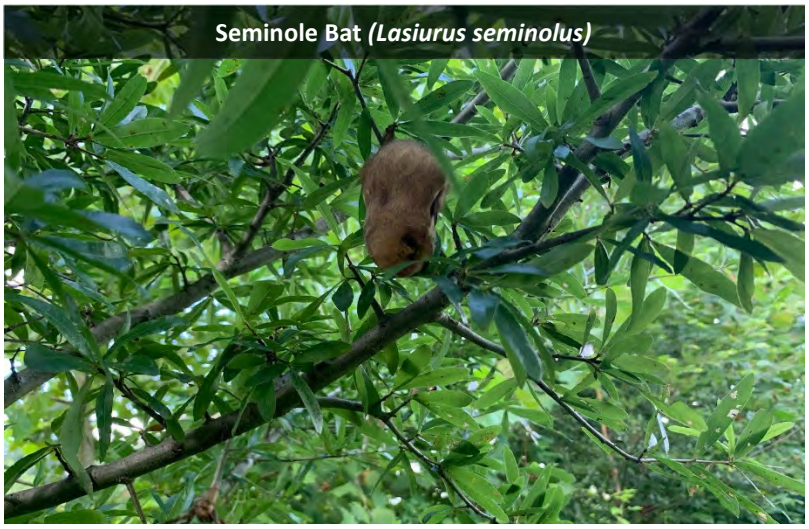
Seminole Bat *(Lasiurus seminolus)*

MONITORING YEAR 5 ANNUAL REPORT

FINAL

MANEY FARM MITIGATION PROJECT

Chatham County, NC
NCDEQ Contract 005793
DMS ID No. 96314
USACE Action ID Number 2014-01825
NCDWR Project Number 2014-0338

Data Collection Period: January - October 2020
Draft Submission Date: October 15, 2020
Final Submission Date: November 4, 2020

PREPARED FOR:

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

Mitigation Project Name	**Maney Farm Stream Mitigation Site**	**USACE Action ID**	**2014-01825**
DMS ID	**96314**	**DWR Permit**	**2014-0338**
River Basin	**Cape Fear**	**Date Project Instituted**	**2/21/2014**
Cataloging Unit	**03030002**	**Date Prepared**	**12/4/2019**
County	**Chatham**	**Stream/Wet. Service Area**	**Cape Fear 03030002**

Todd J Tugwell 9/21/2020

Signature & Date of Official Approving Credit Release

1 - For NCDMS, no credits are released during the first milestone
2 - For NCDMS projects, the inital credit release milestone occurs automatically when the as-built report (baseline monitoring report) has been made available to the IRT by posting it to the DMS portal, provided the following have been met:
1) Approved of Final Mitigation Plan
2) Recordation of the preservation mechanism, as well as a title opinion acceptable to the USACE covering the property.
3) Completion of all physical and biological improvements to the mitigation site pursuant to the mitigation plan.
4) Receipt of necessary DA permit authorization or written DA approval for projects where DA permit issuance is not required.
3 - A 10% reserve of credits is to be held back until the bankfull event performance standard has been met.

Credit Release Milestone	**Warm Stream Credits**						
Project Credits	**Scheduled Releases %**	**Proposed Releases %**	**Proposed Released #**	**Not Approved # Releases**	**Approved Credits**	**Anticipated Release Year**	**Actual Release Date**
1 - Site Establishment	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2 - Year 0 / As-Built	30.00%	30.00%	1,484.380	0.000	1,484.380	2016	5/16/2016
3 - Year 1 Monitoring	10.00%	10.00%	494.793	0.000	494.793	2017	4/3/2017
4 - Year 2 Monitoring	10.00%	10.00%	497.226	15.600	481.626	2018	4/25/2018
5 - Year 3 Monitoring	10.00%	10.00%	492.160	0.000	492.160	2019	4/26/2019
6 - Year 4 Monitoring	5.00%	5.00%	246.080	0.000	246.080	2020	4/20/2020
7 - Year 5 Monitoring	10.00%					2021	
8 - Year 6 Monitoring	5.00%					2022	
9 - Year 7 Monitoring	10.00%					2023	
Stream Bankfull Standard	10.00%	10.00%	492.160	0.000	492.160	2018	4/25/2018
			Totals	15.600	3,691.199		

Total Gross Credits	4,921.600
Total Unrealized Credits to Date	0.000
Total Released Credits to Date	3,691.199
Total Percentage Released	75.00%
Remaining Unreleased Credits	1,230.401

Notes
4/25/2018: Adjustment required due to IRT concerns on how the as-built credits were calculated.

Contingencies (if any)

Project Quantities

Mitigation Type	**Restoration Type**	**Physical Quantity**
Warm Stream	Restoration	3,860.000
Warm Stream	Enhancement I	633.000
Warm Stream	Enhancement II	1,599.000

Mitigation Project Name	**Maney Farm Stream Mitigation Site**	**USACE Action ID**	**2014-01825**
DMS ID	**96314**	**DWR Permit**	**2014-0338**
River Basin	**Cape Fear**	**Date Project Instituted**	**2/21/2014**
Cataloging Unit	**03030002**	**Date Prepared**	**12/4/2019**
County	**Chatham**	**Stream/Wet. Service Area**	**Cape Fear 03030002**

Debits

							Stream Restoration Credits
Beginning Balance (mitigation credits)							**4,921.600**
Released Credits							**3,691.199**
Unrealized Credits							**0.000**
Owning Program	**Req. Id**	**TIP #**	**Project Name**	**USACE Permit #**	**DWR Permit #**	**DCM Permit #**	
NCDOT Stream & Wetland ILF Program	REQ-005957	R-2413A R-2413B	NC 68 Connector	2013-00557	2013-0517		1,169.700
NCDOT Stream & Wetland ILF Program	REQ-005957	R-2413A R-2413B	NC 68 Connector	2013-00557	2013-0517		122.800
NCDOT Stream & Wetland ILF Program	REQ-005957	R-2413A R-2413B	NC 68 Connector	2013-00557	2013-0517		191.880
NCDOT Stream & Wetland ILF Program	REQ-006028	U-2525B U-2525C	Greensboro Eastern Loop	2005-21386	2013-0918		492.160
NCDOT Stream & Wetland ILF Program	REQ-006028	U-2525B U-2525C	Greensboro Eastern Loop	2005-21386	2013-0918		756.400
NCDOT Stream & Wetland ILF Program	REQ-006028	U-2525B U-2525C	Greensboro Eastern Loop	2005-21386	2013-0918		89.467
NCDOT Stream & Wetland ILF Program	REQ-006028	U-2525B U-2525C	Greensboro Eastern Loop	2005-21386	2013-0918		127.920
NCDOT Stream & Wetland ILF Program	REQ-006413		SR 2158 - Bridge 85 - Division 7	2015-01791	2015-0819		37.990
NCDOT Stream & Wetland ILF Program	REQ-006414		SR 1110 - Bridge 200 - Division 7	2015-01907			66.000
NCDOT Stream & Wetland ILF Program	REQ-006473		SR 1007 - Bridge 42 - Division 7	2015-02641			44.800
NCDOT Stream & Wetland ILF Program	REQ-006557		SR 1552 - Bridge 270 - Division 7	2016-01081	2016-0438		125.100
NCDOT Stream & Wetland ILF Program	REQ-006557		SR 1552 - Bridge 270 - Division 7	2016-01081	2016-0438		40.933
NCDOT Stream & Wetland ILF Program	REQ-006557		SR 1552 - Bridge 270 - Division 7	2016-01081	2016-0438		25.967
NCDOT Stream & Wetland ILF Program	REQ-006571		SR 1522 - Bridge 207 - Division 7	2016-01091	2016-0501		154.000
Total Credits Debited							**3,445.117**
Remaining Available balance (Released credits)							**246.080**
Remaining balance (Unreleased credits)							**1,230.403**

PREPARED BY:

WILDLANDS
ENGINEERING

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Raleigh, NC 27609

Jason Lorch
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Phone: 919.851.9986

EXECUTIVE SUMMARY

Wildlands Engineering Inc. (Wildlands) implemented a full delivery project at the Maney Farm Mitigation Project (Site) for the North Carolina Department of Environmental Quality Division of Mitigation Services (DMS) to restore and enhance a total of 6,092 linear feet (LF) of perennial and intermittent streams in Chatham County, NC. The Site is expected to generate 4,922 stream mitigation units (SMUs) by closeout. The Site is located northwest of Pittsboro, NC and north of Silk Hope, NC in the Cape Fear River Basin 8-Digit Hydrologic Unit Code (HUC) 03030002 (Figure 1). The Site flows into Cane Creek and eventually into the Haw River. The streams are all unnamed tributaries (UT) to South Fork Cane Creek (SF) and are referred to herein as UTSF, UT1, UT2, UT3, UT4, and UT5.

The Site is located within the Cane Creek Targeted Local Watershed (TLW) (HUC 03030002050050) which is discussed in DMS's 2009 Cape Fear River Basin Restoration Priorities (RBRP). The RBRP identifies the need to improve aquatic conditions and habitats as well as promoting good riparian conditions in the Cane Creek watershed. Prior to the restoration activities, the Site was maintained as cattle pasture and is one of the 51 animal operations referenced in the RBRP. The Site drains to the Haw River, which flows to B. Everett Jordan Lake (Jordan Lake). The 2005 NCDWR Cape Fear River Basinwide Water Quality Plan indicates that Jordan Lake is a drinking water supply (WS-IV), a primary area for recreation, and a designated Nutrient Sensitive Water which calls for reduction of non-point source pollution. The water supply watershed boundary for Jordan Lake is just six miles downstream from the Site. The Cape Fear watershed is also discussed in the 2005 North Carolina Wildlife Resource Commission's Wildlife Action Plan where sedimentation is noted as a major issue in the basin. Maps within the Wildlife Action Plan indicate that Priority Species are present along Cane Creek. Restoration activities at the Site directly addressed non-point source stressors by removing cattle from the streams, creating stable stream banks, restoring a riparian corridor, and placing 16.69 acres of land under permanent conservation easement.

The project goals established in the Mitigation Plan (Wildlands, 2015) were developed with careful consideration of goals and objectives described in the Cape Fear RBRP. The project goals included:

- Exclude cattle from project streams resulting in reduced pollutant inputs including fecal coliform, nitrogen, and phosphorous;
- Stabilize eroding stream banks resulting in reduced inputs of sediment into streams;
- Construct stream channels that are laterally and vertically stable resulting in a network of streams capable of supporting hydrologic, biologic, and water quality functions;
- Improve instream habitat resulting in improved aquatic communities within the streams;
- Reconnect channels with floodplains so that floodplains are inundated relatively frequently resulting in groundwater recharge, floodplain wetland and vernal pool inundation, and reduced shear stress on channels during larger flow events;
- Restore and enhance native floodplain forest resulting in stream shading, reduced thermal loads, woody input sources, and reduced flood flow velocities allowing for pollutants and sediments to settle; and
- Permanently protect the project site from harmful uses therefore ensuring that development and agricultural damage is prevented.

The project is helping meet the goals for the watershed and providing numerous ecological benefits within the Cape Fear River Basin. While many of these benefits are limited to the project area; others, such as pollutant removal and reduced sediment loading have farther-reaching effects. In addition, protected parcels downstream of the Site promote cumulative project benefits within the watershed.

The Site construction and as-built surveys were completed between October 2015 and February 2016.

Monitoring Year 5 (MY5) assessments and site visits were completed between January and October 2020 to assess the conditions of the project. Several areas of concern were addressed during MY5. A 0.7 acre area of low vegetative growth was replanted, and soil amendments were added. A dense area of invasive vegetation was noted and removed along UT3. The beaver dam located downstream of the conservation easement was removed and caused no damage to the stream bank.

Overall, the Site has met the required vegetation and stream success criteria for MY5. The overall average stem density for the standard planting zones at the Site is 427 stems per acre, exceeding the MY5 interim requirement of 260 stems per acre. All restored and enhanced streams are stable and functioning as designed. Persistent flow and multiple bankfull events were recorded on all streams during MY5.

MANEY FARM MITIGATION PROJECT

Monitoring Year 5 Annual Report

TABLE OF CONTENTS

APPENDICES

Section 1: PROJECT OVERVIEW

The Maney Farm Mitigation Project (Site) is located in northwestern Chatham County within the Cape Fear River Basin (USGS Hydrologic Unit 03030002). The Site is located off Center Church Road northwest of Pittsboro, and north of Silk Hope, North Carolina. The Site is located in the Carolina Slate Belt of the Piedmont Physiographic Province (USGS, 1998). The project watershed consists primarily of agricultural and wooded land. The drainage area for the project site is 211 acres (0.33 square miles).

The project streams consist of six unnamed tributaries to South Fork Cane Creek. Stream restoration reaches include UTSF (Reach 1 and 2) and UT5. Stream enhancement I (EI) and enhancement II (EII) reaches included UT1 (Reach A and B), EII; UT1 (Reach C), EI; UT2 (Reach A), EII; U2 (Reach B), EI; UT3 (Reach A), EII; UT3 (Reach B), EI; and UT4 (Reach A), EII; UT4 (Reach B), EI. Mitigation work within the Site included restoration and enhancement of 6,092 linear feet (LF) of perennial and intermittent stream channels. The riparian areas were planted with native vegetation to improve habitat and protect water quality. Construction activities were completed by Land Mechanic Designs, Inc. in January 2016. Planting and seeding activities were completed by Bruton Natural Systems, Inc. in February 2016. A conservation easement (16.69 ac; Deed Book 1537, Page 876) has been recorded and is in place along the stream and riparian corridors to protect them in perpetuity within a tract owned by the M. Darryl Lindley Revocable Trust. The project is expected to provide 4,922 stream mitigation units (SMU's) by closeout.

Directions and a map of the Site are provided in Figure 1 and project components are illustrated for the Site in Figure 2.

1.1 Project Goals and Objectives

Prior to construction activities, the streams and vegetative communities on the Site had been severely impacted due to livestock having direct access to the streams and riparian zones. Table 4 in Appendix 1 and Tables 10a through 10d in Appendix 4 present the pre-restoration conditions in detail.

This Site is intended to provide numerous ecological benefits within the Cape Fear River Basin. While many of these benefits are limited to the Site, others such as pollutant removal and reduced sediment loading have more far-reaching effects. Expected improvements to water quality and ecological processes are outlined below as project goals and objectives. These project goals were established and completed with careful consideration of goals and objectives that were described in the RBRP and to meet the DMS mitigation needs while maximizing the ecological and water quality uplift within the watershed.

The following project goals and related objectives established in the Mitigation Plan (Wildlands, 2015) included:

Goal	Objective	Expected Outcomes
Exclude cattle from project streams.	Install fencing around conservation easements adjacent to cattle pastures.	Reduce pollutant inputs including fecal coliform, nitrogen, and phosphorous.
Stabilize eroding stream banks.	Reconstruct stream channels with stable dimensions. Add bank revetments and in-stream structures to protect restored/enhanced streams.	Reduce inputs of sediment into streams.
Construct stream channels that are laterally and vertical stable.	Construct stream channels that will maintain a stable pattern and profile considering the hydrologic and sediment inputs to the system, the landscape setting, and the watershed conditions.	Return a network of streams to a stable form that is capable of supporting hydrologic, biologic, and water quality functions.
Improve instream habitat.	Install habitat features such as constructed riffles and brush toes into restored/enhanced streams. Add woody materials to channel beds. Construct pools of varying depth.	Improve aquatic communities in project streams.
Reconnect channels with floodplains so that floodplains are inundated relatively frequently.	Reconstructing stream channels with appropriate bankfull dimensions and depth relative to the existing floodplain.	Raise local groundwater elevations. Inundate floodplain wetlands and vernal pools. Reduce shear stress on channels during larger flow events.
Restore and enhance native floodplain forest.	Plant native tree and understory species in riparian zone.	Create and improve forested riparian habitats. Provide a canopy to shade streams and reduce thermal loadings. Create a source of woody inputs for streams. Reduce flood flow velocities on floodplain and allow pollutants and sediment to settle.
Permanently protect the project site from harmful uses.	Establish a conservation easement on the site.	Ensure that development and agricultural uses that would damage the site or reduce the benefits of the project are prevented.

The design streams were restored to the appropriate type based on the surrounding landscape, climate, and natural vegetation communities but also with strong consideration to existing watershed conditions and trajectory. The final mitigation plan was submitted and accepted by the DMS in August 2015. Baseline monitoring (MY0) was conducted between January 2016 and February 2016. Annual monitoring will be conducted for seven years with the close-out anticipated to commence in 2023 given the success criteria are met. Appendix 1 provides more detailed project activity, history, contact information, and watershed/site background information for the Site.

1.2 Monitoring Year 5 Data Assessment

Annual monitoring and quarterly site visits were conducted during MY5 to assess the condition of the project. The stream and vegetation success criteria for the Site follows the approved success criteria presented in the Maney Farm Mitigation Project Mitigation Plan (Wildlands, 2015).

1.2.1 Vegetative Assessment

A total of 13 standard 10-meter by 10-meter vegetation plots and one non-standard 5-meter by 20-meter plot were established during the baseline monitoring within the project easement area. Plots were established to monitor both the standard planting zones (11 plots) as well as the supplemental planting zones (3 plots). The final vegetative success criteria for the standard plots will be the survival of 210 planted stems per acre averaging 10 feet in height within the conservation easement at the end of the seven-year monitoring period (MY7). The interim measure of vegetative success for the Site will be the survival of 260 planted stems per acre at the end of the fifth year of monitoring (MY5).

While there are no performance criteria for the stems established within the supplemental planting zones, these areas are monitored to document survival rates of these species.

The MY5 vegetative survey was completed in August 2020. The 2020 vegetation monitoring resulted in an average stem density of 427 planted stems per acre within the standard planting zones, which is greater than the interim requirement of 260 stems per acre required at MY5, but approximately 38% less than the baseline density recorded (688 planted stems per acre). There was an average of 11 stems per plot as compared to an average of 16 stems per plot in MY0. All 11 of the plots are on track to meet the success criteria required for MY7 (Table 9a, Appendix 3).

Stem densities were monitored in the three supplemental planting zone plots to document annual survival rates within these zones. The MY5 survival rates within the supplemental plots ranged from 0% to 50% with an overall average of 19%, indicating a significant mortality rate since MY0 (Table 7b, Appendix 3). Survival rates of the individual species selected for these supplemental planting zones ranged from 0% (Arrow-wood (*Viburnum prunifolium)*), (Spice bush (*Calycanthus floridus)*), and (American beautyberry (*Callicarpa americana)*) to 35% (Ironwood (*Carpinus caroliniana)*) in MY5 (Table 7c, Appendix 3). These three supplemental planting plots were experimental to see how well understory planting would work on the site, and results have not been favorable.

Refer to Appendix 2 for vegetation plot photographs and the vegetation condition assessment table and Appendix 3 for vegetation plot data tables.

1.2.2 Vegetation Areas of Concern

A 0.7 acre area of low vegetative growth was noted along UTSF Reach 2 (Figure 3.0). This area was replanted and soil amendments were added during MY5. Eighty, one gallon container trees were planted in February 2020 which included a mixture of willow oak *(Quercus phellos)*, sycamore *(Platanus occidentalis)*, and river birch *(Betula nigra)*. Soil amendments including a mixture of dolomitic lime, fertilizer, humic acid, and a seed mix of herbaceous vegetation was applied to the low growth area in July 2020. Trees in the area look healthy with signs of new growth, and herbaceous vegetation has fully covered the ground.

Chinese privet (*Ligustrum sinense*) is located immediately adjacent to the project boundary; however, this farm is certified organic and prevents chemical treatments outside the easement boundary. As a result, scattered populations of Chinese privet have become established along the perimeter of the conservation easement. A 0.34 acre dense population of privet along UT3 (Figure 3.0) was treated in

September 2020, along with sporadic plants that occurred throughout the Site. Invasive species will continue to be monitored and treated as needed in subsequent monitoring years.

1.2.3 Stream Assessment

Morphological surveys for MY5 were conducted in March 2020. All streams within the Site are stable. Overall, cross-sections at the Site show little to no change in the bankfull area, maximum depth ratio, or width-to-depth ratio. The deposition noted in MY1 for the pools on UT1C, UT2B, UT3B, and UT4B have stabilized and cross-sectional areas fall within the range of the design parameters. Slight increases in bank height ratios for some cross-sections are likely the result of the established vegetation causing increased deposition along the bankfull benches. Bank height ratios fall within the success range stated in the Mitigation Plan.

A bank pin array was established on UTSF Reach 1 to monitor potential meander bend bank erosion at cross-section 4. No changes in exposed length of bank pins were observed during the MY5 assessments indicating bank stability.

Longitudinal profile surveys are not required on the project unless visual inspection indicates reach wide vertical instability. Refer to Appendix 2 for the visual stability assessment table, CCPV map, and reference photographs. Refer to Appendix 4 for the morphological data and plots.

Overall, substrate materials in the restoration and enhancement reaches indicate maintenance of coarser materials in the riffle reaches and finer particles in the pools.

1.2.4 Stream Areas of Concern

Beaver on the parcel downstream of the Site were removed in the fall of 2019. More beaver activity was noted in the Spring of 2020, impounding water onto the Site. Beaver and the dam were immediately removed, and subsequent site visits have not documented any new beaver activity. Stream impacts associated with the impounded waters were temporary and beaver activity will continue to be monitored during subsequent monitoring years.

1.2.5 Hydrology Assessment

At the end of the seven-year monitoring period, two or more bankfull events must have occurred in separate years within the restoration reaches. Restoration reaches UTSF Reach 1, UTSF Reach 2, and UT5 had multiple bankfull events throughout the year. Bankfull events were also recorded on all restoration reaches during all prior monitoring years, resulting in attainment of the stream hydrology assessment criteria. In addition, the presence of baseflow must be documented within the intermittent reach of UTSF Reach 1 for a minimum of 30 consecutive days during a normal precipitation year. Results from the flow gage established on UTSF Reach 1 indicate the stream is maintaining baseflow as expected for an intermittent stream. As of September 23, 2020, baseflow was recorded for 134 consecutive days and 264 total days out of 266 days so far this year. Refer to Appendix 5 for hydrologic data.

1.2.6 Maintenance Plan

The low vegetative growth area mentioned in Section 1.2.2 will continued to be assessed for further supplemental needs, and invasive species will continue to be monitored throughout the Site.

1.3 Monitoring Year 5 Summary

All standard vegetation plots met the MY5 requirement of 260 stems per acre as noted in CCPV. Replanting and soil amendments occurred in one low vegetative growth area along UTSF Reach 2. Invasive vegetation was treated throughout the Site. All streams within the Site are stable and functioning as designed. Beaver activity occurred downstream of the project and impounded water onto

the Site but no long-term damage resulted. The Site will continue to be monitored for beaver activity and remedial actions will be implemented if needed. Multiple bankfull events have been documented within the restored stream reaches at the Site during all monitoring years resulting in attainment of hydrology success criteria. Additionally, the flow gage on UTSF Reach 1 recorded baseflow for 134 consecutive days during the MY5 monitoring period and has met the established annual hydrological criteria.

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. Narrative background and supporting information formerly found in these reports can be found in the mitigation plan documents available on DMS's website. All raw data supporting the tables and figures in the appendices are available from DMS upon request.

Section 2: METHODOLOGY

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 the Stream Restoration: A Natural Channel Design Handbook (Doll et al., 2003). All Integrated Current Condition Mapping was recorded using a Trimble handheld GPS with sub-meter accuracy and processed using Pathfinder and ArcGIS. Crest gages and pressure transducers were installed in surveyed riffle cross sections and monitored throughout the year. Hydrologic monitoring instrument installation and monitoring methods are in accordance with the United States Army Corps of Engineers (USACE, 2003) standards. Vegetation monitoring protocols followed the Carolina Vegetation Survey-EEP Level 2 Protocol (Lee et al., 2008).

Section 3: REFERENCES

Doll, B.A., Grabow, G.L., Hall, K.A., Halley, J., Harman, W.A., Jennings, G.D., and Wise, D.E. 2003. Stream Restoration A Natural Channel Design Handbook.

Harrelson, C.C., Rawlins, C.L., Potyondy, J.P. 1994. *Stream Channel Reference Sites: An Illustrated Guide to Field Technique.* Gen. Tech. Rep. RM-245. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 61 p.

Lee, M.T., Peet, R.K., S.D., Wentworth, T.R. 2008. CVS-EEP Protocol for Recording Vegetation Version 4.2. Retrieved from http://cvs.bio.unc.edu/protocol/cvs-eep-protocol-v4.2-lev1-5.pdf.

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United States Army Corps of Engineers. 2003. Stream Mitigation Guidelines. USACE, NCDENR-DWQ, USEPA, NCWRC.

United States Geological Survey. 1998. North Carolina Geology. http://www.geology.enr.state.nc.us/usgs/carolina.htm

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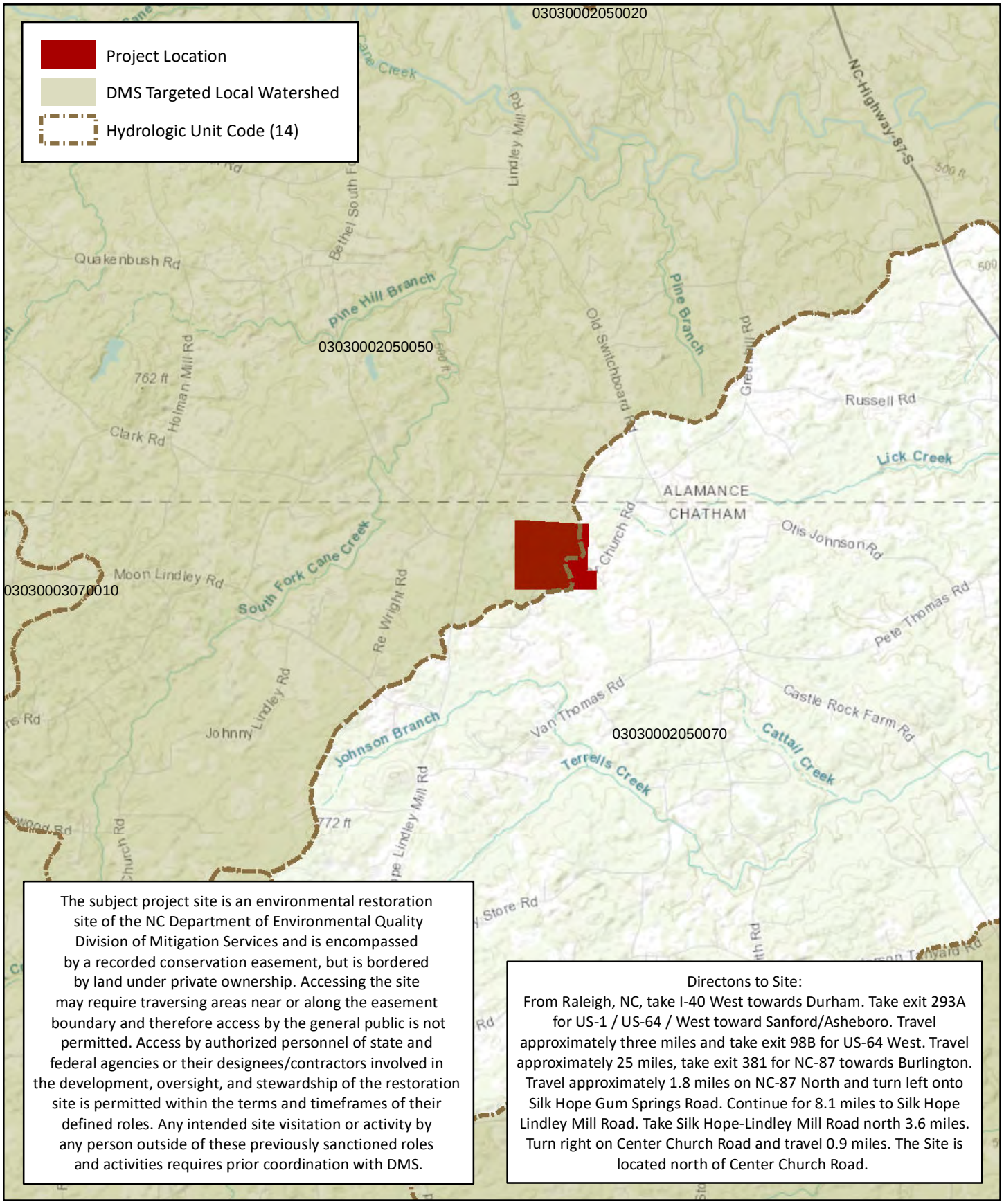
APPENDIX 1. General Figures and Tables



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

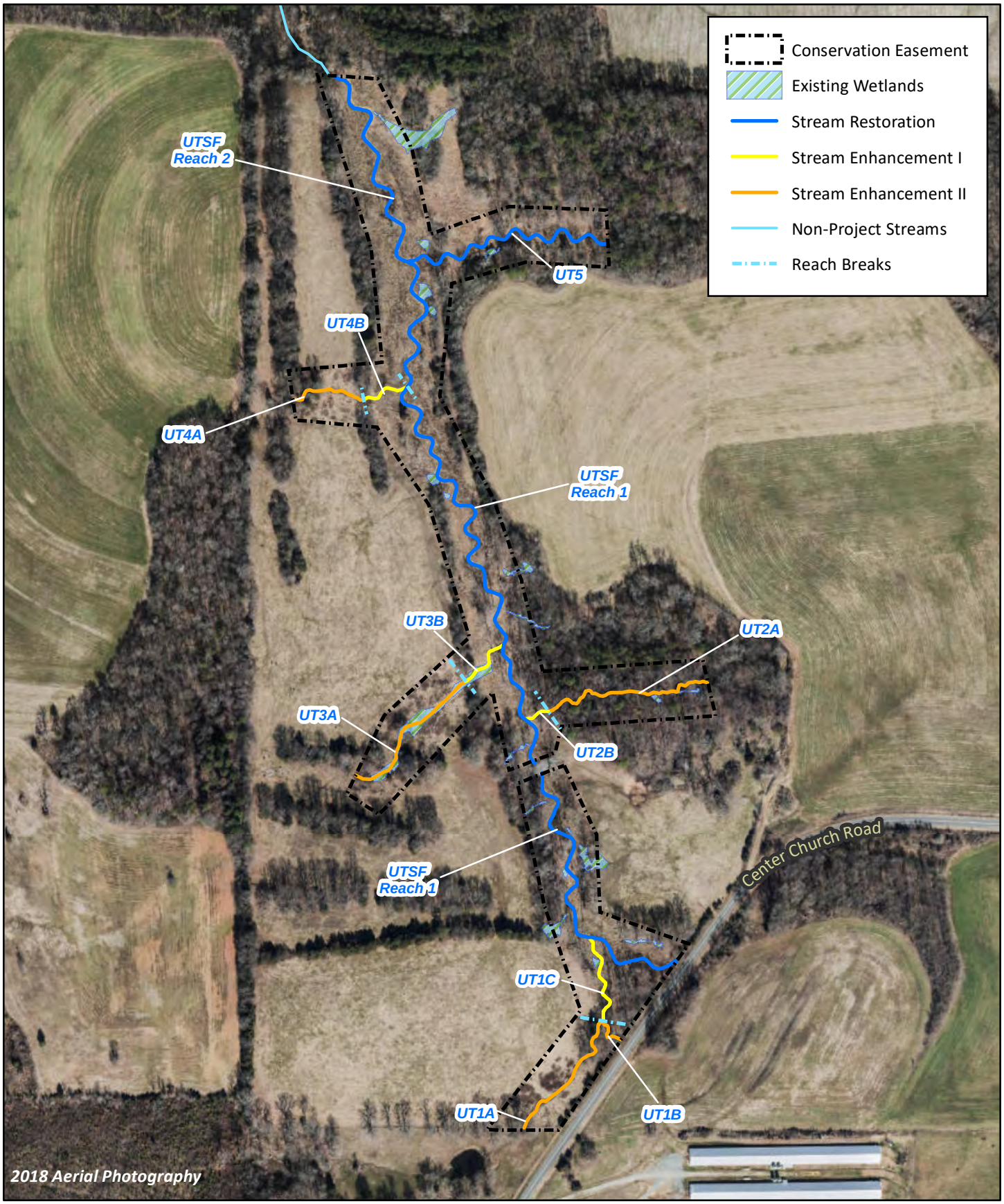
Directons to Site:
From Raleigh, NC, take I-40 West towards Durham. Take exit 293A for US-1 / US-64 / West toward Sanford/Asheboro. Travel approximately three miles and take exit 98B for US-64 West. Travel approximately 25 miles, take exit 381 for NC-87 towards Burlington. Travel approximately 1.8 miles on NC-87 North and turn left onto Silk Hope Gum Springs Road. Continue for 8.1 miles to Silk Hope Lindley Mill Road. Take Silk Hope-Lindley Mill Road north 3.6 miles. Turn right on Center Church Road and travel 0.9 miles. The Site is located north of Center Church Road.

WILDLANDS ENGINEERING

0 0.5 1 Miles

N

Figure 1 Project Vicinity Map
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020
Chatham County, NC



WILDLANDS ENGINEERING

0 175 350 Feet

Figure 2 Project Component/Asset Map
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Chatham County, NC

Table 1. Project Components and Mitigation Credits
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Mitigation Credits									
	Stream		Riparian Wetland		Non-Riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Totals	4,922	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Project Components							
Reach ID	As-Built Stationing / Location	Existing Footage / Acreage	Approach	Restoration or Restoration Equivalent	Restoration Footage / Acreage	Mitigation Ratio	Credits (SMU / WMU)
STREAMS							
UTSF - Reach 1	100+00 - 108+39 108+80 - 121+63	2,298	P1	Restoration	2,122	1:1	2,122
UTSF - Reach 2	121+63 - 132+24	1,209	P1	Restoration	1,061	1:1	1,061
UT1A	250+00 - 253+90	390	EII	Restoration	390	2.5:1	156
UT1B	199+08 - 200+00	101	EII	Restoration	92	2.5:1	37
UT1C	200+00 - 202+60	166	EI	Restoration	260	1.5:1	173
UT2A	295+15 - 300+00	485	EII	Restoration	484	2.5:1	194
UT2B	300+00 - 300+74	44	EI	Restoration	73	1.5:1	49
UT3A	395+79 - 400+00	418	EII	Restoration	421	2.5:1	168
UT3B	400+00 - 401+63	84	EI	Restoration	162	1.5:1	108
UT4A	497+87 - 500+00	217	EII	Restoration	212	2.5:1	85
UT4B	500+00 - 501+38	40	EI	Restoration	138	1.5:1	92
UT5	602+00 - 608+77	778	P1	Restoration	677	1:1	677

Component Summation						
Restoration Level	Stream (LF)	Riparian Wetland (acres)		Non-Riparian Wetland (acres)	Buffer (square feet)	Upland (acres)
		Riverine	Non-Riverine			
Restoration	3,860	-	-	-	-	-
Enhancement		-	-	-	-	-
Enhancement I	633					
Enhancement II	1,599					
Creation		-	-	-		
Preservation	-	-	-	-		-
High Quality Preservation	-	-	-	-		-

* Credit calculations were originally calculated along the as-built thalweg and updated to be calculated along stream centerlines for Monitoring Year 2 after discusions with NC IRT.

Table 2. Project Activity and Reporting History
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Activity or Report		Data Collection Complete	Completion or Scheduled Delivery
Mitigation Plan		July 2014	August 2015
Final Design - Construction Plans		July 2014	August 2015
Construction		October 2015 - January 2016	January 2016
Temporary S&E mix applied to entire project area [1]		October 2015 - January 2016	January 2016
Permanent seed mix applied to reach/segments [1]		October 2015 - January 2016	January 2016
Bare root and live stake plantings for reach/segments		February 2016	February 2016
Baseline Monitoring Document (Year 0)	Stream Survey	February 2016	April 2016
	Vegetation Survey	February 2016	
Year 1 Monitoring	Stream Survey	September 2016	December 2016
	Vegetation Survey	September 2016	
Year 2 Monitoring	Stream Survey	March 2017	December 2017
	Vegetation Survey	August 2017	
Year 3 Monitoring	Stream Survey	April 2018	December 2018
	Vegetation Survey	August 2018	
Invasive Vegetation Treatment			October 2019
Beaver Control			November 2019
Year 4 Monitoring			December 2019
Supplemental Planting			February 2020
Beaver Control			May 2020
Soil Amendments			July 2020
Invasive Vegetation Treatment			September 2020
Year 5 Monitoring	Stream Survey	March 2020	December 2020
	Vegetation Survey	August 2020	
Year 6 Monitoring			December 2021
Year 7 Monitoring	Stream Survey	2022	December 2022
	Vegetation Survey	2022	

[1]Seed and mulch is added as each section of construction is completed.

Table 3. Project Contact Table
Maney Farm Mitigation Site
DMS Project No. 96314
Monitoring Year 5 - 2020

Designer Jeff Keaton, PE	**Wildlands Engineering, Inc.** 312 West Millbrook Road, Suite 225 Raleigh, NC 27609 919.851.9986
Construction Contractor	**Land Mechanic Designs, Inc.** 126 Circle G Lane Willow Spring, NC 27592
Planting Contractor	**Bruton Natural Systems, Inc** P.O. Box 1197 Fremont, NC 27830
Seeding Contractor	**Land Mechanic Designs, Inc.** 126 Circle G Lane Willow Spring, NC 27592
Seed Mix Sources	**Green Resource, LLC**
Nursery Stock Suppliers Bare Roots Live Stakes	**Bruton Natural Systems, Inc**
Monitoring Performers Monitoring, POC	**Wildlands Engineering, Inc.** Jason Lorch 919-851-9986

Table 4. Project Information and Attributes

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

Project Information	
Project Name	Maney Farm Mitigation Site
County	Chatham County
Project Area (acres)	16.69
Planting Area (acres)	16.00
Project Coordinates (latitude and longitude)	35°50'18.00" N, 79° 20'38.00" W

Project Watershed Summary Information	
Physiographic Province	Carolina Slate Belt
River Basin	Cape Fear
USGS Hydrologic Unit 8-digit	03030002
USGS Hydrologic Unit 14-digit	03030002050050
DWR Sub-basin	03-06-04
Project Drainiage Area (acres)	211
Project Drainage Area Percentage of Impervious Area	3%
CGIA Land Use Classification	69% – Agriculture/Managed Herbaceous; 28% – Forested/Scrubland; 3% - Developed

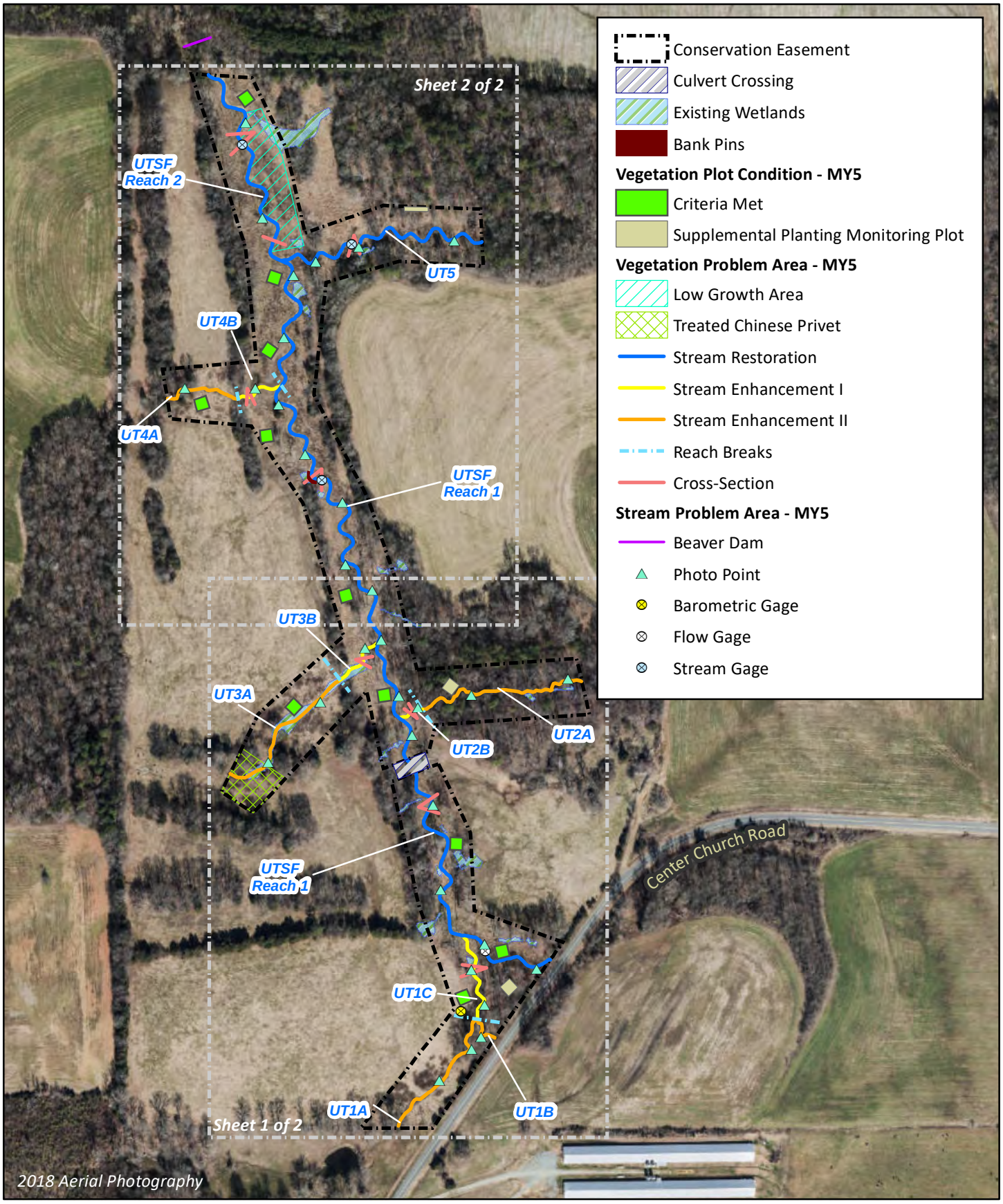
Reach Summary Information

Parameters	UTSF-R1	UTSF-R2	UT1A	UT1B	UT1C	UT2A/B	UT3A/B	UT4A/B	UT5
Length of Reach (linear feet) - Post-Restoration	2,122	1,061	390	92	260	557	583	350	677
Drainage Area (acres)	115	211	16	4	19	11	10	20	76
NCDWR Stream Identification Score	27/37	37	21	25.5	28	26/30	20.75	22.5	32.5
NCDWR Water Quality Classification	N/A								
Morphological Desription (stream type)	I/P	P	I	I	I	I/P	I	I	P
Evolutionary Trend (Simon's Model) - Pre-Restoration	II/IV	II/IV	III	V	II/IV	II/V	V/VI	II/V	II/III
Underlying Mapped Soils	Cid Silt Loam, Cid-Lignum Complex, Nanford-Badin Complex, Georgeville Silty Clay Loam								
Drainage Class	Well Drained - Moderately Well Drained								
Soil Hydric Status	Cid-Lignum Complex 2 to 6 percent slopes - Hydric								
Slope	0.0131	0.0086	0.0187	0.0396	0.0187	0.0366	0.0377	0.0232	0.0139
FEMA Classification	X								
Native Vegetation Community	Piedmont Bottomland Forest								
Percent Composition Exotic Invasive Vegetation - Post-Restoration	1%								

Regulatory Considerations

Regulation	Applicable?	Resolved?	Supporting Documentation
Waters of the United States - Section 404	X	X	USACE Nationwide Permit No.27 and DWR 401 Water Quality Certification No. 3885.
Waters of the United States - Section 401	X	X	
Division of Land Quality (Dam Safety)	N/A	N/A	N/A
Endangered Species Act	X	X	Maney Farm Mitigation Plan; Wildlands determined "no effect" on Chatham County listed endangered species. The USFWS responded on April 4, 2014 and concurred with NCWRC stating that "the proposed action is not likely to adversely affect any federally-listed endangered or threatened species, their formally designated critical habitat, or species currently proposed for listing under the Act."
Historic Preservation Act	X	X	Correspondence from SHPO on March 24, 2014 indicating they were not aware of any historic resources that would be affected by the project.
Coastal Zone Management Act (CZMA)/Coastal Area Management Act (CAMA)	N/A	N/A	N/A
FEMA Floodplain Compliance	X	X	Correspondence from Chatham County Public Works Director on January 12, 2015 stated that a floodplain development permit is not required since work is not located in a Special Flood Hazard Area.
Essential Fisheries Habitat	N/A	N/A	N/A

APPENDIX 2. Visual Assessment Data



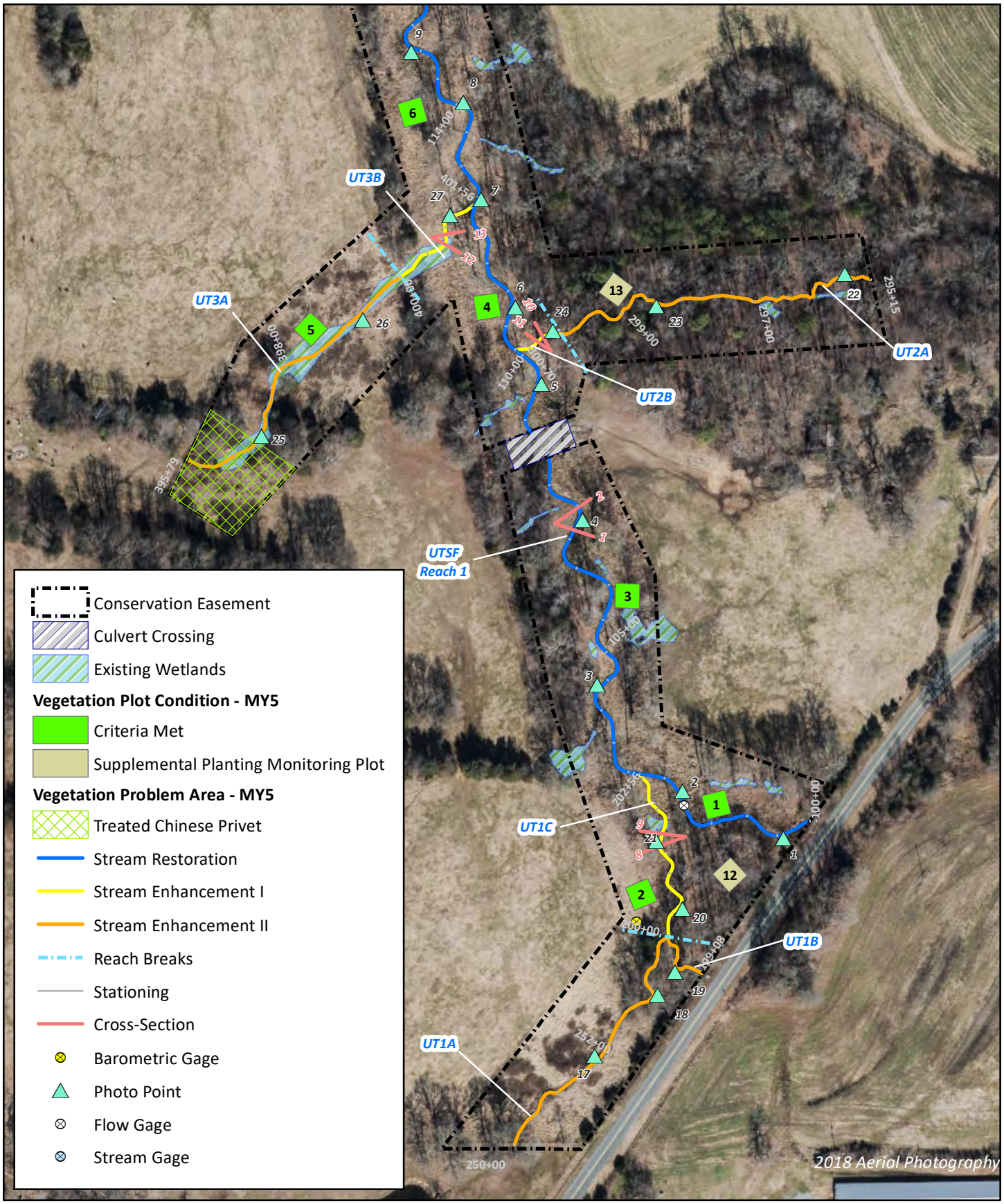
WILDLANDS ENGINEERING

0 175 350 Feet

N

Figure 3.0 Integrated Current Condition Plan View (Key)
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Chatham County, NC

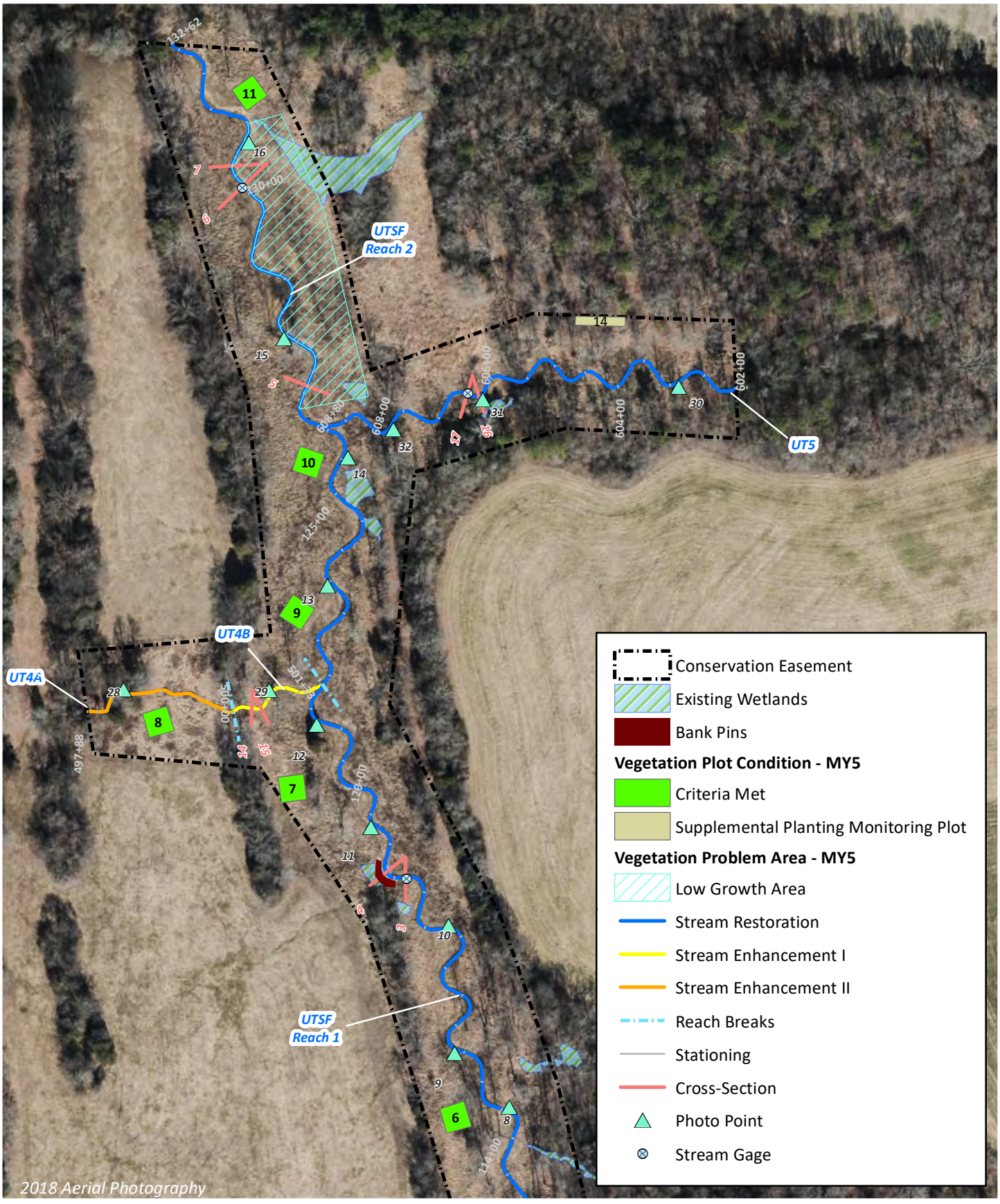


WILDLANDS ENGINEERING

0 90 180 Feet

Figure 3.1 Integrated Current Condition Plan View
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Chatham County, NC



WILDLANDS ENGINEERING

0 85 170 Feet

Figure 3.2 Integrated Current Condition Plan View
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Chatham County, NC

Table 5a. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UTSF Reach 1 (2,122 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	38	38			100%			
	3. Meander Pool Condition	Depth Sufficient	38	38			100%			
		Length Appropriate	38	38			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	37	37			100%			
		Thalweg centering at downstream of meander bend (Glide)	38	38			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	30	30			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	16	16			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	16	16			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	14	14			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	14	14			100%			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5b. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UTSF Reach 2 (1,061 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	17	17			100%			
	3. Meander Pool Condition	Depth Sufficient	16	16			100%			
		Length Appropriate	16	16			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	16	16			100%			
		Thalweg centering at downstream of meander bend (Glide)	16	16			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	10	10			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	7	7			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	7	7			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	3	3			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	3	3			100%			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5c. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT1C (260 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	9	9			100%			
	3. Meander Pool Condition	Depth Sufficient	8	8			100%			
		Length Appropriate	8	8			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	8	8			100%			
		Thalweg centering at downstream of meander bend (Glide)	8	8			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	n/a	n/a			n/a			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	n/a	n/a			n/a			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	n/a	n/a			n/a			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5d. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT2B (73 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	3	3			100%			
	3. Meander Pool Condition	Depth Sufficient	2	2			100%			
		Length Appropriate	2	2			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	2	2			100%			
		Thalweg centering at downstream of meander bend (Glide)	2	2			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	n/a	n/a			n/a			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	n/a	n/a			n/a			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	n/a	n/a			n/a			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5e. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT3B (162 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	5	5			100%			
	3. Meander Pool Condition	Depth Sufficient	4	4			100%			
		Length Appropriate	4	4			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	4	4			100%			
		Thalweg centering at downstream of meander bend (Glide)	4	4			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	n/a	n/a			n/a			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	n/a	n/a			n/a			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	n/a	n/a			n/a			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5f. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT4B (138 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	5	5			100%			
	3. Meander Pool Condition	Depth Sufficient	4	4			100%			
		Length Appropriate	4	4			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	4	4			100%			
		Thalweg centering at downstream of meander bend (Glide)	4	4			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	n/a	n/a			n/a			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	n/a	n/a			n/a			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	n/a	n/a			n/a			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5g. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT5 (677 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	17	17			100%			
	3. Meander Pool Condition	Depth Sufficient	16	16			100%			
		Length Appropriate	16	16			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	16	16			100%			
		Thalweg centering at downstream of meander bend (Glide)	16	16			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	9	9			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	9	9			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	9	9			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 6. Vegetation Condition Assessment Table

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Planted Acreage **16**

Vegetation Category	Definitions	Mapping Threshold (Ac)	Number of Polygons	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material	0.1	0	0	0.0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1	0	0.0	0.0%
		Total	**0**	**0.0**	**0.0%**
Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 Ac	1	0.7	4%
		Cumulative Total	**1**	**0.7**	**4.0%**

Easement Acreage **17**

Vegetation Category	Definitions	Mapping Threshold (SF)	Number of Polygons	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Areas of points (if too small to render as polygons at map scale).	1,000	0	0.0	0.0%
Easement Encroachment Areas	Areas of points (if too small to render as polygons at map scale).	none	0	0	0%

STREAM PHOTOGRAPHS

	
PHOTO POINT 1 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 1 UTSF R1 – looking downstream *(3/03/2020)***
	
PHOTO POINT 2 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 2 UTSF R1 – looking downstream *(3/03/2020)***
	
PHOTO POINT 3 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 3 UTSF R1 – looking downstream *(3/03/2020)***

	
PHOTO POINT 4 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 4 UTSF R1 – looking downstream *(3/03/2020)***
	
PHOTO POINT 5 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 5 UTSF R1 – looking downstream *(3/03/2020)***
	
PHOTO POINT 6 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 6 UTSF R1 – looking downstream *(3/03/2020)***

	
PHOTO POINT 7 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 7 UTSF R1 – looking downstream *(3/03/2020)***
	
PHOTO POINT 8 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 8 UTSF R1 – looking downstream *(3/03/2020)***
	
PHOTO POINT 9 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 9 UTSF R1 – looking downstream *(3/03/2020)***

	
PHOTO POINT 10 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 10 UTSF R1 – looking downstream *(3/03/2020)***
	
PHOTO POINT 11 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 11 UTSF R1 – looking downstream *(3/03/2020)***
	
PHOTO POINT 12 UTSF R1 – looking upstream *(3/03/2020)*	**PHOTO POINT 12 UTSF R1 – looking downstream *(3/03/2020)***

	
PHOTO POINT 13 UTSF R2 – looking upstream *(3/03/2020)*	**PHOTO POINT 13 UTSF R2 – looking downstream *(3/03/2020)***
	
PHOTO POINT 14 UTSF R2 – looking upstream *(3/03/2020)*	**PHOTO POINT 14 UTSF R2 – looking downstream *(3/03/2020)***
	
PHOTO POINT 15 UTSF R2 – looking upstream *(3/03/2020)*	**PHOTO POINT 15 UTSF R2 – looking downstream *(3/03/2020)***

	
PHOTO POINT 16 UTSF R2 – looking upstream *(3/03/2020)*	**PHOTO POINT 16 UTSF R2 – looking downstream *(3/03/2020)***
	
PHOTO POINT 17 UT1C – looking upstream *(3/03/2020)*	**PHOTO POINT 17 UT1C – looking downstream *(3/03/2020)***
	
PHOTO POINT 18 UT1C – looking upstream *(3/03/2020)*	**PHOTO POINT 18 UT1C – looking downstream *(3/03/2020)***

PHOTO POINT 19 UT1C – looking upstream *(3/03/2020)*

PHOTO POINT 19 UT1C – looking downstream *(3/03/2020)*

PHOTO POINT 20 UT1C – looking upstream *(3/03/2020)*

PHOTO POINT 20 UT1C – looking downstream *(3/03/2020)*

PHOTO POINT 21 UT1C – looking upstream *(3/03/2020)*

PHOTO POINT 21 UT1C – looking downstream *(3/03/2020)*

	
PHOTO POINT 22 UT2 – looking upstream *(3/03/2020)*	**PHOTO POINT 22 UT2 – looking downstream *(3/03/2020)***
	
PHOTO POINT 23 UT2 – looking upstream *(3/03/2020)*	**PHOTO POINT 23 UT2 – looking downstream *(3/03/2020)***
	
PHOTO POINT 24 UT2 – looking upstream *(3/03/2020)*	**PHOTO POINT 24 UT2 – looking downstream *(3/03/2020)***

	
PHOTO POINT 25 UT3 – looking upstream *(3/03/2020)*	**PHOTO POINT 25 UT3 – looking downstream *(3/03/2020)***
	
PHOTO POINT 26 UT3 – looking upstream *(3/03/2020)*	**PHOTO POINT 26 UT3 – looking downstream *(3/03/2020)***
	
PHOTO POINT 27 UT3 – looking upstream *(3/03/2020)*	**PHOTO POINT 27 UT3 – looking downstream *(3/03/2020)***

	
PHOTO POINT 28 UT4 – looking upstream *(3/03/2020)*	**PHOTO POINT 28 UT4 – looking downstream *(3/03/2020)***
	
PHOTO POINT 29 UT4 – looking upstream *(3/03/2020)*	**PHOTO POINT 29 UT4 – looking downstream *(3/03/2020)***
	
PHOTO POINT 30 UT5 – looking upstream *(3/03/2020)*	**PHOTO POINT 30 UT5 – looking downstream *(3/03/2020)***

	
PHOTO POINT 31 UT5 – looking upstream *(3/03/2020)*	**PHOTO POINT 31 UT5 – looking downstream *(3/03/2020)***
	
PHOTO POINT 32 UT5 – looking upstream *(3/03/2020)*	**PHOTO POINT 32 UT5 – looking downstream *(3/03/2020)***

Vegetation Photographs

Vegetation Plot 1 – *(08/06/2020)*

Vegetation Plot 2 – *(08/06/2020)*

Vegetation Plot 3 – *(08/06/2020)*

Vegetation Plot 4 – *(08/06/2020)*

Vegetation Plot 5 – *(08/06/2020)*

Vegetation Plot 6 – *(08/06/2020)*

Vegetation Plot 7 – *(08/20/2020)*

Vegetation Plot 8 – *(08/06/2020)*

Vegetation Plot 9 – *(08/06/2020)*

Vegetation Plot 10 – *(08/06/2020)*

Vegetation Plot 11 – *(08/06/2020)*

Vegetation Plot 12 – *(08/06/2020)*

	
Vegetation Plot 13 – *(08/06/2020)*	**Vegetation Plot 14** – *(08/06/2020)*

APPENDIX 3. Vegetation Plot Data

Table 7a. Vegetation Plot Criteria Attainment Table (Standard Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Plot	Success Criteria Met	Tract Mean
1	Yes	100%
2	Yes	
3	Yes	
4	Yes	
5	Yes	
6	Yes	
7	Yes	
8	Yes	
9	Yes	
10	Yes	
11	Yes	

Table 7b. Percent Survival by Plot Table (Supplemental Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Plot	MY0 Stems/Plot	MY1 Stems/Plot	MY2 Stems/Plot	MY3 Stems/Plot	MY5 Stems/Plot	MY1 Survival (%)	MY2 Survival (%)	MY3 Survival (%)	MY5 Survival (%)	MY1 Mean Survival (%)	MY2 Mean Survival (%)	MY3 Mean Survival (%)	MY5 Mean Survival (%)
12	16	13	5	3	1	81%	31%	19%	6%	83%	46%	29%	19%
13	16	15	10	8	8	94%	63%	50%	50%				
14	16	12	7	3	0	75%	44%	19%	0%				

Table 7c. Percent Survival by Species Table (Supplemental Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Scientific Name	Common Name	MY0 Stems	MY1 Stems	MY2 Stems	MY3 Stems	MY5 Stems	MY1 Survival (%)	MY2 Survival (%)	MY3 Survival (%)	MY5 Survival (%)
Aesculus pavia	Red buckeye	3	3	1	1	1	100%	33%	33%	33%
Callicarpa americana	American beautyberry	11	9	1	0	0	82%	9%	0%	0%
Calycanthus floridus	Sweet-shrub	6	4	2	1	0	67%	33%	17%	0%
Carpinus caroliniana	American hornbeam	17	16	13	10	6	94%	76%	59%	35%
Symphoricarpos orbiculatus	Coralberry	10	7	5	2	2	70%	50%	20%	20%
Viburnum prunifolium	Black haw	1	1	0	0	0	100%	0%	0%	0%

Table 8. CVS Vegetation Plot Metadata

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

Report Prepared By	Carolyn Lanza
Date Prepared	8/10/2020
Database Name	Maney Farm MY5- cvs-eep-entrytool-v2.5.0.mdb
Database Location	C:\Users\clanza\Documents
Computer Name	CAROLYN-PC
File Size	94806016
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT----------	
Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Project Planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Project Total Stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc.).
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
ALL Stems by Plot and Spp	A matrix of the count of total living stems of each species (planted and natural volunteers combined) for each plot; dead and missing stems are exclu
PROJECT SUMMARY----------	
Project Code	96314
Project Name	Maney Farm
Description	Stream Mitigation
Sampled Plots	14

Table 9a. Planted and Total Stem Counts (Standard Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Scientific Name	Common Name	Species Type	Current Plot Data (MY5 2020)														
			VP 1			VP 2			VP 3			VP 4			VP 5		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer negundo	Box Elder	Tree															
Acer rubrum	Red Maple	Tree									1						1
Alnus serrulata	Tag Alder	Shrub Tree															
Betula nigra	River Birch	Tree	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1
Calycanthus floridus	Sweet-shrub	Shrub															
Carpinus caroliniana	Ironwood	Shrub Tree							2	2	2						
Fraxinus pennsylvanica	Green Ash	Tree	3	3	48	3	3	33	6	6	23			11	3	3	5
Juglans nigra	Black Walnut	Tree															
Juniperus virginiana	Eastern Red Ceader	Tree						6									
Ligustrum sinense	Chinese Privet	Exotic									1						
Liquidambar styraciflua	Sweet Gum	Tree						2			2						
Liriodendron tulipifera	Tulip Poplar	Tree													1	1	1
Pinus taeda	Loblolly Pine	Tree															
Platanus occidentalis	Sycamore	Tree	2	2	2	1	1	1	1	1	3	5	5	5	1	1	1
Populus deltoides	Eastern Cottonwood	Tree															
Quercus palustris	Pin Oak	Tree	1	1	1							1	1	1	1	1	1
Quercus phellos	Willow Oak	Tree			1	3	3	14	1	1	1	1	1	1	4	4	4
Salix nigra	Black Willow	Tree															
Symphoricarpos orbiculatus	Coralberry	Shrub															
Ulmus alata	Winged Elm	Tree			7			3			9						
Ulmus americana	American Elm	Tree															
Ulmus rubra	Slippery Elm	Tree															
Viburnum prunifolium	Black Haw	Shrub Tree															
		Stem count	7	7	60	9	9	61	11	11	42	8	8	19	11	11	14
		size (ares)	1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02		
		Species count	4	4	6	4	4	7	5	5	9	4	4	5	6	6	7
		Stems per ACRE	283	283	2,428	364	364	2,469	445	445	1,700	324	324	769	445	445	567

Color for Density

Exceeds requirements by 10%
Exceeds requirements, but by less than 10%
Fails to meet requirements, by less than 10%
Fails to meet requirements by more than 10%
Volunteers

PnoLS: Number of Planted stems excluding live stakes
P-all: Number of planted stems including live stakes
T: Total Stems

Table 9a. Planted and Total Stem Counts (Standard Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Scientific Name	Common Name	Species Type	Current Plot Data (MY5 2020)																	
			VP 6			VP 7			VP 8			VP 9			VP 10			VP 11		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer negundo	Box Elder	Tree																		2
Acer rubrum	Red Maple	Tree												4			17			1
Alnus serrulata	Tag Alder	Shrub Tree																		
Betula nigra	River Birch	Tree	3	3	3				3	3	3	1	1	1						
Calycanthus floridus	Sweet-shrub	Shrub							1	1	1									
Carpinus caroliniana	Ironwood	Shrub Tree							1	1	1				1	1	1			
Fraxinus pennsylvanica	Green Ash	Tree	3	3	29	6	6	11	3	3	7	3	3	7	4	4	9	3	3	10
Juglans nigra	Black Walnut	Tree						1			1									
Juniperus virginiana	Eastern Red Ceader	Tree																		1
Ligustrum sinense	Chinese Privet	Exotic																		
Liquidambar styraciflua	Sweet Gum	Tree									1									1
Liriodendron tulipifera	Tulip Poplar	Tree	1	1	1									1						
Pinus taeda	Loblolly Pine	Tree																		
Platanus occidentalis	Sycamore	Tree	2	2	2	3	3	3	3	3	3	8	8	8	6	6	7	6	6	21
Populus deltoides	Eastern Cottonwood	Tree															1			
Quercus palustris	Pin Oak	Tree							1	1	1									
Quercus phellos	Willow Oak	Tree	2	2	2	1	1	1						1	3	3	4			
Salix nigra	Black Willow	Tree												1						
Symphoricarpos orbiculatus	Coralberry	Shrub																		
Ulmus alata	Winged Elm	Tree									4									2
Ulmus americana	American Elm	Tree			17												8			
Ulmus rubra	Slippery Elm	Tree						1									8			
Viburnum prunifolium	Black Haw	Shrub Tree				1	1	1	1	1	1									
		Stem count	11	11	54	11	11	18	13	13	23	12	12	23	14	14	55	9	9	38
		size (ares)	1			1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.02		
		Species count	5	5	6	4	4	6	7	7	10	3	3	7	4	4	8	2	2	7
		Stems per ACRE	445	445	2,185	445	445	728	526	526	931	486	486	931	567	567	2,226	364	364	1,538

Color for Density

Exceeds requirements by 10%
Exceeds requirements, but by less than 10%
Fails to meet requirements, by less than 10%
Fails to meet requirements by more than 10%
Volunteers

PnoLS: Number of Planted stems excluding live stakes
P-all: Number of planted stems including live stakes
T: Total Stems

Table 9a. Planted and Total Stem Counts (Standard Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Scientific Name	Common Name	Species Type	Annual Means														
			MY5 (2020)			MY3 (2018)			MY2 (2017)			MY1 (2016)			MY0 (2016)		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer negundo	Box Elder	Tree			2			1									
Acer rubrum	Red Maple	Tree			24			18									
Alnus serrulata	Tag Alder	Shrub Tree				1	1	1	4	4	4	7	7	7	13	13	13
Betula nigra	River Birch	Tree	13	13	13	15	15	15	13	13	13	19	19	19	25	25	25
Calycanthus floridus	Sweet-shrub	Shrub	1	1	1	2	2	2									
Carpinus caroliniana	Ironwood	Shrub Tree	4	4	4	4	4	4	7	7	7	10	10	10	13	13	13
Fraxinus pennsylvanica	Green Ash	Tree	37	37	193	40	40	293	36	36	139	35	35	35	36	36	36
Juglans nigra	Black Walnut	Tree			2			1									
Juniperus virginiana	Eastern Red Ceader	Tree			7												
Ligustrum sinense	Chinese Privet	Exotic			1												
Liquidambar styraciflua	Sweet Gum	Tree			6			5									
Liriodendron tulipifera	Tulip Poplar	Tree	2	2	3	2	2	2	2	2	2	7	7	7	16	16	16
Pinus taeda	Loblolly Pine	Tree						1									
Platanus occidentalis	Sycamore	Tree	38	38	56	37	37	45	38	38	44	37	37	37	37	37	37
Populus deltoides	Eastern Cottonwood	Tree			1			1									
Quercus palustris	Pin Oak	Tree	4	4	4	6	6	6	6	6	6	15	15	15	16	16	16
Quercus phellos	Willow Oak	Tree	15	15	29	16	16	27	15	15	21	15	15	15	16	16	16
Salix nigra	Black Willow	Tree			1						1						
Symphoricarpos orbiculatus	Coralberry	Shrub						56				7	7	7	10	10	10
Ulmus alata	Winged Elm	Tree			25			2			4						
Ulmus americana	American Elm	Tree			25			16									
Ulmus rubra	Slippery Elm	Tree			9			9			13						
Viburnum prunifolium	Black Haw	Shrub Tree	2	2	2	2	2	2	2	2	2	5	5	5	5	5	5
		Stem count	116	116	407	125	125	506	123	123	256	157	157	157	187	187	187
		size (ares)	11			11			11			11			11		
		size (ACRES)	0.27			0.27			0.27			0.27			0.27		
		Species count	9	9	20	10	10	20	9	9	12	10	10	10	10	10	10
		Stems per ACRE	427	427	1,497	460	460	1,862	453	453	942	578	578	578	688	688	688

Color for Density

Exceeds requirements by 10%
Exceeds requirements, but by less than 10%
Fails to meet requirements, by less than 10%
Fails to meet requirements by more than 10%
Volunteers

PnoLS: Number of Planted stems excluding live stakes
P-all: Number of planted stems including live stakes
T: Total Stems

Table 9b. Planted and Total Stem Counts (Supplemental Planting Zones)
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Scientific Name	Common Name	Species Type	Current Plot Data (MY5 2020)									Annual Means														
			VP 12			VP 13			VP 14			MY5 (2020)			MY3 (2018)			MY2 (2017)			MY1 (2016)			MY0 (2016)		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Aesculus pavia	Red buckeye	Shrub/Tree				1	1	1				1	1	1	1	1	1	1	1	1	3	3	3	3	3	3
Callicarpa americana	American beautyberry	Shrub																1	1	1	9	9	9	11	11	11
Calycanthus floridus	Sweet-shrub	Shrub													1	1	1	2	2	2	4	4	4	6	6	6
Carpinus caroliniana	American hornbeam	Shrub Tree	1	1	1	5	5	5				6	6	6	10	10	10	13	13	13	16	16	16	17	17	17
Symphoricarpos orbiculatus	Coralberry	Shrub				2	2	2				2	2	2	2	2	2	5	5	5	7	7	7	10	10	10
Viburnum prunifolium	Black haw	Shrub Tree																			1	1	1	1	1	1
		Stem count	1	1	1	8	8	8	0	0	0	9	9	9	14	14	14	22	22	22	40	40	40	48	48	48
		size (ares)		1			1			1			3			3			3			3			3	
		size (ACRES)		0.02			0.02			0.02			0.07			0.07			0.07			0.07			0.07	
		Species count	1	1	1	3	3	3	0	0	0	3	3	3	4	4	4	5	5	5	6	6	6	6	6	6
		Stems per ACRE	40	40	40	324	324	324	0	0	0	121	121	121	189	189	189	297	297	297	540	540	540	647	647	647

Supplemental planting zones are monitored to determine survival rates of these species but the results will not be tied to project success.

PnoLS: Number of Planted stems excluding live stakes
P-all: Number of planted stems including live stakes
T: Total Stems

APPENDIX 4. Morphological Summary Data and Plots

Table 10a. Baseline Stream Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

UT South Fork Reaches 1 and 2

		Pre-Restoration Condition				Reference Reach Data				Design				As-Built/Baseline			
Parameter	**Gage**	**UTSF Reach 1**		**UTSF Reach 2**		**Agony Acres UT1A-Reach 1**		**UT to Cane Creek**		**UTSF Reach 1**		**UTSF Reach 2**		**UTSF Reach 1**		**UTSF Reach 2**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Dimension and Substrate - Riffle																	
Bankfull Width (ft)		3.2	12.0	4.7	8.2	9.1	10.4	11.5	12.3	9.5		12.1		8.8	9.3	12.7	13.7
Floodprone Width (ft)		15	50	70	82	>36		31		21	48	27	61	85		150	
Bankfull Mean Depth		0.6	1.3	0.7	1.2	1.0	1.2	0.8	1.0	0.7		0.8		0.6	0.7	0.8	0.9
Bankfull Max Depth		1.2	2.0	1.5		1.8		1.2	1.6	1.0	1.2	1.2	1.5	1.0	1.2	1.3	1.4
Bankfull Cross-Sectional Area (ft2)	N/A	4.1	7.1	5.4	5.6	10.7	11.3	8.9	12.2	6.5		10.2		5.3	6.8	10.9	11.0
Width/Depth Ratio		2.5	20.4	4.0	12.3	7.3	10.1	12.3	14.4	14.0		14.0		9.1	9.7	14.5	17.3
Entrenchment Ratio		1.4	12.5	10.0	14.8	>3.9		2.5	2.7	2.2	5.0	2.2	5.0	6.2	9.5	10.9	11.8
Bank Height Ratio		1.3	2.2	1.4	1.9	---		---		0.9	1.1	0.9	1.1	1.0		1.0	
D50 (mm)		Medium Sand		Silt/Clay										8.4		10.4	
Riffle Length (ft)						---		---		---		---		9	50	9	40
Riffle Slope (ft/ft)		0.0036	0.0274	0.0062	0.0258	---		0.0188	0.0704	0.0120	0.0505	0.0106	0.0447	0.0058	0.0432	0.0055	0.0326
Pool Length (ft)	N/A					---		---		---		---		12	47	23	50
Pool Max Depth (ft)		1.5	1.8	1.8	2	2.5		1.8	2.3	1.1	2.1	1.3	2.6	2.4	2.6	2.1	
Pool Spacing (ft)		23	239	44	145	---		27	73	3	67	4	85	29	85	45	78
Pool Volume (ft^3)																	
Pattern																	
Channel Beltwidth (ft)		5	42	10	37	21	93	102		15	85	19	108	24	56	37	54
Radius of Curvature (ft)		4	25	5	13	14	60	23	38	17	55	22	70	9	36	17	28
Rc:Bankfull Width (ft/ft)	N/A	1.3	2.1	1.1	1.6	1.5	5.8	2.0	3.1	1.8	5.8	1.8	5.8	1.0	4.1	1.6	2.6
Meander Length (ft)		18	100	21	59	---		---		29	156	36	198	68	151	110	144
Meander Width Ratio		1.6	3.5	2.1	4.5	2.3	8.9	8.3	8.9	1.6	8.9	1.6	8.9	2.7	6.5	3.4	5.0
Substrate, Bed and Transport Parameters																	
Ri%/Ru%/P%/G%/S%																	
SC%/Sa%/G%/C%/B%/Be%														21/13/64/2/0/0		28/10/56/6/0/0	
d16/d35/d50/d84/d95/d100	N/A	SC/VFS/MS/11.1/15.4/22.6		SC/SC/SC/6.1/28.5/180		---		---						SC/2.37/8.4/34.5/55/180		SC/0.40/10.4/37.9/71.7/180	
Reach Shear Stress (Competency) lb/ft^2		0.39		0.45						0.42		0.44		0.32	0.34	0.35	0.37
Max part size (mm) mobilized at bankfull		28.9		34.2						31.7		33.0					
Stream Power (Capacity) W/m^2										---		---		---		---	
Additional Reach Parameters																	
Drainage Area (SM)		0.18		0.33		0.30		0.29		0.18		0.33		0.18		0.33	
Watershed Impervious Cover Estimate (%)		5%		3%		---		---		5%		3%		5%		3%	
Rosgen Classification		E5		E5		E4		E4		C		C		C		C	
Bankfull Velocity (fps)		2.8	4.8	3.4	3.6	2.2	2.4	3.8		3.0		2.8		2.8	3.6	2.6	2.7
Bankfull Discharge (cfs)		19.6		19.3		25.3		40.0		19.0		29.0		19.0		29.0	
Q-NFF regression (2-yr)										43		67					
Q-USGS extrapolation (1.2-yr)	N/A									22		34					
Q-Mannings										4.8	8.0	6.9	11.0				
Valley Length (ft)		1,720		910		---		---		1,720		910		1,720		910	
Channel Thalweg Length (ft)		2,298		1,209		---		---		2,163		1,061		2,185		1,077	
Sinuosity		1.34		1.33		1.35		1.40		1.20	1.40	1.20	1.40	1.27		1.18	
Water Surface Slope $(ft/ft)^2$		0.0084		0.0075		---		---		0.0095		0.0113		0.0103		0.0078	
Bankfull Slope (ft/ft)		---		---		---		---		0.0129		0.0114		0.0102	0.0104	0.0077	0.0078

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

Table 10b. Baseline Stream Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

UT1C and UT2B

		Pre-Restoration Condition				Reference Reach Data		Design				As-Built/Baseline			
Parameter	**Gage**	**UT1C**		**UT2B**		**UT to Varnals Creek**		**UT1C**		**UT2B**		**UT1C**		**UT2B**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Dimension and Substrate - Riffle															
Bankfull Width (ft)		4.1		2.6		9.3	10.5	8.1		4.0		9.8		5.5	
Floodprone Width (ft)		5.3		4.4		20	64	18	41	9	20	60		60	
Bankfull Mean Depth		0.5		0.4		1.1	1.2	0.6		0.4		0.5		0.4	
Bankfull Max Depth		0.8		0.5		1.5	1.7	0.9	1.2	0.5	0.7	0.7		0.7	
Bankfull Cross-Sectional Area (ft2)	N/A	2.1		1.1		10.3	12.3	5.2		1.5		4.9		2.3	
Width/Depth Ratio		8.1		6.2		8.1	9.3	13.0		11.0		19.4		13.2	
Entrenchment Ratio		1.3		1.7		1.9	6.1	2.2	5.0	2.2	5.0	6.1		10.8	
Bank Height Ratio		2.3		5.4		0.9	1.0	0.9	1.1			1.0		1.0	
D50 (mm)		---		---								3.3		0.1	
Riffle Length (ft)						---		---		---		8	22	11	19
Riffle Slope (ft/ft)		---		---		0.0240	0.0570	0.0086	0.0355	0.0083	0.0342	0.0011	0.0110	0.0073	0.0106
Pool Length (ft)	N/A					---		---		---		6	22	13	19
Pool Max Depth (ft)		---		---		2.5	2.6	0.9	1.8	0.6	1.2	2.0		1.5	
Pool Spacing (ft)		34	44	---		8	82	2	44	1	24	22	38	22	
Pool Volume (ft^3)															
Channel Beltwidth (ft)		10	18	1	2	15	45	13	72	6	36	16	26	---	
Radius of Curvature (ft)		9	16	1	3	8	47	11	47	5	23	9	15	13	25
Rc:Bankfull Width (ft/ft)	N/A	2.2	3.9	0.4	1.2	0.6	3.2	1.3	5.8	1.3	5.8	1.0	1.6	1.8	3.3
Meander Length (ft)		54	63	12		---		24	133	12	66	55	73	---	
Meander Width Ratio		2.4	4.4	0.4	0.8	1.0	3.0	1.6	8.9	1.6	8.9	1.7	2.8	---	
Ri%/Ru%/P%/G%/S%															
SC%/Sa%/G%/C%/B%/Be%												24/17/58/1/0/0		47/13/37/3/0/0	
d16/d35/d50/d84/d95/d100	N/A	---		---		---						SC/0.21/3.3/22.6/34.8/128		SC/SC/0.1/22.6/50.6/128	
Reach Shear Stress (Competency) lb/ft^2		---		---				---		---		0.15		0.23	
Max part size (mm) mobilized at bankfull		---		---				---		---					
Stream Power (Capacity) W/m^2								---		---		---		---	
Additional Reach Parameters															
Drainage Area (SM)		0.03		0.02		0.41		0.03		0.02		0.03		0.02	
Watershed Impervious Cover Estimate (%)		13%		0%		---		13%		0%		13%		0%	
Rosgen Classification		B5		B5		E4		C		C		C		C	
Bankfull Velocity (fps)		3.0		3.4		4.4	5.2	1.1		3.1		1.1		1.6	
Bankfull Discharge (cfs)		---		---		54.0		5.6		3.6		5.6		3.6	
Q-NFF regression (2-yr)								13		8					
Q-USGS extrapolation (1.2-yr)	N/A							6		4					
Q-Mannings								4.1	5.7	6.9	7.3				
Valley Length (ft)		142		42		---		220		62		231		67	
Channel Thalweg Length (ft)		166		44		---		260		74		256		70	
Sinuosity		1.17		1.04		1.20		1.10	1.25	1.10	1.25	1.11		1.04	
Water Surface Slope $(ft/ft)^2$		---		---		---		---		---		0.0053		0.0101	
Bankfull Slope (ft/ft)		---		---		---		0.0083		0.0080		0.0078	0.0080	0.0070	0.0084

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

Table 10c. Baseline Stream Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

UT3B and UT4B

		Pre-Restoration Condition				Reference Reach Data		Design				As-Built/Baseline			
Parameter	**Gage**	**UT3B**		**UT4B**		**UT to Varnals Creek**		**UT3B**		**UT4B**		**UT3B**		**UT4B**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Dimension and Substrate - Riffle															
Bankfull Width (ft)		2.2		4.4		9.3	10.5	4.0		5.0		4.2		5.7	
Floodprone Width (ft)		11.4		23.3		20	64	9	20	11	25	60		25	
Bankfull Mean Depth		0.5		0.4		1.1	1.2	0.4		0.4		0.4		0.6	
Bankfull Max Depth		0.8		1.0		1.5	1.7	0.5	0.7	0.5	0.7	0.6		0.9	
Bankfull Cross-Sectional Area (ft2)	N/A	1.1		1.9		10.3	12.3	1.5		1.9		1.6		3.6	
Width/Depth Ratio		4.6		9.9		8.1	9.3	11.0		13.0		11.6		9.1	
Entrenchment Ratio		5.1		5.3		1.9	6.1	2.2	5.0	2.2	5.0	14.1		4.3	
Bank Height Ratio		2.2		1.4		0.9	1.0	0.9	1.1	0.9	1.1	1.0		1.0	
D50 (mm)		---		---								5.6		4.0	
Riffle Length (ft)						---		---		---		12	23	8	19
Riffle Slope (ft/ft)		---		---		0.0240	0.0570	0.0191	0.0786	0.0088	0.0312	0.0112	0.0419	0.0035	0.0113
Pool Length (ft)	N/A					---		---		---		10	22	10	21
Pool Max Depth (ft)		---		---		2.5	2.6	0.6	1.2	0.6	1.2	1.3		1.4	
Pool Spacing (ft)		56	157	---		8	82	1	24	3	31	30	36	31	
Pool Volume (ft^3)															
Channel Beltwidth (ft)		---		2	3	15	45	6	36	8	45	12	23	19	23
Radius of Curvature (ft)		---		2	3	8	47	5	23	7	29	11	47	10	20
Rc:Bankfull Width (ft/ft)	N/A	---		0.5	0.7	0.6	3.2	1.3	5.8	1.3	5.8	1.7	7.6	1.8	3.6
Meander Length (ft)		---		11	22	---		12	66	15	82	55	68	59	69
Meander Width Ratio		---		0.5	0.7	1.0	3.0	1.6	8.9	1.6	8.9	1.9	3.7	3.3	4.1
Ri%/Ru%/P%/G%/S%															
SC%/Sa%/G%/C%/B%/Be%												32/14/51/3/0/0		22/20/57/1/0/0	
d16/d35/d50/d84/d95/d100	N/A	---		---		---						SC/0.08/5.6/33.4/56.9/90		SC/0.25/4.0/20.1/45/90	
Reach Shear Stress (Competency) lb/ft^2		---		---				---		---		0.33		0.14	
Max part size (mm) mobilized at bankfull		---		---				---		---					
Stream Power (Capacity) W/m^2								---		---		---		---	
Additional Reach Parameters															
Drainage Area (SM)		0.02		0.03		0.41		0.02		0.03		0.02		0.03	
Watershed Impervious Cover Estimate (%)		0%		0%		---		0%		0%		0%		0%	
Rosgen Classification		E5b		E5b		E4		C		C		C		E	
Bankfull Velocity (fps)		3.2		3.0		4.4	5.2	3.3		3.3		2.2		1.5	
Bankfull Discharge (cfs)		---		---		54.0		3.5		5.3		3.5		5.3	
Q-NFF regression (2-yr)								8		12					
Q-USGS extrapolation (1.2-yr)	N/A							4		6					
Q-Mannings								7.8	12.0	4.1	5.5				
Valley Length (ft)		84		38		---		138		117		148		124	
Channel Thalweg Length (ft)		84		40		---		163		138		155		212	
Sinuosity		1.00		1.06		1.20		1.10	1.25	1.10	1.25	1.05		1.71	
Water Surface Slope $(ft/ft)^2$		---		---		---		---		---		0.0164		0.0043	
Bankfull Slope (ft/ft)		---		---		---		0.0170		0.0073		0.0127	0.0161	0.0059	0.0067

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

Table 10d. Baseline Stream Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

UT5

		Pre-Restoration		Reference Reach Data				Design		As-Built/Baseline	
Parameter	**Gage**	**UT5**		**Agony Acres UT1A-Reach 1**		**UT to Cane Creek**		**UT5**		**UT5**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Dimension and Substrate - Riffle											
Bankfull Width (ft)	N/A	5.7		9.1	10.4	11.5	12.3	7.2		8.1	
Floodprone Width (ft)		40		>36		31		16	36	100	
Bankfull Mean Depth		0.6		1.0	1.2	0.8	1.0	0.6		0.5	
Bankfull Max Depth		1.2		1.8		1.2	1.6	0.8	1.0	0.9	
Bankfull Cross-Sectional Area (ft2)		3.5		10.7	11.3	8.9	12.2	4.1		4.0	
Width/Depth Ratio		9.1		7.3	10.1	12.3	14.4	13.0		16.6	
Entrenchment Ratio		7.1		>3.9		2.5	2.7	2.2	5.0	12.3	
Bank Height Ratio		1.4		---		---		0.9	1.1	1.0	
D50 (mm)		Silt/Clay								5.9	
Riffle Length (ft)	N/A			---		---		---		5	21
Riffle Slope (ft/ft)		0.0028	0.0638	---		0.0188	0.0704	0.0128	0.0541	0.0081	0.0374
Pool Length (ft)				---		---		---		18	42
Pool Max Depth (ft)		1.4		2.5		1.8	2.3	0.9	1.8	1.7	
Pool Spacing (ft)		9	197	---		27	73	2	44	31	51
Pool Volume (ft^3)											
Pattern											
Channel Beltwidth (ft)	N/A	3	18	21	93	102		12	64	22	40
Radius of Curvature (ft)		3	14	14	60	23	38	13	42	10	37
Rc:Bankfull Width (ft/ft)		0.5	2.5	1.5	5.8	2.0	3.1	1.3	5.8	1.0	3.7
Meander Length (ft)		16	58	---		---		22	118	63	97
Meander Width Ratio		0.5	3.2	2.3	8.9	8.3	8.9	1.6	8.9	2.3	4.0
Substrate, Bed and Transport Parameters											
Ri%/Ru%/P%/G%/S%	N/A										
SC%/Sa%/G%/C%/B%/Be%										34/11/54/1/0/0	
d16/d35/d50/d84/d95/d100		SC/SC/SC/8.9/22.6/64		---		---				SC/0.08/5.9/29.8/53.7/90	
Reach Shear Stress (Competency) lb/ft^2		0.19						0.37		0.31	
Max part size (mm) mobilized at bankfull		14.0						27.5			
Stream Power (Capacity) W/m^2								---		---	
Additional Reach Parameters											
Drainage Area (SM)	N/A	0.12		0.30		0.29		0.12		0.12	
Watershed Impervious Cover Estimate (%)		0%		---		---		0%		0%	
Rosgen Classification		E5		E4		E4		C		C	
Bankfull Velocity (fps)		2.1		2.2	2.4	3.8		2.9		3.5	
Bankfull Discharge (cfs)		7.4		25.3		40.0		14.0		14.0	
Q-NFF regression (2-yr)								32			
Q-USGS extrapolation (1.2-yr)								16			
Q-Mannings								5.4	11.0		
Valley Length (ft)		580		---		---		520		515	
Channel Thalweg Length (ft)		778		---		---		677		680	
Sinuosity		1.34		1.35		1.40		1.20	1.40	1.3	
Water Surface Slope $(ft/ft)^2$		0.0111		---		---		---		0.0114	
Bankfull Slope (ft/ft)		---		---		---		0.0138		0.0110	0.0114

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

Table 11a. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

	Cross-Section 1, UTSF Reach 1 (Riffle)						Cross-Section 2, UTSF Reach 1 (Pool)						Cross-Section 3, UTSF Reach 1 (Riffle)					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	567.0	567.0	567.0	567.0	567.0		566.4	566.4	566.4	566.5	566.3		556.5	556.5	556.5	556.7	556.5	
Low Bank Elevation (ft)	567.0	567.0	567.0	567.0	567.0		566.4	566.4	566.4	566.5	566.3		556.5	556.5	556.5	556.5	556.5	
Bankfull Width (ft)	8.8	8.7	8.6	8.6	8.4		11.1	10.8	11.5	11.9	9.1		9.3	9.0	9.0	9.5	9.5	
Floodprone Width (ft)	85	85	85	85	85		---	---	---	---	---		85	85	85	85	85	
Bankfull Mean Depth (ft)	0.6	0.7	0.6	0.6	0.6		1.2	1.3	1.2	1.1	1.6		0.7	0.7	0.7	0.7	0.6	
Bankfull Max Depth (ft)	1.0	1.1	1.1	1.1	1.2		2.6	2.6	2.3	2.4	2.3		1.2	1.1	1.1	1.3	1.1	
Bankfull Cross-Sectional Area (ft^2)	5.3	5.7	5.4	5.3	5.2		13.6	14.0	13.6	13.6	14.2		6.8	6.2	6.2	6.8	6.0	
Bankfull Width/Depth Ratio	14.6	13.3	13.5	13.8	13.5		9.1	8.3	9.7	10.4	5.9		12.8	13.1	13.0	13.3	15.1	
Entrenchment Ratio[1]	9.7	9.8	9.9	9.9	10.1		---	---	---	---	---		9.1	9.4	9.4	8.9	8.9	
Bankfull Bank Height Ratio[2]	1.0	1.0	1.0	1.0	<1.0		---	---	---	---	---		1.0	1.0	1.0	<1.0	<1.0	
	Cross-Section 4, UTSF Reach 1 (Pool)						**Cross-Section 5, UTSF Reach 2 (Riffle)**						**Cross-Section 6, UTSF Reach 2 (Riffle)**					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	556.0	556.0	556.0	556.2	556.3		549.9	549.9	549.9	549.9	549.8		547.9	547.9	547.9	547.9	547.8	
Low Bank Elevation (ft)	556.0	556.0	556.0	556.4	556.3		549.9	549.9	549.9	549.7	549.8		547.9	547.9	547.9	547.7	547.8	
Bankfull Width (ft)	14.8	13.9	14.1	15.6	16.0		11.6	12.3	12.2	13.6	11.3		13.7	13.9	13.9	15.3	12.6	
Floodprone Width (ft)	---	---	---	---	---		150	150	150	150	150		150	150	150	150	150	
Bankfull Mean Depth (ft)	1.2	1.1	1.2	1.1	1.3		0.9	0.9	0.9	0.8	0.8		0.8	0.7	0.7	0.7	0.8	
Bankfull Max Depth (ft)	2.4	2.3	2.5	2.5	2.6		1.4	1.4	1.4	1.5	1.4		1.3	1.3	1.3	1.4	1.5	
Bankfull Cross-Sectional Area (ft^2)	17.5	15.7	16.3	17.5	20.3		10.9	11.0	10.5	10.9	8.5		10.9	10.2	10.4	10.9	9.5	
Bankfull Width/Depth Ratio	12.6	12.2	12.1	13.9	12.6		12.4	13.7	14.3	16.9	14.9		17.3	18.9	18.7	21.5	16.8	
Entrenchment Ratio[1]	---	---	---	---	---		12.9	12.2	12.3	11.0	13.3		10.9	10.8	10.8	9.8	11.9	
Bankfull Bank Height Ratio[2]	---	---	---	---	---		1.0	1.0	1.0	<1.0	<1.0		1.0	1.0	1.0	<1.0	<1.0	
	Cross-Section 7, UTSF Reach 2 (Pool)						**Cross-Section 8, UT1C (Pool)**						**Cross-Section 9, UT1C (Riffle)**					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	547.0	547.0	547.0	547.0	547.1		572.5	572.5	572.5	572.7	572.5		572.4	572.4	572.4	572.5	572.5	
Low Bank Elevation (ft)	547.0	547.0	547.0	547.3	547.1		572.5	572.5	572.5	572.7	572.5		572.4	572.4	572.4	572.5	572.5	
Bankfull Width (ft)	12.3	12.0	12.1	12.4	13.7		7.6	6.6	7.0	6.3	5.0		9.8	9.8	9.9	10.7	9.7	
Floodprone Width (ft)	---	---	---	---	---		---	---	---	---	---		60	60	60	60	60	
Bankfull Mean Depth (ft)	1.2	1.2	1.2	1.2	1.2		1.0	0.8	0.8	0.7	1.2		0.5	0.5	0.5	0.5	0.5	
Bankfull Max Depth (ft)	2.1	2.1	2.2	2.2	2.3		2.0	1.6	1.6	1.9	1.7		0.7	0.7	0.8	0.9	0.9	
Bankfull Cross-Sectional Area (ft^2)	14.7	14.0	14.5	14.7	17.0		7.7	5.5	5.2	7.7	5.8		4.9	4.6	4.5	4.9	4.7	
Bankfull Width/Depth Ratio	10.3	10.3	10.0	10.4	11.1		7.6	7.9	9.3	13.9	4.3		19.4	20.7	21.8	23.2	19.6	
Entrenchment Ratio[1]	---	---	---	---	---		---	---	---	---	---		6.1	6.1	6.1	5.6	6.2	
Bankfull Bank Height Ratio[2]	---	---	---	---	---		---	---	---	---	---		1.0	1.1	1.0	<1.0	<1.0	

[1]Entrenchment Ratio is calculated using the method specified in the Industry Technical Workgroup Memorandum

[2]Bank Height Ratio is calculated using the method specified in the Industry Technical Workgroup Memorandum

Table 11b. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

	Cross-Section 10, UT2B (Pool)						Cross-Section 11, UT2B (Riffle)						Cross-Section 12, UT3B (Pool)					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	564.2	564.2	564.2	564.4	564.2		563.9	563.9	563.9	563.9	563.9		563.0	563.0	563.0	563.2	563.1	
Low Bank Elevation (ft)	564.2	564.2	564.2	564.2	564.2		563.9	563.9	563.9	563.9	563.9		563.0	563.0	563.0	563.1	563.1	
Bankfull Width (ft)	10.7	10.5	10.7	13.2	9.4		5.5	6.5	6.8	6.7	5.5		6.2	6.3	7.0	10.9	6.9	
Floodprone Width (ft)	---	---	---	---	---		60	60	60	60	60		---	---	---	---	---	
Bankfull Mean Depth (ft)	0.8	0.6	0.6	0.7	0.4		0.4	0.4	0.4	0.3	0.2		0.6	0.5	0.5	0.3	0.5	
Bankfull Max Depth (ft)	1.5	1.0	1.0	1.1	0.8		0.7	0.7	0.7	0.6	0.6		1.3	1.0	1.0	1.0	1.2	
Bankfull Cross-Sectional Area (ft^2)	8.6	6.3	6.3	8.6	3.4		2.3	2.7	2.8	2.3	1.4		3.8	3.0	3.2	3.8	3.4	
Bankfull Width/Depth Ratio	13.3	17.4	17.9	20.2	25.8		13.2	15.7	16.5	19.3	22.6		10.1	13.4	15.5	31.2	14.3	
Entrenchment Ratio[1]	---	---	---	---	---		10.8	9.3	8.8	9.0	10.8		---	---	---	---	---	
Bankfull Bank Height Ratio[2]	---	---	---	---	---		1.0	1.0	1.0	1.1	<1.0		---	---	---	---	---	
	Cross-Section 13[3], UT3B (Riffle)						**Cross-Section 14, UT4B (Riffle)**						**Cross-Section 15, UT4B (Pool)**					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	563.0	563.0	563.0	563.2	563.1		553.8	553.8	553.8	554.0	554.0		553.6	553.6	553.6	553.9	553.8	
Low Bank Elevation (ft)	563.0	563.1	563.1	563.1	563.1		553.8	553.8	553.8	553.8	554.0		553.6	553.6	553.6	553.7	553.8	
Bankfull Width (ft)	8.7	4.7	4.6	6.6	5.9		5.7	6.4	6.7	9.9	5.3		6.3	5.7	5.5	6.5	4.5	
Floodprone Width (ft)	60	60	60	60	60		25	25	25	25	25		---	---	---	---	---	
Bankfull Mean Depth (ft)	0.3	0.4	0.4	0.4	0.4		0.6	0.4	0.4	0.4	0.4		0.7	0.5	0.6	0.7	0.5	
Bankfull Max Depth (ft)	0.8	0.7	0.6	0.8	0.9		0.9	0.6	0.6	0.8	0.8		1.4	1.0	1.1	1.2	0.9	
Bankfull Cross-Sectional Area (ft^2)	2.7	1.9	1.7	2.7	2.3		3.6	2.4	2.4	3.6	2.2		4.5	3.0	3.2	4.5	2.0	
Bankfull Width/Depth Ratio	11.6	11.5	12.4	16.5	15.3		9.1	17.3	19.2	27.4	12.3		8.7	11.0	9.4	9.8	9.9	
Entrenchment Ratio[1]	14.1	12.8	13.0	9.1	10.2		4.3	3.9	3.7	2.5	4.8		---	---	---	---	---	
Bankfull Bank Height Ratio[2]	1.0	1.1	1.1	<1.0	<1.0		1.0	1.0	1.0	<1.0	<1.0		---	---	---	---	---	
	Cross-Section 16, UT5 (Pool)						**Cross-Section 17, UT5 (Riffle)**											
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**						
Bankfull Elevation (ft)	552.6	552.6	552.6	552.7	552.7		552.5	552.5	552.5	552.6	552.7							
Low Bank Elevation (ft)	552.6	552.6	552.6	552.8	552.7		552.5	552.5	552.5	552.4	552.7							
Bankfull Width (ft)	8.0	7.6	7.3	8.1	6.4		8.1	8.1	8.2	8.4	9.9							
Floodprone Width (ft)	---	---	---	---	---		100	100	100	100	100							
Bankfull Mean Depth (ft)	1.0	1.1	1.1	1.0	1.3		0.5	0.4	0.5	0.5	0.5							
Bankfull Max Depth (ft)	1.7	1.7	1.7	1.8	1.8		0.9	0.8	0.8	0.9	1.2							
Bankfull Cross-Sectional Area (ft^2)	7.9	8.0	7.9	7.9	8.5		4.0	3.5	3.8	4.0	4.7							
Bankfull Width/Depth Ratio	8.0	7.2	6.8	8.3	4.8		16.6	18.7	17.8	17.7	21.0							
Entrenchment Ratio[1]	---	---	---	---	---		12.3	12.4	12.2	11.9	10.1							
Bankfull Bank Height Ratio[2]	---	---	---	---	---		1.0	1.0	1.0	<1.0	1.2							

[1]Entrenchment Ratio is calculated using the method specified in the Industry Technical Workgroup Memorandum

[2]Bank Height Ratio is calculated using the method specified in the Industry Technical Workgroup Memorandum

[3] Alternative Bank Height Ratio calculation method applied due to insufficient MY0 data

Table 12a. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

UT South Fork Reach 1

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	8.8	9.3	8.7	9.0	8.6	9.0	8.6	9.5	8.4	9.5		
Floodprone Width (ft)	85		85		85		85		85			
Bankfull Mean Depth	0.6	0.7	0.7		0.6	0.7	0.6	0.7	0.6			
Bankfull Max Depth	1.0	1.2	1.1		1.1		1.1	1.3	1.1	1.2		
Bankfull Cross-Sectional Area (ft^2)	5.3	6.8	5.7	6.2	5.4	6.2	5.3	6.8	5.2	6.0		
Width/Depth Ratio	12.8	14.6	13.1	13.3	13.0	13.5	13.3	13.8	13.5	15.1		
Entrenchment Ratio	9.1	9.7	9.4	9.8	9.4	9.9	8.9	9.9	8.9	10.1		
Bank Height Ratio	1.0		1.0		1.0		<1.0	1.0	<1.0			
D50 (mm)	8.4		14.1		3.3		2.4		5.6			
Profile												
Riffle Length (ft)	9	50										
Riffle Slope (ft/ft)	0.0058	0.0432										
Pool Length (ft)	12	47										
Pool Max Depth (ft)	2.4	2.6										
Pool Spacing (ft)	29	85										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	24	56										
Radius of Curvature (ft)	9	36										
Rc:Bankfull Width (ft/ft)	1.0	4.1										
Meander Wave Length (ft)	68	151										
Meander Width Ratio	2.7	6.5										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	2,185											
Sinuosity (ft)	1.27											
Water Surface Slope (ft/ft)	0.0103											
Bankfull Slope (ft/ft)	0.0102	0.0104										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	21/13/64/2/0/0		25/9/52/14/0/0		27/22/33/18/0/0		27/20/46/7/0/0		14/17/66/3/0/0			
d16/d35/d50/d84/d95/d100	SC/2.37/8.4/34.5/55 /180		SC/2.4/14.1/60/107 /256		SC/0.14/3.3/70/121 /256		SC/0.16/2.4/34.8/ 73.4/128		0.07/2.5/5.6/22.6/55.6 /90.0			
% of Reach with Eroding Banks	0%		0%		0%		0%		0%			

(---): Data was not provided

Table 12b. Monitoring Data - Stream Reach Data Summary
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT South Fork Reach 2

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	12.7	13.7	12.3	13.9	12.2	13.9	13.6	15.3	11.3	12.6		
Floodprone Width (ft)	150		150		150		150		150			
Bankfull Mean Depth	0.8	0.9	0.7	0.9	0.7	0.9	0.7	0.8	0.8			
Bankfull Max Depth	1.3	1.4	1.3	1.4	1.3	1.4	1.4	1.5	1.4	1.5		
Bankfull Cross-Sectional Area (ft^2)	10.9	11.0	10.2	11.0	10.4	10.5	10.9		8.5	9.5		
Width/Depth Ratio	14.5	17.3	13.7	18.9	14.3	18.7	16.9	21.5	14.9	16.8		
Entrenchment Ratio	10.9	11.8	10.8	12.2	10.8	12.3	9.8	11.0	11.9	13.3		
Bank Height Ratio	1.0		1.0		1.0		1.0		<1.0			
D50 (mm)	10.4		14.6		7.3		8.0		13.3			
Profile												
Riffle Length (ft)	9	40										
Riffle Slope (ft/ft)	0.0055	0.0326										
Pool Length (ft)	23	50										
Pool Max Depth (ft)	2.1											
Pool Spacing (ft)	45	78										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	37	54										
Radius of Curvature (ft)	17	28										
Rc:Bankfull Width (ft/ft)	1.6	2.6										
Meander Wave Length (ft)	110	144										
Meander Width Ratio	3.4	5.0										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	1,077											
Sinuosity (ft)	1.18											
Water Surface Slope (ft/ft)	0.0078											
Bankfull Slope (ft/ft)	0.0077	0.0078										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	28/10/56/6/0/0		15/16/43/26/0/1		23/21/44/11/1/0		14/15/67/4/0/0		15/15/59/11/0/0			
d16/d35/d50/d84/d95/d100	SC/0.4/10.4/37.9/72.0 /180		0.13/4.7/15/85/124.0 /256		SC/0.3/7.3/53.7/90.0 /362		0.1/2.5/8/33/53.7 /128		0.14/3.06/13.3/58.0 /82.6/180			
% of Reach with Eroding Banks	0%		0%		0%		0%		0%			

(---): Data was not provided

Table 12c. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT1C

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	9.8		9.8		9.9		10.7		9.7			
Floodprone Width (ft)	60		60		60		60		60			
Bankfull Mean Depth	0.5		0.5		0.5		0.5		0.5			
Bankfull Max Depth	0.7		0.7		0.8		0.9		0.9			
Bankfull Cross-Sectional Area (ft^2)	4.9		4.6		4.5		4.9		4.7			
Width/Depth Ratio	19.4		20.7		21.8		23.2		19.6			
Entrenchment Ratio	6.1		6.1		6.1		5.6		6.2			
Bank Height Ratio	1.0		1.1		1.0		<1.0		<1.0			
D50 (mm)	3.3		12.9		8.9		5.3		4.8			
Profile												
Riffle Length (ft)	8	22										
Riffle Slope (ft/ft)	0.0011	0.0110										
Pool Length (ft)	6	22										
Pool Max Depth (ft)	2.0											
Pool Spacing (ft)	22	38										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	16	26										
Radius of Curvature (ft)	9	15										
Rc:Bankfull Width (ft/ft)	1.0	1.6										
Meander Wave Length (ft)	55	73										
Meander Width Ratio	1.7	2.8										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	256											
Sinuosity (ft)	1.11											
Water Surface Slope (ft/ft)	0.0053											
Bankfull Slope (ft/ft)	0.0078	0.0080										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	24/17/58/1/0/0		15/10/67/8/0/0		27/10/47/16/0/0		29/13/55/3/0/0		13/22/61/4/0/0			
d16/d35/d50/d84/d95/d100	SC/0.21/3.3/22.6/35 /128		0.15/5.1/12.9/41/79 /180		SC/0.63/8.9/64/107 /180		SC/0.19/5.3/35.4/ 56.9/128		0.2/2.0/4.8/27.8/60.4 /180			
% of Reach with Eroding Banks	0%		0%		0%		0%		0%			

(---): Data was not provided

Table 12d. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT2B

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	5.5		6.5		6.8		6.7		5.5			
Floodprone Width (ft)	60		60		60		60		60			
Bankfull Mean Depth	0.4		0.4		0.4		0.3		0.2			
Bankfull Max Depth	0.7		0.7		0.7		0.6		0.6			
Bankfull Cross-Sectional Area (ft^2)	2.3		2.7		2.8		2.3		1.4			
Width/Depth Ratio	13.2		15.7		16.5		19.3		22.6			
Entrenchment Ratio	10.8		9.3		8.8		9.0		10.8			
Bank Height Ratio	1.0		1.0		1.0		1.1		<1.0			
D50 (mm)	0.1		0.2		0.2		SC		1.3			
Profile												
Riffle Length (ft)	11	19										
Riffle Slope (ft/ft)	0.0073	0.0106										
Pool Length (ft)	13	19										
Pool Max Depth (ft)	1.5											
Pool Spacing (ft)	22											
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	---											
Radius of Curvature (ft)	13	25										
Rc:Bankfull Width (ft/ft)	1.8	3.3										
Meander Wave Length (ft)	---											
Meander Width Ratio	---											
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	70											
Sinuosity (ft)	1.04											
Water Surface Slope (ft/ft)	0.0101											
Bankfull Slope (ft/ft)	0.0070	0.0084										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	47/13/37/3/0/0		39/23/31/8/0/0		44/26/21/9/0/0		61/32/4/3/0/0		44/8/47/1/0/0			
d16/d35/d50/d84/d95/d100	SC/SC/0.1/22.6/50.6/128		SC/SC/0.2/33.9/81.9/180		SC/SC/0.2/36.3/95/128		SC/SC/SC/0.6/32/180		SC/SC/1.3/8.4/16.0/90.0			
% of Reach with Eroding Banks	0%		0%		0%		0%		0%			

(---): Data was not provided

Table 12e. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT3B

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	4.2		3.9		3.4		6.6		5.9			
Floodprone Width (ft)	60		60		60		60		60			
Bankfull Mean Depth	0.4		0.3		0.3		0.4		0.4			
Bankfull Max Depth	0.6		0.6		0.4		0.8		0.9			
Bankfull Cross-Sectional Area (ft^2)	1.6		1.1		1.0		2.7		2.3			
Width/Depth Ratio	11.6		13.0		11.8		16.5		15.3			
Entrenchment Ratio	14.1		15.5		17.5		9.1		10.2			
Bank Height Ratio	1.0		1.2		1.3		<1.0		<1.0			
D50 (mm)	5.6		2.8		0.2		0.2		6.7			
Profile												
Riffle Length (ft)	12	23										
Riffle Slope (ft/ft)	0.0112	0.0419										
Pool Length (ft)	10	22										
Pool Max Depth (ft)	1.3											
Pool Spacing (ft)	30	36										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	12	23										
Radius of Curvature (ft)	11	47										
Rc:Bankfull Width (ft/ft)	1.7	7.6										
Meander Wave Length (ft)	55	68										
Meander Width Ratio	1.9	3.7										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	155											
Sinuosity (ft)	1.05											
Water Surface Slope (ft/ft)	0.0164											
Bankfull Slope (ft/ft)	0.0127	0.0161										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	32/14/51/3/0/0		33/14/43/10/0/0		29/39/20/12/0/0		45/17/26/12/0/0		33/13/41/13/0/0			
d16/d35/d50/d84/d95/d100	SC/0.08/5.6/33.4/57/90		SC/0.2/2.8/41.3/85/180		SC/0.1/0.2/53.7/83/128		SC/SC/0.2/48.3/ 104.7/180		SC/0.1/6.7/49.1/107.3 /256			
% of Reach with Eroding Banks	0%		0%		0%		0%		0%			

(---): Data was not provided

Table 12f. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT4B

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	5.7		6.4		6.7		9.9		5.3			
Floodprone Width (ft)	25		25		25		25		25			
Bankfull Mean Depth	0.6		0.4		0.4		0.4		0.4			
Bankfull Max Depth	0.9		0.6		0.6		0.8		0.8			
Bankfull Cross-Sectional Area (ft^2)	3.6		2.4		2.4		3.6		2.2			
Width/Depth Ratio	9.1		17.3		19.2		27.4		12.3			
Entrenchment Ratio	4.3		3.9		3.7		2.5		4.8			
Bank Height Ratio	1.0		1.0		1.0		1.0		<1.0			
D50 (mm)	4.0		6.9		0.4		0.5		3.2			
Profile												
Riffle Length (ft)	8	19										
Riffle Slope (ft/ft)	0.0035	0.0113										
Pool Length (ft)	10	21										
Pool Max Depth (ft)	1.4											
Pool Spacing (ft)	31											
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	19	23										
Radius of Curvature (ft)	10	20										
Rc:Bankfull Width (ft/ft)	1.8	3.6										
Meander Wave Length (ft)	59	69										
Meander Width Ratio	3.3	4.1										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	212											
Sinuosity (ft)	1.71											
Water Surface Slope (ft/ft)	0.0043											
Bankfull Slope (ft/ft)	0.0059	0.0067										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	22/20/57/1/0/0		31/12/43/14/0/0		18/43/34/5/0/0		38/16/29/17/0/0		19/21/60/0/0/0			
d16/d35/d50/d84/d95/d100	SC/0.25/4.0/20.1/45/90		SC/0.19/6.9/59.2/90/180		SC/0.2/0.4/34.8/64/128		SC/SC/0.5/66/98.3/180		SC/1.2/3.2/17.1/26.2/45			
% of Reach with Eroding Banks	0%		0%		0%		0%		0%			

(---): Data was not provided

Table 12g. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT5

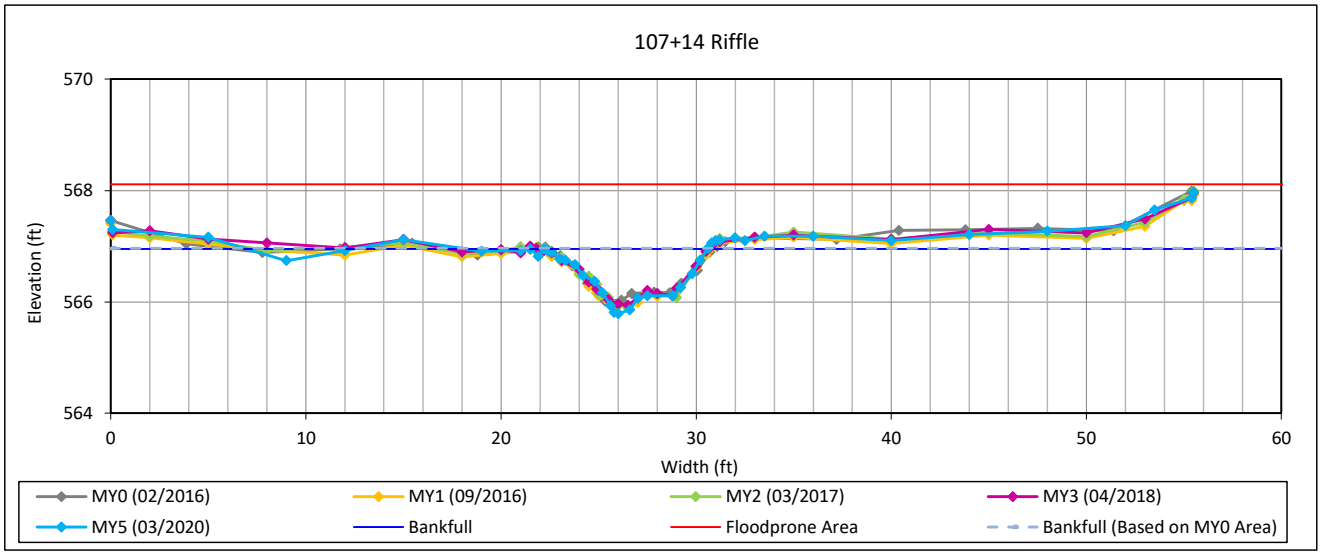
Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	8.1		8.1		8.1		8.4		9.9			
Floodprone Width (ft)	100		100		100		100		100			
Bankfull Mean Depth	0.5		0.4		0.5		0.5		0.5			
Bankfull Max Depth	0.9		0.8		0.8		0.9		1.2			
Bankfull Cross-Sectional Area (ft^2)	4.0		3.5		3.7		4.0		4.7			
Width/Depth Ratio	16.6		18.7		17.5		17.7		21.0			
Entrenchment Ratio	12.3		12.4		12.4		11.9		10.1			
Bank Height Ratio	1.0		1.0		1.0		<1.0		1.2			
D50 (mm)	5.9		19.0		4.7		0.7		3.2			
Profile												
Riffle Length (ft)	5	21										
Riffle Slope (ft/ft)	0.0081	0.0374										
Pool Length (ft)	18	42										
Pool Max Depth (ft)	1.7											
Pool Spacing (ft)	31	51										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	22	40										
Radius of Curvature (ft)	10	37										
Rc:Bankfull Width (ft/ft)	1.0	3.7										
Meander Wave Length (ft)	63	97										
Meander Width Ratio	2.3	4.0										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	680											
Sinuosity (ft)	1.32											
Water Surface Slope (ft/ft)	0.0114											
Bankfull Slope (ft/ft)	0.0110	0.0114										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	34/11/54/1/0/0		30/10/46/14/0/0		31/16/40/13/0/0		34/22/25/8/0/0		27/19/48/6/0/0			
d16/d35/d50/d84/d95/d100	SC/0.08/5.9/29.8/54/90		SC/0.18/19/61/101/180		SC/0.17/4.7/57.8/87/180		SC/0.14/0.7/45/75.9/180		SC/0.2/3.2/33.9/71.7/128			
% of Reach with Eroding Banks	0%		0%		0%		0%		0%			

(---): Data was not provided

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 1, UTSF Reach 1



Bankfull Dimensions	
5.2	x-section area (ft.sq.)
8.4	width (ft)
0.6	mean depth (ft)
1.2	max depth (ft)
8.9	wetted perimeter (ft)
0.6	hydraulic radius (ft)
13.5	width-depth ratio
85.0	W flood prone area (ft)
10.1	entrenchment ratio
< 1.0	low bank height ratio

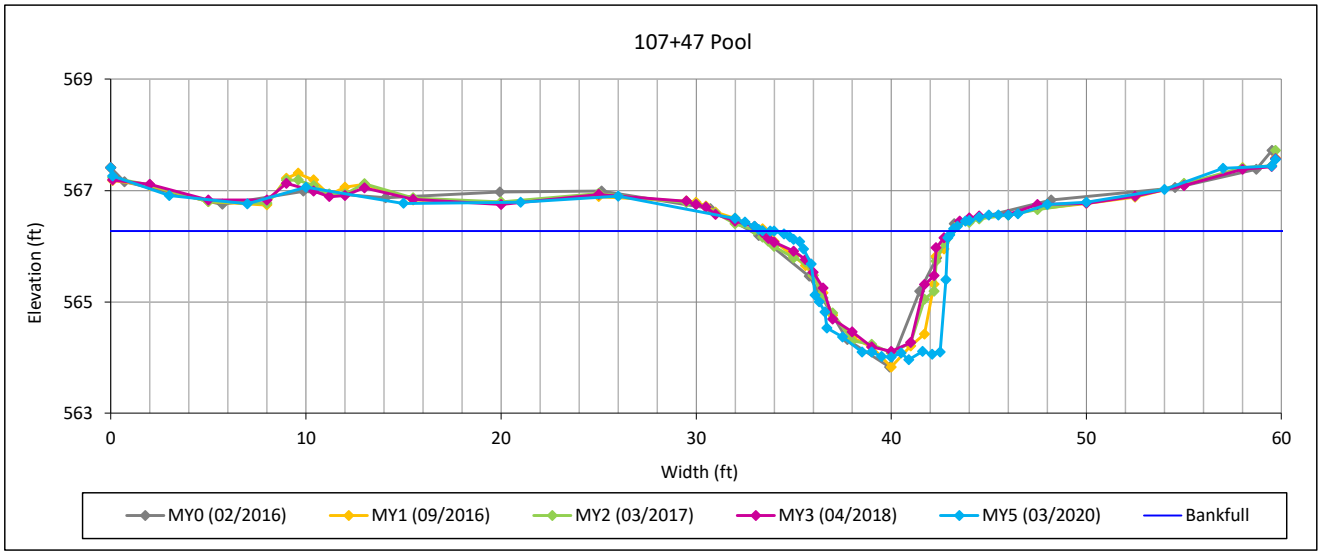
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 2, UTSF Reach 1



Bankfull Dimensions	
14.2	x-section area (ft.sq.)
9.1	width (ft)
1.6	mean depth (ft)
2.3	max depth (ft)
11.8	wetted perimeter (ft)
1.2	hydraulic radius (ft)
5.9	width-depth ratio

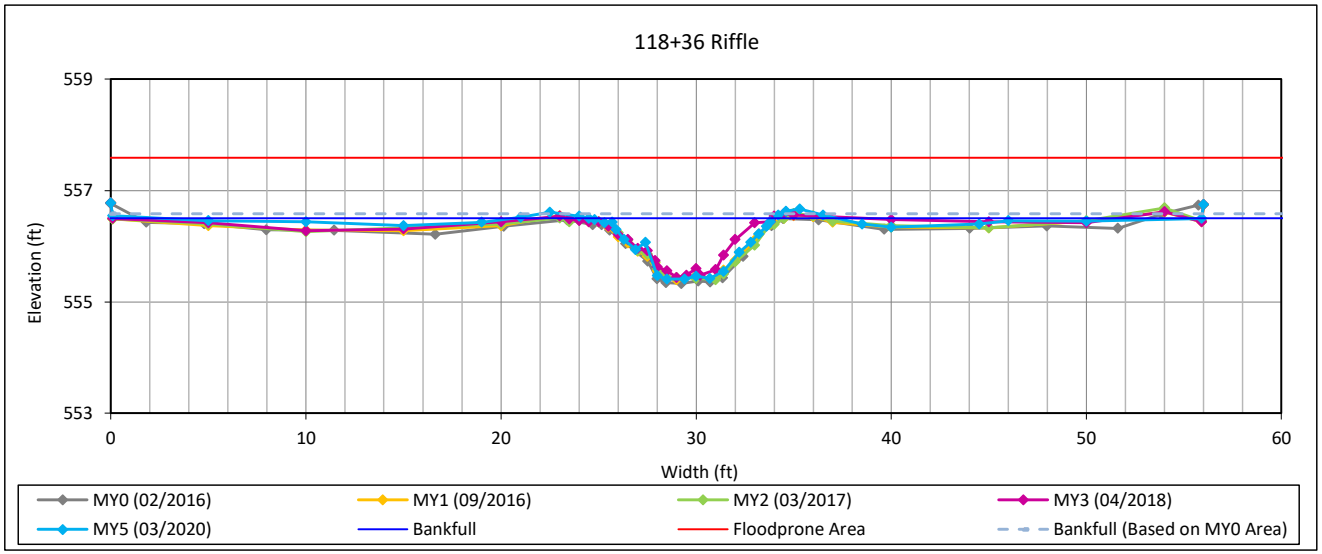
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 3, UTSF Reach 1



Bankfull Dimensions	
6.0	x-section area (ft.sq.)
9.5	width (ft)
0.6	mean depth (ft)
1.1	max depth (ft)
10.1	wetted perimeter (ft)
0.6	hydraulic radius (ft)
15.1	width-depth ratio
85.0	W flood prone area (ft)
8.9	entrenchment ratio
< 1.0	low bank height ratio

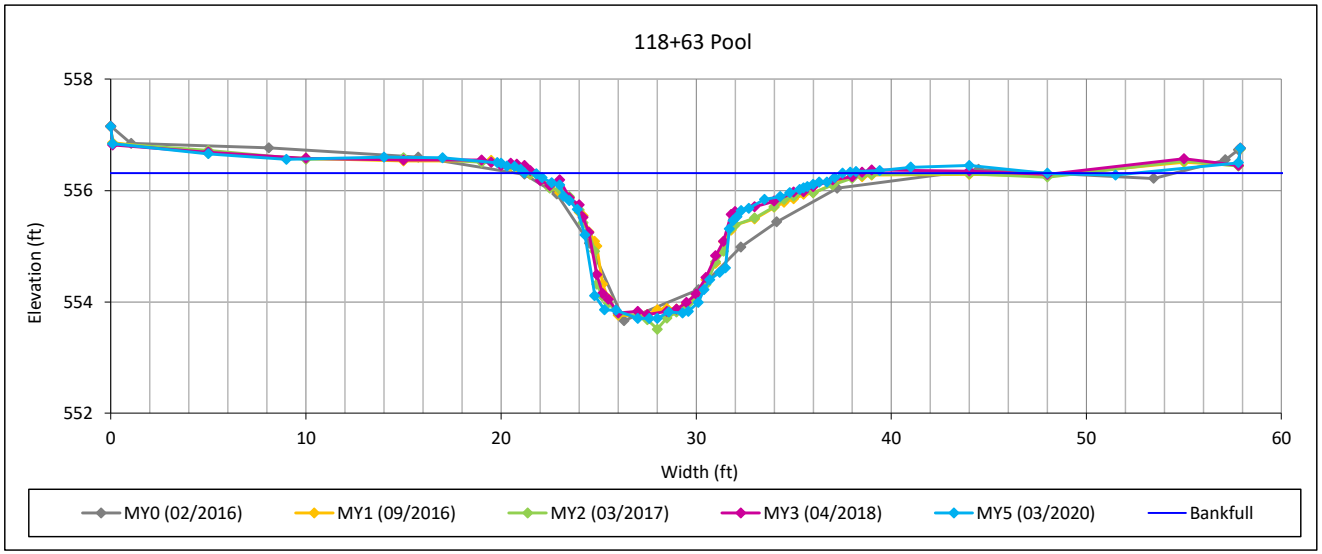
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 4, UTSF Reach 1



Bankfull Dimensions	
20.3	x-section area (ft.sq.)
16.0	width (ft)
1.3	mean depth (ft)
2.6	max depth (ft)
18.0	wetted perimeter (ft)
1.1	hydraulic radius (ft)
12.6	width-depth ratio

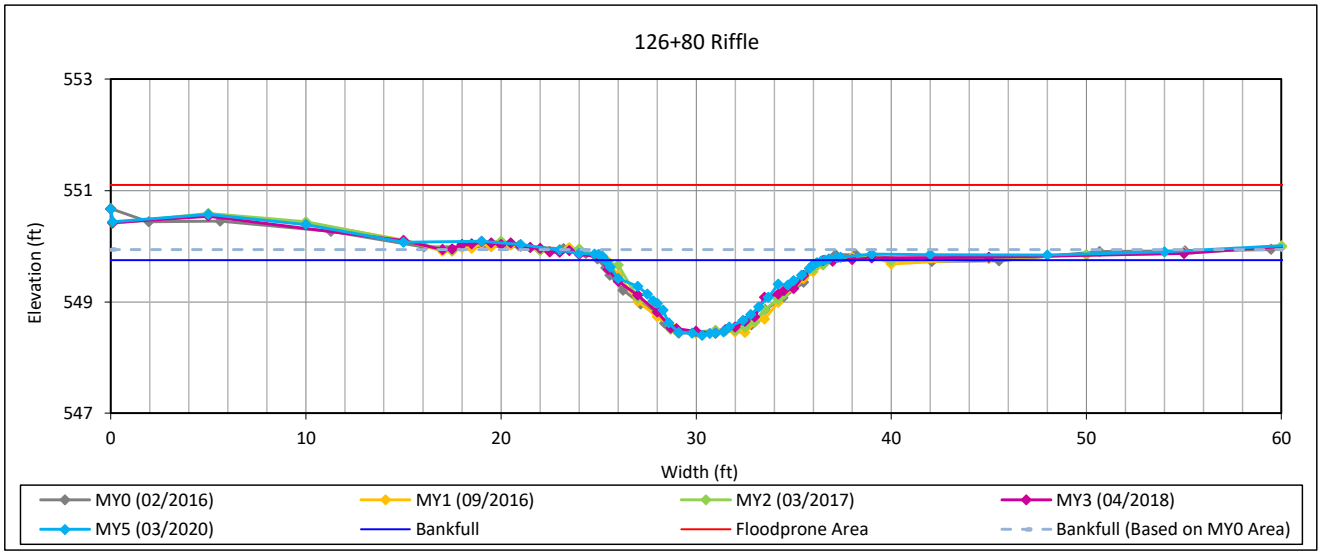
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 5, UTSF Reach 2



Bankfull Dimensions	
8.5	x-section area (ft.sq.)
11.3	width (ft)
0.8	mean depth (ft)
1.4	max depth (ft)
11.7	wetted perimeter (ft)
0.7	hydraulic radius (ft)
14.9	width-depth ratio
150.0	W flood prone area (ft)
13.3	entrenchment ratio
< 1.0	low bank height ratio

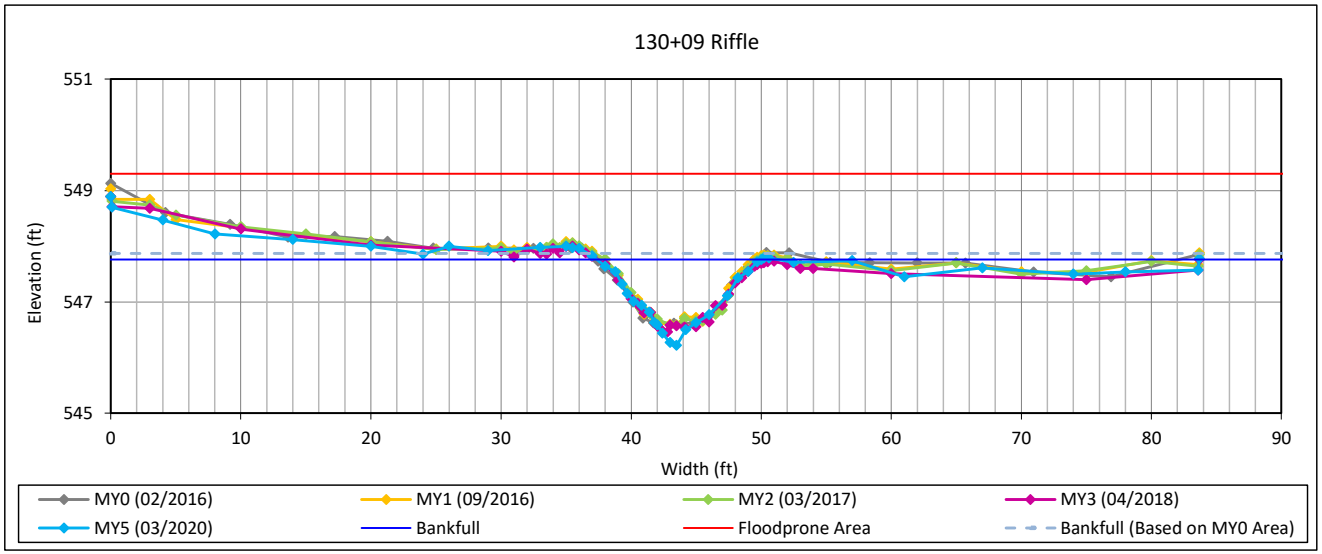
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 6, UTSF Reach 2



Bankfull Dimensions	
9.5	x-section area (ft.sq.)
12.6	width (ft)
0.8	mean depth (ft)
1.5	max depth (ft)
13.1	wetted perimeter (ft)
0.7	hydraulic radius (ft)
16.8	width-depth ratio
150.0	W flood prone area (ft)
11.9	entrenchment ratio
< 1.0	low bank height ratio

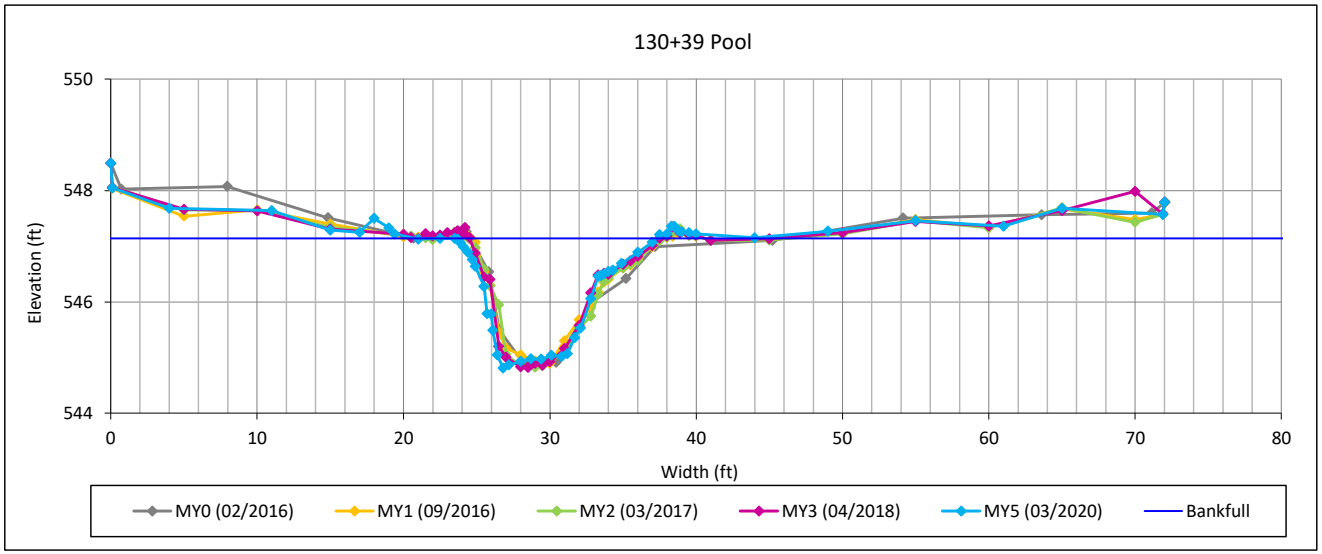
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 7, UTSF Reach 2



Bankfull Dimensions	
17.0	x-section area (ft.sq.)
13.7	width (ft)
1.2	mean depth (ft)
2.3	max depth (ft)
15.3	wetted perimeter (ft)
1.1	hydraulic radius (ft)
11.1	width-depth ratio

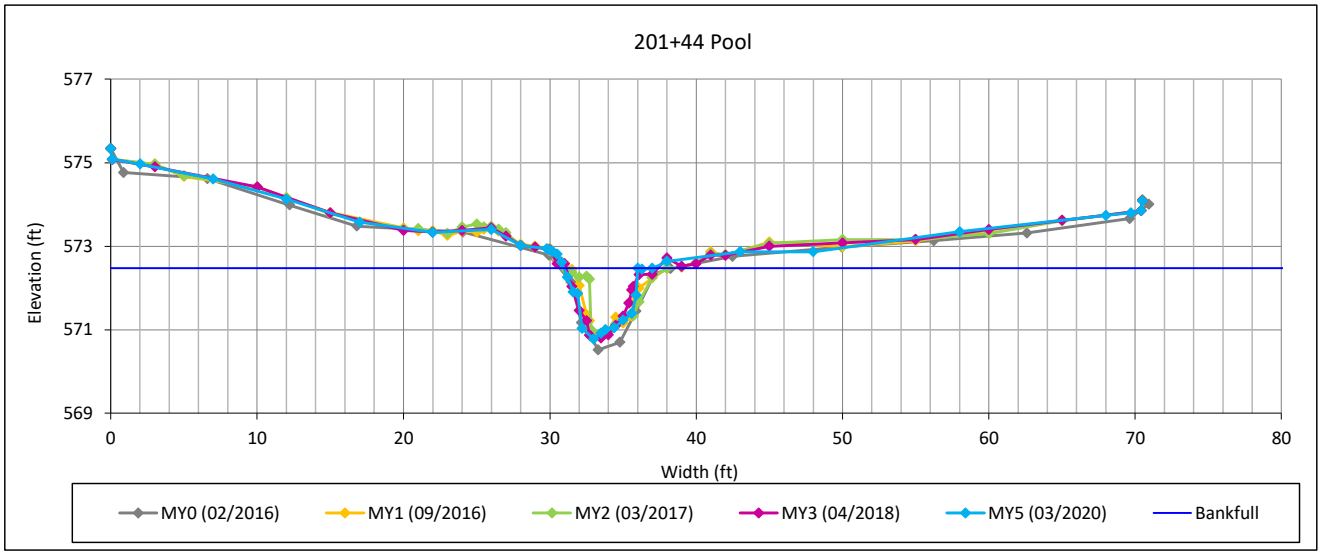
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 8, UT1C



Bankfull Dimensions	
5.8	x-section area (ft.sq.)
5.0	width (ft)
1.2	mean depth (ft)
1.7	max depth (ft)
6.7	wetted perimeter (ft)
0.9	hydraulic radius (ft)
4.3	width-depth ratio

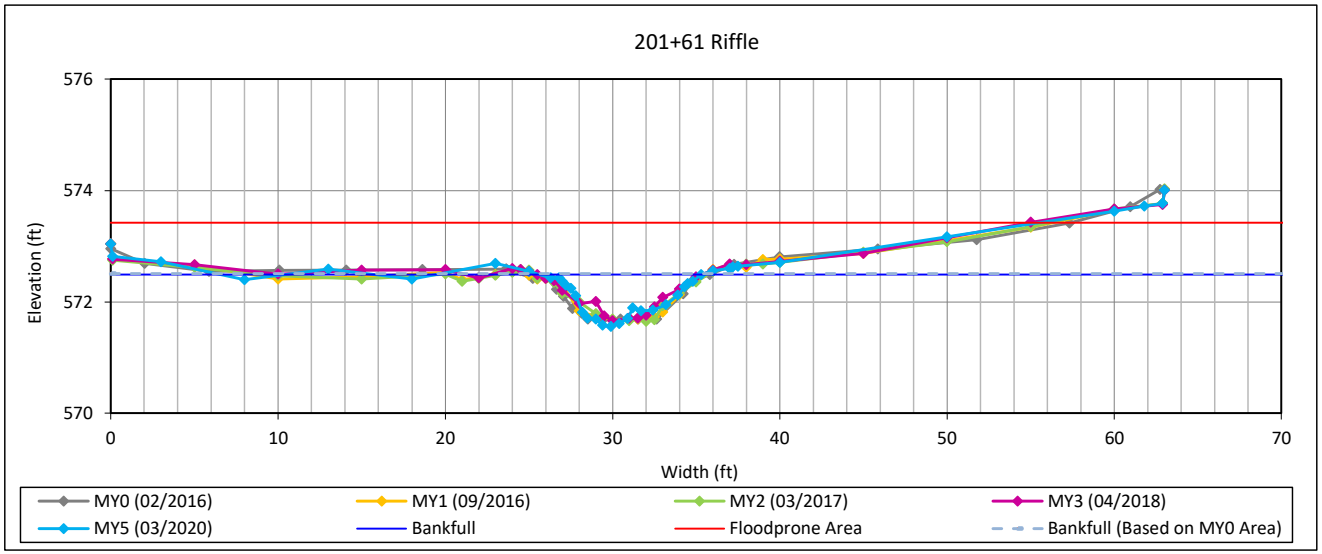
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 9, UT1C



Bankfull Dimensions	
4.7	x-section area (ft.sq.)
9.7	width (ft)
0.5	mean depth (ft)
0.9	max depth (ft)
10.0	wetted perimeter (ft)
0.5	hydraulic radius (ft)
19.6	width-depth ratio
60.0	W flood prone area (ft)
6.2	entrenchment ratio
< 1.0	low bank height ratio

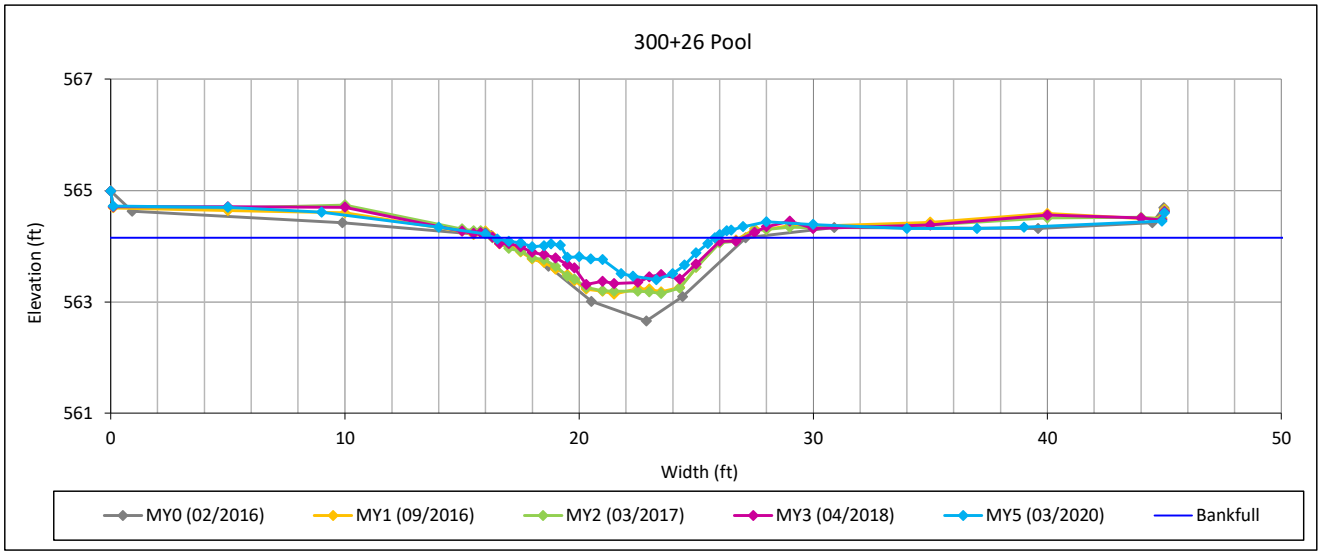
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 10, UT2B



Bankfull Dimensions	
3.4	x-section area (ft.sq.)
9.4	width (ft)
0.4	mean depth (ft)
0.8	max depth (ft)
9.7	wetted perimeter (ft)
0.4	hydraulic radius (ft)
25.8	width-depth ratio

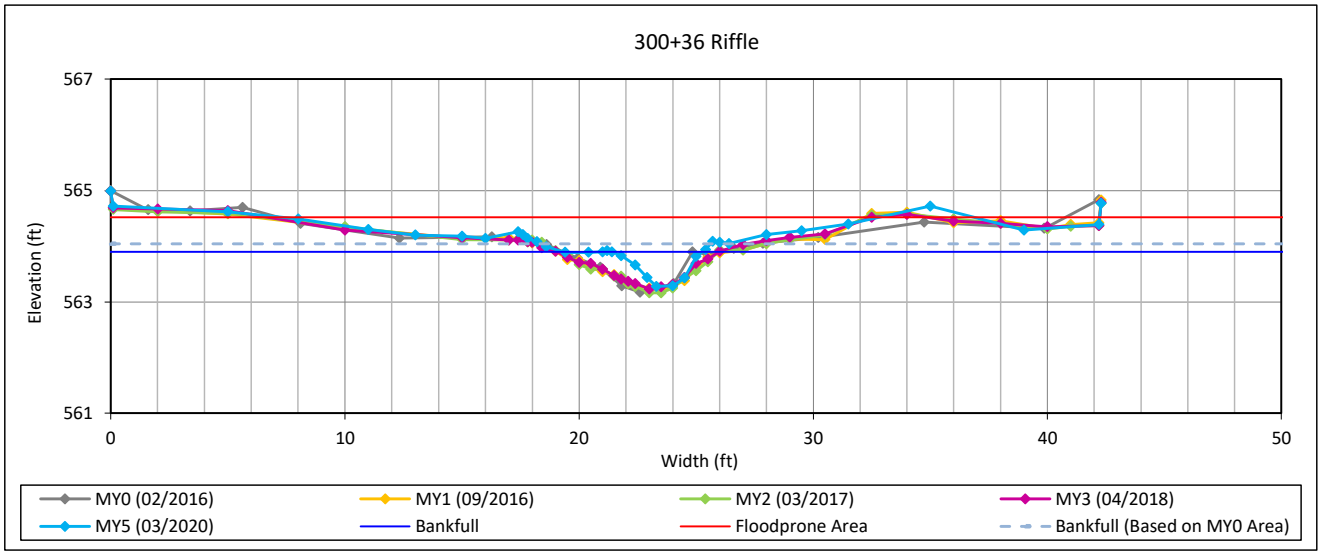
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 11, UT2B



Bankfull Dimensions	
1.4	x-section area (ft.sq.)
5.5	width (ft)
0.2	mean depth (ft)
0.6	max depth (ft)
5.8	wetted perimeter (ft)
0.2	hydraulic radius (ft)
22.6	width-depth ratio
60.0	W flood prone area (ft)
10.8	entrenchment ratio
< 1.0	low bank height ratio

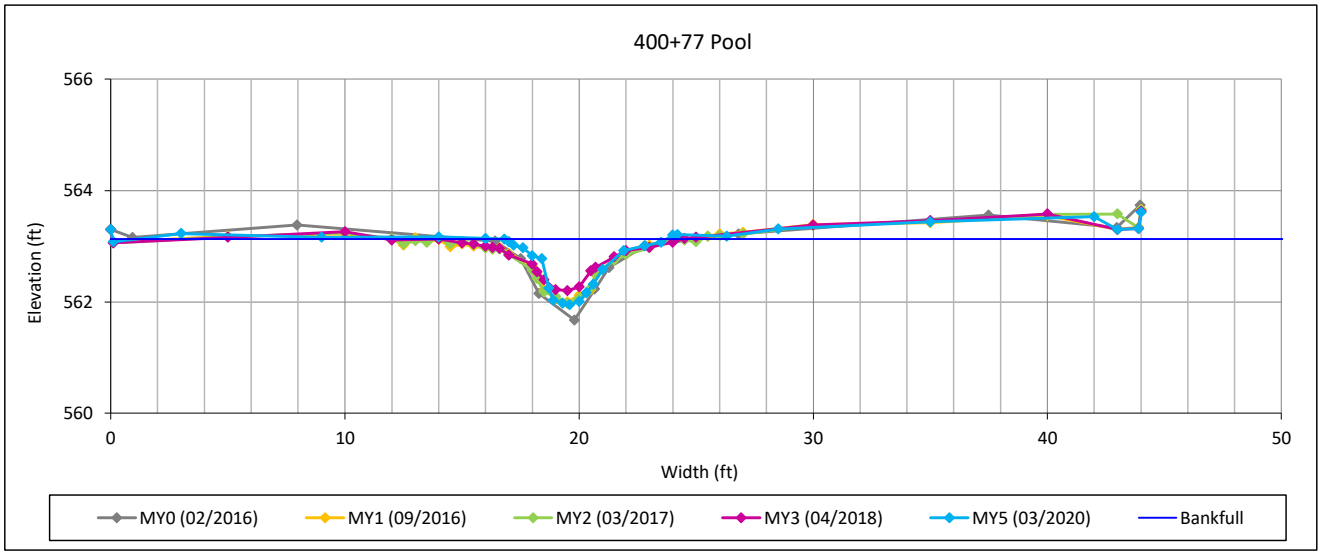
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 12, UT3B



Bankfull Dimensions	
3.4	x-section area (ft.sq.)
6.9	width (ft)
0.5	mean depth (ft)
1.2	max depth (ft)
7.6	wetted perimeter (ft)
0.4	hydraulic radius (ft)
14.3	width-depth ratio

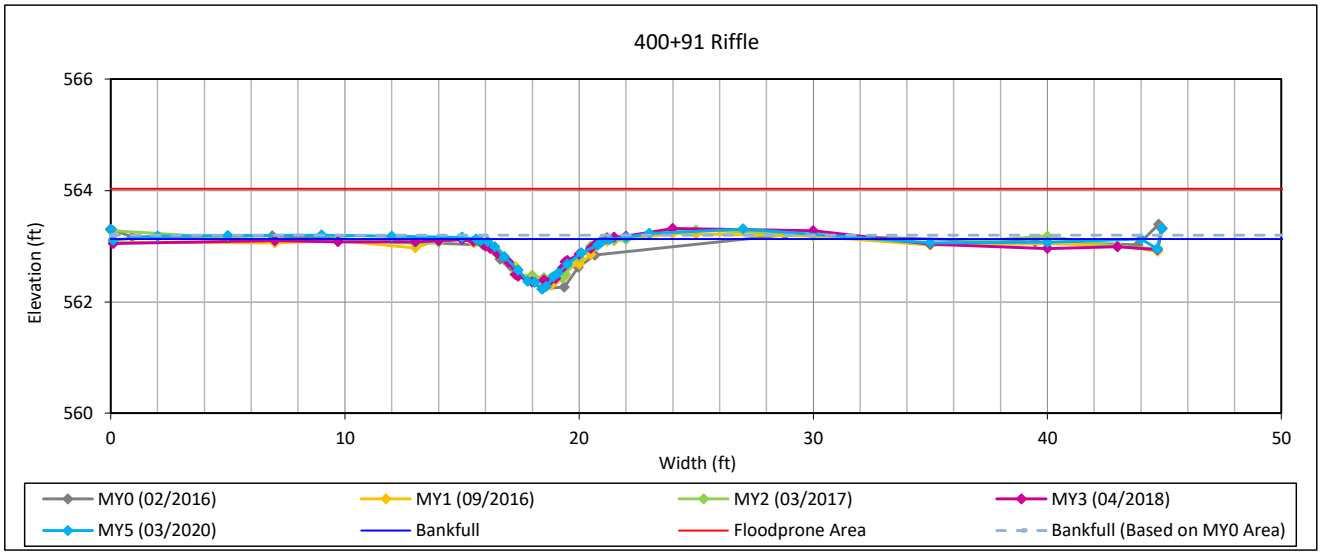
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 13, UT3B



Bankfull Dimensions	
2.3	x-section area (ft.sq.)
5.9	width (ft)
0.4	mean depth (ft)
0.9	max depth (ft)
6.2	wetted perimeter (ft)
0.4	hydraulic radius (ft)
15.3	width-depth ratio
60.0	W flood prone area (ft)
10.2	entrenchment ratio
< 1.0	low bank height ratio

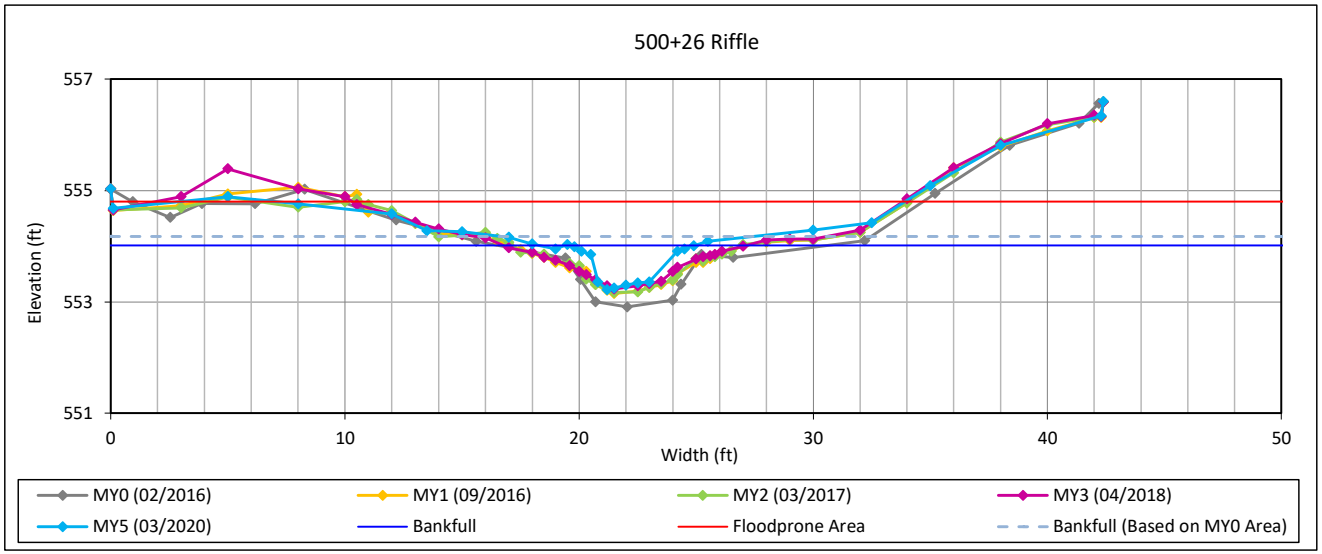
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 14, UT4B



Bankfull Dimensions	
2.2	x-section area (ft.sq.)
5.3	width (ft)
0.4	mean depth (ft)
0.8	max depth (ft)
5.7	wetted perimeter (ft)
0.4	hydraulic radius (ft)
12.3	width-depth ratio
25.0	W flood prone area (ft)
4.8	entrenchment ratio
< 1.0	low bank height ratio

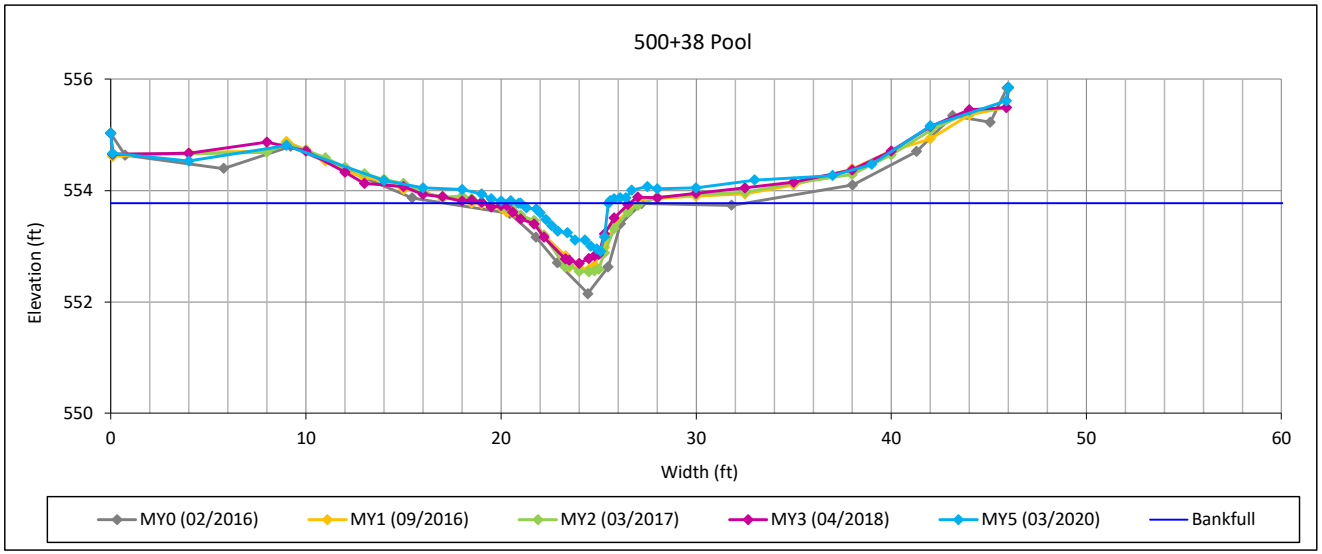
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 15, UT4B



Bankfull Dimensions	
2.0	x-section area (ft.sq.)
4.5	width (ft)
0.5	mean depth (ft)
0.9	max depth (ft)
5.2	wetted perimeter (ft)
0.4	hydraulic radius (ft)
9.9	width-depth ratio

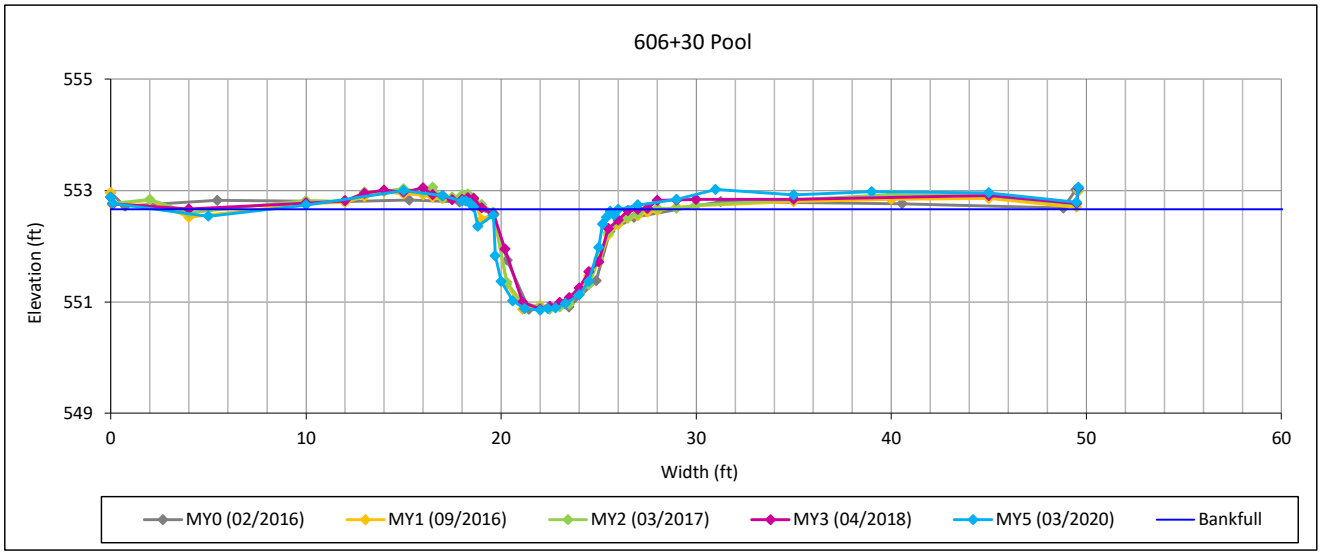
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 16, UT5



Bankfull Dimensions	
8.5	x-section area (ft.sq.)
6.4	width (ft)
1.3	mean depth (ft)
1.8	max depth (ft)
8.1	wetted perimeter (ft)
1.0	hydraulic radius (ft)
4.8	width-depth ratio

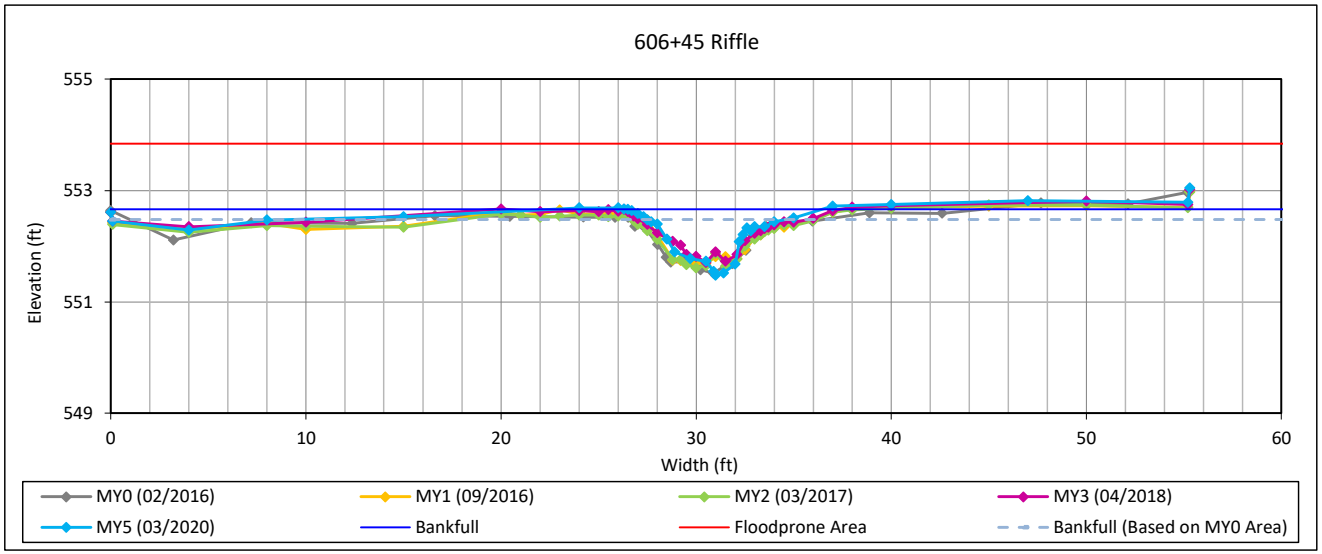
Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Cross-Section 17, UT5



Bankfull Dimensions	
4.7	x-section area (ft.sq.)
9.9	width (ft)
0.5	mean depth (ft)
1.2	max depth (ft)
10.5	wetted perimeter (ft)
0.4	hydraulic radius (ft)
21.0	width-depth ratio
100.0	W flood prone area (ft)
10.1	entrenchment ratio
1.2	low bank height ratio

Survey Date: 03/2020
Field Crew: Wildlands Engineering

View Downstream

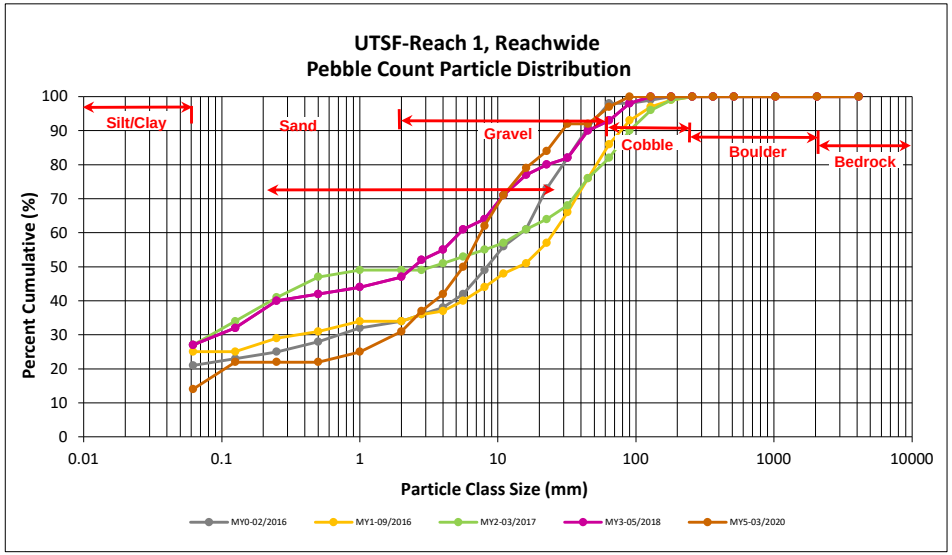
Reachwide and Cross-Section Pebble Count Plots

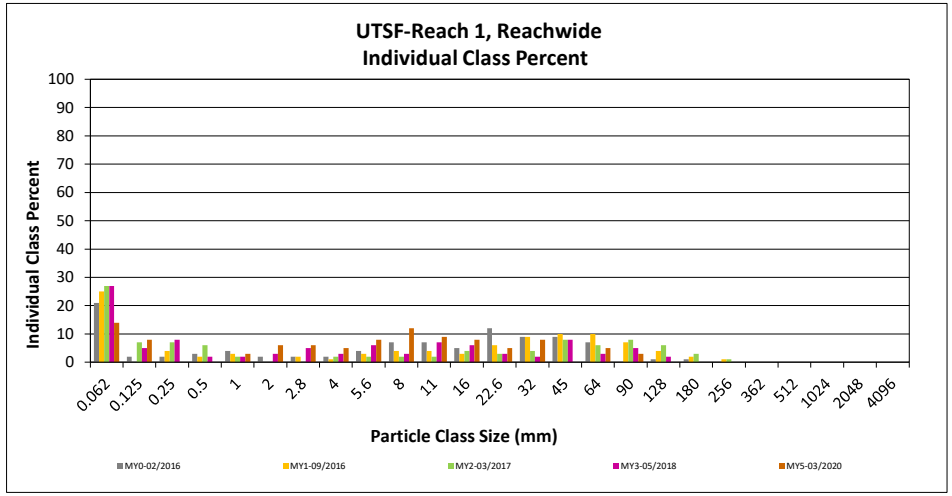
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UTSF-Reach 1, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	12	14	14	14
SAND	Very fine	0.062	0.125	4	4	8	8	22
	Fine	0.125	0.250					22
	Medium	0.25	0.50					22
	Coarse	0.5	1.0	2	1	3	3	25
	Very Coarse	1.0	2.0	3	3	6	6	31
GRAVEL	Very Fine	2.0	2.8	2	4	6	6	37
	Very Fine	2.8	4.0	4	1	5	5	42
	Fine	4.0	5.6	3	5	8	8	50
	Fine	5.6	8.0	6	6	12	12	62
	Medium	8.0	11.0	5	4	9	9	71
	Medium	11.0	16.0	4	4	8	8	79
	Coarse	16.0	22.6	2	3	5	5	84
	Coarse	22.6	32	5	3	8	8	92
	Very Coarse	32	45					92
	Very Coarse	45	64	5		5	5	97
COBBLE	Small	64	90	3		3	3	100
	Small	90	128					100
	Large	128	180					100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.07
D_{35} =	2.50
D_{50} =	5.6
D_{84} =	22.6
D_{95} =	55.6
D_{100} =	90.0





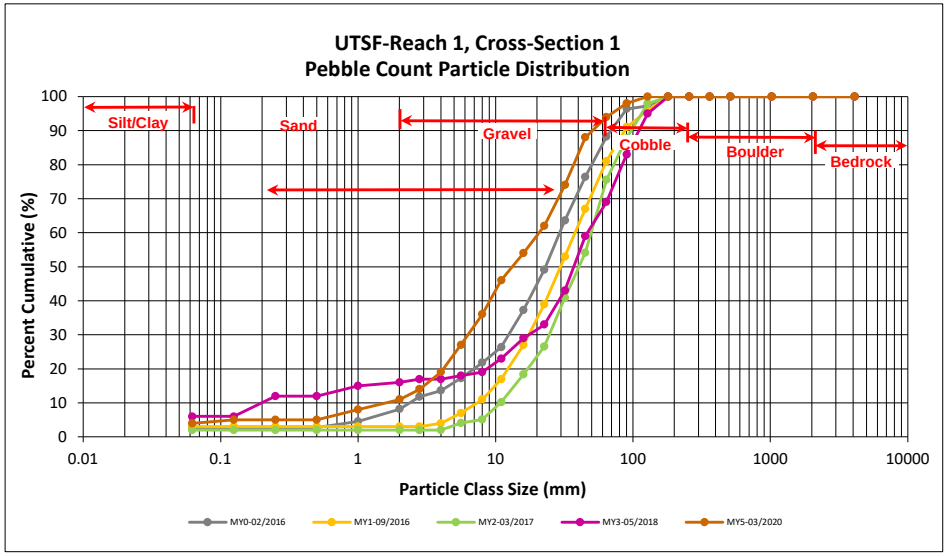
Reachwide and Cross-Section Pebble Count Plots

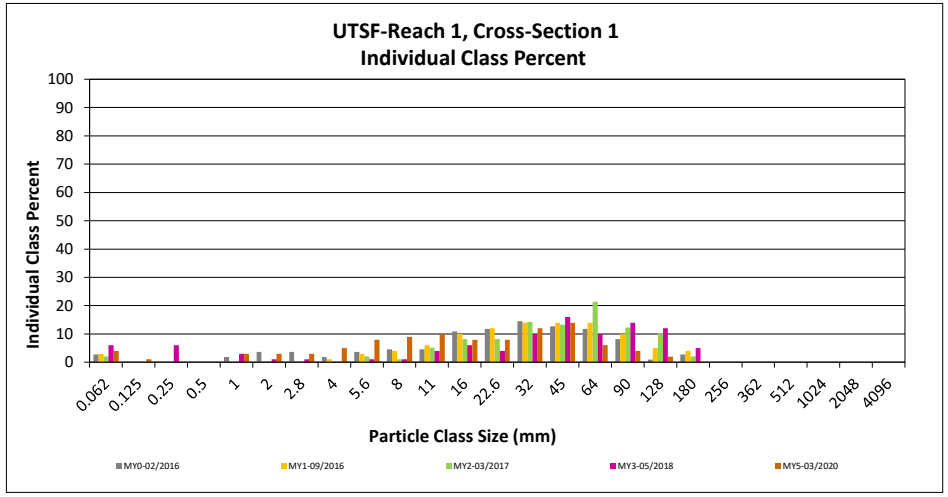
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UTSF-Reach 1, Cross-Section 1

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	4	4	4
SAND	Very fine	0.062	0.125	1	1	5
	Fine	0.125	0.250			5
	Medium	0.25	0.50			5
	Coarse	0.5	1.0	3	3	8
	Very Coarse	1.0	2.0	3	3	11
GRAVEL	Very Fine	2.0	2.8	3	3	14
	Very Fine	2.8	4.0	5	5	19
	Fine	4.0	5.6	8	8	27
	Fine	5.6	8.0	9	9	36
	Medium	8.0	11.0	10	10	46
	Medium	11.0	16.0	8	8	54
	Coarse	16.0	22.6	8	8	62
	Coarse	22.6	32	12	12	74
	Very Coarse	32	45	14	14	88
	Very Coarse	45	64	6	6	94
COBBLE	Small	64	90	4	4	98
	Small	90	128	2	2	100
	Large	128	180			100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 1	
Channel materials (mm)	
D_{16} =	3.23
D_{35} =	7.69
D_{50} =	13.3
D_{84} =	40.8
D_{95} =	69.7
D_{100} =	128.0





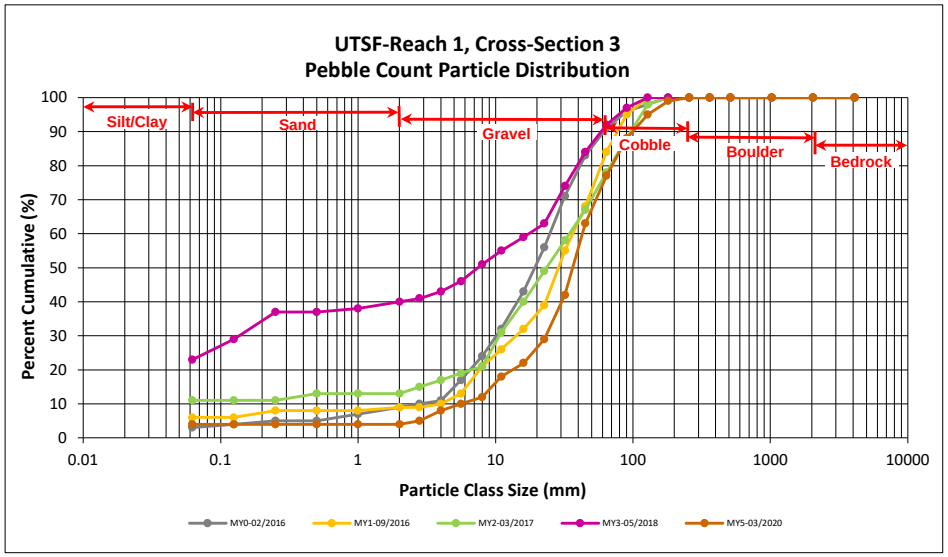
Reachwide and Cross-Section Pebble Count Plots

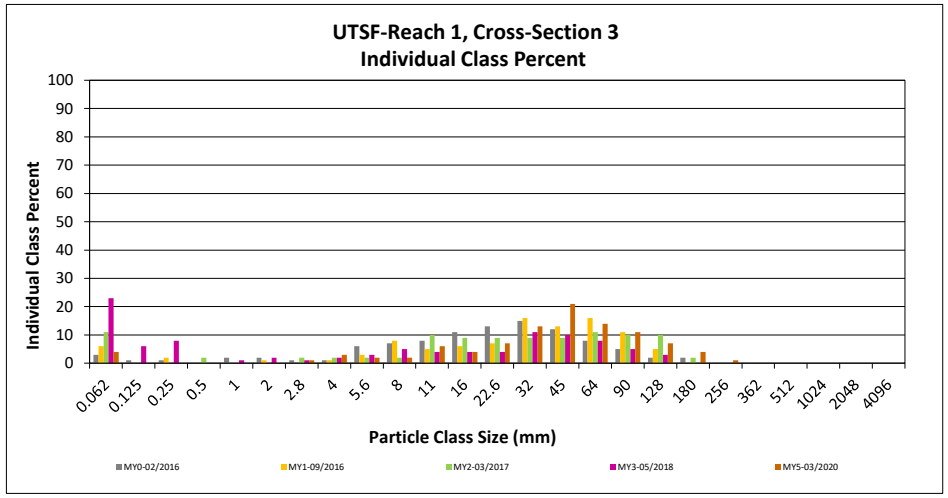
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UTSF-Reach 1, Cross-Section 3

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	4	4	4
SAND	Very fine	0.062	0.125			4
	Fine	0.125	0.250			4
	Medium	0.25	0.50			4
	Coarse	0.5	1.0			4
	Very Coarse	1.0	2.0			4
GRAVEL	Very Fine	2.0	2.8	1	1	5
	Very Fine	2.8	4.0	3	3	8
	Fine	4.0	5.6	2	2	10
	Fine	5.6	8.0	2	2	12
	Medium	8.0	11.0	6	6	18
	Medium	11.0	16.0	4	4	22
	Coarse	16.0	22.6	7	7	29
	Coarse	22.6	32	13	13	42
	Very Coarse	32	45	21	21	63
	Very Coarse	45	64	14	14	77
COBBLE	Small	64	90	11	11	88
	Small	90	128	7	7	95
	Large	128	180	4	4	99
	Large	180	256	1	1	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 3	
Channel materials (mm)	
D_{16} =	9.89
D_{35} =	26.54
D_{50} =	36.4
D_{84} =	79.5
D_{95} =	128.0
D_{100} =	256.0





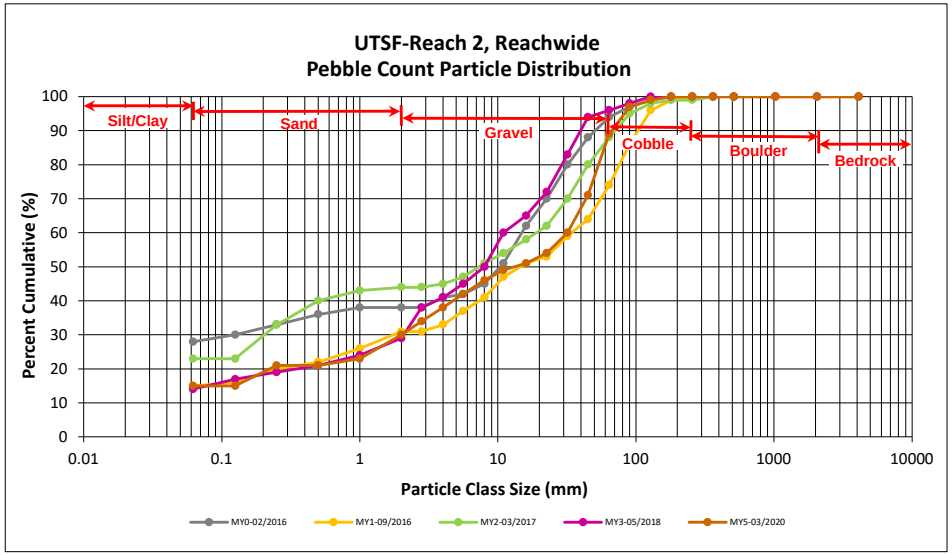
Reachwide and Cross-Section Pebble Count Plots

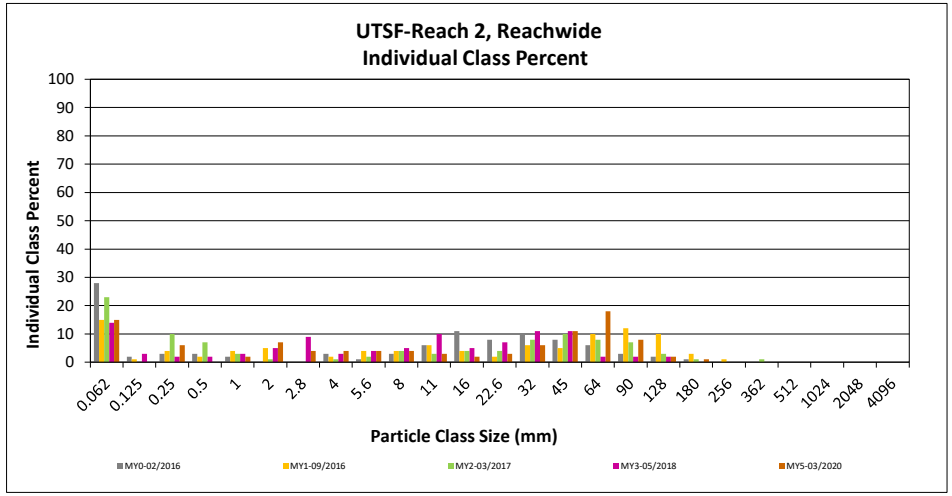
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UTSF-Reach 2, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		15	15	15	15
SAND	Very fine	0.062	0.125					15
	Fine	0.125	0.250		6	6	6	21
	Medium	0.25	0.50					21
	Coarse	0.5	1.0		2	2	2	23
	Very Coarse	1.0	2.0		7	7	7	30
GRAVEL	Very Fine	2.0	2.8	1	3	4	4	34
	Very Fine	2.8	4.0	2	2	4	4	38
	Fine	4.0	5.6	2	2	4	4	42
	Fine	5.6	8.0	1	3	4	4	46
	Medium	8.0	11.0	2	1	3	3	49
	Medium	11.0	16.0	1	1	2	2	51
	Coarse	16.0	22.6	3		3	3	54
	Coarse	22.6	32	3	3	6	6	60
	Very Coarse	32	45	9	2	11	11	71
	Very Coarse	45	64	15	3	18	18	89
COBBLE	Small	64	90	8		8	8	97
	Small	90	128	2		2	2	99
	Large	128	180	1		1	1	100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.14
D_{35} =	3.06
D_{50} =	13.3
D_{84} =	58.0
D_{95} =	82.6
D_{100} =	180.0





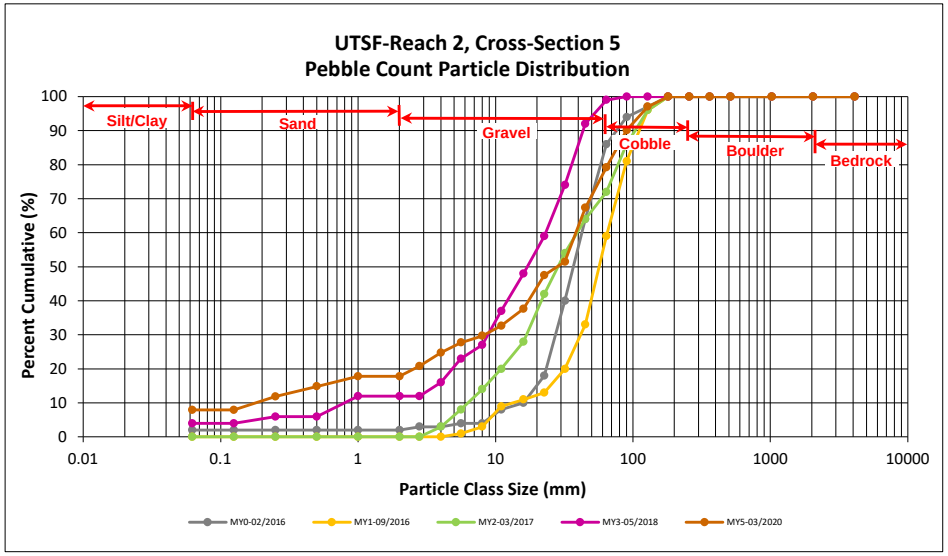
Reachwide and Cross-Section Pebble Count Plots

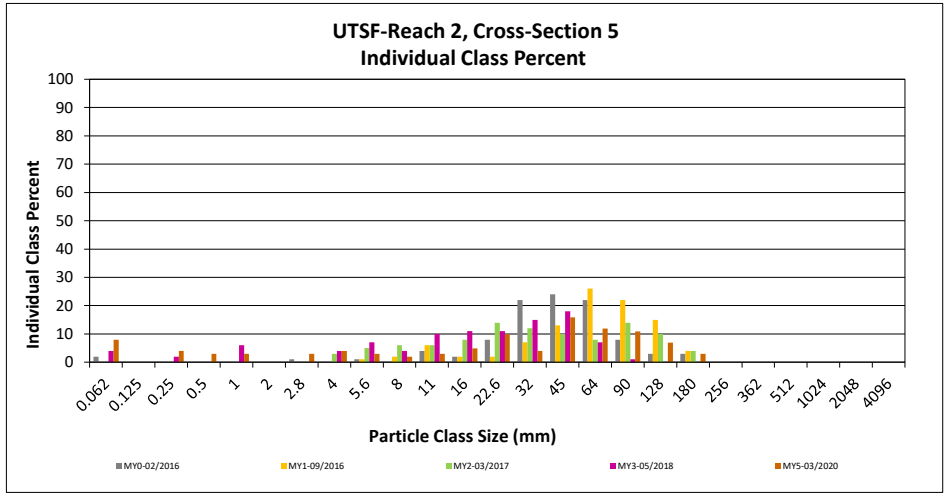
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UTSF-Reach 2, Cross-Section 5

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	8	8	8
SAND	Very fine	0.062	0.125			8
	Fine	0.125	0.250	4	4	12
	Medium	0.25	0.50	3	3	15
	Coarse	0.5	1.0	3	3	18
	Very Coarse	1.0	2.0			18
GRAVEL	Very Fine	2.0	2.8	3	3	21
	Very Fine	2.8	4.0	4	4	25
	Fine	4.0	5.6	3	3	28
	Fine	5.6	8.0	2	2	30
	Medium	8.0	11.0	3	3	33
	Medium	11.0	16.0	5	5	38
	Coarse	16.0	22.6	10	10	48
	Coarse	22.6	32	4	4	51
	Very Coarse	32	45	16	16	67
	Very Coarse	45	64	12	12	79
COBBLE	Small	64	90	11	11	90
	Small	90	128	7	7	97
	Large	128	180	3	3	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**101**	**100**	**100**

Cross-Section 5	
Channel materials (mm)	
D_{16} =	0.65
D_{35} =	13.12
D_{50} =	28.1
D_{84} =	74.4
D_{95} =	115.5
D_{100} =	180.0





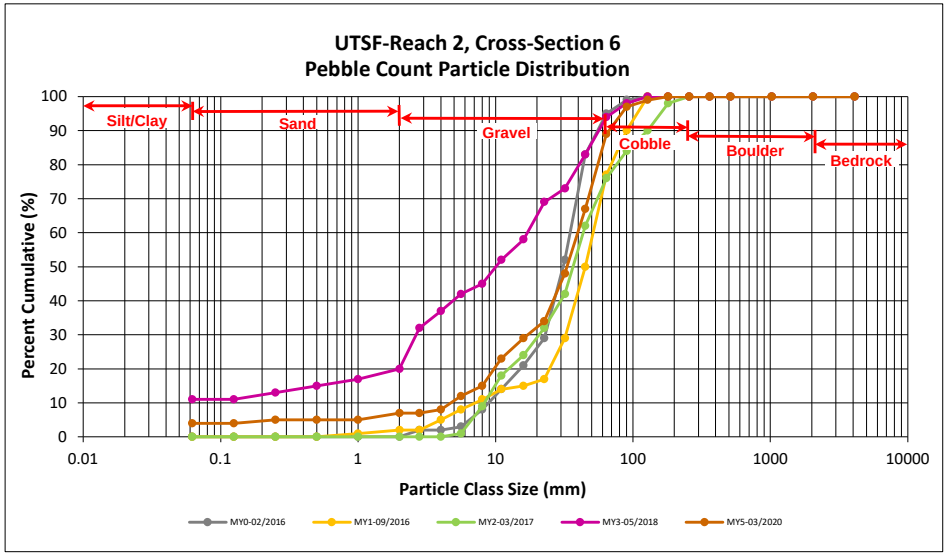
Reachwide and Cross-Section Pebble Count Plots

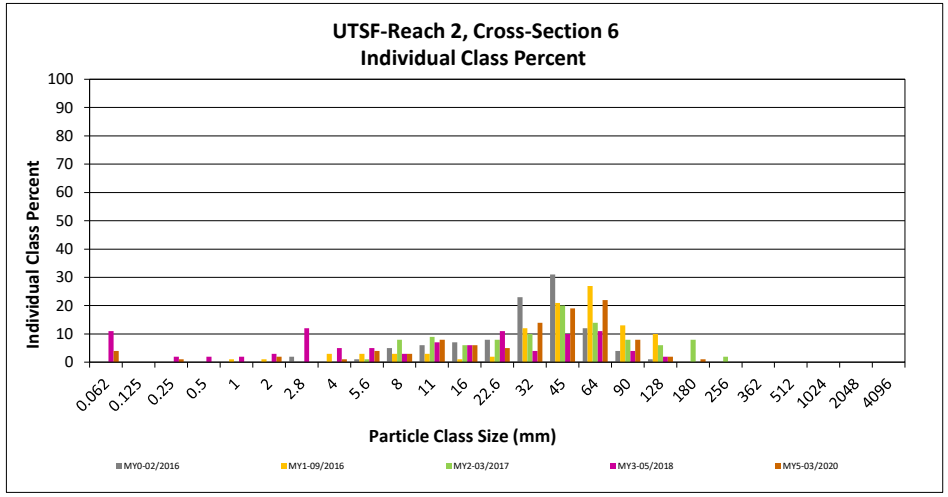
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UTSF-Reach 2, Cross-Section 6

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	4	4	4
SAND	Very fine	0.062	0.125			4
	Fine	0.125	0.250	1	1	5
	Medium	0.25	0.50			5
	Coarse	0.5	1.0			5
	Very Coarse	1.0	2.0	2	2	7
GRAVEL	Very Fine	2.0	2.8			7
	Very Fine	2.8	4.0	1	1	8
	Fine	4.0	5.6	4	4	12
	Fine	5.6	8.0	3	3	15
	Medium	8.0	11.0	8	8	23
	Medium	11.0	16.0	6	6	29
	Coarse	16.0	22.6	5	5	34
	Coarse	22.6	32	14	14	48
	Very Coarse	32	45	19	19	67
	Very Coarse	45	64	22	22	89
COBBLE	Small	64	90	8	8	97
	Small	90	128	2	2	99
	Large	128	180	1	1	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 6	
Channel materials (mm)	
D_{16} =	8.32
D_{35} =	23.17
D_{50} =	33.2
D_{84} =	59.1
D_{95} =	82.6
D_{100} =	180.0





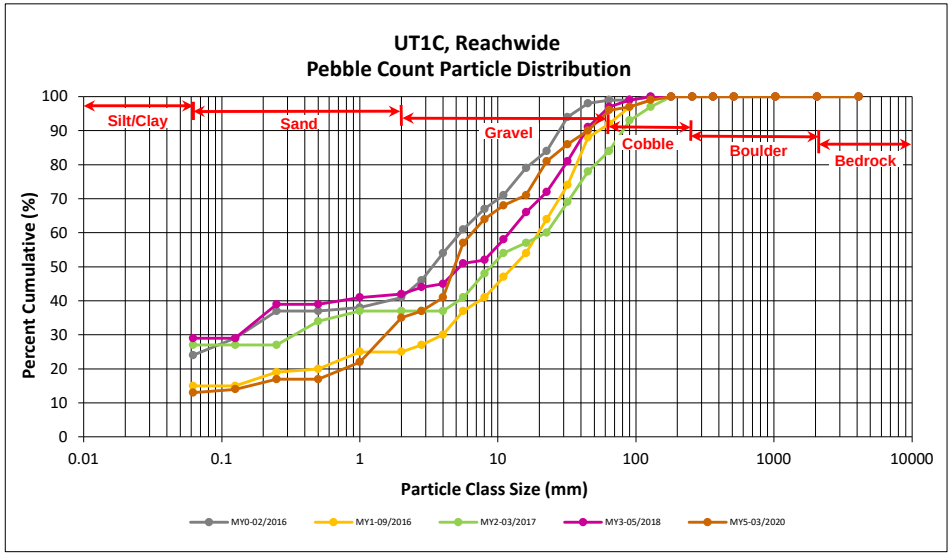
Reachwide and Cross-Section Pebble Count Plots

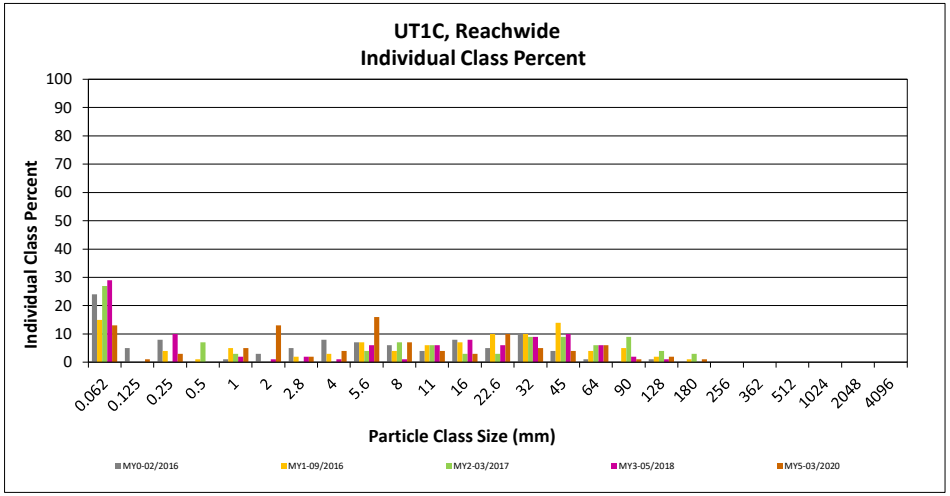
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT1C, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	3	10	13	13	13
SAND	Very fine	0.062	0.125	1		1	1	14
	Fine	0.125	0.250	3		3	3	17
	Medium	0.25	0.50					17
	Coarse	0.5	1.0	2	3	5	5	22
	Very Coarse	1.0	2.0		13	13	13	35
GRAVEL	Very Fine	2.0	2.8	1	1	2	2	37
	Very Fine	2.8	4.0	2	2	4	4	41
	Fine	4.0	5.6	6	10	16	16	57
	Fine	5.6	8.0	2	5	7	7	64
	Medium	8.0	11.0	1	3	4	4	68
	Medium	11.0	16.0	3		3	3	71
	Coarse	16.0	22.6	10		10	10	81
	Coarse	22.6	32	4	1	5	5	86
	Very Coarse	32	45	3	1	4	4	90
	Very Coarse	45	64	6		6	6	96
COBBLE	Small	64	90		1	1	1	97
	Small	90	128	2		2	2	99
	Large	128	180	1		1	1	100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.20
D_{35} =	2.00
D_{50} =	4.8
D_{84} =	27.8
D_{95} =	60.4
D_{100} =	180.0





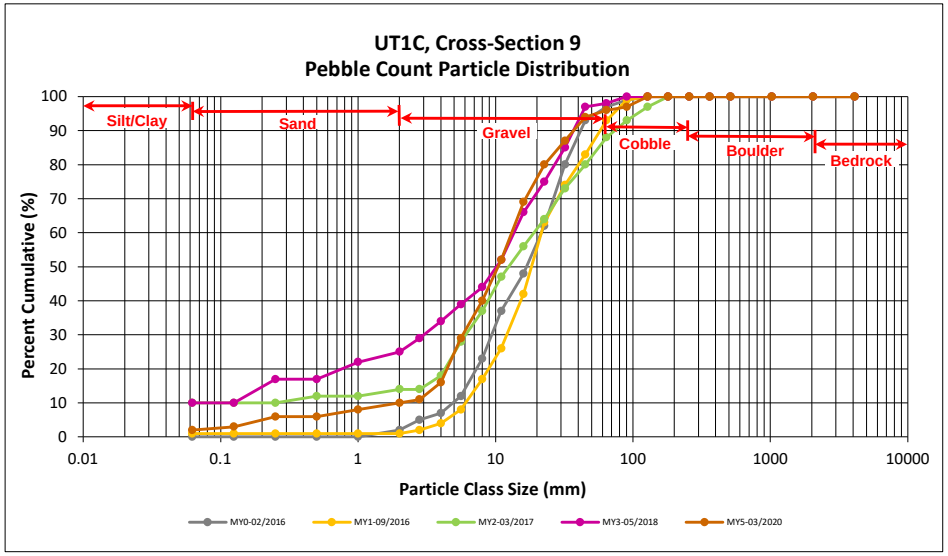
Reachwide and Cross-Section Pebble Count Plots

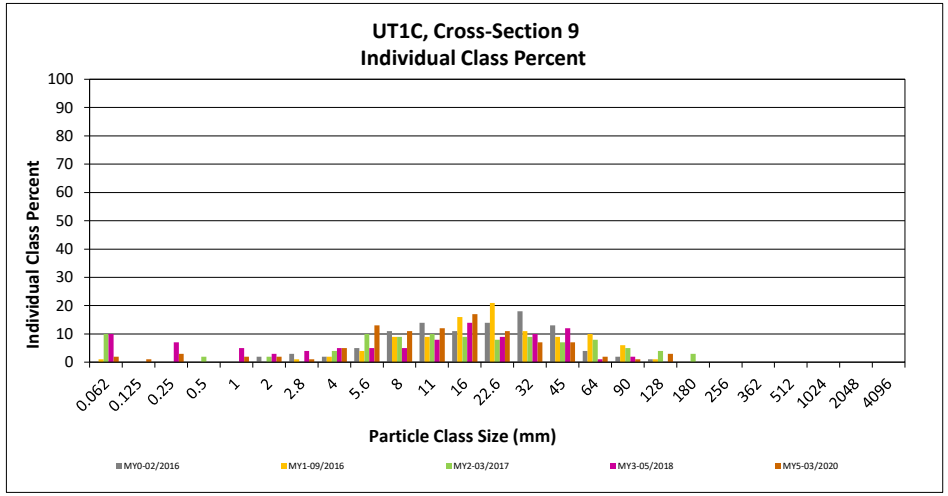
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT1C, Cross-Section 9

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	Very fine	0.062	0.125	1	1	3
	Fine	0.125	0.250	3	3	6
	Medium	0.25	0.50			6
	Coarse	0.5	1.0	2	2	8
	Very Coarse	1.0	2.0	2	2	10
GRAVEL	Very Fine	2.0	2.8	1	1	11
	Very Fine	2.8	4.0	5	5	16
	Fine	4.0	5.6	13	13	29
	Fine	5.6	8.0	11	11	40
	Medium	8.0	11.0	12	12	52
	Medium	11.0	16.0	17	17	69
	Coarse	16.0	22.6	11	11	80
	Coarse	22.6	32	7	7	87
	Very Coarse	32	45	7	7	94
	Very Coarse	45	64	2	2	96
COBBLE	Small	64	90	1	1	97
	Small	90	128	3	3	100
	Large	128	180			100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 9	
Channel materials (mm)	
D_{16} =	4.00
D_{35} =	6.80
D_{50} =	10.4
D_{84} =	27.6
D_{95} =	53.7
D_{100} =	128.0





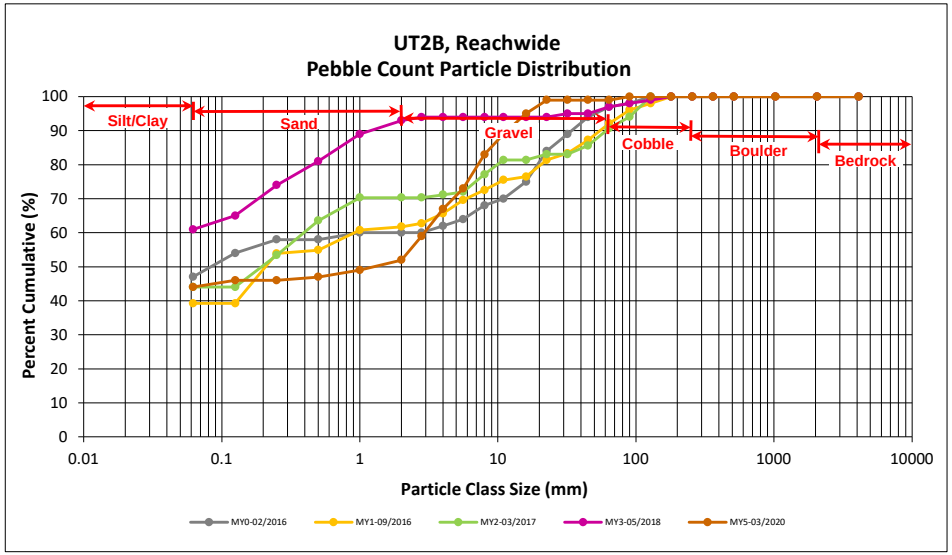
Reachwide and Cross-Section Pebble Count Plots

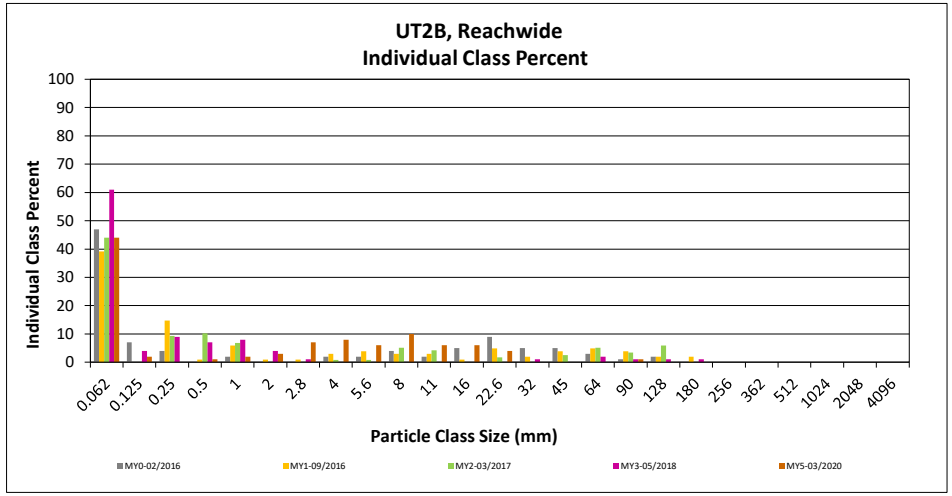
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT2B, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	12	32	44	44	44
SAND	Very fine	0.062	0.125		2	2	2	46
	Fine	0.125	0.250					46
	Medium	0.25	0.50		1	1	1	47
	Coarse	0.5	1.0		2	2	2	49
	Very Coarse	1.0	2.0		3	3	3	52
GRAVEL	Very Fine	2.0	2.8	4	3	7	7	59
	Very Fine	2.8	4.0	5	3	8	8	67
	Fine	4.0	5.6	4	2	6	6	73
	Fine	5.6	8.0	9	1	10	10	83
	Medium	8.0	11.0	5	1	6	6	89
	Medium	11.0	16.0	6		6	6	95
	Coarse	16.0	22.6	4		4	4	99
	Coarse	22.6	32					99
	Very Coarse	32	45					99
	Very Coarse	45	64					99
COBBLE	Small	64	90	1		1	1	100
	Small	90	128					100
	Large	128	180					100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	Silt/Clay
D_{50} =	1.3
D_{84} =	8.4
D_{95} =	16.0
D_{100} =	90.0





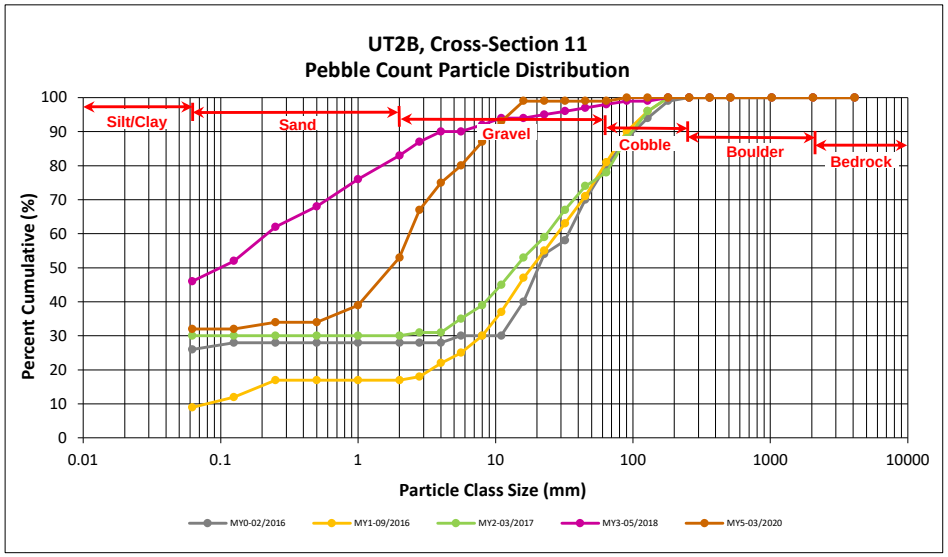
Reachwide and Cross-Section Pebble Count Plots

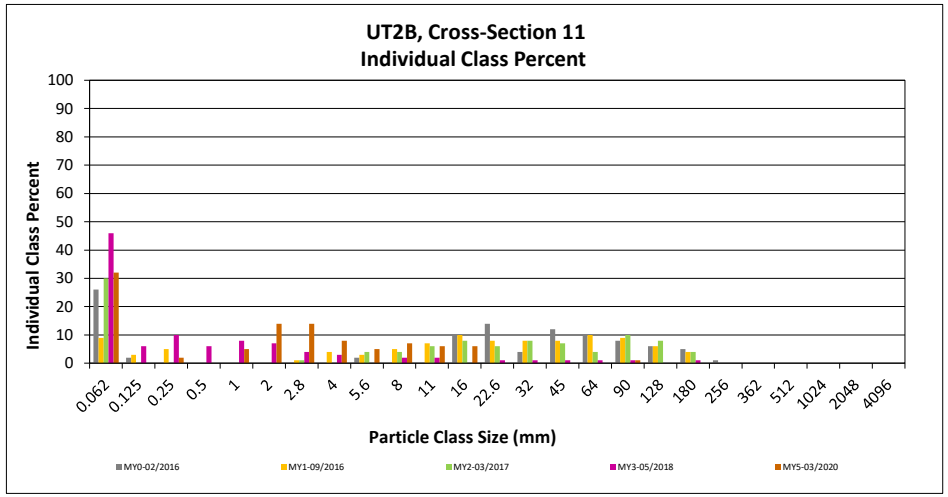
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT2B, Cross-Section 11

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	32	32	32
SAND	Very fine	0.062	0.125			32
	Fine	0.125	0.250	2	2	34
	Medium	0.25	0.50			34
	Coarse	0.5	1.0	5	5	39
	Very Coarse	1.0	2.0	14	14	53
GRAVEL	Very Fine	2.0	2.8	14	14	67
	Very Fine	2.8	4.0	8	8	75
	Fine	4.0	5.6	5	5	80
	Fine	5.6	8.0	7	7	87
	Medium	8.0	11.0	6	6	93
	Medium	11.0	16.0	6	6	99
	Coarse	16.0	22.6			99
	Coarse	22.6	32			99
	Very Coarse	32	45			99
	Very Coarse	45	64			99
COBBLE	Small	64	90	1	1	100
	Small	90	128			100
	Large	128	180			100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 11	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.57
D_{50} =	1.7
D_{84} =	6.9
D_{95} =	12.5
D_{100} =	90.0





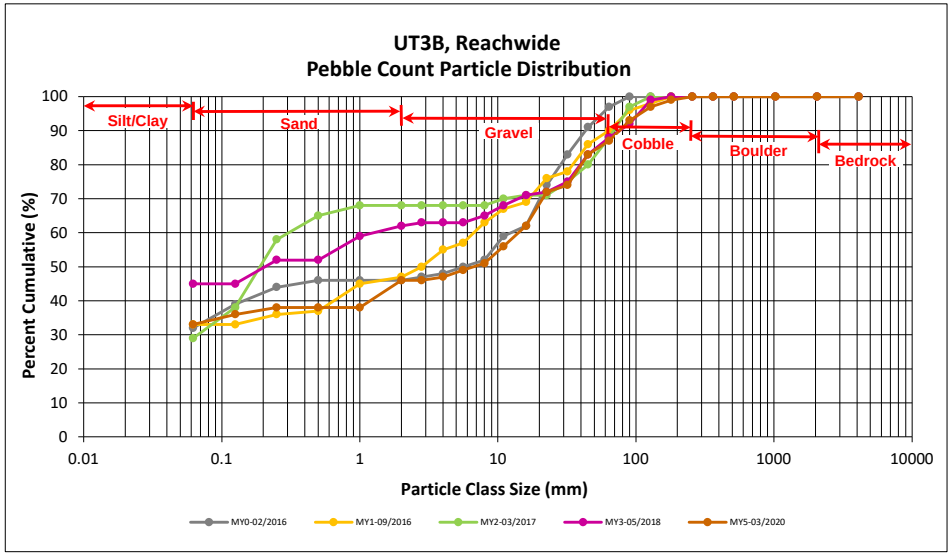
Reachwide and Cross-Section Pebble Count Plots

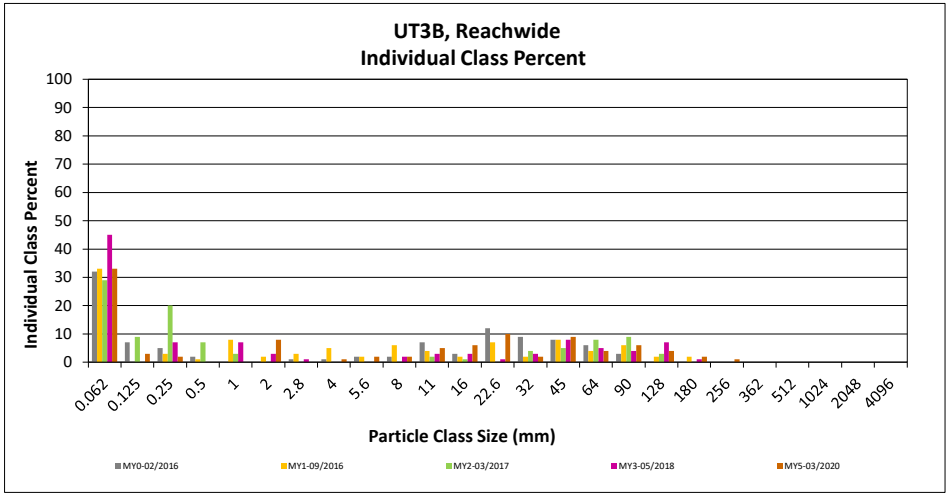
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT3B, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	15	18	33	33	33
SAND	Very fine	0.062	0.125	1	2	3	3	36
	Fine	0.125	0.250		2	2	2	38
	Medium	0.25	0.50					38
	Coarse	0.5	1.0					38
	Very Coarse	1.0	2.0		8	8	8	46
GRAVEL	Very Fine	2.0	2.8					46
	Very Fine	2.8	4.0		1	1	1	47
	Fine	4.0	5.6		2	2	2	49
	Fine	5.6	8.0		2	2	2	51
	Medium	8.0	11.0		5	5	5	56
	Medium	11.0	16.0	1	5	6	6	62
	Coarse	16.0	22.6	7	3	10	10	72
	Coarse	22.6	32	2		2	2	74
	Very Coarse	32	45	8	1	9	9	83
	Very Coarse	45	64	4		4	4	87
COBBLE	Small	64	90	5	1	6	6	93
	Small	90	128	4		4	4	97
	Large	128	180	2		2	2	99
	Large	180	256	1		1	1	100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.10
D_{50} =	6.7
D_{84} =	49.1
D_{95} =	107.3
D_{100} =	256.0





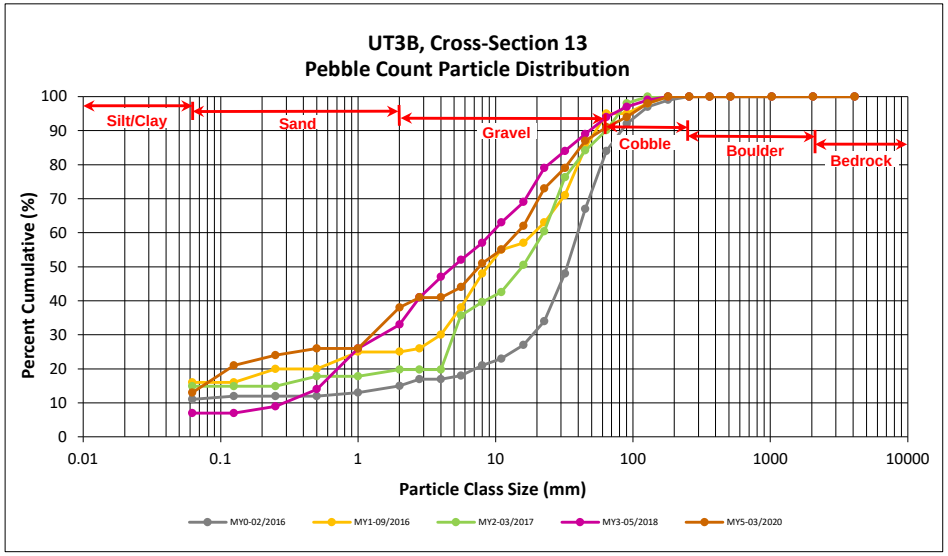
Reachwide and Cross-Section Pebble Count Plots

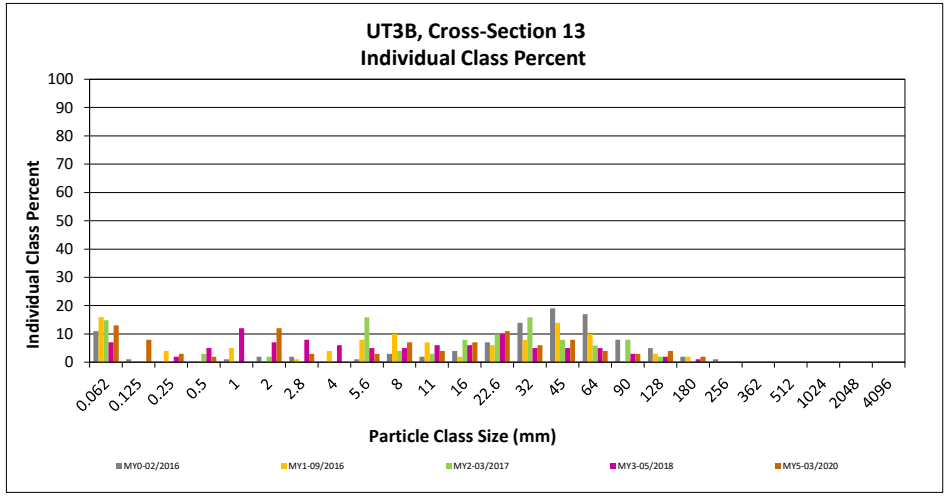
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT3B, Cross-Section 13

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	13	13	13
SAND	Very fine	0.062	0.125	8	8	21
	Fine	0.125	0.250	3	3	24
	Medium	0.25	0.50	2	2	26
	Coarse	0.5	1.0			26
	Very Coarse	1.0	2.0	12	12	38
GRAVEL	Very Fine	2.0	2.8	3	3	41
	Very Fine	2.8	4.0			41
	Fine	4.0	5.6	3	3	44
	Fine	5.6	8.0	7	7	51
	Medium	8.0	11.0	4	4	55
	Medium	11.0	16.0	7	7	62
	Coarse	16.0	22.6	11	11	73
	Coarse	22.6	32	6	6	79
	Very Coarse	32	45	8	8	87
	Very Coarse	45	64	4	4	91
COBBLE	Small	64	90	3	3	94
	Small	90	128	4	4	98
	Large	128	180	2	2	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 13	
Channel materials (mm)	
D_{16} =	0.08
D_{35} =	1.68
D_{50} =	7.6
D_{84} =	39.6
D_{95} =	98.3
D_{100} =	180.0





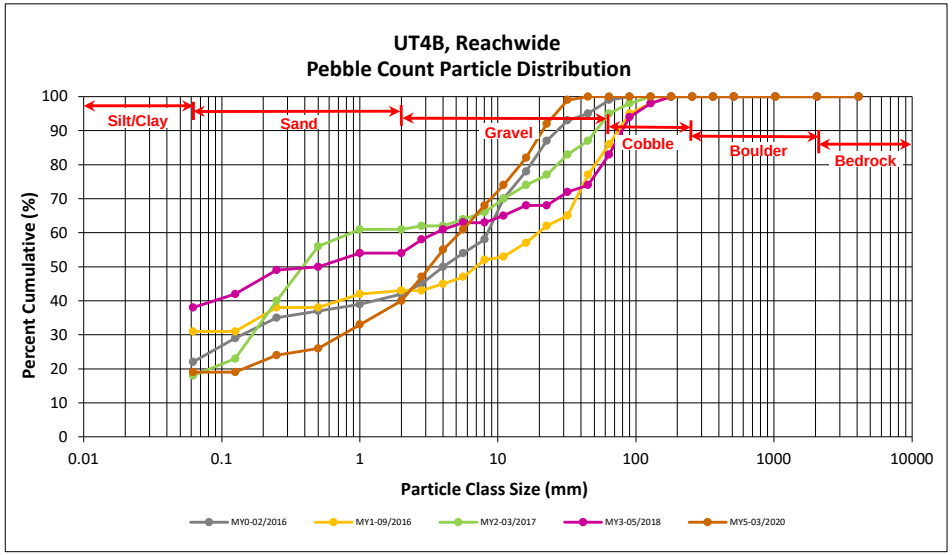
Reachwide and Cross-Section Pebble Count Plots

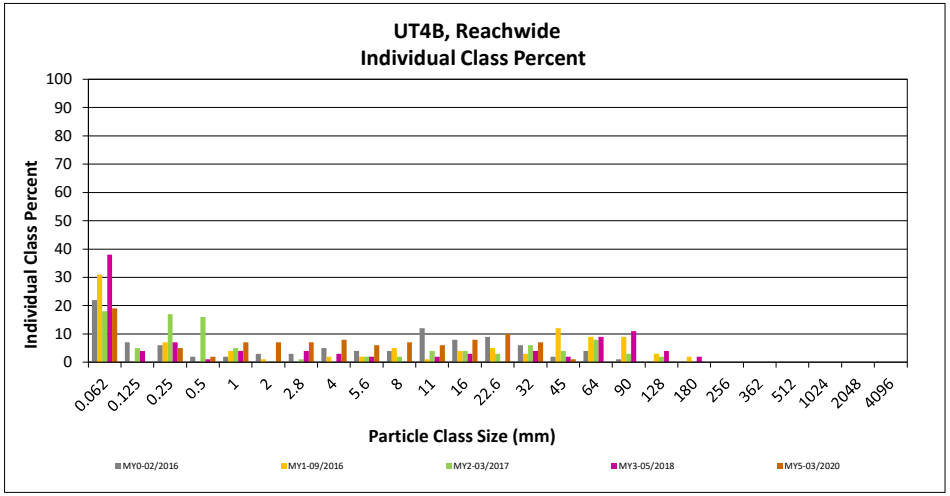
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT4B, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	17	19	19	19
SAND	Very fine	0.062	0.125					19
	Fine	0.125	0.250		5	5	5	24
	Medium	0.25	0.50		2	2	2	26
	Coarse	0.5	1.0		7	7	7	33
	Very Coarse	1.0	2.0	2	5	7	7	40
GRAVEL	Very Fine	2.0	2.8		7	7	7	47
	Very Fine	2.8	4.0	3	5	8	8	55
	Fine	4.0	5.6	4	2	6	6	61
	Fine	5.6	8.0	7		7	7	68
	Medium	8.0	11.0	6		6	6	74
	Medium	11.0	16.0	8		8	8	82
	Coarse	16.0	22.6	10		10	10	92
	Coarse	22.6	32	7		7	7	99
	Very Coarse	32	45	1		1	1	100
	Very Coarse	45	64					100
COBBLE	Small	64	90					100
	Small	90	128					100
	Large	128	180					100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	1.22
D_{50} =	3.2
D_{84} =	17.1
D_{95} =	26.2
D_{100} =	45.0





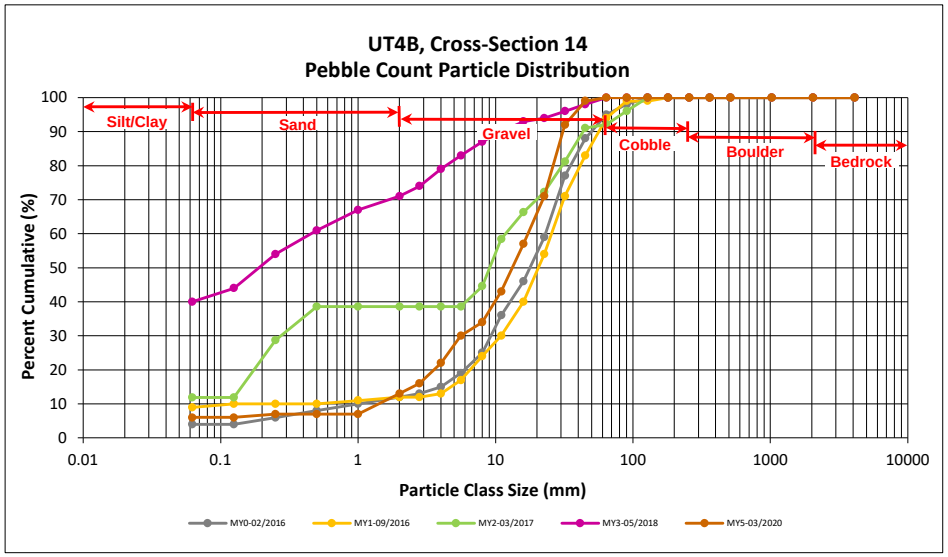
Reachwide and Cross-Section Pebble Count Plots

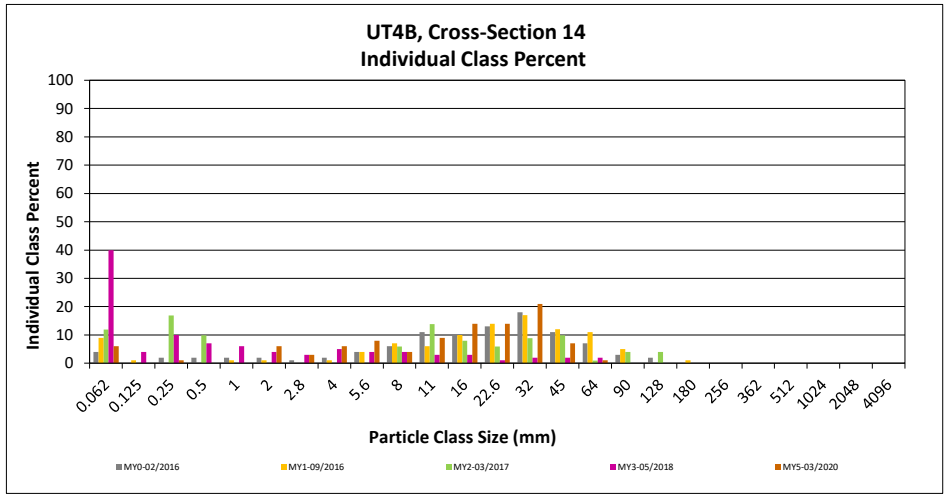
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT4B, Cross-Section 14

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	6	6	6
SAND	Very fine	0.062	0.125			6
	Fine	0.125	0.250	1	1	7
	Medium	0.25	0.50			7
	Coarse	0.5	1.0			7
	Very Coarse	1.0	2.0	6	6	13
GRAVEL	Very Fine	2.0	2.8	3	3	16
	Very Fine	2.8	4.0	6	6	22
	Fine	4.0	5.6	8	8	30
	Fine	5.6	8.0	4	4	34
	Medium	8.0	11.0	9	9	43
	Medium	11.0	16.0	14	14	57
	Coarse	16.0	22.6	14	14	71
	Coarse	22.6	32	21	21	92
	Very Coarse	32	45	7	7	99
	Very Coarse	45	64	1	1	100
COBBLE	Small	64	90			100
	Small	90	128			100
	Large	128	180			100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 14	
Channel materials (mm)	
D_{16} =	2.80
D_{35} =	8.29
D_{50} =	13.3
D_{84} =	28.0
D_{95} =	37.0
D_{100} =	64.0





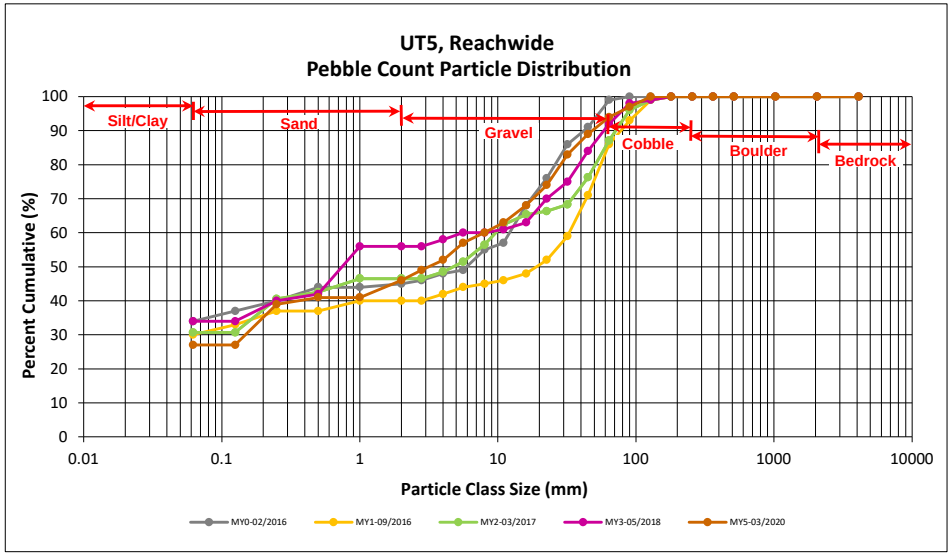
Reachwide and Cross-Section Pebble Count Plots

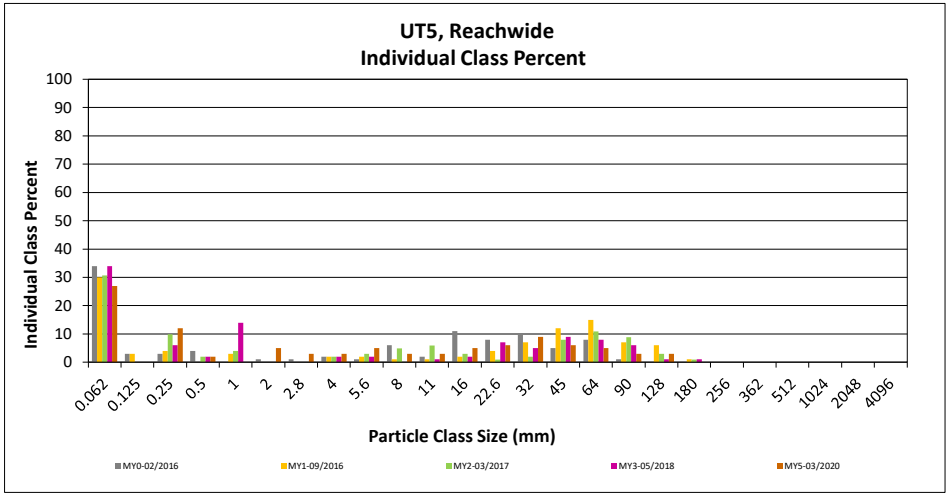
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT5, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	3	24	27	27	27
SAND	Very fine	0.062	0.125					27
	Fine	0.125	0.250		12	12	12	39
	Medium	0.25	0.50		2	2	2	41
	Coarse	0.5	1.0					41
	Very Coarse	1.0	2.0	2	3	5	5	46
GRAVEL	Very Fine	2.0	2.8	2	1	3	3	49
	Very Fine	2.8	4.0	1	2	3	3	52
	Fine	4.0	5.6	3	2	5	5	57
	Fine	5.6	8.0	3		3	3	60
	Medium	8.0	11.0	3		3	3	63
	Medium	11.0	16.0	5		5	5	68
	Coarse	16.0	22.6	4	2	6	6	74
	Coarse	22.6	32	7	2	9	9	83
	Very Coarse	32	45	6		6	6	89
	Very Coarse	45	64	5		5	5	94
COBBLE	Small	64	90	3		3	3	97
	Small	90	128	3		3	3	100
	Large	128	180					100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.20
D_{50} =	3.2
D_{84} =	33.9
D_{95} =	71.7
D_{100} =	128.0





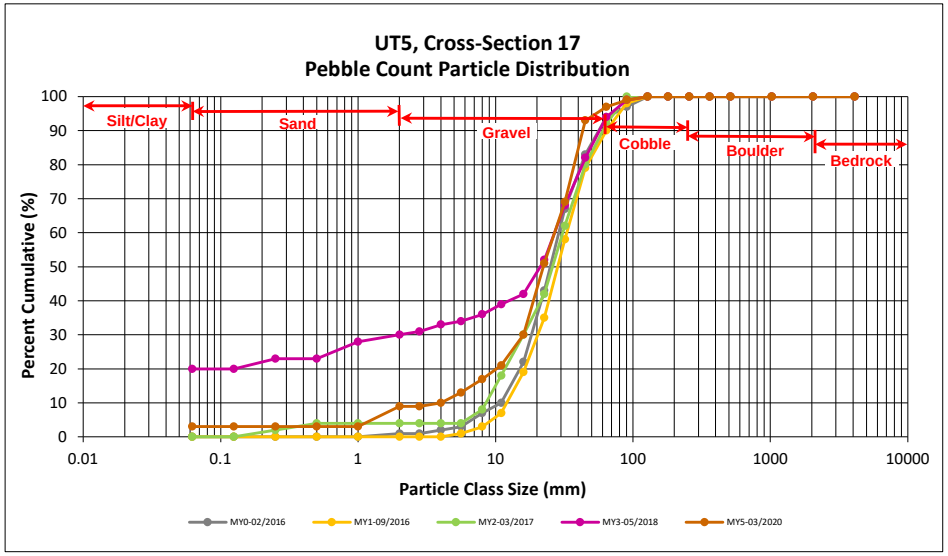
Reachwide and Cross-Section Pebble Count Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT5, Cross-Section 17

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	3	3	3
SAND	Very fine	0.062	0.125			3
	Fine	0.125	0.250			3
	Medium	0.25	0.50			3
	Coarse	0.5	1.0			3
	Very Coarse	1.0	2.0	6	6	9
GRAVEL	Very Fine	2.0	2.8			9
	Very Fine	2.8	4.0	1	1	10
	Fine	4.0	5.6	3	3	13
	Fine	5.6	8.0	4	4	17
	Medium	8.0	11.0	4	4	21
	Medium	11.0	16.0	9	9	30
	Coarse	16.0	22.6	21	21	51
	Coarse	22.6	32	18	18	69
	Very Coarse	32	45	24	24	93
	Very Coarse	45	64	4	4	97
COBBLE	Small	64	90	2	2	99
	Small	90	128	1	1	100
	Large	128	180			100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 17	
Channel materials (mm)	
D_{16} =	7.32
D_{35} =	17.37
D_{50} =	22.2
D_{84} =	39.6
D_{95} =	53.7
D_{100} =	128.0



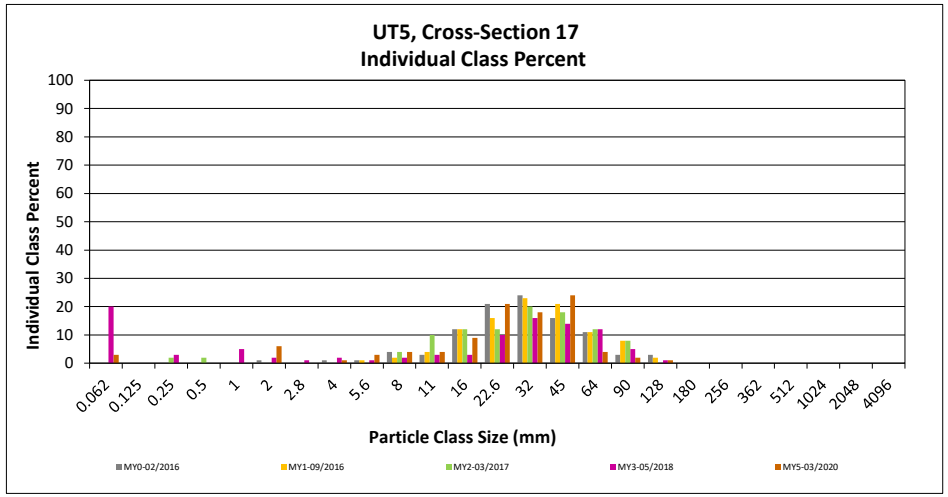


Table 13. Bank Pin Table

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

UT South Fork Reach 1 - Cross-Section 4 Pool (Station 118+63)

Pin	Date	Exposure (in)
Upstream	4/15/2016	0.0
Midstream		0.0
Downstream		0.0
Upstream	9/14/2016	0.0
Midstream		0.0
Downstream		0.0
Upstream	10/19/2017	0.0
Midstream		0.0
Downstream		0.0
Upstream	10/22/2018	0.0
Midstream		0.0
Downstream		0.0
Upstream	9/25/2020	0.0
Midstream		0.0
Downstream		0.0

APPENDIX 5. Hydrology Summary Data

Table 14. Verification of Bankfull Events

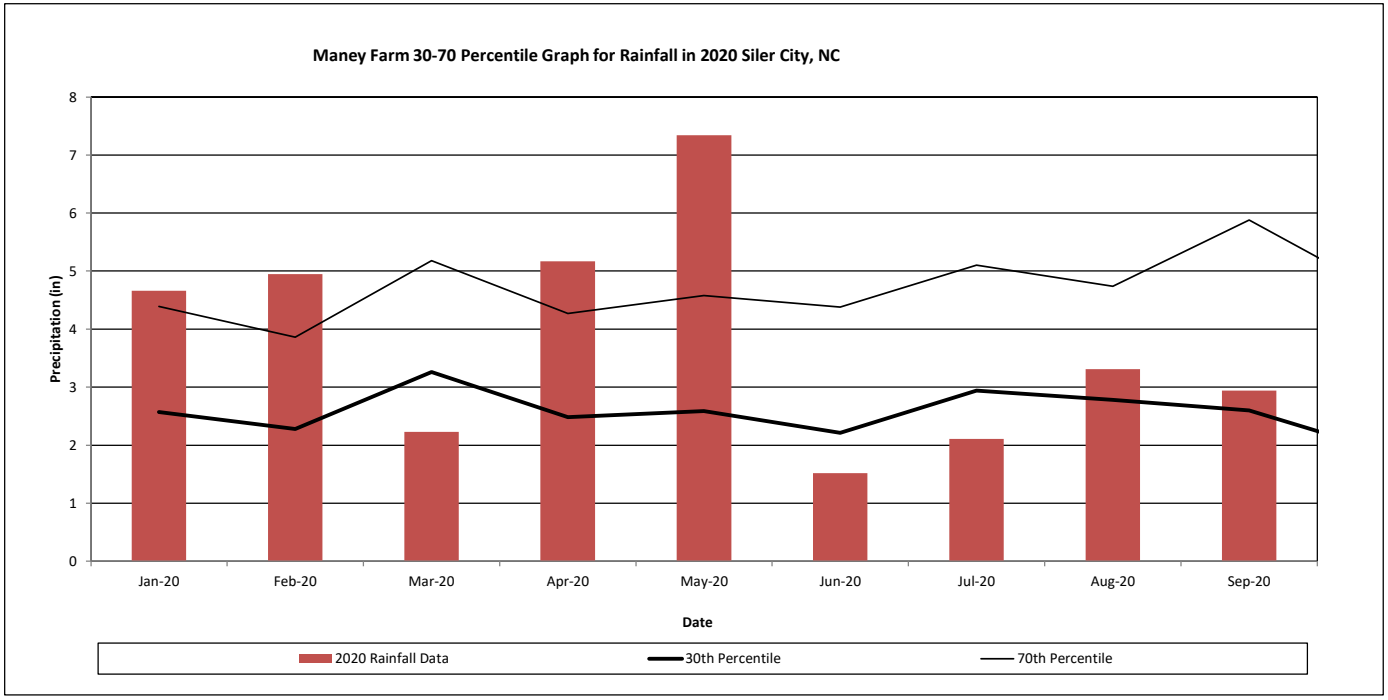
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

	MY1		MY2		MY3		MY4		MY5		
Reach	**Date of Data Collection**	**Date of Occurrence**	**Date of Data Collection**	**Date of Occurrence**	**Date of Data Collection**	**Date of Occurrence**	**Date of Data Collection**	**Date of Occurrence**	**Date of Data Collection**	**Date of Occurrence**	**Method**
UTSF Reach 1	8/8/2016	2/16/2016	3/9/2017	1/9/2017	7/3/2018	5/16/2018	9/26/2019	3/21/2019	2/11/2020	2/6/2020	Crest Gage/ Pressure Transducer
			10/17/2017	7/23/2017	10/22/2018	9/17/2018*	***	4/19/2019	8/7/2020	6/11/2020	
UTSF Reach 2	8/8/2016	2/16/2016	3/9/2017	1/9/2017	10/22/2018	**	9/26/2019	3/21/2019	2/11/2020	2/6/2020	
			10/17/2017	7/23/2017				4/19/2019	8/7/2020	6/11/2020	
UT5	8/8/2016	2/16/2016	3/9/2017	1/9/2017	7/3/2018	5/16/2018	9/26/2019	3/21/2019	2/11/2020	2/6/2020	
			10/17/2017	7/23/2017	10/22/2018	9/17/2018*		4/19/2019	8/7/2020	6/11/2020	

*Hurricane Florence
**Crest gauge data malfunctioned
***Flow gauge data from UTSF Reach 1 was used in place of the crest gague due to equipment malfunction.

Monthly Rainfall Data

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020



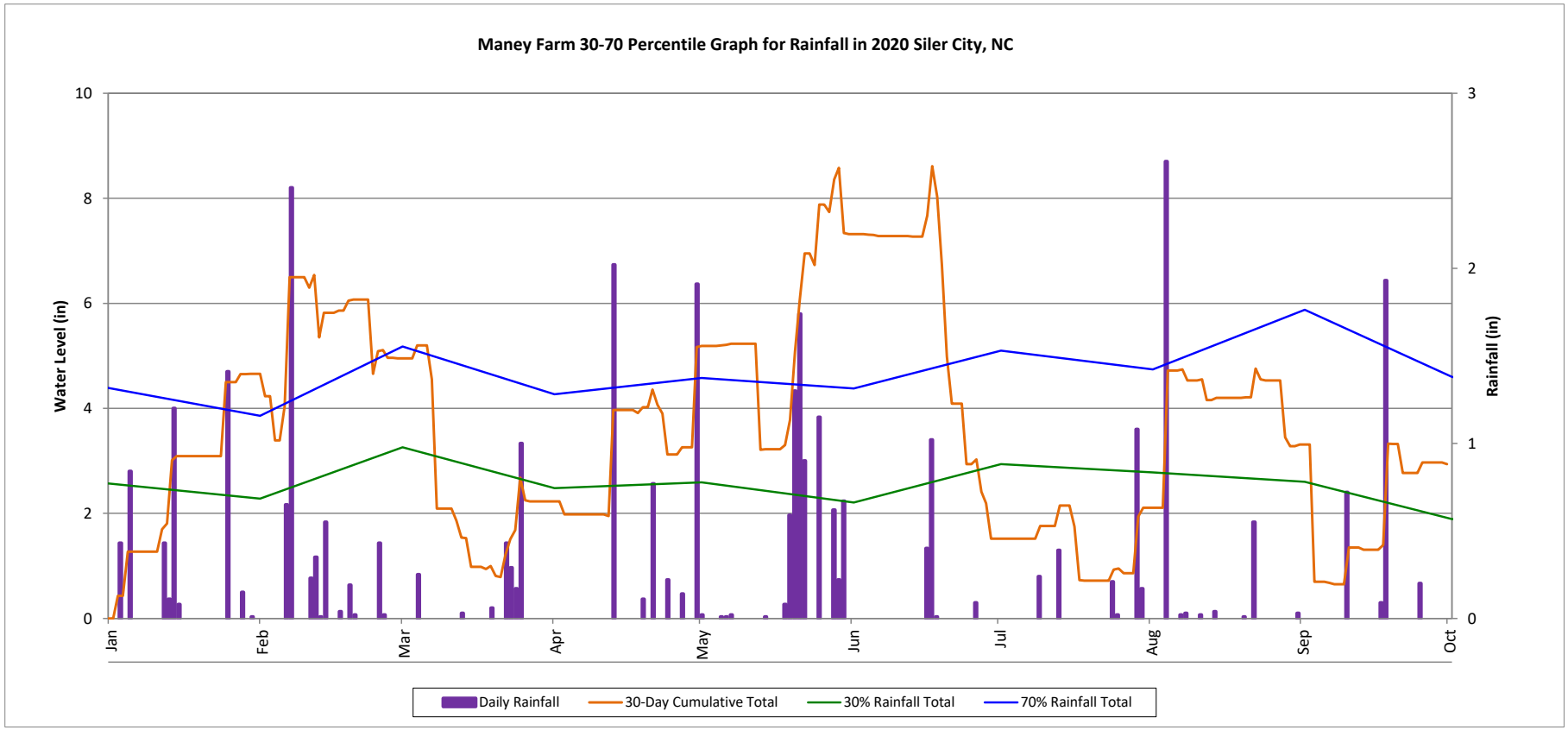
[1] 2020 monthly rainfall from USDA Station SILER CITY (317924)
[2] 30th and 70th percentile rainfall data collected from weather station Siler City 2 S, NC7924 (USDA, 2020).

30-Day Cumulative Total Rainfall Data

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020



[1] 2020 monthly rainfall from USDA Station SILER CITY (317924)

[2] 30th and 70th percentile rainfall data collected from weather station Siler City 2 S, NC7924 (USDA, 2020).

Recorded In-Stream Flow Events

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 5 - 2020

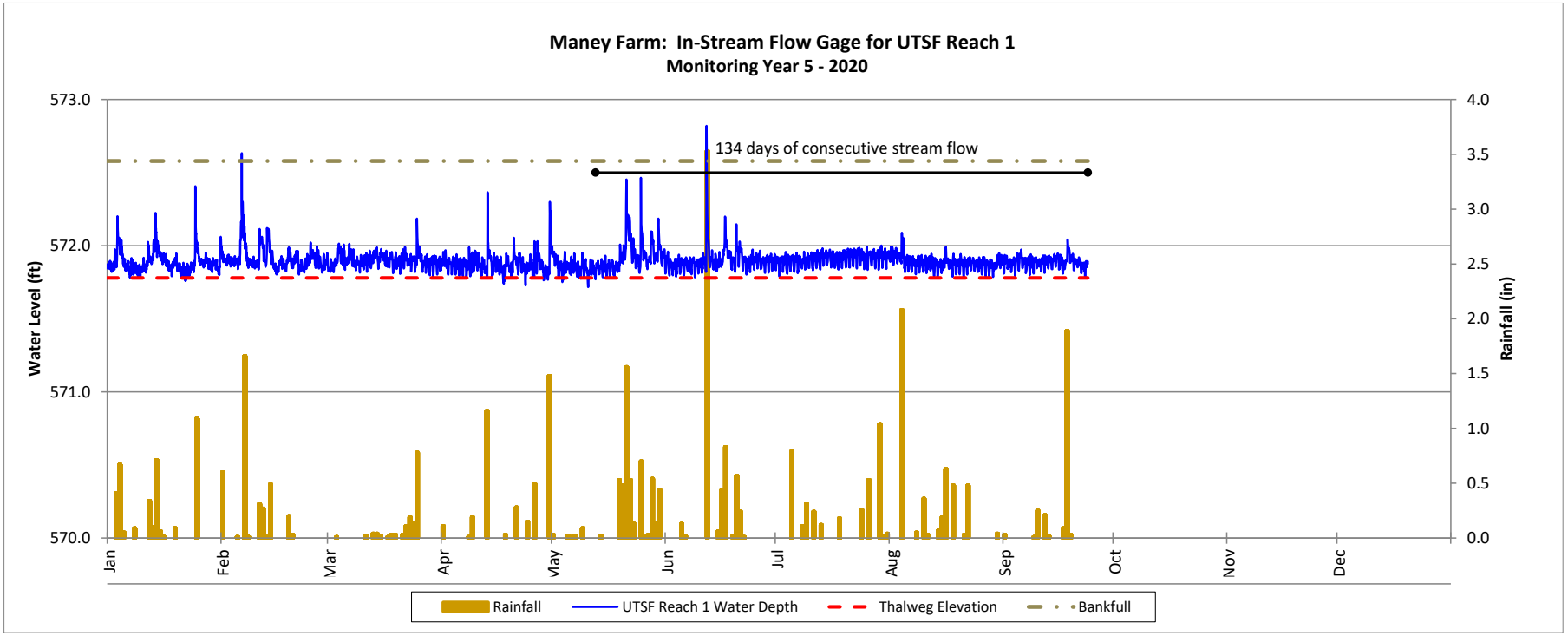


Table 15. Recorded In-Stream Flow Events Attainment Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 5 - 2020

Summary of In-Stream Flow Gage Results for Monitoring Years 1 through 7							
Reach	**Max Consecutive Days/ Total Days Meeting Success Criteria***						
	Year 1 (2016)	**Year 2 (2017)**	**Year 3 (2018)**	**Year 4 (2019)**	**Year 5 (2020)****	**Year 6 (2021)**	**Year 7 (2022)**
UTSF Reach 1	**207 Days/ 207 Days**	**137 Days/ 191 Days**	**365 Days/ 365 Days**	**365 Days/ 365 Days**	**134 Days/ 264 Days**		

*Success criteria is 30 consecutive days of flow.
**Data collected through September 23, 2020