80		
50.6	853.52		
52.2	853.99		
53.8	854.14		
56.1	854.72		
58.5	856.48		
61.1	858.05		
64.7	858.05		
71.9	858.04		

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	853.81
Bankfull Cross-Sectional Area:	17.3
Total Cross-Sectional Area:	17.2
Bankfull Width:	12.7
Flood Prone Area Elevation:	856.16
Flood Prone Width:	44.2
Max Depth at Bankfull:	2.4
Mean Depth at Bankfull:	1.4
W / D Ratio:	9.4
Entrenchment Ratio:	3.5
Bank Height Ratio:	1.0
Thalweg Elevation:	851.45

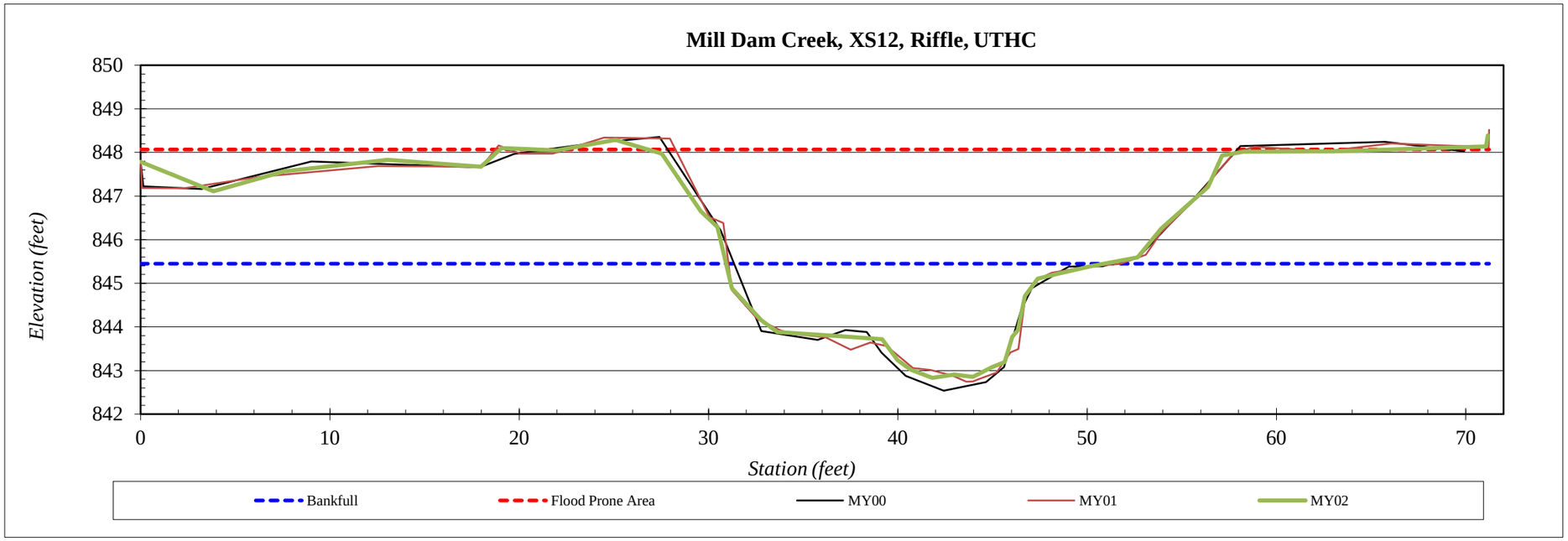


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS12
Drainage Area (sq mi):	0.61
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	844.44
3.8	843.77
9.2	844.22
14.1	844.48
15.2	844.33
18.1	844.75
21.3	844.70
23.7	844.94
25.8	844.63
26.6	843.30
27.4	842.95
28.9	841.54
29.8	840.81
32.9	840.53
35.3	840.45
36.1	840.37
36.8	839.89
38.0	839.68
39.1	839.48
40.1	839.56
41.1	839.51
41.8	839.73
42.2	839.84
42.5	840.42
42.9	840.58
43.5	841.36
44.5	841.76
46.3	841.86
48.8	842.04
50.1	842.25
52.5	842.91
53.3	843.86
54.4	844.58
59.2	844.67
67.2	844.68
67.3	844.79

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	845.45
Bankfull Cross-Sectional Area:	30.2
Total Cross-Sectional Area:	28.9
Bankfull Width:	20.0
Flood Prone Area Elevation:	848.07
Flood Prone Width:	19.8
Max Depth at Bankfull:	2.6
Mean Depth at Bankfull:	1.5
W / D Ratio:	13.2
Entrenchment Ratio:	1.0
Bank Height Ratio:	0.9
Thalweg Elevation:	842.83

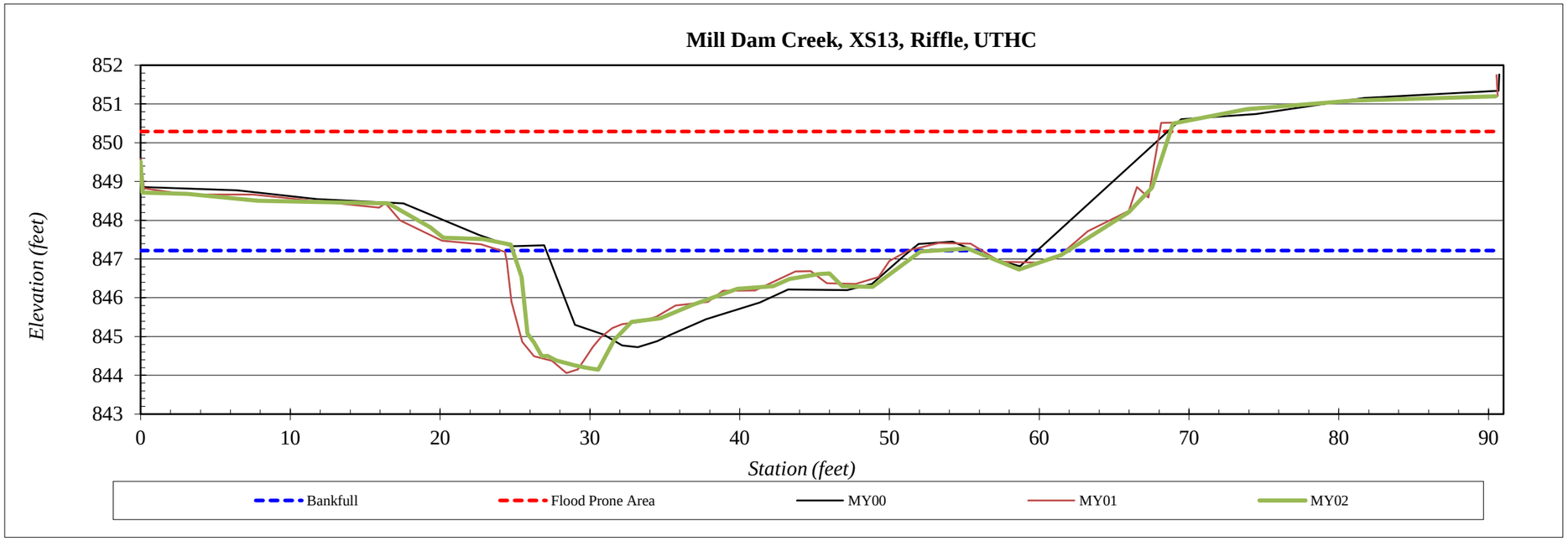


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS13
Drainage Area (sq mi):	0.04
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation	Station	Elevation
0.0	849.51	68.9	850.49
0.1	848.72	73.9	850.87
3.1	848.68	80.9	851.09
7.8	848.50	90.5	851.20
16.5	848.43		
19.3	847.82		
20.2	847.55		
22.9	847.51		
24.7	847.38		
25.4	846.54		
25.8	845.07		
26.3	844.85		
26.8	844.50		
27.2	844.50		
27.8	844.38		
29.0	844.26		
29.7	844.20		
30.5	844.15		
31.6	844.92		
32.8	845.38		
34.7	845.47		
36.9	845.82		
39.8	846.23		
42.2	846.30		
43.3	846.49		
45.3	846.61		
46.0	846.63		
46.8	846.30		
48.9	846.28		
52.1	847.20		
55.2	847.27		
58.6	846.73		
61.5	847.11		
66.0	848.21		
67.5	848.84		

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	847.22
Bankfull Cross-Sectional Area:	38.7
Total Cross-Sectional Area:	42.3
Bankfull Width:	27.2
Flood Prone Area Elevation:	850.29
Flood Prone Width:	68.8
Max Depth at Bankfull:	3.1
Mean Depth at Bankfull:	1.4
W / D Ratio:	19.1
Entrenchment Ratio:	2.5
Bank Height Ratio:	1.1
Thalweg Elevation:	844.15

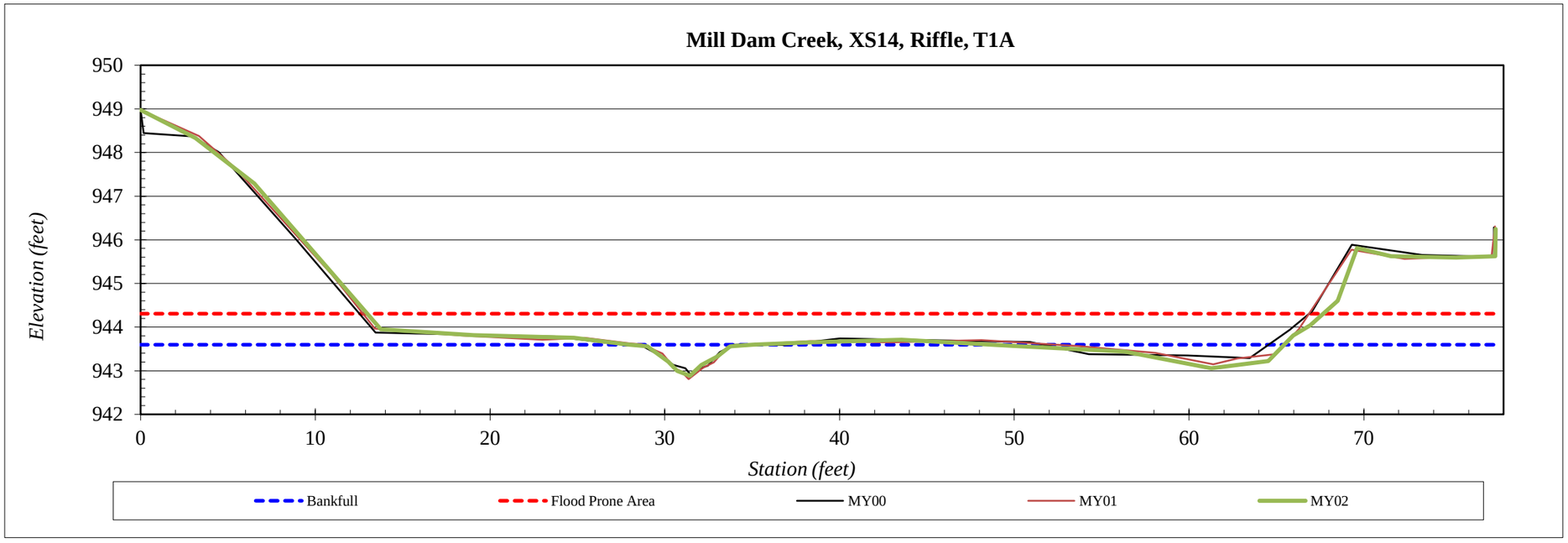


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS14
Drainage Area (sq mi):	0.04
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	948.33
3.4	947.29
10.6	943.95
15.9	943.81
21.7	943.76
24.6	943.61
25.9	943.56
27.1	943.21
27.6	943.00
28.3	942.89
29.0	943.14
29.9	943.33
30.6	943.56
31.9	943.60
35.1	943.65
40.4	943.71
46.9	943.57
53.2	943.44
58.1	943.05
61.4	943.22
62.8	943.81
63.8	944.04
65.4	944.61
66.5	945.82
68.4	945.62
72.2	945.60
74.4	945.62
74.4	946.25

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	943.60
Bankfull Cross-Sectional Area:	1.8
Total Cross-Sectional Area:	1.8
Bankfull Width:	4.7
Flood Prone Area Elevation:	944.31
Flood Prone Width:	54.7
Max Depth at Bankfull:	0.7
Mean Depth at Bankfull:	0.4
W / D Ratio:	12.4
Entrenchment Ratio:	11.5
Bank Height Ratio:	0.9
Thalweg Elevation:	942.89

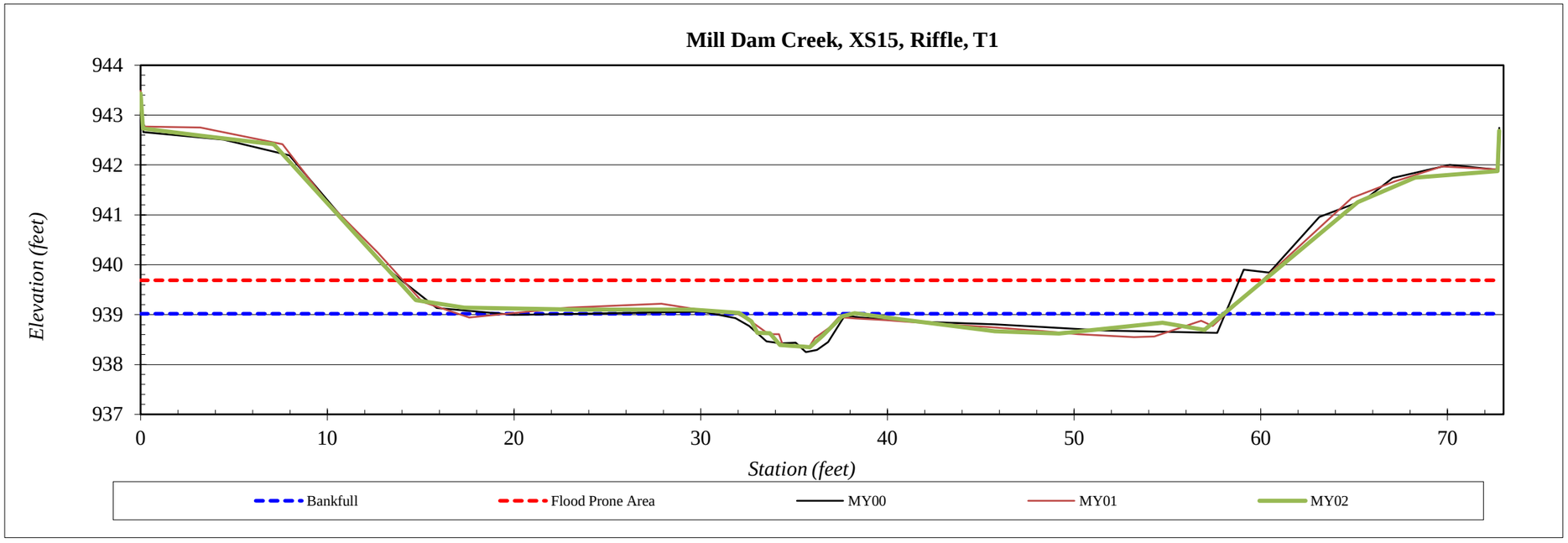


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS15
Drainage Area (sq mi):	0.07
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	943.43
0.1	942.73
3.4	942.58
7.1	942.42
9.1	941.63
14.7	939.29
17.3	939.14
23.5	939.10
29.6	939.10
32.0	939.03
32.7	938.86
33.0	938.64
33.7	938.63
34.2	938.39
34.7	938.38
35.5	938.36
35.8	938.35
36.5	938.57
37.6	938.97
38.3	939.03
40.8	938.91
45.7	938.66
49.2	938.62
54.7	938.84
57.0	938.69
65.2	941.25
68.3	941.74
72.7	941.88
72.8	942.69

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	939.02
Bankfull Cross-Sectional Area:	2.3
Total Cross-Sectional Area:	1.9
Bankfull Width:	6.1
Flood Prone Area Elevation:	939.69
Flood Prone Width:	46.4
Max Depth at Bankfull:	0.7
Mean Depth at Bankfull:	0.4
W / D Ratio:	15.6
Entrenchment Ratio:	7.7
Bank Height Ratio:	1.0
Thalweg Elevation:	938.35

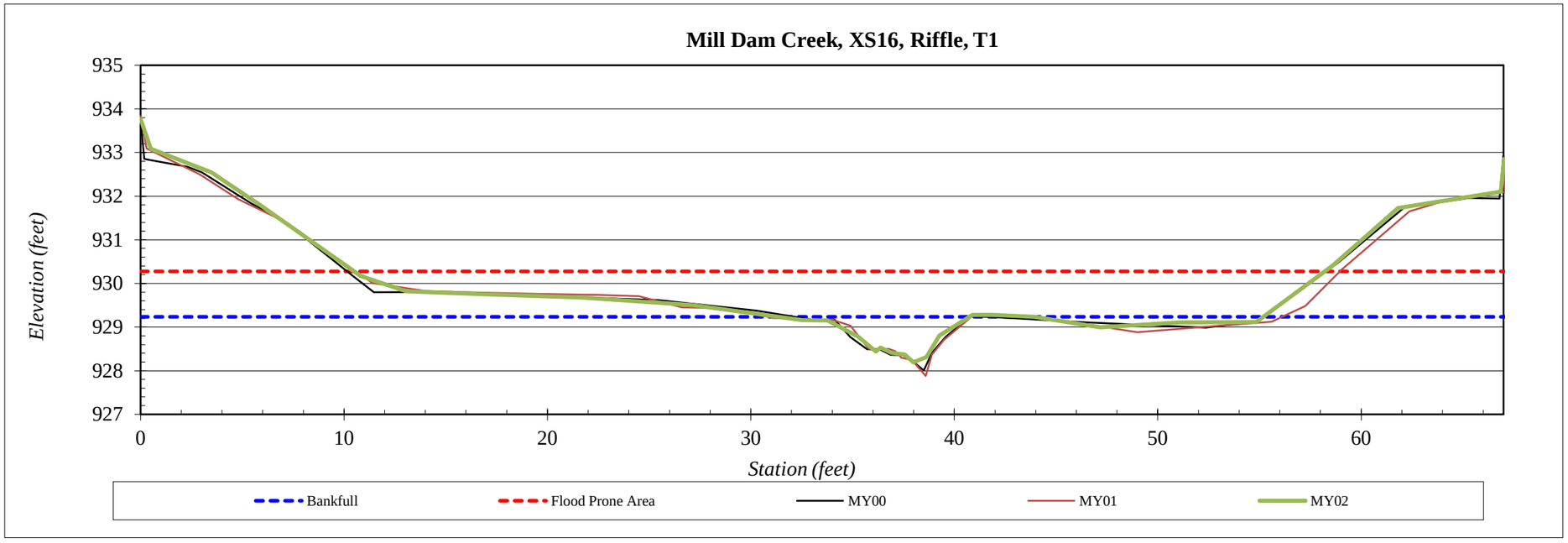


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS16
Drainage Area (sq mi):	0.07
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	933.77
0.5	933.08
3.5	932.55
5.9	931.78
10.8	930.17
13.0	929.82
17.3	929.74
21.7	929.68
27.1	929.51
32.5	929.16
33.8	929.16
35.3	928.79
36.1	928.44
36.4	928.53
36.9	928.41
37.6	928.37
38.0	928.19
38.6	928.31
39.3	928.81
40.9	929.28
41.9	929.28
43.9	929.23
47.2	928.99
51.1	929.11
54.8	929.11
58.6	930.41
61.8	931.73
66.9	932.10
67.0	932.85

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	929.23
Bankfull Cross-Sectional Area:	3.9
Total Cross-Sectional Area:	3.4
Bankfull Width:	7.0
Flood Prone Area Elevation:	930.28
Flood Prone Width:	47.7
Max Depth at Bankfull:	1.0
Mean Depth at Bankfull:	0.6
W / D Ratio:	12.6
Entrenchment Ratio:	6.8
Bank Height Ratio:	0.9
Thalweg Elevation:	928.19

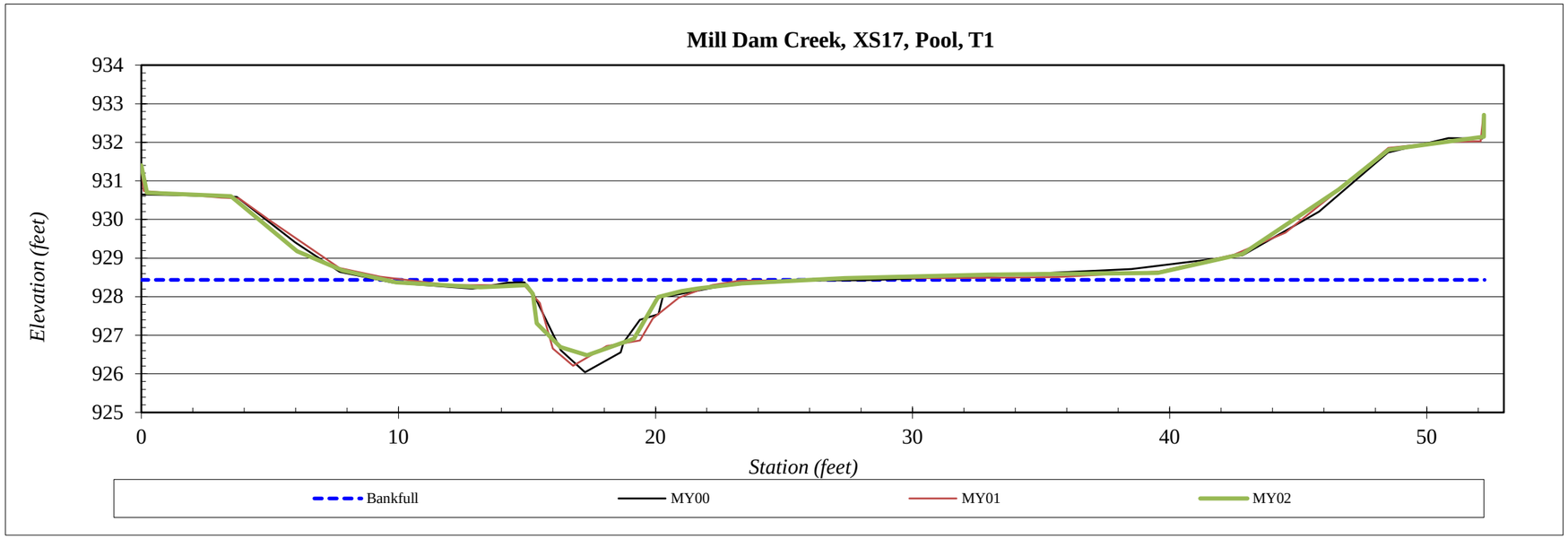


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS17
Drainage Area (sq mi):	0.07
Date:	7/22/2021
Field Crew:	TS/AG

Station	Elevation
0.0	931.40
0.2	930.70
3.5	930.60
6.1	929.18
7.8	928.68
9.9	928.37
13.2	928.24
15.0	928.30
15.2	928.07
15.4	927.31
16.3	926.70
17.3	926.48
19.2	926.91
20.1	927.99
21.0	928.14
21.7	928.21
23.4	928.35
27.4	928.48
32.9	928.58
39.5	928.61
42.8	929.10
46.6	930.78
48.5	931.81
52.2	932.15
52.2	932.71

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	928.44
Bankfull Cross-Sectional Area:	8.3
Total Cross-Sectional Area:	7.7
Bankfull Width:	8.4
Flood Prone Area Elevation:	---
Flood Prone Width:	---
Max Depth at Bankfull:	2.0
Mean Depth at Bankfull:	1.0
W / D Ratio:	---
Entrenchment Ratio:	---
Bank Height Ratio:	---
Thalweg Elevation:	926.48

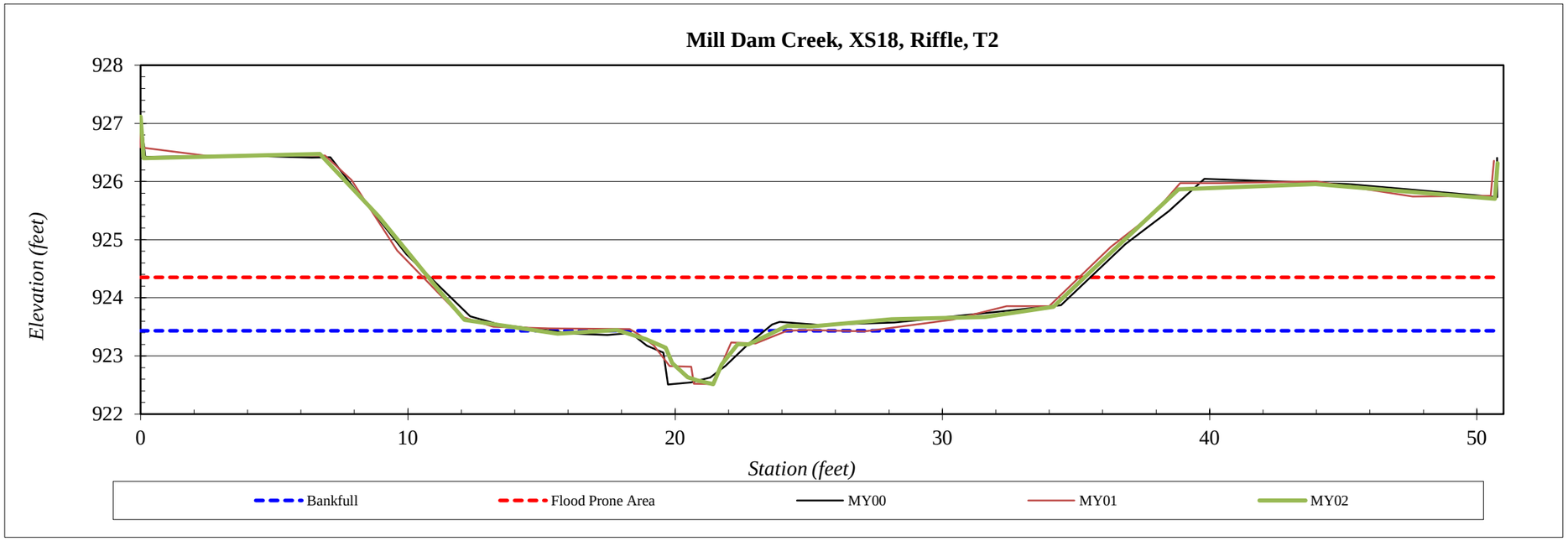


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS18
Drainage Area (sq mi):	0.02
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	927.12
0.1	926.40
6.7	926.47
8.9	925.41
11.2	924.09
12.1	923.62
15.6	923.39
17.8	923.44
18.9	923.29
19.6	923.14
19.9	922.88
20.5	922.63
20.8	922.58
21.4	922.52
21.7	922.85
22.3	923.20
22.7	923.20
24.2	923.52
25.1	923.51
28.1	923.63
31.6	923.67
34.2	923.85
35.6	924.47
38.8	925.87
44.0	925.95
50.7	925.70
50.8	926.32

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	923.43
Bankfull Cross-Sectional Area:	2.3
Total Cross-Sectional Area:	1.9
Bankfull Width:	5.9
Flood Prone Area Elevation:	924.35
Flood Prone Width:	24.5
Max Depth at Bankfull:	0.9
Mean Depth at Bankfull:	0.4
W / D Ratio:	15.6
Entrenchment Ratio:	4.1
Bank Height Ratio:	1.0
Thalweg Elevation:	922.52

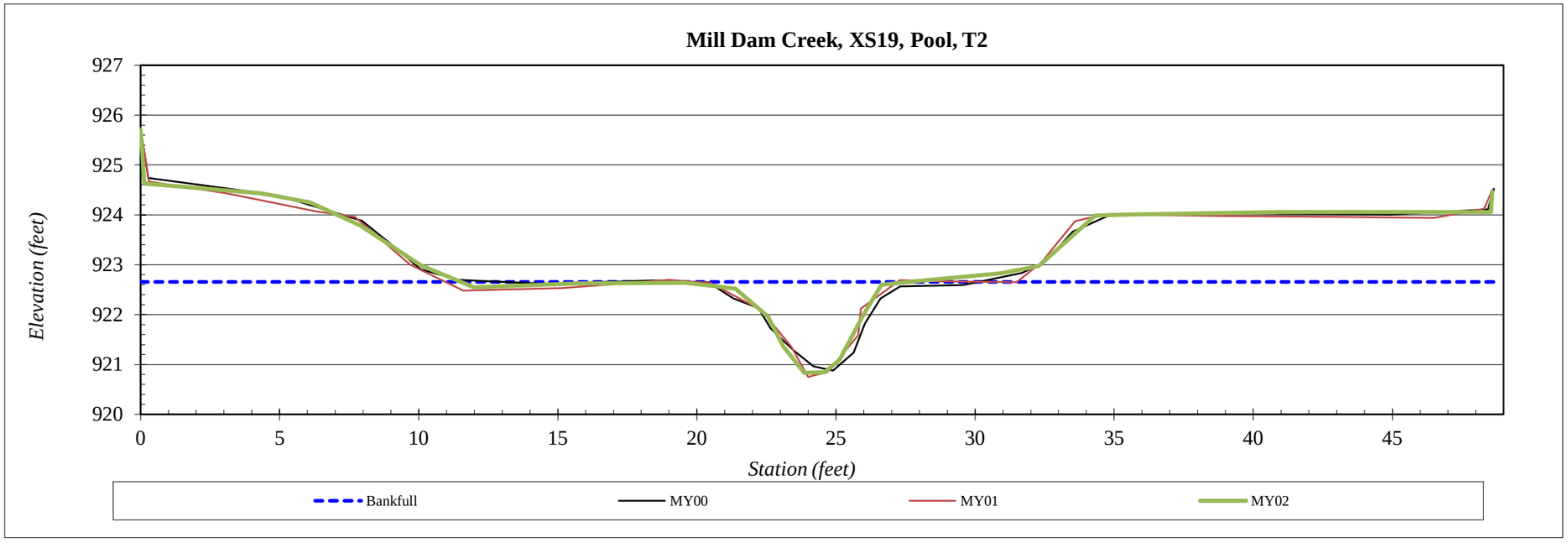


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS19
Drainage Area (sq mi):	0.02
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	925.70
0.1	924.63
4.3	924.43
6.1	924.25
7.9	923.79
10.1	922.99
12.0	922.55
15.7	922.62
19.6	922.64
21.4	922.52
22.5	921.97
23.1	921.37
23.9	920.83
24.6	920.85
25.1	921.09
26.0	921.97
26.6	922.60
28.0	922.68
30.9	922.83
32.3	922.97
34.3	923.99
35.3	924.01
41.1	924.06
48.6	924.06
48.6	924.46

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	922.66
Bankfull Cross-Sectional Area:	5.7
Total Cross-Sectional Area:	5.2
Bankfull Width:	6.2
Flood Prone Area Elevation:	---
Flood Prone Width:	---
Max Depth at Bankfull:	1.8
Mean Depth at Bankfull:	0.9
W / D Ratio:	---
Entrenchment Ratio:	---
Bank Height Ratio:	---
Thalweg Elevation:	920.83

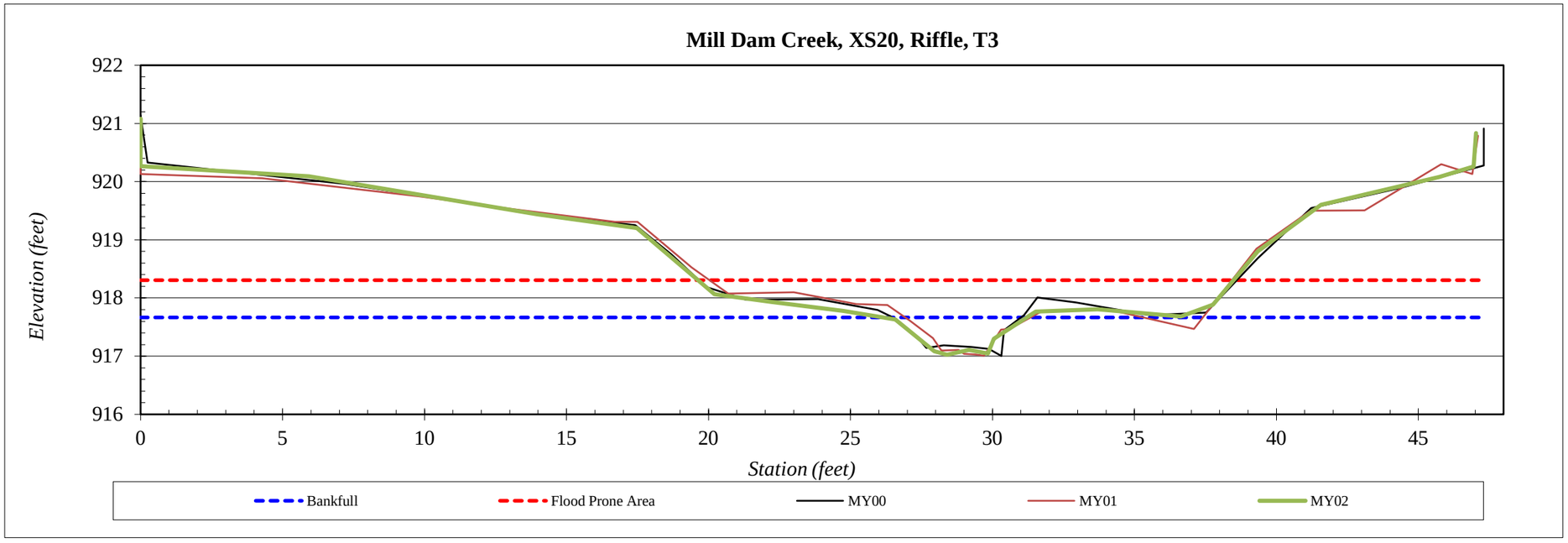


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS20
Drainage Area (sq mi):	0.01
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	921.08
0.0	920.27
5.9	920.09
14.0	919.44
17.5	919.20
20.2	918.06
22.2	917.93
24.8	917.78
26.6	917.63
28.0	917.09
28.4	917.03
29.2	917.11
29.8	917.05
30.1	917.30
31.5	917.77
33.7	917.80
36.6	917.68
37.8	917.89
39.3	918.80
41.6	919.60
45.7	920.08
46.9	920.26
47.0	920.83

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	917.67
Bankfull Cross-Sectional Area:	1.9
Total Cross-Sectional Area:	2.0
Bankfull Width:	5.1
Flood Prone Area Elevation:	918.31
Flood Prone Width:	18.9
Max Depth at Bankfull:	0.6
Mean Depth at Bankfull:	0.4
W / D Ratio:	13.6
Entrenchment Ratio:	3.7
Bank Height Ratio:	0.9
Thalweg Elevation:	917.03

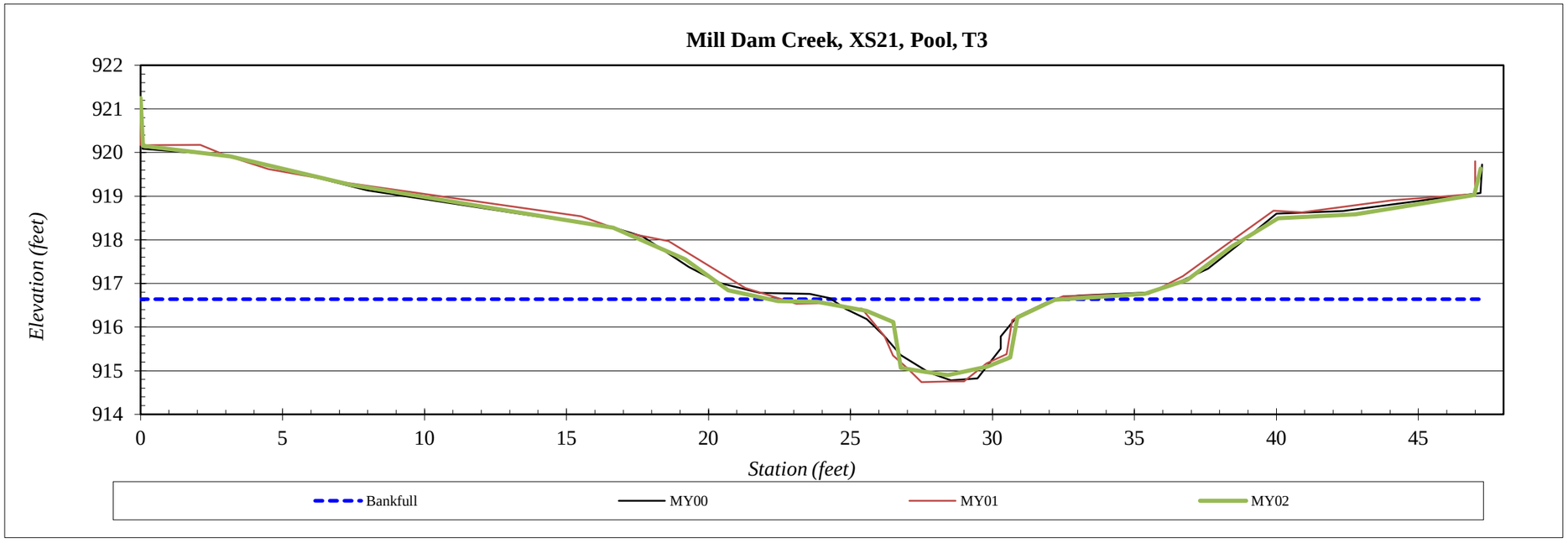


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS21
Drainage Area (sq mi):	0.01
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	921.25
0.1	920.15
3.1	919.92
7.4	919.26
12.4	918.72
16.7	918.27
19.2	917.56
20.7	916.85
22.4	916.60
23.8	916.58
25.6	916.37
26.5	916.11
26.8	915.06
27.6	914.98
28.4	914.90
29.8	915.09
30.6	915.31
30.9	916.22
32.2	916.63
35.4	916.76
36.9	917.08
38.4	917.85
40.1	918.50
42.8	918.58
47.0	919.03
47.2	919.64

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	916.64
Bankfull Cross-Sectional Area:	7.3
Total Cross-Sectional Area:	7.4
Bankfull Width:	6.8
Flood Prone Area Elevation:	---
Flood Prone Width:	---
Max Depth at Bankfull:	1.7
Mean Depth at Bankfull:	1.1
W / D Ratio:	---
Entrenchment Ratio:	---
Bank Height Ratio:	---
Thalweg Elevation:	914.90

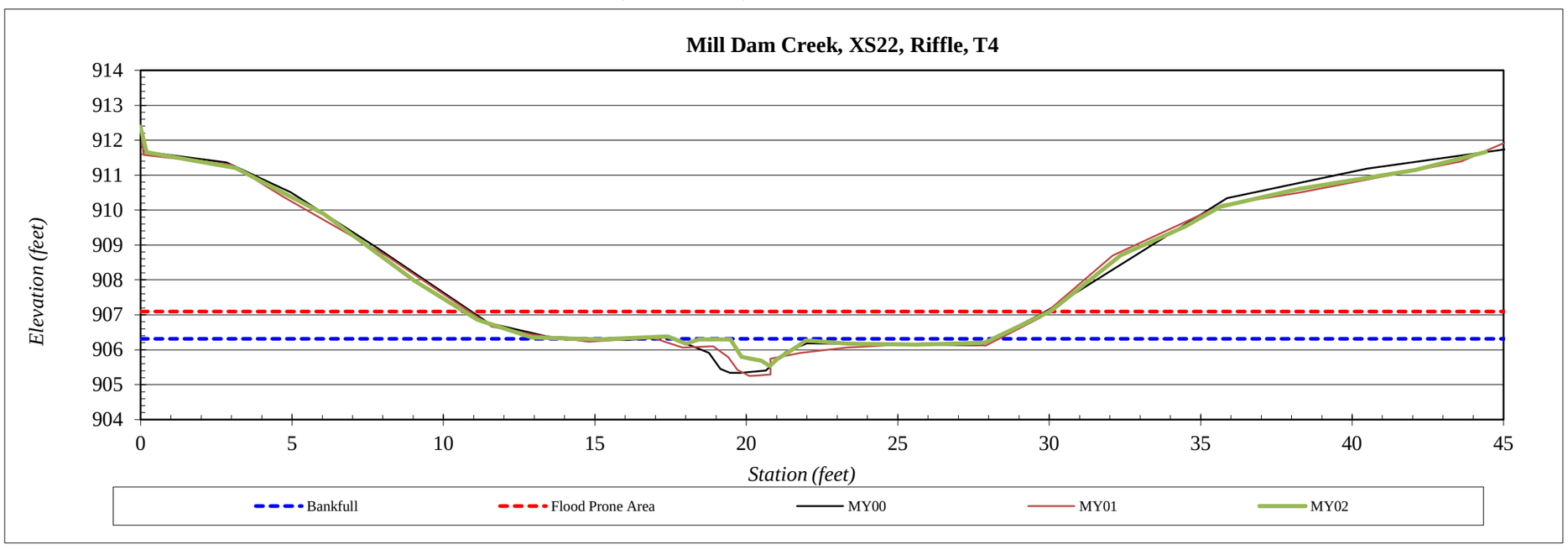


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS22
Drainage Area (sq mi):	0.01
Date:	7/20/2021
Field Crew:	TS/AG

Station	Elevation
0.0	912.37
0.2	911.65
3.1	911.20
6.0	909.89
9.0	907.98
11.1	906.86
12.9	906.36
15.1	906.30
17.4	906.38
18.0	906.18
18.4	906.30
19.5	906.29
19.8	905.80
20.1	905.75
20.5	905.69
20.8	905.53
21.0	905.72
21.7	906.08
22.0	906.27
23.4	906.17
25.6	906.15
27.9	906.20
30.1	907.12
32.4	908.70
34.5	909.53
35.6	910.09
38.2	910.60
42.1	911.15
44.4	911.66

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	906.31
Bankfull Cross-Sectional Area:	1.9
Total Cross-Sectional Area:	0.9
Bankfull Width:	8.7
Flood Prone Area Elevation:	907.09
Flood Prone Width:	19.3
Max Depth at Bankfull:	0.8
Mean Depth at Bankfull:	0.2
W / D Ratio:	38.7
Entrenchment Ratio:	2.2
Bank Height Ratio:	0.9
Thalweg Elevation:	905.53

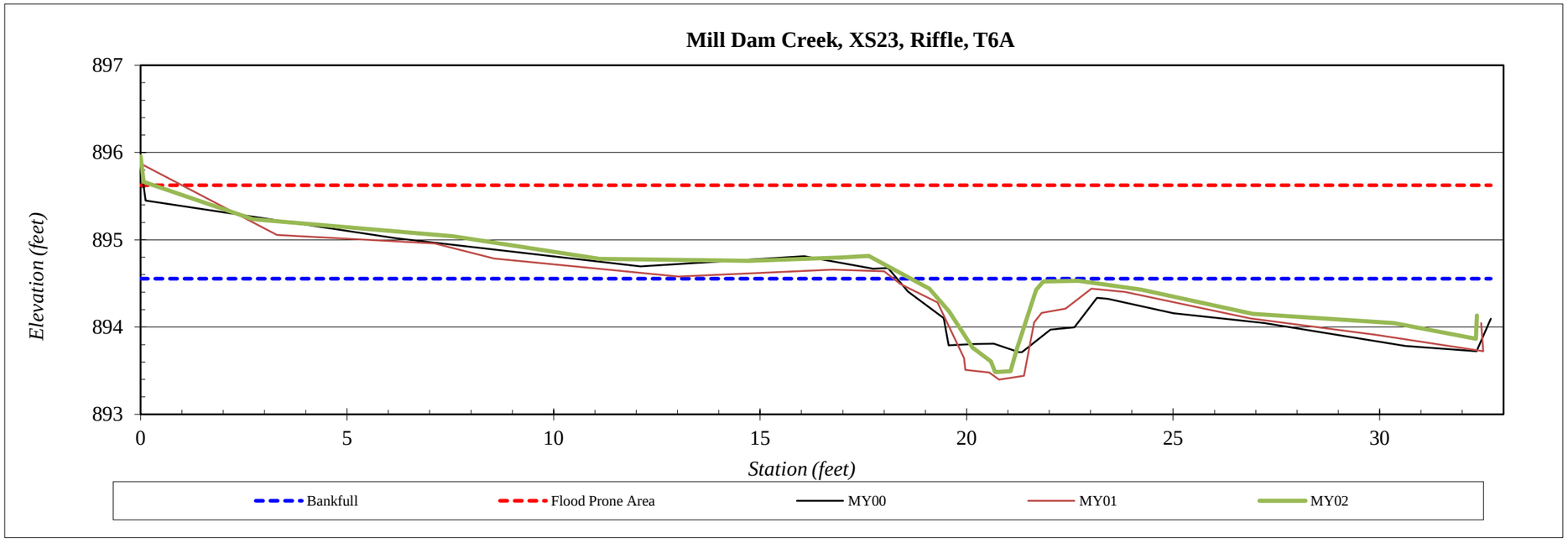


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS23
Drainage Area (sq mi):	0.01
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	895.96
0.1	895.66
2.7	895.24
7.6	895.04
11.1	894.78
14.7	894.76
17.0	894.80
17.6	894.81
19.1	894.44
19.6	894.18
20.1	893.76
20.6	893.61
20.7	893.48
21.1	893.49
21.2	893.75
21.7	894.42
21.9	894.52
22.7	894.53
24.2	894.43
26.9	894.15
30.3	894.05
32.3	893.87
32.4	894.13

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	894.55
Bankfull Cross-Sectional Area:	1.7
Total Cross-Sectional Area:	1.1
Bankfull Width:	3.2
Flood Prone Area Elevation:	895.63
Flood Prone Width:	32.0
Max Depth at Bankfull:	1.1
Mean Depth at Bankfull:	0.5
W / D Ratio:	5.9
Entrenchment Ratio:	10.0
Bank Height Ratio:	1.0
Thalweg Elevation:	893.48

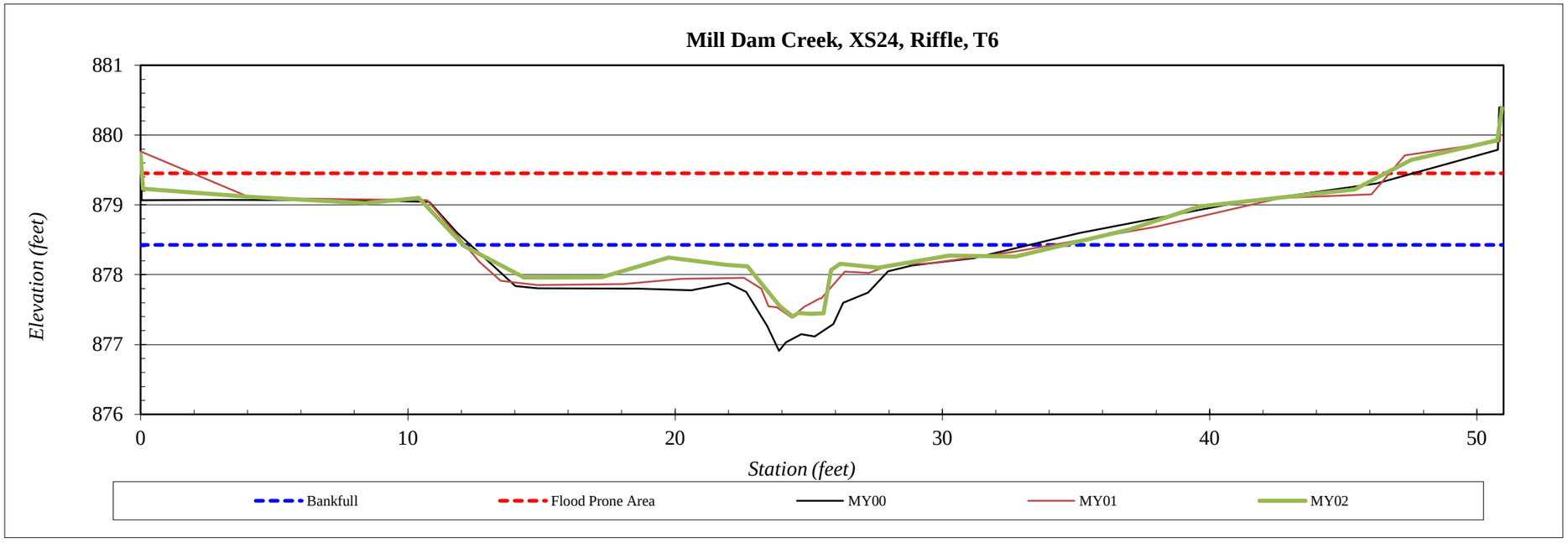


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS24
Drainage Area (sq mi):	0.07
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	879.73
0.1	879.23
4.1	879.12
8.4	879.03
10.4	879.10
12.1	878.41
14.3	877.96
17.3	877.96
19.8	878.25
21.9	878.14
22.7	878.12
23.9	877.55
24.4	877.40
24.6	877.45
25.1	877.44
25.6	877.45
25.8	878.07
26.2	878.16
27.6	878.10
30.3	878.28
32.7	878.26
37.0	878.65
39.6	878.98
45.4	879.22
47.5	879.65
50.8	879.93
50.9	880.39

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	878.43
Bankfull Cross-Sectional Area:	2.6
Total Cross-Sectional Area:	0.9
Bankfull Width:	3.5
Flood Prone Area Elevation:	879.45
Flood Prone Width:	46.5
Max Depth at Bankfull:	1.0
Mean Depth at Bankfull:	0.8
W / D Ratio:	4.6
Entrenchment Ratio:	13.4
Bank Height Ratio:	0.7
Thalweg Elevation:	877.40

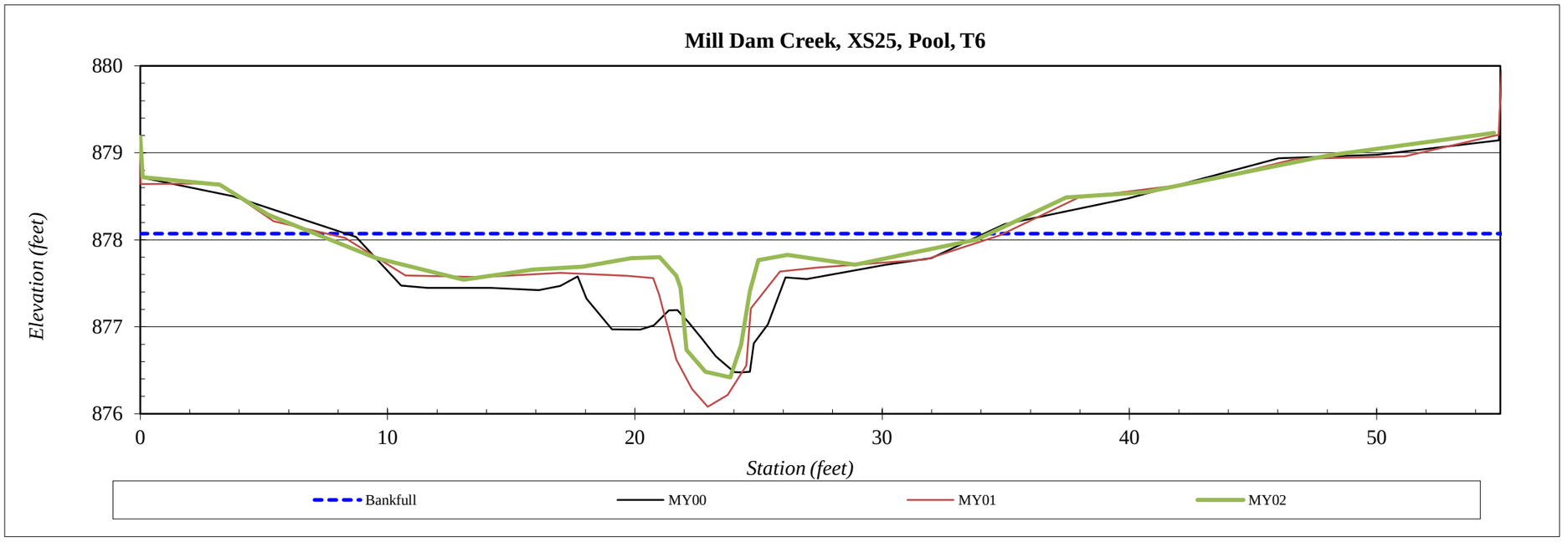


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS25
Drainage Area (sq mi):	0.07
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	879.18
0.1	878.72
3.2	878.63
5.2	878.29
9.5	877.79
13.1	877.54
15.9	877.66
17.9	877.69
19.9	877.79
21.0	877.80
21.7	877.59
21.8	877.45
22.1	876.73
22.9	876.48
23.9	876.42
24.3	876.79
24.7	877.41
25.0	877.77
26.2	877.83
28.9	877.72
33.8	878.00
37.4	878.49
40.6	878.55
48.1	878.97
54.7	879.23

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	878.07
Bankfull Cross-Sectional Area:	5.1
Total Cross-Sectional Area:	2.6
Bankfull Width:	6.3
Flood Prone Area Elevation:	---
Flood Prone Width:	---
Max Depth at Bankfull:	1.7
Mean Depth at Bankfull:	0.8
W / D Ratio:	---
Entrenchment Ratio:	---
Bank Height Ratio:	---
Thalweg Elevation:	876.42

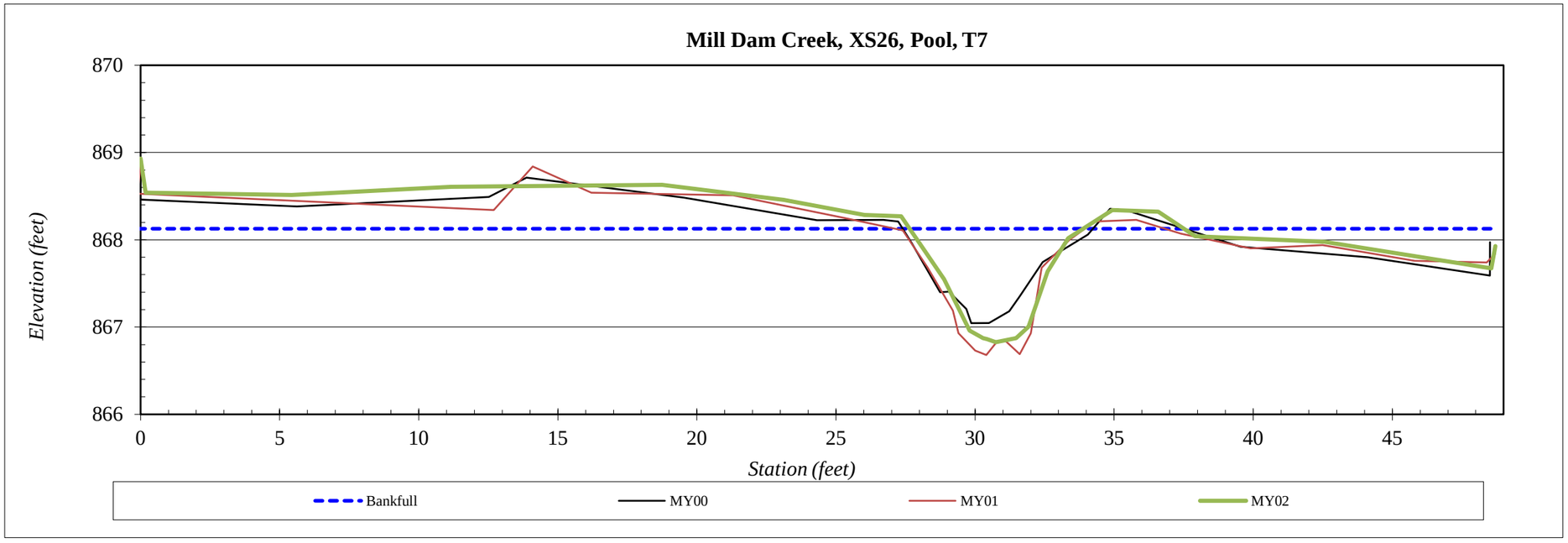


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS26
Drainage Area (sq mi):	0.07
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	868.93
0.2	868.54
5.4	868.52
11.2	868.61
18.8	868.63
23.1	868.46
26.0	868.28
27.3	868.27
28.9	867.55
29.8	866.96
30.3	866.87
30.4	866.86
30.8	866.83
31.5	866.87
31.9	867.01
32.6	867.63
33.3	868.02
34.9	868.34
36.6	868.32
37.9	868.04
42.6	867.98
48.6	867.67
48.7	867.93

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	868.13
Bankfull Cross-Sectional Area:	4.6
Total Cross-Sectional Area:	5.1
Bankfull Width:	6.2
Flood Prone Area Elevation:	---
Flood Prone Width:	---
Max Depth at Bankfull:	1.3
Mean Depth at Bankfull:	0.7
W / D Ratio:	---
Entrenchment Ratio:	---
Bank Height Ratio:	---
Thalweg Elevation:	866.83

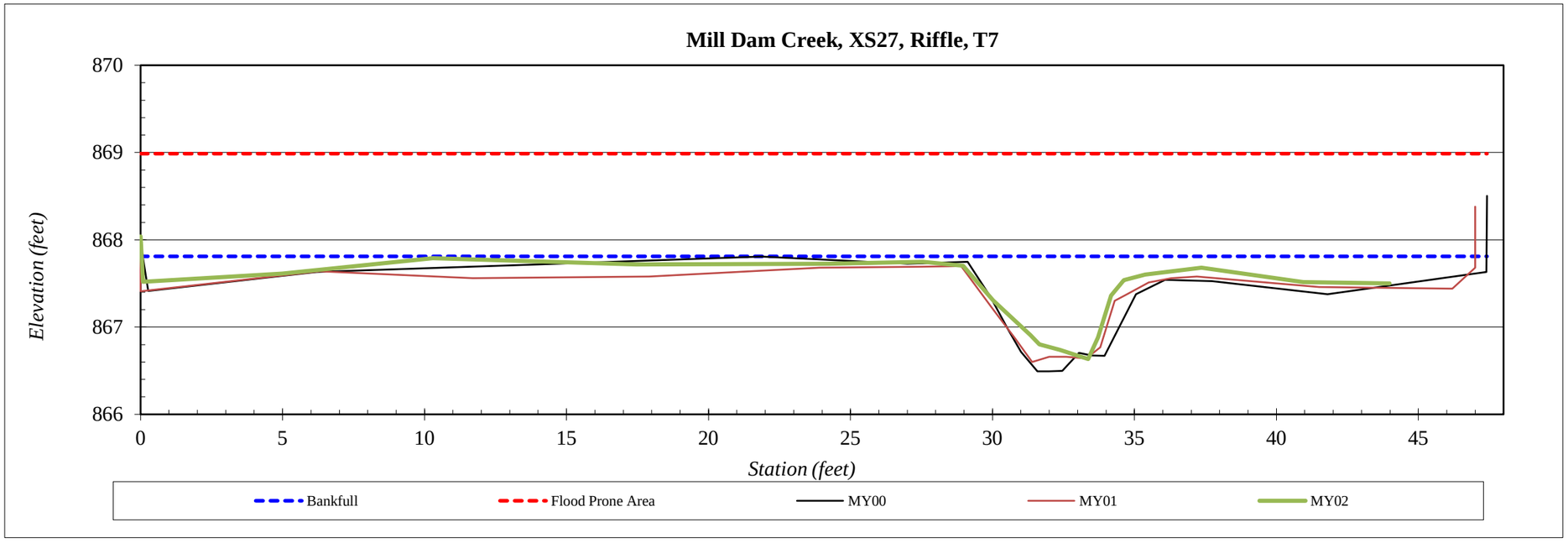


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS27
Drainage Area (sq mi):	0.07
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	868.04
0.1	867.52
5.0	867.61
10.3	867.79
17.5	867.72
24.2	867.73
27.5	867.75
29.0	867.70
30.0	867.31
31.3	866.91
31.7	866.80
32.4	866.74
33.4	866.63
33.7	866.88
34.2	867.36
34.6	867.54
35.4	867.60
37.4	867.68
40.9	867.52
44.0	867.50

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	867.81
Bankfull Cross-Sectional Area:	4.3
Total Cross-Sectional Area:	2.8
Bankfull Width:	5.7
Flood Prone Area Elevation:	868.99
Flood Prone Width:	44.0
Max Depth at Bankfull:	1.2
Mean Depth at Bankfull:	0.8
W / D Ratio:	7.5
Entrenchment Ratio:	7.8
Bank Height Ratio:	0.9
Thalweg Elevation:	866.63

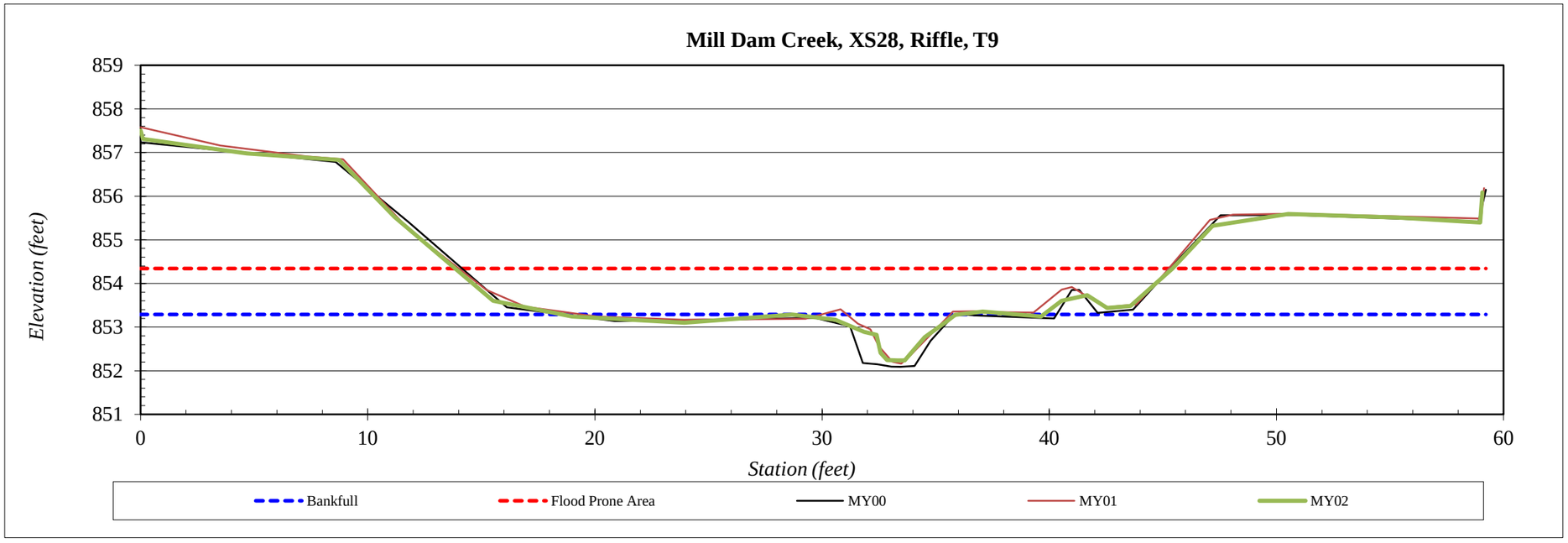


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS28
Drainage Area (sq mi):	0.04
Date:	7/21/2021
Field Crew:	TS/AG

Station	Elevation
0.0	857.51
0.1	857.31
4.7	856.98
8.7	856.83
11.2	855.52
15.5	853.61
19.0	853.25
23.9	853.10
28.7	853.29
30.6	853.17
31.9	852.89
32.4	852.82
32.6	852.41
32.9	852.25
33.3	852.24
33.6	852.24
34.0	852.44
34.5	852.77
35.4	853.11
35.9	853.28
37.1	853.35
39.6	853.25
40.5	853.60
41.7	853.73
42.6	853.44
43.6	853.48
45.4	854.34
47.2	855.32
50.5	855.60
55.4	855.51
59.0	855.40
59.1	856.09

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	853.29
Bankfull Cross-Sectional Area:	2.8
Total Cross-Sectional Area:	1.5
Bankfull Width:	5.3
Flood Prone Area Elevation:	854.34
Flood Prone Width:	31.6
Max Depth at Bankfull:	1.1
Mean Depth at Bankfull:	0.5
W / D Ratio:	9.9
Entrenchment Ratio:	6.0
Bank Height Ratio:	0.8
Thalweg Elevation:	852.24

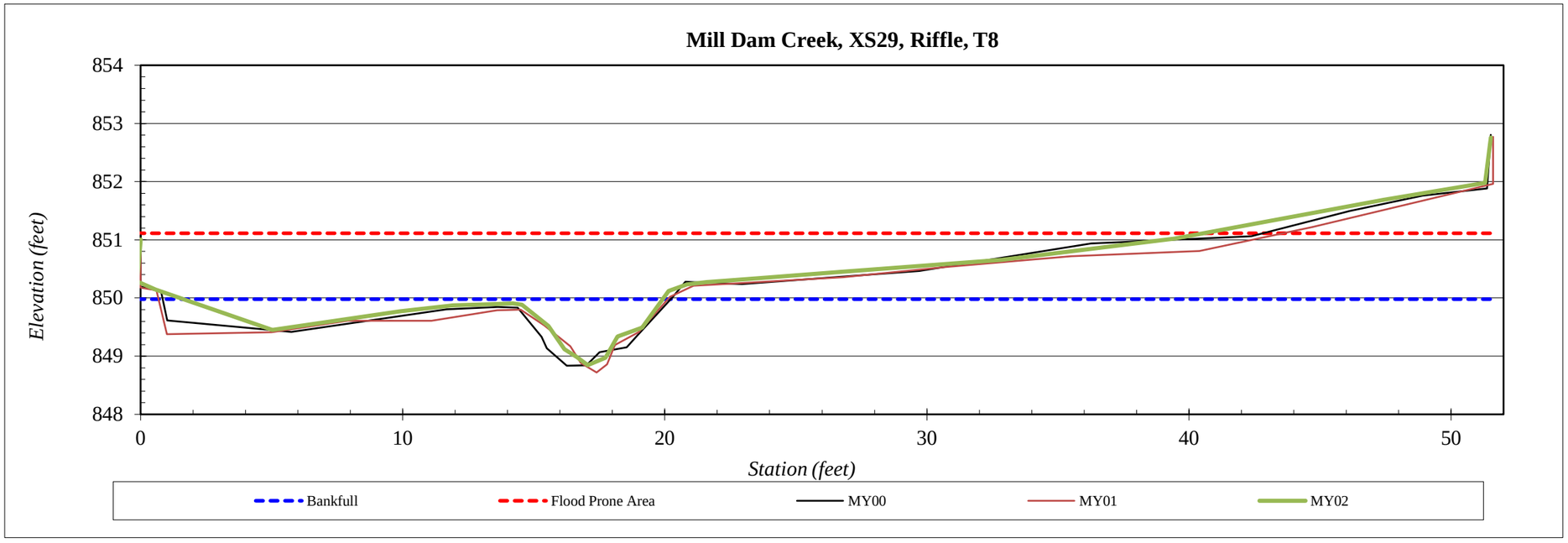


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS29
Drainage Area (sq mi):	0.03
Date:	7/22/2021
Field Crew:	TS/AG

Station	Elevation
0.0	851.00
-0.1	850.29
0.6	850.14
5.0	849.45
9.9	849.77
11.9	849.87
13.6	849.89
14.2	849.91
14.6	849.89
15.6	849.52
16.2	849.12
16.6	848.98
17.1	848.85
17.7	848.97
18.2	849.34
19.1	849.49
20.1	850.12
20.9	850.23
21.6	850.27
23.6	850.34
26.7	850.45
32.8	850.65
39.5	851.02
47.4	851.68
51.3	851.98
51.5	852.76

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	849.98
Bankfull Cross-Sectional Area:	3.4
Total Cross-Sectional Area:	2.6
Bankfull Width:	5.4
Flood Prone Area Elevation:	851.11
Flood Prone Width:	40.6
Max Depth at Bankfull:	1.1
Mean Depth at Bankfull:	0.6
W / D Ratio:	8.5
Entrenchment Ratio:	7.6
Bank Height Ratio:	0.9
Thalweg Elevation:	848.85

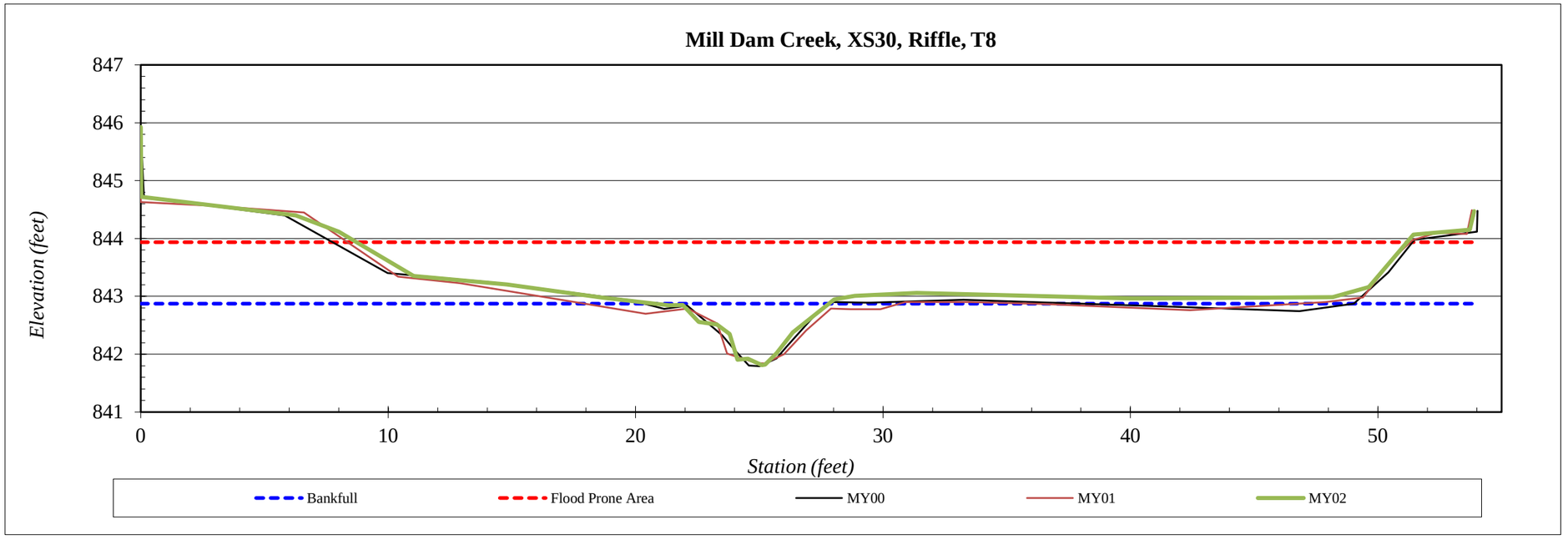


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS30
Drainage Area (sq mi):	0.03
Date:	7/22/2021
Field Crew:	TS/AG

Station	Elevation
0.0	845.93
0.0	844.72
6.3	844.40
8.0	844.12
11.0	843.35
14.8	843.21
18.6	842.98
21.3	842.84
21.9	842.85
22.5	842.56
23.3	842.51
23.8	842.35
24.1	841.91
24.5	841.92
25.1	841.81
25.2	841.82
25.7	842.02
26.4	842.38
28.0	842.95
28.9	843.01
31.4	843.06
40.1	842.96
48.2	842.99
49.6	843.16
51.4	844.07
53.7	844.15
53.9	844.47

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	842.87
Bankfull Cross-Sectional Area:	3.2
Total Cross-Sectional Area:	3.0
Bankfull Width:	7.1
Flood Prone Area Elevation:	843.94
Flood Prone Width:	42.5
Max Depth at Bankfull:	1.1
Mean Depth at Bankfull:	0.5
W / D Ratio:	15.5
Entrenchment Ratio:	6.0
Bank Height Ratio:	1.0
Thalweg Elevation:	841.81

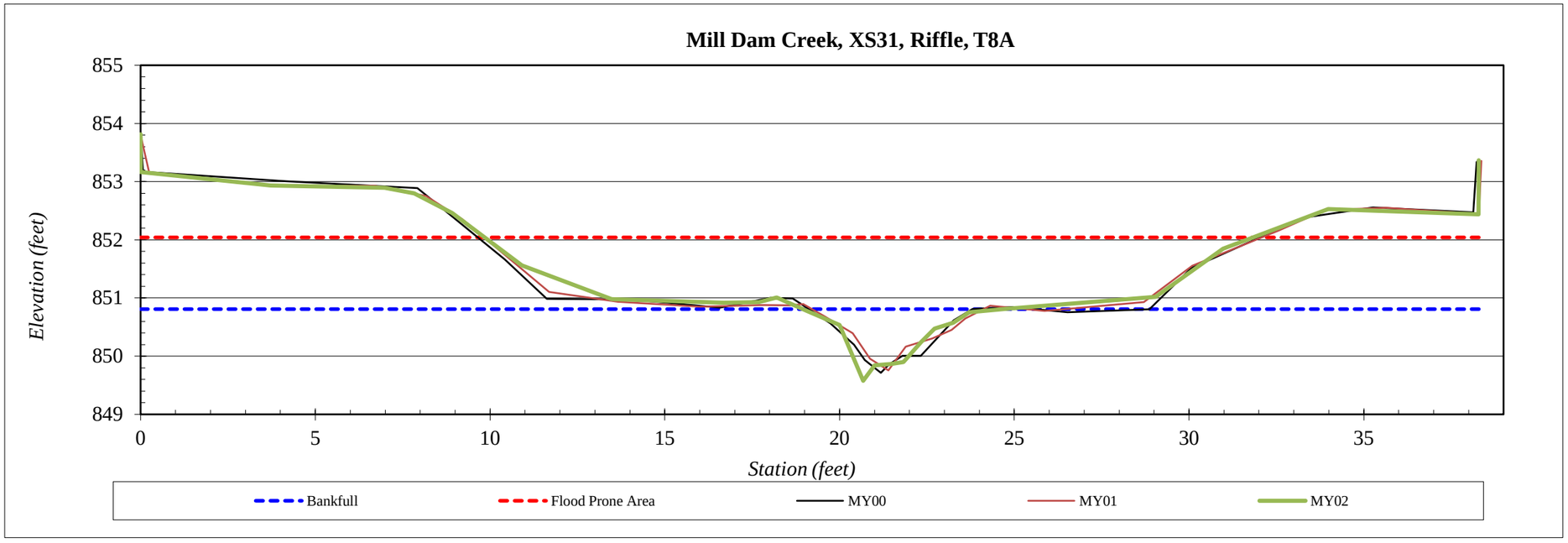


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS31
Drainage Area (sq mi):	0.01
Date:	7/22/2021
Field Crew:	TS/AG

Station	Elevation
0.0	853.81
0.0	853.16
3.7	852.93
7.0	852.89
7.8	852.80
8.9	852.46
10.9	851.56
13.5	850.98
16.7	850.92
17.7	850.93
18.2	851.01
19.0	850.78
20.0	850.54
20.7	849.58
21.0	849.84
21.5	849.87
21.8	849.90
22.3	850.24
22.7	850.48
23.3	850.58
23.7	850.76
24.7	850.81
29.0	851.02
31.0	851.85
34.0	852.53
38.3	852.44
38.3	853.37

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	850.81
Bankfull Cross-Sectional Area:	2.6
Total Cross-Sectional Area:	2.6
Bankfull Width:	5.7
Flood Prone Area Elevation:	852.04
Flood Prone Width:	22.0
Max Depth at Bankfull:	1.2
Mean Depth at Bankfull:	0.5
W / D Ratio:	12.6
Entrenchment Ratio:	3.9
Bank Height Ratio:	1.0
Thalweg Elevation:	849.58

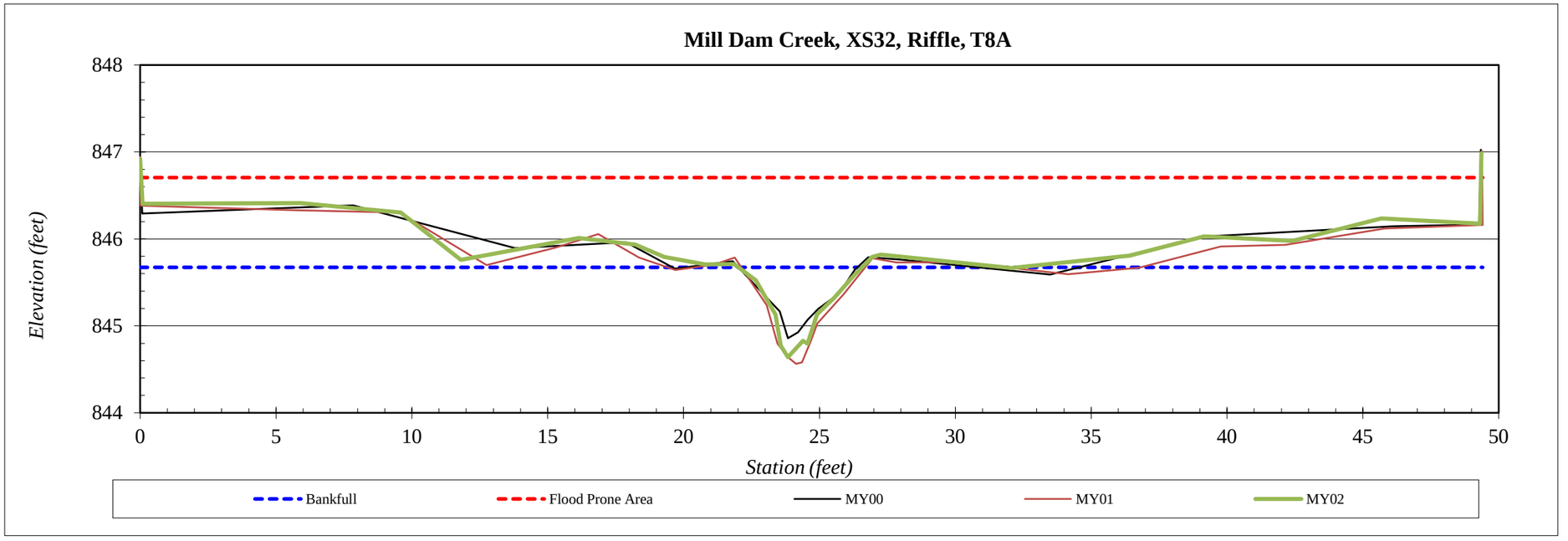


Cross-Section Plots

River Basin:	Yadkin River
Site:	Mill Dam Creek
XS ID	XS32
Drainage Area (sq mi):	0.01
Date:	7/22/2021
Field Crew:	TS/AG

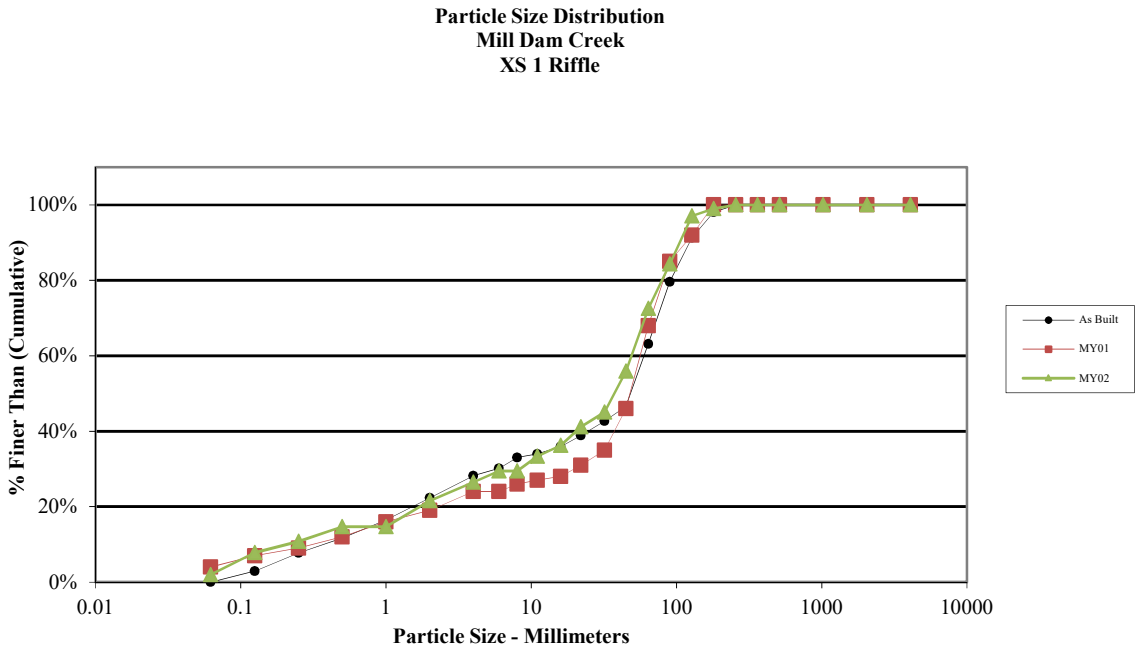
Station	Elevation
0.0	846.92
0.1	846.41
5.9	846.41
9.6	846.30
11.8	845.76
16.1	846.01
18.2	845.93
19.3	845.79
20.8	845.71
21.9	845.71
22.7	845.52
23.4	845.13
23.6	844.77
23.8	844.64
24.4	844.83
24.6	844.79
24.9	845.13
25.5	845.33
26.3	845.58
26.9	845.79
27.3	845.82
28.7	845.78
32.1	845.67
36.4	845.81
39.2	846.03
42.4	845.98
45.7	846.24
49.3	846.17
49.4	846.99

SUMMARY DATA	
Bankfull Elevation (ft) - Based on AB-Bankfull Area	845.67
Bankfull Cross-Sectional Area:	2.1
Total Cross-Sectional Area:	2.5
Bankfull Width:	4.5
Flood Prone Area Elevation:	846.71
Flood Prone Width:	49.3
Max Depth at Bankfull:	1.0
Mean Depth at Bankfull:	0.5
W / D Ratio:	10.0
Entrenchment Ratio:	10.9
Bank Height Ratio:	1.0
Thalweg Elevation:	844.64



Cross-Section 1 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	2
Very Fine	.062 - .125	S	6
Fine	.125 - .25	A	3
Medium	.25 - .50	N	4
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	7
Very Fine	2 - 4		5
Fine	4 - 5.7	G	3
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	4
Medium	11.3 - 16	V	3
Coarse	16 - 22.6	E	5
Coarse	22.6 - 32	L	4
Very Coarse	32 - 45	S	11
Very Coarse	45 - 64		17
Small	64 - 90	C	12
Small	90 - 128	O	13
Large	128 - 180	B	2
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	102

Note:



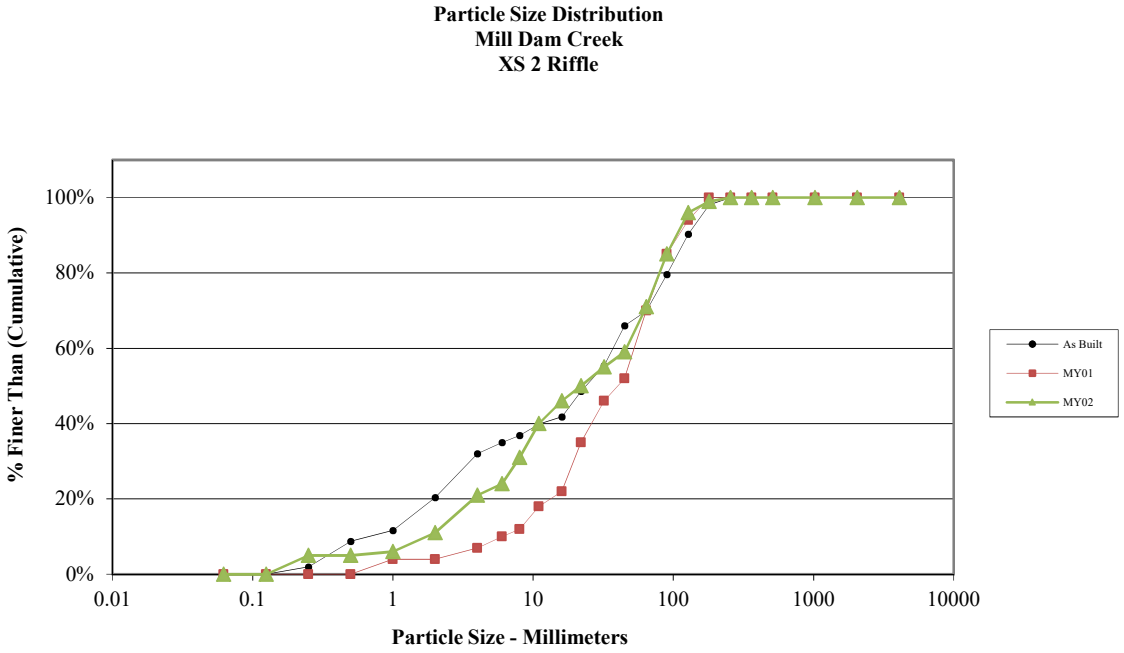
Size (mm)	
D16	1.1
D35	14
D50	37
D65	55
D84	89
D95	120

Size Distribution	
mean	9.9
dispersion	18.0
skewness	-0.41

Type	
silt/clay	2%
sand	20%
gravel	51%
cobble	25%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 2 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	5
Medium	.25 - .50	N	
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	5
Very Fine	2 - 4		10
Fine	4 - 5.7	G	3
Fine	5.7 - 8	R	7
Medium	8 - 11.3	A	9
Medium	11.3 - 16	V	6
Coarse	16 - 22.6	E	4
Coarse	22.6 - 32	L	5
Very Coarse	32 - 45	S	4
Very Coarse	45 - 64		12
Small	64 - 90	C	14
Small	90 - 128	O	11
Large	128 - 180	B	3
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



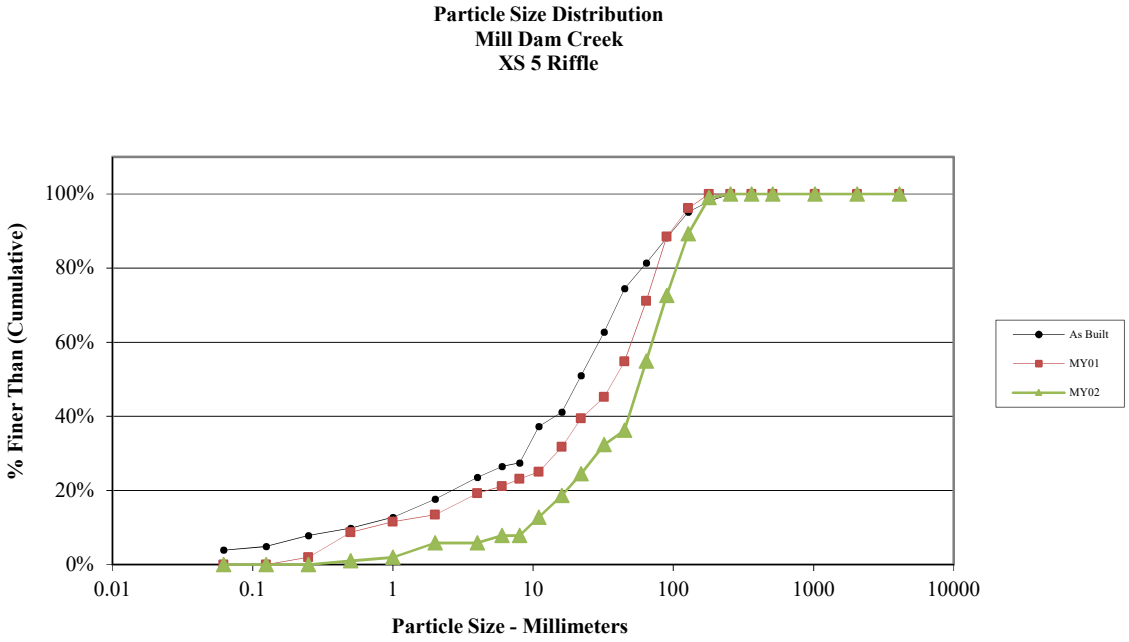
Size (mm)	
D16	2.8
D35	9.2
D50	22
D65	54
D84	88
D95	120

Size Distribution	
mean	15.7
dispersion	5.9
skewness	-0.12

Type	
silt/clay	0%
sand	11%
gravel	60%
cobble	29%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 5 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	1
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	4
Very Fine	2 - 4		
Fine	4 - 5.7	G	2
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	5
Medium	11.3 - 16	V	6
Coarse	16 - 22.6	E	6
Coarse	22.6 - 32	L	8
Very Coarse	32 - 45	S	4
Very Coarse	45 - 64		19
Small	64 - 90	C	18
Small	90 - 128	O	17
Large	128 - 180	B	10
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	102

Note:



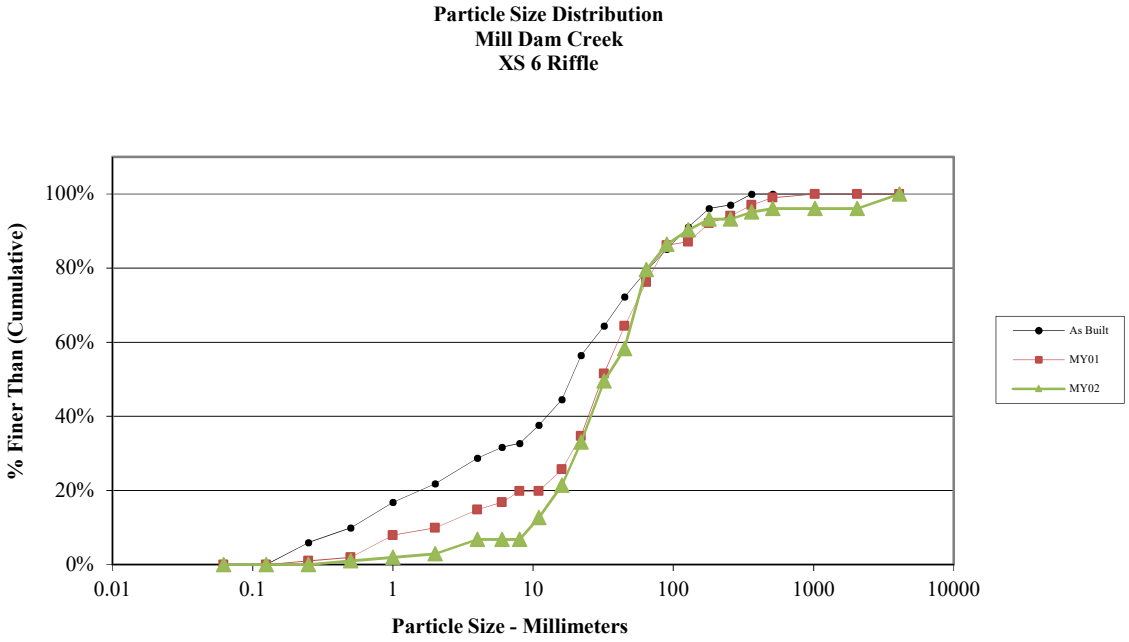
Size (mm)	
D16	14
D35	40
D50	58
D65	78
D84	110
D95	160

Size Distribution	
mean	39.2
dispersion	3.0
skewness	-0.18

Type	
silt/clay	0%
sand	6%
gravel	49%
cobble	45%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 6 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	1
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	1
Very Fine	2 - 4		4
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	6
Medium	11.3 - 16	V	9
Coarse	16 - 22.6	E	12
Coarse	22.6 - 32	L	17
Very Coarse	32 - 45	S	9
Very Coarse	45 - 64		22
Small	64 - 90	C	7
Small	90 - 128	O	4
Large	128 - 180	B	3
Large	180 - 256	L	
Small	256 - 362	B	2
Small	362 - 512	L	1
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	4
		Total	103

Note:



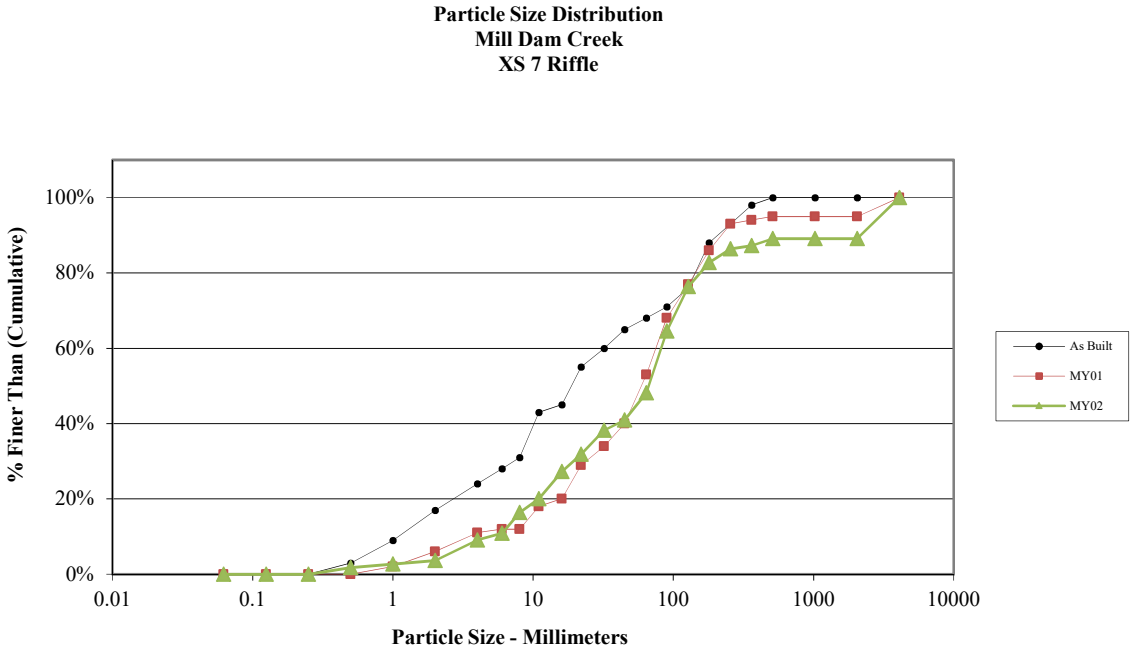
Size (mm)	
D16	13
D35	23
D50	33
D65	50
D84	80
D95	350

Size Distribution	
mean	32.2
dispersion	2.5
skewness	-0.01

Type	
silt/clay	0%
sand	3%
gravel	77%
cobble	14%
boulder	3%
bedrock	4%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 7 Riffle -MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	2
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	1
Very Fine	2 - 4		6
Fine	4 - 5.7	G	2
Fine	5.7 - 8	R	6
Medium	8 - 11.3	A	4
Medium	11.3 - 16	V	8
Coarse	16 - 22.6	E	5
Coarse	22.6 - 32	L	7
Very Coarse	32 - 45	S	3
Very Coarse	45 - 64		8
Small	64 - 90	C	18
Small	90 - 128	O	13
Large	128 - 180	B	7
Large	180 - 256	L	4
Small	256 - 362	B	1
Small	362 - 512	L	2
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	12
		Total	110

Note:



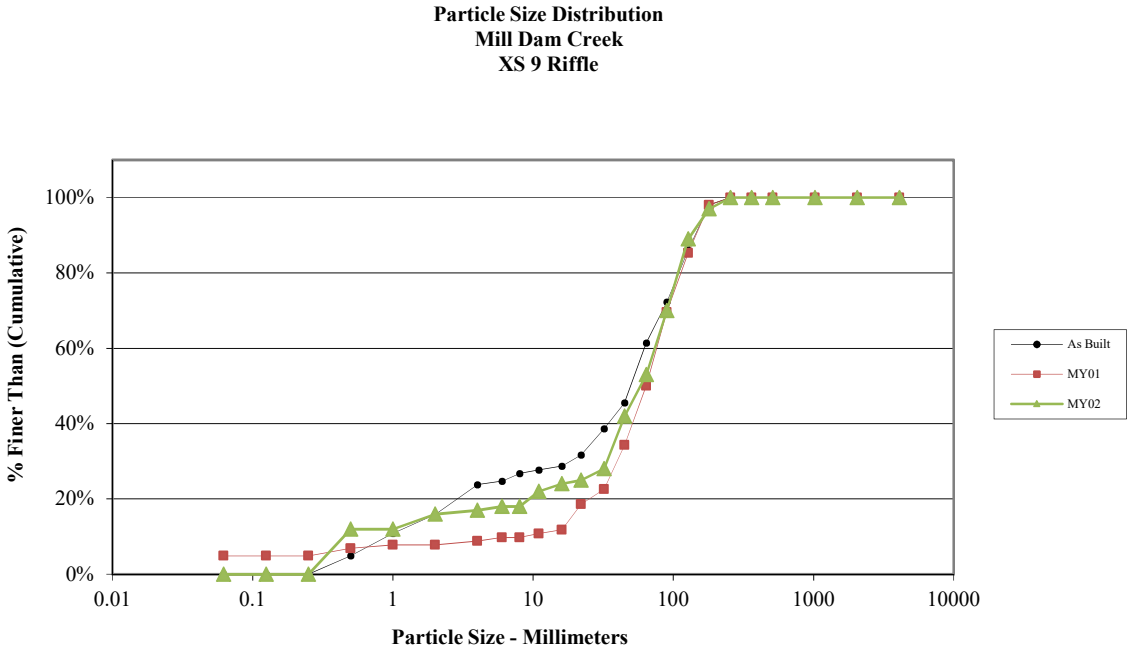
Size (mm)	
D16	7.8
D35	27
D50	66
D65	91
D84	200
D95	3000

Size Distribution	
mean	39.5
dispersion	5.7
skewness	-0.19

Type	
silt/clay	0%
sand	4%
gravel	45%
cobble	35%
boulder	3%
bedrock	11%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 9 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	12
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	4
Very Fine	2 - 4		1
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	4
Medium	11.3 - 16	V	2
Coarse	16 - 22.6	E	1
Coarse	22.6 - 32	L	3
Very Coarse	32 - 45	S	14
Very Coarse	45 - 64		11
Small	64 - 90	C	17
Small	90 - 128	O	19
Large	128 - 180	B	8
Large	180 - 256	L	3
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



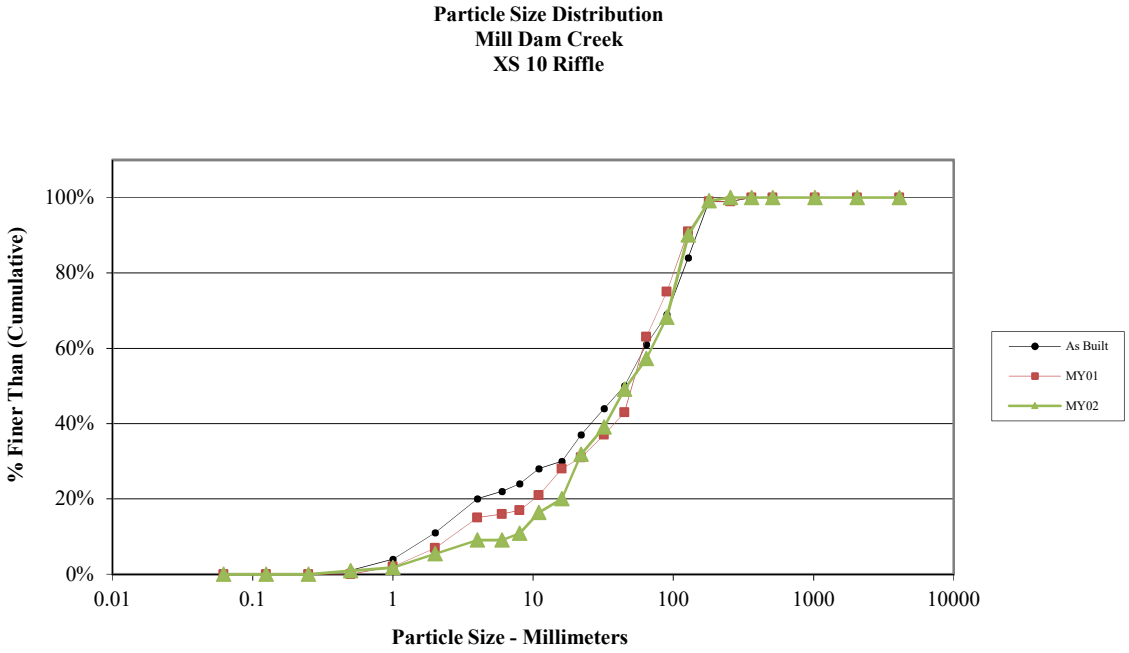
Size (mm)	
D16	2
D35	38
D50	58
D65	81
D84	120
D95	170

Size Distribution	
mean	15.5
dispersion	15.5
skewness	-0.43

Type	
silt/clay	0%
sand	16%
gravel	37%
cobble	44%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 10 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	1
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	4
Very Fine	2 - 4		4
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	2
Medium	8 - 11.3	A	6
Medium	11.3 - 16	V	4
Coarse	16 - 22.6	E	13
Coarse	22.6 - 32	L	8
Very Coarse	32 - 45	S	11
Very Coarse	45 - 64		9
Small	64 - 90	C	12
Small	90 - 128	O	24
Large	128 - 180	B	10
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	110

Note:



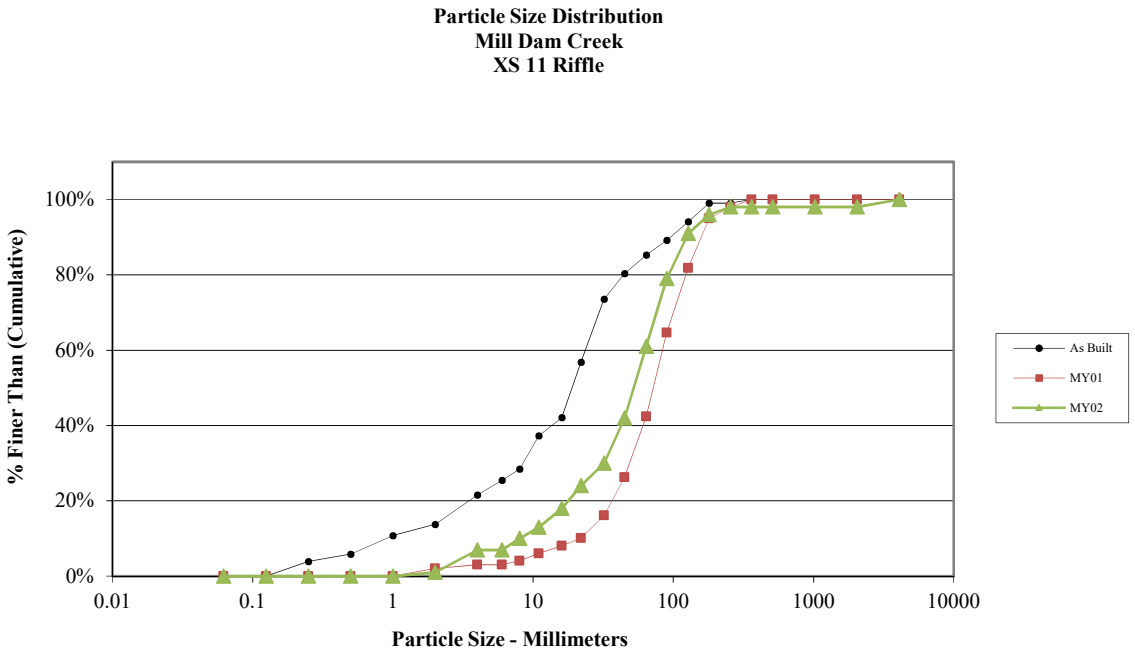
Size (mm)	
D16	11
D35	26
D50	47
D65	81
D84	120
D95	150

Size Distribution	
mean	36.3
dispersion	3.4
skewness	-0.11

Type	
silt/clay	0%
sand	5%
gravel	52%
cobble	42%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 11 Riffle -MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	1
Very Fine	2 - 4		6
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	3
Medium	8 - 11.3	A	3
Medium	11.3 - 16	V	5
Coarse	16 - 22.6	E	6
Coarse	22.6 - 32	L	6
Very Coarse	32 - 45	S	12
Very Coarse	45 - 64		19
Small	64 - 90	C	18
Small	90 - 128	O	12
Large	128 - 180	B	5
Large	180 - 256	L	2
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	2
		Total	100

Note:



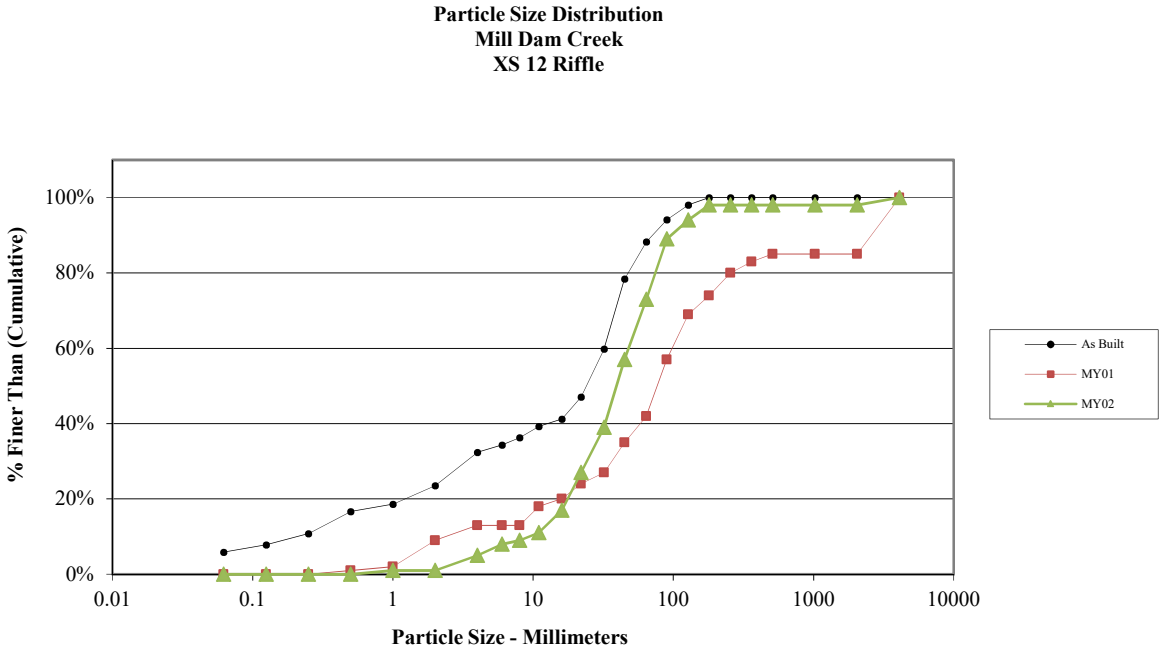
Size (mm)	
D16	14
D35	37
D50	52
D65	69
D84	100
D95	170

Size Distribution	
mean	37.4
dispersion	2.8
skewness	-0.15

Type	
silt/clay	0%
sand	1%
gravel	60%
cobble	37%
boulder	0%
bedrock	2%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 12 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	
Very Fine	2 - 4		4
Fine	4 - 5.7	G	3
Fine	5.7 - 8	R	1
Medium	8 - 11.3	A	2
Medium	11.3 - 16	V	6
Coarse	16 - 22.6	E	10
Coarse	22.6 - 32	L	12
Very Coarse	32 - 45	S	18
Very Coarse	45 - 64		16
Small	64 - 90	C	16
Small	90 - 128	O	5
Large	128 - 180	B	4
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	2
		Total	100

Note:



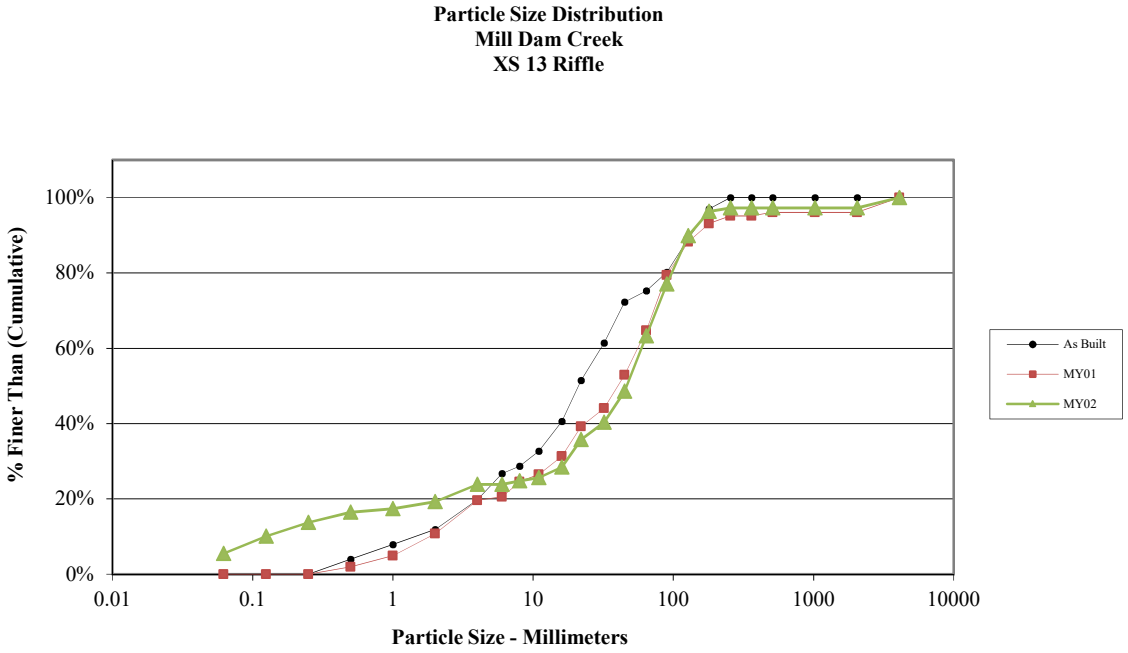
Size (mm)	
D16	15
D35	28
D50	39
D65	54
D84	81
D95	140

Size Distribution	
mean	34.9
dispersion	2.3
skewness	-0.06

Type	
silt/clay	0%
sand	1%
gravel	72%
cobble	25%
boulder	0%
bedrock	2%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 13 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	6
Very Fine	.062 - .125	S	5
Fine	.125 - .25	A	4
Medium	.25 - .50	N	3
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	2
Very Fine	2 - 4		5
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	1
Medium	8 - 11.3	A	1
Medium	11.3 - 16	V	3
Coarse	16 - 22.6	E	8
Coarse	22.6 - 32	L	5
Very Coarse	32 - 45	S	9
Very Coarse	45 - 64		16
Small	64 - 90	C	15
Small	90 - 128	O	14
Large	128 - 180	B	7
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	3
		Total	109

Note:



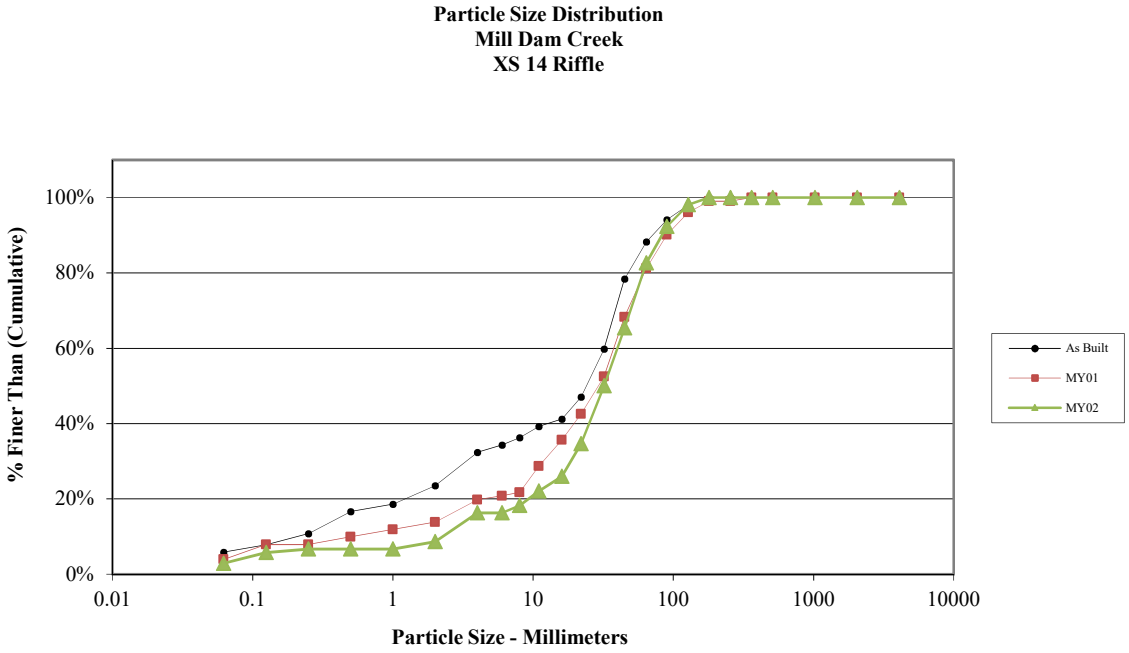
Size (mm)	
D16	0.44
D35	21
D50	47
D65	67
D84	110
D95	170

Size Distribution	
mean	7.0
dispersion	54.6
skewness	-0.54

Type	
silt/clay	6%
sand	14%
gravel	44%
cobble	34%
boulder	0%
bedrock	3%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 14 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	3
Very Fine	.062 - .125	S	3
Fine	.125 - .25	A	1
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	2
Very Fine	2 - 4		8
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	2
Medium	8 - 11.3	A	4
Medium	11.3 - 16	V	4
Coarse	16 - 22.6	E	9
Coarse	22.6 - 32	L	16
Very Coarse	32 - 45	S	16
Very Coarse	45 - 64		18
Small	64 - 90	C	10
Small	90 - 128	O	6
Large	128 - 180	B	2
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	104

Note:



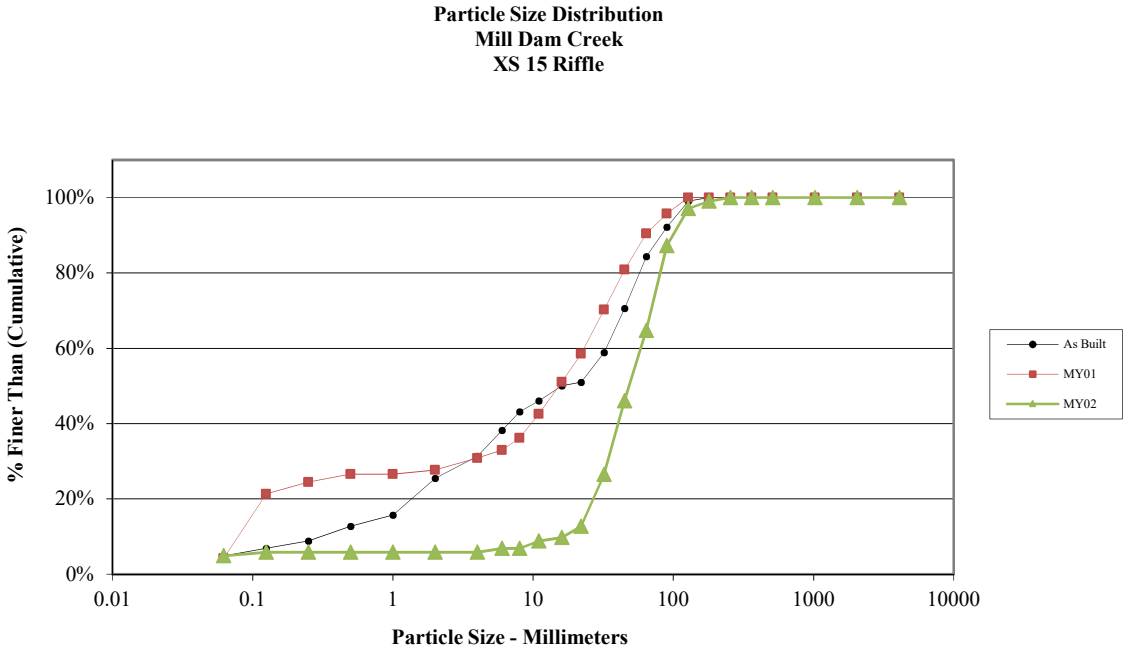
Size (mm)	
D16	3.9
D35	22
D50	32
D65	45
D84	67
D95	110

Size Distribution	
mean	16.2
dispersion	5.1
skewness	-0.27

Type	
silt/clay	3%
sand	6%
gravel	74%
cobble	17%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 15 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	5
Very Fine	.062 - .125	S	1
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	2
Medium	11.3 - 16	V	1
Coarse	16 - 22.6	E	3
Coarse	22.6 - 32	L	14
Very Coarse	32 - 45	S	20
Very Coarse	45 - 64		19
Small	64 - 90	C	23
Small	90 - 128	O	10
Large	128 - 180	B	2
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	102

Note:



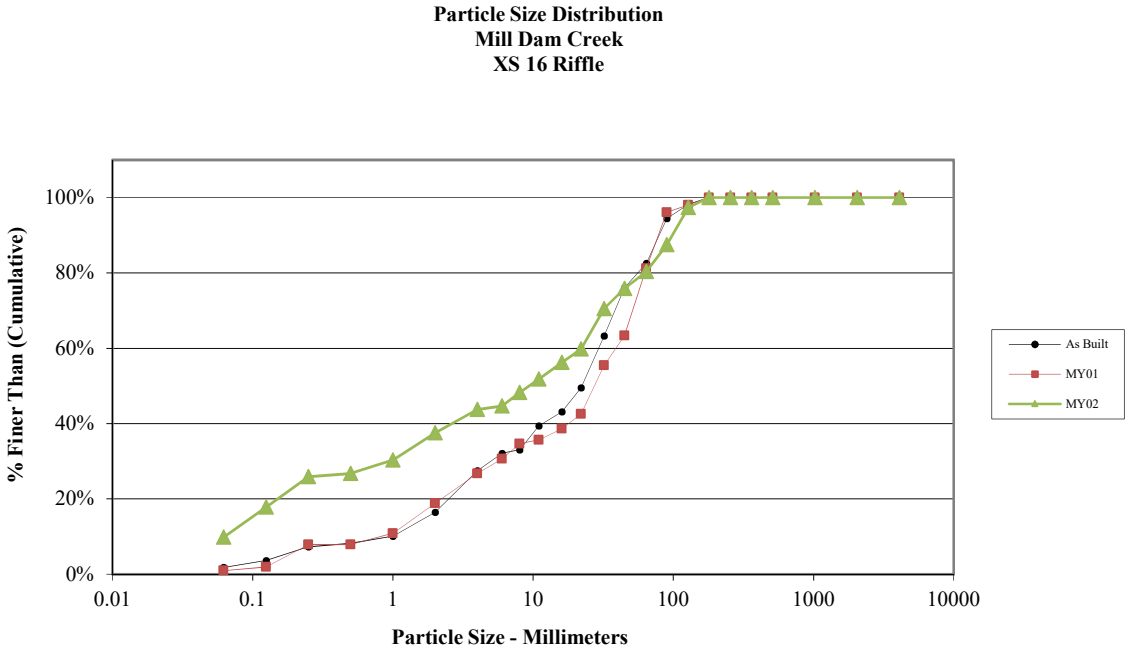
Size (mm)	
D16	24
D35	37
D50	48
D65	64
D84	86
D95	120

Size Distribution	
mean	45.4
dispersion	1.9
skewness	-0.03

Type	
silt/clay	5%
sand	1%
gravel	59%
cobble	35%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 16 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	11
Very Fine	.062 - .125	S	9
Fine	.125 - .25	A	9
Medium	.25 - .50	N	1
Coarse	.50 - 1	D	4
Very Coarse	1 - 2	S	8
Very Fine	2 - 4		7
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	4
Medium	8 - 11.3	A	4
Medium	11.3 - 16	V	5
Coarse	16 - 22.6	E	4
Coarse	22.6 - 32	L	12
Very Coarse	32 - 45	S	6
Very Coarse	45 - 64		5
Small	64 - 90	C	8
Small	90 - 128	O	11
Large	128 - 180	B	3
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	112

Note:



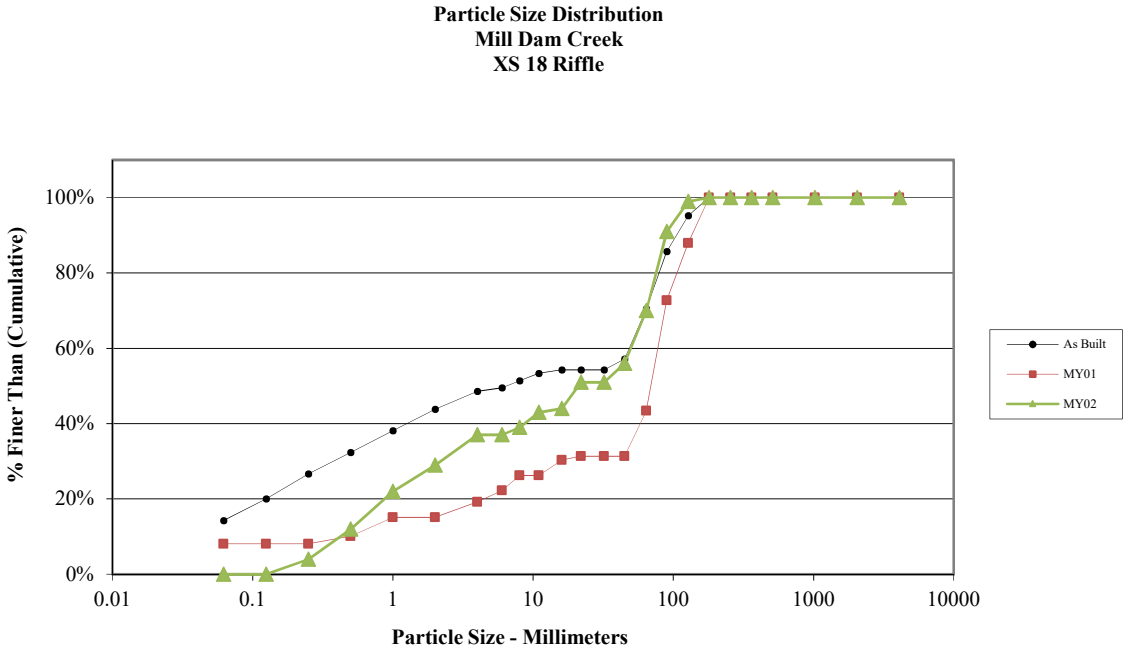
Size (mm)	
D16	0.11
D35	1.6
D50	9.4
D65	26
D84	76
D95	120

Size Distribution	
mean	2.9
dispersion	46.8
skewness	-0.30

Type	
silt/clay	10%
sand	28%
gravel	43%
cobble	20%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 18 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	4
Medium	.25 - .50	N	8
Coarse	.50 - 1	D	10
Very Coarse	1 - 2	S	7
Very Fine	2 - 4		8
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	2
Medium	8 - 11.3	A	4
Medium	11.3 - 16	V	1
Coarse	16 - 22.6	E	7
Coarse	22.6 - 32	L	
Very Coarse	32 - 45	S	5
Very Coarse	45 - 64		14
Small	64 - 90	C	21
Small	90 - 128	O	8
Large	128 - 180	B	1
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



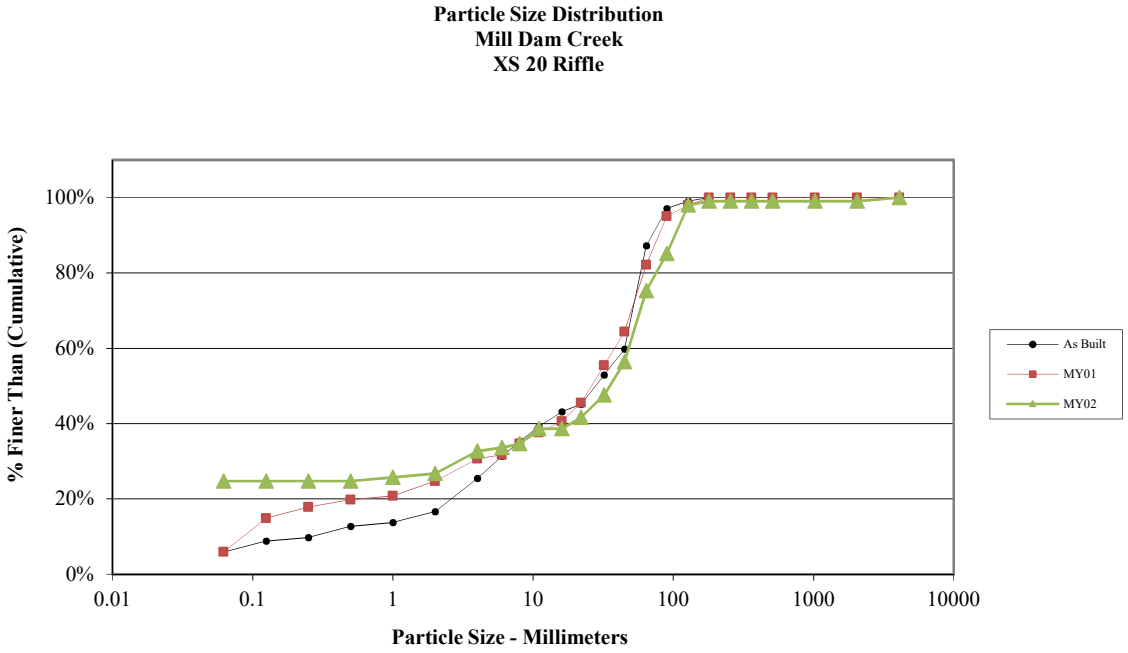
Size (mm)	
D16	0.66
D35	3.4
D50	21
D65	56
D84	80
D95	110

Size Distribution	
mean	7.3
dispersion	17.8
skewness	-0.32

Type	
silt/clay	0%
sand	29%
gravel	41%
cobble	30%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 20 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	25
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	1
Very Fine	2 - 4		6
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	1
Medium	8 - 11.3	A	4
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	3
Coarse	22.6 - 32	L	6
Very Coarse	32 - 45	S	9
Very Coarse	45 - 64		19
Small	64 - 90	C	10
Small	90 - 128	O	13
Large	128 - 180	B	1
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	1
		Total	101

Note:



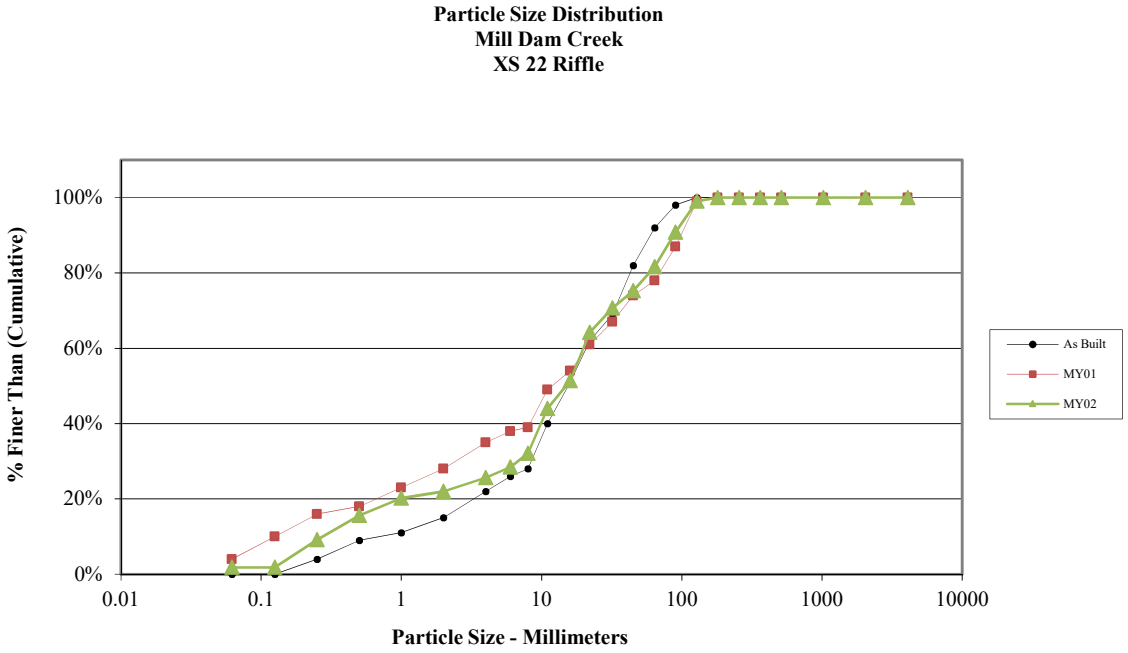
Size (mm)	
D16	0.062
D35	8.2
D50	35
D65	53
D84	87
D95	120

Size Distribution	
mean	2.3
dispersion	283.5
skewness	-0.66

Type	
silt/clay	25%
sand	2%
gravel	49%
cobble	24%
boulder	0%
bedrock	1%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 22 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	2
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	8
Medium	.25 - .50	N	7
Coarse	.50 - 1	D	5
Very Coarse	1 - 2	S	2
Very Fine	2 - 4		4
Fine	4 - 5.7	G	3
Fine	5.7 - 8	R	4
Medium	8 - 11.3	A	13
Medium	11.3 - 16	V	8
Coarse	16 - 22.6	E	14
Coarse	22.6 - 32	L	7
Very Coarse	32 - 45	S	5
Very Coarse	45 - 64		7
Small	64 - 90	C	10
Small	90 - 128	O	9
Large	128 - 180	B	1
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	109

Note:



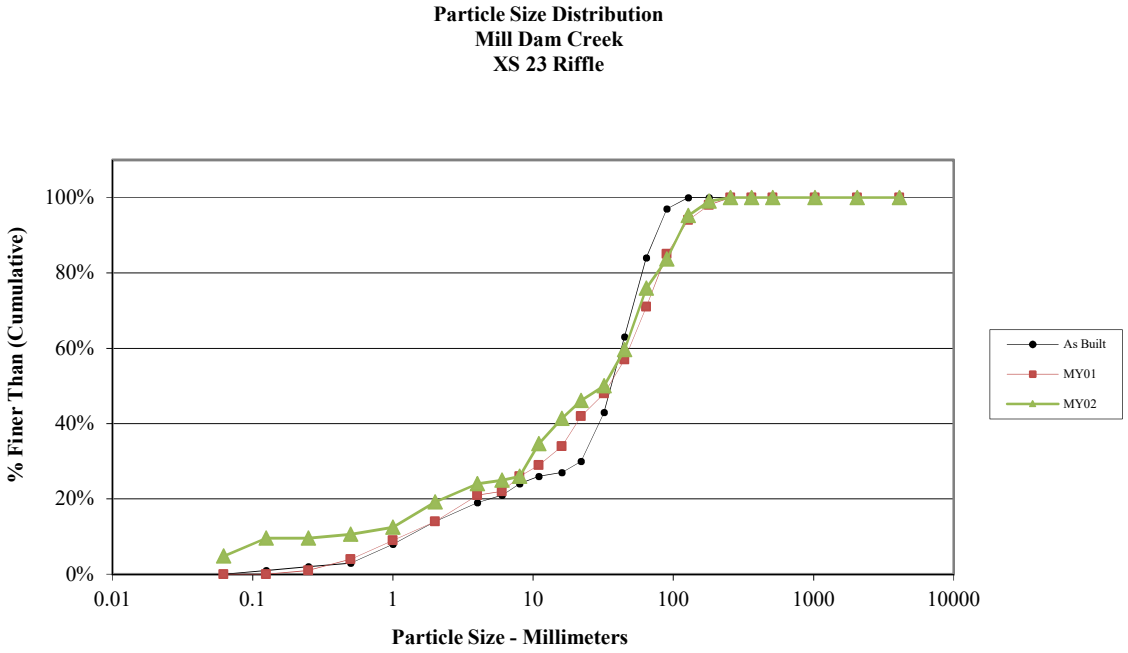
Size (mm)	
D16	0.53
D35	8.6
D50	15
D65	23
D84	70
D95	110

Size Distribution	
mean	6.1
dispersion	16.5
skewness	-0.27

Type	
silt/clay	2%
sand	20%
gravel	60%
cobble	18%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 23 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	5
Very Fine	.062 - .125	S	5
Fine	.125 - .25	A	
Medium	.25 - .50	N	1
Coarse	.50 - 1	D	2
Very Coarse	1 - 2	S	7
Very Fine	2 - 4		5
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	1
Medium	8 - 11.3	A	9
Medium	11.3 - 16	V	7
Coarse	16 - 22.6	E	5
Coarse	22.6 - 32	L	4
Very Coarse	32 - 45	S	10
Very Coarse	45 - 64		17
Small	64 - 90	C	8
Small	90 - 128	O	12
Large	128 - 180	B	4
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	104

Note:



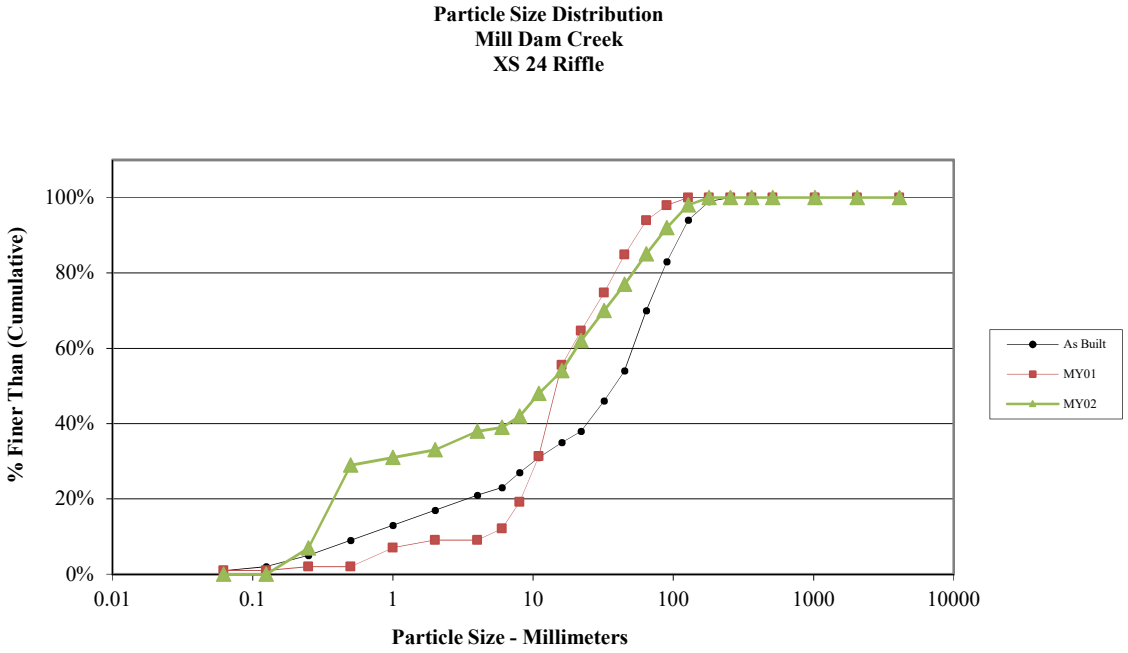
Size (mm)	
D16	1.4
D35	11
D50	32
D65	51
D84	91
D95	130

Size Distribution	
mean	11.3
dispersion	12.9
skewness	-0.34

Type	
silt/clay	5%
sand	14%
gravel	57%
cobble	24%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 24 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	7
Medium	.25 - .50	N	22
Coarse	.50 - 1	D	2
Very Coarse	1 - 2	S	2
Very Fine	2 - 4		5
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	3
Medium	8 - 11.3	A	6
Medium	11.3 - 16	V	6
Coarse	16 - 22.6	E	8
Coarse	22.6 - 32	L	8
Very Coarse	32 - 45	S	7
Very Coarse	45 - 64		8
Small	64 - 90	C	7
Small	90 - 128	O	6
Large	128 - 180	B	2
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



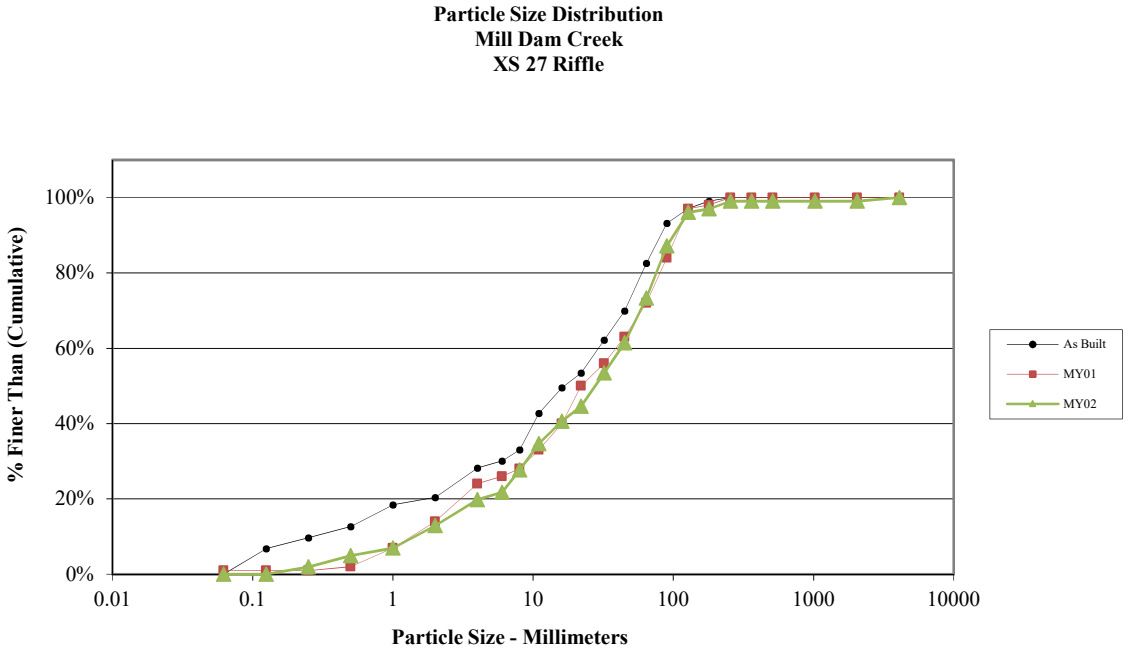
Size (mm)	
D16	0.33
D35	2.6
D50	12
D65	25
D84	61
D95	110

Size Distribution	
mean	4.5
dispersion	20.7
skewness	-0.28

Type	
silt/clay	0%
sand	33%
gravel	52%
cobble	15%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 27 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	2
Medium	.25 - .50	N	3
Coarse	.50 - 1	D	2
Very Coarse	1 - 2	S	6
Very Fine	2 - 4		7
Fine	4 - 5.7	G	2
Fine	5.7 - 8	R	6
Medium	8 - 11.3	A	7
Medium	11.3 - 16	V	6
Coarse	16 - 22.6	E	4
Coarse	22.6 - 32	L	9
Very Coarse	32 - 45	S	8
Very Coarse	45 - 64		12
Small	64 - 90	C	14
Small	90 - 128	O	9
Large	128 - 180	B	1
Large	180 - 256	L	2
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	1
		Total	101

Note:



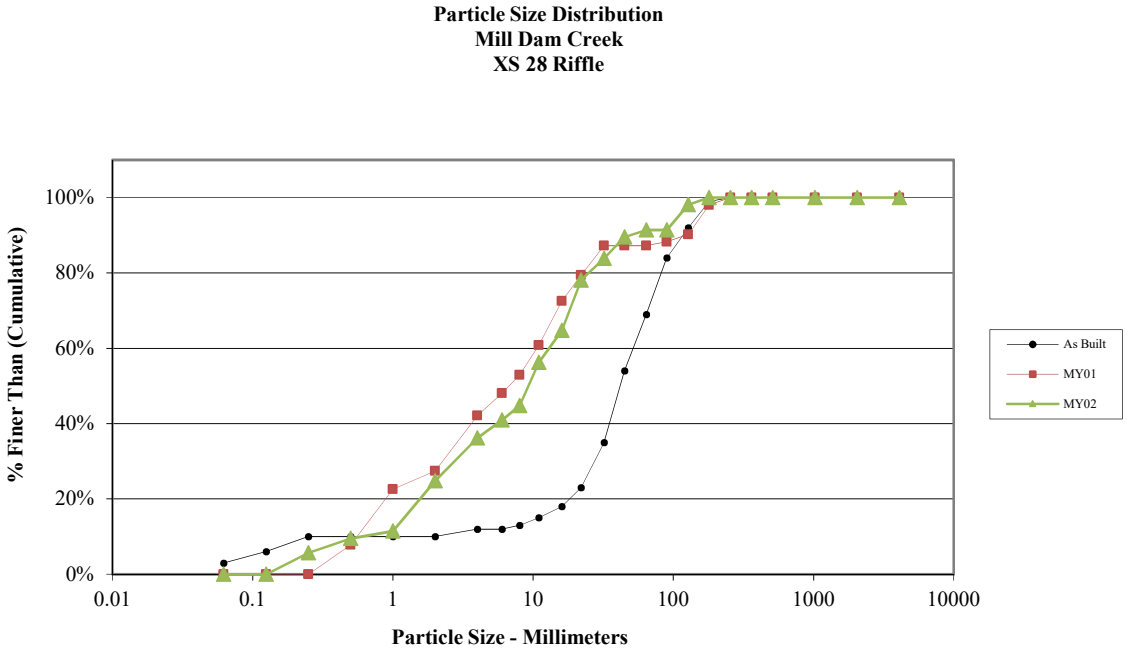
Size (mm)	
D16	2.7
D35	11
D50	28
D65	50
D84	83
D95	120

Size Distribution	
mean	15.0
dispersion	6.7
skewness	-0.22

Type	
silt/clay	0%
sand	13%
gravel	60%
cobble	26%
boulder	0%
bedrock	1%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 28 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	6
Medium	.25 - .50	N	4
Coarse	.50 - 1	D	2
Very Coarse	1 - 2	S	14
Very Fine	2 - 4		12
Fine	4 - 5.7	G	5
Fine	5.7 - 8	R	4
Medium	8 - 11.3	A	12
Medium	11.3 - 16	V	9
Coarse	16 - 22.6	E	14
Coarse	22.6 - 32	L	6
Very Coarse	32 - 45	S	6
Very Coarse	45 - 64		2
Small	64 - 90	C	
Small	90 - 128	O	7
Large	128 - 180	B	2
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	105

Note:



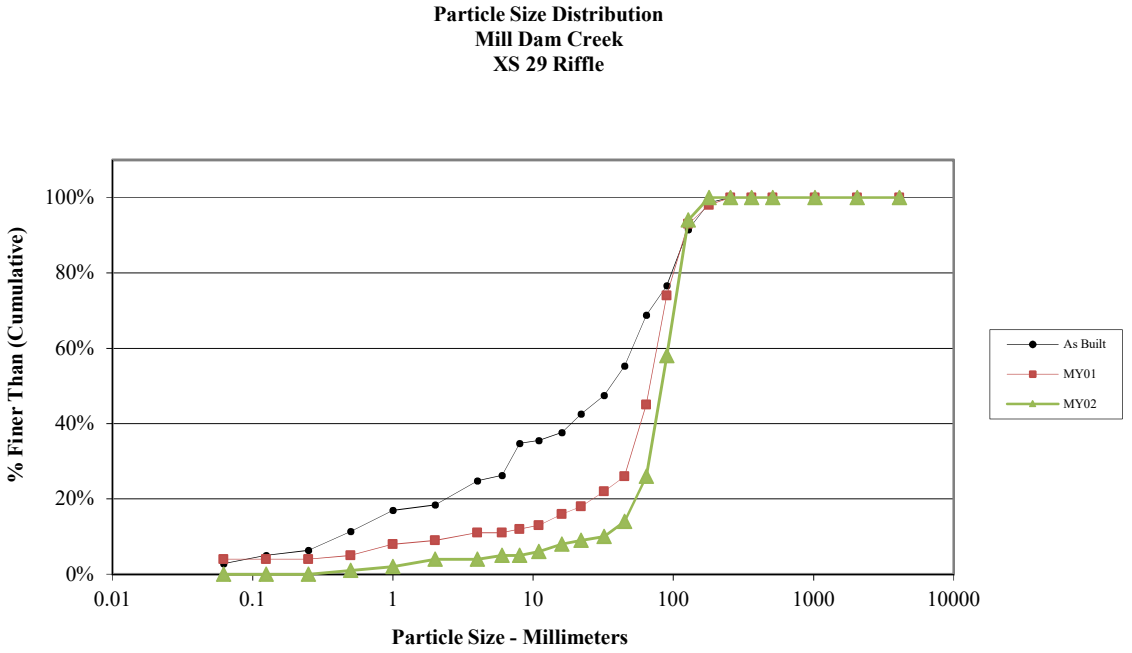
Size (mm)	
D16	1.3
D35	3.7
D50	9.3
D65	16
D84	32
D95	110

Size Distribution	
mean	6.4
dispersion	5.3
skewness	-0.13

Type	
silt/clay	0%
sand	25%
gravel	67%
cobble	9%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 29 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	1
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	2
Very Fine	2 - 4		
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	1
Medium	11.3 - 16	V	2
Coarse	16 - 22.6	E	1
Coarse	22.6 - 32	L	1
Very Coarse	32 - 45	S	4
Very Coarse	45 - 64		12
Small	64 - 90	C	32
Small	90 - 128	O	36
Large	128 - 180	B	6
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



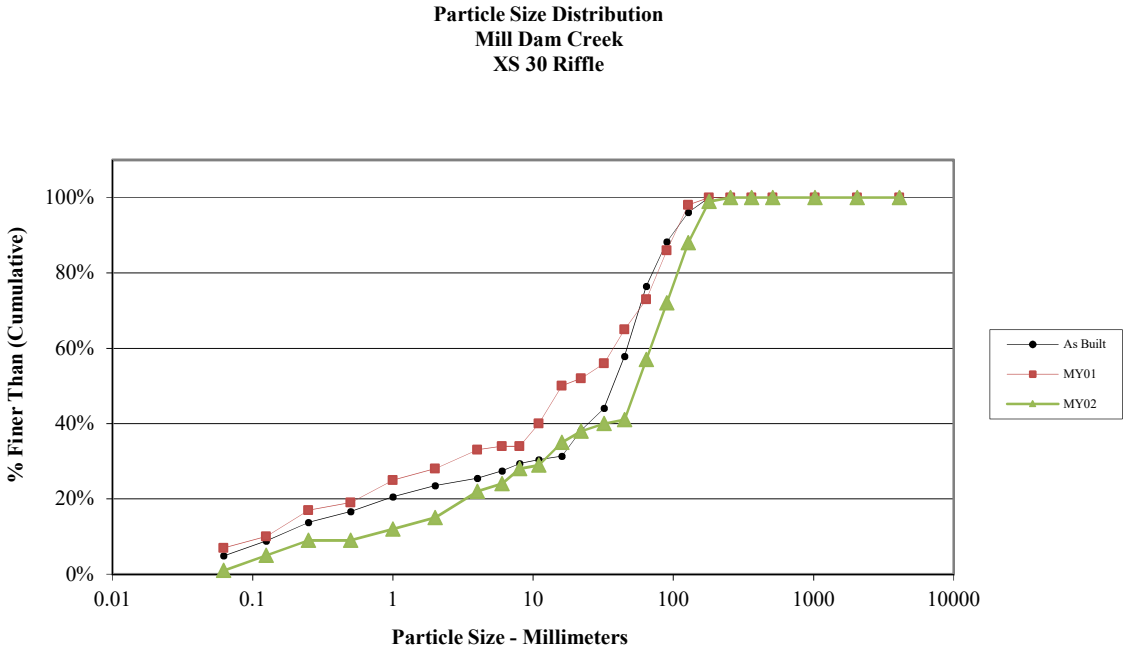
Size (mm)	
D16	48
D35	70
D50	83
D65	96
D84	120
D95	140

Size Distribution	
mean	75.9
dispersion	1.6
skewness	-0.06

Type	
silt/clay	0%
sand	4%
gravel	22%
cobble	74%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 30 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	1
Very Fine	.062 - .125	S	4
Fine	.125 - .25	A	4
Medium	.25 - .50	N	
Coarse	.50 - 1	D	3
Very Coarse	1 - 2	S	3
Very Fine	2 - 4		7
Fine	4 - 5.7	G	2
Fine	5.7 - 8	R	4
Medium	8 - 11.3	A	1
Medium	11.3 - 16	V	6
Coarse	16 - 22.6	E	3
Coarse	22.6 - 32	L	2
Very Coarse	32 - 45	S	1
Very Coarse	45 - 64		16
Small	64 - 90	C	15
Small	90 - 128	O	16
Large	128 - 180	B	11
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



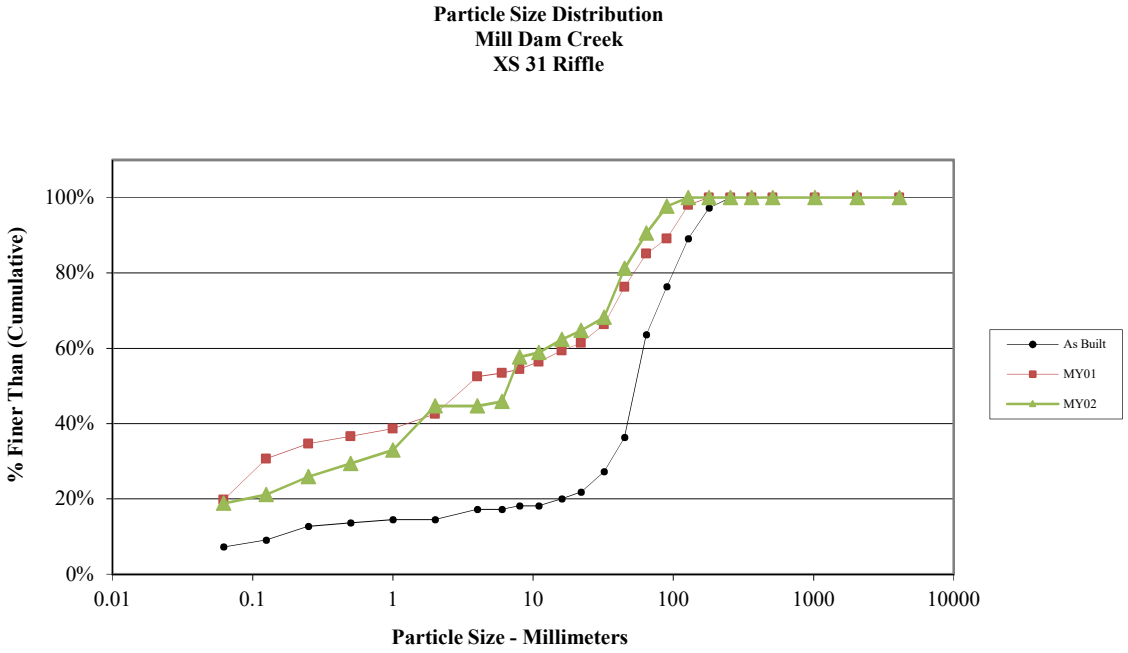
Size (mm)	
D16	2.2
D35	16
D50	55
D65	77
D84	120
D95	160

Size Distribution	
mean	16.2
dispersion	13.6
skewness	-0.40

Type	
silt/clay	1%
sand	14%
gravel	42%
cobble	43%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 31 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	16
Very Fine	.062 - .125	S	2
Fine	.125 - .25	A	4
Medium	.25 - .50	N	3
Coarse	.50 - 1	D	3
Very Coarse	1 - 2	S	10
Very Fine	2 - 4		
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	10
Medium	8 - 11.3	A	1
Medium	11.3 - 16	V	3
Coarse	16 - 22.6	E	2
Coarse	22.6 - 32	L	3
Very Coarse	32 - 45	S	11
Very Coarse	45 - 64		8
Small	64 - 90	C	6
Small	90 - 128	O	2
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	85

Note:



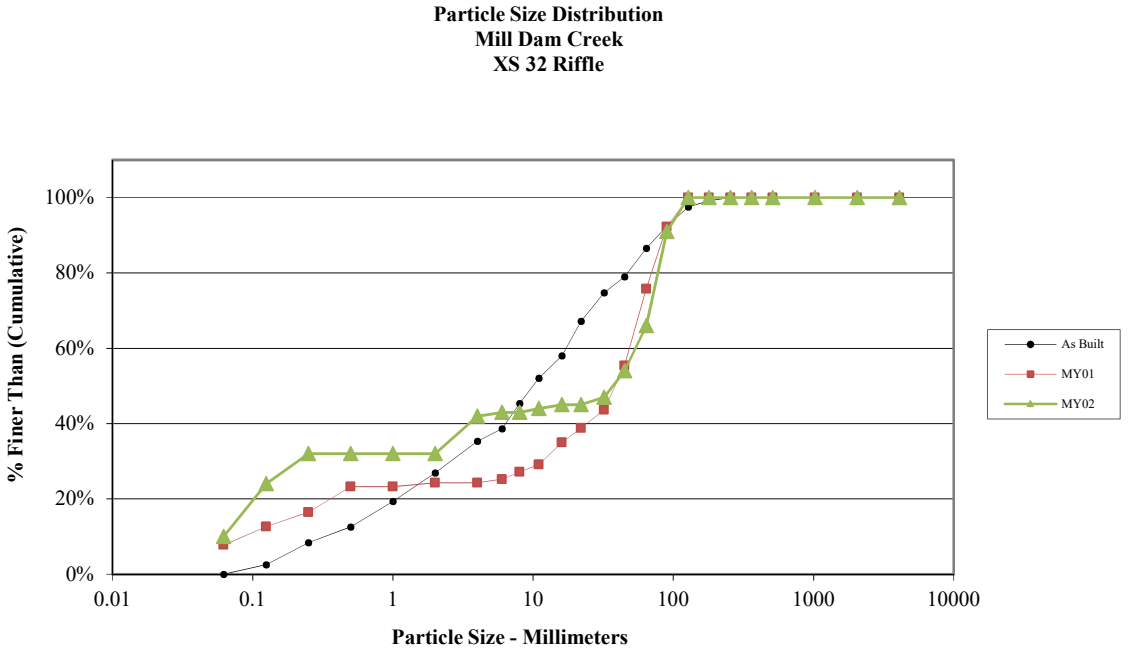
Size (mm)	
D16	0.062
D35	1.1
D50	6.6
D65	23
D84	50
D95	79

Size Distribution	
mean	1.8
dispersion	57.0
skewness	-0.34

Type	
silt/clay	19%
sand	26%
gravel	46%
cobble	9%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 32 Riffle - MY02			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	10
Very Fine	.062 - .125	S	14
Fine	.125 - .25	A	8
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		10
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	1
Medium	11.3 - 16	V	1
Coarse	16 - 22.6	E	
Coarse	22.6 - 32	L	2
Very Coarse	32 - 45	S	7
Very Coarse	45 - 64		12
Small	64 - 90	C	25
Small	90 - 128	O	9
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



Size (mm)	
D16	0.084
D35	2.5
D50	37
D65	62
D84	82
D95	110

Size Distribution	
mean	2.6
dispersion	221.3
skewness	-0.66

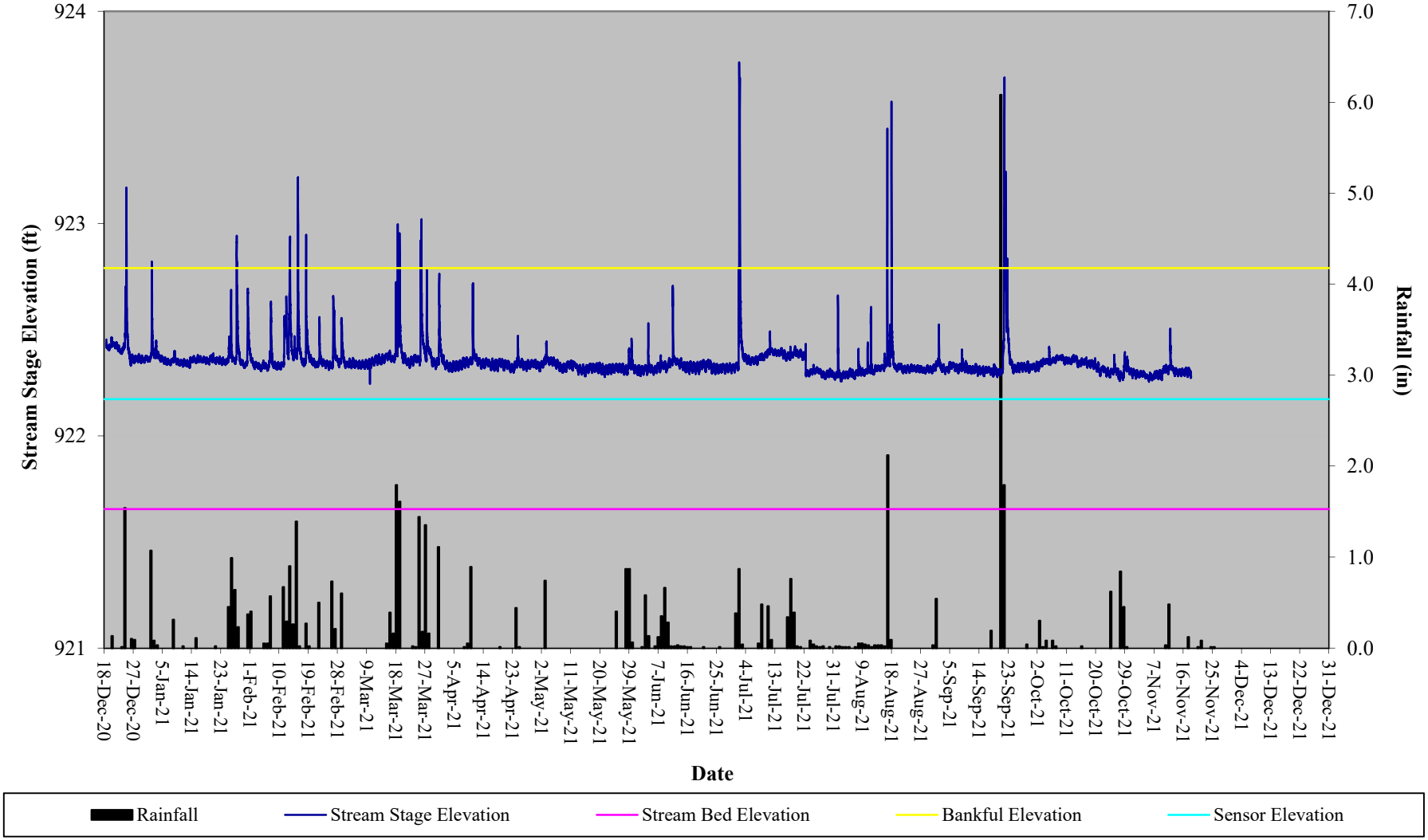
Type	
silt/clay	10%
sand	22%
gravel	34%
cobble	34%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

APPENDIX E

Hydrologic Data

	Table 11. Verification of Bankfull Events Mill Dam Creek Restoration Site, DMS Project #97136		
Monitoring Year	**Date of Occurrence**	**Method**	**Reach**
MY01	January 24, 2020	Onsite stream gauge	UTHC1
	February 6, 2020	Onsite stream gauge	UTHC1, UTHC3
	February 11, 2020	Onsite stream gauge	UTHC1
	February 13, 2020	Onsite stream gauge	UTHC1
	March 24, 2020	Onsite stream gauge	UTHC1
	April 13, 2020	Onsite stream gauge	UTHC1, UTHC3
	April 25, 2020	Onsite stream gauge	UTHC1
	April 29, 2020	Onsite stream gauge	UTHC1, UTHC3
	May 21, 2020	Onsite stream gauge	UTHC1, UTHC3
	May 27, 2020	Onsite stream gauge	UTHC1, UTHC3
	December 16, 2020	Photos taken on-site	UTHC1, UTHC3, T1, T2, T6, T8
	December 16, 2020	Onsite stream gauge	UTHC1
MY02	January 1, 2021	Onsite stream gauge	UTHC1, UTHC3
	January 27, 2021	Onsite stream gauge	UTHC1
	February 13, 2021	Onsite stream gauge	UTHC1
	February 15, 2021	Onsite stream gauge	UTHC1, UTHC3
	February 18, 2021	Onsite stream gauge	UTHC1
	March 19, 2021	Onsite stream gauge	UTHC1
	March 25, 2021	Onsite stream gauge	UTHC1
	July 2, 2021	Onsite stream gauge	UTHC1, UTHC3
	August 16, 2021	Onsite stream gauge	UTHC1, UTHC3
	August 18, 2021	Onsite stream gauge	UTHC1, UTHC3
	September 21, 2021	Onsite stream gauge	UTHC1, UTHC3

Mill Dam Creek Restoration Site
Hydrograph
UTHC-1 Stream Gauge



Mill Dam Creek Restoration Site
Hydrograph
UTHC-3 Stream Gauge

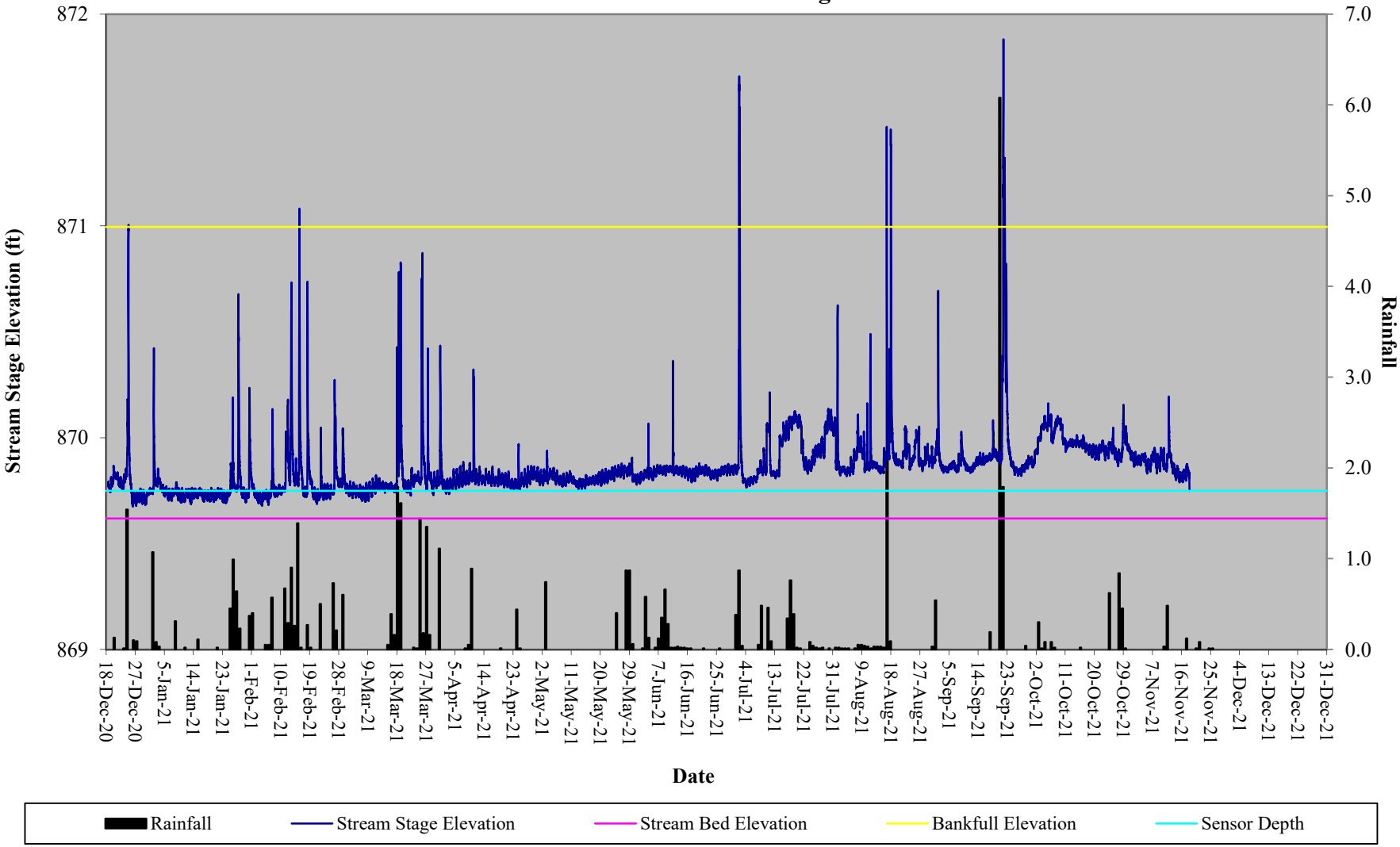
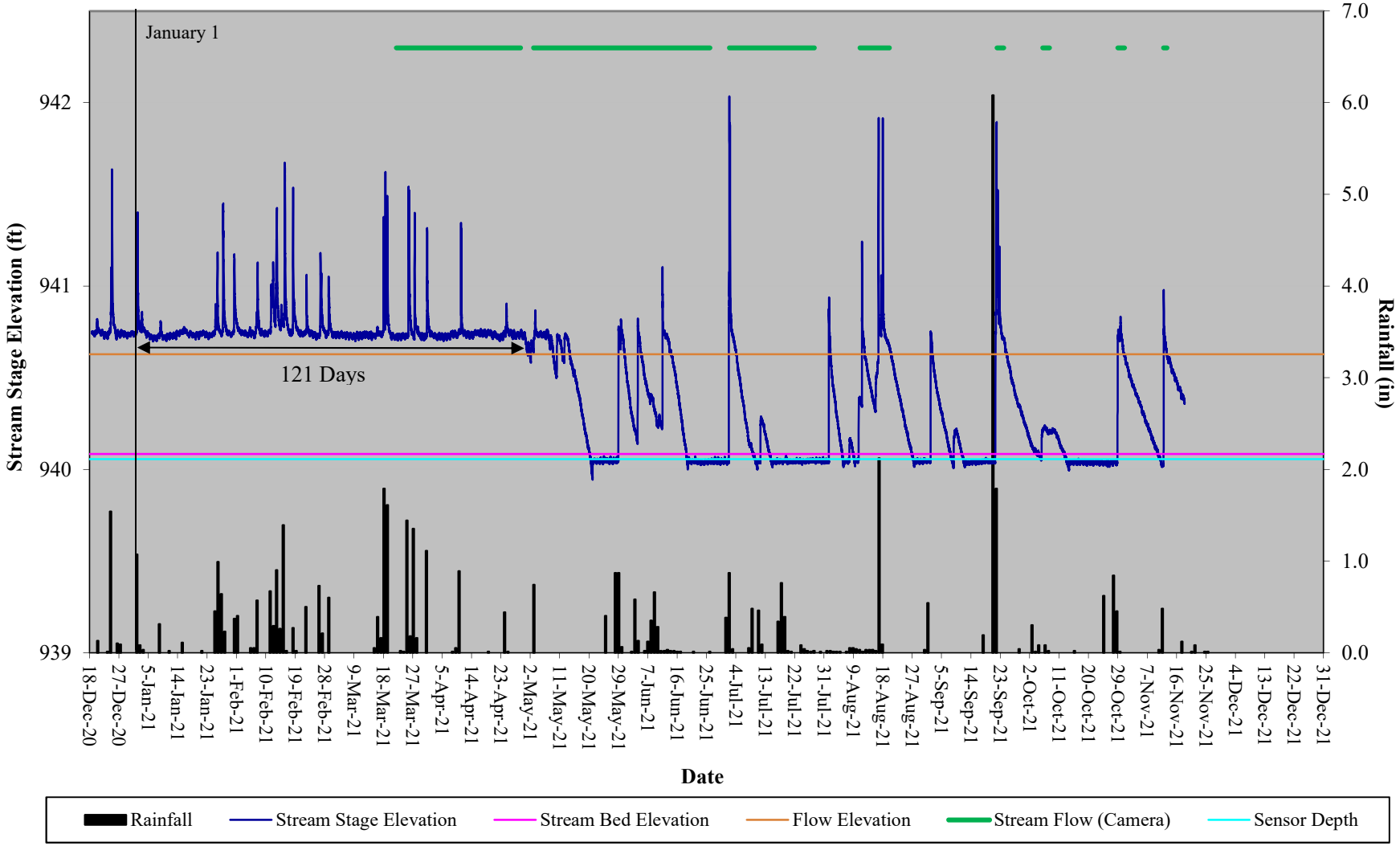
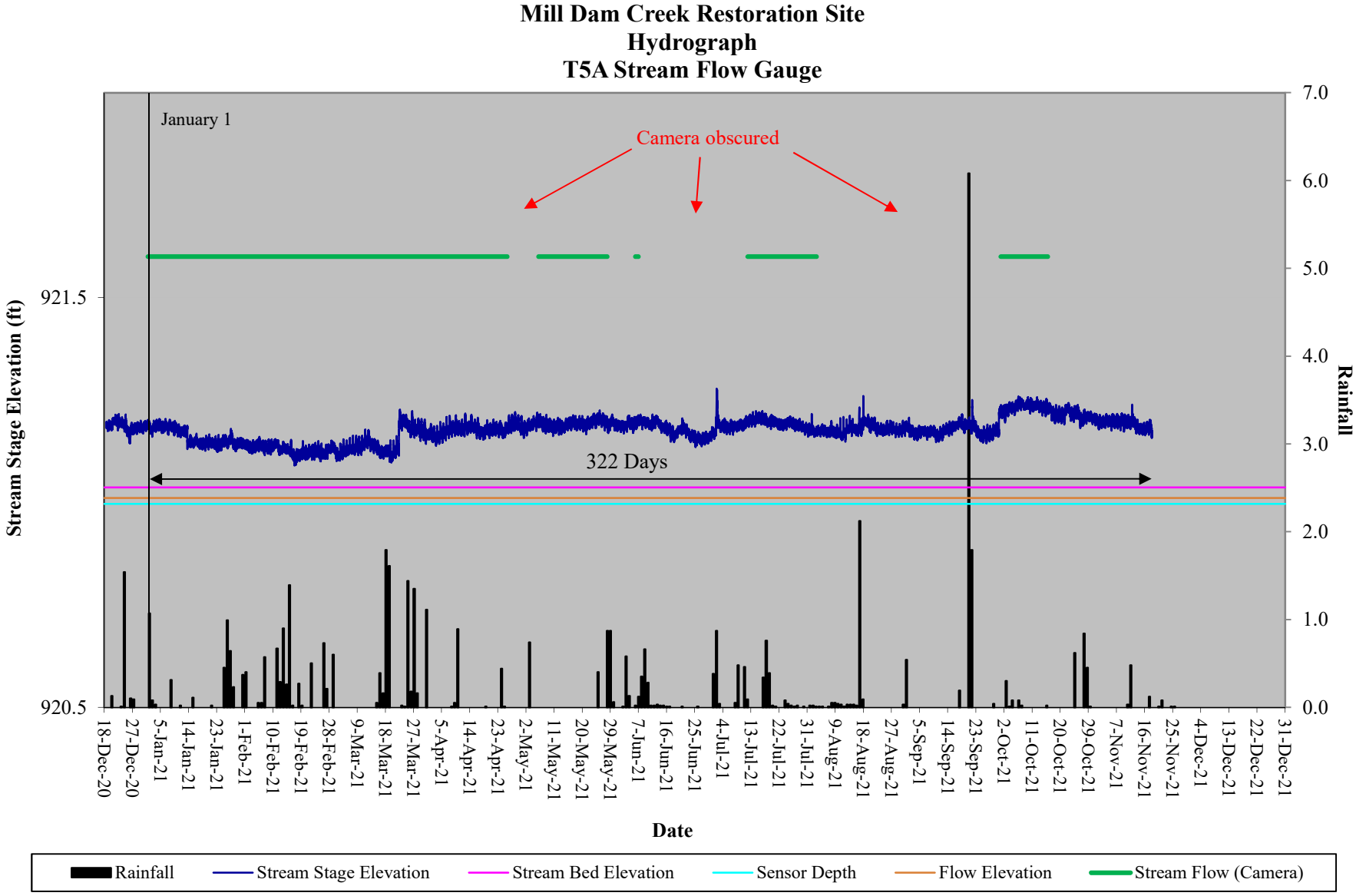


Table 12. Verification of Stream Flow Mill Dam Creek Restoration Site, DMS Project #97136				
	Gauge		Camera	
Reach	Dates Achieving	Maximum Consecutive Days	Dates Achieving	Maximum Consecutive Days
T1A	January 1 – May 1	121	March 22 – April 29; May 3 – June 26	55
T5A	January 1 – November 18	322	January 1 – April 26	116
T8A	January 1 – March 22; May 5 – October 18	167	January 1 – June 29	180

Table 13. Stream Flow Criteria Attainment Mill Dam Creek Restoration Site, DMS Project #97136							
	Greater than 30 Days of Flow/Max Consecutive Days						
Reach	MY-01 2020	MY-02 2021	MY-03 2022	MY-04 2023	MY-05 2024	MY-06 2025	MY-07 2026
T1A (Gauge)	Yes/68	Yes/121					
T1A (Camera)	Yes/44	Yes/55					
T5A (Gauge)	Yes/152	Yes/322					
T5A (Camera)	Yes/70	Yes/116					
T8A (Gauge)	Yes/152	Yes/167					
T8A (Camera)	Yes/84	Yes/180					

Mill Dam Creek Restoration Site
Hydrograph
T1A Stream Flow Gauge




Mill Dam Creek Restoration Site
Hydrograph
T5A Stream Flow Gauge
January 1
Camera obscured
322 Days
Stream Stage Elevation (ft)
921.5
920.5
Rainfall
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
18-Dec-20
27-Dec-20
5-Jan-21
14-Jan-21
23-Jan-21
1-Feb-21
10-Feb-21
19-Feb-21
28-Feb-21
9-Mar-21
18-Mar-21
27-Mar-21
5-Apr-21
14-Apr-21
23-Apr-21
2-May-21
11-May-21
20-May-21
29-May-21
7-Jun-21
16-Jun-21
25-Jun-21
4-Jul-21
13-Jul-21
22-Jul-21
31-Jul-21
9-Aug-21
18-Aug-21
27-Aug-21
5-Sep-21
14-Sep-21
23-Sep-21
2-Oct-21
11-Oct-21
20-Oct-21
29-Oct-21
7-Nov-21
16-Nov-21
25-Nov-21
4-Dec-21
13-Dec-21
22-Dec-21
31-Dec-21
Date
Rainfall
Stream Stage Elevation
Stream Bed Elevation
Sensor Depth
Flow Elevation
Stream Flow (Camera)

Mill Dam Creek Restoration Site
Hydrograph
T8A Stream Flow Gauge

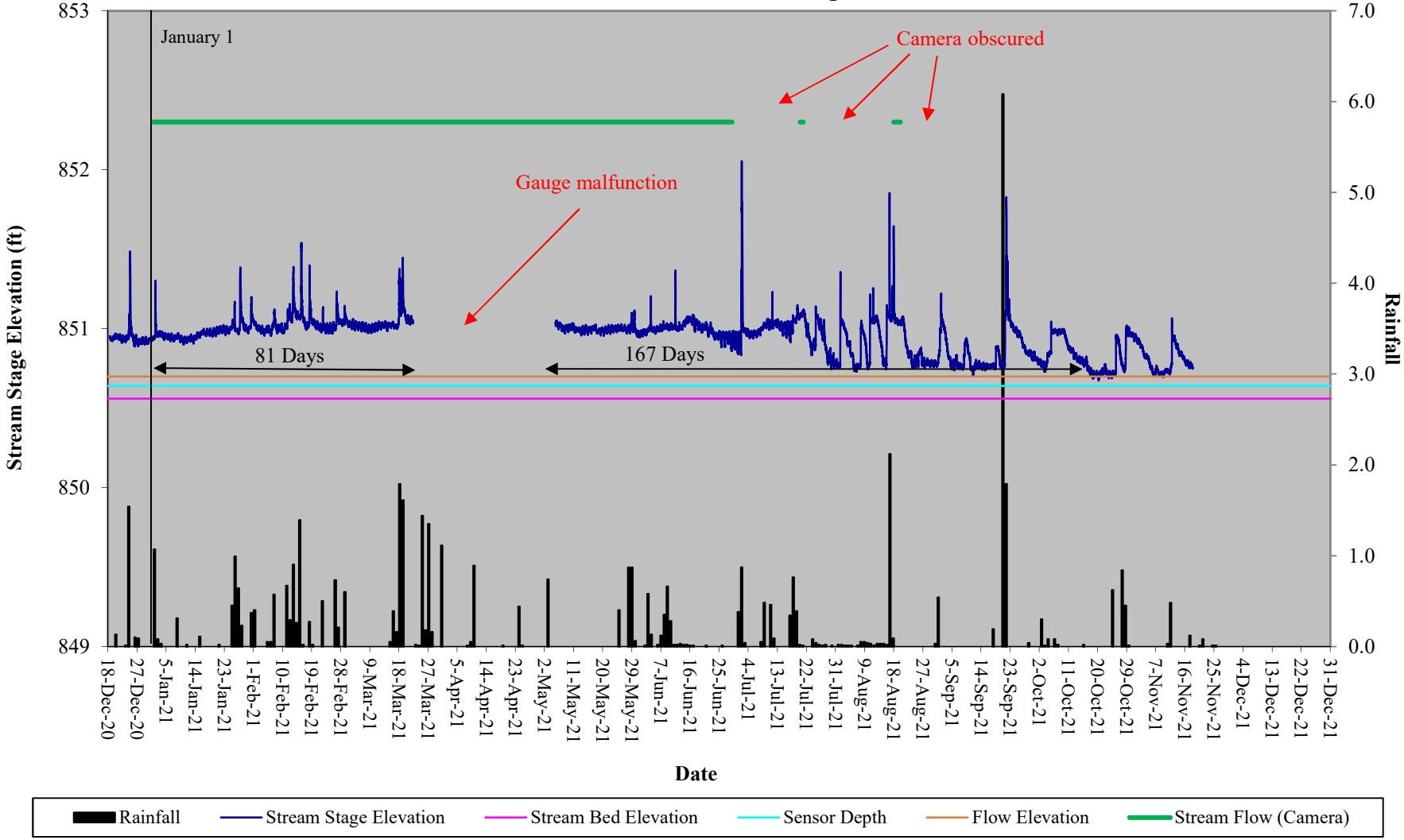
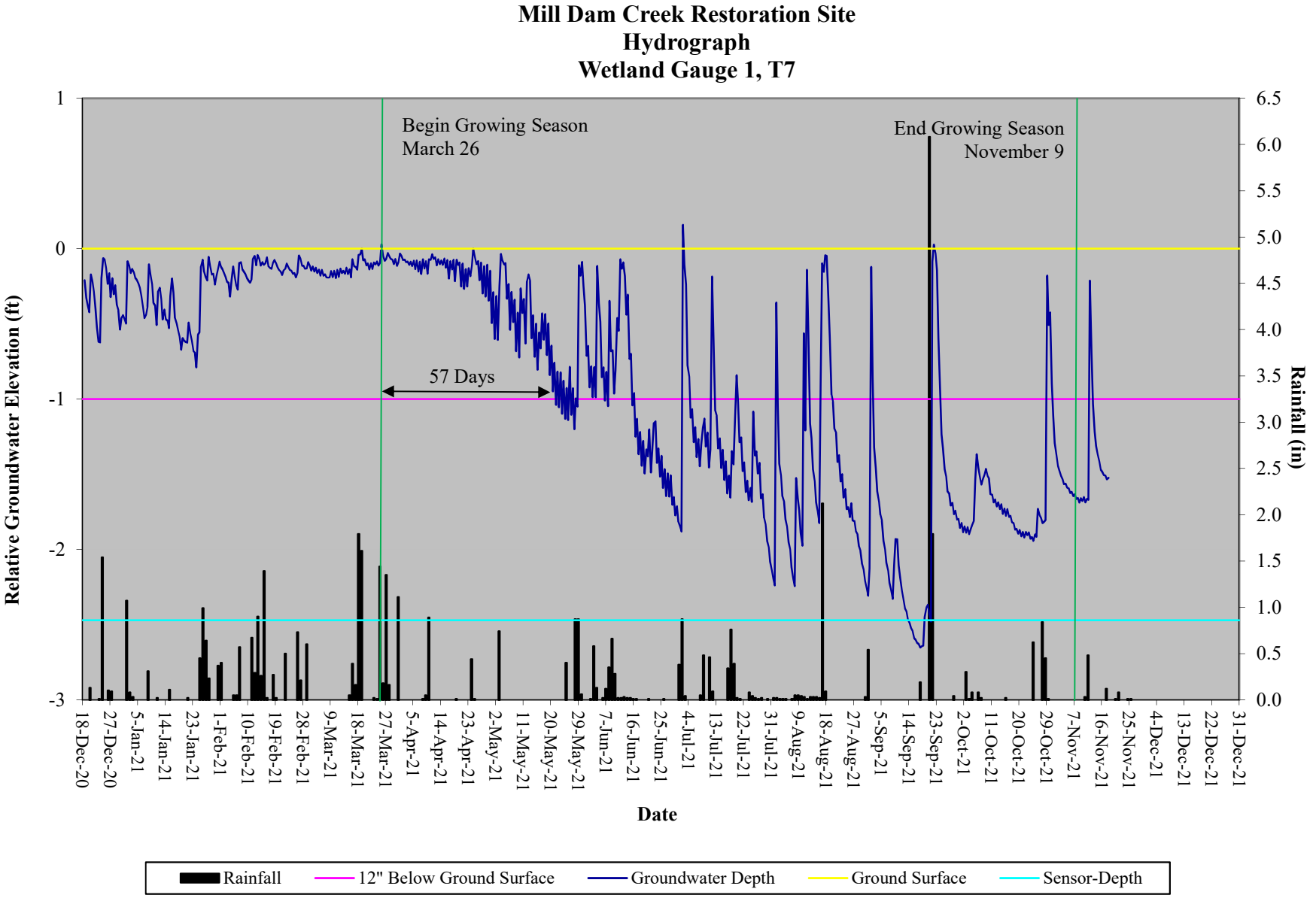
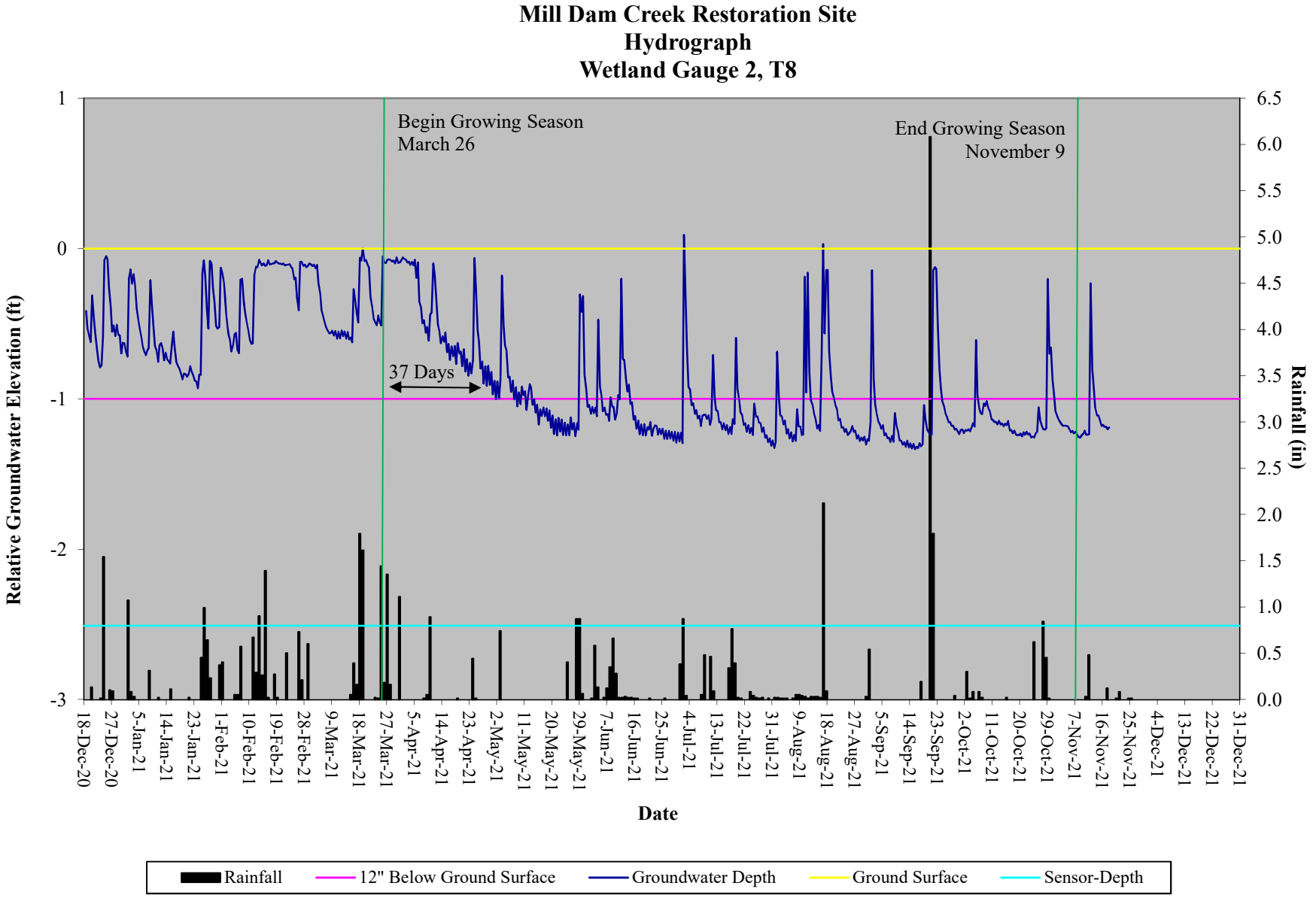


Table 14. Wetland Hydrology Verification Mill Dam Creek Restoration Site, DMS Project #97136								
		Max Consecutive Days During Growing Season (Percentage)						
Gauge #	**Location**	**MY-01 2020**	**MY-02 2021**	**MY-03 2022**	**MY-04 2023**	**MY-05 2024**	**MY-06 2025**	**MY-07 2026**
Gauge 1	T7	45 (19.7%)	57 (24.8%)					
Gauge 2	T8	Gauge malfunction	37 (15.6%)					


Mill Dam Creek Restoration Site
Hydrograph
Wetland Gauge 1, T7
Begin Growing Season
March 26
End Growing Season
November 9
57 Days
Relative Groundwater Elevation (ft)
Rainfall (in)
Date
1
0
-1
-2
-3
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
18-Dec-20
27-Dec-20
5-Jan-21
14-Jan-21
23-Jan-21
1-Feb-21
10-Feb-21
19-Feb-21
28-Feb-21
9-Mar-21
18-Mar-21
27-Mar-21
5-Apr-21
14-Apr-21
23-Apr-21
2-May-21
11-May-21
20-May-21
29-May-21
7-Jun-21
16-Jun-21
25-Jun-21
4-Jul-21
13-Jul-21
22-Jul-21
31-Jul-21
9-Aug-21
18-Aug-21
27-Aug-21
5-Sep-21
14-Sep-21
23-Sep-21
2-Oct-21
11-Oct-21
20-Oct-21
29-Oct-21
7-Nov-21
16-Nov-21
25-Nov-21
4-Dec-21
13-Dec-21
22-Dec-21
31-Dec-21
Rainfall
12" Below Ground Surface
Groundwater Depth
Ground Surface
Sensor-Depth


Mill Dam Creek Restoration Site
Hydrograph
Wetland Gauge 2, T8
Begin Growing Season
March 26
End Growing Season
November 9
37 Days
Relative Groundwater Elevation (ft)
Rainfall (in)
Date
1
0
-1
-2
-3
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
18-Dec-20
27-Dec-20
5-Jan-21
14-Jan-21
23-Jan-21
1-Feb-21
10-Feb-21
19-Feb-21
28-Feb-21
9-Mar-21
18-Mar-21
27-Mar-21
5-Apr-21
14-Apr-21
23-Apr-21
2-May-21
11-May-21
20-May-21
29-May-21
7-Jun-21
16-Jun-21
25-Jun-21
4-Jul-21
13-Jul-21
22-Jul-21
31-Jul-21
9-Aug-21
18-Aug-21
27-Aug-21
5-Sep-21
14-Sep-21
23-Sep-21
2-Oct-21
11-Oct-21
20-Oct-21
29-Oct-21
7-Nov-21
16-Nov-21
25-Nov-21
4-Dec-21
13-Dec-21
22-Dec-21
31-Dec-21
Rainfall
12" Below Ground Surface
Groundwater Depth
Ground Surface
Sensor-Depth