MONITORING YEAR 2 ANNUAL REPORT
FINAL

HUNTSMAN MITIGATION SITE
Wilkes County, NC
Yadkin River Basin
HUC 03040102

DMS Project No. 100123
DMS Contract No. 7891
DMS RFP No. 16-007728; Date of Issue: 11/13/2018
USACE Action ID No. SAW-2019-00836
DWR Project No. 20190866
Data Collection Dates: February - November 2023
Submission Date: January 2024

PREPARED FOR:

NC Department of Environmental Quality
Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699-1652

PREPARED BY:

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January 15, 2024

Mr. Matthew Reid
Western Project Manager
NCDEQ – Division of Mitigation Services
Asheville Regional Office
2090 U.S. 70 Highway
Swannanoa, NC 28778-8211

RE: Huntsman Draft MY2 Report Review
Yadkin River Basin – CU# 03040102
Wilkes County
DMS Project ID No. 100123
Contract # 7891

Dear Mr. Reid:

Wildlands Engineering, Inc. (Wildlands) has reviewed the Division of Mitigation Services (DMS) comments and observations from the Huntsman MY2 Draft Report, received on January 2, 2023. The report text has been revised for the final submittal to reflect the most current condition of the site. Your comments and observations from the report are noted below in **Bold**. Wildlands' response to those comments are noted in *Italics*.

DMS' Comment: Section 2.2 indicates invasive treatment occurred in June 2023. Table 14 shows July 2023. Please update for consistency.
Wildlands' Response: Wildlands confirmed that treatment of invasives occurred in July 2023. The report text has been updated accordingly.

DMS' Comment: Section 2.2 discusses small bare area near 208+50 on UT1 Reach 1. This is not shown on the CCPV. Please include on CCPV if the area is greater than the mapping threshold (0.1ac) and include in Table 5.
Wildlands' Response: The bare area is currently below the mapping threshold of 0.10 acres; therefore, it is not included on the CCPV or in Table 5.

DMS' Comment: Section 2.3 says 16 out of 17 cross sections are stable. Currently, there are only 16 total cross sections being monitored for the site. Please revise.
Wildlands' Response: The report has been updated accordingly.

DMS' Comment: Section 2.3 contains a short discussion regarding the isolated bed scour at XS10 and the resulting BHR of 1.3. It should also be noted that when the BHR is calculated using the AB bankfull area, the BHR is 1.0 as shown on Table 10.
Wildlands' Response: The BHR for XS10 was misreported on Table 10. The correct BHR is 1.3, and Table 10 has been updated accordingly.

DMS' Comment: In July 2023, a beaver dam was identified and removed. Please include this on Table 14.
Wildlands' Response: Table 14 has been updated accordingly.

DMS' Comment: Section 2.6 mistakenly says that several stream repairs were completed in MY3 on UT1 R1 and R3. Please update to MY2.
Wildlands' Response: The report has been updated accordingly.

DMS' Comment: The IRT requested a repair table be included that summarizes the repairs completed on the site during the 2023 Credit Release Meeting. Thank you for compiling and including the table as well as additional photos.
Wildlands' Response: Noted.

DMS' Comment: WEI is planning supplemental planting and hand repairs on piping structures in early 2024. Thanks for including the proposed species list. Please include updates in the MY3 report.
Wildlands' Response: Noted.

DMS' Comment: The geodatabase submitted with the draft is empty. Please check the database content and resubmit with final.
Wildlands' Response: The support files have been updated accordingly.

Enclosed please find two (2) hard copies of the Year 7 Final Monitoring Report and one (1) USB with all the final corrected electronic files for DMS distribution. Please contact me at 704-332-7754 x101 if you have any questions.

Sincerely,

Kristi Suggs
ksuggs@wildlandseng.com

North Carolina Department of Environmental Quality | Division of Mitigation Services
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919.707.8976

HUNTSMAN MITIGATION SITE
Monitoring Year 2 Annual Report

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Section 1: PROJECT OVERVIEW

The Huntsman Mitigation Site (Site) is located in Wilkes County approximately 5 miles south of Ronda and 8 miles southwest of Jonesville, North Carolina. The Site is located within the North Little Hunting Creek targeted local watershed (TLW) Hydrologic Unit Code (HUC) 03040102020030 and will provide warm stream credits in the South Yadkin 03040102 (Yadkin 02) Cataloging Unit (CU). North Little Hunting Creek (NLHC) and its tributaries are classified as Water Supply III (WS-III) with additional protection for Class C uses. Table 3 presents information related to the project attributes.

1.1 Project Quantities and Credits

Mitigation work within the Site included restoration and enhancement II of perennial stream channels. Table 1 below shows stream credits by reach and the total amount of stream credits expected at closeout.

Table 1. Project Quantities and Credits

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage**	**As-Built Footage**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
STREAM							
North Little Hunting Creek Reach 1	722.905	717.000	Warm	R	1.0	722.905	Restoring dimension, pattern, and profile, reconnecting channels with floodplains and wetlands, riparian planting, fencing out livestock, invasive species treatment, and protecting with conservation easement
North Little Hunting Creek Reach 2	1,027.718	1,033.000	Warm	R	1.0	1,027.718	Restoring dimension, pattern, and profile, reconnecting channels with floodplains and wetlands, riparian planting, fencing out livestock, invasive species treatment, protecting with conservation easement, and bridge crossing
UT1 Reach 1	1,432.561	1,433.000	Warm	R	1.0	1,432.561	Restoring dimension, pattern, and profile, reconnecting channels with floodplains and wetlands, riparian planting, fencing out livestock, invasive species treatment, protecting with conservation easement, and bridge crossing

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage**	**As-Built Footage**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
UT1 Reach 2	244.166	244.000	Warm	R	1.0	244.166	Restoring dimension, pattern, and profile, reconnecting channels with floodplains and wetlands, riparian planting, fencing out livestock, invasive species treatment, protecting with conservation easement, and road crossing
UT1 Reach 3	217.715	217.000	Warm	R	1.0	217.715	Restoring dimension, pattern, and profile, reconnecting channels with floodplains and wetlands, riparian planting, fencing out livestock, invasive species treatment, and protecting with conservation easement
UT2 Reach 1	299.853	300.000	Warm	EII	2.5	119.941	Partial channel restoration, riparian planting, fencing out livestock, protecting with a conservation easement, and bridge crossing
UT2 Reach 2	286.763	287.000	Warm	R	1.0	286.763	Restoring dimension, pattern, and profile, reconnecting channels with floodplains and wetlands, riparian planting, invasive species treatment, fencing out livestock, and protecting with conservation easement
UT2 Reach 3	568.949	569.000	Warm	R	1.0	568.949	
UT2 Reach 4	522.002	522.000	Warm	R	1.0	522.002	
Barn Branch	287.612	289.000	Warm	R	1.0	287.612	
Old Bus Branch	87.471	88.000	Warm	R	1.0	87.471	Restoring dimension, pattern, and profile, stormwater BMP implementation, reconnecting channels with floodplains and wetlands, riparian planting, fencing out livestock, protecting with conservation easement
Rifle Tributary	252.855	245.000	Warm	EII	2.5	101.142	Stormwater BMP implementation, partial channel restoration, riparian planting, fencing out livestock, and protecting with conservation easement

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage**	**As-Built Footage**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
Trapper Tributary	40.718	41.000	Warm	EII	2.5	16.287	Partial channel restoration, riparian planting, fencing out livestock, and protecting with conservation easement
					Net Credit Gain for buffers wider than 30-ft:	181.720	
					Total:	**5,816.952**	

Restoration Level	**Stream**		
	Warm	**Cool**	**Cold**
Restoration	5,397.862		
Enhancement I	--		
Enhancement II	237.370		
Preservation	--		
Credit Gain: Buffers > 30-feet[3]	181.720		
Totals:	**5,816.952**		
Total Stream Credit:	**5,816.952**		

1. Crossing lengths have been removed from restoration footage
2. No direct credit for BMPs.

1.2 Project Goals and Objectives

The project is intended to provide numerous ecological benefits. Table 2 below describes expected outcomes to water quality and ecological processes and provides project goals and objectives.

Table 2. Goals, Performance Criteria, and Credits

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Improve the stability of stream channels.	Construct stream channels that will maintain stable cross-sections, patterns, and profiles over time.	Reduce sediment inputs from bank erosion. Reduce shear stress on channel boundary.	ER over 1.4 for B-type and 2.2 for C-type channels and BHR below 1.2 with visual assessments showing progression towards stability.	16 Cross-sections will be assessed during MY1, MY2, MY3, MY5, and MY7 and visual inspections will be assessed annually.	Most cross-sections (XS) show streams are stable and functioning as designed. Apart from XS10 (BHR of 1.3) all riffle XS BHRs are below 1.2.

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Reconnect channels with floodplains and to allow a natural flooding regime.	Reconstruct stream channels with designed bankfull dimensions and depth based on reference reach data. Remove pond above T2.	Allow more frequent flood flows to disperse on the floodplain.	Four bankfull events in separate years within the 7-year monitoring period.	Three automated pressure transducers were installed on restoration reaches and will record flow elevations and durations.	MY2: Multiple bankfull events were recorded on UT2 Reach 4 (CG2) and UT1 Reach 1 (CG3). No bankfull events were recorded on NLHC Reach 2 (CG1) in 2023.
Restore and enhance native floodplain and streambank vegetation.	Plant native tree and understory species in riparian zones and plant native shrub and herbaceous species on streambanks.	Reduce sediment inputs from bank erosion and runoff. Increase nutrient cycling and storage in floodplain. Provide riparian habitat. Add a source of LWD and organic material to stream.	Survival rate of 320 stems per acre at MY3, 260 planted stems per acre at MY5 and a height of 6 ft., and 210 stems per acre at MY7 with a height of 8 ft.	13 permanent and 4 mobile one hundred square meter vegetation plots are placed on 2% of the planted area of the Site and monitored during MY1, MY2, MY3, MY5, and MY7.	MY2: 14/17 vegetation plots have a planted stem density greater than 320 stems per acre.
Improve instream habitat.	Install habitat features such as constructed riffles, lunker logs, and brush toes into restored/enhanced streams. Add woody materials to channel beds. Construct pools of varying depth.	Increase and diversify available habitats for macroinvertebrates, fish, and amphibians leading to colonization and increase in biodiversity over time.	There is no required performance standard for this metric.	Visual assessment.	N/A
Diffuse concentrated agricultural runoff.	Install stormwater BMPs in areas of concentrated agricultural runoff to diffuse and provide vegetated infiltration for runoff before it enters the stream channel.	Reduce agricultural and sediment inputs to the project, which will reduce likelihood of accumulated fines and excessive algal blooms from nutrients.	There is no required performance standard for this metric.	N/A	N/A

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Permanently protect the project Site from harmful uses.	Establish conservation easements on the Site.	Protect Site from encroachment on the riparian corridor and direct impact to streams and wetlands.	Prevent easement encroachment.	Visually inspect the perimeter of the Site to ensure no easement encroachment is occurring.	No easement encroachments.

1.3 Project Attributes

North Little Hunting Creek originates offsite to the west in the steep, forested Brushy Mountains. The stream gradually widens and flattens in slope as it travels downstream out of the mountains and flows through several agricultural parcels before it enters the Site. UT1 originates within the Site limits, north of Ingle Hollow Road, and flows under Ingle Hollow Road to join North Little Hunting Creek. Land use in the drainage area of UT1 includes agricultural fields and chicken houses. UT2 begins in steep woods offsite, enters the Site from the south, and joins North Little Hunting Creek within the project area. Old Bus Branch, Rifle Tributary, Trapper Tributary, and Barn Branch all originate within Site limits and are tributaries to UT2. Within Site limits, North Little Hunting Creek, UT2, and the UT2 tributaries all flow through actively grazed pastures.

Table 3. Project Attributes

PROJECT INFORMATION	
Project Name	Huntsman Mitigation Site
Project Area (acres)	17.7
County	Wilkes County
Project Coordinates	36.140689, - 80.932189
PROJECT WATERSHED SUMMARY INFORMATION	
Physiographic Province	Piedmont
USGS HUC 8-digit	03040102
USGS HUC 14-digit	03040102020030
River Basin	Yadkin River
DWR Sub-basin	03-07-06
Land Use Classification	74% forested, 22% agriculture, 2% shrubland, 1% developed, 1% open water
Project Drainage Area (acres)	1,416
Percentage of Impervious Area	0.23%

RESTORATION TRIBUTARY SUMMARY INFORMATION					
Parameters	**North Little Hunting Creek**	**UT1**	**UT2**	**Barn Branch**	**Old Bus Branch**
Pre-project length (feet)	1,646	996	1,707	247	90
Post-project (feet)	1,750	1,894	1,678	289	88
Valley confinement (Confined, moderately confined, unconfined)	Unconfined	Moderately Confined	Confined to Unconfined	Moderately Confined	Confined
Drainage area (acres)	1,274	70	43	10	5.2
Perennial, Intermittent, Ephemeral	Perennial				

DWR Water Quality Classification	WS-III				
Dominant Stream Classification (existing)	G4	C4/B4	A6, E5b	B5a	G5
Dominant Stream Classification (proposed)	C4	B4a/C4b/C4	B5a, B5, C5	B5a	A5
Dominant Evolutionary class (Simon) if applicable	Stage IV-V	Stage II-III	Stage III	Stage IV	Stage III-IV
REGULATORY CONSIDERATIONS					
Parameters	**Applicable?**		**Resolved?**	**Supporting Documentation**	
Water of the United States - Section 404	Yes		Yes	USACE Action ID No. SAW-2019-00836	
Water of the United States - Section 401	Yes		Yes	DWR # 2019-0866	
Endangered Species Act	Yes		Yes	Categorical Exclusion in Mitigation Plan (Wildlands, 2021)	
Historic Preservation Act	Yes		Yes		
Coastal Zone Management Act (CZMA or CAMA)	N/A		N/A	N/A	
FEMA Floodplain Compliance	Yes		Yes	Wilkes County – No Rise Certification	
Essential Fisheries Habitat	N/A		N/A	N/A	

Section 2: MONITORING YEAR 2 DATA ASSESSMENT

The MY2 data collection was conducted between February and November 2023 to assess the condition of the project. The vegetation, stream, and hydrology success criteria for the Site follow the approved Mitigation Plan (Wildlands, 2021). Performance criteria for vegetation, stream, and hydrologic assessments are located in Section 1.2 Table 3: Goals, Performance Criteria, and Functional Improvements. The Site will be monitored for a total of seven years, with the final monitoring activities scheduled for 2028.

2.1 Vegetative Assessment

The MY2 vegetative survey was completed in July of 2023, resulting in an average stem density of 402 stems per acre for all monitored permanent and mobile vegetation plots (VP). The Site is on track to meet the MY3 interim density requirement of 320 stems per acre with 14 out of the 17 vegetation plots individually exceeding this requirement. Planted stems within the permanent vegetation plots exhibited an 85% survival rate with flowering dogwood (*Cornus florida*), eastern sweetshrub (*Calycanthus floridus*) and American beech (*Fagus grandifolia*) displaying the lowest survival rates individually. In MY2, 3 permanent vegetation plots (VP6, VP7, and VP12) failed to meet the MY3 criteria, each with a stem density of 243. Stems within VP6 were outcompeted by herbaceous vegetation and those in VP7 were disturbed by adjacent stream bed repairs on UT1; issues are further discussed in Section 2.2. VP12 stem mortality can be attributed to the shading of young stems by wetland plants including a hydrophytic common rush (*Juncus effusus*) and purple aster (*Symphyotrichum puniceum*) on the left bank of UT2 Reach 4. Refer to Appendix A for Vegetation Plot Photographs and the Vegetation Condition Assessment Table and Appendix B for Vegetation Plot Data.

2.2 Vegetation Areas of Concern and Management Activities

MY2 visual assessments reveal that a majority of the conservation easement is unaffected by invasive species. Localized patches of Chinese privet (*Ligustrum sinense*), tree of heaven (*Ailanthus altissima*), multiflora rose (*Rosa multiflora*), Japanese honeysuckle (*Lonicera japonica*), and callery pear (*Pyrus calleryana*) were treated with herbicidal applications in July 2023. Treatments were successful in reducing invasive species areas and are presently below the mapping threshold, therefore they are not shown on the Current Condition Plan View (CCPV) figures. Invasive species will continue to be monitored and treated as necessary throughout the monitoring period.

Bare areas and areas of low stem density have vastly improved in MY2, as woody stems and herbaceous vegetation continue to become established throughout the Site. In February 2023, bare areas and areas of low stem density received soil amendments and were re-seeded and re-planted with approved species from the project's Final Mitigation Plan (Wildlands, 2021). See Appendix B for a list and quantities of the planted bare root stems. In July 2023, an additional round of soil amendments and native seed mix were applied to the bare areas mapped in MY1. Additionally, livestakes were planted along both banks for the entire length of UT1.

Except for one small area in the left floodplain along UT1 Reach 1 near station 213+50, the bare areas have been successfully resolved in MY2. The bare area on UT1 Reach 1 is below the mapping threshold of 0.10 acres and therefore, is not depicted on the CCPV. Several areas of low stem density continue to persist on UT1 Reach 1, with localized occurrences on North Little Hunting Creek. At VP6 and the headwaters of UT1, herbaceous vegetation has outcompeted planted stems, resulting in an area of reduced stem density while poor soil conditions and moderately steep slopes have negatively affected the successful establishment of woody vegetation along mid-reach of UT1 Reach 1. Additionally, low stem density near VP7 was directly attributed to construction access during stream repairs discussed in Section 2.4. Areas of low stem density on the Site have a combined total acreage of 1.1 acres or 6.9% of

the total easement acreage. Management activities are planned for winter 2023/2024 and will include supplementally planting mapped areas of low stem density with approved species from the project's Final Mitigation Plan (Wildlands, 2021). Refer to the CCPV Figures 1.0 – 1.2 and the Vegetation Condition Assessment Table. A list of the proposed plantings and quantities is included in Appendix B.

MY2 visual assessments reveal that there were no easement boundary areas of concern. Wildlands staff walked the easement boundary and determined that signage and easement markers are sufficient and visible, the fencing is intact, and no encroachments have been identified. Wildlands will continue to monitor the easement boundary in MY3.

2.3 Stream Assessment

Morphological surveys for MY2 were conducted in July 2023. Cross-section (XS) survey results indicate that channel dimensions are stable and functioning as designed on all restoration reaches with minimal adjustments. All sixteen (16) cross-sections are stable, with bank height ratios (BHRs) at or near 1.0, and bankfull dimensions within an acceptable range of the design parameters.

Channel morphology continues to adjust along UT1 and portions of North Little Hunting Creek as the banks and floodplain become increasingly vegetated, as erosional areas re-stabilize, and as the channels move both on-site and off-site sediments through the system. Examples of these adjustments are exhibited as slight variations in cross-sectional areas and width-to-depth ratios as well as some aggradation in pools (i.e., XS2 and XS3) and isolated areas of bed scour at XS10, which has a BHR of 1.3. Wildlands will continue to monitor these cross-sections for signs of accelerated instability upon which management measures may need to be implemented. Refer to Appendix A for the visual stability assessment tables and reference photographs, and Appendix C for the morphological tables and plots.

2.4 Stream Areas of Concern and Management Activity

The MY2 visual assessment revealed that the bed and banks on the majority of the project reaches are stable and performing as intended with only a few instances of scour or localized structure issues.

- **UT1 Reach 2: STA 216+00 to 216+75** – A lack of baseflow in this segment of stream was observed in late August. Wildlands installed a game camera in November 2023 to monitor baseflow and reassess the area in MY3.
- **UT1 Reach 3**: **STA 218+23** – A rock sill is piping resulting in a perched culvert. A repair was completed on this area in January 2023; however, the repair was unsuccessful, and the rock sill is piping again. To address this issue, Wildlands will repair the rock sill to backup water into the culvert in late 2023/early 2024.
- **UT1 Reach 3**: **STA 219+80 to 219+86** – There is localized scour on riffle XS10 resulting in undercut banks and bed scour. Wildlands will continue to monitor this area and will repair the area if needed.

In July 2023, a beaver dam was identified and removed from Little Hunting Creek Reach 1. The dam on the Site did not impede stream flow, but Animal & Plant Health Inspection Service (APHIS) was contacted regarding safe and sustainable dam removal. Wildlands will continue to monitor project reaches for dams and beaver activity. Refer to the CCPV Figures 1.0 - 1.2 for the locations of the removed beaver dam.

In the MY1 report, Wildlands documented several areas of concern that required mechanical repairs in MY2. All repairs were completed in January 2023 are as follows:

- **UT1 Reach 1: STA 210+50 to 210+70** – Riffle material was washed out of one of the previously repaired riffles resulting in some minor bed scour. Wildlands repositioned and embedded the riffle material in the degraded riffle, added a log sill at Sta 210+55, and installed livestakes on both banks along the entire length of UT1.

- **UT1 Reach 3: STA 218+23** – A rock sill was piping resulting in a perched culvert. Wildlands added geotextile fabric and rip-rap to the back of the rock sill to backup water into the culvert for aquatic passage. Since the repair was first completed, the rip-rap has washed downstream and the culvert is once again perched.
- **UT2 Reach 3: STA 308+00 to 308+30** – Hydrological seepage from a wetland area that abuts the reach resulted in stream bank slump and scour. Wildlands re-graded both banks, installed brushtoe, and re-seeded and matted the banks and floodplain.

Wildlands will continue to monitor all areas of concern and document repairs and management activities, if needed, in the MY3 report. Refer to Appendix A for the CCPV Figures 1.0-1.2, Stream Condition Assessment Table, Area of Concern (AOC) and Repair Table, and the photologs.

2.5 Hydrology Assessment

In total, 3 automated transducer type crest gages (CG) were installed on North Little Hunting Creek Reach 2, UT1 Reach 2, and UT2 Reach 4 to monitor bankfull events. In MY2, at least one bankfull event was documented on UT2 Reach 4 and UT1 Reach 1. With multiple bankfull events recorded for UT2 Reach 4 in MY1 and MY2, the hydrologic success criteria of four bankfull events in separate years has been partially met for the reach. Please refer to Appendix D for the hydrologic summary, data plots, and bankfull documentation.

2.6 Monitoring Year 2 Summary

Overall, the Site is performing as intended, and is on track to meet most of the required stream, vegetation, and hydrologic success criteria for MY2. The average stem density for the Site is 402 stems per acre, which exceeds the MY3 requirement of 320 planted stems per acre. The Site is largely unaffected by invasive species, and streams on Site are mostly stable and functioning as designed. Geomorphic surveys indicate that cross-section bankfull dimensions generally match the baseline monitoring, with some minor adjustments. In MY2, at least one bankfull event was documented on UT2 Reach 4 and UT1 Reach 1. Several stream repairs were completed in MY2 on UT1 Reach 1 and 3.

Supplemental planting, seeding, and the incorporation of soil amendments were also conducted in MY2 just upstream of the crossing in the left floodplain of UT1 Reach 1 and just downstream of the crossing in the right floodplain of NLHC Reach 2. The MY2 visual assessment revealed a few isolated areas of concern including areas of low stem density, as well as instances of minor bed scour, and structure piping. In early 2024, supplemental planting in areas of low stem density and hand repairs on piping structures have been proposed where needed. Wildlands will continue to monitor these areas and additional management actions will be implemented as necessary throughout the seven-year monitoring period to maintain the ecological health of the Site.

Summary information and data related to the performance of various project and monitoring elements can be found in the tables and figures in the report appendices. All raw data supporting the tables and figures in the appendices are available from DMS upon request.

Section 3: METHODOLOGY

Annual monitoring will consist of collecting morphologic, vegetative, and hydrologic data to assess project success based on the goals outlined in the Site's Mitigation Plan (Wildlands, 2021). Monitoring requirements will follow guidelines outlined in the NC IRT Stream and Wetland Mitigation Guidance Update (2016). Installed monitoring devices and plot locations closely mimic the locations of those proposed in the Site's Mitigation Plan. Deviations from these locations were made when professional judgement deemed them necessary to better represent as-built field conditions or when installation of the device in the proposed location was not physically feasible.

Geomorphic data was collected following the standards outlined in The Stream Channel Reference Site: An Illustrated Guide to Field Techniques (Harrelson et al., 1994) and in Stream Restoration: A Natural Channel Design Handbook (Doll et al., 2003). All Integrated Current Condition Mapping was collected by either a professional licensed surveyor or an Arrow 100® Submeter GNSS Receiver and processed using ArcPro. Crest gages, using automated pressure transducers, were installed in riffle cross-sections to monitor stream hydrology throughout the year. Stream hydrology and vegetation monitoring protocols followed the Wilmington District Stream and Wetland Compensatory Mitigation Update (NCIRT, 2016). Vegetation installation data collection follow the Carolina Vegetation Survey-EEP Level 2 Protocol (Lee et al., 2008); however, vegetation data processing follows the NC DMS Vegetation Data Entry Tool and Vegetation Plot Data Table (NCDMS, 2020).

Section 4: REFERENCES

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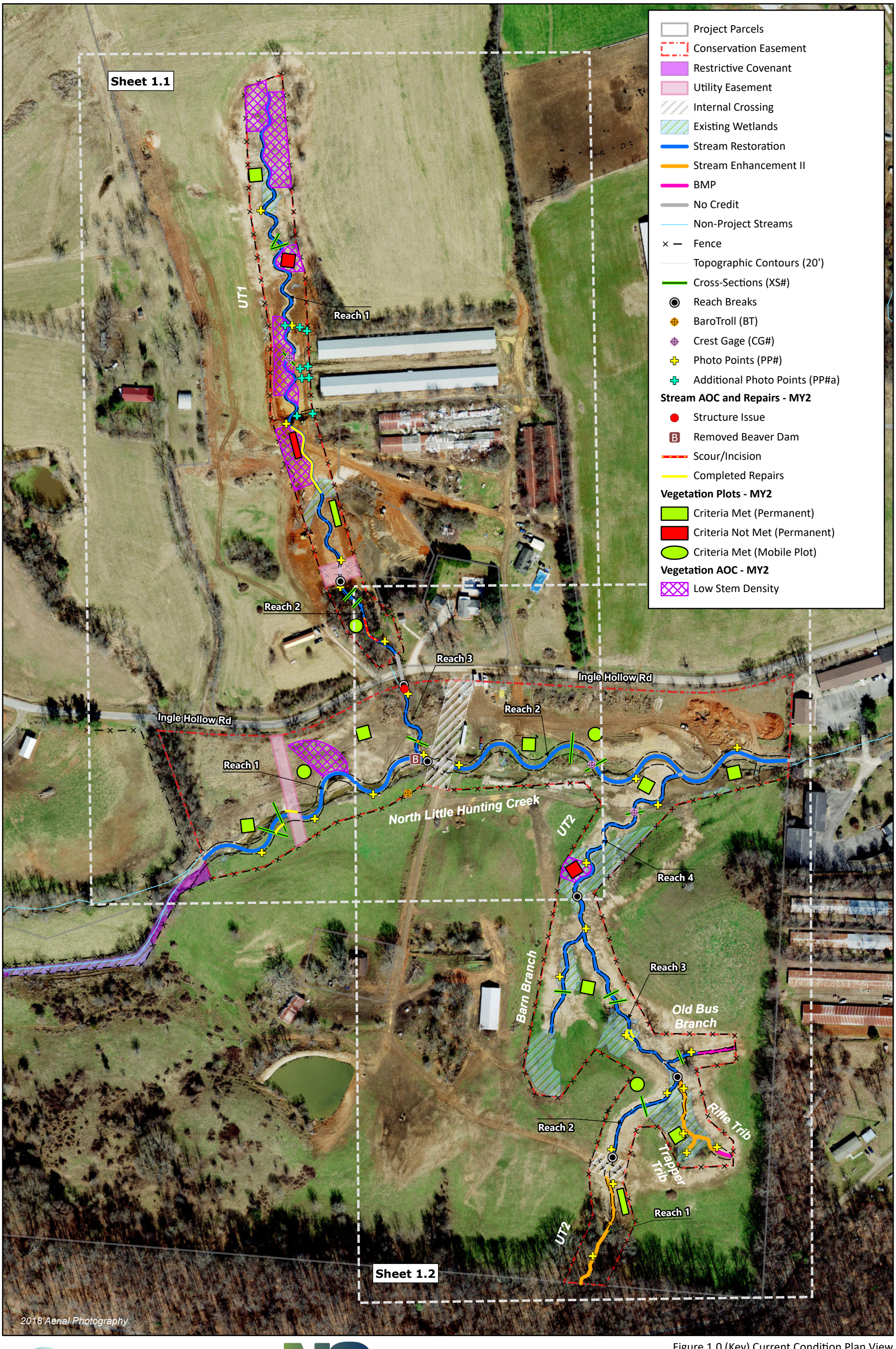
Figures



WILDLANDS ENGINEERING

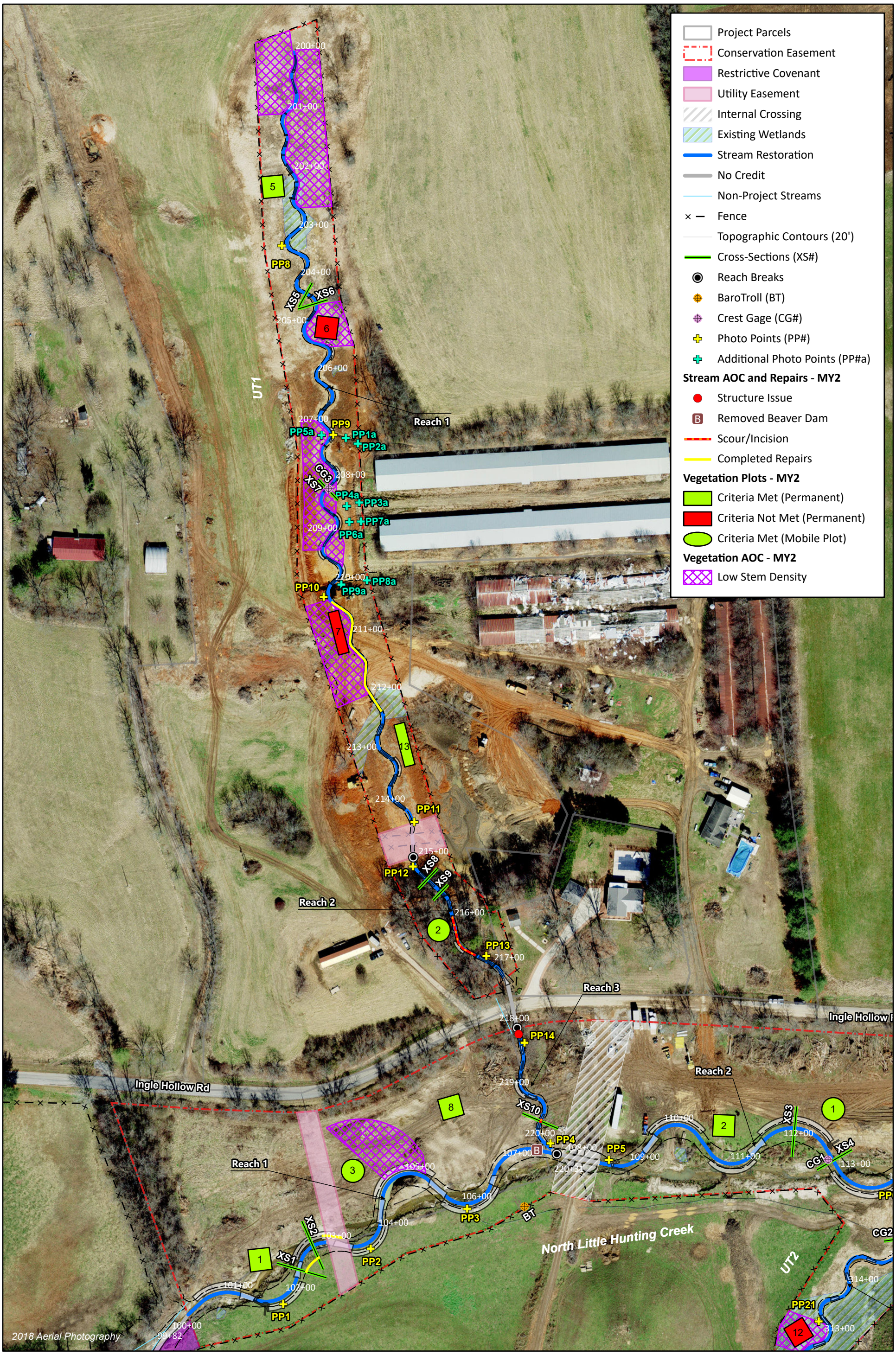
Environmental Quality

0 110 220 Feet

N

Figure 1.0 (Key) Current Condition Plan View
Huntsman Mitigation Site
Yadkin River Basin (03040102)
Monitoring Year 2 - 2023

Wilkes County, NC

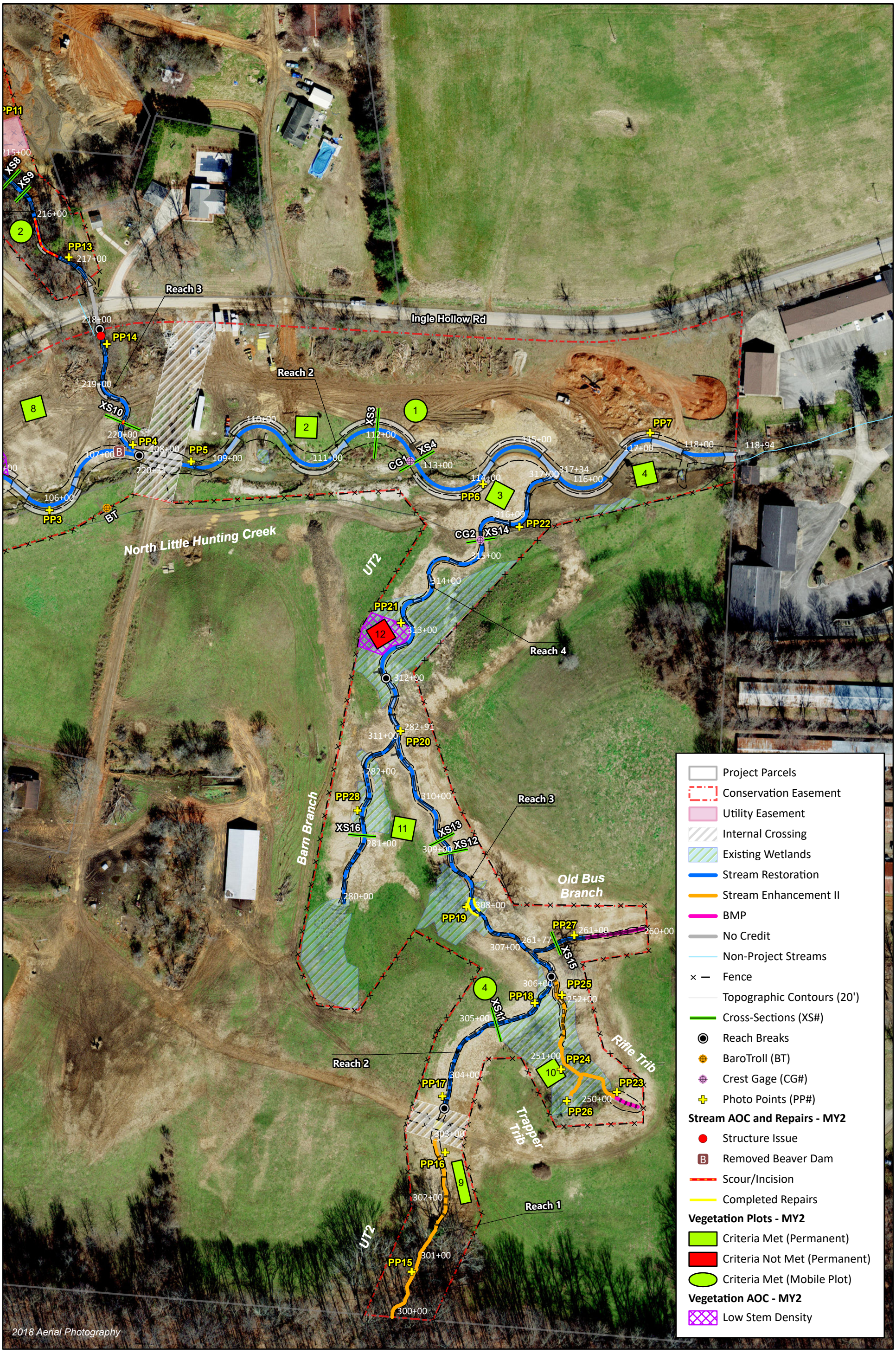


WILDLANDS ENGINEERING

Environmental Quality

0 100 200 Feet

Figure 1.1 Current Condition Plan View
Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023
Wilkes County, NC



WILDLANDS ENGINEERING

Environmental Quality

0 100 200 Feet

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Figure 1.2 Current Condition Plan View
Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023
Wilkes County, NC

APPENDIX A. Visual Assessment Data

Table 4a. Visual Stream Morphology Stability Assessment Table

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

North Little Hunting Creek Reach 1 Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	717
					Assessed Bank Length	1,434
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	1	1		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	8	8		100%

North Little Hunting Creek Reach 2 Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	1,033
					Assessed Bank Length	2,066
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	2	2		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	10	10		100%

Table 4b. Visual Stream Morphology Stability Assessment Table
Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

UT1 Reach 1 Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	1,433
					Assessed Bank Length	2,866
Bank	Surface Scour/ Bare Bank	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	0	100%
Structure	Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	28	28*		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	8	8		100%

* An additonal log sill was added at station 210+45 in MY2.

UT1 Reach 2 Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	244
					Assessed Bank Length	488
Bank	Surface Scour/ Bare Bank	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			75	85%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	75	85%
Structure	Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	5	5		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	2	2		100%

Table 4c. Visual Stream Morphology Stability Assessment Table
Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

UT1 Reach 3 Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	217
					Assessed Bank Length	434
Bank	Surface Scour/ Bare Bank	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			6	99%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	6	99%
Structure	Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	4	5		80%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	1	1		100%

UT2 Reach 2 Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	287
					Assessed Bank Length	573
Bank	Surface Scour/ Bare Bank	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	0	100%
Structure	Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	14	14		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	0	0		N/A

Table 4d. Visual Stream Morphology Stability Assessment Table
Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

UT2 Reach 3 Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	569
					Assessed Bank Length	1,138
Bank	Surface Scour/ Bare Bank	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	0	100%
Structure	Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	12	12		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	1	1		100%

UT2 Reach 4 Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	522
					Assessed Bank Length	1,044
Bank	Surface Scour/ Bare Bank	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	0	100%
Structure	Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	3	3		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	0	0		N/A

Table 4e. Visual Stream Morphology Stability Assessment Table
Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Old Bus Branch Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	88
					Assessed Bank Length	176
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	13	13		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	0	0		N/A

Barn Branch Date Last Assessed: 10/17/2023

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	289
					Assessed Bank Length	578
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	8	8		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	1	1		100%

Table 5. Vegetation Condition Assessment Table
Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Planted Acreage within Easement **16.00** Date Last Assessed: 9/26/2023

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.1	0.00	0.0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on current MY stem count criteria.	0.1	1.1	6.9%
		Total	**1.1**	**6.9%**
Areas of Poor Growth Rates	Planted areas where average height is not meeting current MY Performance Standard.	0.1	0.0	0.0%
		Cumulative Total	**1.1**	**6.9%**

Easement Acreage **17.66** Date Last Assessed: 09/26/2023

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Invasives may occur outside of planted areas and within the easement and will therefore be calculated against the total easement acreage. Include species with the potential to directly outcompete native, young, woody stems in the short-term or community structure for existing communities. Invasive species included in summation above should be identified in report summary.	0.1	0.0	0.0%
Easement Encroachment Areas	Encroachment may be point, line, or polygon. Encroachment to be mapped consists of any violation of restrictions specified in the conservation easement. Common encroachments are mowing, cattle access, vehicular access. Encroachment has no threshold value as will need to be addressed regardless of impact area.	none	0 Encroachments Noted / 0 ac	

Table 6. Area of Concern and Repair Table
Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

MY Documented - AOC #[1]	Stream Name	Station[1]	AOC Description	Repair Date	Repair Description	Length (LF)
MY0-1	North Little Hunting Creek Reach 1	RB: 102+25 - 102+75 LB: 102+85 - 103+00	Localized scour behind the top of bank.	September 2022	Wildlands re-graded both banks, added riffle material to the channel, and re-seeded and matted the banks and floodplain.	65 LF
MY0-2	UT1 Reach 1	210+50 - 212+00	Riffle material washed out of multiple riffles in this section from storm events and deposited downstream.		Wildlands added and embedded riffle material on several degraded riffles from STA. 210+50 to 212+00, removed displaced riffle material from the pools, planted supplemental live stakes and herbaceous seed, and installed sod mats on the banks.	150 LF
MY1-1	UT1 Reach 1	210+50 - 210 +70	Riffle material washed out of one of the previously repaired riffles resulting in some minor bed scour.	January 2023	Wildlands repositioned and embedded the riffle material in the degraded riffle, added a log sill at 210+55, and installed livestakes to the entire length of UT1.	20 LF
MY1-2	UT1 Reach 3	218+23	Rock sill was piping , which lowered the water elevation downstream of the culvert and resulted in a perched culvert.		Wildlands added rip-rap and geo-textile matting to the rock sill.	N/A
MY1-3	UT2 Reach 3	LB: 308+00 - 308+36 RB: 308+00 - 308+23	Wetland hydrology abutted the stream resulting in stream bank slump and scour.		Wildlands re-graded both banks, reinforced them with clay soil and brushtoe, and re-seeded and matted the banks and floodplain.	59 LF
MY2-1	UT1 Reach 2	216+00 - 216+75	Lack of Baseflow observed on 8/24/23.	N/A	No repair needed at this time. Camera Installed on 11/13/23 to monitor baseflow.	75 LF
MY2-2	UT1 Reach 3	218+23	Observed on 9/26/23, the rip rap previously used for the rock sill repair was washed downstream causing the rock sill to begin piping again and returned the culvert to a perched position.	Late 2023/Early 2024	Wildlands will repair the rock sill to displace water back into the culvert in late 2023/early 2024.	N/A
MY2-3	UT1 Reach 3	219+80 - 219+86	Localized incision on cross-section 10.	N/A	No repair needed at this time. Wildlands will continue to monitor the area of localized incision and will report on conditions in 2024.	6 LF

[1]MY = Monitoring Year, AOC = Area of Concern, RB = Right Bank, LB = Left Bank

Stream Photographs

Monitoring Year 2

	
Photo Point 1 – NL Hunting R1, view upstream *(04/06/2023)*	**Photo Point 1** – NL Hunting R1, view downstream *(04/06/2023)*
	
Photo Point 2 – NL Hunting R1, view upstream *(04/06/2023)*	**Photo Point 2** – NL Hunting R1, view downstream *(04/06/2023)*
	
Photo Point 3 – NL Hunting R1, view upstream *(04/06/2023)*	**Photo Point 3** – NL Hunting R1, view downstream *(04/06/2023)*

Photo Point 4 – NL Hunting R1, view upstream *(04/06/2023)*

Photo Point 4 – NL Hunting R1, view downstream *(04/06/2023)*

Photo Point 4 – UT1 Reach 3 view upstream *(04/06/2023)*

Photo Point 5 – NL Hunting R2, view upstream *(04/06/2023)*

Photo Point 5 – NL Hunting R2, view downstream *(04/06/2023)*

	
Photo Point 6 – NL Hunting R2, view upstream *(04/06/2023)*	**Photo Point 6** – NL Hunting R2, view downstream *(04/06/2023)*
	
Photo Point 7 – NL Hunting R2, view upstream *(04/06/2023)*	**Photo Point 7** – NL Hunting R2, view downstream *(04/06/2023)*
	
Photo Point 8 – UT1 Reach 1, view upstream *(04/06/2023)*	**Photo Point 8** – UT1 Reach 1, view downstream *(04/06/2023)*

	
Photo Point 9 – UT1 Reach 1, view upstream *(04/06/2023)*	**Photo Point 9** – UT1 Reach 1, view downstream *(04/06/2023)*
	
Photo Point 10 – UT1 Reach 1, view upstream *(04/06/2023)*	**Photo Point 10** – UT1 Reach 1, view downstream *(04/06/2023)*
	
Photo Point 11 – UT1 Reach 1, view upstream *(04/06/2023)*	**Photo Point 11** – UT1 Reach 1, view downstream *(04/06/2023)*

Photo Point 12 – UT1 Reach 2, view upstream *(04/06/2023)*

Photo Point 12 – UT1 Reach 2, view downstream *(04/06/2023)*

Photo Point 13 – UT1 Reach 2, view upstream *(04/06/2023)*

Photo Point 13 – UT1 Reach 2, view downstream *(04/06/2023)*

Photo Point 14 – UT1 Reach 3, view upstream *(04/06/2023)*

Photo Point 14 – UT1 Reach 2, view downstream *(04/06/2023)*

	
Photo Point 15 – UT2 Reach 1, view upstream *(04/06/2023)*	**Photo Point 15** – UT2 Reach 1, view downstream *(04/06/2023)*
	
Photo Point 16 – UT2 Reach 1, view upstream *(04/06/2023)*	**Photo Point 16** – UT2 Reach 1, view downstream *(04/06/2023)*
	
Photo Point 17 – UT2 Reach 2, view upstream *(04/06/2023)*	**Photo Point 17** – UT2 Reach 2, view downstream *(04/06/2023)*

	
Photo Point 18 – UT2 Reach 2, view upstream *(04/06/2023)*	**Photo Point 18** – UT2 Reach 2, view downstream *(04/06/2023)*
	
Photo Point 19 – UT2 Reach 3, view upstream *(04/06/2023)*	**Photo Point 19** – UT2 Reach 3, view downstream *(04/06/2023)*
	
Photo Point 20 – UT2 Reach 3, view upstream *(04/06/2023)*	**Photo Point 20 –** UT2 Reach 3, view downstream *(04/06/2023)*

	
Photo Point 21 – UT2 Reach 4, view upstream *(04/06/2023)*	**Photo Point 21 –** UT2 Reach 4, view downstream *(04/06/2023)*
	
Photo Point 22 – UT2 Reach 4, view upstream *(04/06/2023)*	**Photo Point 22 –** UT2 Reach 4, view downstream *(04/06/2023)*
	
Photo Point 23 – Rifle Trib, view upstream *(04/06/2023)*	**Photo Point 23** – Rifle Trib, view downstream *(04/06/2023)*

	
Photo Point 24 – Rifle Trib, view upstream *(04/06/2023)*	**Photo Point 24 –** Rifle Trib, view downstream *(04/06/2023)*
	
Photo Point 25 – Rifle Trib, view upstream *(04/06/2023)*	**Photo Point 25 –** Rifle Trib, view downstream *(04/06/2023)*
	
Photo Point 26 – Trapper Trib, view upstream *(04/06/2023)*	**Photo Point 26 –** Trapper Trib, view downstream *(04/06/2023)*

	
Photo Point 27 – Old Bus Branch, view upstream *(04/06/2023)*	**Photo Point 27 –** Old Bus Branch, view downstream *(04/06/2023)*
	
Photo Point 28 – Barn Branch, view upstream *(04/06/2023)*	**Photo Point 28** – Barn Branch, view downstream *(04/06/2023)*

Additional Swale Photographs

Monitoring Year 2

Photo Point 1a – Stabilized swale, view up valley *(04/06/2023)*

Photo Point 1a – Stabilized swale, view down valley *(04/06/2023)*

Photo Point 2a – Stabilized swale, view up valley *(04/06/2023)*

Photo Point 2a – Stabilized swale, view down valley *(04/06/2023)*

Photo Point 3a – Stabilized swale, view up valley *(04/06/2023)*

Photo Point 3a – Stabilized swale, view down valley *(04/06/2023)*

Photo Point 4a – Stabilized swale, view up valley *(04/06/2023)*

Photo Point 4a – UT1 Reach 1, view down valley *(04/06/2023)*

Photo Point 5a – Stabilized swale, view up valley *(04/06/2023)*

Photo Point 6a – Stabilized swale, view up valley *(04/06/2023)*

Photo Point 6a – Stabilized swale, view down valley *(04/06/2023)*

	
Photo Point 7a – Stabilized swale, view up valley *(04/06/2023)*	**Photo Point 7a** – Stabilized swale, view down valley *(04/06/2023)*
	
Photo Point 8a – Stabilized swale, view up valley *(04/06/2023)*	**Photo Point 8a** – Stabilized swale, view down valley *(04/06/2023)*
	
Photo Point 9a – Stabilized swale, view up valley *(04/06/2023)*	**Photo Point 9a** – Stabilized swale, view down valley *(04/06/2023)*

Vegetation Plot Photographs

Monitoring Year 2

PERMANENT VEGETATION PLOT 1 *(07/26/2023)*

PERMANENT VEGETATION PLOT 2 *(07/26/2023)*

PERMANENT VEGETATION PLOT 3 *(07/26/2023)*

PERMANENT VEGETATION PLOT 4 *(07/26/2023)*

PERMANENT VEGETATION PLOT 5 *(07/26/2023)*

PERMANET VEGETATION PLOT 6 *(07/26/2023)*

PERMANENT VEGETATION PLOT 7 *(07/26/2023)*

PERMANENT VEGETATION PLOT 8 *(07/26/2023)*

PERMANENT VEGETATION PLOT 9 *(07/26/2023)*

PERMANENT VEGETATION PLOT 10 *(07/26/2023)*

PERMANENT VEGETATION PLOT 11 *(07/26/2023)*

PERMANENT VEGETATION PLOT 12 *(07/26/2023)*

PERMANENT VEGETATION PLOT 13 *(07/26/2023)*

MOBILE VEGETATION PLOT 1 *(07/26/2023)*

MOBILE VEGETATION PLOT 2 *(07/26/2023)*

MOBILE VEGETATION PLOT 3 *(07/26/2023)*

MOBILE VEGETATION PLOT 4 *(07/26/2023)*

Areas of Concern & Repair Photographs

Monitoring Year 2

	
MY0-1 – **NL Hunting Reach 1, 102+25 - 102+75** – Right bank scour before repairs *(06/01/2022)*	**MY0-1** – **NL Hunting Reach 1, 102+25 - 102+75** – Re-stabilized right bank after repairs *(09/26/2022)*
	
MY0-1 – **NL Hunting Reach 1, 102+85 - 103+00** – Floodplain scour before repairs on left bank *(05/24/2022)*	**MY0-1** – **NL Hunting Reach 1, 102+85 - 103+00** – Re-stabilized floodplain and left bank after repairs *(09/26/2022)*

MY0-2 – UT1 Reach 1, station 210+50 to 212+00 – Riffle scour before repairs *(06/01/2022)*

MY0-2 – UT1 Reach 1, station 210+50 to 212+00 – Re-stabilized riffle after repairs *(01/08/2023)*

MY1-1 – UT1 Reach 1, station 210+50 to 210+70 – Riffle scour before repairs *(12/08/2022)*

MY1-1 – UT1 Reach 1, station 210+50 to 210+70 – Re-stabilized riffle after repairs *(09/26/2023)*

UT1 Reach 1, station 210+45 – Additional installed log sill after repairs *(09/26/23)*

	
MY1-2 – UT1 Reach 3, station 218+23 – Rock sill piping before repairs *(09/27/2022)*	**MY1-2 – UT1 Reach 3, station 218+23** – Rock sill after repairs *(01/08/2023)*
	
MY1-3 – UT2 Reach 3, station 308+00 to 308+36 – Bank scour before repairs *(12/08/2022)*	**MY1-3 – UT2 Reach 3, station 308+00 to 308+36 –** Re-stabilized bank after repairs *(09/26/2023)*
	
MY2-1 – UT1 Reach 2, station 216+00 to 216+75 – Lack of base flow *(09/29/2023)*	**MY2-2 – UT1 Reach 3, station 218+23 –** Rock sill piping, perched culvert before repairs *(09/26/2023)*

MY2-3 – UT1 Reach 3, station 219+80 to 219+86 – Isolated riffle scour *(10/17/2023)*

APPENDIX B. Vegetation Plot Data

Table 7a. Vegetation Plot Data

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Planted Acreage	16
Date of Initial Plant	2022-04-07
Date(s) of Supplemental Plant(s)	2023-02-16
Date(s) Mowing	NA
Date of Current Survey	2023-07-26
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 4 F		Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F		Veg Plot 8 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Acer negundo	boxelder	Tree	FAC	2	2	1	1	1	1	2	2	2	2	1	1			1	1
	Asimina triloba	pawpaw	Tree	FAC																
	Betula nigra	river birch	Tree	FACW	3	3	3	3	2	2	3	3	2	2	2	2			4	4
	Calycanthus floridus	eastern sweetshrub	Shrub	FACU																
	Diospyros virginiana	common persimmon	Tree	FAC	1	1	1	1	3	3			3	3						
	Fagus grandifolia	American beech	Tree	FACU																
	Hamamelis virginiana	American witchhazel	Tree	FACU																
	Lindera benzoin	northern spicebush	Tree	FAC															1	1
	Nyssa sylvatica	blackgum	Tree	FAC	2	2									2	2			2	2
	Platanus occidentalis	American sycamore	Tree	FACW	3	3	3	3	4	4	3	3	3	3	1	1	2	2	3	3
	Quercus alba	white oak	Tree	FACU	1	1	1	1	1	1							1	1	2	2
	Quercus rubra	northern red oak	Tree	FACU	1	1							1	1						
	Ulmus americana	American elm	Tree	FACW			1	1			1	1	1	1			2	2		
	Ulmus rubra	slippery elm	Tree	FAC			1	1			1	1					1	1	2	2
Sum	Performance Standard				13	13	11	11	11	11	10	10	12	12	6	6	6	6	15	15
Mitigation Plan Performance Standard	Current Year Stem Count					13		11		11		10		12		6		6		15
	Stems/Acre					526		445		445		405		486		243		243		607
	Species Count					7		7		5		5		6		4		4		7
	Dominant Species Composition (%)					23		27		36		30		25		33		33		27
	Average Plot Height (ft.)					2		2		2		3		3		3		2		2
	% Invasives					0		0		0		0		0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					13		11		11		10		12		6		6		15
	Stems/Acre					526		445		445		405		486		243		243		607
	Species Count					7		7		5		5		6		4		4		7
	Dominant Species Composition (%)					23		27		36		30		25		33		33		27
	Average Plot Height (ft.)					2		2		2		3		3		3		2		2
	% Invasives					0		0		0		0		0		0		0		0

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 7b. Vegetation Plot Data

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Planted Acreage	16
Date of Initial Plant	2022-04-07
Date(s) of Supplemental Plant(s)	2023-02-16
Date(s) Mowing	NA
Date of Current Survey	2023-07-26
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 9 F		Veg Plot 10 F		Veg Plot 11 F		Veg Plot 12 F		Veg Plot 13 F		Veg Plot 1 R	Veg Plot 2 R	Veg Plot 3 R	Veg Plot 4 R
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Total	Total	Total	Total
Species Included in Approved Mitigation Plan	Acer negundo	boxelder	Tree	FAC			1	1			1	1	4	4		3	1	1
	Asimina triloba	pawpaw	Tree	FAC	1	1					1	1	1	1				
	Betula nigra	river birch	Tree	FACW	2	2	2	2	2	2			1	1	3	1	3	3
	Calycanthus floridus	eastern sweetshrub	Shrub	FACU	1	1												
	Diospyros virginiana	common persimmon	Tree	FAC	2	2	2	2	3	3					2	1	3	1
	Fagus grandifolia	American beech	Tree	FACU			1	1										
	Hamamelis virginiana	American witchhazel	Tree	FACU									1	1				
	Lindera benzoin	northern spicebush	Tree	FAC							1	1						
	Nyssa sylvatica	blackgum	Tree	FAC									1	1	1	2	1	
	Platanus occidentalis	American sycamore	Tree	FACW	2	2	2	2	3	3	1	1			1	3	4	2
	Quercus alba	white oak	Tree	FACU	1	1									1			
	Quercus rubra	northern red oak	Tree	FACU			1	1	2	2	1	1	2	2				1
	Ulmus americana	American elm	Tree	FACW			1	1					1	1			1	
	Ulmus rubra	slippery elm	Tree	FAC							1	1						
Sum	Performance Standard				9	9	10	10	10	10	6	6	11	11	8	10	13	8
Mitigation Plan Performance Standard	Current Year Stem Count					9		10		10		6		11	8	10	13	8
	Stems/Acre					364		405		405		243		445	324	405	526	324
	Species Count					6		7		4		6		7	5	5	6	5
	Dominant Species Composition (%)					22		20		30		17		36	38	30	31	38
	Average Plot Height (ft.)					2		3		3		2		2	2	2	2	3
	% Invasives					0		0		0		0		0	0	0	0	0
Post Mitigation Plan Performance Standard	Current Year Stem Count					9		10		10		6		11	8	10	13	8
	Stems/Acre					364		405		405		243		445	324	405	526	324
	Species Count					6		7		4		6		7	5	5	6	5
	Dominant Species Composition (%)					22		20		30		17		36	38	30	31	38
	Average Plot Height (ft.)					2		3		3		2		2	2	2	2	3
	% Invasives					0		0		0		0		0	0	0	0	0

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded), species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 8. Vegetation Performance Standards Summary Table

Huntsman Mitigation Site

DMS Project No. 100123

Monitoring Year 2- 2023

	Veg Plot 1 F				Veg Plot 2 F				Veg Plot 3 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	526	2	7	0	445	2	7	0	445	2	5	0
Monitoring Year 1	567	2	8	0	486	2	7	0	445	2	5	0
Monitoring Year 0	607	2	9	0	607	2	10	0	567	2	8	0
	Veg Plot 4 F				Veg Plot 5 F				Veg Plot 6 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	405	3	5	0	486	3	6	0	243	3	4	0
Monitoring Year 1	486	3	6	0	445	3	6	0	364	2	6	0
Monitoring Year 0	607	2	9	0	567	2	9	0	567	2	9	0
	Veg Plot 7 F				Veg Plot 8 F				Veg Plot 9 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	243	2	4	0	607	2	7	0	364	2	6	0
Monitoring Year 1	364	2	6	0	648	2	8	0	445	2	7	0
Monitoring Year 0	607	2	10	0	648	2	8	0	567	2	9	0
	Veg Plot 10 F				Veg Plot 11 F				Veg Plot 12 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	405	3	7	0	405	3	4	0	243	2	6	0
Monitoring Year 1	405	2	7	0	526	3	7	0	445	2	10	0
Monitoring Year 0	567	2	10	0	607	2	8	0	607	2	11	0
	Veg Plot 13 F				Veg Plot Group 1 R				Veg Plot Group 2 R			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	445	2	7	0	324	2	5	0	405	2	5	0
Monitoring Year 1	405	2	5	0	283	2	6	0	364	2	8	0
Monitoring Year 0					567	2	9	0	607	2	11	0
	Veg Plot Group 3 R				Veg Plot Group 4 R							
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives				
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	526	2	6	0	324	3	5	0				
Monitoring Year 1	445	2	6	0	364	2	6	0				
Monitoring Year 0	526	2	7	0	526	2	9	0				

*Each monitoring year represents a different plot for the random vegetation plot "groups". Random plots are denoted with an R, and fixed plots with an F.

Supplemental Planting Species List

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Open Riparian Buffer Planting Zone				
Scientific Name	**Common Name**	**Wetland Indicator Status**	**Planting Type**	**Quantity**
Acer negundo	Boxelder	FAC	Bare Root	10
Cornus florida	Flowering Dogwood	FACU	Bare Root	10
Quercus rubra	Northern Red Oak	FACU	Bare Root	10
Ulmus americana	American Elm	FACW	Bare Root	10
			Total	40

Streambank Planting Zone				
Scientific Name	**Common Name**	**Wetland Indicator Status**	**Planting Type**	**Quantity**
Salix nigra	Black Willow	OBL	Livestake	95
Salix sericea	Silky Willow	OBL	Livestake	210
Cornus amomum	Silky Dogwood	FACW	Livestake	210
Sambucus canadensis	Elderberry	FAC	Livestake	115
			Total	630

Proposed Species for Supplemental Planting - Winter 2023/2024

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Open Riparian Buffer Planting Zone				
Scientific Name	**Common Name**	**Wetland Indicator Status**	**Planting Type**	**Quantity**
Platanus occidentalis	American Sycamore	FACW	Bare Root	15
Ulmus americana	American Elm	FACW	Bare Root	15
Betula nigra	River Birch	FACW	Bare Root	15
Quercus rubra	Northern Red Oak	FACU	Bare Root	15
Fagus grandifolia	American Beech	FACU	Bare Root	10
Nyssa sylvatica	Blackgum	FAC	Bare Root	10
Ulmus rubra	Slippery Elm	FAC	Bare Root	10
			Total	90

APPENDIX C. Stream Geomorphology Data

Table 9a. Baseline Stream Data Summary

Huntsman Mitigation Site

DMS Project No. 100123

Monitoring Year 2 - 2023

	PRE-EXISTING CONDITIONS			DESIGN		MONITORING BASELINE (MY0)		
Parameter	**North Little Hunting Creek Reach 1**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	12.4	16.3	2	22.0		22.1		1
Floodprone Width (ft)	17.0	44.0	2	48.0	220.0	78.1		1
Bankfull Mean Depth	1.6	1.7	2	1.3		1.3		1
Bankfull Max Depth	2.1	2.3	2	2.0		2.2		1
Bankfull Cross Sectional Area (ft^2)	20.6	25.8	2	29.2		28.6		1
Width/Depth Ratio	7.5	10.3	2	16.6		17.1		1
Entrenchment Ratio	1.4	2.7	2	2.2	10.0	3.5		1
Bank Height Ratio	2.0	2.3	2	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	15.00			--		64.0		1
Rosgen Classification	G4			C4		C4		
Bankfull Discharge (cfs)	100-110			100.0		90.6		
Sinuosity	1.1			1.3		1.3		
Water Surface Slope ($ft/ft)^2$	0.0073			0.0049		0.0053		
Other	--			--		--		
Parameter	**North Little Hunting Creek Reach 2**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	12.4	16.3	2	23.0		27.9		1
Floodprone Width (ft)	17.0	44.0	2	51.0	230.0	61.2		1
Bankfull Mean Depth	1.6	1.7	2	1.4		1.4		1
Bankfull Max Depth	2.1	2.3	2	2.0		2.3		1
Bankfull Cross Sectional Area (ft^2)	20.6	25.8	2	31.1		37.8		1
Width/Depth Ratio	7.5	10.3	2	17.0		20.5		1
Entrenchment Ratio	1.4	2.7	2	2.2	10.0	2.2		1
Bank Height Ratio	2.0	2.3	2	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	15.00			--		105		1
Rosgen Classification	G4			C4		C3		
Bankfull Discharge (cfs)	100-110			110.0		114.8		
Sinuosity	1.1			1.2		1.2		
Water Surface Slope ($ft/ft)^2$	0.0073			0.0066		0.0061		
Other	--			--		--		

1. ER for the baseline/monitoring parameters are based on the width of the cross-section, in lieu of assuming the width across the floodplain.

(---): Data was not provided, N/A: Not Applicable

Table 9b. Baseline Stream Data Summary

Huntsman Mitigation Site

DMS Project No. 100123

Monitoring Year 2 - 2023

	PRE-EXISTING CONDITIONS			DESIGN		MONITORING BASELINE (MY0)		
Parameter	**UT1 Reach 1**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	10.2	13.7	2	4.5	5.7	4.8	5.2	2
Floodprone Width (ft)	23.0	35.0	2	10.0	57.0	41.3	43.8	2
Bankfull Mean Depth	0.7	0.8	2	0.3	0.4	0.3	0.4	2
Bankfull Max Depth	1.3	1.7	2	0.5	0.6	0.6		2
Bankfull Cross Sectional Area (ft^2)	8.2	9.8	2	1.5	2.3	1.4	1.9	2
Width/Depth Ratio	12.7	19.1	2	13.5	13.9	12.3	18.8	2
Entrenchment Ratio	2.2	2.5	2	>1.4	>2.2	8.0	9.1	2
Bank Height Ratio	1.0	1.8	2	1.0	1.1	1.0		2
Max part size (mm) mobilized at bankfull	27.00			--		39.5	43.2	2
Rosgen Classification	E4/C4			C4 & B4		C4b		
Bankfull Discharge (cfs)	7-11			7.0		3.4		
Sinuosity	1.1			1.1	1.3	1.2		
Water Surface Slope ($ft/ft)^2$	0.0296			0.0190	0.0595	0.0243		
Other	--			--		--		
Parameter	**UT1 Reach 2**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	10.2	13.7	2	6.2		6.2		1
Floodprone Width (ft)	23.0	35.0	2	11.0	25.0	42.3		1
Bankfull Mean Depth	0.7	0.8	2	0.4		0.8		1
Bankfull Max Depth	1.3	1.7	2	0.6		1.5		1
Bankfull Cross Sectional Area (ft^2)	8.2	9.8	2	2.6		5.2		1
Width/Depth Ratio	12.7	19.1	2	14.6		7.4		1
Entrenchment Ratio	2.2	2.5	2	1.8	4.0	6.8		1
Bank Height Ratio	1.0	1.8	2	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	27.00			--		39		1
Rosgen Classification	E4/C4			C4b		C4b		
Bankfull Discharge (cfs)	7-11			10.0		31.8		
Sinuosity	1.1			1.2		1.2		
Water Surface Slope ($ft/ft)^2$	0.0296			0.0380		0.0399		
Other	--			--		--		

1. ER for the baseline/monitoring parameters are based on the width of the cross-section, in lieu of assuming the width across the floodplain.

2. Channel slope for UT1 Reach 1 is calculated from the surface of the channel bed rather than water surface.

(---): Data was not provided, N/A: Not Applicable

Table 9c. Baseline Stream Data Summary

Huntsman Mitigation Site

DMS Project No. 100123

Monitoring Year 2 - 2023

	PRE-EXISTING CONDITIONS			DESIGN		MONITORING BASELINE (MY0)		
Parameter	**UT1 Reach 3**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	10.2	13.7	2	6.6		6.3		1
Floodprone Width (ft)	23.0	35.0	2	12.0	26.0	18.4		1
Bankfull Mean Depth	0.7	0.8	2	0.5		0.5		1
Bankfull Max Depth	1.3	1.7	2	0.8		0.9		1
Bankfull Cross Sectional Area (ft^2)	8.2	9.8	2	3.0		3.4		1
Width/Depth Ratio	12.7	19.1	2	14.3		11.7		1
Entrenchment Ratio	2.2	2.5	2	1.8	4.0	2.9		1
Bank Height Ratio	1.0	1.8	2	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	27.00			--		53.7		1
Rosgen Classification	E4/C4			C4b		C4b		
Bankfull Discharge (cfs)	7-11			11.0		15.3		
Sinuosity	1.1			1.1		1.1		
Water Surface Slope ($ft/ft)^2$	0.0296			0.0310		0.0366		
Other	--			--		--		
Parameter	**UT2 Reach 2**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	3.5		1	5.0		5.1		1
Floodprone Width (ft)	5.0		1	7.0	12.0	18.2		1
Bankfull Mean Depth	0.8		1	0.3		0.3		1
Bankfull Max Depth	1.0		1	0.5		0.5		1
Bankfull Cross Sectional Area (ft^2)	2.6		1	1.6		1.4		1
Width/Depth Ratio	4.7		1	15.4		18.0		1
Entrenchment Ratio	1.3		1	1.4	2.4	3.6		1
Bank Height Ratio	2.8		1	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	0.90			--		44		1
Rosgen Classification	A6			B5a		B4a		
Bankfull Discharge (cfs)	7.0			7.0		6.7		
Sinuosity	1.1			1.1		1.1		
Water Surface Slope ($ft/ft)^2$	0.0791			0.0830		0.0856		
Other	--			--		--		

1. ER for the baseline/monitoring parameters are based on the width of the cross-section, in lieu of assuming the width across the floodplain.

2. Channel slope is calculated from the surface of the channel bed rather than water surface.

(---): Data was not provided, N/A: Not Applicable

Table 9d. Baseline Stream Data Summary

Huntsman Mitigation Site

DMS Project No. 100123

Monitoring Year 2 - 2023

	PRE-EXISTING CONDITIONS			DESIGN		MONITORING BASELINE (MY0)		
Parameter	**UT2 Reach 3**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	3.0		1	6.6		7.5		1
Floodprone Width (ft)	10.0		1	9.0	16.0	23.0		1
Bankfull Mean Depth	1.1		1	0.4		0.5		1
Bankfull Max Depth	1.4		1	0.5		0.8		1
Bankfull Cross Sectional Area (ft^2)	3.2		1	2.6		3.4		1
Width/Depth Ratio	2.9		1	17.1		16.3		1
Entrenchment Ratio	3.2		1	1.4	2.4	3.1		1
Bank Height Ratio	2.3		1	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	0.90			--		33.7		1
Rosgen Classification	E5b			B5		C4b		
Bankfull Discharge (cfs)	9.0			9.0		13.3		
Sinuosity	1.1			1.1		1.1		
Water Surface Slope ($ft/ft)^2$	0.0254			0.0300		0.0319		
Other	--			--		--		
Parameter	**UT2 Reach 4**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	3.0		1	8.4		6.0		1
Floodprone Width (ft)	10.0		1	18.0	84.0	21.3		1
Bankfull Mean Depth	1.1		1	0.5		0.4		1
Bankfull Max Depth	1.4		1	0.8		0.6		1
Bankfull Cross Sectional Area (ft^2)	3.2		1	4.5		2.2		1
Width/Depth Ratio	2.9		1	15.8		16.3		1
Entrenchment Ratio	3.2		1	2.2	10.0	3.6		1
Bank Height Ratio	2.3		1	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	0.90			--		31		1
Rosgen Classification	E5b			C5		C4		
Bankfull Discharge (cfs)	9.0			9.0		4.7		
Sinuosity	1.1			1.3		1.3		
Water Surface Slope ($ft/ft)^2$	0.0254			0.0700		0.0128		
Other	--			--		--		

1. ER for the baseline/monitoring parameters are based on the width of the cross-section, in lieu of assuming the width across the floodplain.

2. Channel slope for UT2 Reach 3 is calculated from the surface of the channel bed rather than water surface.

(---): Data was not provided, N/A: Not Applicable

Table 9e. Baseline Stream Data Summary

Huntsman Mitigation Site

DMS Project No. 100123

Monitoring Year 2 - 2023

	PRE-EXISTING CONDITIONS			DESIGN		MONITORING BASELINE (MY0)		
Parameter	**Old Bus Branch**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	4.1		1	3.0		3.7		1
Floodprone Width (ft)	7.0		1	4.0	7.0	6.4		1
Bankfull Mean Depth	0.8		1	0.3		0.3		1
Bankfull Max Depth	1.2		1	0.5		0.4		1
Bankfull Cross Sectional Area (ft^2)	3.4		1	0.9		1.0		1
Width/Depth Ratio	4.9		1	10.3		13.7		1
Entrenchment Ratio	1.7		1	1.4	2.4	1.7		1
Bank Height Ratio	6.3		1	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	0.10			--		47.3		1
Rosgen Classification	G5			A5		B4a		
Bankfull Discharge (cfs)	4.0			4.0		4.9		
Sinuosity	1.1			1.0		1.0		
Water Surface Slope ($ft/ft)^2$	0.0284			0.0900		0.1030		
Other	--			--		--		
Parameter	**Barn Branch**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	3.8		1	4.3		8.4		1
Floodprone Width (ft)	9.0		1	6.0	10.0	40.1		1
Bankfull Mean Depth	0.9		1	0.3		0.7		1
Bankfull Max Depth	1.2		1	0.5		1.1		1
Bankfull Cross Sectional Area (ft^2)	3.3		1	1.4		5.6		1
Width/Depth Ratio	4.3		1	13.2		12.7		1
Entrenchment Ratio	2.5		1	1.4	2.4	4.8		1
Bank Height Ratio	2.5		1	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	0.10			--		52		1
Rosgen Classification	B5a			B5a		B4a		
Bankfull Discharge (cfs)	6.0			6.0		30.2		
Sinuosity	1.0			1.1		1.1		
Water Surface Slope ($ft/ft)^2$	0.0435			0.0520		0.0388		
Other	--			--		--		

1. ER for the baseline/monitoring parameters are based on the width of the cross-section, in lieu of assuming the width across the floodplain.

2. Channel slope for Old Bus Branch is calculated from the surface of the channel bed rather than water surface.

(---): Data was not provided, N/A: Not Applicable

Table 10. Cross-Section Morphology Monitoring Summary

Huntsman Mitigation Site

DMS Project No. 100123

Monitoring Year 2 - 2023

	North Little Hunting Creek Reach 1												North Little Hunting Creek Reach 2											
	Cross-Section 1 (Riffle)						Cross-Section 2 (Pool)						Cross-Section 3 (Pool)						Cross-Section 4 (Riffle)					
	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	1119.0	1118.8	1119.1				--	--	--				--	--	--				1113.1	1113.0	1113.1			
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0	0.9	0.9				--	--	--				--	--	--				1.0	1.0	1.0			
Thalweg Elevation	1116.9	1116.8	1116.8				1113.5	1116.2	1116.0				1107.9	1108.8	1109.1				1110.8	1110.4	1110.5			
LTOB[2] Elevation	1119.0	1118.6	1118.9				1118.7	1118.5	1118.7				1113.4	1113.4	1113.4				1113.1	1112.9	1113.1			
LTOB[2] Max Depth (ft)	2.2	1.9	2.1				5.2	2.3	2.7				5.5	4.7	4.4				2.3	2.4	2.6			
LTOB[2] Cross Sectional Area (ft^2)	28.6	24.4	24.2				74.9	36.2	30.9				78.6	69.2	64.0				37.8	34.7	37.7			
	UT1 Reach 1																		UT1 Reach 2					
	Cross-Section 5 (Riffle)						Cross-Section 6 (Pool)						Cross-Section 7 (Riffle)						Cross-Section 8 (Riffle)					
	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	1158.4	1158.4	1158.3				--	--	--				1152.8	1152.8	1152.8				1134.0	1133.9	1134.0			
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0	1.0	1.0				--	--	--				1.0	1.1	1.0				1.0	1.0	1.0			
Thalweg Elevation	1157.7	1157.9	1157.8				1156.4	1156.0	1155.9				1152.1	1152.2	1152.2				1132.5	1132.4	1132.6			
LTOB[2] Elevation	1158.4	1158.4	1158.3				1157.9	1157.8	1157.7				1152.8	1152.9	1152.9				1134.0	1134.0	1134.0			
LTOB[2] Max Depth (ft)	0.6	0.5	0.5				1.5	1.8	1.9				0.6	0.7	0.7				1.5	1.6	1.4			
LTOB[2] Cross Sectional Area (ft^2)	1.4	1.3	1.3				7.5	7.9	7.1				1.9	2.3	2.0				5.2	5.6	5.3			
	UT1 Reach 2						UT1 Reach 3						UT2 Reach 2						UT2 Reach 3					
	Cross-Section 9 (Pool)						Cross-Section 10 (Riffle)						Cross-Section 11 (Riffle)						Cross-Section 12 (Pool)					
	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	--	--	--				1117.8	1117.9	1117.2				1144.9	1145.0	1144.9				--	--	--			
Bank Height Ratio - Based on AB Bankfull[1] Area	--	--	--				1.0	0.9	1.3				1.0	0.7	0.9				--	--	--			
Thalweg Elevation	1132.0	1131.8	1131.7				1116.9	1116.8	1115.9				1144.3	1144.5	1144.2				1125.0	1123.9	1124.2			
LTOB[2] Elevation	1133.2	1133.1	1133.3				1117.8	1117.7	1117.6				1144.9	1144.8	1144.8				1126.9	1126.8	1126.7			
LTOB[2] Max Depth (ft)	1.2	1.3	1.6				0.9	0.9	1.7				0.5	0.3	0.6				1.9	2.9	2.6			
LTOB[2] Cross Sectional Area (ft^2)	5.3	6.7	8.7				3.4	2.6	5.2				1.4	0.7	1.0				8.8	12.3	8.4			
	UT2 Reach 3						UT2 Reach 4						Old Bus Branch						Barn Branch					
	Cross-Section 13 (Riffle)						Cross-Section 14 (Riffle)						Cross-Section 15 (Riffle)						Cross-Section 16 (Riffle)					
	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	1125.7	1125.6	1125.6				1113.8	1113.8	1113.8				1137.1	1137.1	1137.0				1126.6	1126.7	1126.7			
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0	1.1	1.1				1.0	1.0	1.1				1.0	0.8	1.0				1.0	1.1	1.0			
Thalweg Elevation	1124.9	1124.4	1124.5				1113.2	1113.0	1113.1				1136.7	1136.6	1136.3				1125.5	1125.7	1125.7			
LTOB[2] Elevation	1125.7	1125.8	1125.8				1113.8	1113.8	1113.9				1137.1	1137.0	1137.0				1126.6	1126.8	1126.7			
LTOB[2] Max Depth (ft)	0.8	1.4	1.2				0.6	0.8	0.8				0.4	0.4	0.7				1.1	1.2	1.0			
LTOB[2] Cross Sectional Area (ft^2)	3.4	4.6	4.7				2.2	2.3	2.6				1.0	0.7	0.9				5.6	6.6	5.3			

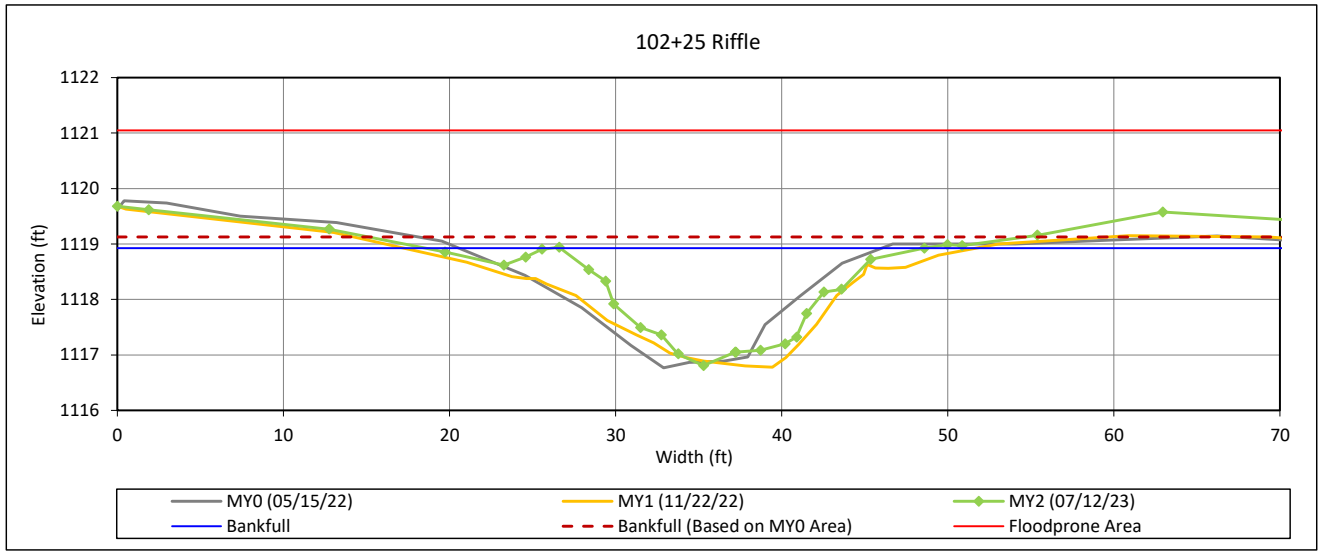
[1]Bank Height Ratio (BHR) takes the as-built bankful area as the basis for adjusting each subsequent years bankfull elevation.

[2]Low top of bank (LTOB) area and max depth - These are based on the LTOB elevation for each years survey (The same elevation used for the LTOB in the BHR calculation). Area below the LTOB elevation will be used and tracked for each year as above. The difference between the LTOB elevation and the thalweg elevation (same as in the BHR calculation) will be recorded and tracked above as LTOB max depth.

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 1 - North Little Hunting Creek Reach 1



Bankfull Dimensions	
24.2	x-section area (ft.sq.)
21.9	width (ft)
1.1	mean depth (ft)
2.1	max depth (ft)
22.6	wetted perimeter (ft)
1.1	hydraulic radius (ft)
19.8	width-depth ratio
78.0	W flood prone area (ft)
3.6	entrenchment ratio
0.9	low bank height ratio

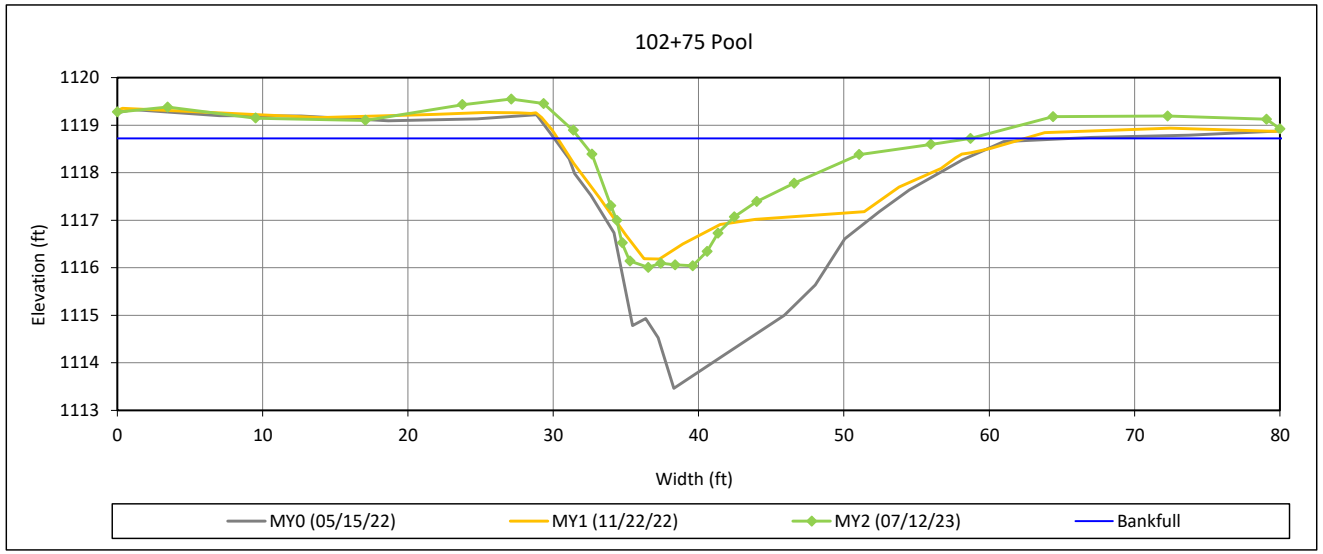
Survey Date: 07/12/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 2 - North Little Hunting Creek Reach 1



Bankfull Dimensions	
30.9	x-section area (ft.sq.)
26.9	width (ft)
1.2	mean depth (ft)
2.7	max depth (ft)
28.1	wetted perimeter (ft)
1.1	hydraulic radius (ft)
23.4	width-depth ratio

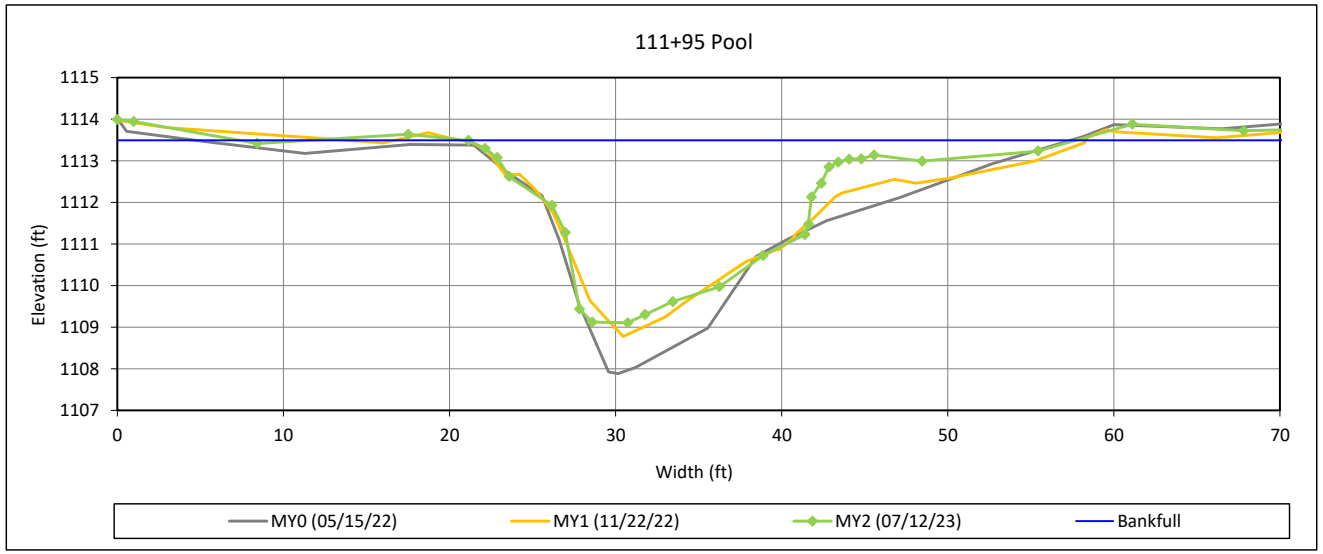
Survey Date: 07/12/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 3 - North Little Hunting Creek Reach 2



Bankfull Dimensions	
64.0	x-section area (ft.sq.)
36.5	width (ft)
1.8	mean depth (ft)
4.4	max depth (ft)
39.4	wetted perimeter (ft)
1.6	hydraulic radius (ft)
20.8	width-depth ratio

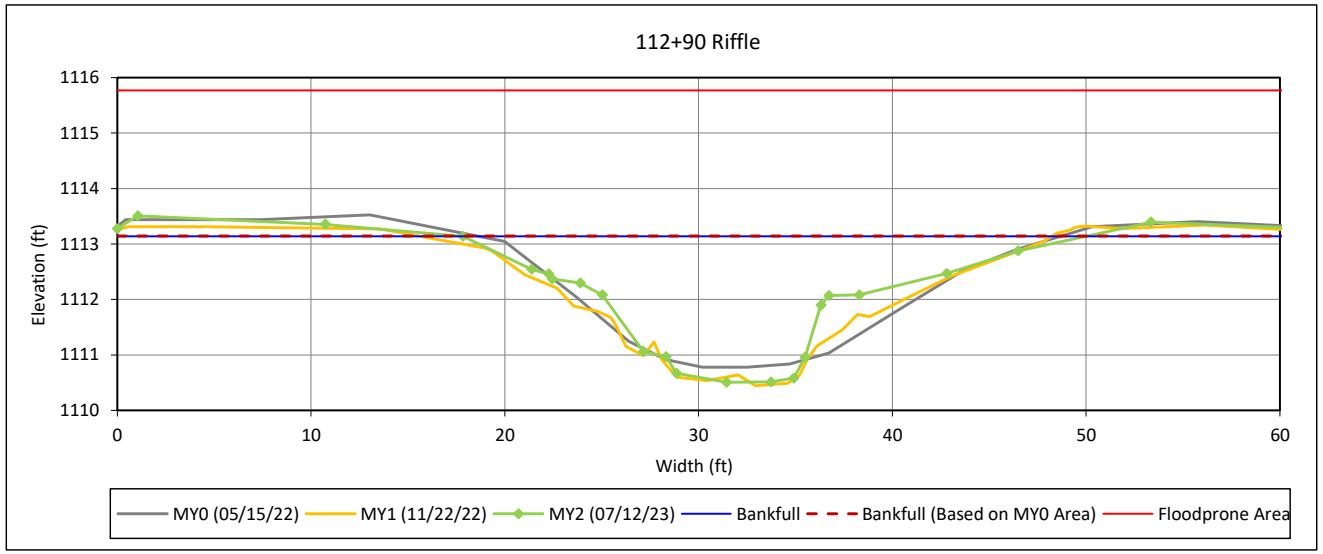
Survey Date: 07/12/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 4 - North Little Hunting Creek Reach 2



Bankfull Dimensions	
37.7	x-section area (ft.sq.)
32.1	width (ft)
1.2	mean depth (ft)
2.6	max depth (ft)
33.2	wetted perimeter (ft)
1.1	hydraulic radius (ft)
27.4	width-depth ratio
61.2	W flood prone area (ft)
1.9	entrenchment ratio
1.0	low bank height ratio

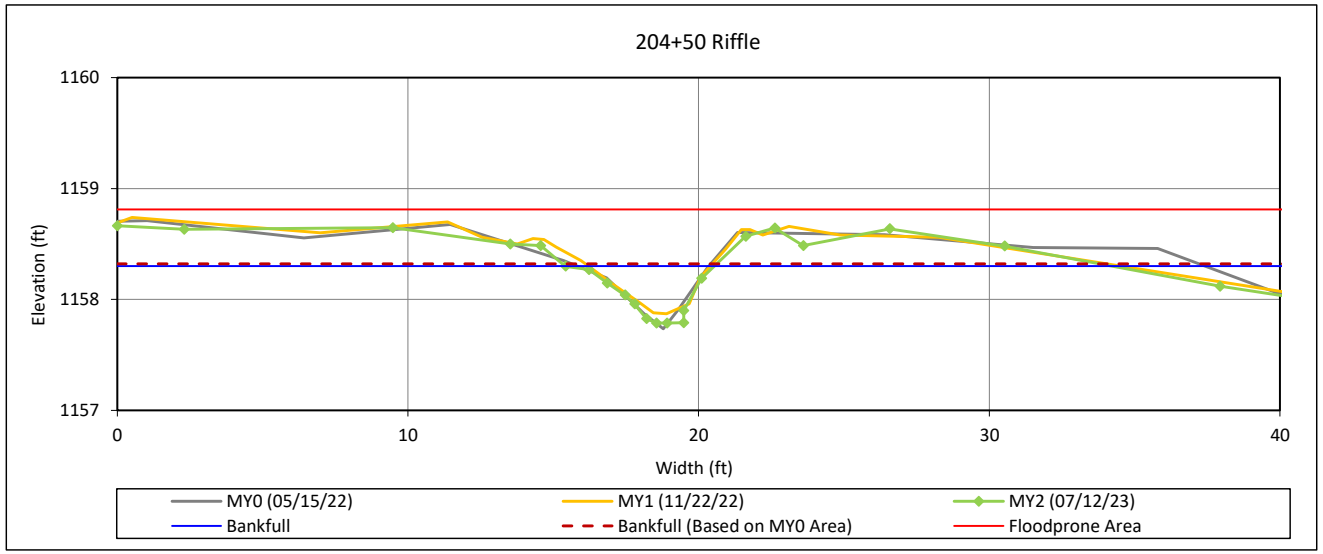
Survey Date: 07/12/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 5 - UT1 Reach 1



Bankfull Dimensions	
1.3	x-section area (ft.sq.)
5.1	width (ft)
0.3	mean depth (ft)
0.5	max depth (ft)
5.4	wetted perimeter (ft)
0.2	hydraulic radius (ft)
20.4	width-depth ratio
41.3	W flood prone area (ft)
8.1	entrenchment ratio
1.0	low bank height ratio

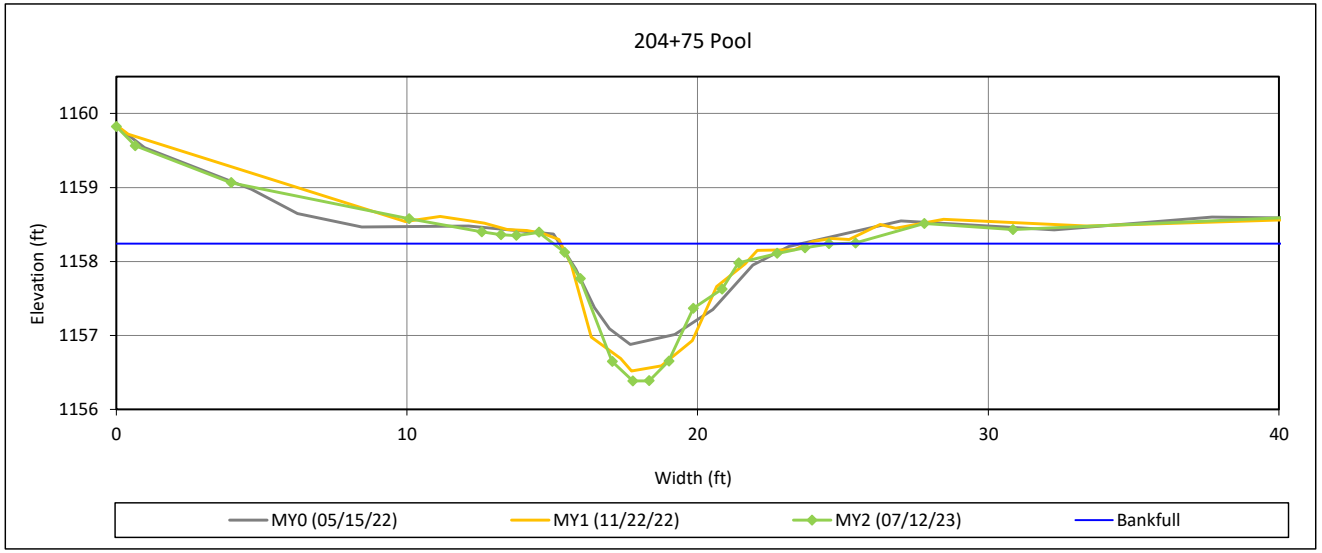
Survey Date: 07/12/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 6 - UT1 Reach 1



Bankfull Dimensions	
7.1	x-section area (ft.sq.)
9.5	width (ft)
0.8	mean depth (ft)
1.9	max depth (ft)
10.6	wetted perimeter (ft)
0.7	hydraulic radius (ft)
12.6	width-depth ratio

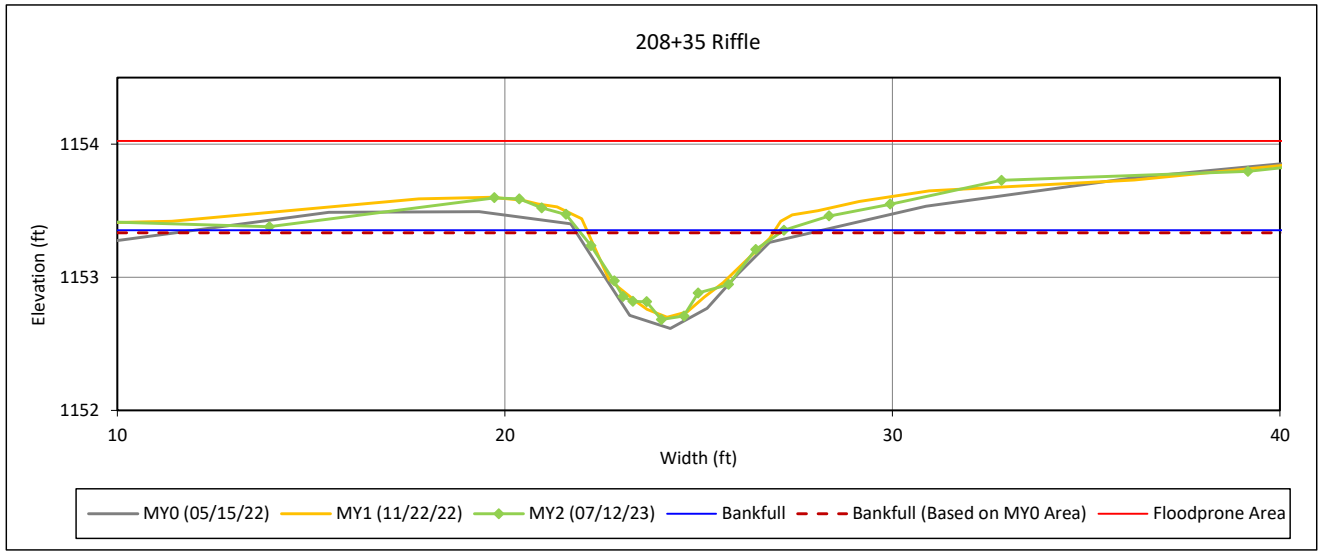
Survey Date: 07/12/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 7 - UT1 Reach 1



Bankfull Dimensions	
2.0	x-section area (ft.sq.)
5.3	width (ft)
0.4	mean depth (ft)
0.7	max depth (ft)
5.5	wetted perimeter (ft)
0.4	hydraulic radius (ft)
14.0	width-depth ratio
44.2	W flood prone area (ft)
8.3	entrenchment ratio
1.0	low bank height ratio

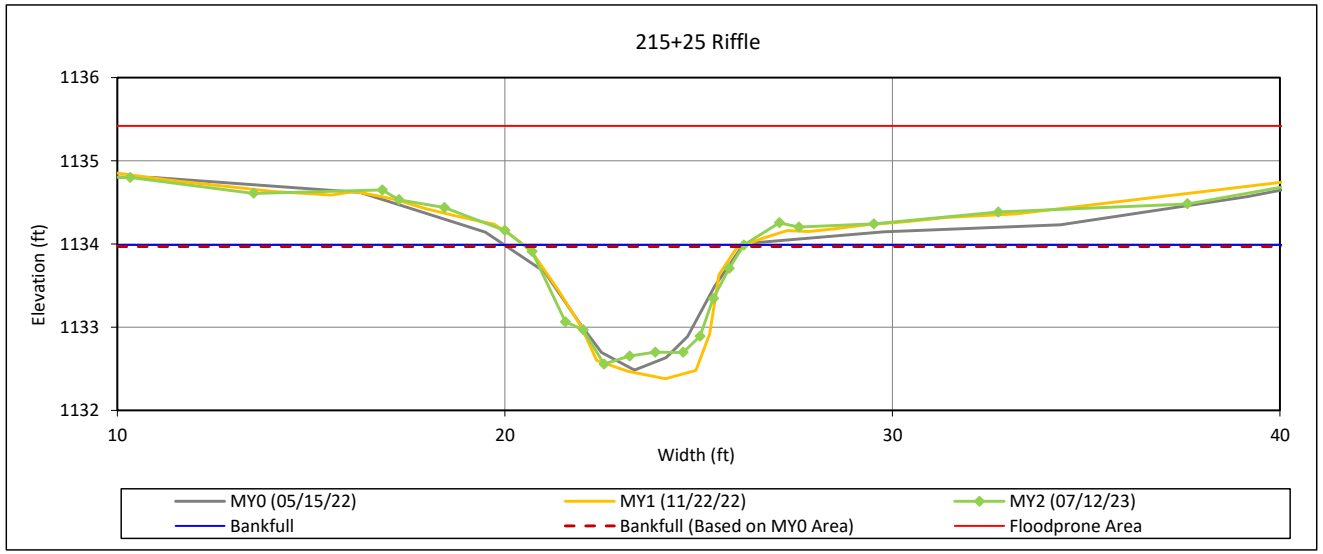
Survey Date: 07/12/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 8 - UT1 Reach 2



Bankfull Dimensions	
5.3	x-section area (ft.sq.)
5.7	width (ft)
0.9	mean depth (ft)
1.4	max depth (ft)
6.7	wetted perimeter (ft)
0.8	hydraulic radius (ft)
6.1	width-depth ratio
42.2	W flood prone area (ft)
7.4	entrenchment ratio
1.0	low bank height ratio

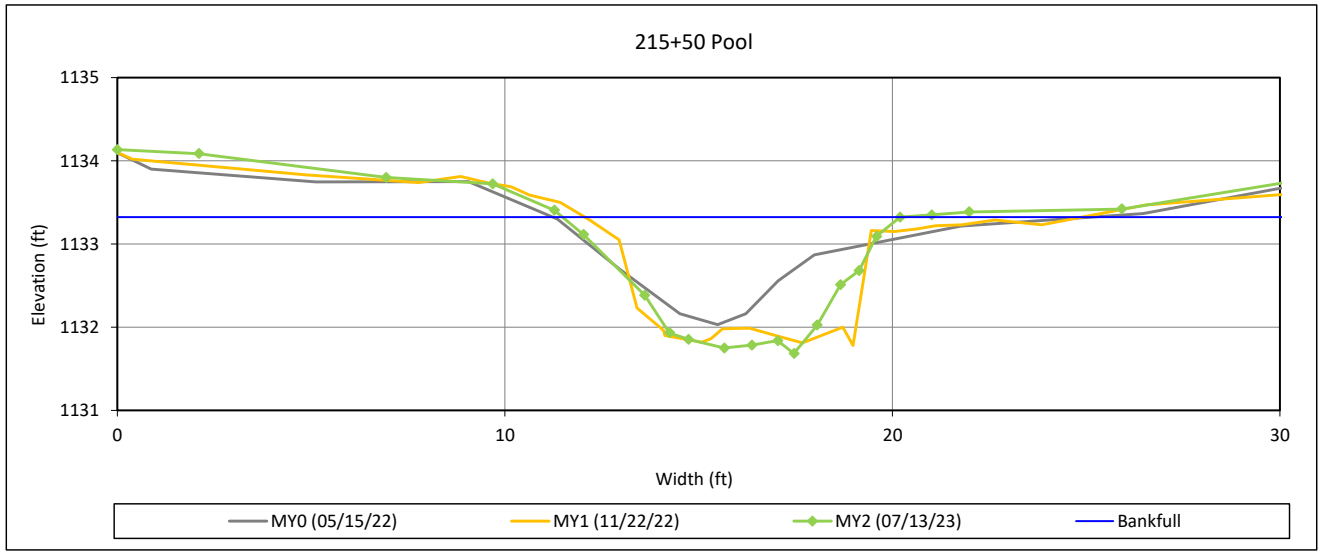
Survey Date: 07/12/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 9 - UT1 Reach 2



Bankfull Dimensions	
8.7	x-section area (ft.sq.)
8.7	width (ft)
1.0	mean depth (ft)
1.6	max depth (ft)
9.6	wetted perimeter (ft)
0.9	hydraulic radius (ft)
8.7	width-depth ratio

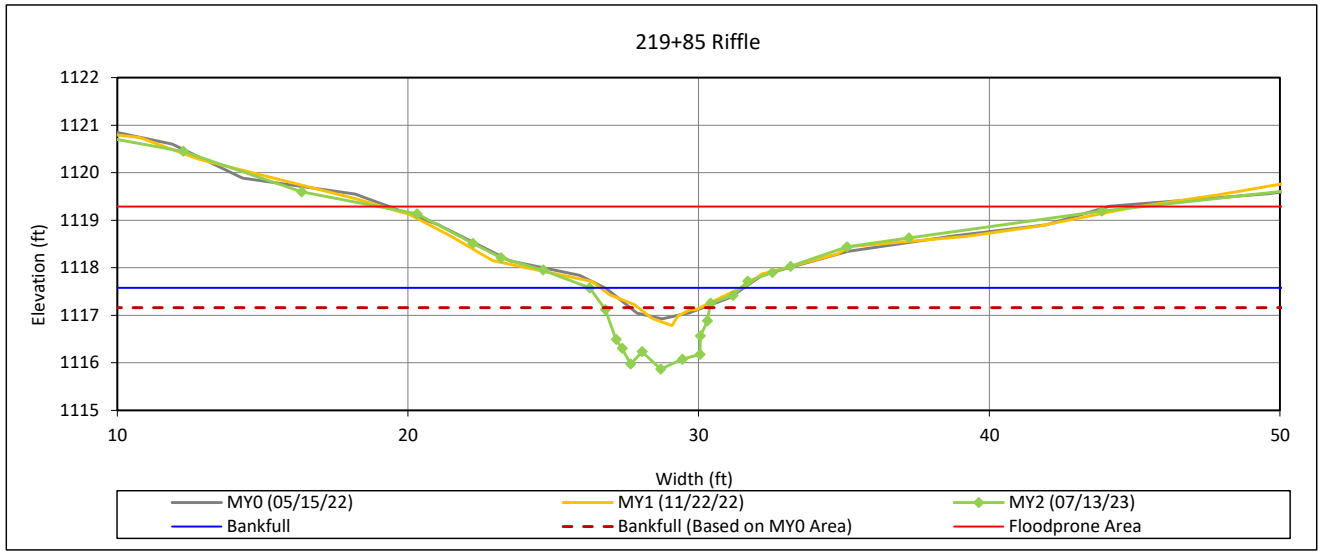
Survey Date: 07/13/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 10 - UT1 Reach 3



Bankfull Dimensions	
5.2	x-section area (ft.sq.)
5.2	width (ft)
1.0	mean depth (ft)
1.7	max depth (ft)
7.0	wetted perimeter (ft)
0.7	hydraulic radius (ft)
5.2	width-depth ratio
26.3	W flood prone area (ft)
5.1	entrenchment ratio
1.3	low bank height ratio

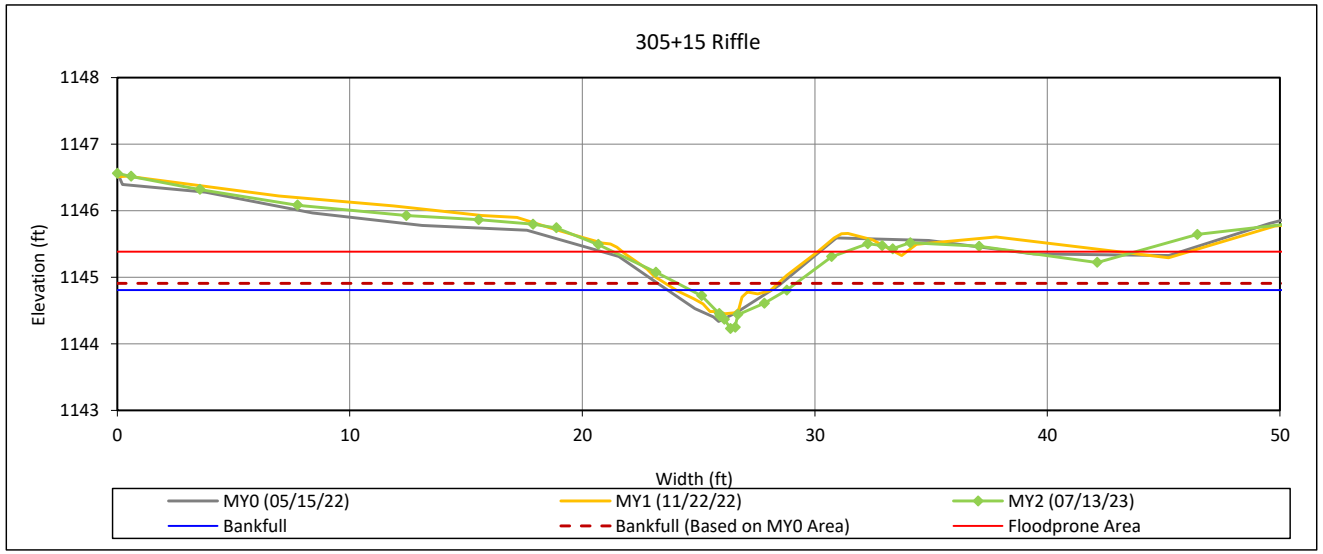
Survey Date: 07/13/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 11 - UT2 Reach 2



Bankfull Dimensions	
1.0	x-section area (ft.sq.)
4.1	width (ft)
0.2	mean depth (ft)
0.6	max depth (ft)
4.4	wetted perimeter (ft)
0.2	hydraulic radius (ft)
17.1	width-depth ratio
14.9	W flood prone area (ft)
3.6	entrenchment ratio
0.9	low bank height ratio

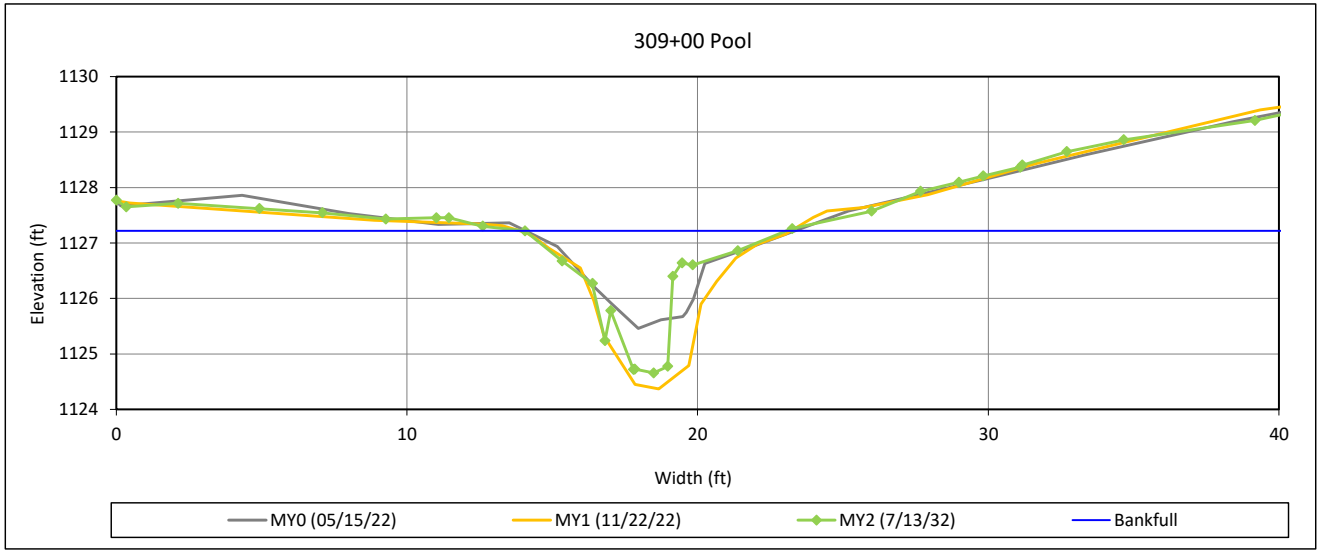
Survey Date: 07/13/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 12 - UT2 Reach 3



Bankfull Dimensions	
8.4	x-section area (ft.sq.)
9.0	width (ft)
0.9	mean depth (ft)
2.6	max depth (ft)
12.4	wetted perimeter (ft)
0.7	hydraulic radius (ft)
9.7	width-depth ratio

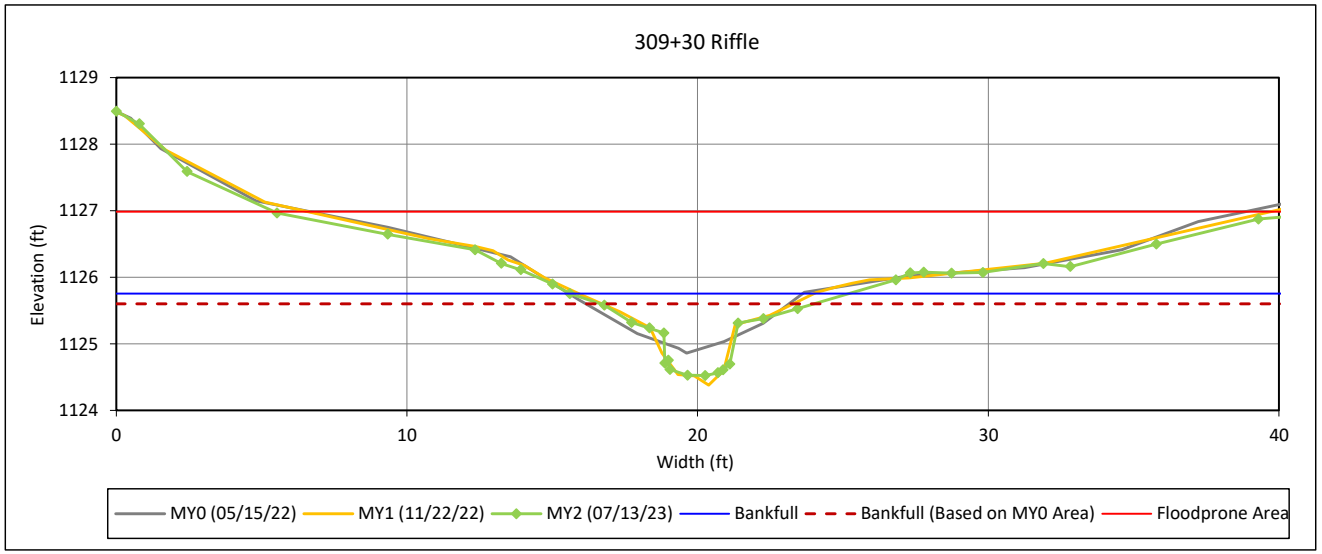
Survey Date: 7/13/32
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 13 - UT2 Reach 3



Bankfull Dimensions	
4.7	x-section area (ft.sq.)
9.6	width (ft)
0.5	mean depth (ft)
1.2	max depth (ft)
10.6	wetted perimeter (ft)
0.4	hydraulic radius (ft)
19.4	width-depth ratio
35.9	W flood prone area (ft)
3.7	entrenchment ratio
1.1	low bank height ratio

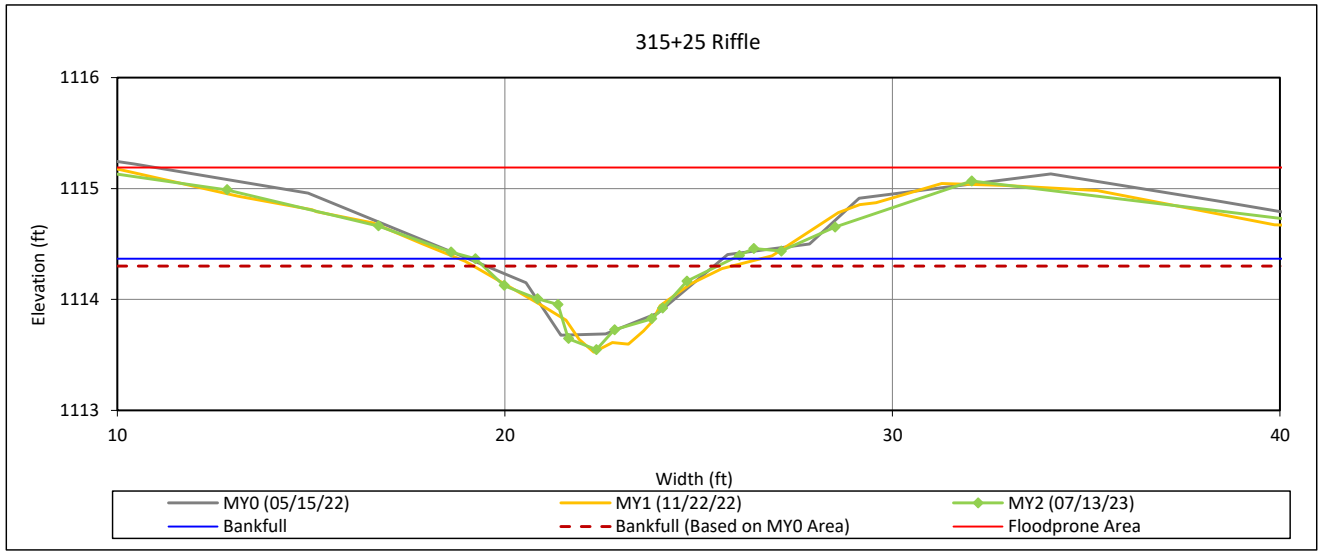
Survey Date: 07/13/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 14 - UT2 Reach 4



Bankfull Dimensions	
2.6	x-section area (ft.sq.)
6.6	width (ft)
0.4	mean depth (ft)
0.8	max depth (ft)
7.0	wetted perimeter (ft)
0.4	hydraulic radius (ft)
16.8	width-depth ratio
34.8	W flood prone area (ft)
5.2	entrenchment ratio
1.1	low bank height ratio

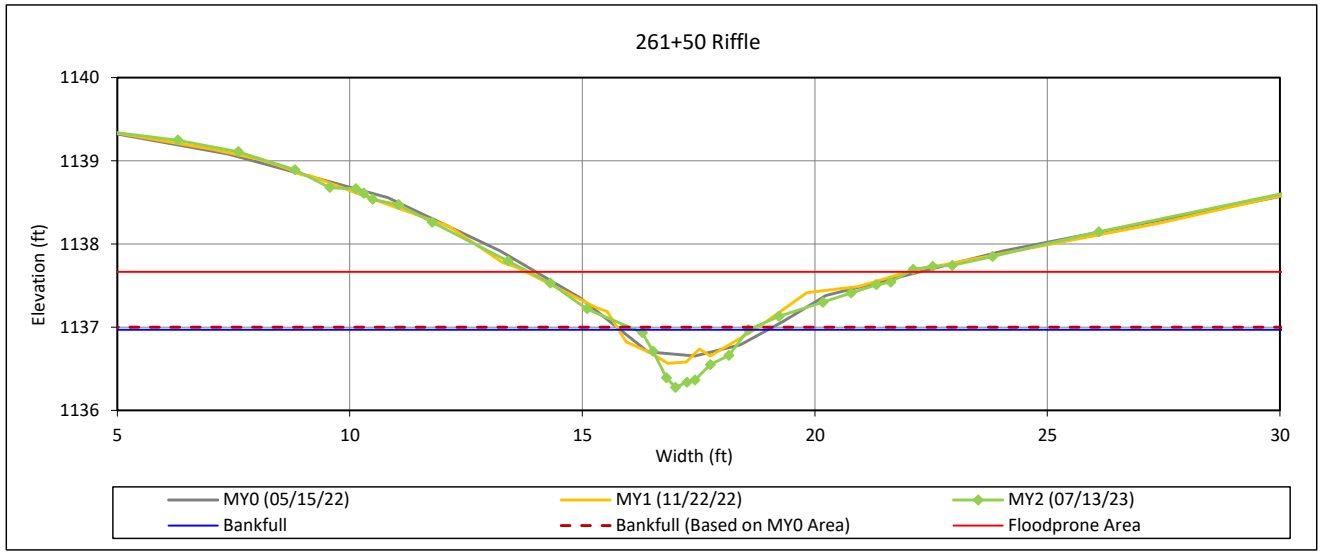
Survey Date: 07/13/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 15 - Old Bus Branch



Bankfull Dimensions	
0.9	x-section area (ft.sq.)
2.4	width (ft)
0.4	mean depth (ft)
0.7	max depth (ft)
2.9	wetted perimeter (ft)
0.3	hydraulic radius (ft)
6.3	width-depth ratio
8.2	W flood prone area (ft)
3.4	entrenchment ratio
1.0	low bank height ratio

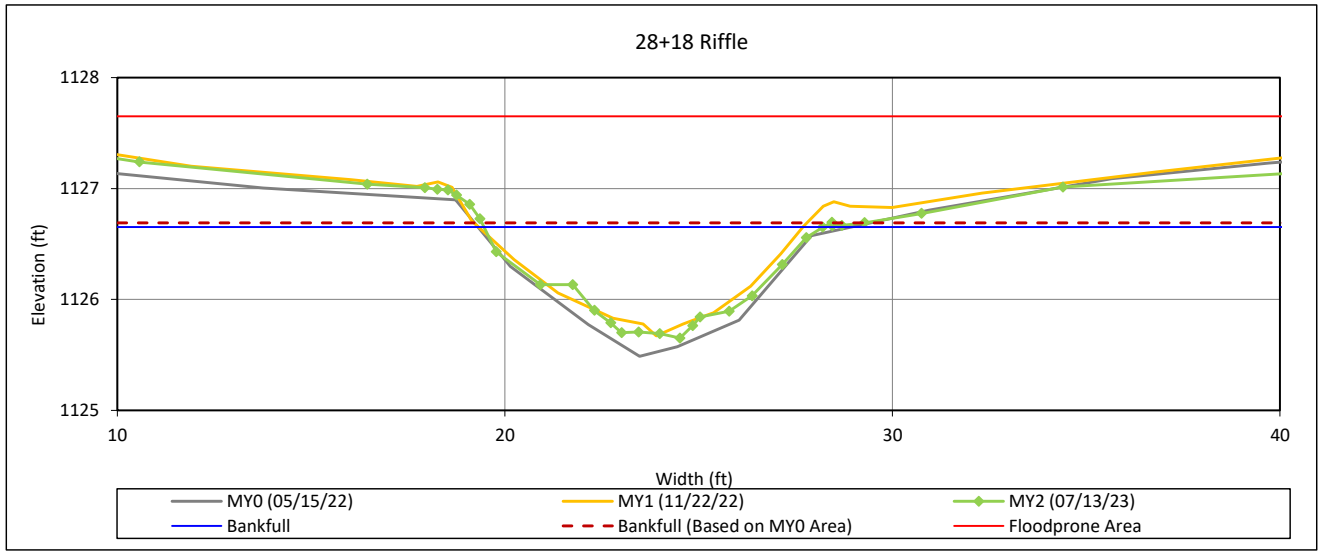
Survey Date: 07/13/23
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Cross-Section 16 - Barn Branch



Bankfull Dimensions	
5.3	x-section area (ft.sq.)
8.7	width (ft)
0.6	mean depth (ft)
1.0	max depth (ft)
9.1	wetted perimeter (ft)
0.6	hydraulic radius (ft)
14.5	width-depth ratio
39.0	W flood prone area (ft)
4.5	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/13/23
Field Crew: Wildlands Engineering

View Downstream

APPENDIX D. Hydrology Data

Table 11. Bankfull Events Summary

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Reach	MY1 (2022)	MY2 (2023)	MY3 (2024)	MY4 (2025)	MY5 (2026)	MY6 (2027)	MY7 (2028)
North Little Hunting Creek Reach 2 - CG1	7/10/2022	---					
UT2 Reach 4 - CG2	5/26/2022 6/16/2022 7/11/2022 8/6/2022 8/30/2022 9/5/2022 11/11/2022 11/21/2022	1/15/2023 1/28/2023 2/17/2023 3/3/2023 4/28/2023 6/19/2023 6/26/2023 7/9 2023 7/15/2023					
UT1 Reach 1 - CG3	Gage Malfuction - No Data Collected	1/25/2023 3/3/2023 4/28/2023 6/20/2023 6/26/2023 7/9/2023 7/16/2023					

--- - No Bankfull events

Table 12. Verfication of Consecutive Flow Days

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Reach	MY1 (2022)	MY2 (2023)	MY3 (2024)	MY4 (2025)	MY5 (2026)	MY6 (2027)	MY7 (2028)
North Little Hunting Creek Reach 2 - CG1	4/7/2022 - 12/8/2022 245 Days	1/1/2023 - 11/13/2023 316 Days					
UT2 Reach 4 - CG2	4/7/2022 - 12/8/2022 245 Days	1/1/2023 - 11/13/2023 316 Days					
UT1 Reach 1 - CG3	Gage Malfuction - No Data Collected	1/1/2023 - 11/13/2023 316 Days					

Table 13. Rainfall Summary

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

	MY1 (2022)	MY2 (2023)	MY3 (2024)	MY4 (2025)	MY5 (2026)	MY6 (2027)	MY7 (2028)
Annual Precip Total[1]	59.16	57.03					
WETS 30th Percentile[2]	33.41	30.67					
WETS 70th Percentile[2]	60.93	56.28					
Normal	Yes	Yes					

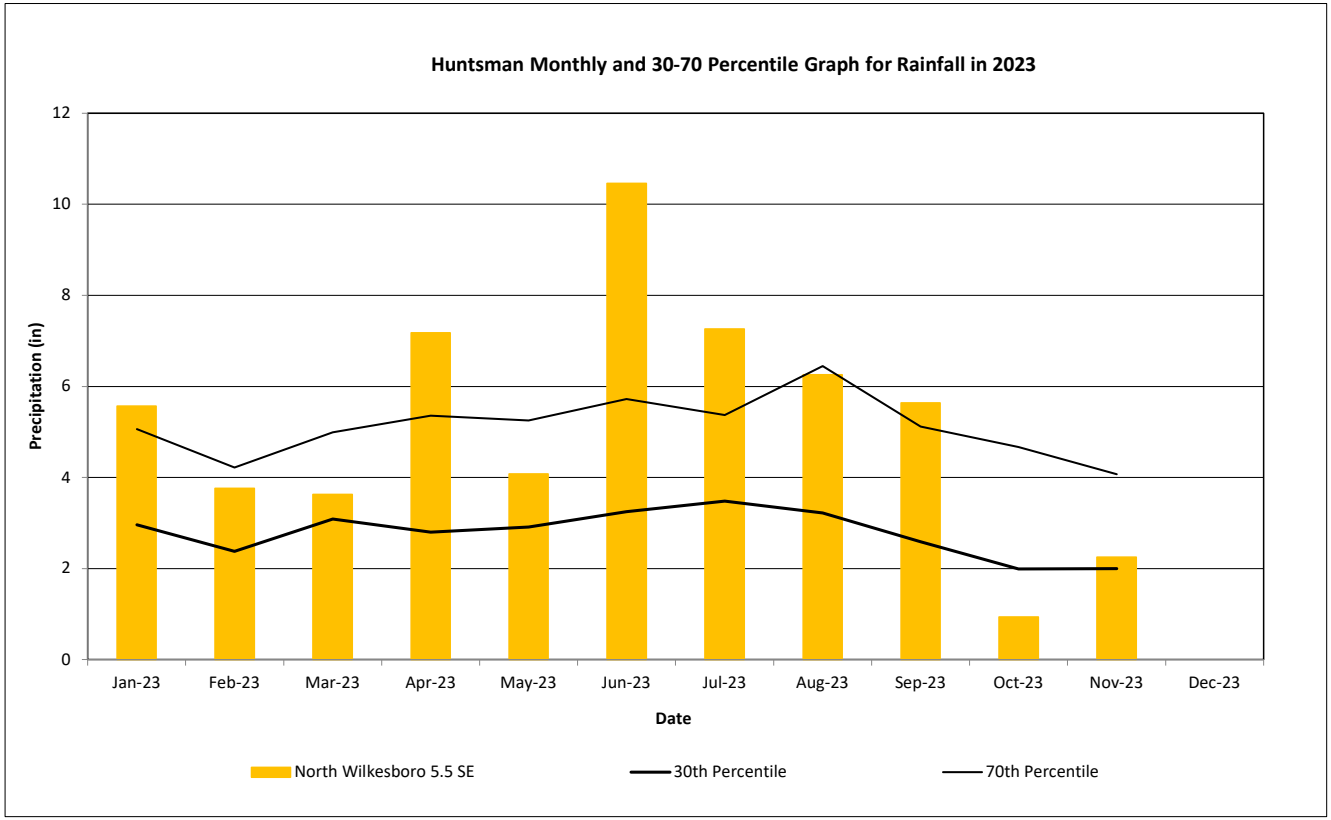
[1]Annual precipitation data was collected from 1-1-23 to 11-27-23 and is derived from the climatological data for the North Wilkesboro 5.5 SE, NC weather station (NOAA, 2023)
[2]30th and 70th percentile precipitation data derived from the WETS data for the North Wilkesboro, NC weather station (NOAA, 2023)

Monthly Rainfall Data

Huntsman Mitigation Site

DMS Project No. 100123

Monitoring Year 2 - 2023

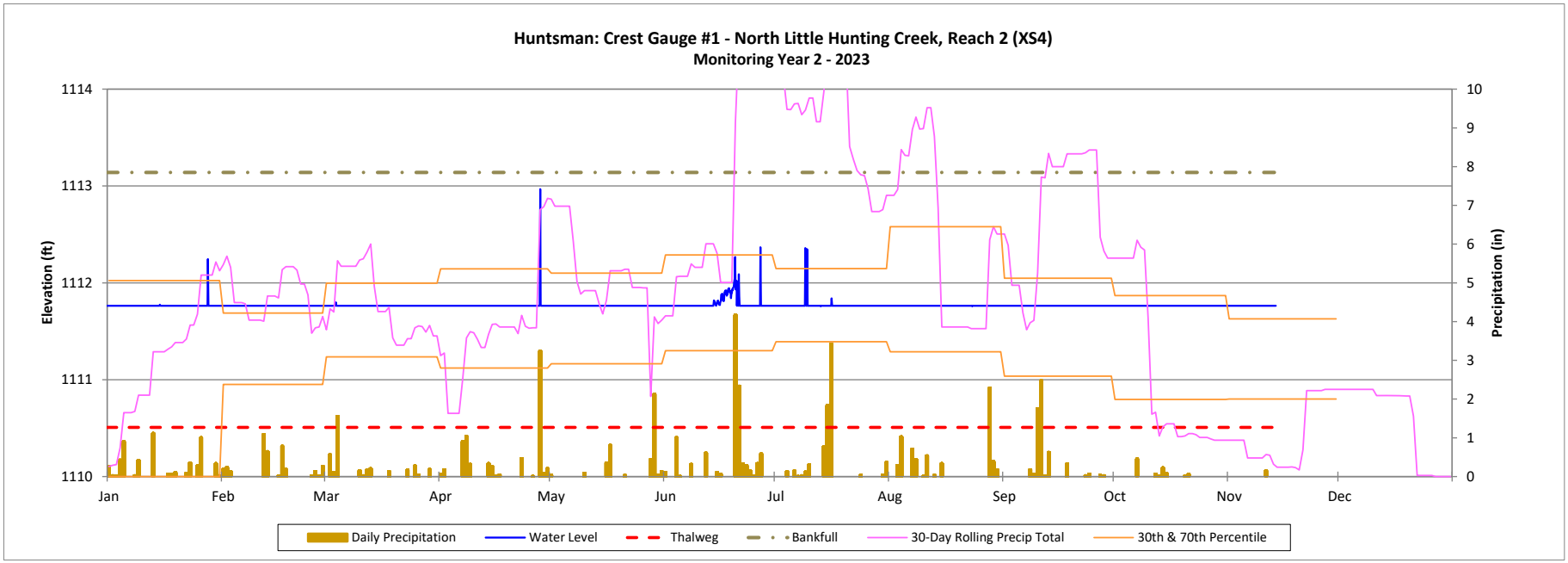


Annual precipitation data was collected from 1-1-23 to 11-27-23 and is derived from the climatological data for the North Wilkesboro 5.5 SE, NC weather station (NOAA, 2023)

30th and 70th percentile precipitation data derived from the WETS data for the North Wilkesboro, NC weather station (NOAA, 2023)

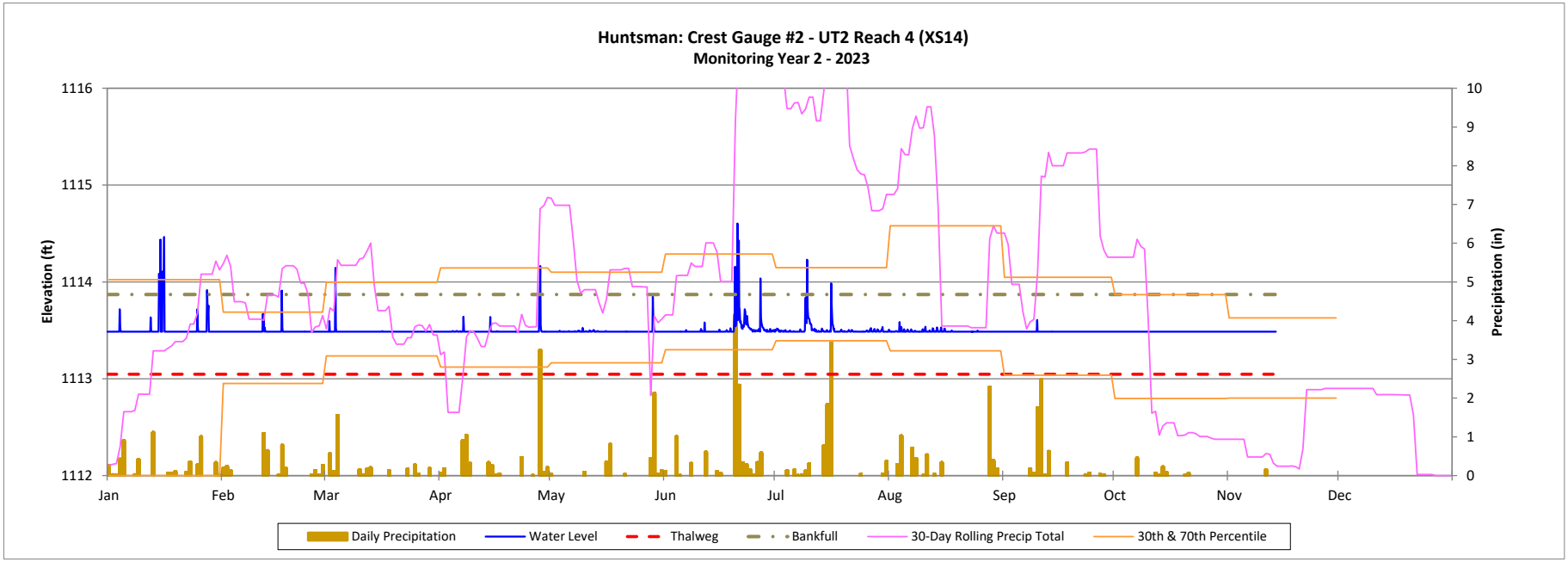
Crest Gage Plot

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023



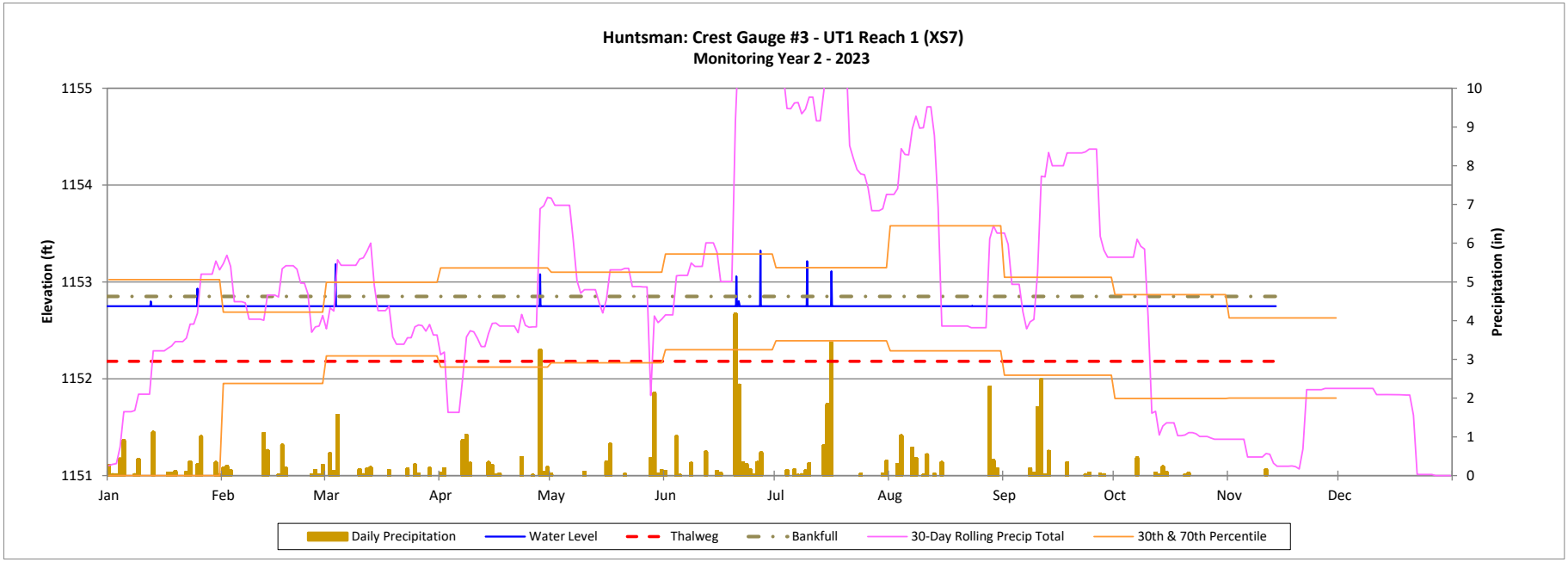
Crest Gage Plot

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023



Crest Gage Plot

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023



APPENDIX E. Project Timeline and Contact Information

Table 14. Project Activity and Reporting History

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Activity or Deliverable		Data Collection Complete	Task Completion or Deliverable Submission
Project Instituted		N/A	May 21, 2019
Mitigation Plan Approved		June 2019	June 2021
Construction (Grading) Completed		N/A	April 2022
Planting Completed		N/A	April 2022
As-Built Survey Completed		May 2022	May 2022
Baseline Monitoring Document (Year 0)	Stream Survey	May 2022	June 2022
	Vegetation Survey	April 2022	
Year 1 Monitoring	Stream Survey	November 2022	January 2023
	Invasive Species Treatments	July, September 2022	
	Stream Repairs	September 2022	
	Vegetation Survey	October - December 2022	
Year 2 Monitoring	Soil Amendments & Supplemental Seeding and Planting	February and July 2023	December 2023
	Stream Repairs	January 2023	
	Stream Survey	July 2023	
	Invasive Species Treatments		
	Vegetation Survey		
Year 3 Monitoring	Stream Survey		
	Vegetation Survey		
Year 4 Monitoring			
Year 5 Monitoring	Stream Survey		
	Vegetation Survey		
Year 6 Monitoring			
Year 7 Monitoring	Stream Survey		
	Vegetation Survey		

Table 15. Project Contact Table

Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 2 - 2023

Designer Aaron Earley, PE	**Wildlands Engineering, Inc.** 1430 S. Mint St., Suite 104 Charlotte, NC 28203
	704.819.0848
Construction Contractor	**Wildlands Construction, Inc.** 1430 S. Mint St., Suite 104 Charlotte, NC 28203
Planting Contractor	**Bruton Natural Systems, Inc.** PO Box 1197 Fremont, NC 27830
Seeding Contractor	**Wildlands Construction, Inc.**
Nursery Stock Supplies	**Bruton Natural Systems, Inc.**
Herbaceous Plugs	**Bruton Natural Systems, Inc.**
Monitoring Performers Monitoring, POC	**Wildlands Engineering, Inc.** Kristi Suggs 704.332.7754

APPENDIX F. Agency Correspondence

Sara Thompson

From: Kristi Suggs
Sent: Friday, May 12, 2023 12:08 PM
To: Haywood, Casey M CIV (USA); Kimberly Browning Isenhour; Tugwell, Todd J CIV USARMY CESAW (US); Kichefski, Steven L CIV USARMY CESAW (USA)
Cc: Reid, Matthew; Paul Wiesner (paul.wiesner@ncdenr.gov); Aaron Earley; Sara Thompson; John Hutton
Subject: 2023 DMS Credit Release Meeting - Huntsman MY1 (WEI Response Follow-up)
Attachments: Huntsman MY1 Credit Release Response to IRT.pdf

Good morning, everyone!

I wanted to follow-up with responses and additional information on a couple of questions from the IRT in regard to the Huntsman MY1 Report. See below for the inquiry from the IRT, and WEI's response.

1. The IRT asked if the repair work to stabilize the access road near the chicken houses had been completed.
    - Yes, it has been completed. Rip rap was added to each swale within the access road to act as a "ford-type" crossing to stabilize the crossing and slow down concentrated flow to minimize an outside source sedimentation into the easement. Photos of the completed work were taken in April 2023. I have included the CCPV map of the area for reference. Please see attached pdf.
2. Casey asked if the crest gauge on UT1 had been replaced.
    - Yes, it was replaced and has been successfully recording data since 12/30/2022. The last time the gauge was downloaded was on 4/20/2023.

Please let me know if you all have any questions. Thank you!

Kristi

Kristi Suggs | *Senior Environmental Scientist*
O: 704.332.7754 x110 **M**: 704.579.4828

Wildlands Engineering, Inc.
1430 S. Mint St, Suite 104
Charlotte, NC 28203

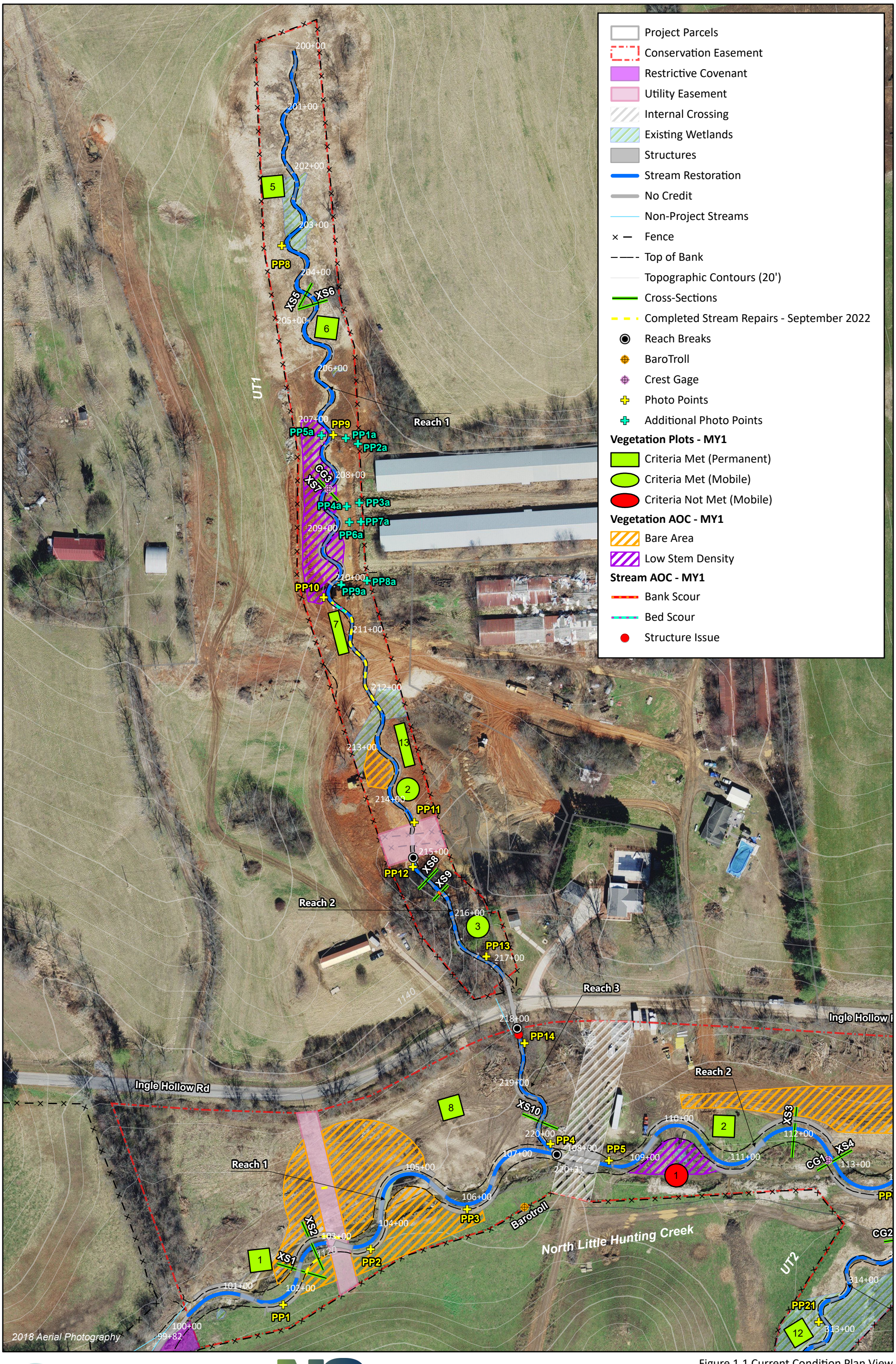
Huntsman Mitigation Site
Chicken House Swale Stabilization Photos

Photo Point 2a – Stabilized swale, view up valley *(04/06/2023)*

Photo Point 3a – Stabilized swale, view up valley *(04/06/2023)*

Photo Point 7a – Stabilized swale, view up valley *(04/06/2023)*

Photo Point 8a – Stabilized swale, view up valley *(04/06/2023)*



WILDLANDS ENGINEERING

Environmental Quality

0 100 200 Feet

N

Figure 1.1 Current Condition Plan View
Huntsman Mitigation Site
DMS Project No. 100123
Monitoring Year 1
Wilkes County, NC