FINAL (MY0) BASELINE MONITORING REPORT
SIX RUNS STREAM AND WETLAND MITIGATION PROJECT

Sampson County, North Carolina
Cape Fear River Basin
HUC 03030006

NCDMS Project #100170
DMS Contract #0303-01
RFP: 16-20190303 (Issued 12/20/2019)
USACE Action ID: SAW-2020-01964 | DWR Project #20201798 v1

Provided by:

Resource Environmental Solutions, LLC
for Environmental Banc & Exchange, LLC

Prepared for:
NC Department of Environmental Quality
Division of Mitigation Services
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August 2023

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August 17, 2023

Jeremiah Dow
NC DEQ Division of Mitigation Services
217 West Jones Street
Raleigh, NC 27604

RE: DMS Comments on the MY0 Report Six Runs, Project ID #100170, DMS Contract #0303-01, RFP 16-20190303

Listed below are comments provided by DMS on July 31, 2023 regarding the Six Runs Stream and Wetland Mitigation Project As-built and MY0 Baseline Monitoring Report and RES' responses.

Report Comments:

1. Title Page(s) – Please add RFP issue date (12/20/2019).
   RFP issue date added to title page.

2. Table 1 – Why did the total wetland acreage change from 13.798 acres at mitigation plan to 13.670 acres at as-built? We typically see little to no change in acreage.
   The change is due to the as-built survey of top-of-bank (TOB) being slightly different than design TOB and the wetland polygons being redrawn to abut the surveyed TOB. Note that the deviation in TOB is due to survey drawing straight lines between shots versus designed TOB using actual curves.

3. Table 2 – Recommend adding the specific growing start and end dates to Success Criteria column where applicable.
   Growing season dates have been added to Table 2 in applicable cells.

4. CCPV – We recommend re-working the cross-section labeling/line thickness so labels for cross sections 1, 3, 5, 9, and 31 are visible.
   The cross-section labeling has been revised.

5. Photo Log – Are any of the photos in the "General Photos" section going to be taken annually? If so, the photo points should be shown on the CCPV.
   RES does not intend to take any of these annually, necessarily. The "General Photos" section is meant to present additional photos besides the customary monitoring photos, and they will likely be different from year-to-year.

6. Table 11 – It is not necessary to calculate BHR on pool cross sections. Recommend removing this data point.
   BHR calculations have been omitted from pool cross sections in Table 11.

7. Appendix C – Please include the cross-section plots/photos.
   The Cross Section Overlay Plots/photos have been included in Appendix C.

Record Drawings:

8. Please add Post Assisted Log Structure (PALS) to the Legend.
   "As-built Post Assisted Log Structure" has been added to the legend.

9. Sheet S1 – There was a PALS added between stations 5+00 and 6+00 that should receive a red callout.
   Red callout has been added for the PALS.

10. Sheet S5 – A stone toe was installed in place of a brush toe at the location of XS 12 and should receive a red line callout.
    Red callout has been added for the stone toe.

11. Sheet S6 – Log structure upstream of Sta. 35+00 was not surveyed but was found in the field. Also, log structure at Sta. 30+00 is shown as surveyed in as-built survey drawings (S7), but not the record drawings.
    Log sill upstream of Sta. 35+00 has been added along with a red callout.
    The surveyed log sill at Sta. 30+00 has been added to the record drawing sheets.

12. Sheet S7 – Immediately downstream of Sta. 37+00 a stone toe was installed in place of a brush toe and should be called out.
    Red callout has been added for the stone toe.

Boundary Inspection:

13. Affirm by email to the project manager that the landowner is aware of the fence location as it relates to the easement and that they are ok with the signs being posted on the fence which extend well over 5 feet away from the easement boundary.
    RES will send such email to Jeremiah Dow upon submittal of the Final As-built and MY0 Report.

14. Corner # 172 – add rebar and aluminum cap per the RFP specifications and the survey plat legend.
    The surveyor has been notified and is scheduled to perform the task promptly.

15. Ensure that each corner is witnessed and signed. This is especially important for the areas where there was no fence installed. Because the pre-existing fence line was removed by clipping the wire and leaving the t-posts there is some potential confusion in areas where the same type of white topped t-post was used to witness the easement corner. Signing all the witness posts will take care of this confusion. It would also be helpful to paint the top 6 inches

of the corner t-posts yellow so that it is easy to distinguish the old fence line from the witness posts.
RES will perform such action items promptly.

16. A KML file has been included with this letter for reference and location details of the boundary inspection action items.
RES appreciates the KML and will perform such action items promptly.

Table of Contents

1 Project Summary

1.1 Project Location and Description

The Six Runs Stream and Wetland Mitigation Project (Project) is located within Sampson County, approximately six and a half miles west of Faison, NC. The Project lies within the Cape Fear River Basin, North Carolina Department of Water Resources (NCDWR) sub-basin 03-06-19 and United States Geological Survey (USGS) 14-digit hydrologic unit code (HUC) 03030006110010 (Six Runs Creek Watershed; **Figure 1**). The Project was designed to help meet compensatory mitigation requirements for stream and wetland impacts in the HUC 03030006. The Project restores 5,788 linear feet (LF) and enhances 1,656 LF of stream as well as re-establishes 6.221 acres (ac), rehabilitates 4.913 ac, enhances 1.008 ac, and preserves 1.656 ac of wetlands that will ultimately provide water quality benefits and ecosystem uplift for the Project's 0.89 mi^2 (570 ac) drainage area.

The Project is comprised of a 30.94-acre easement located along Six Runs Creek, encompassing a portion of the Six Runs Creek floodplain and several tributaries. The Project involves Brad's Branch (a colloquial name for the primary tributary feature draining to Six Runs Creek), five of its unnamed tributaries, and riparian wetlands that all drain into Six Runs Creek which eventually drains south to the Black River. The stream and wetland mitigation components are summarized in **Table 1**. The upstream extent of the Project begins at a property boundary upstream of E Darden Road and the downstream extent ends within the Six Runs Creek swamp. The site is easily accessible from E Darden Road. Coordinates for the Project are as follows: 35.0962°, -78.2304°.

1.2 Project Components

Prior to restoration, the riparian corridors within the Project had been manipulated by agricultural practices over time, thereby adversely impacting both streams and wetlands. Most streams were degraded in varying degrees and were restored or enhanced to attain higher function. Non-jurisdictional areas of hydric soil within riparian areas were restored via re-establishment to improve both hydrologic and vegetative functions. Jurisdictional riparian wetland areas that were severely degraded in terms of vegetation and riparian function were rehabilitated to improve vegetative function and stream interaction. Other jurisdictional wetland areas that were partially forested but degraded from constant cattle pressure were enhanced to improve vegetative function. A small area of mixed, jurisdictional wetland types, including frequently inundated marsh and forested swamp, within the Six Runs floodplain, were preserved. Importantly, cattle no longer have access to the aquatic resources within the Project. These improvements to the Project will help meet the river basin needs expressed in the Division of Mitigation Services' (DMS) 2009 Cape Fear River Basin Restoration Priorities (RBRP).

Through stream restoration and enhancement, the Project presented 7,444 LF of stream mitigation, generating 6,660.599 Warm Stream Mitigation Units (SMUs). By incorporating wider buffers, the total adjusted SMUs for the Project amounted to 6,724.599 SMU (**Table 1**). Additionally, the Project presented 13.798 acres of wetland re-establishment, rehabilitation, enhancement, and preservation, generating 10.044 Riparian Wetland Mitigation Units (WMU; **Table 1**). Additional wetland areas amounting to 1.379 acres were presented that will not generate mitigation credit but are protected within the conservation easement. These asset numbers reflect those in the approved mitigation plan.

Table 1. Six Runs (#100170) Mitigation Quantities and Credits

Project Segment	Original Mitigation Plan Ft/Ac	As-Built Ft/Ac	Original Mitigation Category	Original Restoration Level	Original Mitigation Ratio (X:1)	Credits	Comments
Stream							
BB-A	452	452	Warm	E1	1.50000	301.333	Structure installation, supplemental planting, invasives treatment, livestock exclusion
BB-B	562	562	Warm	E1	1.50000	374.666	Structure installation, meander stabilization, supplemental planting, invasives treatment, livestock exclusion
BB-C	4,357	4,357	Warm	R	1.00000	4,357.000	Channel restoration, riparian planting, invasives treatment, livestock exclusion
DE2-A	231	231	Warm	E2	2.50000	92.400	ESP installation, supplemental planting, invasives treatment, livestock exclusion
DE2-B	156	156	Warm	R	1.00000	156.000	Channel restoration, riparian planting, invasives treatment, livestock exclusion
DE4-A	301	301	Warm	E2	5.00000	60.200	Supplemental planting, invasives treatment, livestock exclusion
DE4-B	992	992	Warm	R	1.00000	992.000	Channel restoration, riparian planting, invasives treatment, livestock exclusion
DE7	112	108	Warm	R	1.00000	112.000	Channel restoration, riparian planting, invasives treatment, livestock exclusion
DE8	171	171	Warm	R	1.00000	171.000	Hydrologic reconnection, channel restoration, riparian planting, invasives treatment, livestock exclusion
MT2	110	110	Warm	E2	2.50000	44.000	Supplemental planting, invasives treatment, livestock exclusion
Wetland							
WC-1	4.903	4.859	R	RH	1.50000	3.269	Reconnect to stream via stream restoration, wetland planting, livestock exclusion
WC-2	1.656	1.656	R	P	10.00000	0.166	Livestock exclusion
WD	0.010	0.009	R	RH	1.50000	0.007	Reconnect to stream via stream restoration, riparian planting, livestock exclusion
WE-1	0.411	0.410	R	E	5.00000	0.082	Supplemental planting, invasives treatment, livestock exclusion
WE-2	0.597	0.586	R	E	2.00000	0.299	Wetland planting, invasives treatment, livestock exclusion
WL	5.759	5.693	R	REE	1.00000	5.759	Stream restoration, spoil/berm removal/grading, native planting, livestock exclusion
WM	0.462	0.457	R	REE	1.00000	0.462	Stream restoration, spoil/berm removal/grading, native planting, livestock exclusion

Project Credits

	Stream			Riparian	Non-Rip	Coastal
Restoration Level	Warm	Cool	Cold	Wetland	Wetland	Marsh
Restoration	5,788.000					
Re-establishment				6.221		
Rehabilitation				3.276		
Enhancement				0.082		
Enhancement I	675.999			0.299		
Enhancement II (2.5)	136.400					
Enhancement II (5.0)	60.200					
Creation						
Preservation				0.166		
Totals	**6,660.599**					

Non-Standard Buffer Width Adjustment	**64.00**
Total Stream Credit	**6,724.599**
Total Wetland Credit	**10.044**

1.3 Project Goals and Objectives

Prior to construction the streams and wetlands had been significantly impacted by historic relocation and straightening of stream channels, hay production, cattle farming, and lack of riparian buffer. The past land use disturbances, absence of buffer vegetation, and current agricultural practices presented a significant opportunity for water quality and ecosystem improvements through the implementation of this Project. Through the comprehensive analysis of the Project's maximum functional uplift using the Stream Functions Pyramid Framework, specific, attainable goals and objectives are being realized by the Project. These goals clearly help to address the degraded hydrology, water quality, and habitat from agricultural practices that were identified as major watershed stressors in the DMS 2009 Cape Fear River Basin Restoration Priorities (RBRP) and within DMS' Targeted Resource Areas (TRA). Ultimately, the Project supports DMS' watershed goals listed in the Approved Mitigation Plan. The Project Summary Goals, Performance, and Results are provided below in **Table 2**. The Project Attributes are found in **Table 3.**

Table 2. Project Summary Goals, Performance, and Results

Objective	Treatment	Monitoring Metric	Success Criteria	Measurement	Cumulative Monitoring Results
Improve the transport of water from the watershed to the Project reaches in a non-erosive way and maintain appropriate wetland hydrology for Bibb and Johnston soil series	Converted land-use of some Project reaches from pasture to riparian forest. Restored and enhanced wetland hydrology through stream restoration activities and spoil removal	Groundwater wells with pressure transducers: Downloaded quarterly	Water table within 12 inches of the ground surface for 12% of growing season (approx. 31 days) Growing season: 3/14 - 11/22	11 goundwater wells	*Data is being collected and will be submitted in the next report.*
Improve flood-bank connectivity by reducing bank height ratios and increase entrenchment ratios Maintain regular, seasonal flow in restored, intermittent streams	Reduced bank height ratios and increased entrenchment ratios by reconstructing channels to mimic reference reach conditions	Stage recorders: Inspected semiannually	Four bankfull events occurring in separate years	Continuous stage recorders on BB-C upper, DE4-A, and BB-C lower	*Data is being collected and will be submitted in the next report.*
		Flow gauges: Inspected quarterly	30+ days of continuous flow each year	Flow gauges on BB-A, DE7, DE2-A, DE8, and MT2	*Data is being collected and will be submitted in the next report.*
		Cross sections: Surveyed in MY 1, 2, 3, 5 and 7	Bank height ratio shall not exceed 1.2	36 Cross section surveys	36/36 with BHR<1.2 - MY0
Limit erosion rates and maintain channel stability Improve bedform diversity (pool spacing, percent riffles, etc. Increase buffer width to 50 feet	Established a riparian buffer to reduce erosion and sediment transport into project streams. Established stable banks with livestakes, erosion control matting, and other in stream structures.	As-built stream profile	N/A	N/A	Survey conducted
		Cross sections: Surveyed in MY 1, 2, 3, 5 and 7	Bank height ratio shall not exceed 1.2	36 Cross section surveys	36/36 with BHR<1.2 - MY0
		Visual monitoring: Performed at least semiannually	Identify and document significant stream problem areas; i.e. erosion, degradation, aggradation, etc.	Visual Assessment conducted	No problem areas
		Vegetation plots: Surveyed in MY 1, 2, 3, 5 and 7	MY 1-3: ≥320 trees/acre MY 5: ≥260 trees/acre (7 ft. tall) MY 7: ≥210 trees/acre (10 ft. tall)	13 fixed veg plots and 6 random plots (19 total)	19/19 passed - MY0
Promote sediment filtration, nutrient cycling, and organic accumulation through natural wetland biogeochemical processes Establish native hardwood riparian buffer Protect aquatic resources in perpetuity	Restored and enhance wetland hydrology Planted a riparian buffer Established permanent conservation easement	Groundwater wells with pressure transducers: Downloaded quarterly	Water table within 12 inches of the ground surface for 12% of growing season (approx. 31 days) Growing season: 3/14 - 11/22	11 goundwater wells installed	*Data is being collected and will be submitted in the next report.*
		Vegetation plots: Surveyed in MY 1, 2, 3, 5 and 7	MY 1-3: ≥320 trees/acre MY 5: ≥260 trees/acre (7 ft. tall) MY 7: ≥210 trees/acre (10 ft. tall)	13 fixed veg plots and 6 random plots (19 total)	19/19 passed - MY0
		Visual assessment of established fencing and conservation signage: Performed at least semiannually	Inspect fencing and signage. Identify and document any damaged or missing fencing and/or signs	Visual Assessment conducted	Fencing and signage are in place

Table 3. Project Attributes

Table 3. Project Attribute Table																
Project Name	Six Runs Stream and Wetland Mitigation Project															
County	Sampson															
Project Area (acres)	30.94															
Area to be planted (acres)	22.59															
Project Coordinates (latitude and longitude decimal	35.0962°, -78.2304°															
Project Watershed Summary Information																
Physiographic Province	Rolling Coastal Plain															
River Basin	Cape Fear															
USGS Hydrologic Unit 8-	3030006															
DWR Sub-basin	03-06-19															
Project Drainage Area (acres)	570															
Project Drainage Area Percentage of Impervious Area	1%															
Land Use Classification	Agriculture, forest, residential															
Reach Summary Information																
Parameters	**BB-A**	**BB-B**	**BB-C**	**DE2-A**	**DE2-B**	**DE3**	**DE4-A**	**DE4-B**	**DE7**	**DE8**	**MT2**					
Pre-project length (feet)	453	572	4207	231	114	128	301	667	251	61	110					
Post-project (feet)	452	562	4357	231	156	0	301	992	112	171	110					
Valley confinement (Confined, moderately confined, unconfined)	Moderately confined	Moderately confined	Unconfined	Moderately confined	Moderately confined	NA	Unconfined	Unconfined	NA	Moderately confined	Moderately confined					
Drainage area (acres)	93	125	570	N/A	10	26	287	295	21	26	9					
Perennial, Intermittent, Ephemeral	Intermittent	Intermittent	Perennial	Intermittent	Intermittent	Intermittent	Perennial	Perennial	Intermittent	Intermittent	Intermittent					
NCDWR Water Quality Classification	C, Sw	C, Sw	C, Sw	C, Sw	C, Sw	C, Sw	C, Sw	C, Sw	C, Sw	C, Sw	C, Sw					
Dominant Stream Classification (existing)	C4/5	G4/5c	G4/5c - F4/5	E5	E5	F5	C5	G4/5c - F4/5	G5c	F5b	E4/5					
Dominant Stream Classification (proposed)	C4/5	G4/5c	C4/E4	E5	C4b	N/A	C5	C4/E4	B4a to E4	C4/E4	E4/5					
Dominant Evolutionary class (Simon) if applicable	III	III	IV	II	II	III	I	III	III	II	I					
Wetland Summary Information																
Parameters	**WA**	**WB**	**WC-1**	**WC-2**	**WD**	**WE-1**	**WE-2**	**WF**	**WG**	**WH**	**WI**	**WJ**	**WK**	**WL**	**WM**	
Pre-project (acres)	0.081	0.057	5.146	1.656	0.016	0.849	0.767	0.348	0.002	0.057	0.204	0.123	0.034	0	0	
Post-project (acres)	0.081	0.057	4.903	1.656	0.01	0.848	0.689	0.299	0.001	0.057	0.198	0.123	0.034	5.759	0.462	
Wetland Type (non-riparian, riparian)	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian	
Mapped Soil Series	Norfolk loamy sand	Norfolk loamy sand	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	Bibb and Johnston soils	
Soil Hydric Status	Non-hydric	Non-hydric	Hydric	Hydric	Hydric	Hydric	Hydric	Hydric	Hydric	Hydric	Hydric	Hydric	Hydric	Hydric	Hydric	
Regulatory Considerations																
Parameters	**Applicable?**	**Resolved?**	**Supporting Docs?**													
Water of the United States - Section 404	Yes	No	PCN													
Water of the United States - Section 401	Yes	No	PCN													
Endangered Species Act	Yes	Yes	Mitigation Plan													
Historic Preservation Act	Yes	Yes	Mitigation Plan													
Coastal Zone Management Act (CZMA or CAMA)	No	N/A	N/A													
FEMA Floodplain Compliance	Yes	No	Mitigation Plan													
Essential Fisheries Habitat	No	N/A	N/A													
DOT Right-of-way Permit	Yes	Yes	N/A													

1.4 Construction and As-Built Conditions

Project construction was completed on March 3rd, 2023, and planting was completed on March 3rd, 2023. The Six Runs Project was built to design plans and guidelines with some minor modifications. Such modifications are summarized below:

- Added several Post-Assisted Log Structures (PALS) to reaches BB-A/B;
- Swapped several brush toes for stone toes;
- Swapped two brush toes for sod mats in lower portion of reach BB-C;
- Added floodplain sills in very wet areas susceptible to erosion;
- Minor alignment change at upper segment of BB-C – This was a design revision in the Final Construction Plans. This did not result in change in LF.
- Minor alignment change at lower segment of DE7 – This was a field-adjustment to avoid an existing mature tree. This resulted in minor loss of LF.

The as-built survey and record drawings are included in **Appendix F.**

There were no changes to the planting plan (Table 7 in **Appendix B)**. Minor monitoring device location changes were made during as-built installation, however, the quantities remained as proposed in the Mitigation Plan.

1.5 Baseline Monitoring Performance (MY0)

The Six Runs Baseline Monitoring activities were performed in March 2023. All Baseline Monitoring data is presented below and in the appendices. The Project is on track to meeting stream, wetland, and vegetation interim success criteria.

1.5.1 Vegetation

Setup and monitoring of the 13 permanent vegetation plots and 6 random vegetation plots were completed after stream construction and planting, on March 23rd, 2023. Vegetation data are in **Appendix B**, and associated photos and plot locations are in **Appendix A**. MY0 monitoring data indicates that all plots are exceeding the interim success criteria of 320 planted stems per acre. Planted stem densities ranged from 567 to 1,012 planted stems per acre with a mean of 737 planted stems per acre across all plots. A total of twenty planted species were documented within the plots. The average stem height in the vegetation plots was 1.3 feet.

Visual assessment of vegetation outside of the monitoring plots indicates that herbaceous vegetation is establishing throughout the project area (**Appendix A**).

1.5.2 Stream Hydrology

Three stage recorders and five flow gauges were installed on March 28th, 2023. The stage recorders are in place to document bankfull events. Two stage recorders were installed on BB-C and one was installed on DE-4. The flow gauges are in place to document presence and persistence of stream flow in the intermittent channel. One flow gauge was installed on each of the reaches: BB-A, MT-2, DE7, DE2-B, and DE8. Stream hydrology data will be included in the Monitoring Year 1 Report in this section and in the appendices. Gauge locations can be found on **Figures 2a-c** and photos are in **Appendix A**.

1.5.3 Stream Geomorphology

Cross section setup and geomorphology data collection for MY0 was collected on March 30th, 2023. Summary tables and cross section plots are in **Appendix C**. Overall, the baseline cross sections and profile relatively match the proposed design. The as-built conditions show that shear stress and velocities have been reduced for all restoration reaches. All reaches were designed as gravel bed channels and remain classified as gravel bed channels post-construction.

Visual assessment of the stream channel was performed to document signs of instability, such as eroding banks, structural instability, or excessive sedimentation. The channel is transporting sediment as designed and will continue to be monitored for aggradation and degradation (**Appendix C**).

1.5.4 Wetland Hydrology

Wetland hydrology is being monitored to document success of wetland restoration areas as well as conditions of wetland enhancement and preservation areas. This is accomplished with eleven automatic pressure transducer gauges (located in groundwater wells) that record daily groundwater levels. Six groundwater wells were installed in wetland re-establishment areas; two were installed in wetland enhancement areas; two were installed in wetland rehabilitation areas; and one was installed in a wetland preservation area to serve as references. One automatic pressure transducer was installed above ground to record ambient air pressure and is used to correct all other pressure transducers onsite. These gauges were installed on March 28th, 2023.

Gauges are downloaded quarterly and wetland hydroperiods are calculated during the growing season. Gauge installation followed current regulatory guidance. Visual observations of primary and secondary wetland hydrology indicators are also recorded during quarterly site visits. As mentioned earlier, soil was characterized at each groundwater well.

Soil borings were taken at each groundwater well and characterized in accordance with the Soil Characterization Data Forms provided in the USACE's *Technical Standard for Water-Table Monitoring of Potential Wetland Sites*, and includes parameters of soil horizon depths, texture, colors, redoximorphic features, induration, and roots, as well as a photo of each soil profile (**Appendix D**). Exact well locations can be found in **Figures 2a-c** and wetland hydrology data will be included in subsequent monitoring reports.

2 References

Griffith, G.E., J.M.Omernik, J.A. Comstock, M.P. Schafale, W.H.McNab, D.R.Lenat, T.F.MacPherson, J.B. Glover, and V.B. Shelburne. (2002). "Ecoregions of North Carolina and South Carolina." (color Poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,500,000).

Lee Michael T., Peet Robert K., Roberts Steven D., and Wentworth Thomas R., 2008. "CVS-EEP Protocol for Recording Vegetation Level." Version 4.2

North Carolina Division of Mitigation Services (NCDMS). "Neuse River Basin Restoration Priorities 2010. Amended August 2018."

Peet, R.K., Wentworth, T.S., and White, P.S. (1998). "A flexible, multipurpose method for recording vegetation composition and structure." Castanea 63:262-274

Resource Environmental Solutions (2022). "Six Runs Final Mitigation Plan".

US Army Corps of Engineers (USACE). (2016). "Wilmington District Stream and Wetland Compensatory Mitigation Update." NC: Interagency Review Team (IRT).

Appendix A

Visual Assessment Data

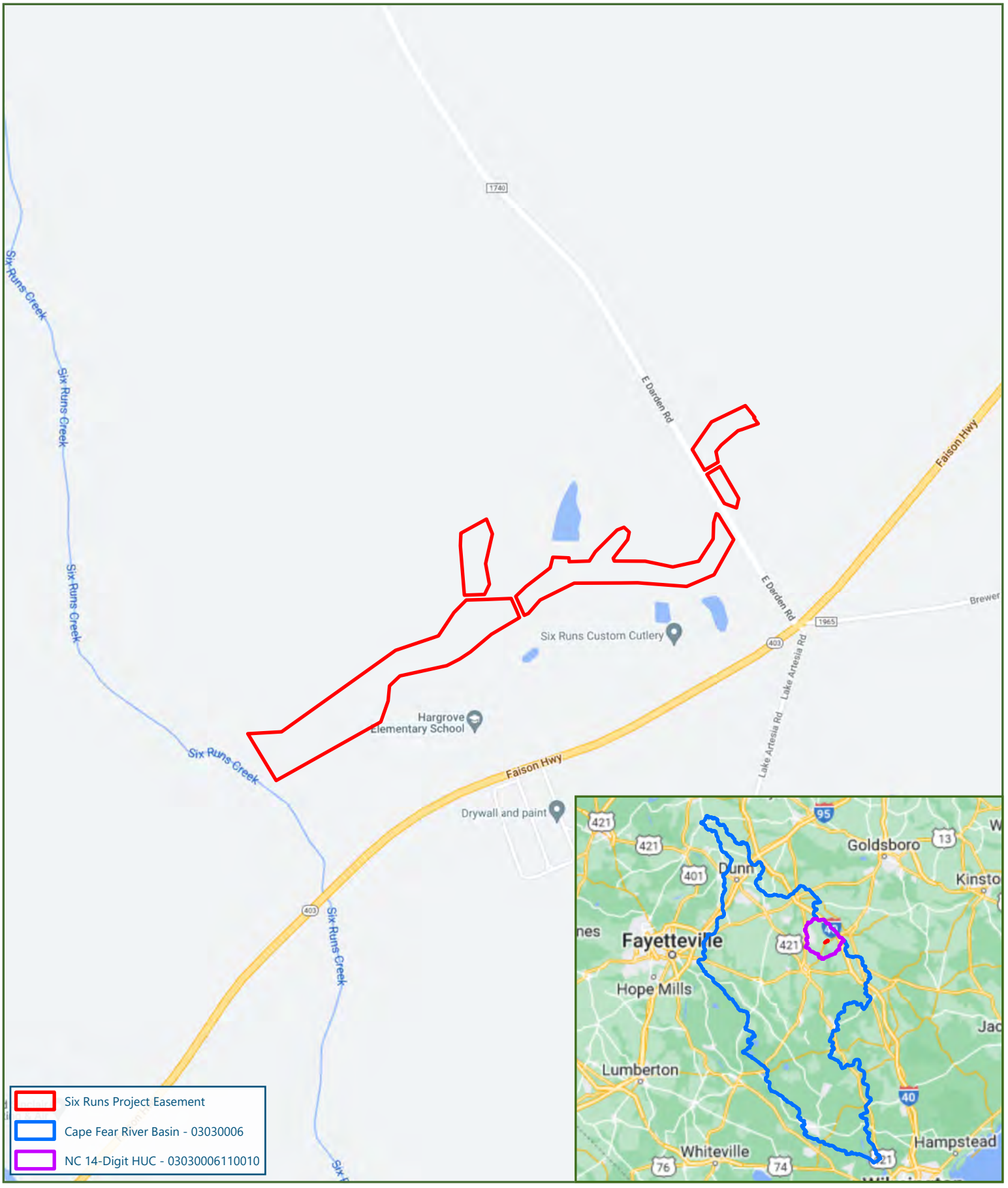


Figure 1
Project Vicinity

Six Runs
Sampson County, North Carolina
78.2361°W 35.0952°N

N

1 in = 1,000 ft
when printed at 8.5x11"

0 500 1,000
Feet

Reference:This information is not to be used as final legal boundaries.
Data Source: USGS, GoogleMaps
Spatial Reference:
NAD 1983 StatePlane North Carolina FIPS 3200

res
www.res.us

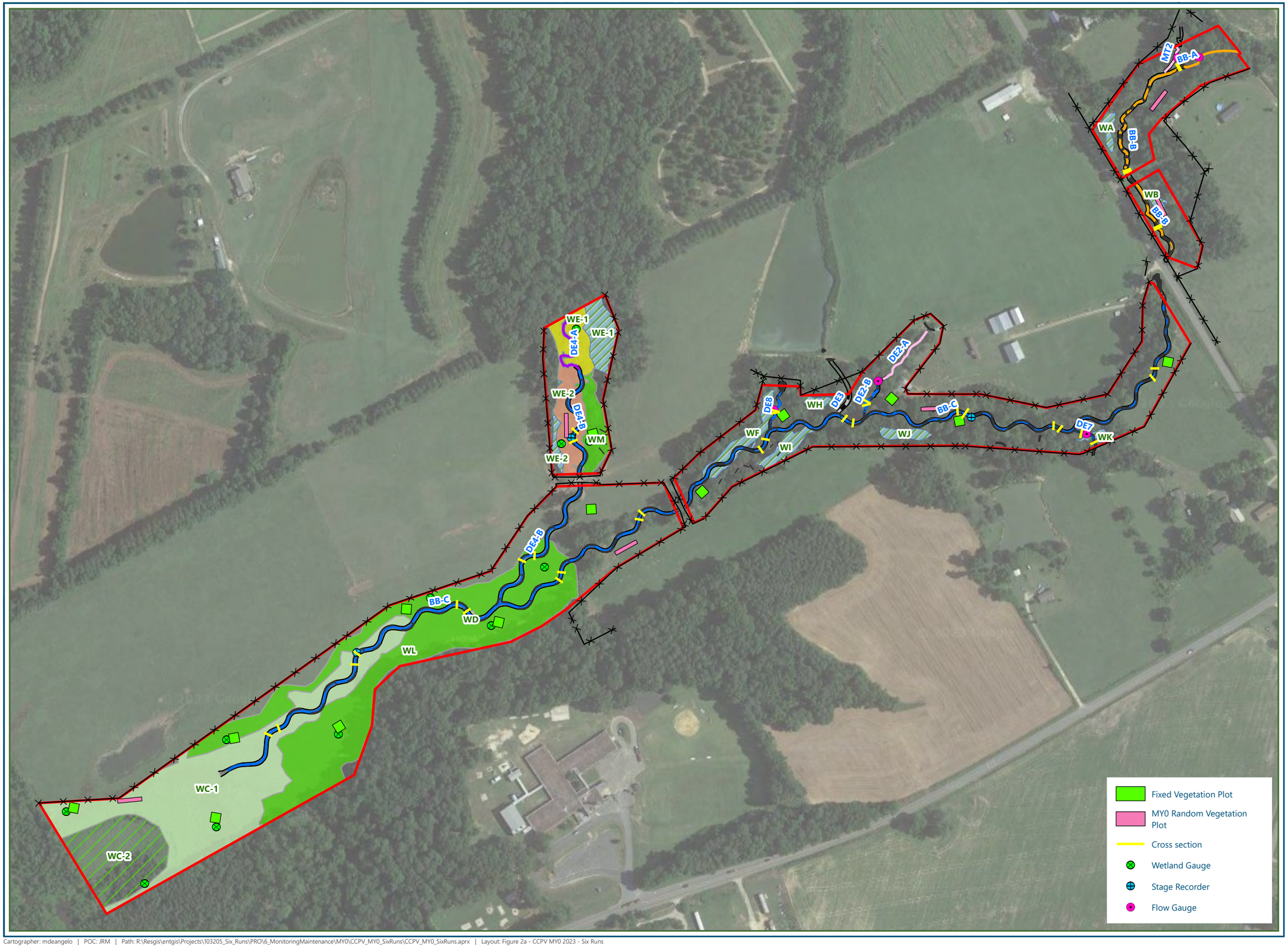
Figure 2a
Current Conditions Plan View

MY0 2023

Six Runs

Sampson County, North Carolina

78.2361°W 35.0952°N



Recorded Easement (30.94 ac.)

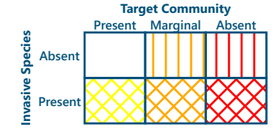
Wetland Approach

- Re-establishment
- Rehabilitation (1.5)
- Enhancement (High) (2)
- Enhancment (Low) (5)
- Preservation (10)
- No Credit

Stream Approach

- Restoration
- Enhancement I (1.5)
- Enhancement II (2.5)
- Enhancement II (5)
- No Credit
- Fencing
- Stream Structures
- As-built Top of Bank

Vegetation Condition Assessment



N

1 in = 300 ft

when printed at 11x17"

0 155 310

Feet

Reference: This information is not to be used as final legal boundaries.
Imagery Source: Google
Spatial Reference:
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Date Exported: 8/14/2023

res

www.res.us

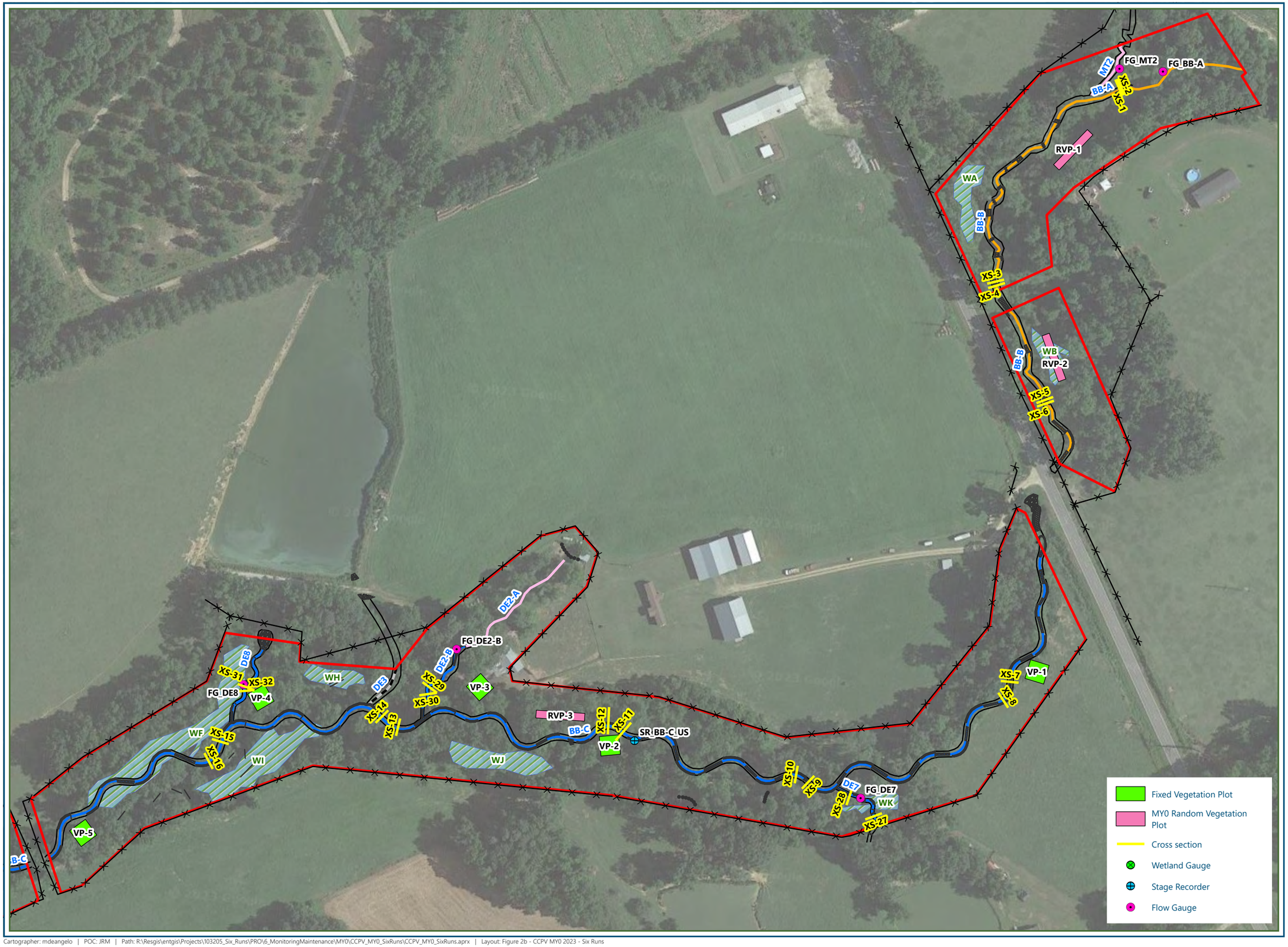
Figure 2b
Current Conditions Plan View

MY0 2023

Six Runs

Sampson County, North Carolina

78.2325°W 35.097°N



Recorded Easement (30.94 ac.)

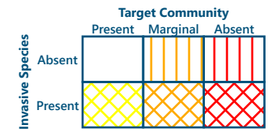
Wetland Approach

- Re-establishment
- Rehabilitation (1.5)
- Enhancement (High) (2)
- Enhancment (Low) (5)
- Preservation (10)
- No Credit

Stream Approach

- Restoration
- Enhancement I (1.5)
- Enhancement II (2.5)
- Enhancement II (5)
- No Credit
- Fencing
- Stream Structures
- As-built Top of Bank

Vegetation Condition Assessment



N

1 in = 150 ft

when printed at 11x17"

0 75 150

Feet

Reference: This information is not to be used as final legal boundaries.
Imagery Source: Google
Spatial Reference:
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Date Exported: 8/16/2023

res

www.res.us

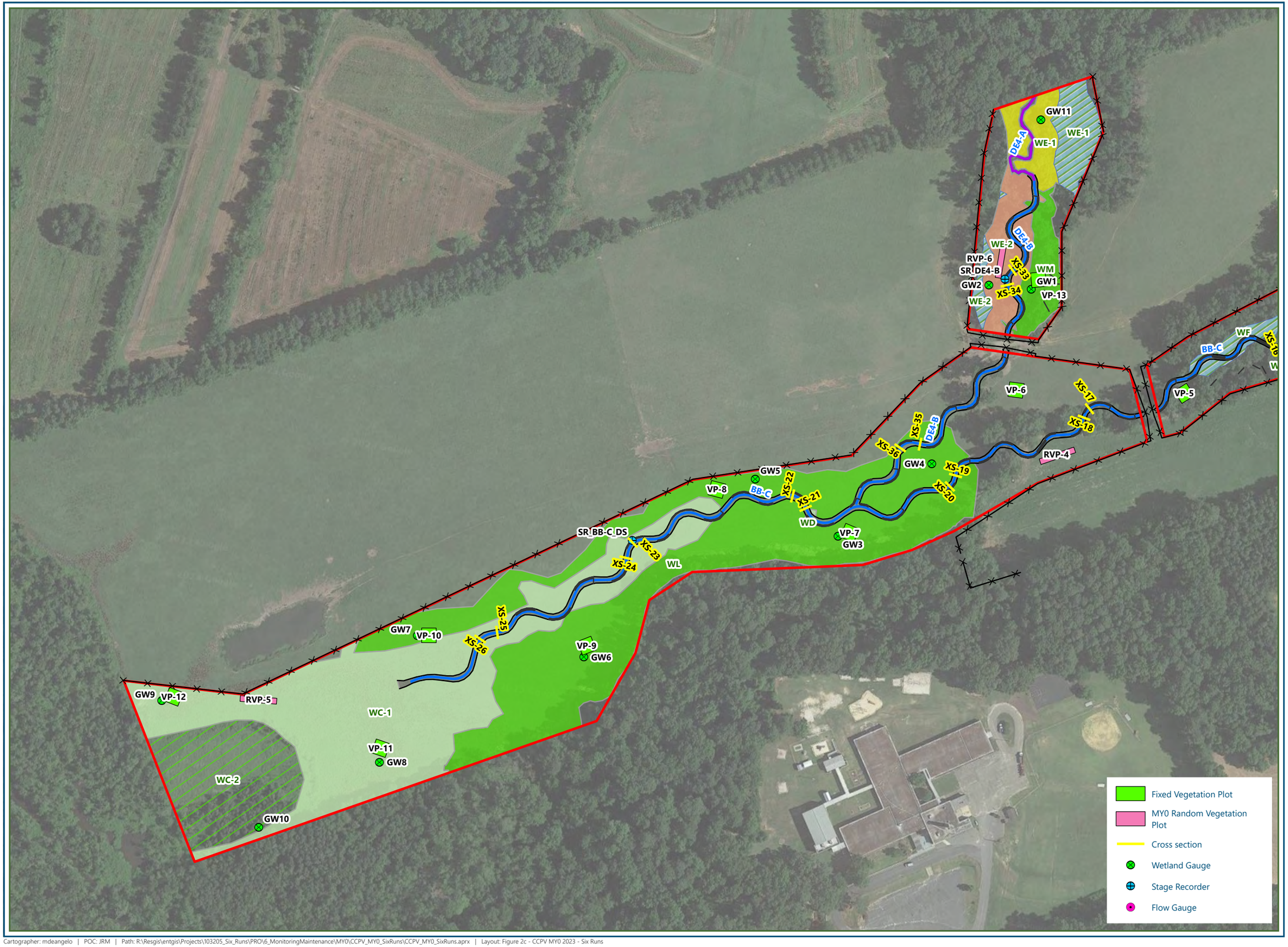
Figure 2c
Current Conditions Plan View

MY0 2023

Six Runs

Sampson County, North Carolina

78.2394°W 35.094°N



Recorded Easement (30.94 ac.)

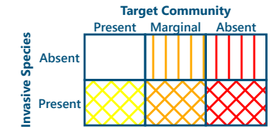
Wetland Approach

- Re-establishment
- Rehabilitation (1.5)
- Enhancement (High) (2)
- Enhancment (Low) (5)
- Preservation (10)
- No Credit

Stream Approach

- Restoration
- Enhancement I (1.5)
- Enhancement II (2.5)
- Enhancement II (5)
- No Credit
- Fencing
- Stream Structures
- As-built Top of Bank

Vegetation Condition Assessment



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1 in = 200 ft

when printed at 11x17"

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Feet

Reference: This information is not to be used as final legal boundaries.

Imagery Source: Google

Spatial Reference:

NAD 1983 StatePlane North Carolina FIPS 3200 Feet

Date Exported: 8/16/2023

res

www.res.us

Six Runs General Photos (MY0)

PALS on BB-B (03/28/2023)

ESP (03/01/2023)

BB-C (downstream) (03/23/2023)

BB-C (upstream) (03/30/2023)

Floodplain (03/01/2023)

Brush toe and spillway (03/01/2023)

Brush toe (03/01/2023)

Siphon to stream (03/23/2023)

Floodplain (03/01/2023)

Floodplain (03/30/2023)

DE4-B (downstream) (03/23/2023)

Wetland and stream (03/01/2023)

Juncus swale (03/01/2023)

Fence (03/14/2023)

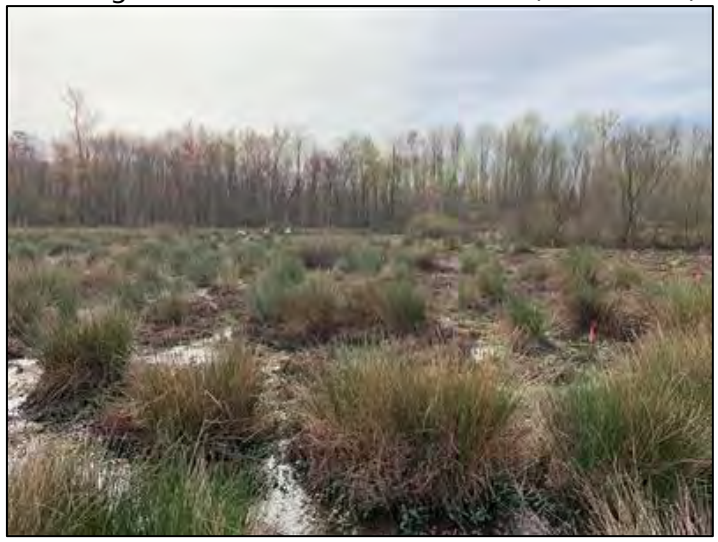
Fence (03/14/2023)

BB-C restoration terminus (downstream) (03/01/2023)

BB-C (upstream) (03/01/2023)

Braiding downstream of BB-C terminus (03/01/2023)

Sign (03/01/2023)



Wetland (03/01/2023)

Six Runs Crossings (MY0)

BB-B - E Darden Rd. Culvert Entrance - (03/23/2023)

BB-C – E Darden Rd. Culvert Exit (03/30/2023)

BB-C - Farm Culvert Entrance - (03/30/2023)

BB-C - Farm Culvert Exit - (03/30/2023)

DE4-B – Farm Culvert Entrance - (03/1/2023)

DE4-B – Farm Culvert Exit - (03/30/2023)

Six Runs Monitoring Device Photos (MY0)

Flow Gauge MT2 (Looking Upstream) (03/28/2023)

Flow Gauge BB-A (Looking Upstream) (03/28/2023)

Ambient (03/28/2023)

Flow Gauge DE7 (Looking Upstream) (03/28/2023)

Stage Recorder BB-C_US (Looking Upstream) (03/28/2023)

Flow Gauge DE2-B (Looking Upstream) (03/28/2023)

Flow Gauge DE8 (Looking Upstream) (03/28/2023)

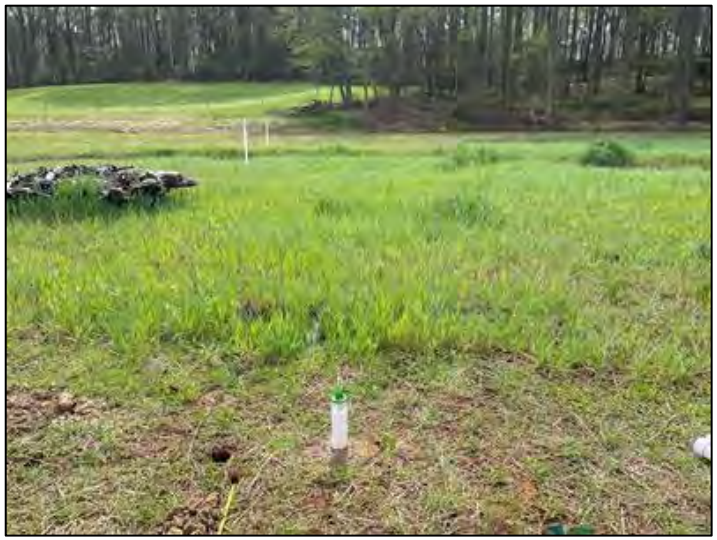
Stage Recorder DE4-B (Looking Upstream) (03/28/2023)

Stage Recorder BB-C_DS (Looking Upstream) (03/28/2023)

GW-01 (03/28/2023)

GW-02 (03/28/2023)

GW-03 (03/28/2023)



GW-04 (03/28/2023)

GW-05 (03/28/2023)

GW-06 (03/28/2023)

GW-07 (03/28/2023)

GW-08 (03/28/2023)

GW-09 (03/28/2023)

GW-10 (03/28/2023)

GW-11 (03/28/2023)

Six Runs Vegetation Plot Photos (MY0)

Vegetation Plot 01 (03/23/2023)

Vegetation Plot 02 (03/23/2023)

Vegetation Plot 03 (03/23/2023)

Vegetation Plot 04 (03/23/2023)

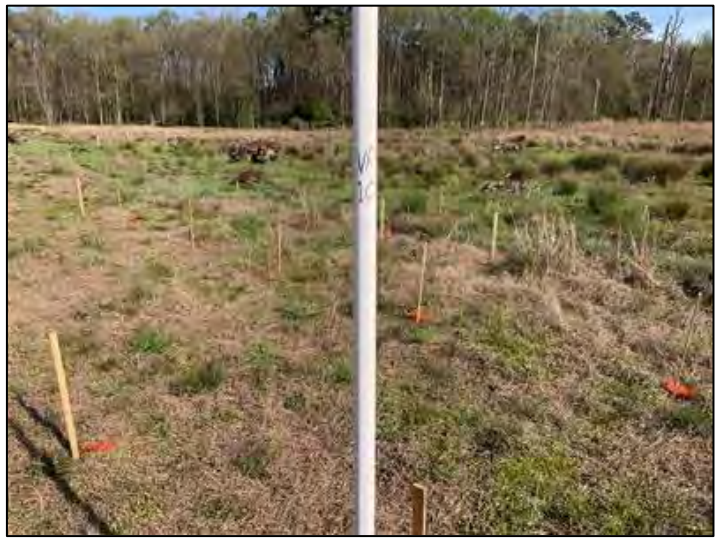
Vegetation Plot 05 (03/23/2023)

Vegetation Plot 06 (03/23/2023)

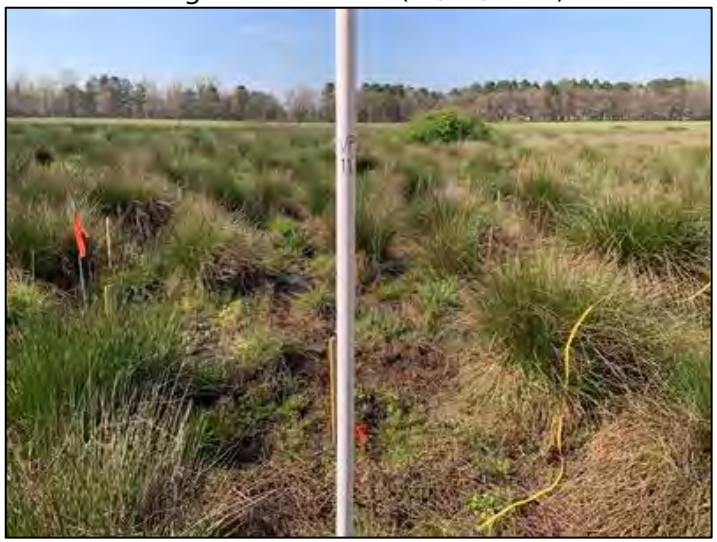
Vegetation Plot 07 (03/23/2023)

Vegetation Plot 08 (03/23/2023)

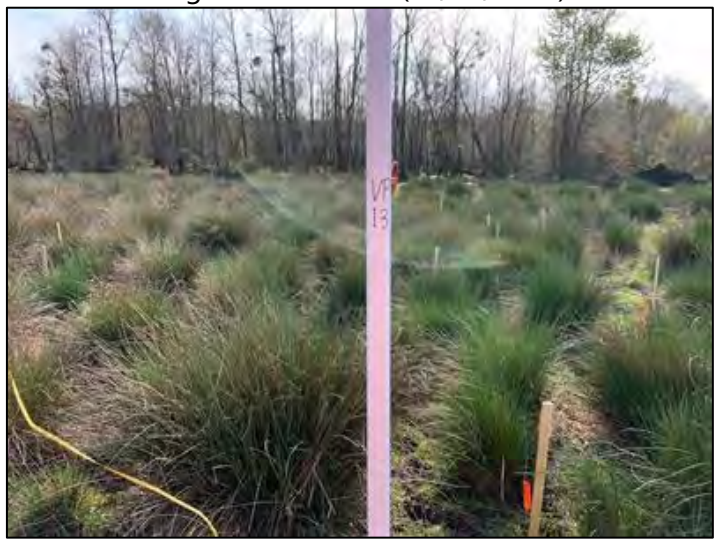
Vegetation Plot 09 (03/23/2023)



Vegetation Plot 10 (03/23/2023)



Vegetation Plot 11 (03/23/2023)



Vegetation Plot 12 (03/23/2023)

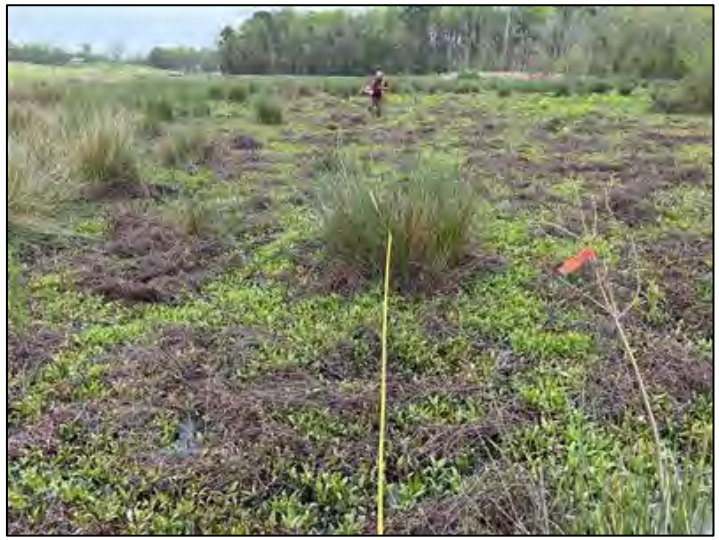
Vegetation Plot 13 (03/23/2023)

Random Vegetation Plot 01 (03/23/2023)

Random Vegetation Plot 02 (03/23/2023)

Random Vegetation Plot 03 (03/23/2023)

Random Vegetation Plot 04 (03/23/2023)



Random Vegetation Plot 05 (03/28/2023)

Random Vegetation Plot 06 (03/28/2023)

Visual Stream Stability Assessment

Reach BB-A

Assessed Stream Length 452

Assessed Bank Length 904

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

Visual Stream Stability Assessment

Reach BB-B

Assessed Stream Length 562

Assessed Bank Length 1124

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
Bank	**Surface Scour/Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse			0	100%
Totals					0	100%
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	8	8		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in DMS monitoring guidance document)	7	7		100%

Visual Stream Stability Assessment

Reach BB-C

Assessed Stream Length 4357

Assessed Bank Length 8714

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
Bank	**Surface Scour/Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse			0	100%
Totals					0	100%
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	21	21		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in DMS monitoring guidance document)	58	58		100%

Visual Stream Stability Assessment

Reach	MT2
Assessed Stream Length	110
Assessed Bank Length	220

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

Visual Stream Stability Assessment

Reach DE7

Assessed Stream Length 112

Assessed Bank Length 224

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
Bank	**Surface Scour/Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse			0	100%
Totals					0	100%
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	6	6		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in DMS monitoring guidance document)	3	3		100%

Visual Stream Stability Assessment

Reach DE2-A

Assessed Stream Length 231

Assessed Bank Length 462

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

Visual Stream Stability Assessment

Reach DE2-B

Assessed Stream Length 156

Assessed Bank Length 312

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
Bank	**Surface Scour/Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse			0	100%
Totals					0	100%
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	3	3		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in DMS monitoring guidance document)	2	2		100%

Visual Stream Stability Assessment

Reach DE8

Assessed Stream Length 171

Assessed Bank Length 342

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
Bank	**Surface Scour/Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse			0	100%
Totals					0	100%
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	3	3		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in DMS monitoring guidance document)	4	4		100%

Visual Stream Stability Assessment

Reach DE4-A

Assessed Stream Length 301

Assessed Bank Length 602

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

Visual Stream Stability Assessment

Reach DE4-B

Assessed Stream Length 992

Assessed Bank Length 1984

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-built	Amount of Unstable Footage	% Stable, Performing as Intended
Bank	**Surface Scour/Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse			0	100%
Totals					0	100%
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	7	7		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in DMS monitoring guidance document)	15	15		100%

Visual Vegetation Assessment

Planted acreage **26.19**

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.1 acres	0.00	0.0%
Low Stem Density Areas*	Woody stem densities clearly below target levels based on current MY stem count criteria.	0.1 acres	0.00	0.0%
		Total		
Areas of Poor Growth Rates	Planted areas where average height is not meeting current MY Performance Standard.	0.25 acres	0.00	0.0%
		Cumulative Total		0.0%

Easement Acreage **30.94**

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Invasives may occur outside of planted areas and within the easement and will therefore be calculated against the total easement acreage. Include species with the potential to directly outcompete native, young, woody stems in the short-term or community structure for existing communities. Species included in summation above should be identified in report summary.	1000 SF	0.00	0.0%
Easement Encroachment Areas	Encroachment may be point, line, or polygon. Encroachment to be mapped consists of any violation of restrictions specified in the conservation easement. Common encroachments are mowing, cattle access, vehicular access. Encroachment has no threshold value as will need to be addressed regardless of impact area.	none	N/A	

Appendix B

Vegetation Plot Data

Table 7. Six Runs As-Built Planting Lists

Zone 1-A & B (Wetlands and Floodplains)			
Bare Roots			
Common Name	**Scientific Name**	**Percent Composition**	**QTY**
Bald cypress	*Taxodium distichum*	10%	1,700
Swamp tupelo	*Nyssa biflora*	10%	1,700
Buttonbush	*Cephalanthus occidentalis*	10%	1,700
Overcup oak	*Quercus lyrata*	10%	1,700
River birch	*Betula nigra*	10%	1,700
Laurel oak	*Quercus laurifolia*	5%	900
Water hickory	*Carya aquatica*	5%	900
Hazel alder	*Alnus serrulata*	5%	900
Green ash	*Fraxinus pennsylvanica*	5%	850
American sycamore	*Platanus occidentalis*	5%	850
American elm	*Ulmus American*	5%	850
Swamp chestnut oak	*Quercus michauxii*	5%	900
Willow oak	*Quercus phellos*	5%	900
Wax myrtle	*Morella cerifera*	5%	850
		Total Bare Roots	**16,400**
Containerized (Zone 1-B Only)			
Bald cypress	*Taxodium distichum*	24%	70
Swamp tupelo	*Nyssa biflora*	24%	70
Buttonbush	*Cephalanthus occidentalis*	24%	70
Overcup oak	*Quercus lyrata*	28%	80
		Total Containerized	**290**
Live Stakes (Zone 1-B Only)			
Black willow	*Salix nigra*	66%	1,200
Hazel alder	*Alnus serrulata*	17%	300
Buttonbush	*Cephalanthus occidentalis*	17%	300
		Total Live Stakes	**1,800**

Zone 2 (Uplands and Slopes)			
Bare Roots			
Common Name	**Scientific Name**	**Percent Composition**	**QTY**
Green ash	*Fraxinus pennsylvanica*	5%	250
American sycamore	*Platanus occidentalis*	5%	250
American elm	*Ulmus American*	5%	250
Swamp chestnut oak	*Quercus michauxii*	10%	500
Willow oak	*Quercus phellos*	10%	500
Wax myrtle	*Morella cerifera*	5%	250
American hornbeam	*Carpinus caroliniana*	10%	500
Water oak	*Quercus nigra*	10%	500
White oak	*Quercus alba*	15%	800
Northern red oak	*Quercus rubra*	15%	800
Yellow poplar	*Liriodendron tulipifera*	10%	500
		Total Bare Roots	**5,100**

Stream Bank Live Staking			
Live Stakes			
Common Name	**Scientific Name**	**Percent Composition**	**QTY**
Black Willow	*Salix nigra*	40%	3,450
Buttonbush	*Cephalanthus occidentalis*	30%	2,600
Silky Dogwood	*Cornus amomum*	30%	2,600
		Total Live Stakes	**8,650**

Table 8. Vegetation Plot Data

Planted Acreage	26.19
Date of Initial Plant	2023-03-02
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	NA
Date of Current Survey	2023-03-02
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/S hrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 4 F		Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F		Veg Plot 8 F		Veg Plot 9 F		Veg Plot 10 F		Veg Plot 11 F		Veg Plot 12 F		Veg Plot 13 F		Veg Plot 1 R	Veg Plot 2 R	Veg Plot 3 R	Veg Plot 4 R	Veg Plot 5 R	Veg Plot 6 R
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Total	Total	Total	Total	Total	Total
Species Included in Approved Mitigation Plan	Alnus serrulata	hazel alder	Tree	FACW	2	2	1	1					3	3			2	2	4	4	1	1			3	3	1	1	1	1			1			
	Betula nigra	river birch	Tree	FACW	1	1	1	1	2	2					2	2	2	2	3	3	2	2	1	1	1	1	2	2	4	4			1		1	
	Carpinus caroliniana	American hornbeam	Tree	FAC					1	1																					2	3	1			
	Carya aquatica	water hickory	Tree	OBL			2	2			5	5	1	1	1	1					4	4	3	3			1	1	2	2		1		1		
	Cephalanthus occidentalis	common buttonbush	Shrub	OBL	1	1	2	2									2	2	2	2	1	1	1	1	2	2	1	1						2	3	
	Fraxinus pennsylvanica	green ash	Tree	FACW							5	5			1	1							1	1										1	2	
	Liriodendron tulipifera	tuliptree	Tree	FACU					3	3																					1			1		
	Morella cerifera	wax myrtle	Tree	FAC			1	1			2	2	1	1	5	5			1	1			2	2	1	1					2		3			
	Nyssa biflora	swamp tupelo	Tree	OBL	1	1					4	4							1	1	2	2					1	1						1	2	
	Platanus occidentalis	American sycamore	Tree	FACW	1	1	3	3	1	1							2	2					2	2					1	1	2	2	3			2
	Quercus alba	white oak	Tree	FACU																											2					
	Quercus laurifolia	laurel oak	Tree	FACW	3	3	1	1			1	1	4	4	4	4	4	4					2	2	1	1	3	3	5	5			3	1		
	Quercus lyrata	overcup oak	Tree	OBL	1	1	2	2									1	1	3	3	1	1	1	1	3	3	5	5	2	2			3	3	1	3
	Quercus michauxii	swamp chestnut oak	Tree	FACW							1	1											2	2	1	1			4	4		4				
	Quercus nigra	water oak	Tree	FAC	1	1	1	1	2	2																					2	1				
	Quercus phellos	willow oak	Tree	FACW			1	1					5	5			2	2					1	1	1	1	1	1			2	2		3	1	2	1	
	Quercus rubra	northern red oak	Tree	FACU					2	2																					7	4	1			
	Salix nigra	black willow	Tree	OBL													2	2	1	1			2	2			2	2	2	2				3	5	3
	Taxodium distichum	bald cypress	Tree	OBL			2	2			1	1	3	3	4	4	4	4	3	3	4	4	2	2	2	2	1	1						3		
	Ulmus americana	American elm	Tree	FAC	4	4	1	1	4	4	1	1			1	1	1	1	2	2	1	1			1	1			2	2	4	4			1	3
Sum	Performance Standard				15	15	18	18	15	15	20	20	17	17	18	18	22	22	20	20	17	17	20	20	16	16	17	17	25	25	22	22	16	15	17	14
Mitigation Plan Performance Standard	Current Year Stem Count					15		18		15		20		17		18		22		20		17		20		16		17		25	22	22	16	15	17	14
	Stems/Acre					607		729		607		810		688		729		891		810		688		810		648		688		1012	891	891	648	607	688	567
	Species Count					9		12		7		8		6		7		10		9		9		12		10		9		10	8	8	8	9	8	6
	Dominant Species Composition (%)					27		17		27		25		29		28		18		20		24		15		19		29		20	32	18	19	20	29	21
	Average Plot Height (ft.)					1		1		1		1		2		2		1		1		1		1		2		2		1	1	1	1	1	2	1
	% Invasives					0		0		0		0		0		0		0		0		0		0		0		0		0	0	0	0	0	0	0
Post Mitigation Plan Performance Standard	Current Year Stem Count					15		18		15		20		17		18		22		20		17		20		16		17		25	22	22	16	15	17	14
	Stems/Acre					607		729		607		810		688		729		891		810		688		810		648		688		1012	891	891	648	607	688	567
	Species Count					9		12		7		8		6		7		10		9		9		12		10		9		10	8	8	8	9	8	6
	Dominant Species Composition (%)					27		17		27		25		29		28		18		20		24		15		19		29		20	32	18	19	20	29	21
	Average Plot Height (ft.)					1		1		1		1		2		2		1		1		1		1		2		2		1	1	1	1	1	2	1
	% Invasives					0		0		0		0		0		0		0		0		0		0		0		0		0	0	0	0	0	0	0

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

Table 9. Vegetation Plot Summary

Vegetation Performance Standards Summary Table												
	Veg Plot 1 F				Veg Plot 2 F				Veg Plot 3 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	607	1	9	0	729	1	12	0	607	1	7	0
	Veg Plot 4 F				Veg Plot 5 F				Veg Plot 6 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	810	1	8	0	688	2	6	0	729	2	7	0
	Veg Plot 7 F				Veg Plot 8 F				Veg Plot 9 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	891	1	10	0	810	1	9	0	688	1	9	0
	Veg Plot 10 F				Veg Plot 11 F				Veg Plot 12 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	810	1	12	0	648	2	10	0	688	2	9	0
	Veg Plot 13 F				Veg Plot Group 1 R				Veg Plot Group 2 R			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	1012	1	10	0	891	1	8	0	891	1	8	0
	Veg Plot Group 3 R				Veg Plot Group 4 R				Veg Plot Group 5 R			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	648	1	8	0	607	1	9	0	688	2	8	0
	Veg Plot Group 6 R											
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives								
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	567	1	6	0								

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

Appendix C

Stream Morphology Data

Table 10: Baseline Stream Data Summary
Six Runs BB-A

Parameter	Pre-Existing Condition (applicable)					Design		Monitoring Baseline (MY0)		
Riffle Only	Min	Mean	Med	Max	n	Min	Max	Min	Max	n
Bankfull Width (ft)	5.4	7.2	7.2	9.0	2		---		9.5	1
Floodprone Width (ft)	6.5	12.0	12.0	17.5	2		---		>29.9	1
Bankfull Mean Depth (ft)	0.7	1.0	1.0	1.2	2		---		0.8	1
Bankfull Max Depth (ft)	1	1.4	1.4	1.7	2		---		1.3	1
Bankfull Cross Sectional Area (ft^2)	6.3	6.4	6.4	6.4	2		---		8.0	1
Width/Depth Ratio	4.6	8.7	8.7	12.7	2		---		11.3	1
Entrenchment Ratio	1.2	1.6	1.6	2.0	2		---		>3.1	1
Bank Height Ratio	1.3	1.6	1.6	1.9	2		---		1.0	1
Max part size (mm) mobilized at bankfull										
Rosgen Classification	C4/5					---		---		
Bankfull Discharge (cfs)										
Sinuosity (ft)	1.04					---		---		
Water Surface Slope (Channel) (ft/ft)										
Other										

Table 10: Baseline Stream Data Summary
Six Runs BB-B

Parameter	Pre-Existing Condition (applicable)					Design		Monitoring Baseline (MY0)		
Riffle Only	Min	Mean	Med	Max	n	Min	Max	Min	Max	n
Bankfull Width (ft)				5.3	1		---	9.4	10.8	2
Floodprone Width (ft)				8.6	1		---	>27.6	>30.2	2
Bankfull Mean Depth (ft)				1.1	1		---			2
Bankfull Max Depth (ft)				1.3	1		---	1.1	1.8	2
Bankfull Cross Sectional Area (ft^2)				5.7	1		---	7.8	12.2	2
Width/Depth Ratio				4.8	1		---			2
Entrenchment Ratio				1.6	1		---	>2.8	>2.9	2
Bank Height Ratio				1.9	1		---	1.0	1.0	2
Max part size (mm) mobilized at bankfull										
Rosgen Classification	G4/5c					---		---		
Bankfull Discharge (cfs)										
Sinuosity (ft)	1.10					---		---		
Water Surface Slope (Channel) (ft/ft)										
Other										

Table 10: Baseline Stream Data Summary
Six Runs BB-C

Parameter	Pre-Existing Condition (applicable)					Design		Monitoring Baseline (MY0)		
Riffle Only	Min	Mean	Med	Max	n	Min	Max	Min	Max	n
Bankfull Width (ft)	7.3	10.1	8.9	15.2	4		11.8	8.5	12.7	10
Floodprone Width (ft)	9.8	14.4	10.8	26.4	4		>50	>29	>29	10
Bankfull Mean Depth (ft)	1.0	1.2	1.2	1.4	4		1.1	0.7	1.3	10
Bankfull Max Depth (ft)	1.3	1.5	1.5	1.9	4		1.6	1.1	2.0	10
Bankfull Cross Sectional Area (ft^2)	8.3	11.8	10.4	18.0	4		13.0	6.4	15.3	10
Width/Depth Ratio	5.3	8.7	8.4	12.9	4		10.7	9.5	14.0	10
Entrenchment Ratio	1.2	1.4	1.3	1.7	4		>2.2	>2.4	>2.4	10
Bank Height Ratio	1.7	2.7	2.1	5.0	4		1.0	1.0	1.0	10
Max part size (mm) mobilized at bankfull										
Rosgen Classification	G4/5c to F4/5					C4/E4		C4/E4		
Bankfull Discharge (cfs)										
Sinuosity (ft)	1.12 - 1.26					1.15 - 1.17		1.15 - 1.17		
Water Surface Slope (Channel) (ft/ft)										
Other										

Table 10: Baseline Stream Data Summary
Six Runs DE2-B

Parameter	Pre-Existing Condition (applicable)					Design		Monitoring Baseline (MY0)		
Riffle Only	Min	Mean	Med	Max	n	Min	Max	Min	Max	n
Bankfull Width (ft)				2.8	1		3.8		4.9	1
Floodprone Width (ft)				>15	1		>20		>30.1	1
Bankfull Mean Depth (ft)				0.4	1		0.4		0.4	1
Bankfull Max Depth (ft)				0.6	1		0.5		0.8	1
Bankfull Cross Sectional Area (ft^2)				1.2	1		1.4		1.8	1
Width/Depth Ratio				6.4	1		10.7		12.9	1
Entrenchment Ratio				>2.2	1		>2.2		>6.2	1
Bank Height Ratio				1.5	1		1.0		1.0	1
Max part size (mm) mobilized at bankfull										
Rosgen Classification	E5					C4b		C4b		
Bankfull Discharge (cfs)										
Sinuosity (ft)	1.07					1.12		1.12		
Water Surface Slope (Channel) (ft/ft)										
Other										

Table 10: Baseline Stream Data Summary
Six Runs DE4-B

Parameter	Pre-Existing Condition (applicable)					Design		Monitoring Baseline (MY0)		
Riffle Only	Min	Mean	Med	Max	n	Min	Max	Min	Max	n
Bankfull Width (ft)				6.0	1		10.3	10.1	10.1	2
Floodprone Width (ft)				9.6	1		>50	>29.7	>30.1	2
Bankfull Mean Depth (ft)				1.0	1		1.0	1	1.1	2
Bankfull Max Depth (ft)				1.4	1		1.5	1.4	1.7	2
Bankfull Cross Sectional Area (ft^2)				6.3	1		10.4	10.3	10.8	2
Width/Depth Ratio				5.8	1		10.3	9.4	11.4	2
Entrenchment Ratio				1.6	1		>2.2	>2.8	>2.9	2
Bank Height Ratio				1.7	1		1.0	1	1.0	2
Max part size (mm) mobilized at bankfull										
Rosgen Classification	G4/5c to F4/4/5					C4/E4		C4/E4		
Bankfull Discharge (cfs)										
Sinuosity (ft)	1.27					1.18		1.18		
Water Surface Slope (Channel) (ft/ft)										
Other										

Table 10: Baseline Stream Data Summary
Six Runs DE7

Parameter	Pre-Existing Condition (applicable)					Design		Monitoring Baseline (MY0)		
Riffle Only	Min	Mean	Med	Max	n	Min	Max	Min	Max	n
Bankfull Width (ft)				3.2	1		3.5		4.3	1
Floodprone Width (ft)				4.2	1		>15		>29.5	1
Bankfull Mean Depth (ft)				0.3	1		0.4		0.5	1
Bankfull Max Depth (ft)				0.5	1		0.5		0.8	1
Bankfull Cross Sectional Area (ft^2)				0.9	1		1.3		2.1	1
Width/Depth Ratio				11.6	1		9.8		8.4	1
Entrenchment Ratio				1.3	1		>2.2		>6.9	1
Bank Height Ratio				2.9	1		1.0		1.0	1
Max part size (mm) mobilized at bankfull										
Rosgen Classification	G5c					B4a to E4		B4a to E4		
Bankfull Discharge (cfs)										
Sinuosity (ft)	1.01					1.05		1.05		
Water Surface Slope (Channel) (ft/ft)										
Other										

Table 10: Baseline Stream Data Summary
Six Runs DE8

Parameter	Pre-Existing Condition (applicable)					Design		Monitoring Baseline (MY0)		
Riffle Only	Min	Mean	Med	Max	n	Min	Max	Min	Max	n
Bankfull Width (ft)				5.5	1		4.5		3.9	1
Floodprone Width (ft)				8.5	1		>20		>29.9	1
Bankfull Mean Depth (ft)				0.3	1		0.4		0.3	1
Bankfull Max Depth (ft)				0.6	1		0.6		0.6	1
Bankfull Cross Sectional Area (ft^2)				1.8	1		1.8		1.3	1
Width/Depth Ratio				17.0	1		11.3		11.6	1
Entrenchment Ratio				1.5	1		>2.2		>7.6	1
Bank Height Ratio				3.5	1		1.0		1.0	1
Max part size (mm) mobilized at bankfull										
Rosgen Classification	F5b					C4/E4		C4/E4		
Bankfull Discharge (cfs)										
Sinuosity (ft)	1.11					1.14		1.14		
Water Surface Slope (Channel) (ft/ft)										
Other										

Monitoring Data - Cross Section Morphology Monitoring Summary

Six Runs Stream and Wetland Mitigation Project / DMS:100170 Reaches: BB-A, BB-B, BB-C

	Cross Section 1 (Riffle - BB-A)							Cross Section 2 (Pool - BB-A)							Cross Section 3 (Riffle - BB-B)							Cross Section 4 (Pool - BB-B)							Cross Section 5 (Riffle - BB-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	148.22							148.04							144.23							144.13							142.18						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0														1.0														1.0						
Thalweg Elevation	146.95							145.23							142.41							140.94							141.06						
LTOB[2] Elevation	148.22							148.04							144.23							144.13							142.18						
LTOB[2] Max Depth (ft)	1.3							2.8							1.8							3.2							1.1						
LTOB[2] Cross Sectional Area (ft^2)	8.0							11.7							12.2							17.2							7.8						

	Cross Section 6 (Pool - BB-B)							Cross Section 7 (Riffle - BB-C)							Cross Section 8 (Pool - BB-C)							Cross Section 9 (Riffle - BB-C)							Cross Section 10 (Pool BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	141.96							136.98							136.71							133.71							133.31						
Bank Height Ratio - Based on AB Bankfull[1] Area								1.0														1.0													
Thalweg Elevation	140.45							135.58							134.49							132.60							130.70						
LTOB[2] Elevation	141.96							136.98							136.71							133.70							133.31						
LTOB[2] Max Depth (ft)	1.5							1.4							2.2							1.1							2.6						
LTOB[2] Cross Sectional Area (ft^2)	9.1							7.7							10.7							6.4							12.2						

	Cross Section 11 (Riffle - BB-C)							Cross Section 12 (Pool - BB-C)							Cross Section 13 (Pool - BB-C)							Cross Section 14 (Riffle - BB-C)							Cross Section 15 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	130.27							129.79							126.77							126.29							123.45						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0																					1.0							1.0						
Thalweg Elevation	128.99							127.65							124.66							125.12							122.11						
LTOB[2] Elevation	130.27							129.79							126.77							126.29							123.45						
LTOB[2] Max Depth (ft)	1.3							2.1							2.1							1.2							1.3						
LTOB[2] Cross Sectional Area (ft^2)	6.9							8.6							11.9							7.1							7.5						

Note: The smaller the channel the closer the survey measurements are to their limit of reliable detection, therefore inter-annual variation in morphological measurement (as a percentage) is by default magnified as channel size decereases. Some of the variability above is the result of this factor and some is due to the large amount of depositional sediments observed.

Monitoring Data - Cross Section Morphology Monitoring Summary

Six Runs Stream and Wetland Mitigation Project / DMS:100170 Reaches: BB-C, DE7, DE2-B

	Cross Section 16 (Pool - BB-C)							Cross Section 17 (Pool - BB-C)							Cross Section 18 (Riffle - BB-C)							Cross Section 19 (Riffle - BB-C)							Cross Section 20 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	123.34							119.65							119.76							117.02							116.74						
Bank Height Ratio - Based on AB Bankfull[1] Area															1.0							1.0													
Thalweg Elevation	120.67							117.18							118.29							115.47							114.07						
LTOB[2] Elevation	123.34							119.65							119.76							117.02							116.74						
LTOB[2] Max Depth (ft)	2.7							2.5							1.5							1.6							2.7						
LTOB[2] Cross Sectional Area (ft^2)	15.0							11.8							9.6							9.2							13.4						

	Cross Section 21 (Riffle - BB-C)							Cross Section 22 (Pool - BB-C)							Cross Section 23 (Pool - BB-C)							Cross Section 24 (Riffle - BB-C)							Cross Section 25 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	115.12							114.46							112.47							112.61							110.45						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0																					1.0							1.0						
Thalweg Elevation	113.17							111.51							109.60							110.64							108.65						
LTOB[2] Elevation	115.12							114.46							112.47							112.61							110.45						
LTOB[2] Max Depth (ft)	2.0							2.9							2.9							2.0							1.8						
LTOB[2] Cross Sectional Area (ft^2)	15.3							20.8							17.1							13.6							12.2						

	Cross Section 26 (Pool - BB-C)							Cross Section 27 (Pool - DE7)							Cross Section 28 (Riffle - DE7)							Cross Section 29 (Pool - DE2-B)							Cross Section 30 (Riffle - DE2-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	110.39							137.08							134.62							128.81							128.31						
Bank Height Ratio - Based on AB Bankfull[1] Area															1.0														1.0						
Thalweg Elevation	107.53							135.46							133.80							127.82							127.48						
LTOB[2] Elevation	110.39							137.08							134.62							128.81							128.31						
LTOB[2] Max Depth (ft)	2.9							1.6							0.8							1.0							0.8						
LTOB[2] Cross Sectional Area (ft^2)	23.4							4.3							2.1							1.8							1.8						

Note: The smaller the channel the closer the survey measurements are to their limit of reliable detection, therefore inter-annual variation in morphological measurement (as a percentage) is by default magnified as channel size decereases. Some of the variability above is the result of this factor and some is due to the large amount of depositional sediments observed.

Monitoring Data - Cross Section Morphology Monitoring Summary

Six Runs Stream and Wetland Mitigation Project / DMS:100170 Reach: DE8, DE4-B

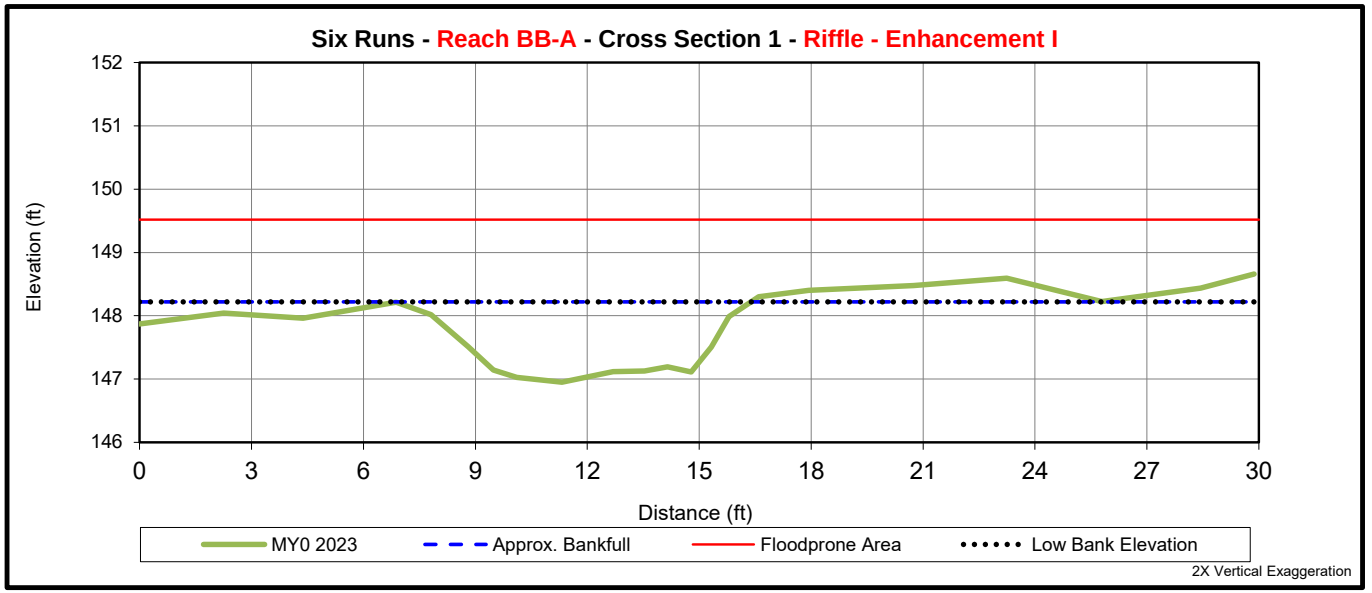
	Cross Section 31 (Pool - DE8)							Cross Section 32 (Riffle - DE8)							Cross Section 32 (Riffle - DE4-B)							Cross Section 31 (Pool - DE4-B)							Cross Section 32 (Riffle - DE4-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	125.71							125.05							119.09							118.53							116.71						
Bank Height Ratio - Based on AB Bankfull[1] Area								1.0							1.0														1.0						
Thalweg Elevation	124.18							124.46							117.65							115.99							115.02						
LTOB[2] Elevation	125.71							125.05							119.09							118.53							116.71						
LTOB[2] Max Depth (ft)	1.5							0.6							1.4							2.5							1.7						
LTOB[2] Cross Sectional Area (ft^2)	2.4							1.3							10.3							14.6							10.8						

	Cross Section 31 (Pool - DE4-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	115.86						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	113.76						
LTOB[2] Elevation	115.86						
LTOB[2] Max Depth (ft)	2.1						
LTOB[2] Cross Sectional Area (ft^2)	9.8						

Note: The smaller the channel the closer the survey measurements are to their limit of reliable detection, therefore inter-annual variation in morphological measurement (as a percentage) is by default magnified as channel size decereases. Some of the variability above is the result of this factor and some is due to the large amount of depositional sediments observed.

Upstream

Downstream

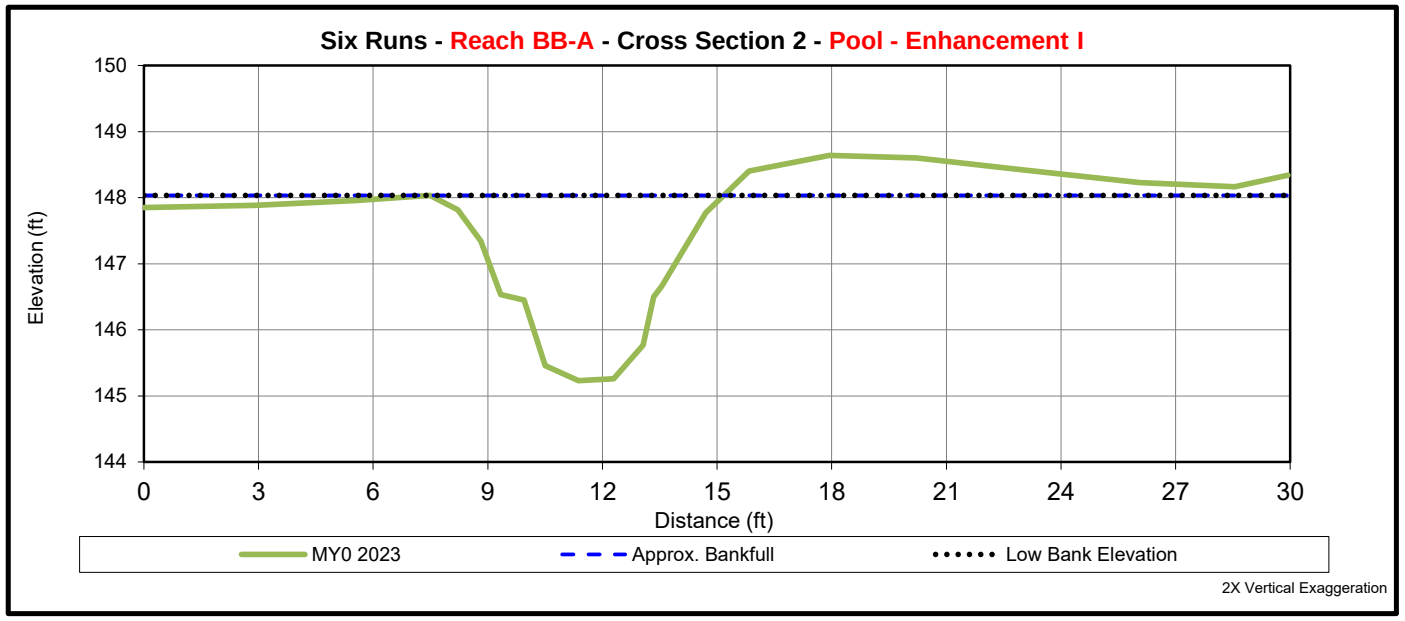


	Cross Section 1 (Riffle - BB-A)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	148.22						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	146.95						
LTOB[2] Elevation	148.22						
LTOB[2] Max Depth (ft)	1.3						
LTOB[2] Cross Sectional Area (ft^2)	8.0						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

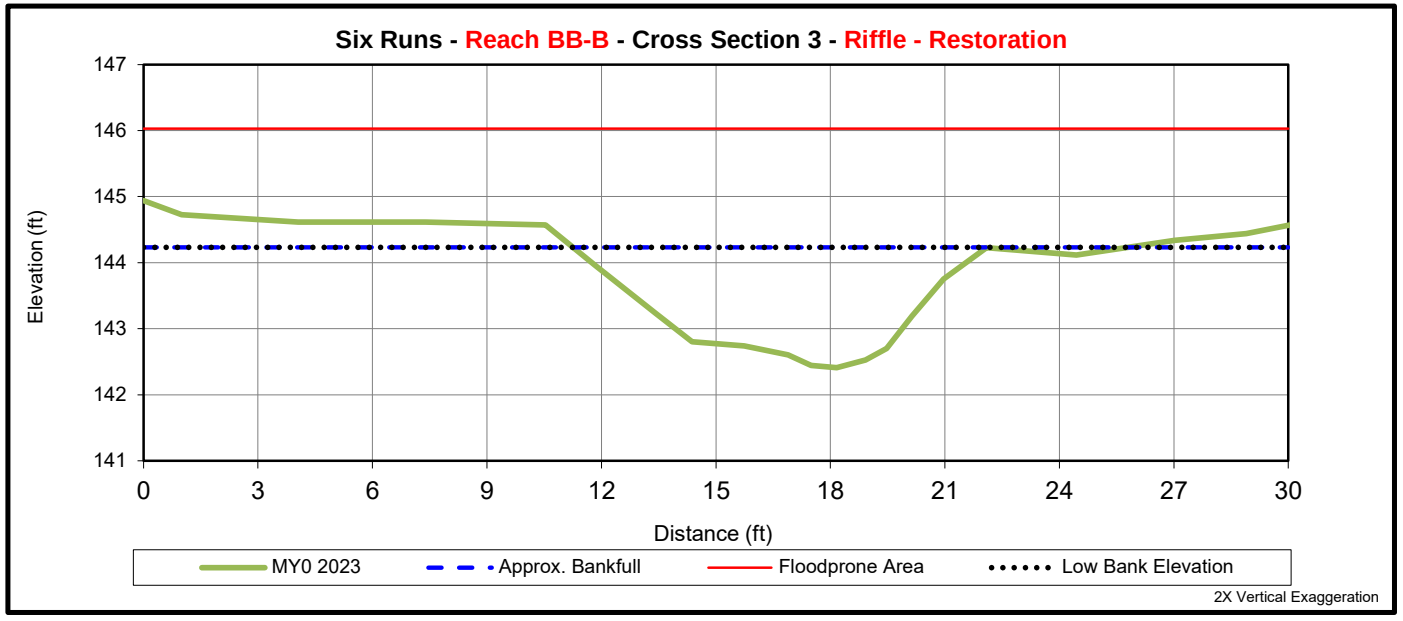


	Cross Section 2 (Pool - BB-A)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	148.04						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	145.23						
LTOB[2] Elevation	148.04						
LTOB[2] Max Depth (ft)	2.8						
LTOB[2] Cross Sectional Area (ft^2)	11.7						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

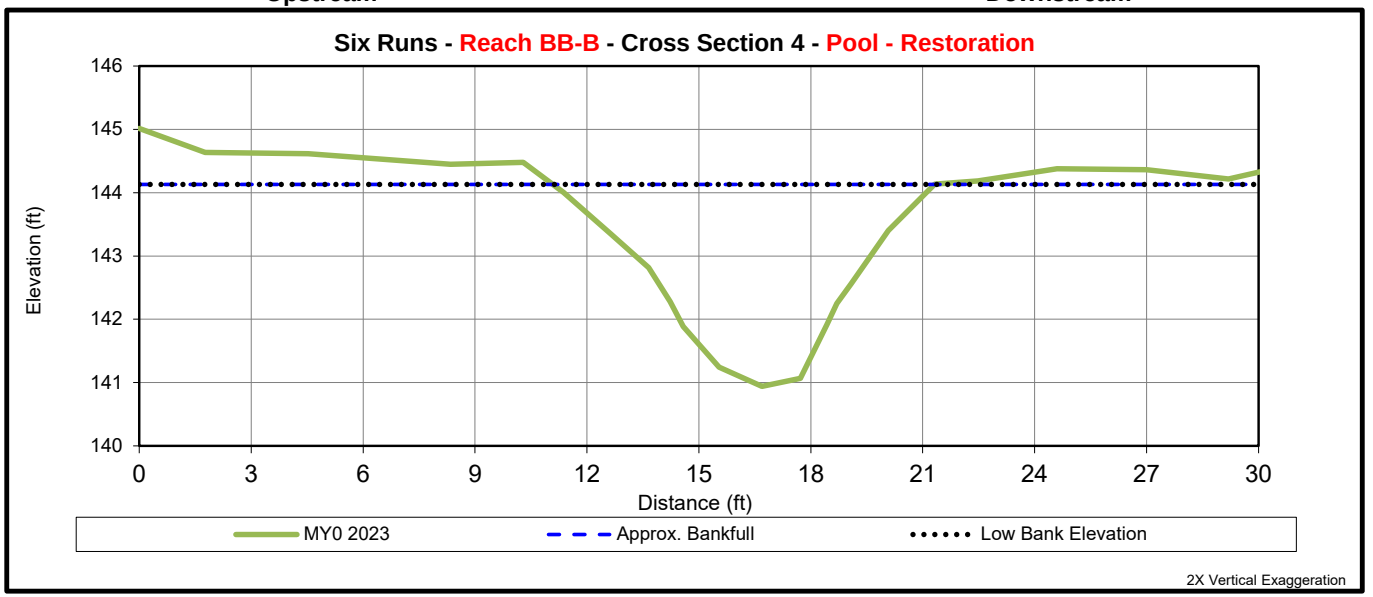


	Cross Section 3 (Riffle - BB-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	144.23						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	142.41						
LTOB[2] Elevation	144.23						
LTOB[2] Max Depth (ft)	1.8						
LTOB[2] Cross Sectional Area (ft^2)	12.2						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

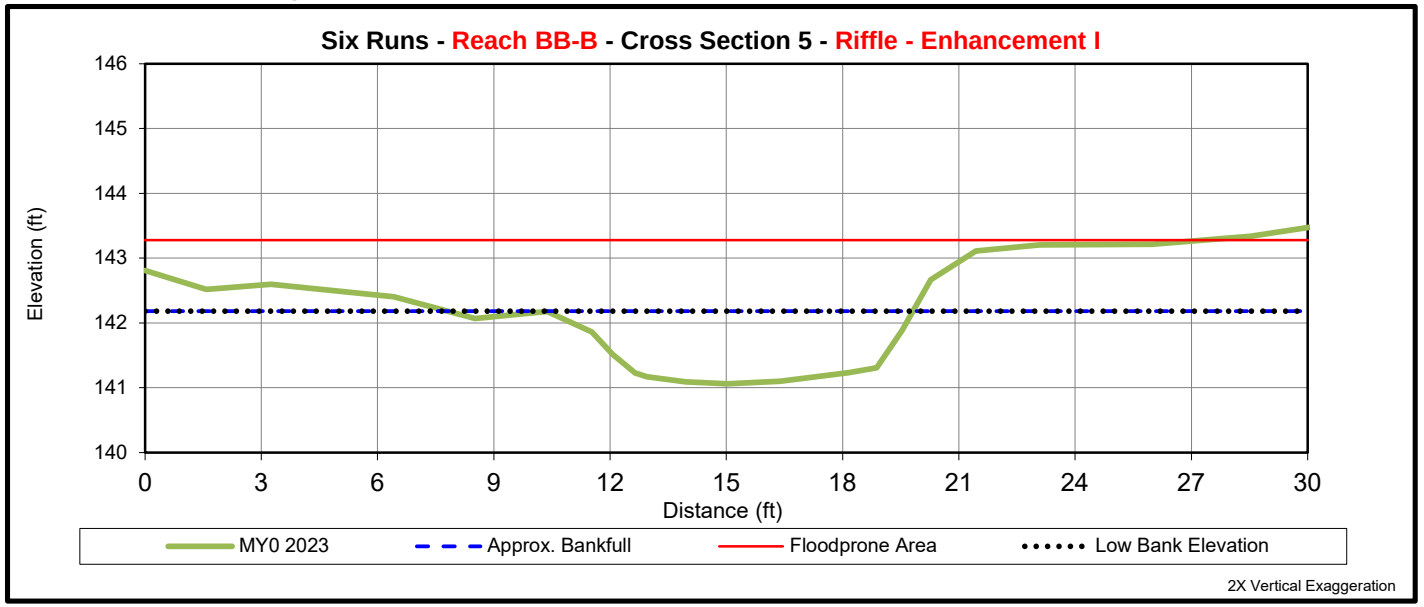


	Cross Section 4 (Pool - BB-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	144.13						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	140.94						
LTOB[2] Elevation	144.13						
LTOB[2] Max Depth (ft)	3.2						
LTOB[2] Cross Sectional Area (ft^2)	17.2						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream



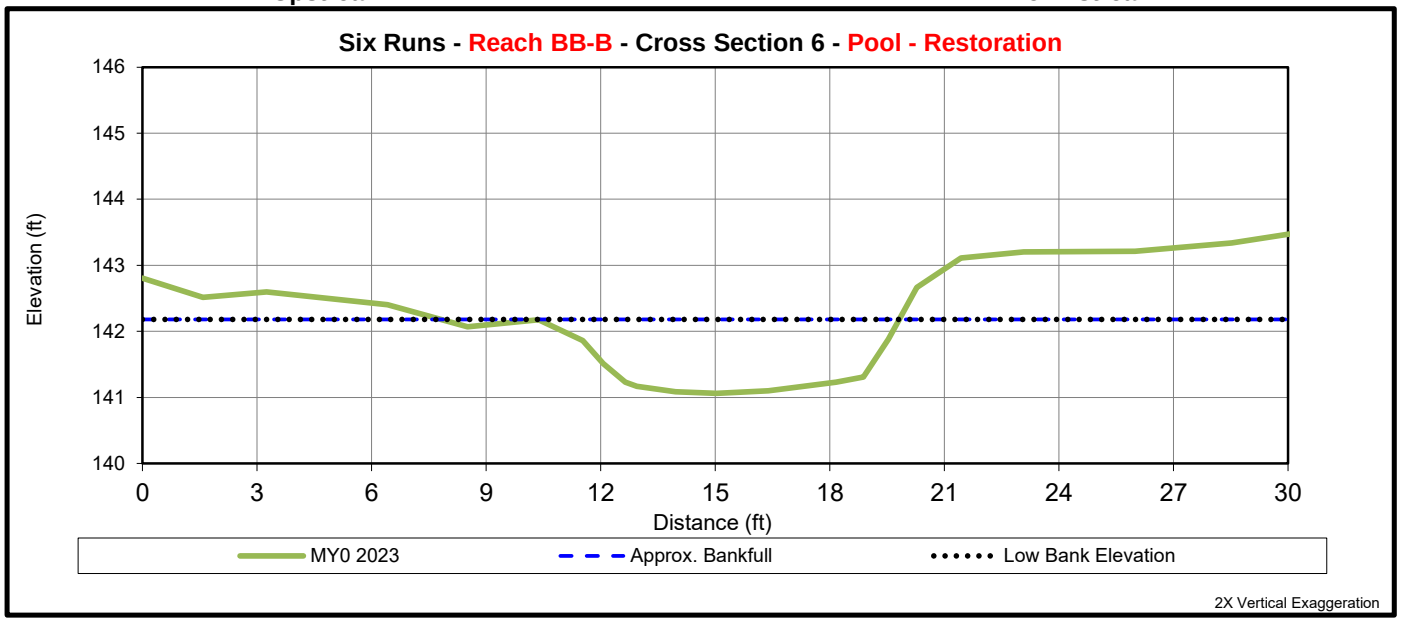
	Cross Section 5 (Riffle - BB-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	142.18						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	141.06						
LTOB[2] Elevation	142.18						
LTOB[2] Max Depth (ft)	1.1						
LTOB[2] Cross Sectional Area (ft^2)	7.8						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation

2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

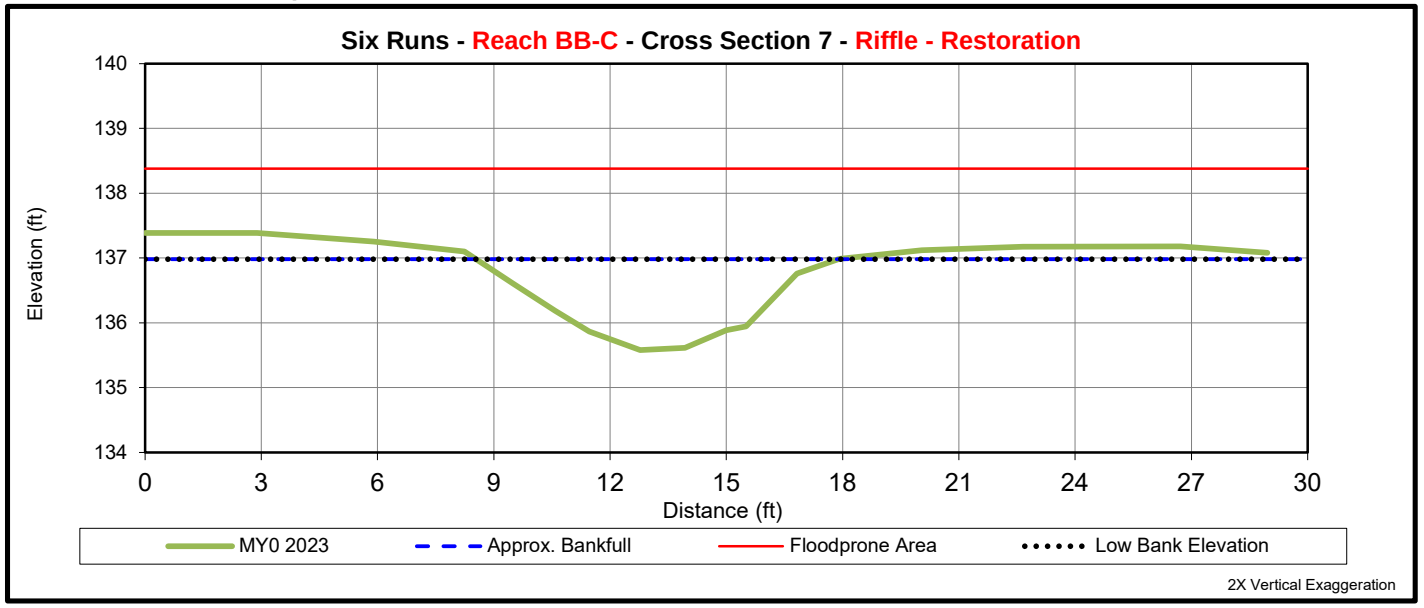


	Cross Section 6 (Pool - BB-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	141.96						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	140.45						
LTOB[2] Elevation	141.96						
LTOB[2] Max Depth (ft)	1.5						
LTOB[2] Cross Sectional Area (ft^2)	9.1						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

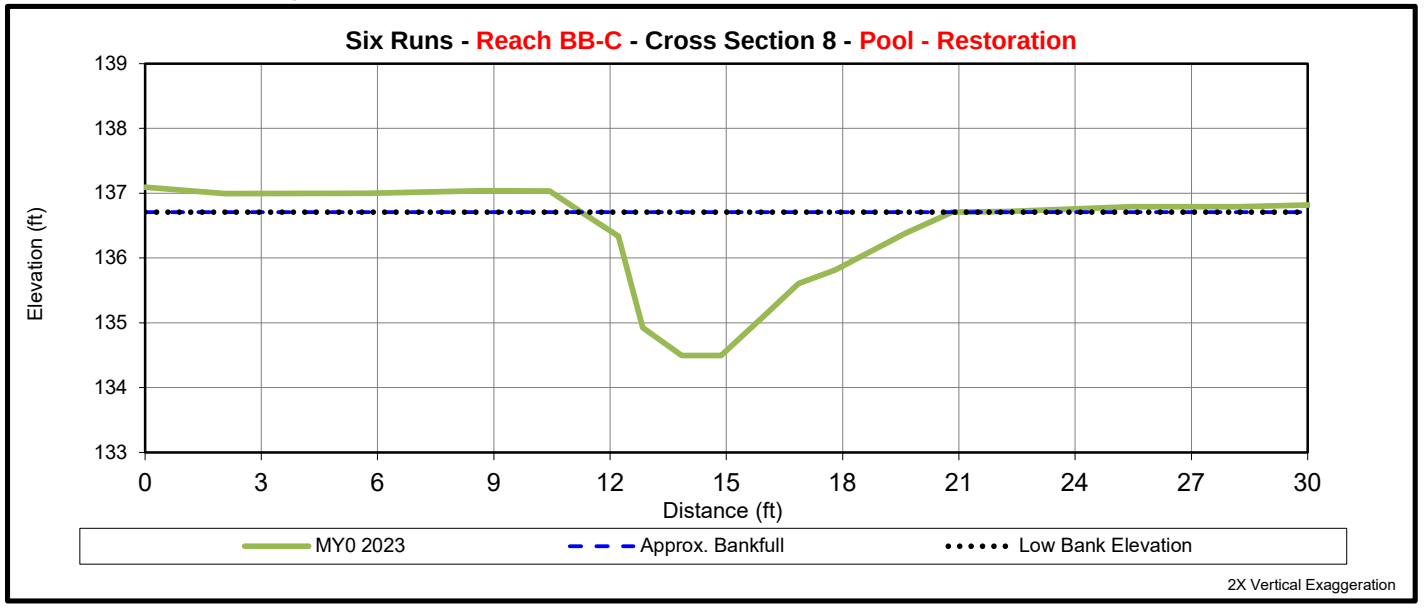


	Cross Section 7 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	136.98						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	135.58						
LTOB[2] Elevation	136.98						
LTOB[2] Max Depth (ft)	1.4						
LTOB[2] Cross Sectional Area (ft^2)	7.7						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream



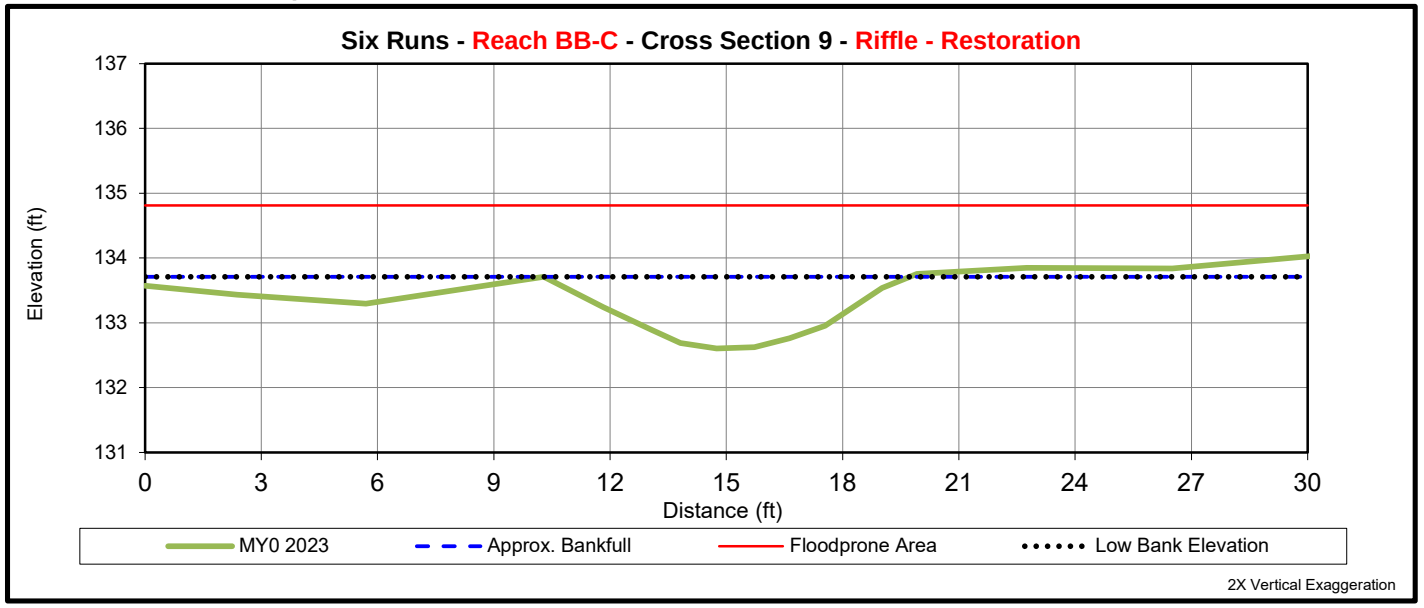
	Cross Section 8 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	136.71						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	134.49						
LTOB[2] Elevation	136.71						
LTOB[2] Max Depth (ft)	2.2						
LTOB[2] Cross Sectional Area (ft^2)	10.7						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation

2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream



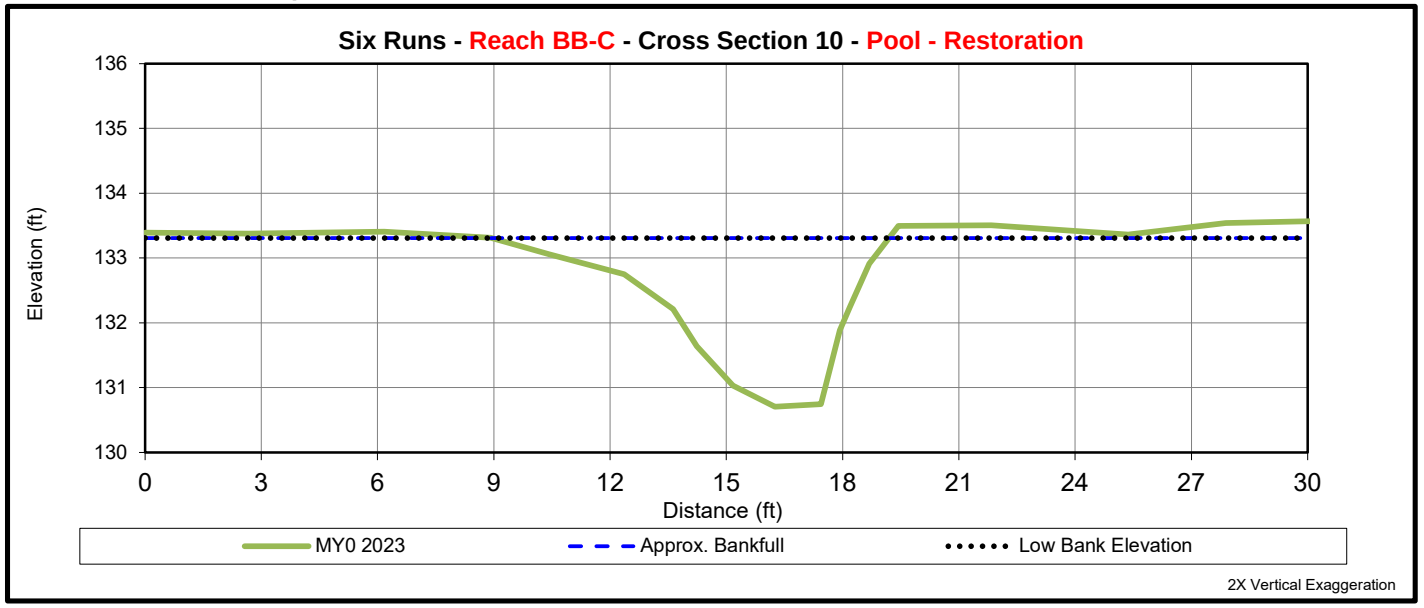
	Cross Section 9 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	133.71						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	132.60						
LTOB[2] Elevation	133.70						
LTOB[2] Max Depth (ft)	1.1						
LTOB[2] Cross Sectional Area (ft^2)	6.4						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation

2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream



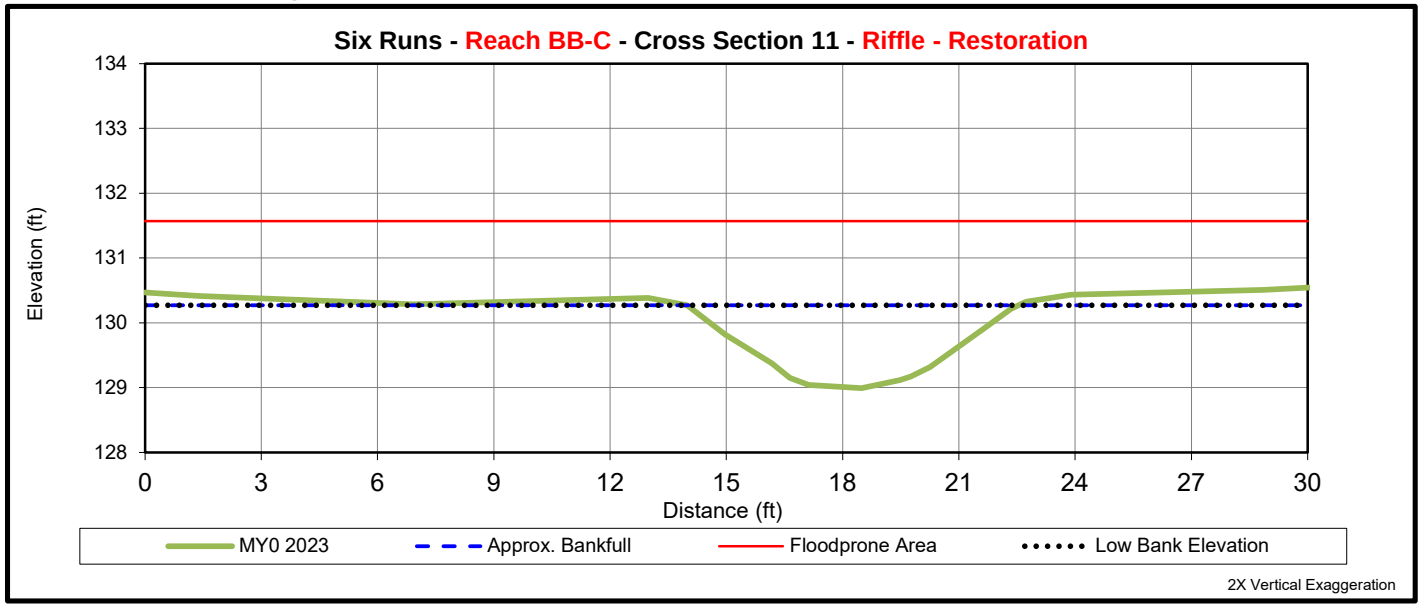
	Cross Section 10 (Pool BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	133.31						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	130.70						
LTOB[2] Elevation	133.31						
LTOB[2] Max Depth (ft)	2.6						
LTOB[2] Cross Sectional Area (ft^2)	12.2						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation

2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream



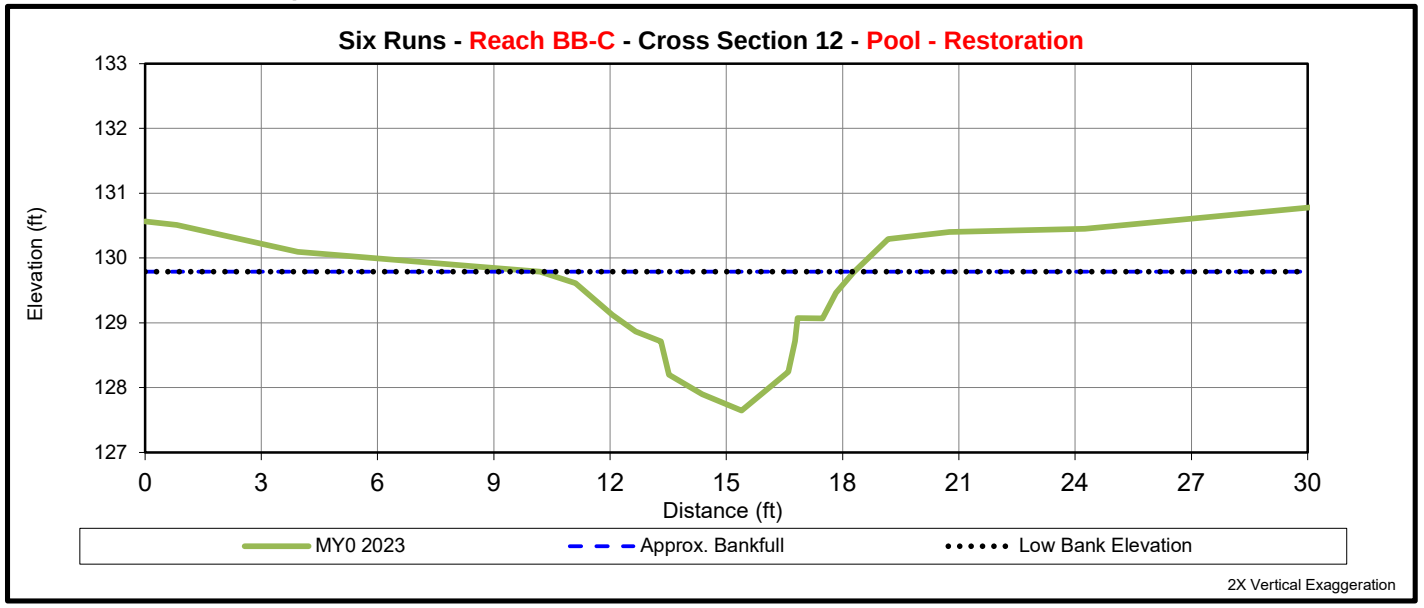
	Cross Section 11 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	130.27						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	128.99						
LTOB[2] Elevation	130.27						
LTOB[2] Max Depth (ft)	1.3						
LTOB[2] Cross Sectional Area (ft^2)	6.9						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation

2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream



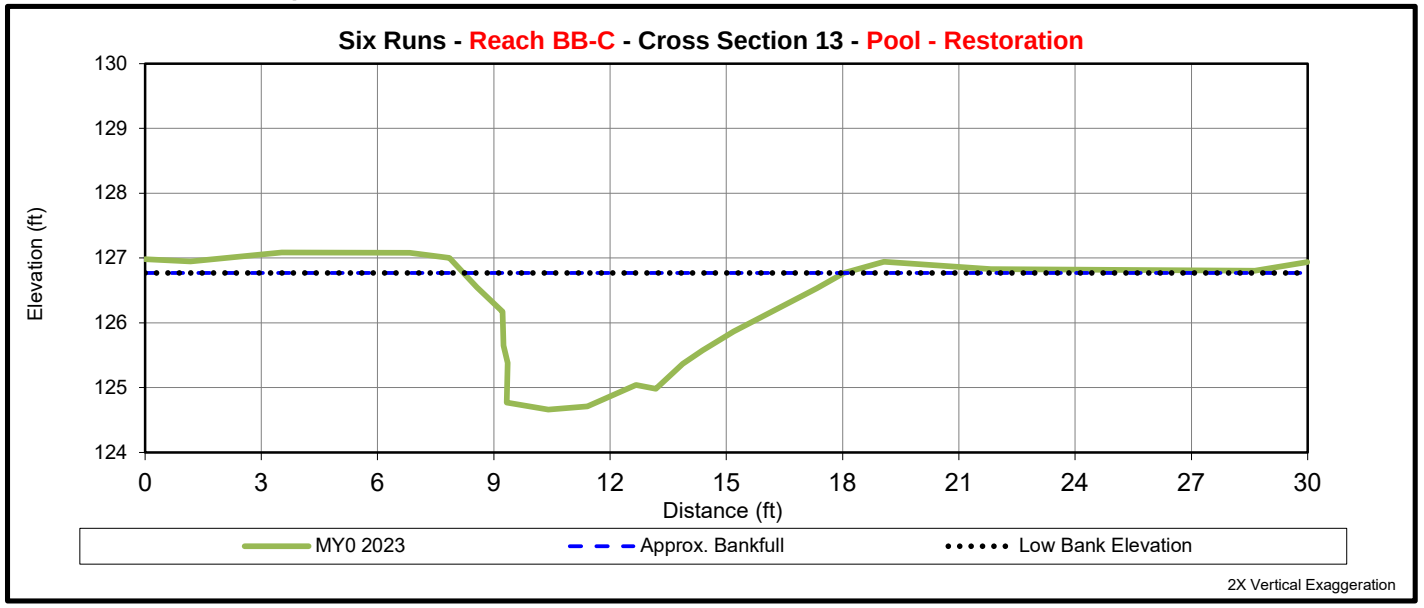
	Cross Section 12 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	129.79						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	127.65						
LTOB[2] Elevation	129.79						
LTOB[2] Max Depth (ft)	2.1						
LTOB[2] Cross Sectional Area (ft^2)	8.6						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation

2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream



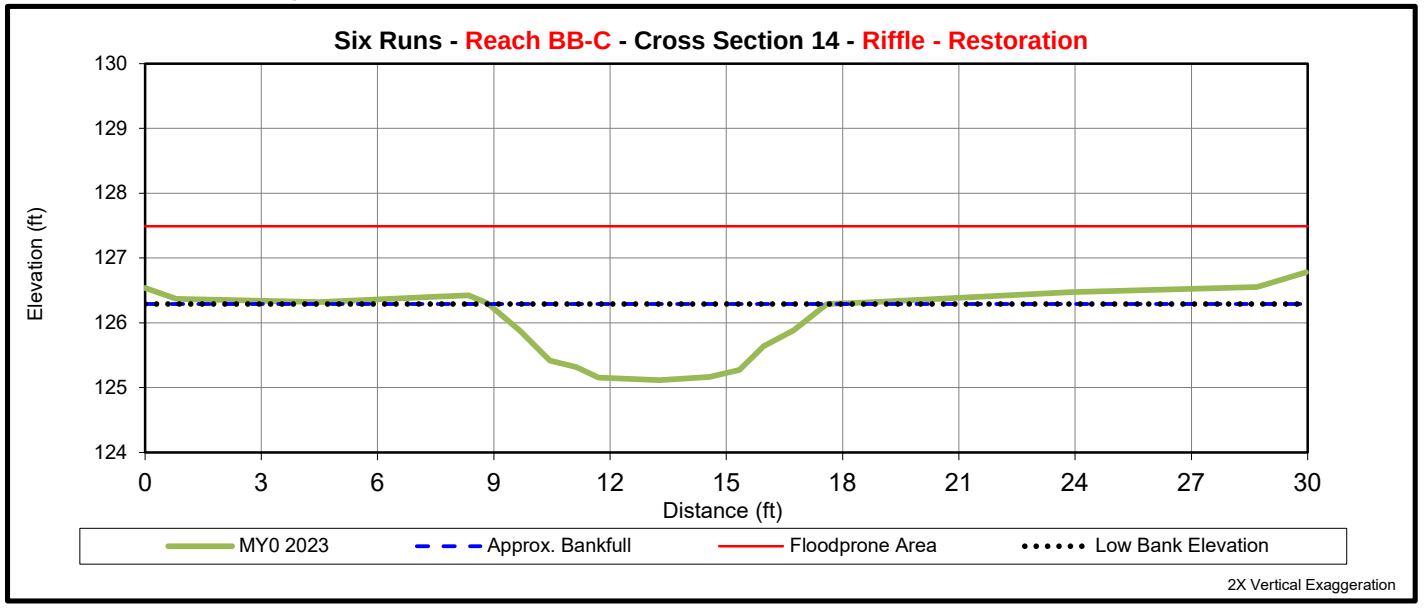
	Cross Section 13 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	126.77						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	124.66						
LTOB[2] Elevation	126.77						
LTOB[2] Max Depth (ft)	2.1						
LTOB[2] Cross Sectional Area (ft^2)	11.9						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation

2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

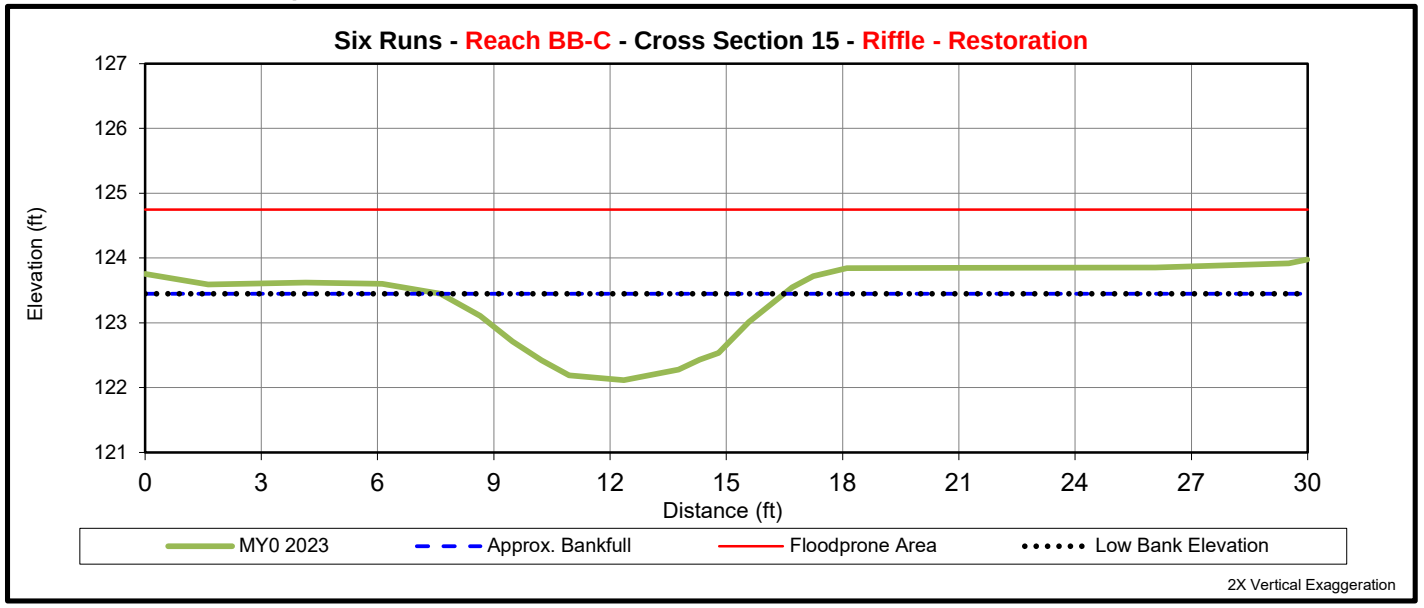


	Cross Section 14 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	126.29						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	125.12						
LTOB[2] Elevation	126.29						
LTOB[2] Max Depth (ft)	1.2						
LTOB[2] Cross Sectional Area (ft^2)	7.1						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

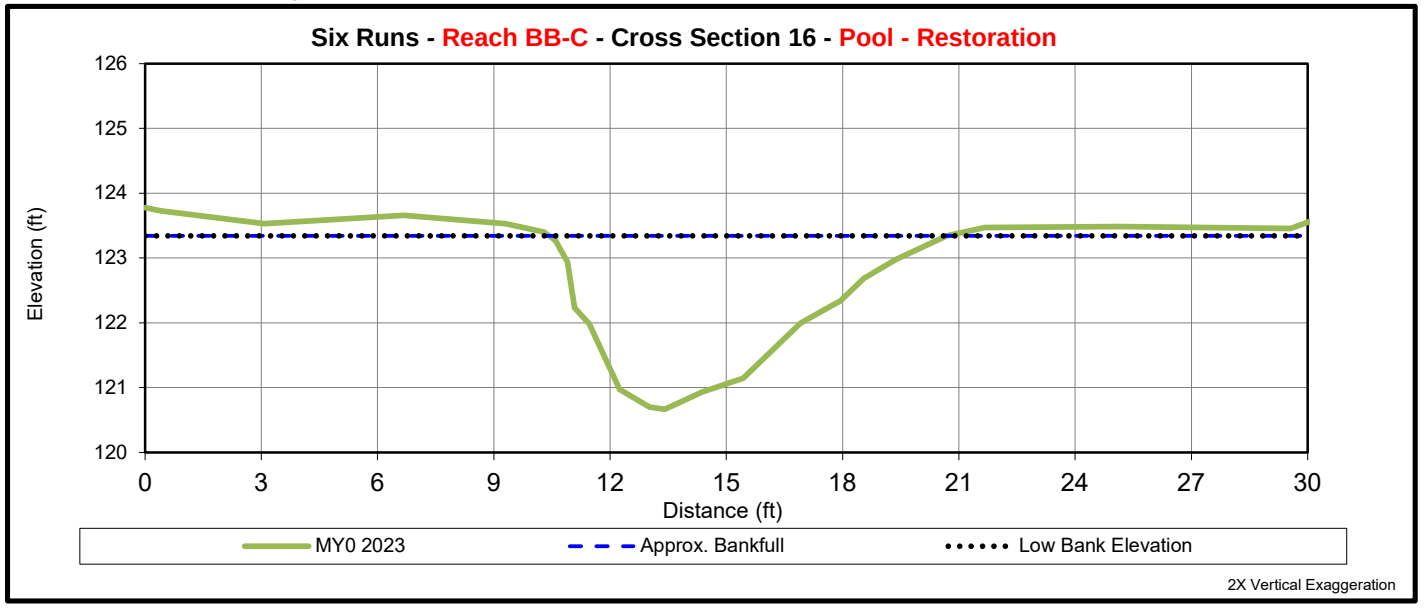


	Cross Section 15 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	123.45						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	122.11						
LTOB[2] Elevation	123.45						
LTOB[2] Max Depth (ft)	1.3						
LTOB[2] Cross Sectional Area (ft^2)	7.5						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

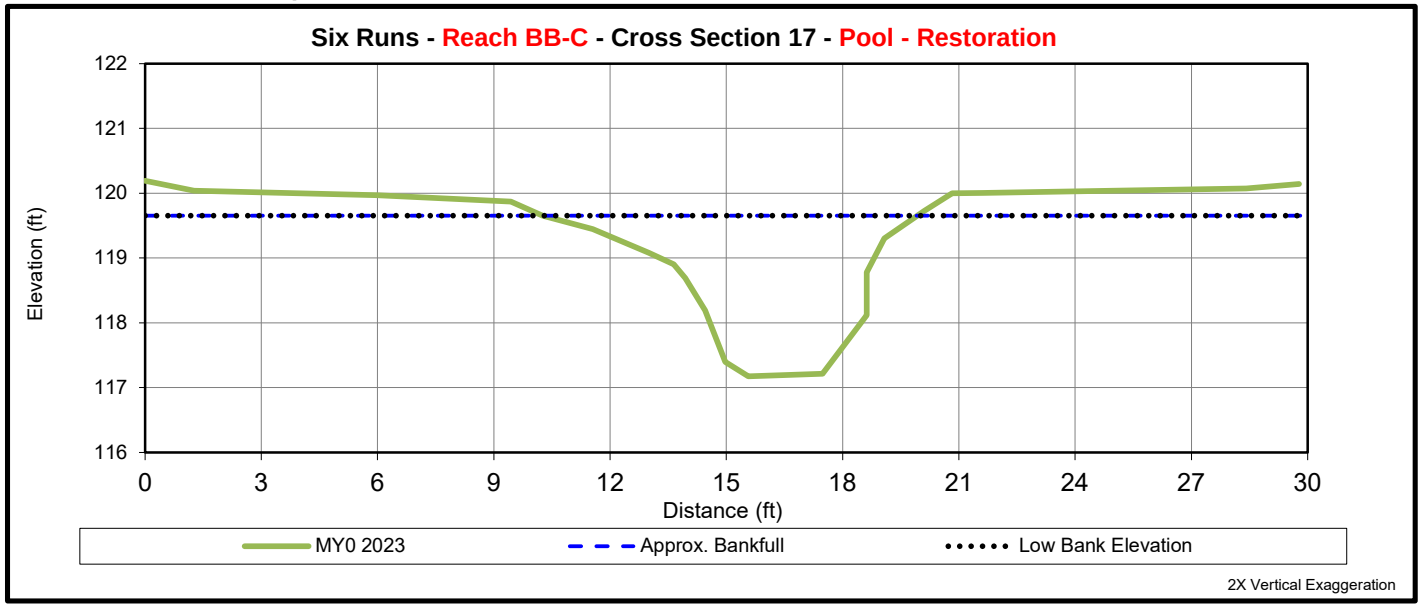


	Cross Section 16 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	123.34						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	120.67						
LTOB[2] Elevation	123.34						
LTOB[2] Max Depth (ft)	2.7						
LTOB[2] Cross Sectional Area (ft^2)	15.0						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

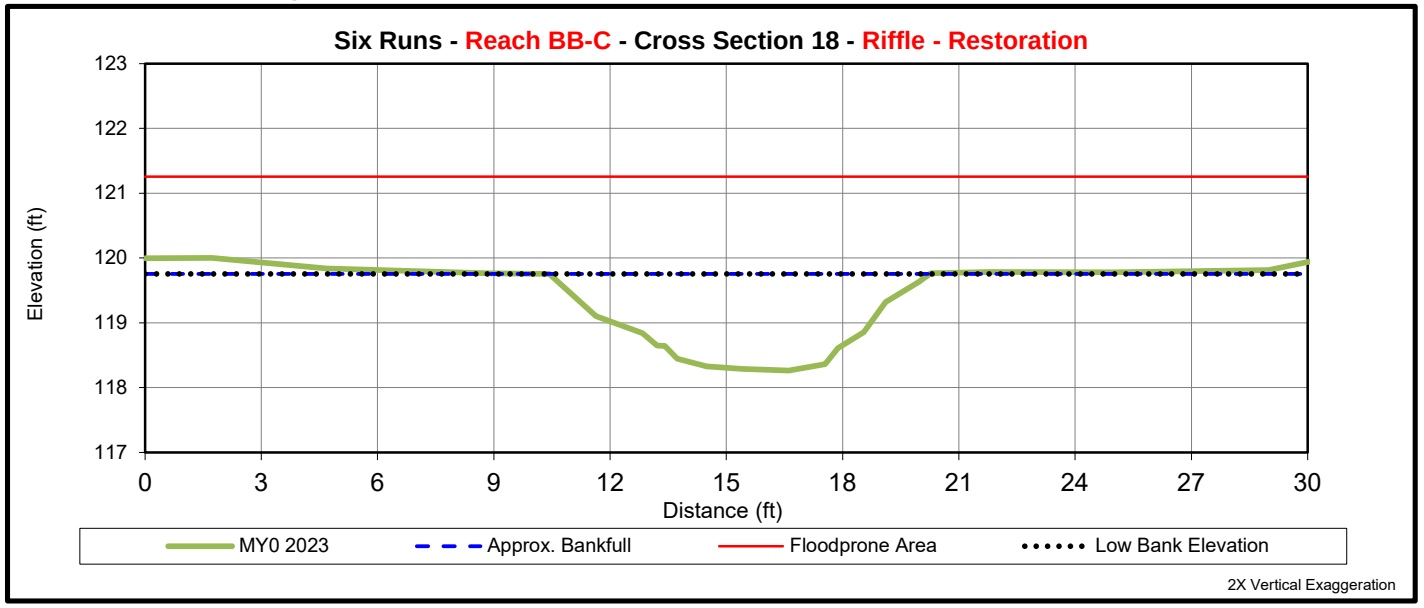


	Cross Section 17 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	119.65						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	117.18						
LTOB[2] Elevation	119.65						
LTOB[2] Max Depth (ft)	2.5						
LTOB[2] Cross Sectional Area (ft^2)	11.8						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

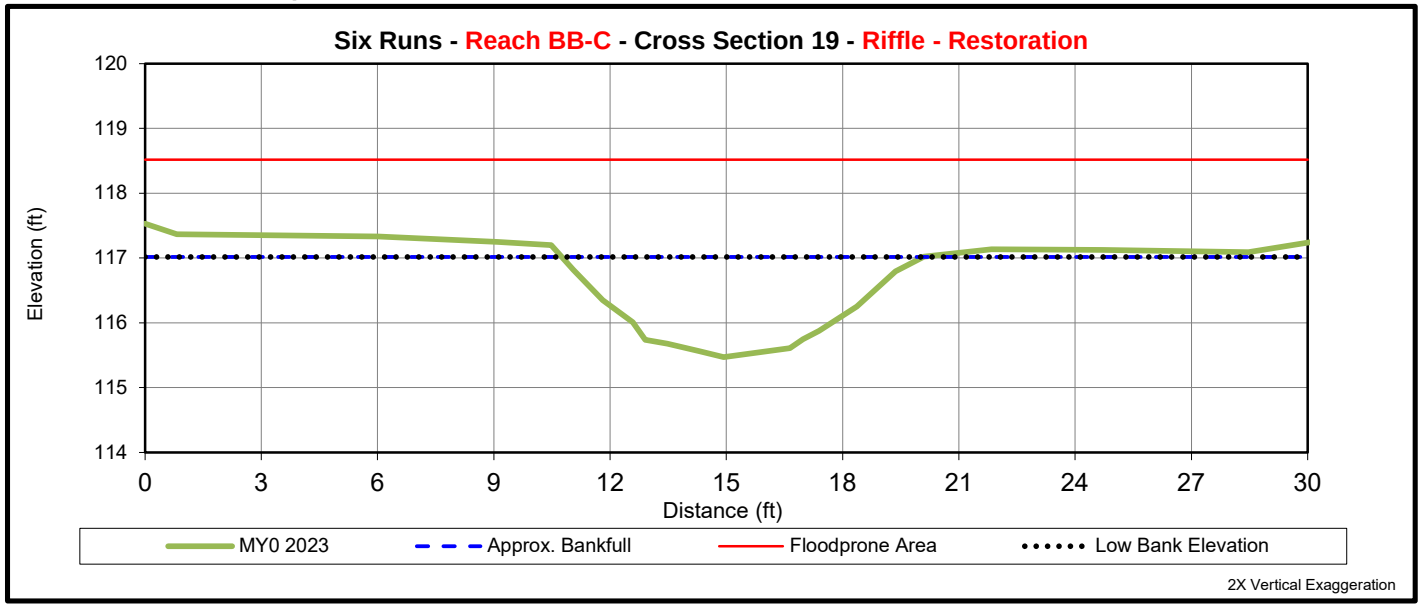


	Cross Section 18 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	119.76						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	118.29						
LTOB[2] Elevation	119.76						
LTOB[2] Max Depth (ft)	1.5						
LTOB[2] Cross Sectional Area (ft^2)	9.6						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

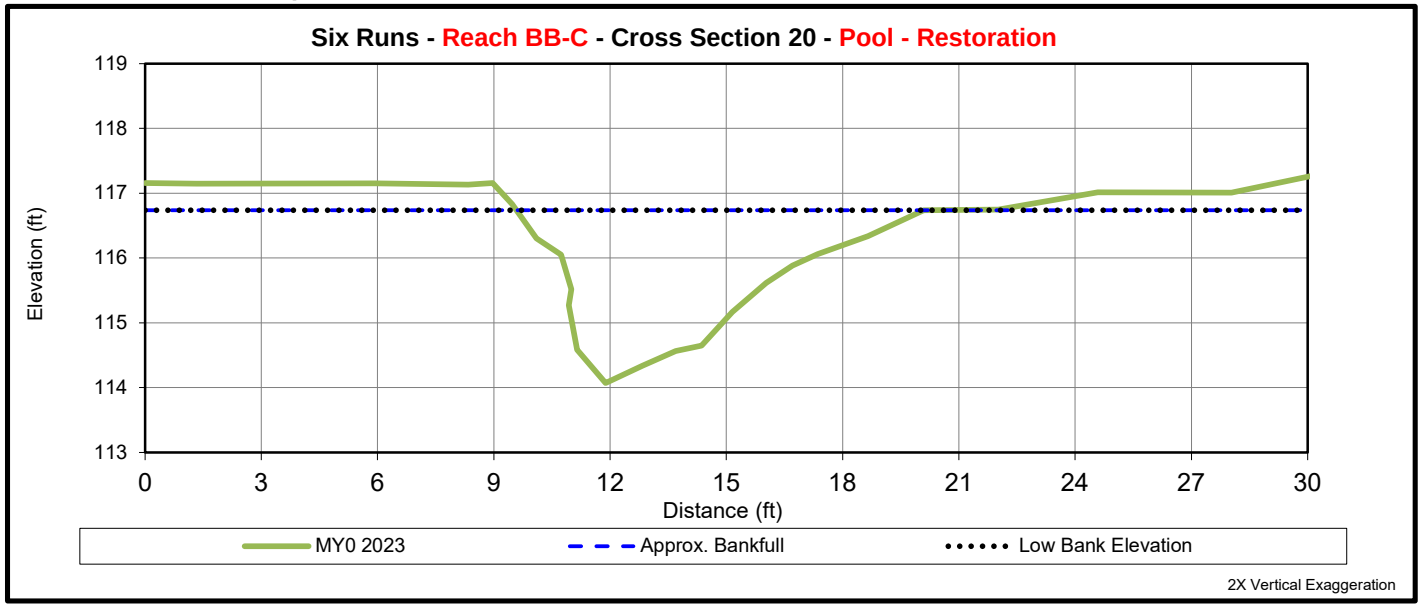


	Cross Section 19 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	117.02						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	115.47						
LTOB[2] Elevation	117.02						
LTOB[2] Max Depth (ft)	1.6						
LTOB[2] Cross Sectional Area (ft^2)	9.2						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

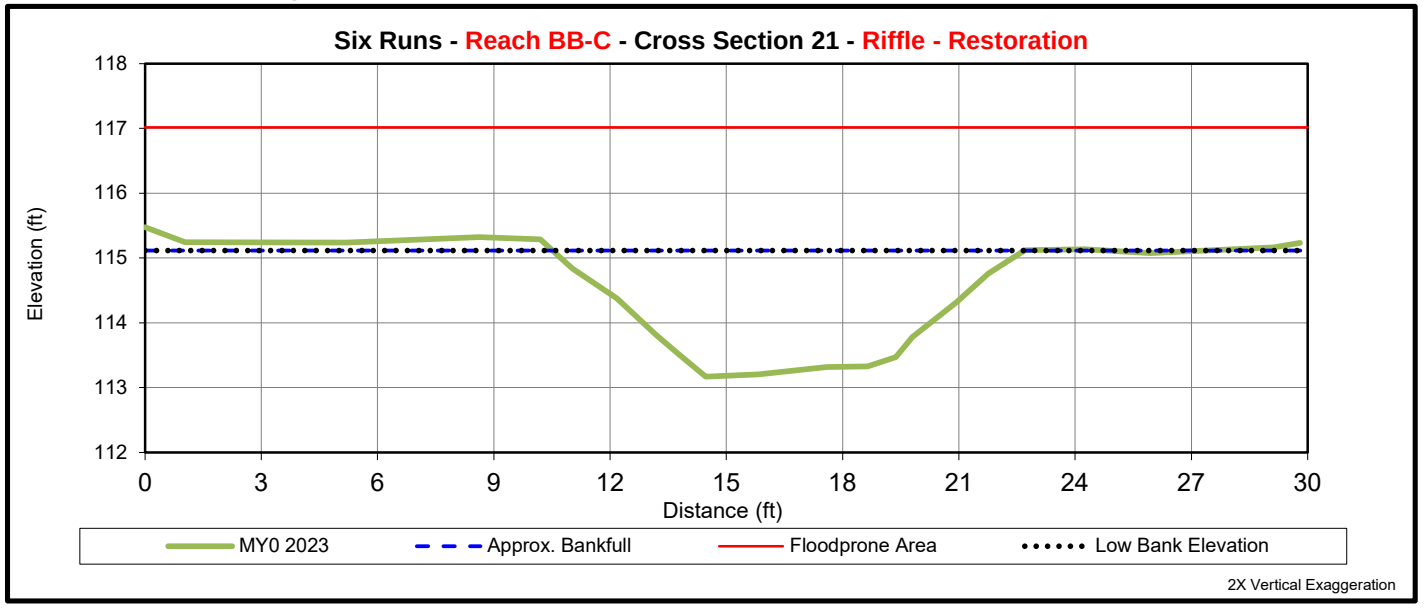


	Cross Section 20 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	116.74						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	114.07						
LTOB[2] Elevation	116.74						
LTOB[2] Max Depth (ft)	2.7						
LTOB[2] Cross Sectional Area (ft^2)	13.4						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

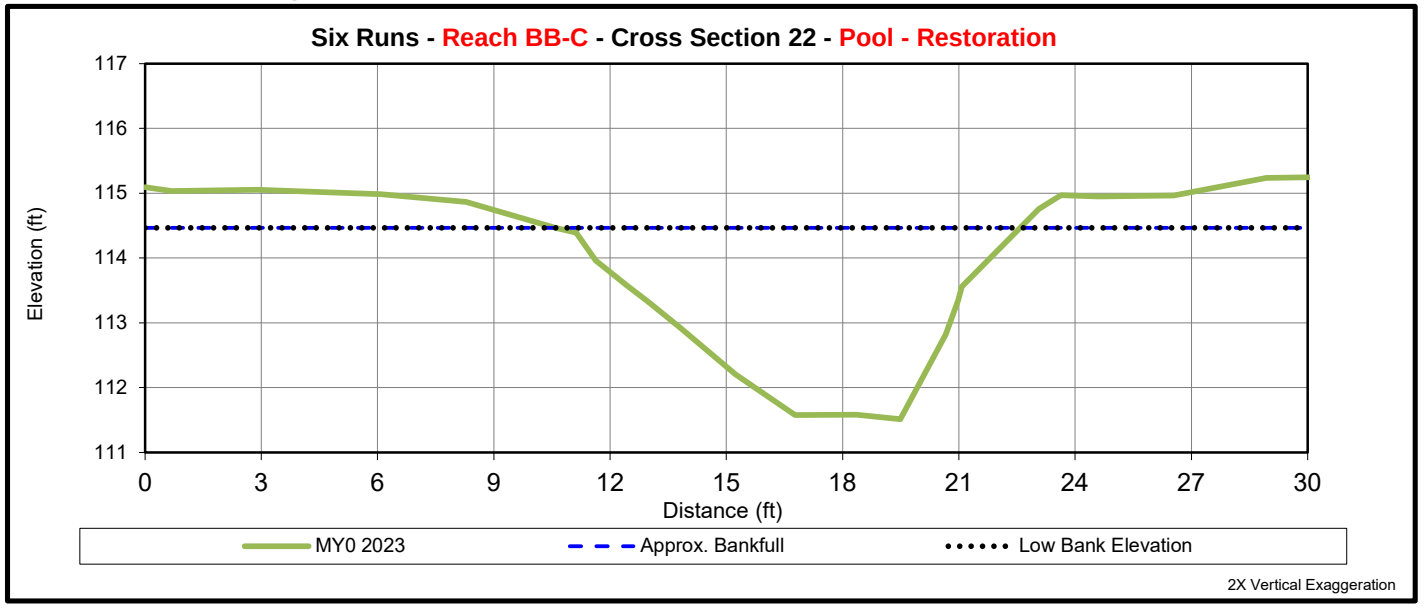


	Cross Section 21 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	115.12						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	113.17						
LTOB[2] Elevation	115.12						
LTOB[2] Max Depth (ft)	2.0						
LTOB[2] Cross Sectional Area (ft^2)	15.3						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

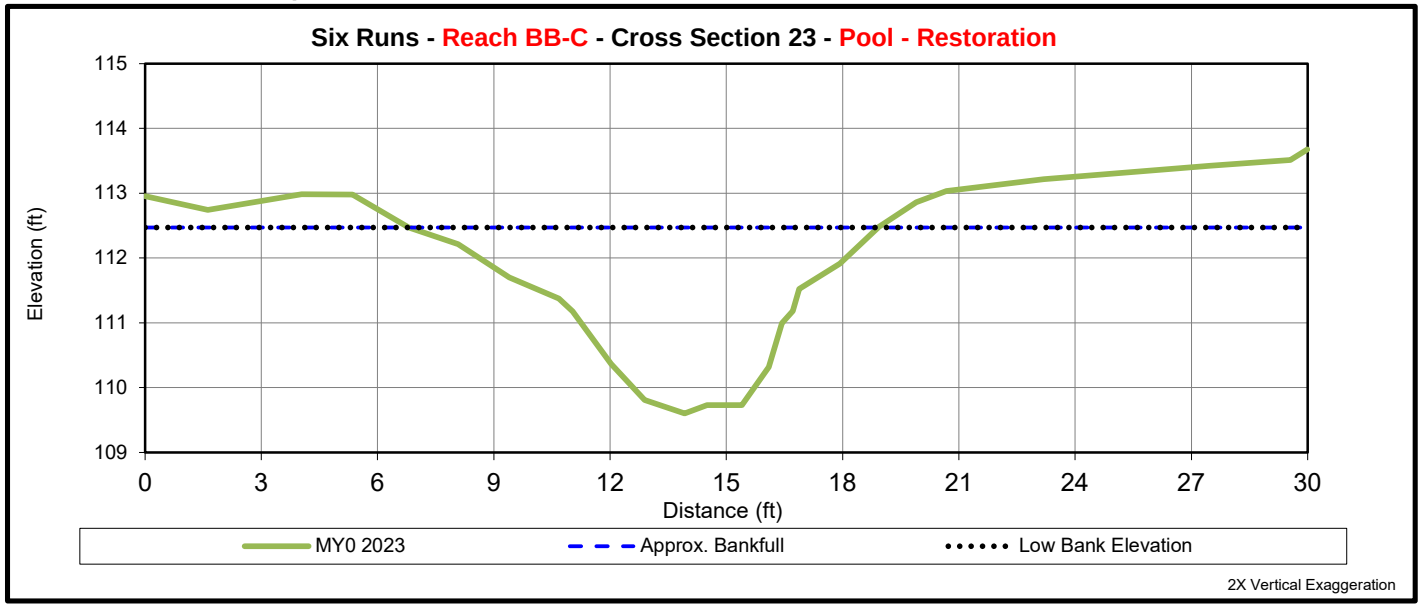


	Cross Section 22 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	114.46						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	111.51						
LTOB[2] Elevation	114.46						
LTOB[2] Max Depth (ft)	2.9						
LTOB[2] Cross Sectional Area (ft^2)	20.8						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

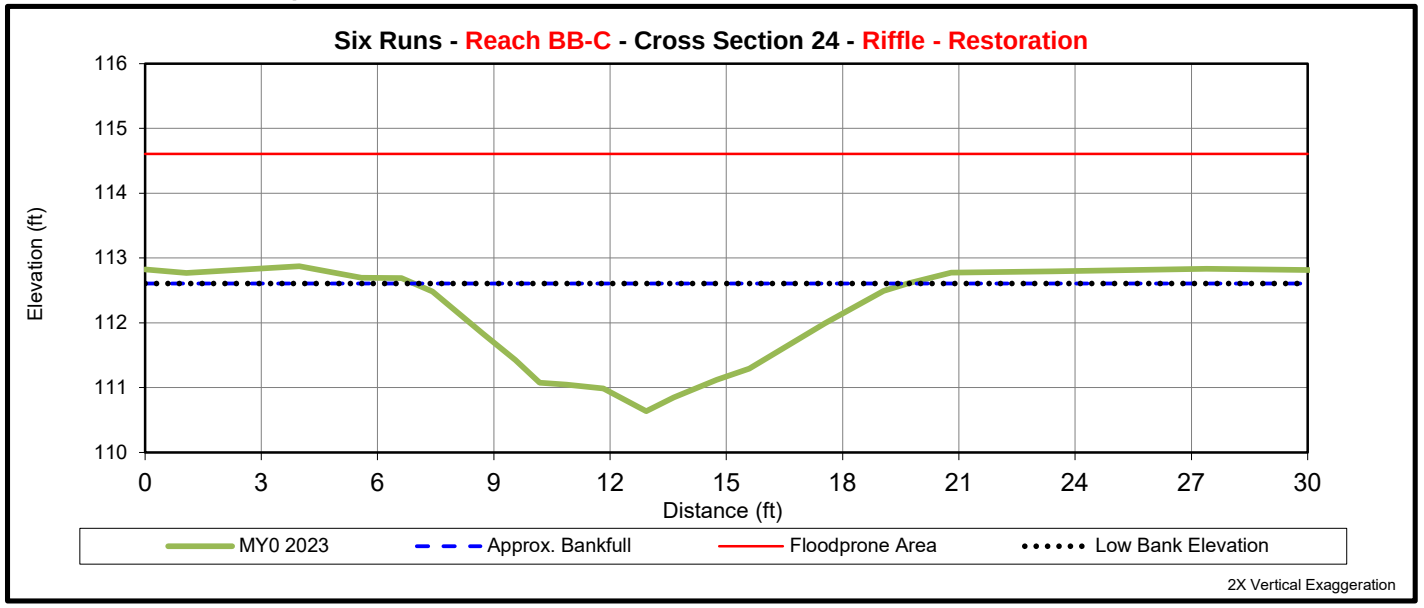


	Cross Section 23 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	112.47						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	109.60						
LTOB[2] Elevation	112.47						
LTOB[2] Max Depth (ft)	2.9						
LTOB[2] Cross Sectional Area (ft^2)	17.1						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

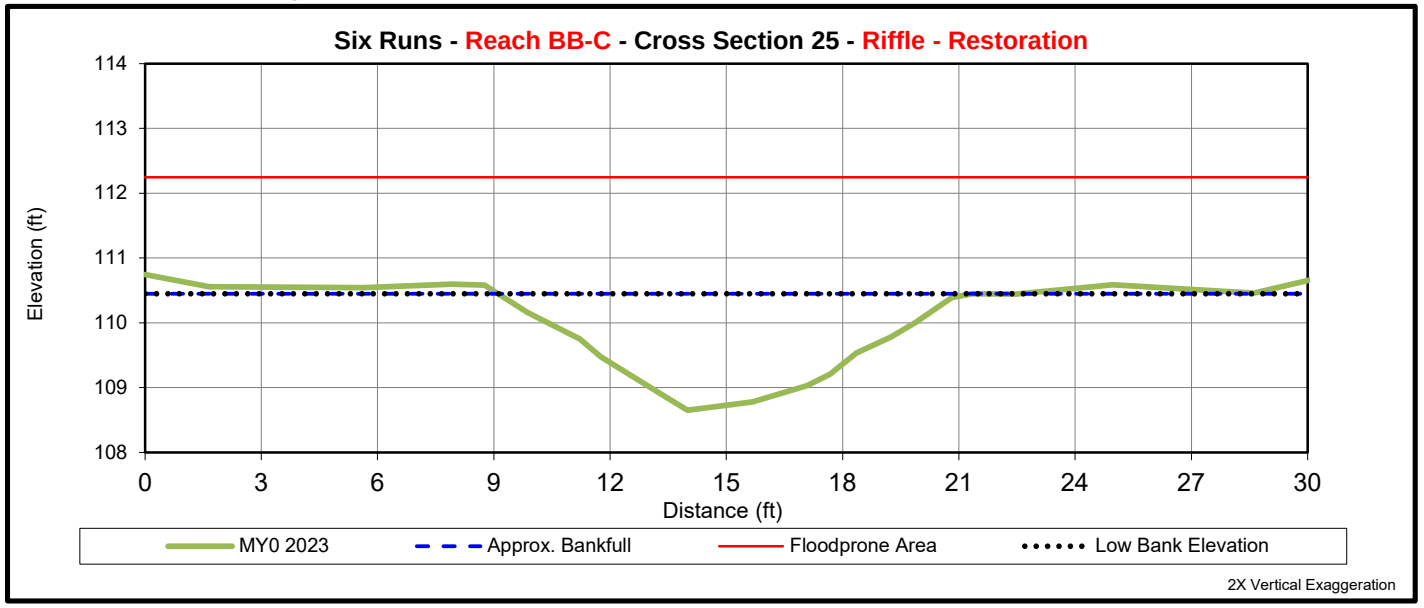


	Cross Section 24 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	112.61						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	110.64						
LTOB[2] Elevation	112.61						
LTOB[2] Max Depth (ft)	2.0						
LTOB[2] Cross Sectional Area (ft^2)	13.6						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

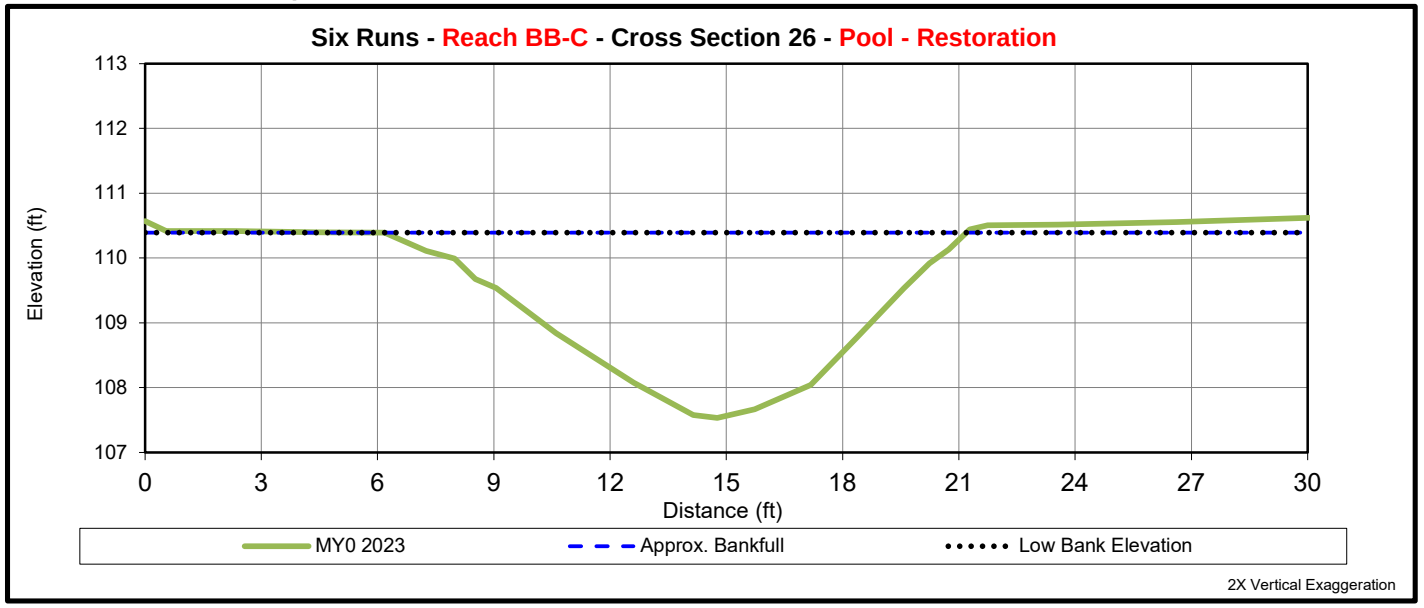


	Cross Section 25 (Riffle - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	110.45						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	108.65						
LTOB[2] Elevation	110.45						
LTOB[2] Max Depth (ft)	1.8						
LTOB[2] Cross Sectional Area (ft^2)	12.2						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

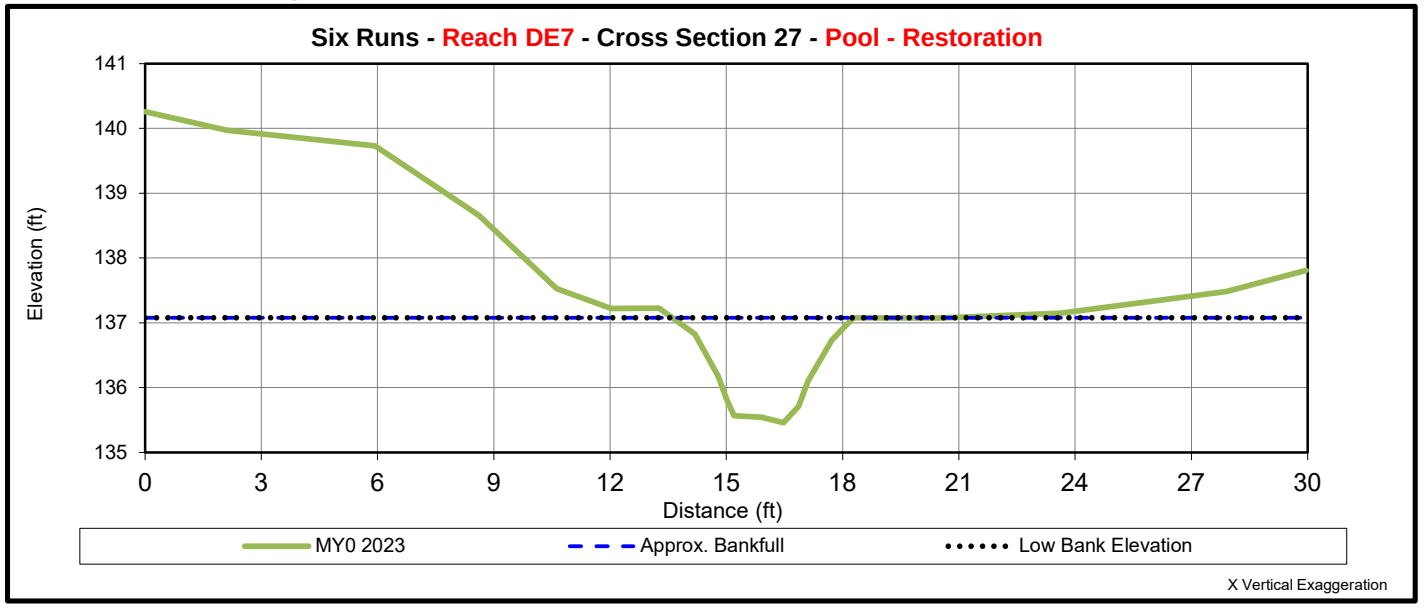


	Cross Section 26 (Pool - BB-C)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	110.39						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	107.53						
LTOB[2] Elevation	110.39						
LTOB[2] Max Depth (ft)	2.9						
LTOB[2] Cross Sectional Area (ft^2)	23.4						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

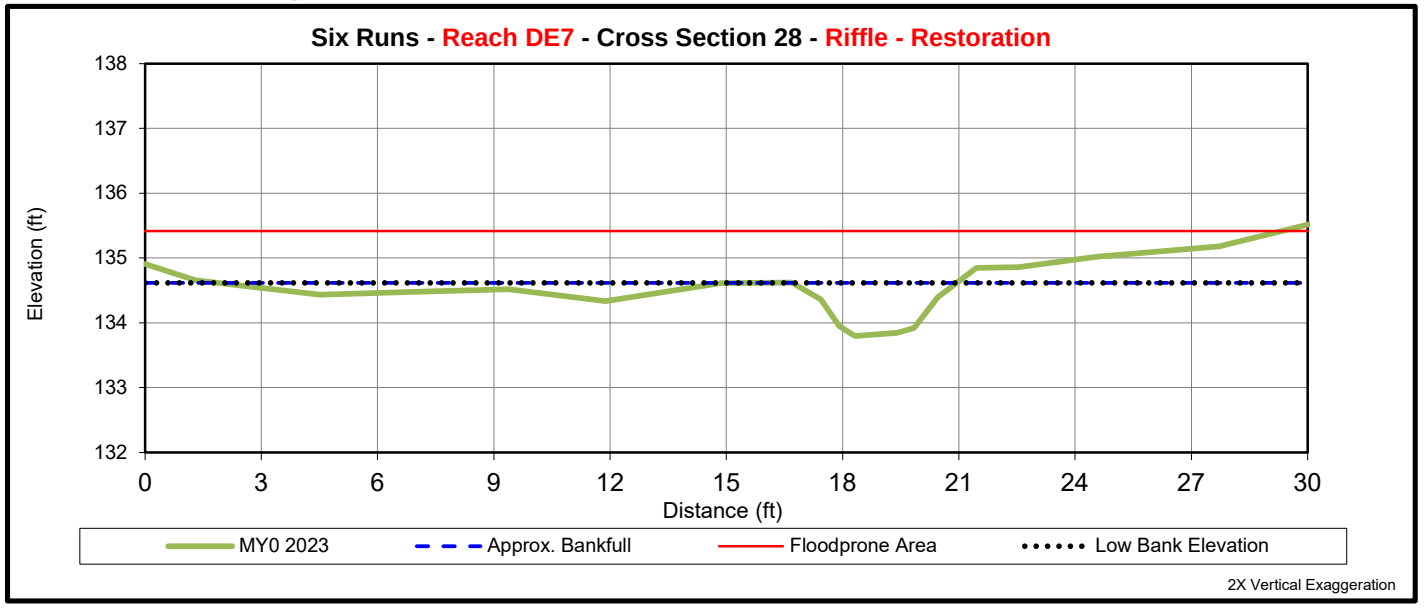


	Cross Section 27 (Pool - DE7)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	137.08						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	135.46						
LTOB[2] Elevation	137.08						
LTOB[2] Max Depth (ft)	1.6						
LTOB[2] Cross Sectional Area (ft^2)	4.3						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

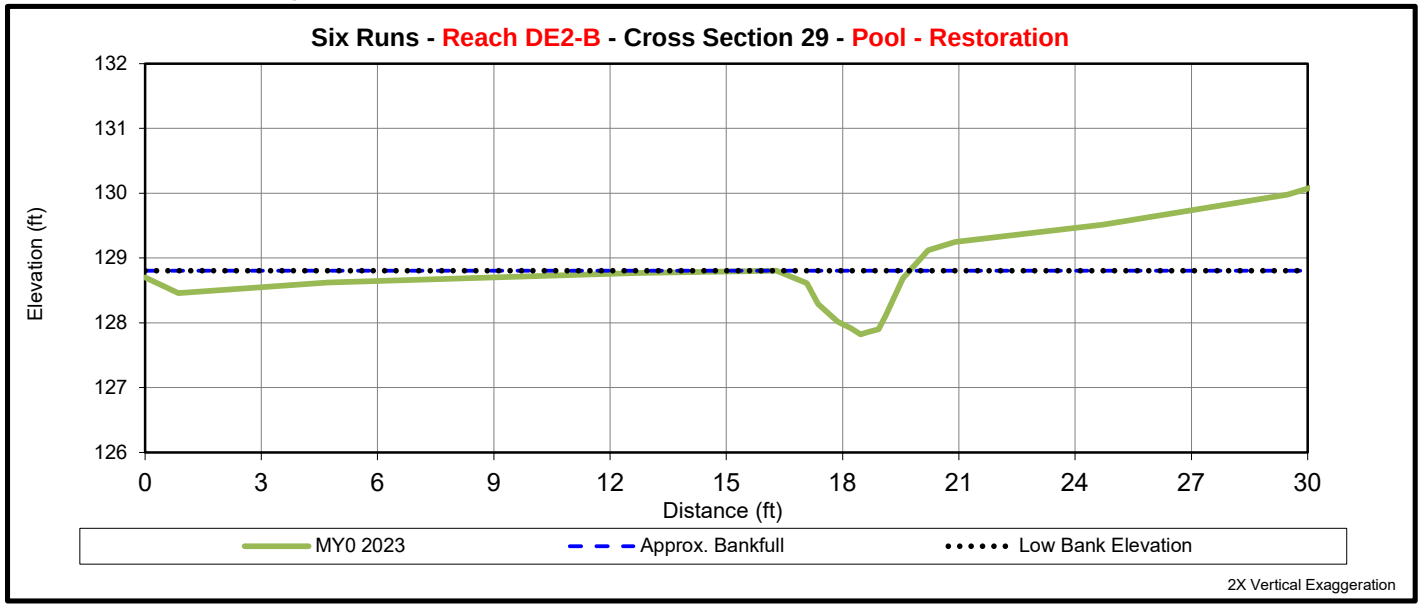


	Cross Section 28 (Riffle - DE7)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	134.62						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	133.80						
LTOB[2] Elevation	134.62						
LTOB[2] Max Depth (ft)	0.8						
LTOB[2] Cross Sectional Area (ft^2)	2.1						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

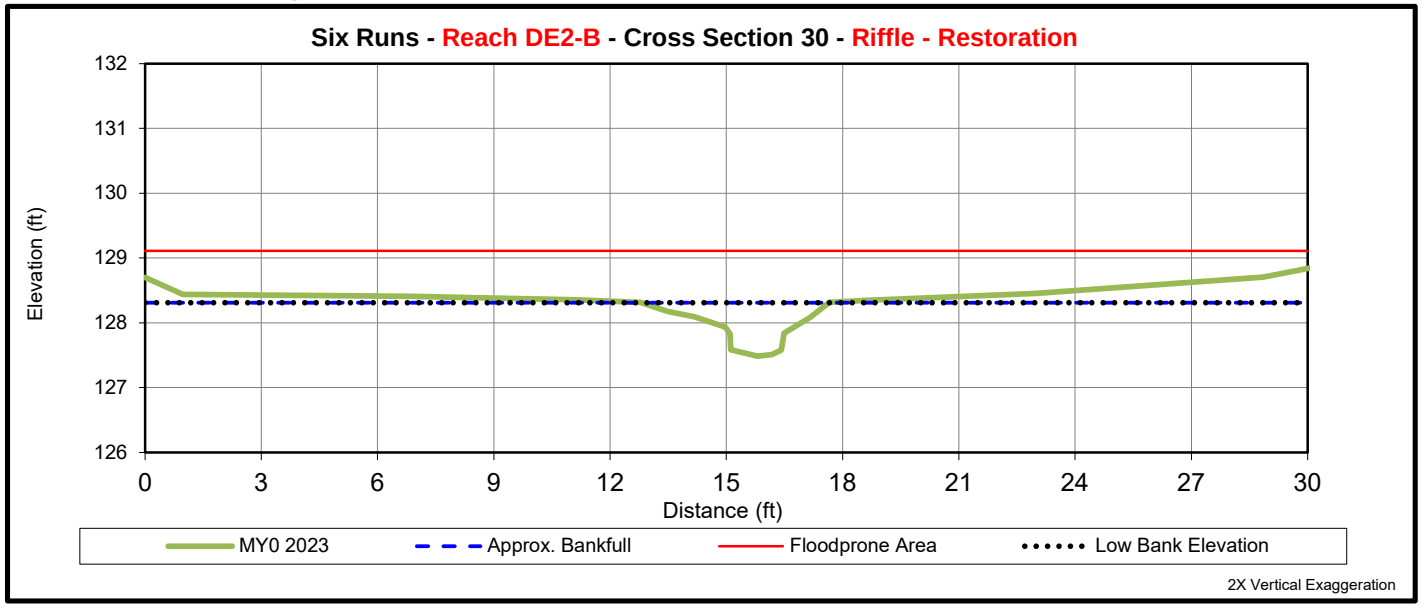


	Cross Section 29 (Pool - DE2-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	128.81						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	127.82						
LTOB[2] Elevation	128.81						
LTOB[2] Max Depth (ft)	1.0						
LTOB[2] Cross Sectional Area (ft^2)	1.8						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

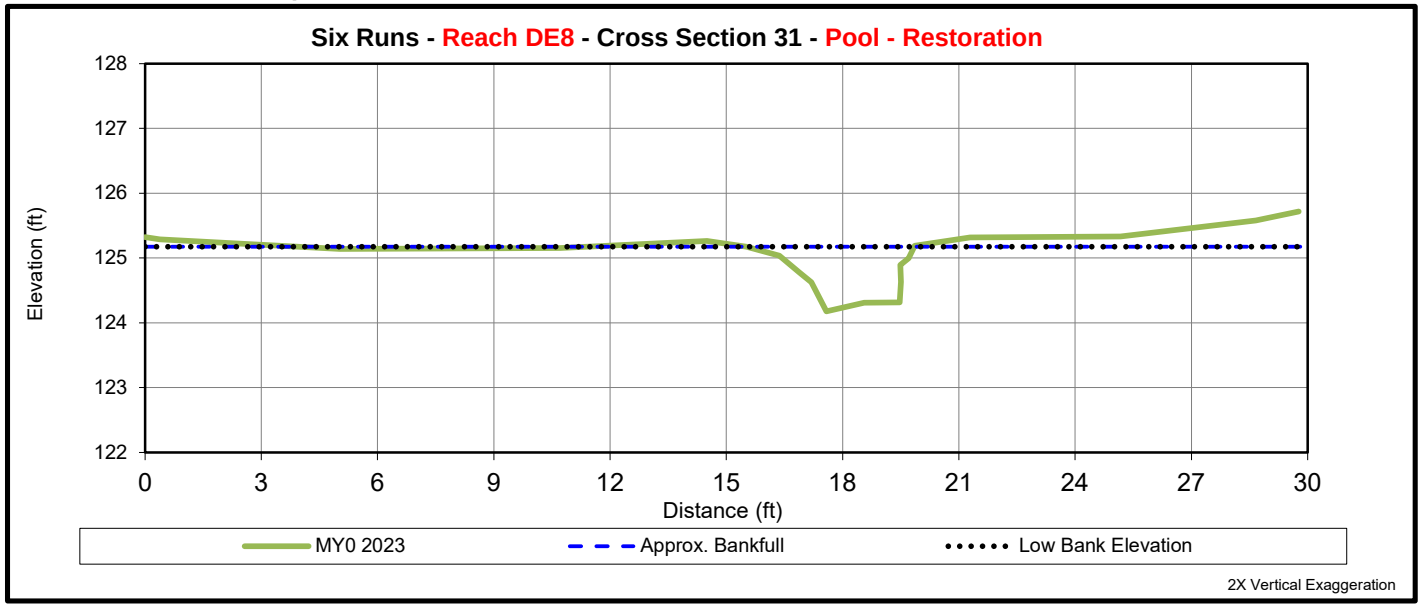


	Cross Section 30 (Riffle - DE2-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	128.31						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	127.48						
LTOB[2] Elevation	128.31						
LTOB[2] Max Depth (ft)	0.8						
LTOB[2] Cross Sectional Area (ft^2)	1.8						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

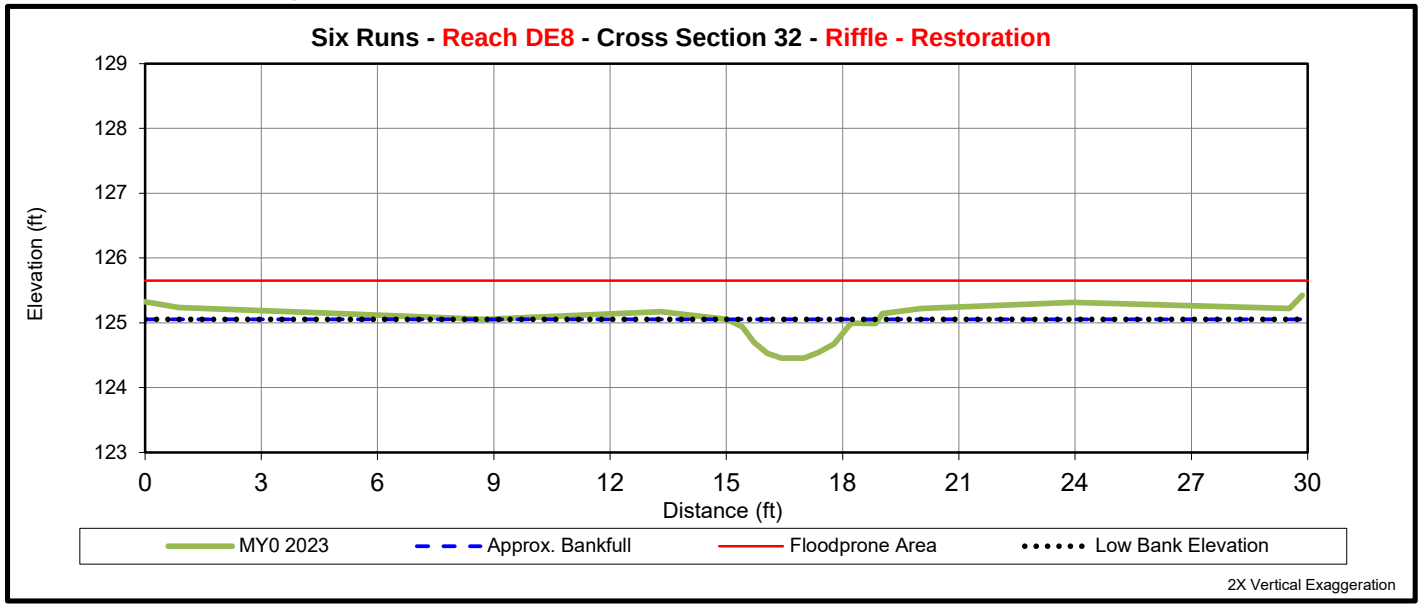


	Cross Section 31 (Pool - DE8)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	125.71						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	124.18						
LTOB[2] Elevation	125.71						
LTOB[2] Max Depth (ft)	1.5						
LTOB[2] Cross Sectional Area (ft^2)	2.4						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

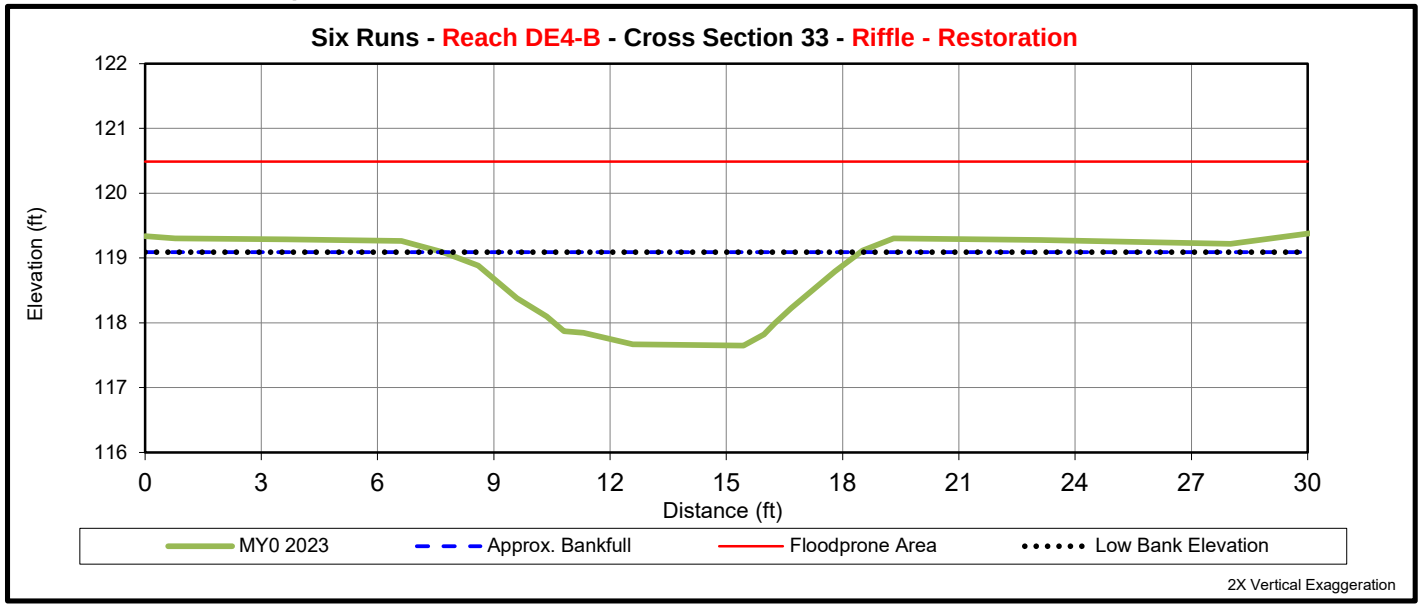


	Cross Section 32 (Riffle - DE8)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	125.05						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	124.46						
LTOB[2] Elevation	125.05						
LTOB[2] Max Depth (ft)	0.6						
LTOB[2] Cross Sectional Area (ft^2)	1.3						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

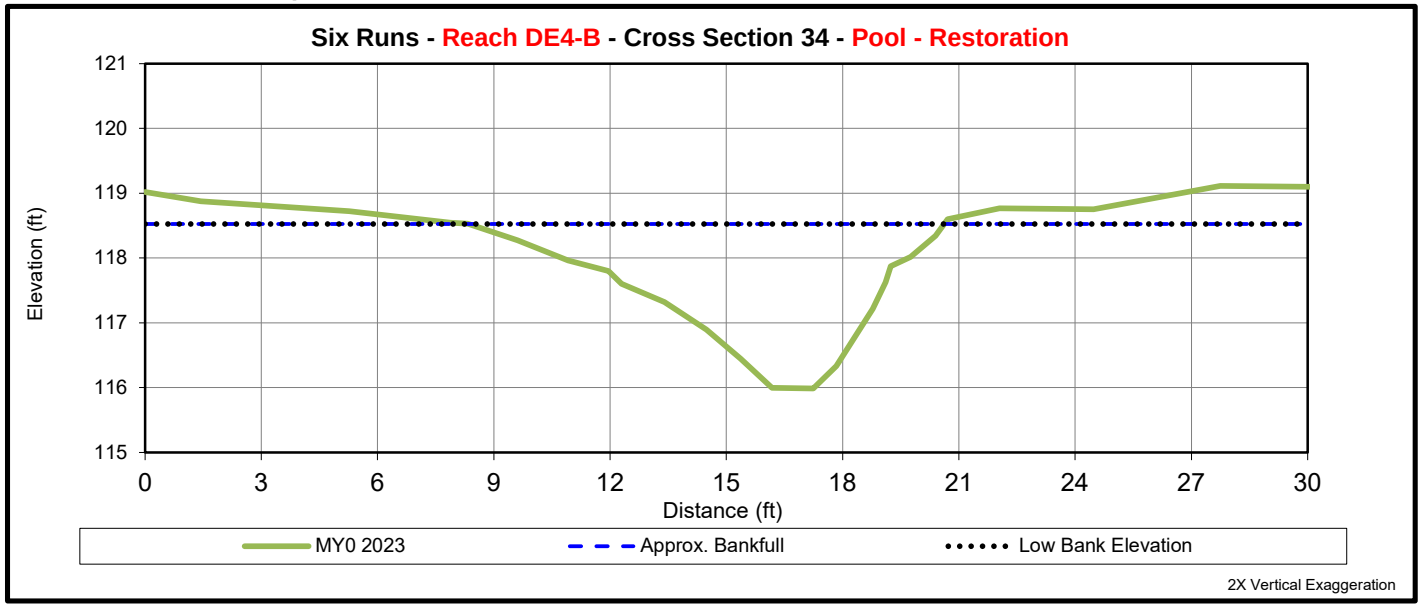


	Cross Section 33 (Riffle - DE4-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	119.09						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	117.65						
LTOB[2] Elevation	119.09						
LTOB[2] Max Depth (ft)	1.4						
LTOB[2] Cross Sectional Area (ft^2)	10.3						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

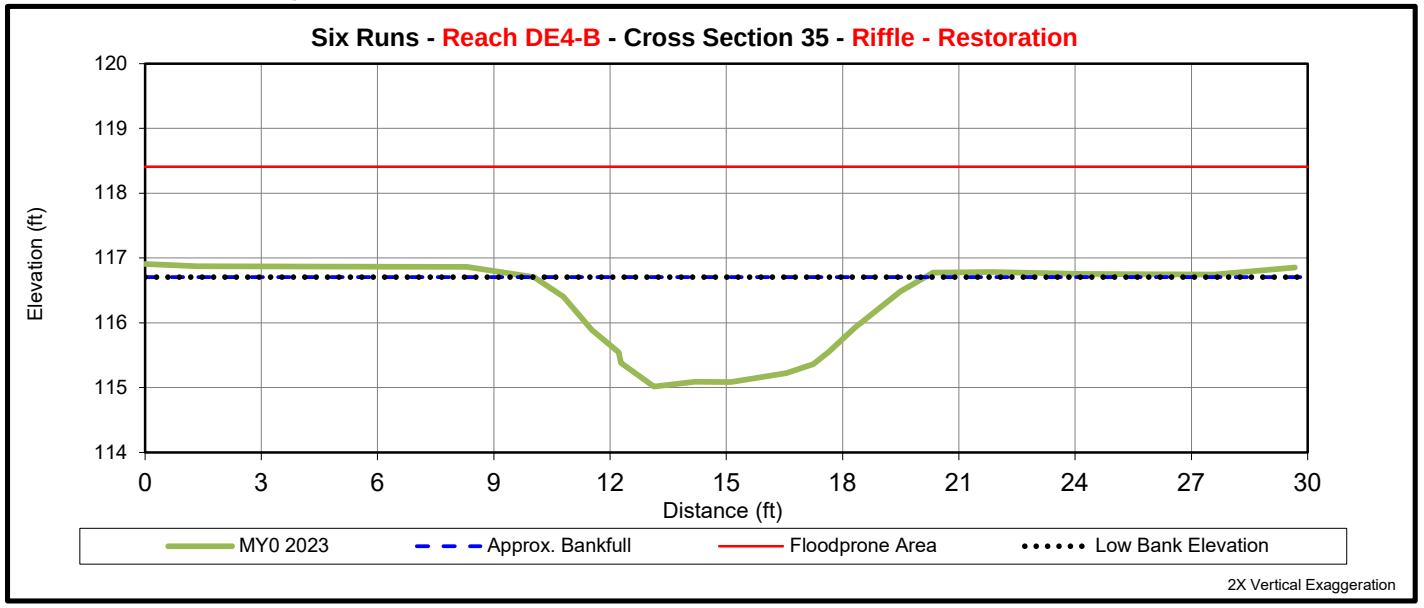


	Cross Section 34 (Pool - DE4-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	118.53						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	115.99						
LTOB[2] Elevation	118.53						
LTOB[2] Max Depth (ft)	2.5						
LTOB[2] Cross Sectional Area (ft^2)	14.6						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream

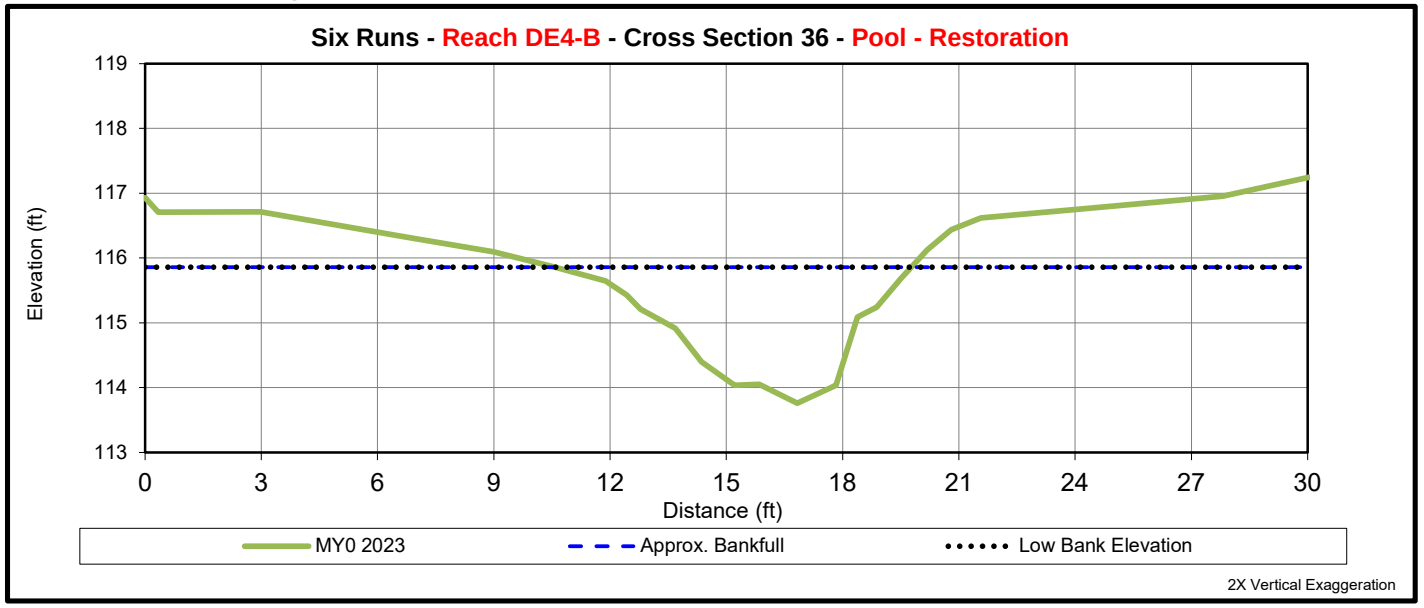


	Cross Section 35 (Riffle - DE4-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	116.71						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						
Thalweg Elevation	115.02						
LTOB[2] Elevation	116.71						
LTOB[2] Max Depth (ft)	1.7						
LTOB[2] Cross Sectional Area (ft^2)	10.8						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Upstream

Downstream



	Cross Section 36 (Pool - DE4-B)						
	MY0	MY1	MY2	MY3	MY5	MY7	MY+
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	115.86						
Bank Height Ratio - Based on AB Bankfull[1] Area							
Thalweg Elevation	113.76						
LTOB[2] Elevation	115.86						
LTOB[2] Max Depth (ft)	2.1						
LTOB[2] Cross Sectional Area (ft^2)	9.8						

1 - Uses the as-built cross sectional area as the basis for adjusting each subsequent years bankfull elevation
2 - Uses the current years low top of bank as the basis for adjusting each subsequent years bankfull elevation

Appendix D

Hydrologic Data

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-01	
			Latitude, Longitude		(35.0955104333811, -78.2366867369408)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-4	Sandy Loam Texture Modifier: NA	10YR 7/3	10YR 5/8	5%	None	Few
4-11	Loam Texture Modifier: NA	10YR 3/2			None	Few
11-14	Clay Loam Texture Modifier: NA	10YR 4/1			None	Few
14-19	Silty Clay Texture Modifier: NA	Gley 1 3/N			None	Few
19-30	Clay Texture Modifier: NA	Gley 1 5/N	10YR 5/8	15%	None	None

Comments:
NA

Soil Profile:

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-02	
			Latitude, Longitude		(35.0955264766183, -78.2370435930126)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-14	Loam Texture Modifier: NA	10YR 4/1	5YR 4/6	5%	None	Common
14-17	Sandy Loam Texture Modifier: NA	10YR 4/1	5YR 4/6	20	None	Few
17-30	Sandy_Clay_Loam Texture Modifier: NA	Gley 1 3/N	5YR 4/6	10	None	Few

Comments:
NA

Soil Profile:

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-03	
			Latitude, Longitude		(35.0937952040874, -78.2378309543405)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-3	Sandy_Clay_Loam Texture Modifier: NA	10YR 5/4	10YR 5/8	10%	None	Few
3-15	Silt Loam Texture Modifier: NA	10YR 5/2	7.5YR 5/8	10	None	Few
15-30	Silt Loam Texture Modifier: NA	10YR 5/1	7.5YR 5/8	25	None	None

Comments:
NA

Soil Profile:

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-04	
			Latitude, Longitude		(35.094311089112, -78.2372384550558)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-3	Silt Loam Texture Modifier: NA	10YR 5/4			None	Common
3-17	Silt Loam Texture Modifier: NA	10YR 4/1	7.5YR 4/6	10%	None	Few
17-24	Loam Texture Modifier: NA	10YR 6/1	10YR 6/8	25%	None	Few
24-30	Silty Clay Texture Modifier: NA	10YR 6/1	10YR 6/8	35%	None	None

Comments:
NA

Soil Profile:

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-05	
			Latitude, Longitude		(35.0940579638133, -78.2385256448011)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-3	Sandy Loam Texture Modifier: NA	10YR 4/1			None	Many
3-18	Silt Loam Texture Modifier: NA	10YR 4/2	7.5YR 5/6	10	None	Few
18-30	Sandy Loam Texture Modifier: NA	10YR 5/2	10YR 4/6	10%	None	None

Comments:
NA

Soil Profile:

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-06	
			Latitude, Longitude		(35.0928398449714, -78.2395972584319)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-18	Clay Loam Texture Modifier: NA	10YR 4/17.5YR 4/6	7.5YR 4/6	15	None	Common
18-30	Silt Loam Texture Modifier: NA	Gley 1 3/N			None	Few

Comments:
NA

Soil Profile:

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-07	
			Latitude, Longitude		(35.0928168937897, -78.2408899079725)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-11	Sandy Loam Texture Modifier: NA	10YR 4/1	7.5YR 4/6	15	None	Common
11-26	Sandy_Clay_Loam Texture Modifier: NA	10YR 5/1	7.5YR 5/8	20	None	Few
26-30	Clay Loam Texture Modifier: NA	10YR 3/1	7.5YR 5/8	10	None	None

Comments:
NA

Soil Profile:

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-08	
			Latitude, Longitude		(35.0919699197121, -78.2409562722684)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-8	Loam Texture Modifier: Muck	10YR 4/1	7.5YR 4/6	10	None	Common
8-10	Sand Texture Modifier: Muck	10YR 6/2	7.5YR 5/6	10	None	Few
10-22	Sandy Loam Texture Modifier: NA	Gley 1 4/n			None	Few
22-30	Sandy_Clay_Loam Texture Modifier: NA	Gley 1 6/n			None	None

Comments:
NA

Soil Profile:

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-09	
			Latitude, Longitude		(35.0921133635085, -78.2426516478521)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-4	Sandy Loam Texture Modifier: NA	10YR 4/2	7.5YR 4/6	10	None	Common
4-22	Loamy Sand Texture Modifier: NA	10YR 5/1	7.5YR 4/6	20	None	Few
22-30	Loamy Sand Texture Modifier: NA	10YR 6/2	10YR 5/8	15	None	None

Comments:
NA

Soil Profile:

Soil Characterization Data Form						
Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-10	
			Latitude, Longitude		(35.0914360429964, -78.2417855675516)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-4	Sandy Loam Texture Modifier: Muck	10YR 4/1	7.5YR 4/6	5	None	Few
4-18	Sand Texture Modifier: Muck	10YR 7/1			None	None
18-2610	Clay Loam Texture Modifier: NA	10YR 5/1			None	None

Comments:
NA

Soil Profile:

Soil Characterization Data Form

Project Name:	Six Runs		**Date:**		March 28, 2023	
Personnel:	Jack Duffus		**Soil Pit ID:**		GW-11	
			Latitude, Longitude		(35.0965616320589, -78.2368171458792)	
Horizon Depths (inches)	**Texture**	**Matrix Color (Munsell moist)**	**Redoximorphic Features**		**Induration (none, weak, strong)**	**Roots**
			Color	**Abundance**		
0-10	Loam Texture Modifier: NA	10YR 4/2	5YR 4/6	3%	None	Common
10-30	Sandy_Clay_Loam Texture Modifier: NA	10YR 4/1			None	Few

Comments:

NA

Soil Profile:

Appendix E

Project Timeline and

Contact Information

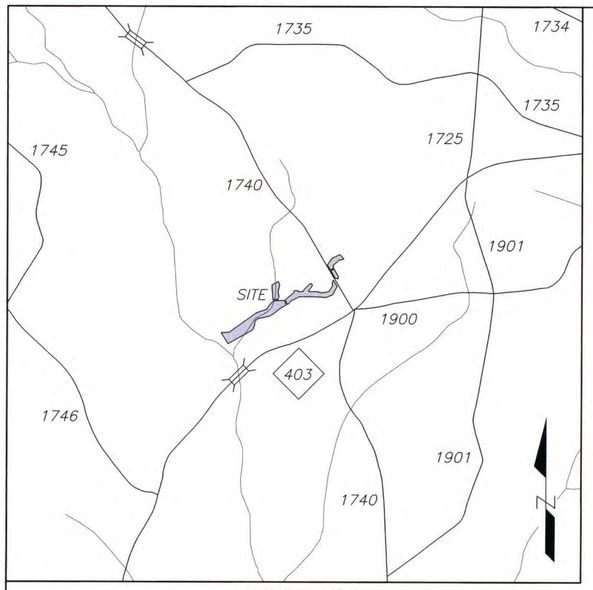
Table 4. Project Timeline and Contact Information

Activity or Deliverable	Data Collection Complete	Task Completion or Deliverable Submission
Project Instituted	NA	Oct-20
Mitigation Plan Approved	NA	Jul-22
Construction (Grading) Completed	NA	Mar-23
Planting Completed	NA	Mar-23
As-built Survey Completed	NA	Aug-23
MY-0 Baseline Report	XS Monitoring - 3/30/2023 VP Monitoring - 3/23/2023	Aug-23

Project Name/Number	
Provider	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612
Mitigation Provider POC	Jamey Mceachran (919) 623-9889
Designer	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612
Primary project design POC	Frasier Mullen, PE (919) 412-3866
Construction Contractor	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612
Construction contractor POC	Daniel Burnette

Appendix F

As-built Survey & Record Drawings



VICINITY MAP
NOT TO SCALE

I, JAMES R. WATSON, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT THIS GROUND SURVEY WAS PERFORMED AT THE 95 PERCENT CONFIDENCE LEVEL (2 SIGMA) TO MEET FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS; THAT THE HORIZONTAL ACCURACY IS 0.10'; THAT THE VERTICAL ACCURACY IS 0.15'; AND THAT THE ORIGINAL DATA WAS OBTAINED ON 12/9/2020 ; THAT THE SURVEY WAS COMPLETED ON 4/26/2023 ; THAT CONTOURS SHOWN HEREON MAY NOT MEET THE STATED STANDARD; AND ALL COORDINATES ARE BASED ON NAD 83(2011) ; AND ALL ELEVATIONS ARE BASED ON NAVD 88 .

WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 11TH DAY OF MAY , A.D., 2023.

James R. Watson
L-4712

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

THE FOLLOWING INFORMATION WAS USED TO PERFORM THIS GNSS SURVEY:

CLASS OF SURVEY: A
POSITIONAL ACCURACY: 0.10'
TYPE OF GPS FIELD PROCEDURE: RTK
DATES OF SURVEY: 12/9/2020 & 4/26/2023
DATUM / EPOCH: NAD 83(2011)
PUBLISHED / FIXED CONTROL USED: OPUS SOLUTION
GEOID MODEL: GEOID12
COMBINED GRID FACTOR: 0.99987403
UNITS: U.S. SURVEY FEET

NOTES:
1. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.
2. THE HORIZONTAL DATUM IS NAD 83(2011) AND THE VERTICAL DATUM IS NAVD 88.
3. THIS MAP IS NOT FOR RECORDATION, SALES, OR CONVEYANCES.
4. THE PURPOSE OF THIS MAP IS TO SHOW POST CONSTRUCTION AS-BUILT CONDITIONS OF THE STREAM RESTORATION AND MAY NOT SHOW ALL UTILITIES, STRUCTURES, AND BOUNDARIES.
5. NO PROPERTY LINES WERE SURVEYED DURING THIS SURVEY. ALL CONSERVATION EASEMENTS, PROPERTY LINES, AND ADJOINING PROPERTY OWNERS ARE SHOWN BY PREVIOUS SURVEYS BY MATRIX EAST, PLLC AS RECORDED IN PLAT CABINET 110, PAGES 78 – 84 IN THE SAMPSON COUNTY REGISTRY.
6. THE LOCATION OF FLOW GAUGE DE2-B; WETLAND GAUGES GW3, GW5, & GW11; VEGETATION PLOTS 1, 6, 7, & 8; AND THE AMBIENT SHOWN HEREON WERE PROVIDED BY RESOURCE ENVIRONMENTAL SOLUTIONS, LLC AND WERE NOT SURVEYED BY MATRIX EAST, PLLC AT THIS TIME.
7. UNLESS OTHERWISE NOTED, COORDINATES SHOWN HEREON ARE GROUND COORDINATES BASED ON A PROJECT CONTROL POINT HAVING NGS OPUS DERIVED NC STATE PLANE COORDINATES (NAD 83/2011 DATUM) OF N=491,613.9708', E=2,229,674.2250' AND A COMBINED SCALE FACTOR OF 0.99987403 FOR THIS SITE.
8. ALL WETLAND BOUNDARIES SHOWN HEREON WERE PROVIDED BY RESOURCE ENVIRONMENTAL SOLUTIONS, LLC. NO WETLAND DETERMINATION WAS PERFORMED BY MATRIX EAST, PLLC. THE WETLAND ACREAGE SHOWN IN THE WETLAND TABLE ON SHEET S2 WAS CALCULATED BY MATRIX EAST, PLLC USING THE BOUNDARIES PROVIDED BY RESOURCE ENVIRONMENTAL SOLUTIONS, LLC.

SIX RUNS MITIGATION SITE
SAMPSON COUNTY, NORTH CAROLINA

CAPE FEAR RIVER BASIN: HUC 03030006
DMS PROJECT #: 100170
CONTRACT #: 0303-01
USACE ACTION ID #: SAW-2020-01964
REF #: 16-20190303
DWR #: 20201798V1

AS-BUILT SURVEY

LEGEND
C/L = CENTERLINE
R/W = RIGHT OF WAY
CMP = CORRUGATED METAL PIPE
CMPA = ARCH CORRUGATED METAL PIPE
PVC = PVC PIPE
HDPE = HDPE PIPE
XS = CROSS-SECTION
VP = VEGETATION PLOT
WE = WATER ELEVATION AT THE TIME OF SURVEY
= LOG STRUCTURE
= ROCK STRUCTURE
= GAUGE
= ENGINEERED SEDIMENT PACK
= POST ASSISTED LOG STRUCTURE
= STONE TOE
= BRUSH TOE
= CONSTRUCTED RIFFLE GRADE CONTROL
= GRAVEL PATH / CROSSING
= RIP RAP
LCE = CONSERVATION EASEMENT LINE
= ADJOINER BOUNDARY LINE
= WOODLINE
= WIRE FENCE

PROJECT COORDINATES:

LATITUDE: 35.096223° N
LONGITUDE: 78.229693° W

PROJECT DIRECTORY

DESIGNER:
RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
3600 GLENWOOD AV., SUITE 100
RALEIGH, NC 27612
(919)209-1061

CONSTRUCTION CONTRACTOR:
RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
3600 GLENWOOD AV., SUITE 100
RALEIGH, NC 27612
(919)209-1061

DMS PROJECT MANAGER:
JEREMIAH DOW
NC DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF MITIGATION SERVICES
217 WEST JONES ST., SUITE 3000A
RALEIGH, NC 27603

MONITORING PERFORMERS:
RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
3600 GLENWOOD AV., SUITE 100
RALEIGH, NC 27612
(919)209-1061

SURVEYING:
MATRIX EAST, PLLC
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
(252)522-2500

SHEET INDEX

SEAL

DRAWING NO. S1

SHEET No. 1 OF 16

STREAM AS BUILT SURVEY
COVER

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC

SIX RUNS MITIGATION SITE

SAMPSON COUNTY, N.C.

MATRIX EAST, PLLC
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

DRAWN BY	DATE	SCALE
JRW	5/11/2023	

PROJECT NO. 20200258

DRAWING NAME 20200258-AS BUILT.DWG

WETLAND ID	MITIGATION TYPE	AREA (AC.)
WA	NO CREDIT	0.081
WB	NO CREDIT	0.057
WC-1	REHABILITATION	4.859
WC-2	PRESERVATION	1.656
WD	REHABILITATION	0.009
WE-1	NO CREDIT	0.439
WE-1	ENHANCEMENT (LOW)	0.410
WE-2	ENHANCEMENT (HIGH)	0.586
WE-2	NO CREDIT	0.092
WF	NO CREDIT	0.292
WH	NO CREDIT	0.057
WI	NO CREDIT	0.197
WJ	NO CREDIT	0.123
WK	NO CREDIT	0.036
WL	RE-ESTABLISHMENT	5.693
WM	RE-ESTABLISHMENT	0.457
	TOTAL	15.044

WETLAND LEGEND

= WETLAND RE-ESTABLISHMENT

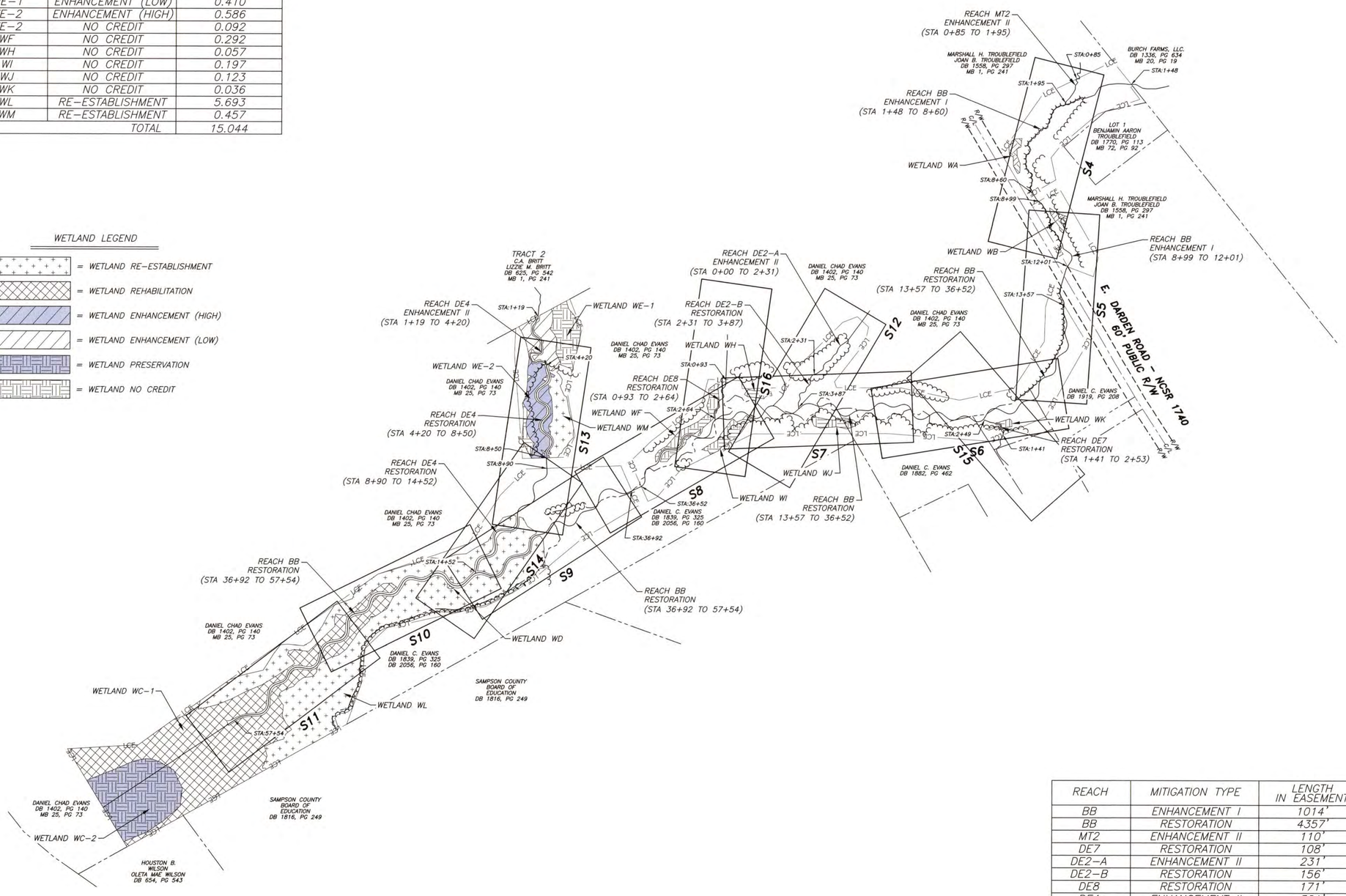
= WETLAND REHABILITATION

= WETLAND ENHANCEMENT (HIGH)

= WETLAND ENHANCEMENT (LOW)

= WETLAND PRESERVATION

= WETLAND NO CREDIT



REACH	MITIGATION TYPE	LENGTH IN EASEMENT
BB	ENHANCEMENT I	1014'
BB	RESTORATION	4357'
MT2	ENHANCEMENT II	110'
DE7	RESTORATION	108'
DE2-A	ENHANCEMENT II	231'
DE2-B	RESTORATION	156'
DE8	RESTORATION	171'
DE4	ENHANCEMENT II	301'
DE4	RESTORATION	992'
	TOTAL	7440'

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

AMD 8/(2011)

SEAL
NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON
5/11/2023

DRAWING NO.
S2

SHEET No.
2 OF 16

STREAM AS BUILT SURVEY
STREAM BASELINE & WETLANDS OVERVIEW

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC

SIX RUNS MITIGATION SITE

SAMPSON COUNTY, N.C.

MATRIX EAST, PLLC
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KINSTON, NC 28501
TEL: 252-522-2500
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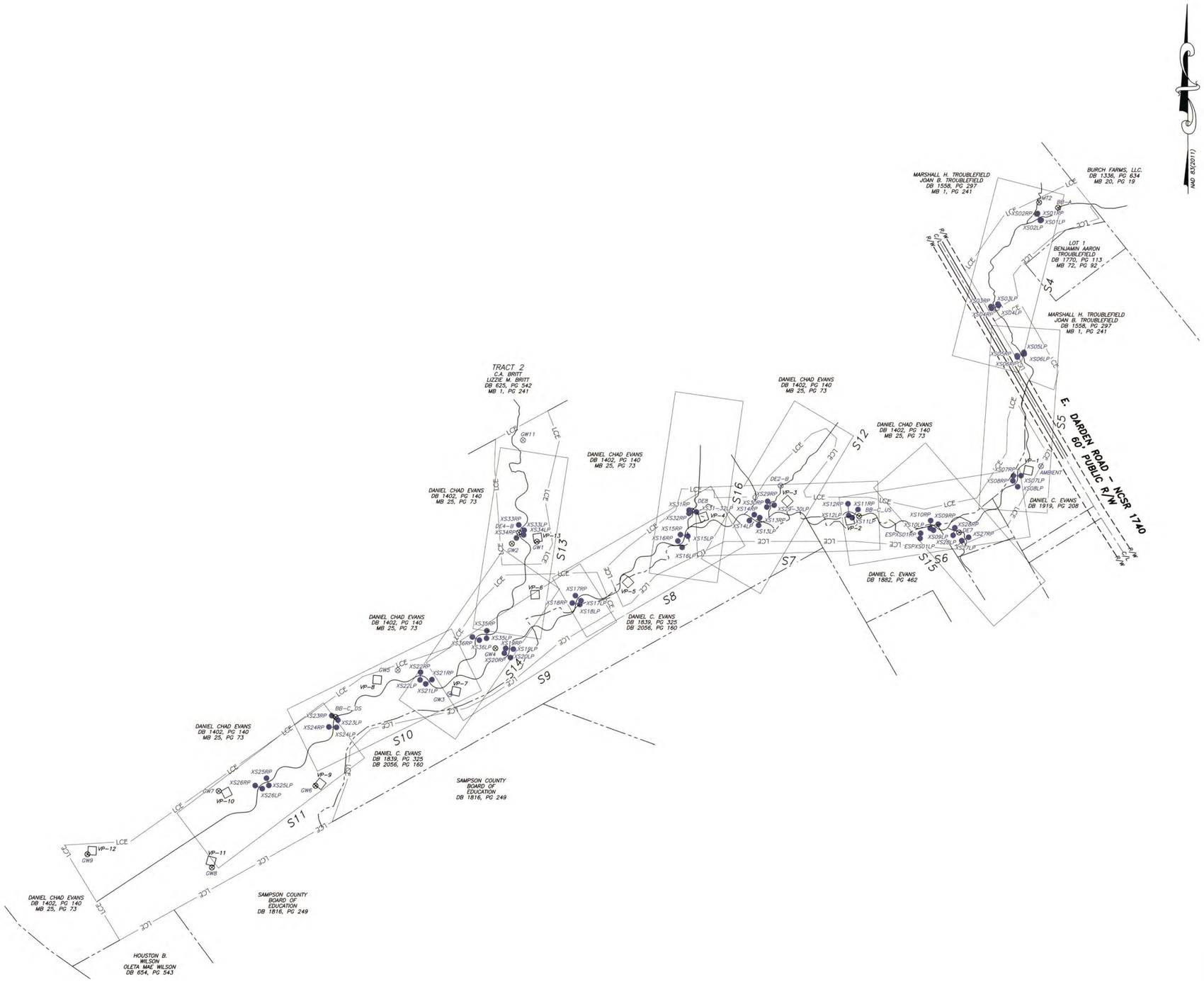
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 200'

PROJECT NO.
20200258

DRAWING NAME
20200258-AS BUILT.DWG

BASELINE MONITORING CROSS SECTION CONTROL

DESCRIPTION	NORTHING	EASTING	ELEVATION
ESPXS01LP	490,564.2448'	2,229,823.2790'	134.32'
ESPXS01RP	490,584.1724'	2,229,825.0910'	133.19'
XS01LP	491,814.6491'	2,230,293.8453'	147.87'
XS01RP	491,840.5225'	2,230,279.0890'	148.66'
XS02LP	491,812.7582'	2,230,290.3786'	147.85'
XS02RP	491,838.9100'	2,230,275.9190'	148.34'
XS03LP	491,484.3536'	2,230,124.7907'	144.94'
XS03RP	491,474.3816'	2,230,096.9992'	144.88'
XS04LP	491,478.5671'	2,230,126.8008'	145.02'
XS04RP	491,467.1997'	2,230,099.5289'	144.35'
XS05LP	491,296.3261'	2,230,227.5646'	142.81'
XS05RP	491,283.0521'	2,230,200.6126'	143.48'
XS06LP	491,290.1294'	2,230,229.3850'	142.79'
XS06RP	491,277.4568'	2,230,202.0659'	143.34'
XS07LP	490,811.7447'	2,230,219.9134'	137.39'
XS07RP	490,811.4949'	2,230,189.8308'	137.08'
XS08LP	490,768.0955'	2,230,206.8246'	137.09'
XS08RP	490,791.3778'	2,230,187.7658'	136.82'
XS09LP	490,596.1914'	2,229,875.9509'	133.57'
XS09RP	490,619.9190'	2,229,894.3577'	134.03'
XS10LP	490,603.8280'	2,229,862.9742'	133.39'
XS10RP	490,633.8318'	2,229,864.7093'	133.57'
XS11LP	490,643.7535'	2,229,555.3830'	130.47'
XS11RP	490,676.6922'	2,229,578.3000'	131.20'
XS12LP	490,653.0479'	2,229,541.4003'	130.56'
XS12RP	490,698.9469'	2,229,538.7215'	133.69'
XS13LP	490,613.1612'	2,229,187.0461'	126.98'
XS13RP	490,642.9207'	2,229,191.0888'	126.94'
XS14LP	490,631.4085'	2,229,150.6673'	126.54'
XS14RP	490,654.6224'	2,229,169.7408'	126.78'
XS15LP	490,569.9409'	2,228,908.7394'	123.76'
XS15RP	490,575.5157'	2,228,879.3249'	123.98'
XS16LP	490,525.5223'	2,228,886.3670'	123.78'
XS16RP	490,550.6674'	2,228,869.4271'	123.65'
XS17LP	490,314.8510'	2,228,488.4674'	120.19'
XS17RP	490,334.7318'	2,228,466.2055'	120.14'
XS18LP	490,300.0724'	2,228,483.6058'	120.00'
XS18RP	490,305.5651'	2,228,454.0925'	119.95'
XS19LP	490,123.4912'	2,228,222.2166'	117.53'
XS19RP	490,126.5206'	2,228,192.3317'	117.25'
XS20LP	490,090.0692'	2,228,211.3037'	117.16'
XS20RP	490,107.4081'	2,228,186.8672'	117.26'
XS21LP	489,985.5411'	2,227,876.3201'	115.47'
XS21RP	490,002.4397'	2,227,901.0876'	115.23'
XS22LP	490,001.3332'	2,227,854.2088'	115.09'
XS22RP	490,031.2479'	2,227,856.1092'	115.25'
XS23LP	489,842.2530'	2,227,531.8984'	112.96'
XS23RP	489,859.5932'	2,227,507.4439'	113.68'
XS24LP	489,813.8615'	2,227,526.2068'	112.82'
XS24RP	489,815.2001'	2,227,496.1125'	112.81'
XS25LP	489,585.3781'	2,227,260.0596'	110.74'
XS25RP	489,613.9129'	2,227,250.6246'	110.66'
XS26LP	489,572.4550'	2,227,234.0962'	110.57'
XS26RP	489,584.5923'	2,227,206.5522'	110.62'
XS27LP	490,555.7329'	2,229,987.3885'	140.26'
XS27RP	490,568.9898'	2,230,014.1935'	137.81'
XS28LP	490,576.5012'	2,229,953.3351'	134.91'
XS28RP	490,605.9805'	2,229,960.0883'	135.57'
XS29/30LP	490,692.6264'	2,229,248.1893'	128.70'
XS29RP	490,707.7822'	2,229,222.1643'	130.10'
XS30RP	490,685.1793'	2,229,219.0272'	128.85'
XS31/32LP	490,664.8398'	2,228,942.0801'	125.32'
XS31RP	490,672.2279'	2,228,913.0861'	125.72'
XS32RP	490,659.3846'	2,228,912.6583'	125.42'
XS33LP	490,590.5492'	2,228,263.9754'	119.34'
XS33RP	490,611.5871'	2,228,242.4367'	119.39'
XS34LP	490,572.1023'	2,228,261.9257'	119.02'
XS34RP	490,560.1854'	2,228,233.4836'	119.27'
XS35LP	490,165.8133'	2,228,116.1611'	116.91'
XS35RP	490,195.3867'	2,228,117.2932'	116.85'
XS36LP	490,158.3945'	2,228,087.8096'	116.93'
XS36RP	490,170.7255'	2,228,060.4616'	117.24'



SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

DRAWING NO. **S3**

SHEET No. 3 OF 16

STREAM AS BUILT SURVEY
STREAM MONITORING OVERVIEW

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC

SIX RUNS MITIGATION SITE

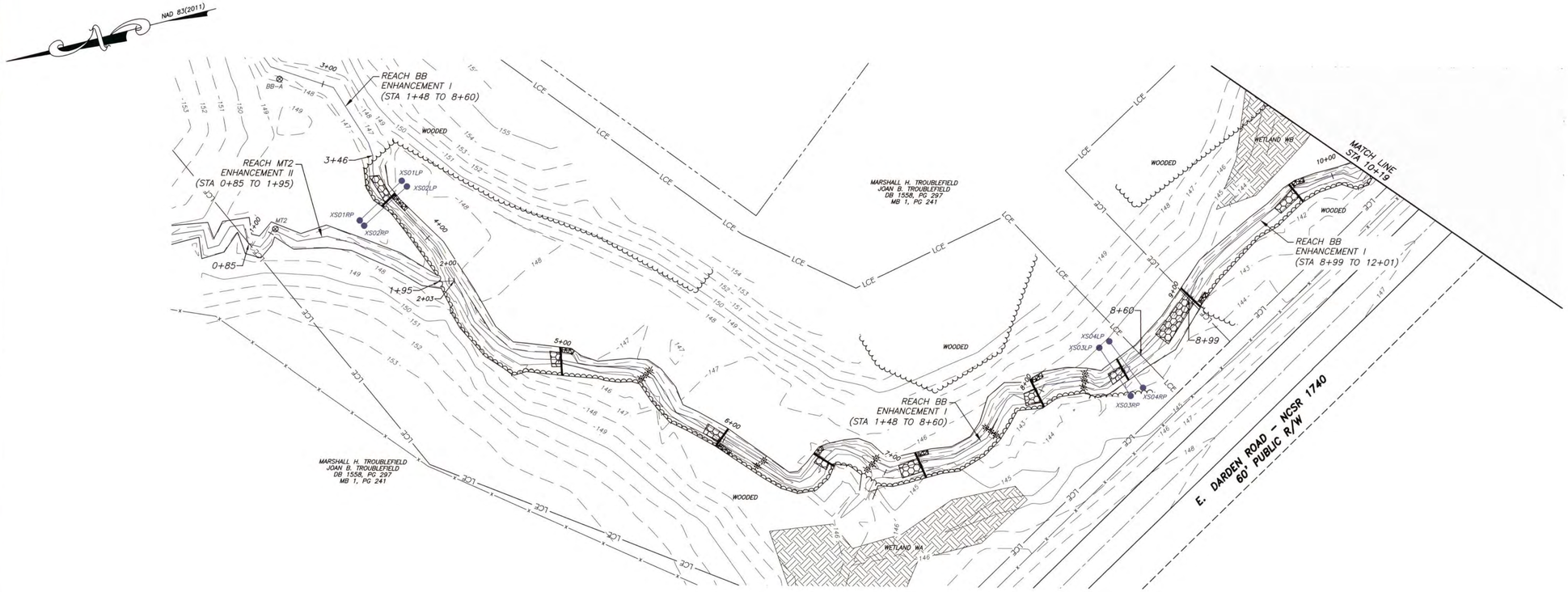
SAMPSON COUNTY, N.C.

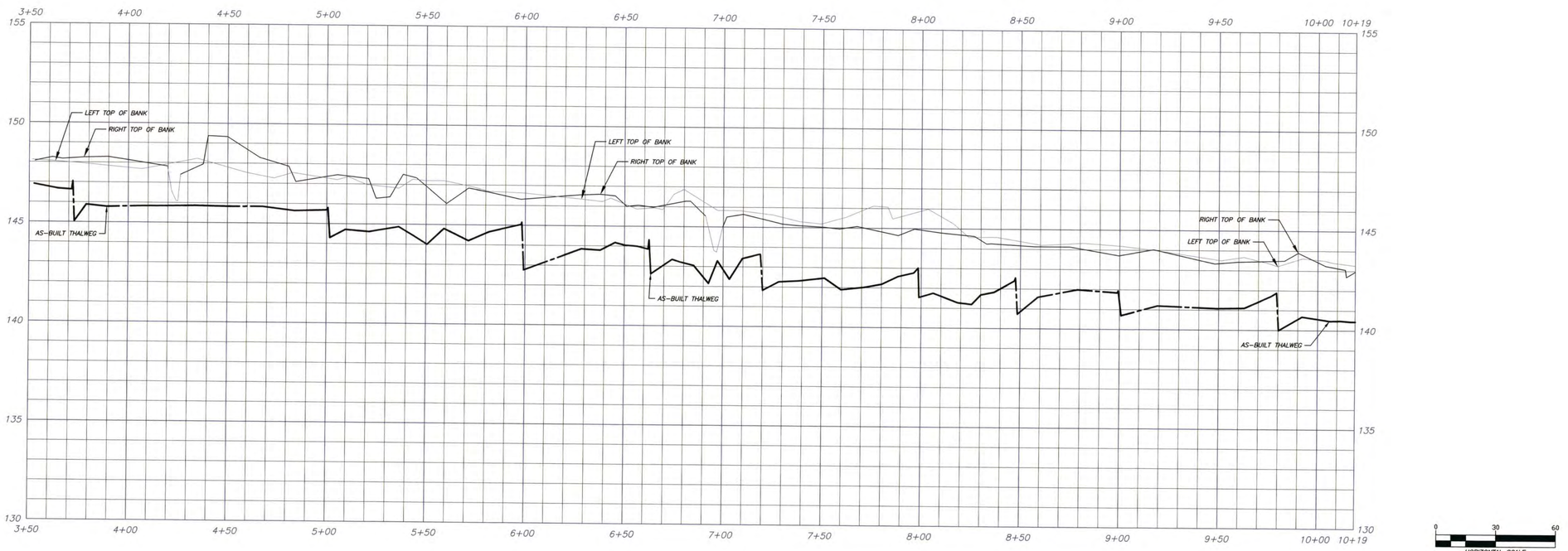
MATRIX EAST, PLLC
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 200'

PROJECT NO. 20200258

DRAWING NAME 20200258-AS BUILT.DWG





SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO.

S4

SHEET No.
4 OF 16

STREAM AS BUILT SURVEY
REACH BB PLAN & PROFILE (STA 03+50 - 10+19)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC

SIX RUNS MITIGATION SITE

SAMPSON COUNTY, N.C.

MATRIX EAST, PLLC

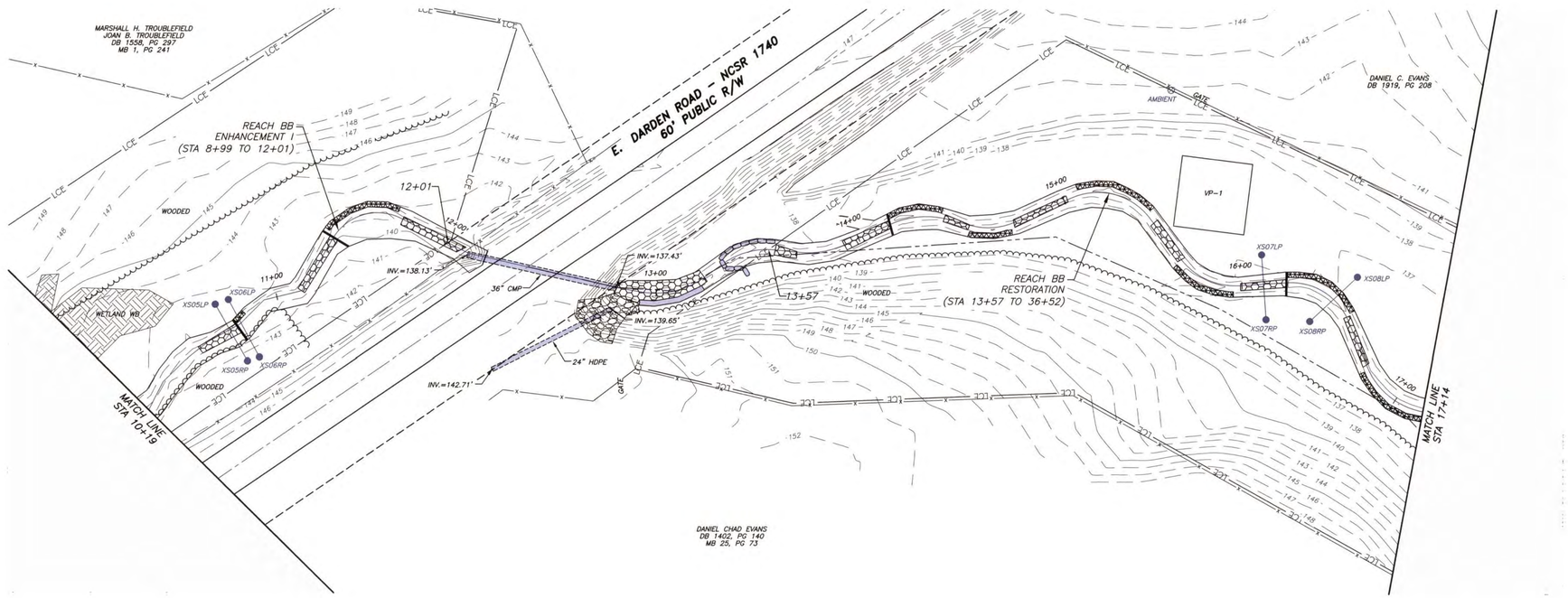
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

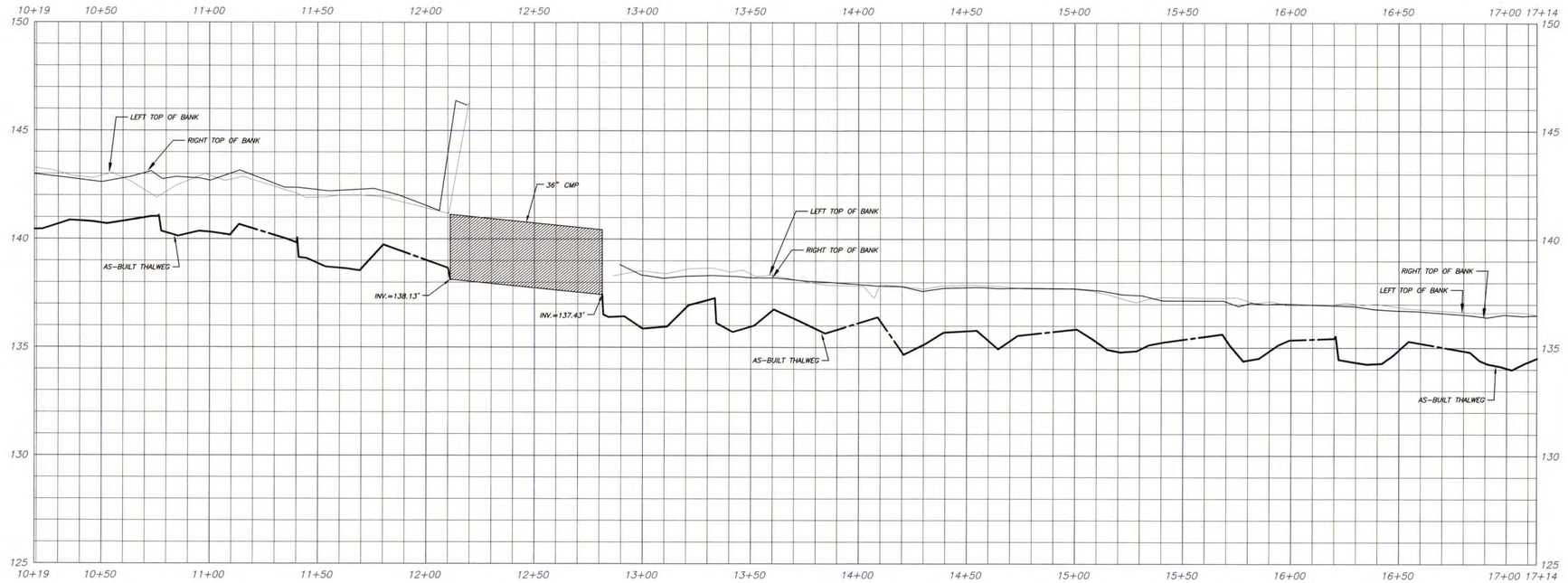
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO.
20200258

DRAWING NAME
20200258-AS BUILT.DWG

NAD 83(2011)





HORIZONTAL SCALE
1" = 30'

VERTICAL SCALE
1" = 3'

SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO. **S5**

SHEET No. 5 OF 16

STREAM AS BUILT SURVEY
REACH BB PLAN & PROFILE (STA 10+19 - 17+14)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
SIX RUNS MITIGATION SITE
SAMPSON COUNTY, N.C.

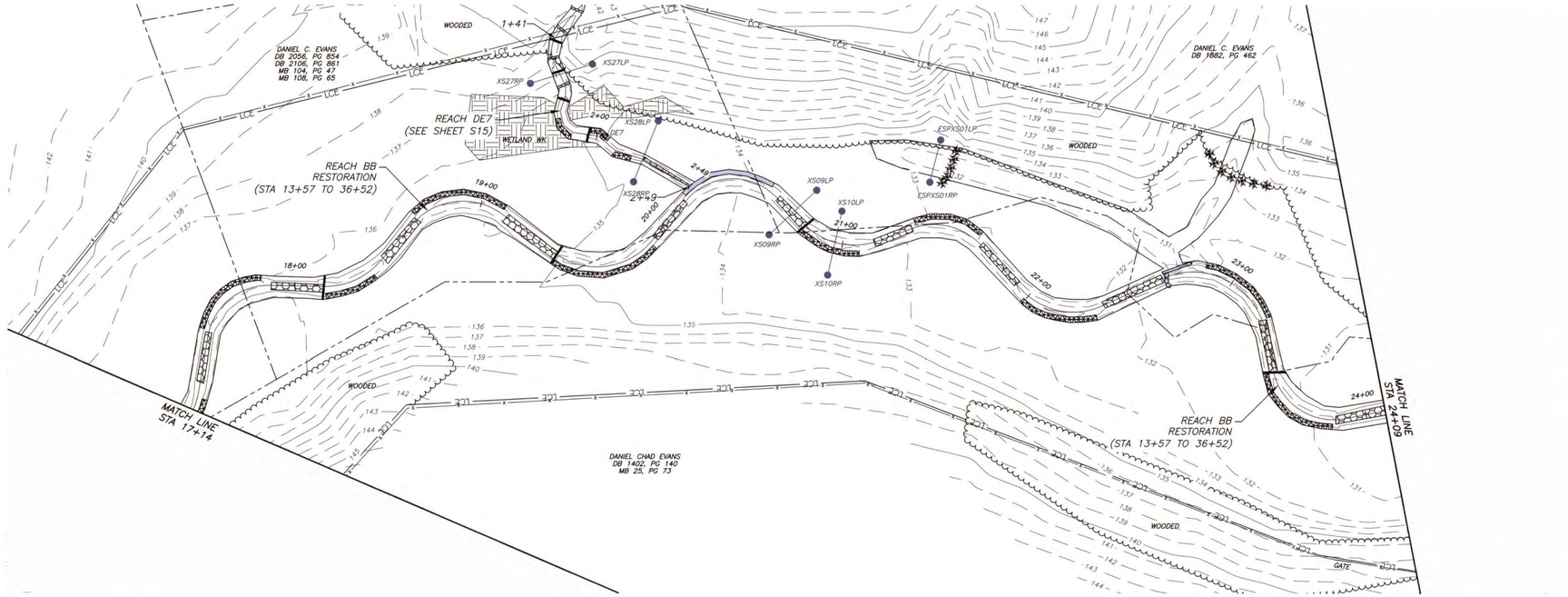
MATRIX EAST, PLLC
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

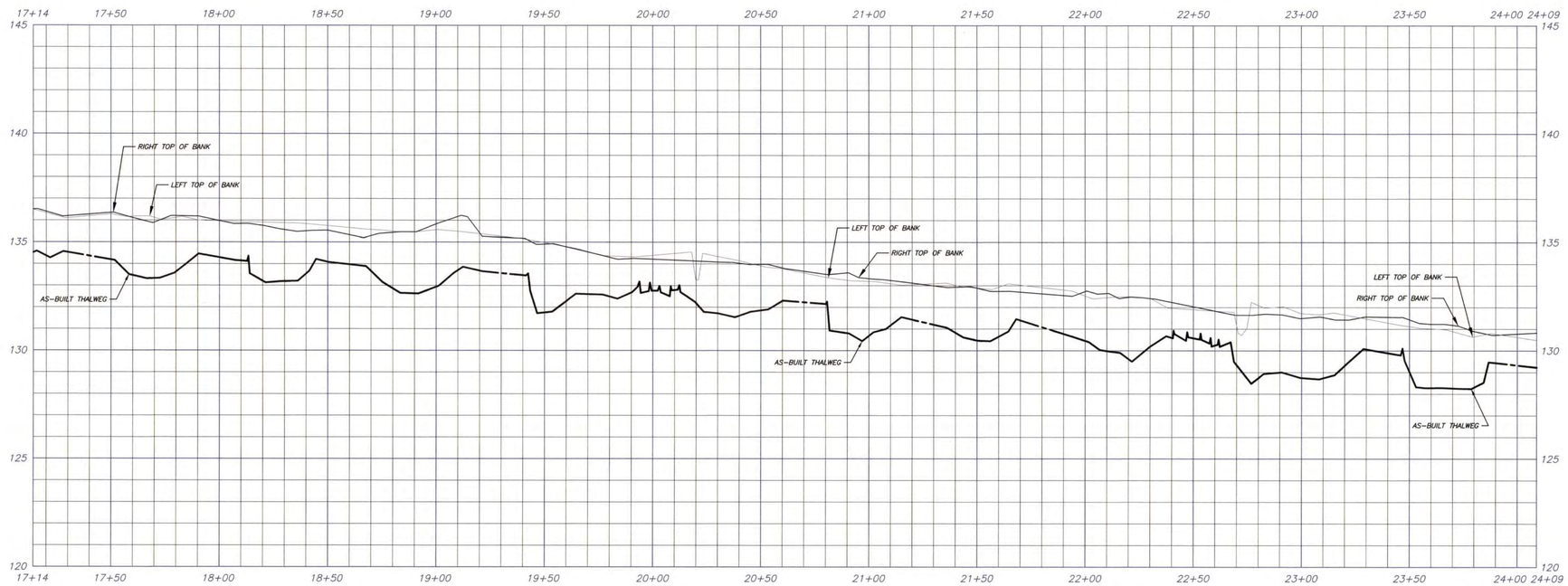
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO. 20200258

DRAWING NAME 20200258-AS BUILT.DWG

NAD 83(2011)





HORIZONTAL SCALE
1" = 30'

VERTICAL SCALE
1" = 3'

SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO.

S6

SHEET No.
6 OF 16

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC

SIX RUNS MITIGATION SITE

SAMPSON COUNTY, N.C.

STREAM AS BUILT SURVEY

REACH BB PLAN & PROFILE (STA 17+14 - 24+09)

MATRIX EAST, PLLC

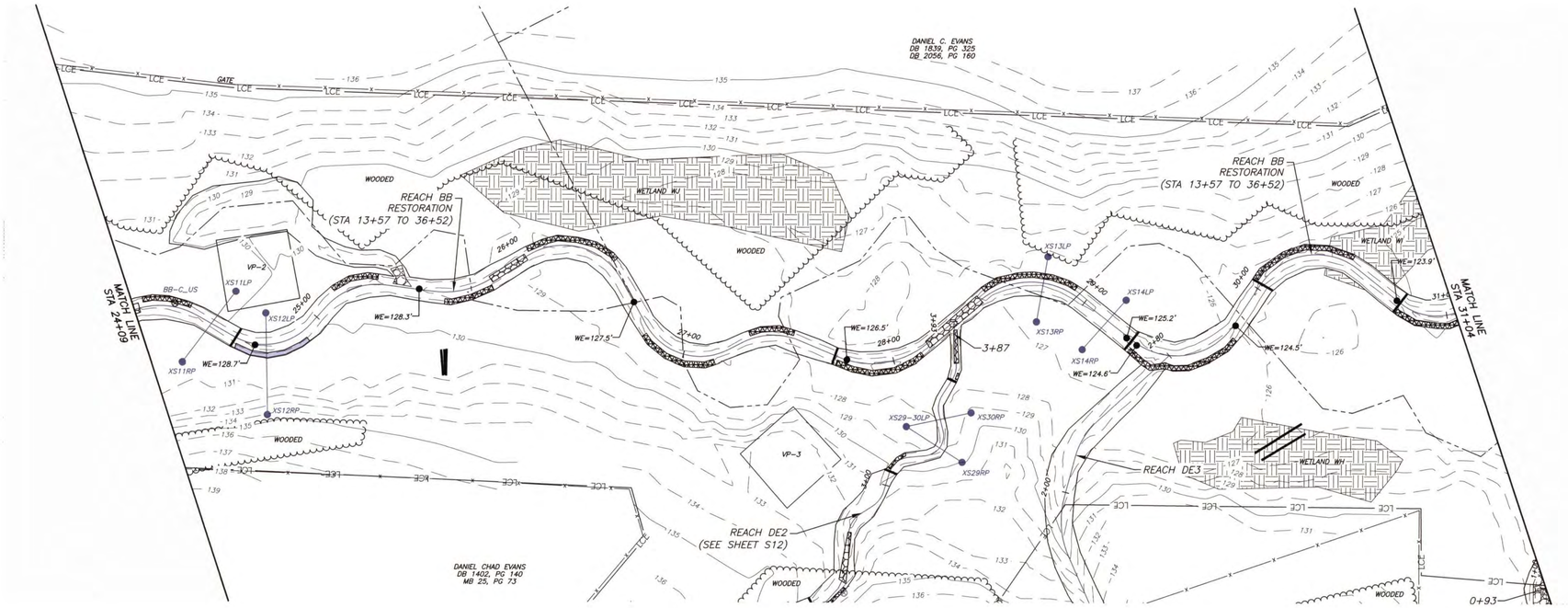
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

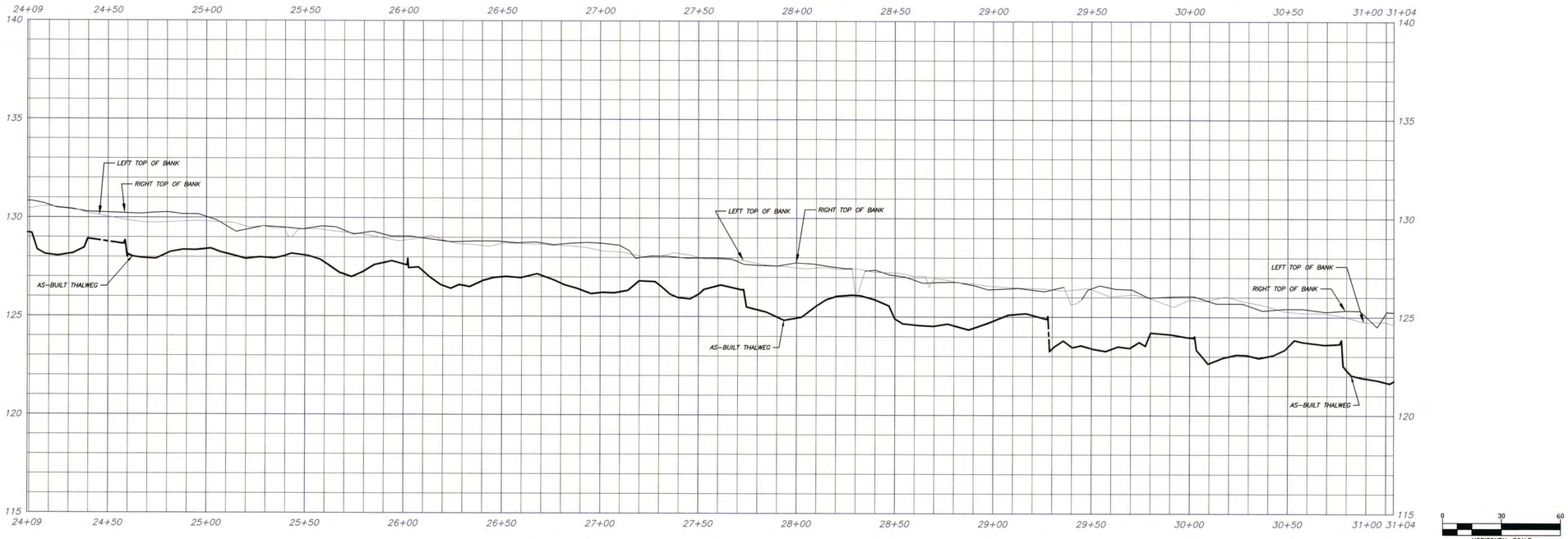
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO.
20200258

DRAWING NAME
20200258-AS BUILT.DWG

NAD 83(2011)





SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO. **S7**

SHEET No. 7 OF 16

STREAM AS BUILT SURVEY
REACH BB PLAN & PROFILE (STA 24+09 - 31+04)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC

SIX RUNS MITIGATION SITE

SAMPSON COUNTY, N.C.

MATRIX EAST, PLLC

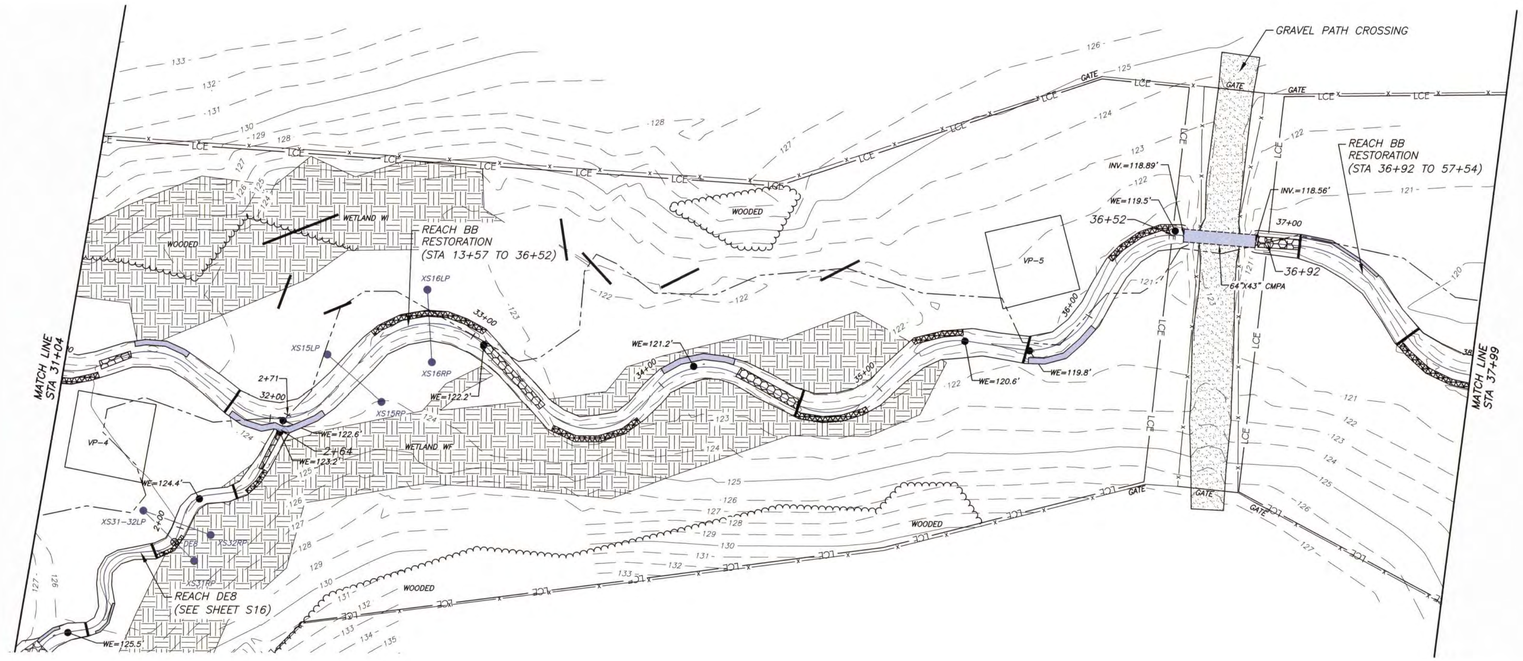
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

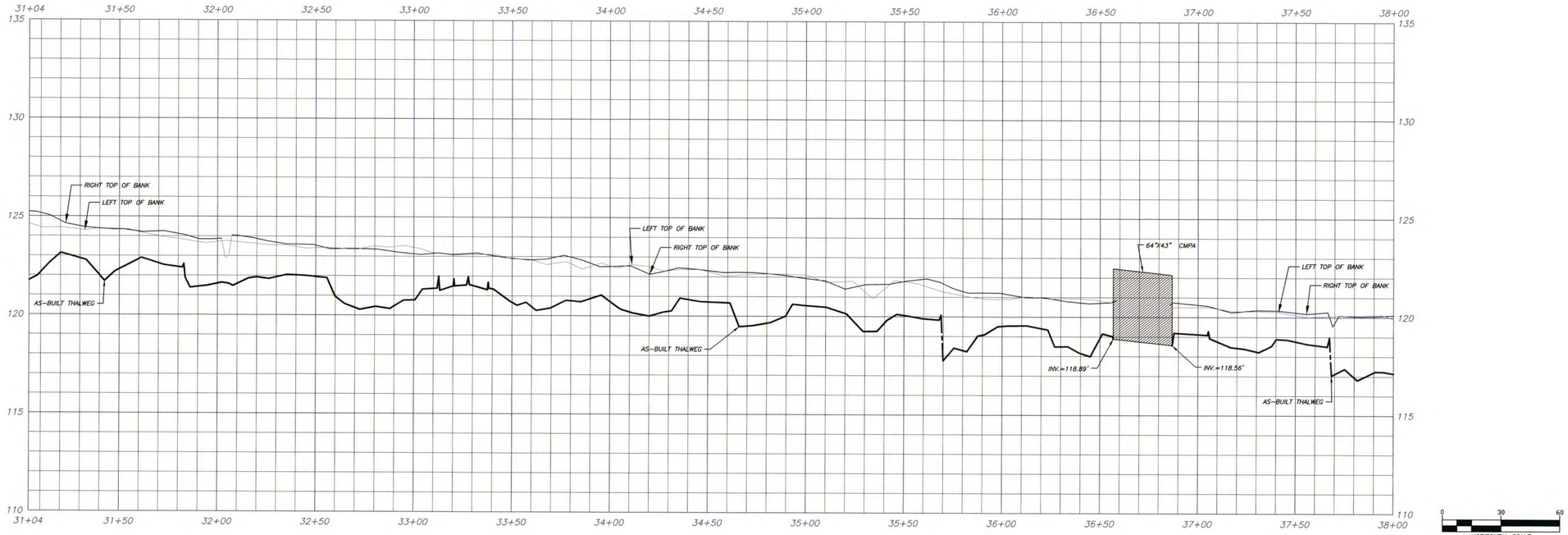
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO. 20200258

DRAWING NAME 20200258-AS BUILT.DWG

NAD 83(2011)





0 30 60
HORIZONTAL SCALE
1" = 30'

0 3' 6'
VERTICAL SCALE
1" = 3'

SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO. **S8**

SHEET No. 8 OF 16

STREAM AS BUILT SURVEY
REACH BB PLAN & PROFILE (STA 31+04 - 37+99)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
SIX RUNS MITIGATION SITE
SAMPSON COUNTY, N.C.

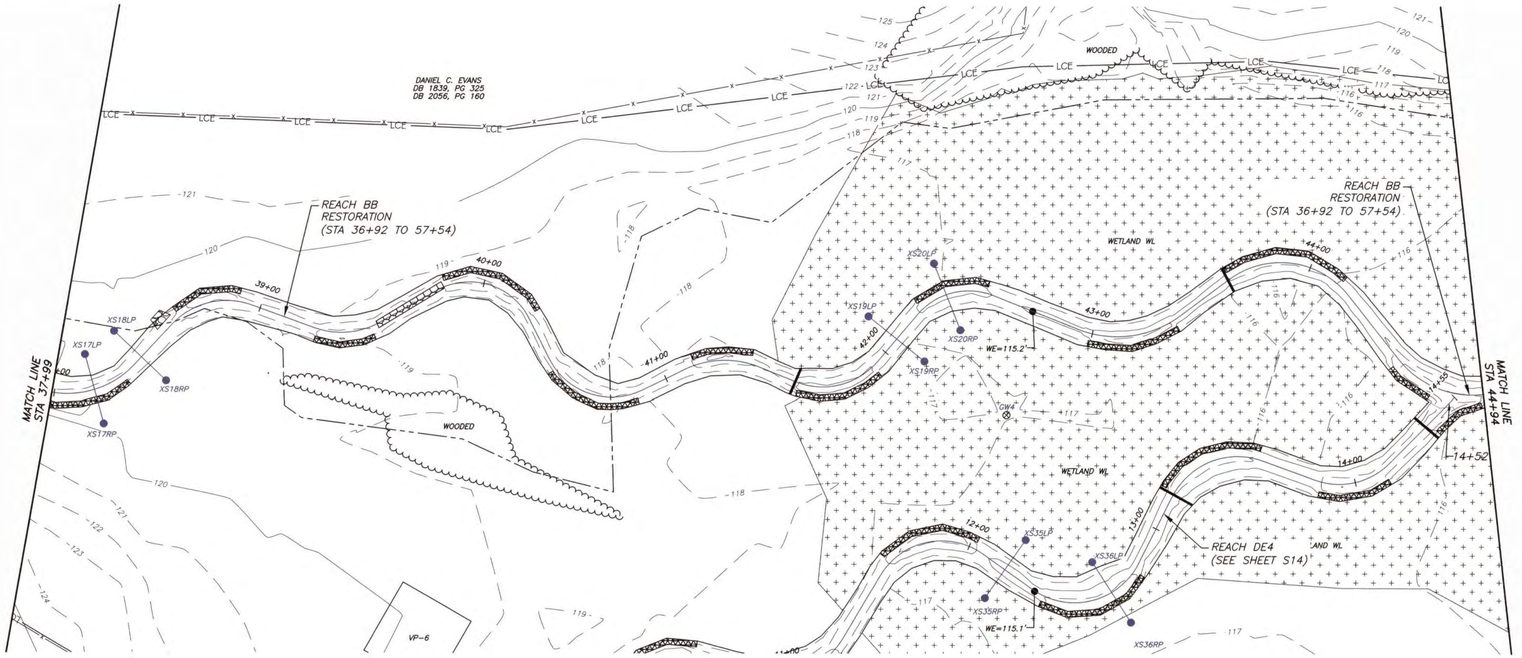
MATRIX EAST, PLLC

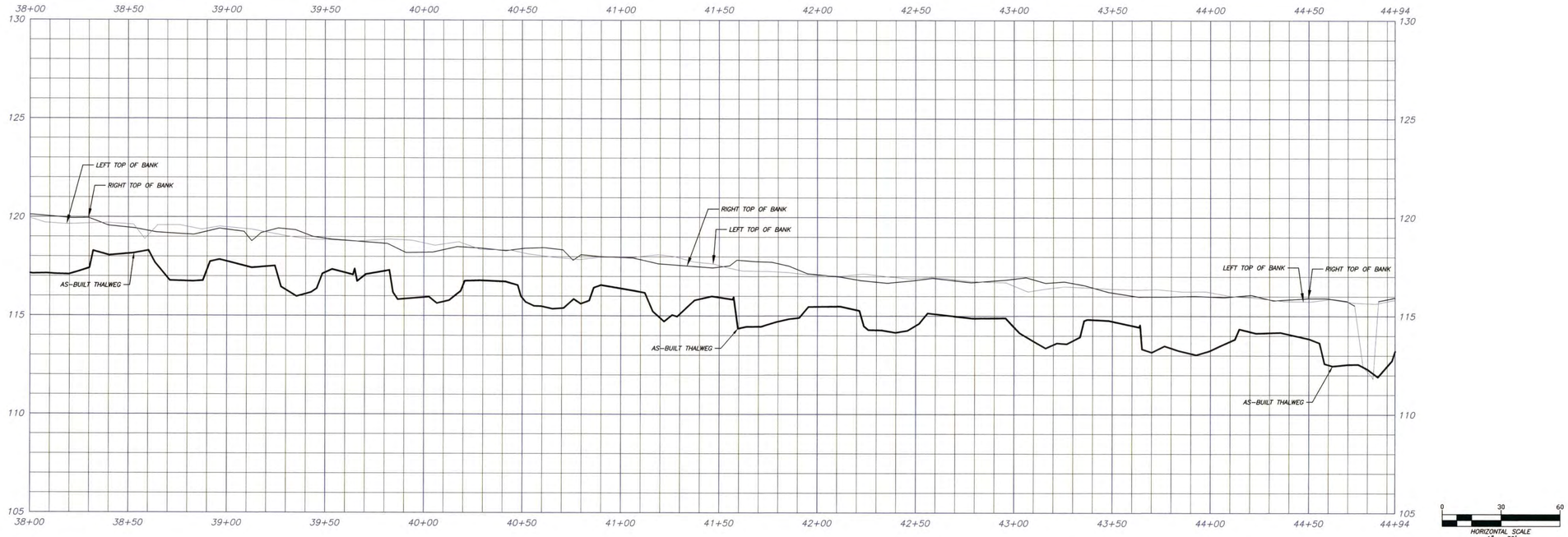
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO. 20200258

DRAWING NAME 20200258-AS BUILT.DWG





HORIZONTAL SCALE
1" = 30'

VERTICAL SCALE
1" = 3'

SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO.

S9

SHEET No. 9 OF 16

STREAM AS BUILT SURVEY
REACH BB PLAN & PROFILE (STA 37+99 - 44+94)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC

SIX RUNS MITIGATION SITE

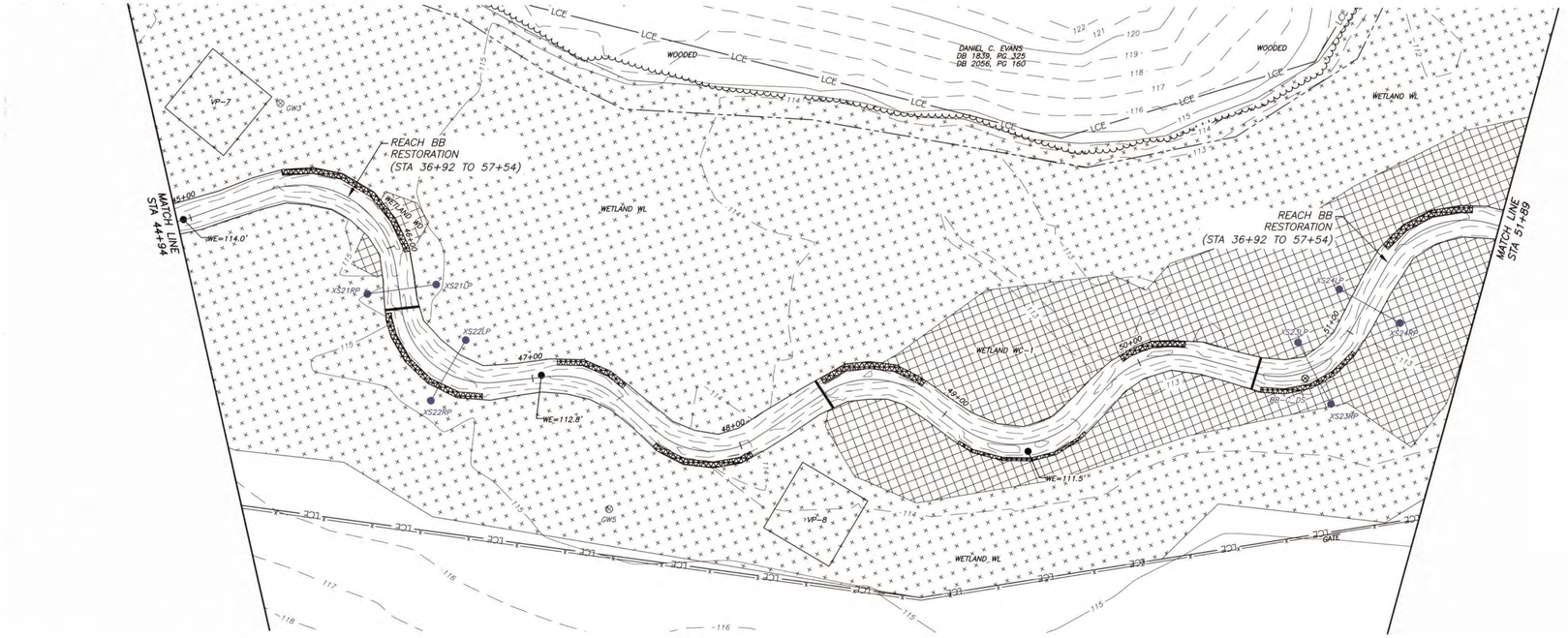
SAMPSON COUNTY, N.C.

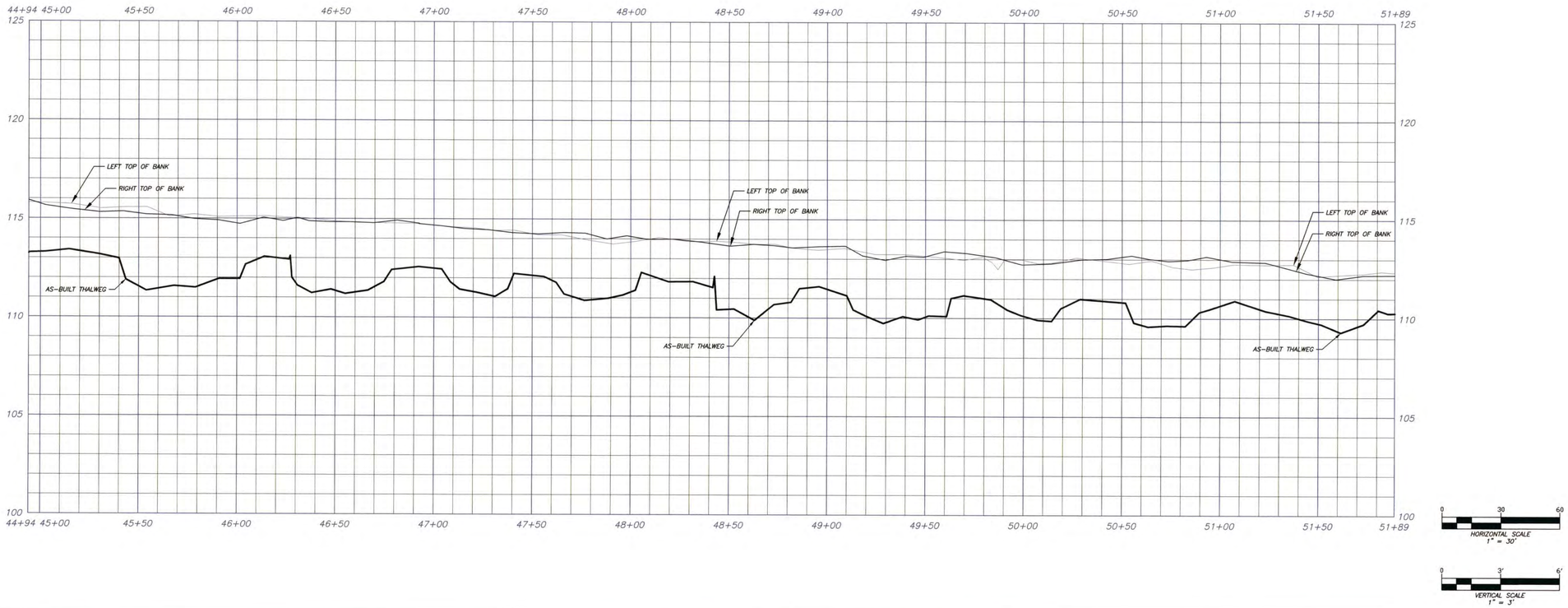
MATRIX EAST, PLLC
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO. 20200258

DRAWING NAME 20200258-AS BUILT.DWG





0 30 60
HORIZONTAL SCALE
1" = 30'

0 3' 6'
VERTICAL SCALE
1" = 3'

NAD, 83(2011)

SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

DRAWING NO.
S10

SHEET No.
10 OF 16

STREAM AS BUILT SURVEY
REACH BB PLAN & PROFILE (STA 44+94 - 51+89)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC

SIX RUNS MITIGATION SITE

SAMPSON COUNTY, N.C.

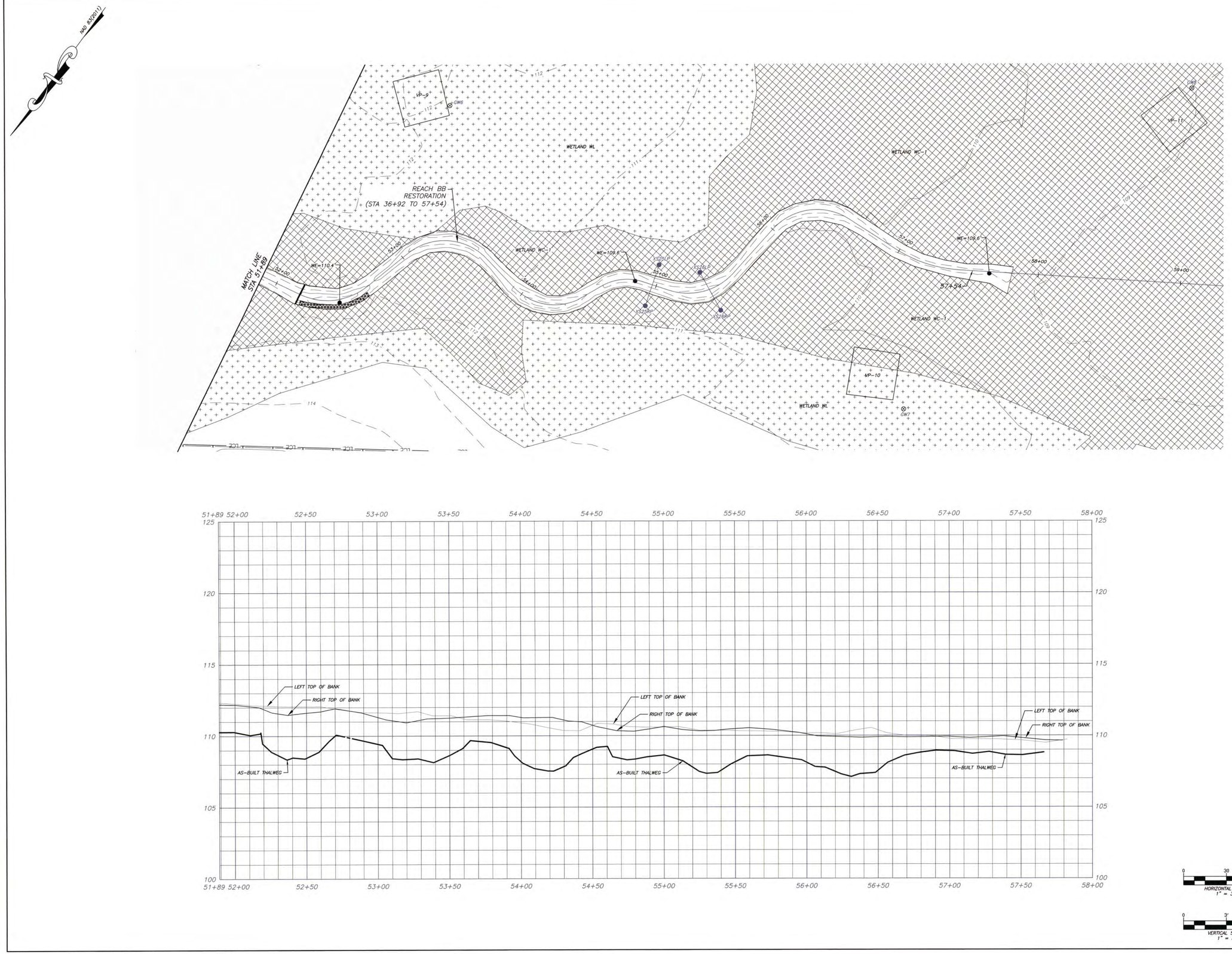
MATRIX EAST, PLLC

906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO.
20200258

DRAWING NAME
20200258-AS BUILT.DWG



SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO.

S11

SHEET No.
11 OF 16

STREAM AS BUILT SURVEY
REACH BB PLAN & PROFILE (STA 51+89 - 58+00)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC

SIX RUNS MITIGATION SITE

SAMPSON COUNTY, N.C.

MATRIX EAST, PLLC

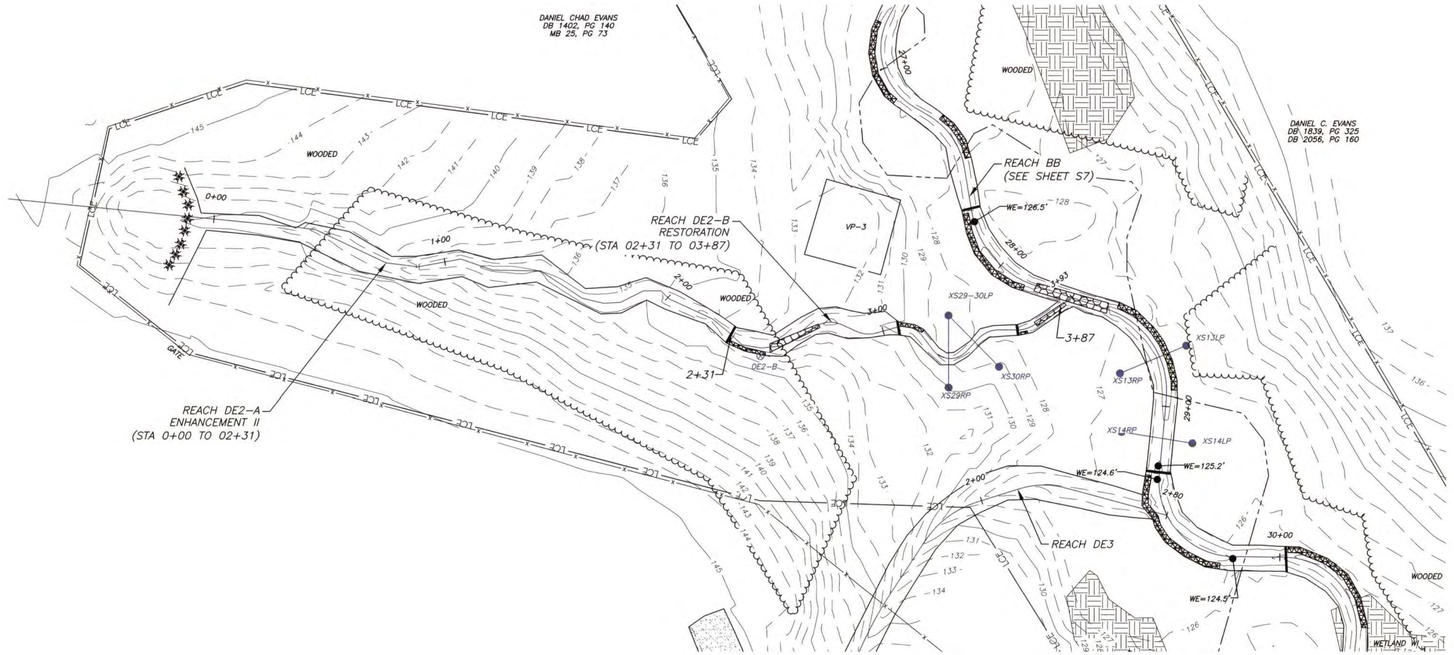
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

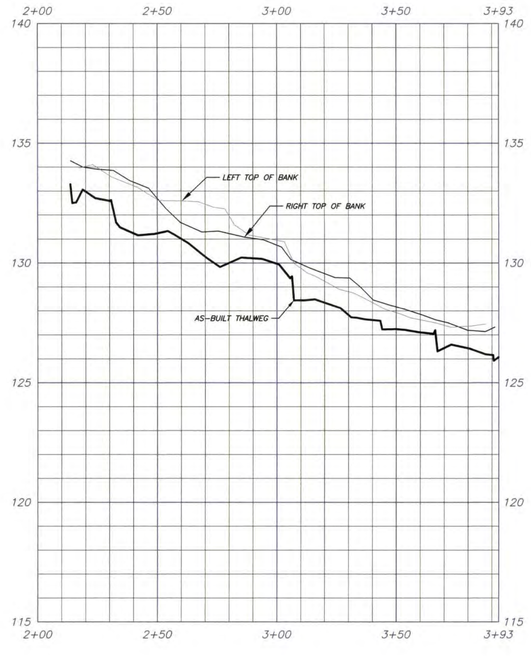
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO.
20200258

DRAWING NAME
20200258-AS BUILT.DWG

NAD 83(2011)





HORIZONTAL SCALE
1" = 30'

VERTICAL SCALE
1" = 3'

SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO. S12

SHEET No. 12 OF 16

STREAM AS BUILT SURVEY
REACH DE2 PLAN & PROFILE (STA 02+00 - 03+93)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
SIX RUNS MITIGATION SITE
SAMPSON COUNTY, N.C.

MATRIX EAST, PLLC

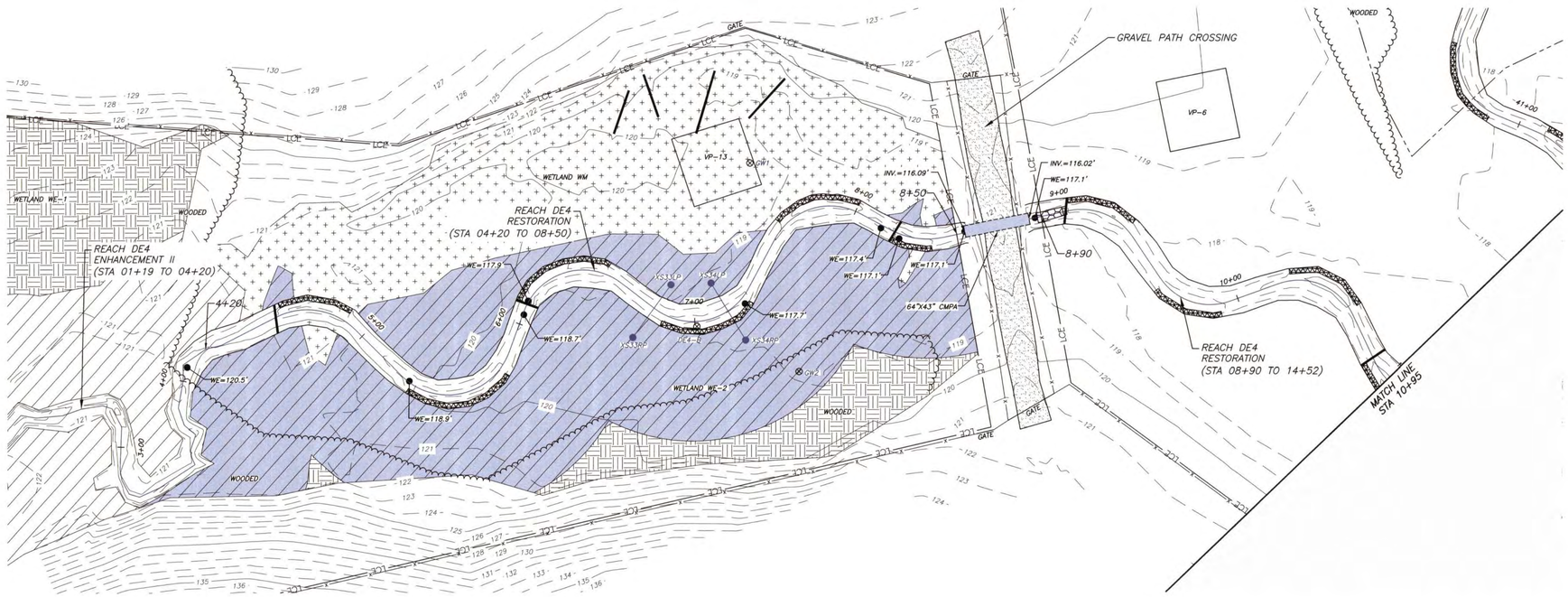
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

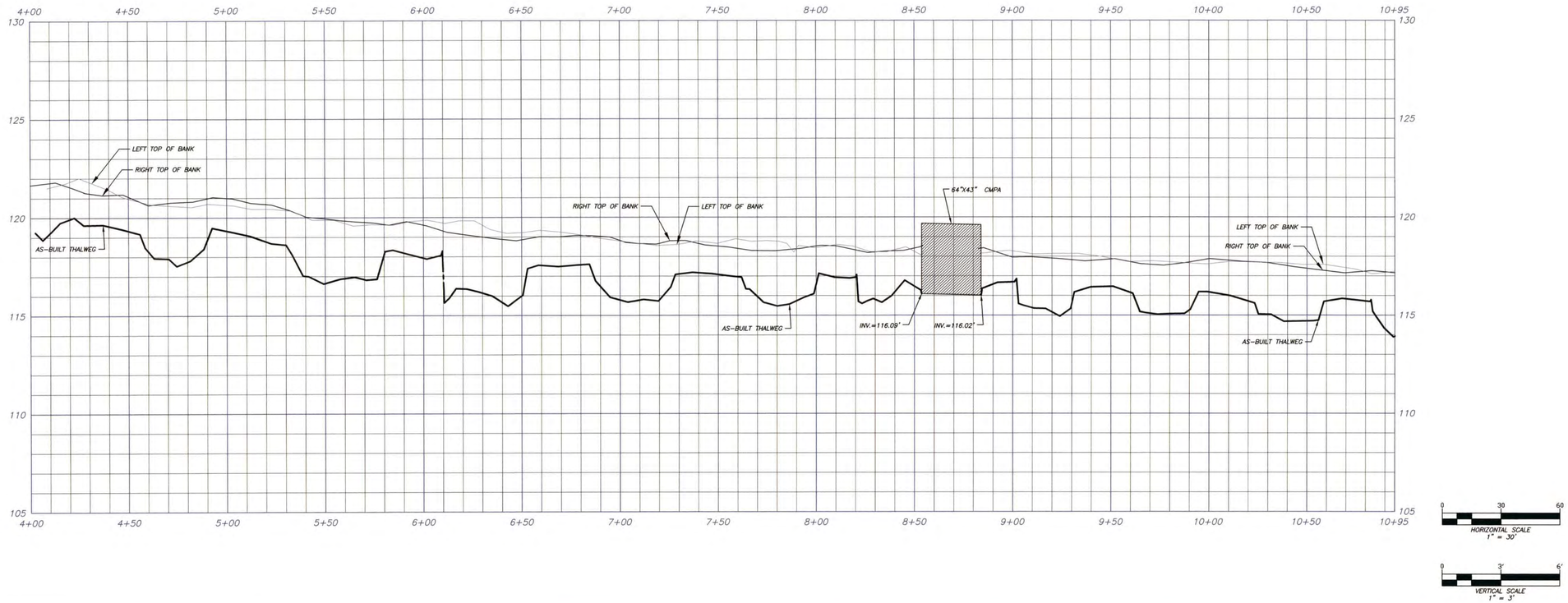
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO. 20200258

DRAWING NAME 20200258-AS BUILT.DWG

NAD 83(2011)





HORIZONTAL SCALE
1" = 30'

VERTICAL SCALE
1" = 3'

SEAL
NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO.
S13

SHEET No.
13 OF 16

STREAM AS BUILT SURVEY
REACH DE4 PLAN & PROFILE (STA 04+00 - 10+95)

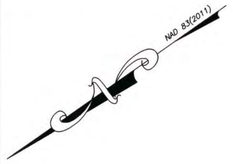
RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
SIX RUNS MITIGATION SITE
SAMPSON COUNTY, N.C.

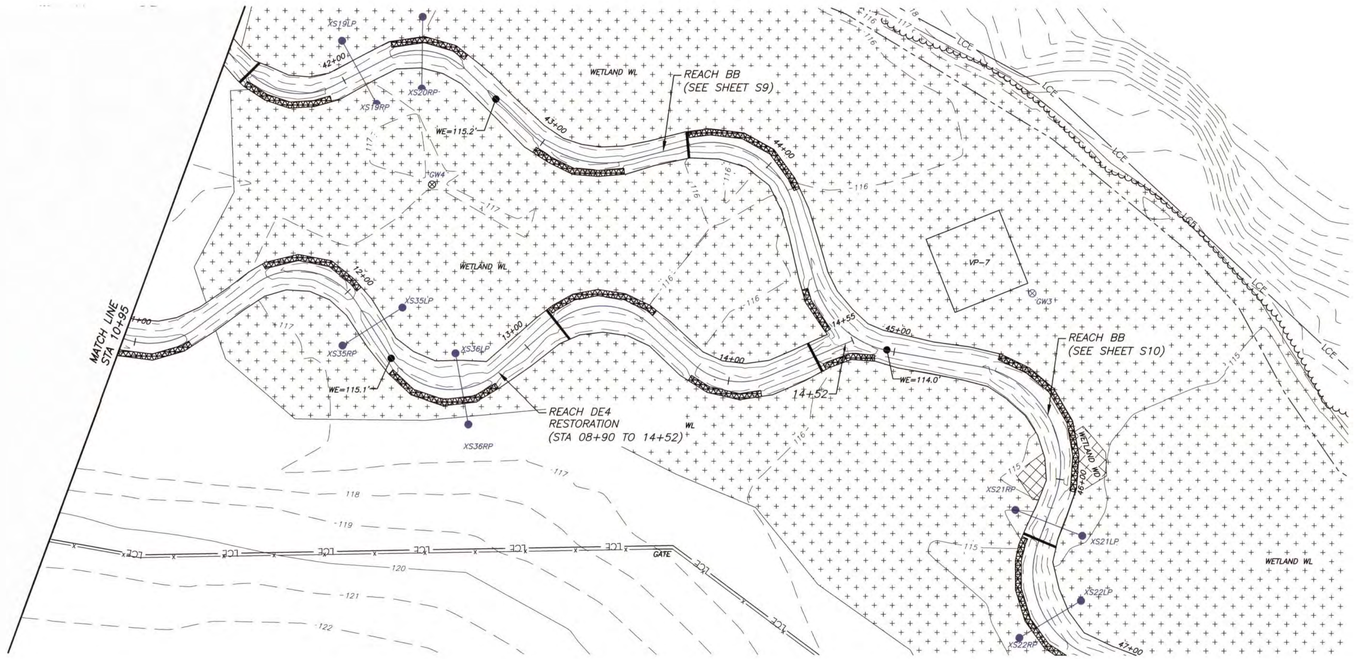
MATRIX EAST, PLLC
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

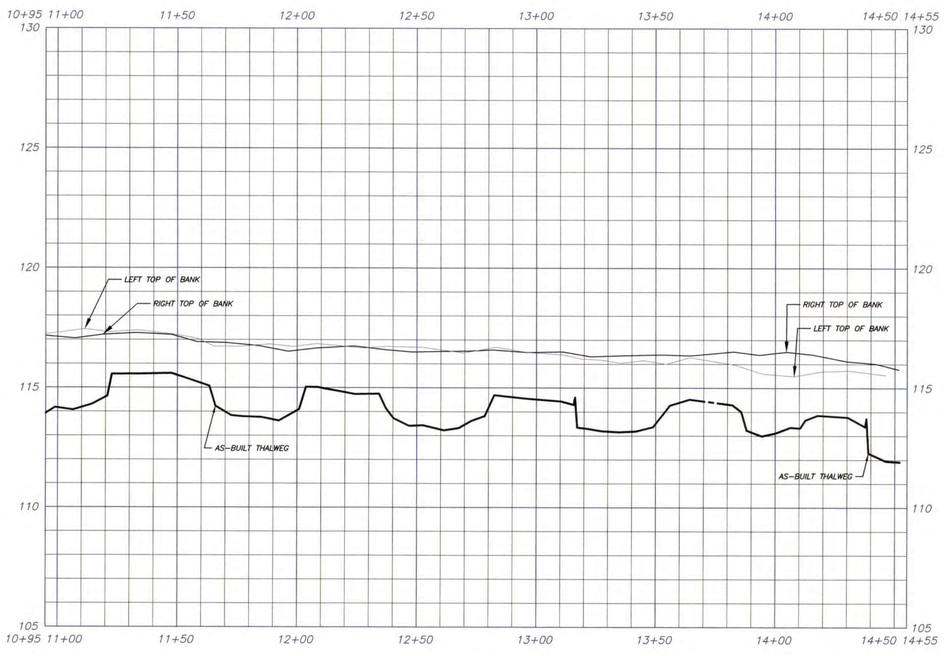
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

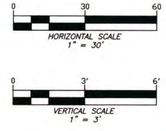
PROJECT NO.
20200258

DRAWING NAME
20200258-AS BUILT.DWG









SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

5/11/2023

DRAWING NO.
S14

SHEET No.
14 OF 16

STREAM AS BUILT SURVEY
REACH DE4 PLAN & PROFILE (STA 10+95 - 14+55)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
SIX RUNS MITIGATION SITE
SAMPSON COUNTY, N.C.

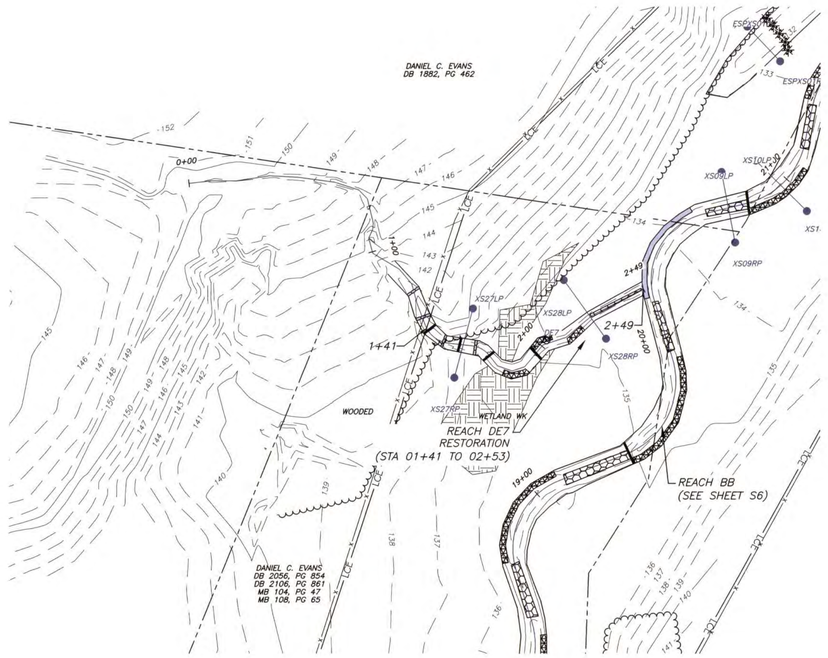
MATRIX EAST, PLLC
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

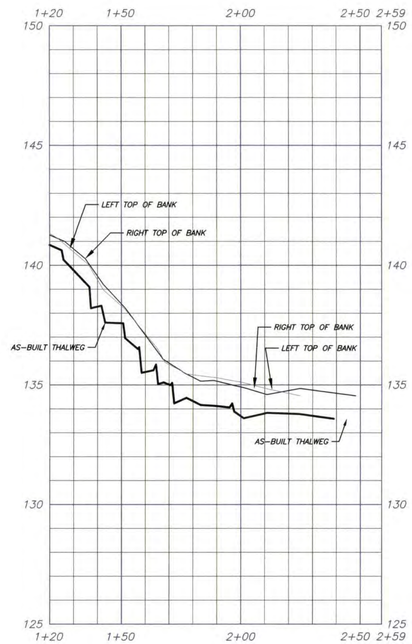
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO.
20200258

DRAWING NAME
20200258-AS BUILT.DWG

NAD 83(2011)





0 30 60
HORIZONTAL SCALE
1" = 30'

0 3' 6'
VERTICAL SCALE
1" = 3'

SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

DRAWING NO.
S15

SHEET No.
15 OF 16

STREAM AS BUILT SURVEY
REACH DE7 PLAN & PROFILE (STA 01+41 - 02+49)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
SIX RUNS MITIGATION SITE
SAMPSON COUNTY, N.C.

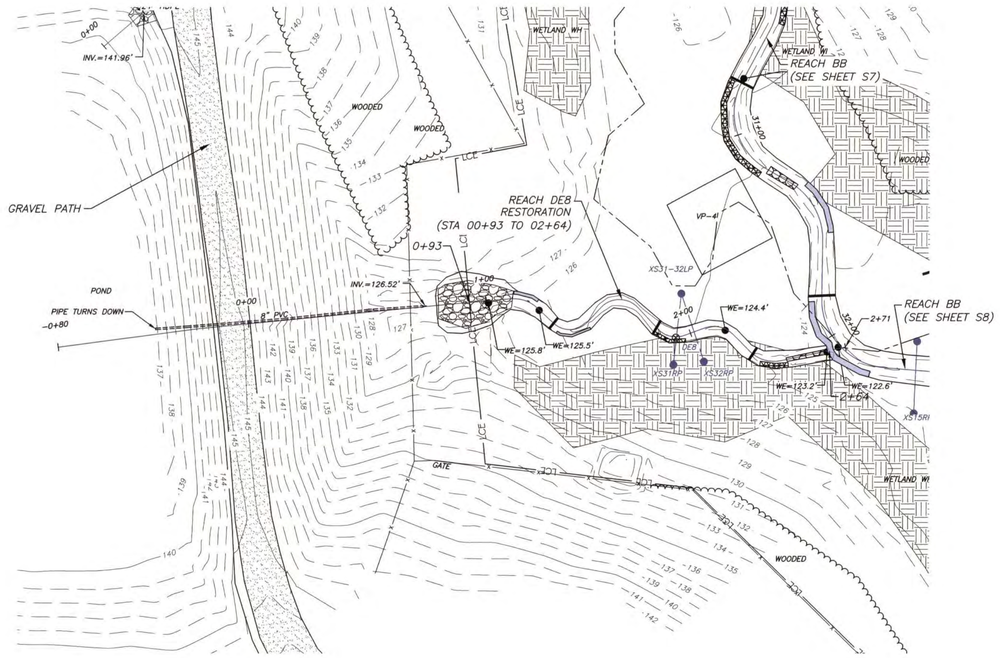
MATRIX EAST, PLLC
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

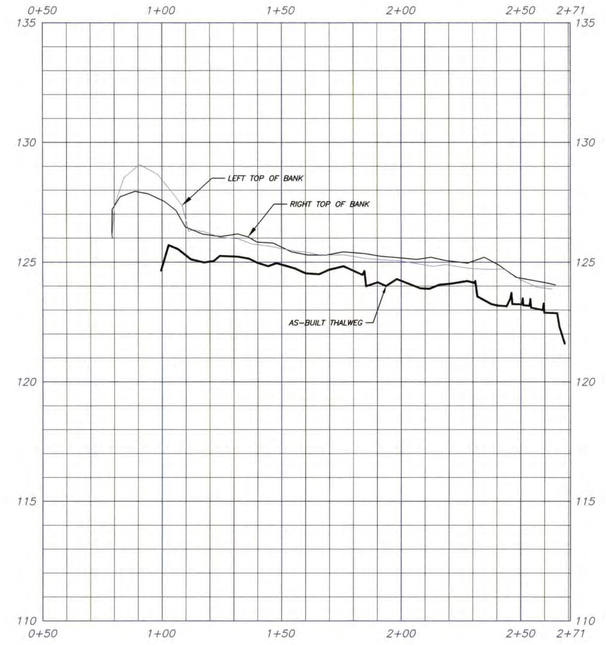
DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO.
20200258

DRAWING NAME
20200258-AS BUILT.DWG

NAD 83(2011)





HORIZONTAL SCALE
1" = 30'

VERTICAL SCALE
1" = 3'

SEAL

NORTH CAROLINA PROFESSIONAL SEAL L-4712 LAND SURVEYOR JAMES R. WATSON

DRAWING NO.
S16

SHEET No.
16 OF 16

STREAM AS BUILT SURVEY
REACH DE8 PLAN & PROFILE (STA 00+50 - 02+71)

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
SIX RUNS MITIGATION SITE
SAMPSON COUNTY, N.C.

MATRIX EAST, PLLC

906 N. QUEEN ST., SUITE A
KINSTON, NC 28501
TEL: 252-522-2500
FAX: 252-522-4747
FIRM LIC. # P-0221
EMAIL: surveyor@matrixeast.net

DRAWN BY	DATE	SCALE
JRW	5/11/2023	1" = 30'

PROJECT NO.
20200258

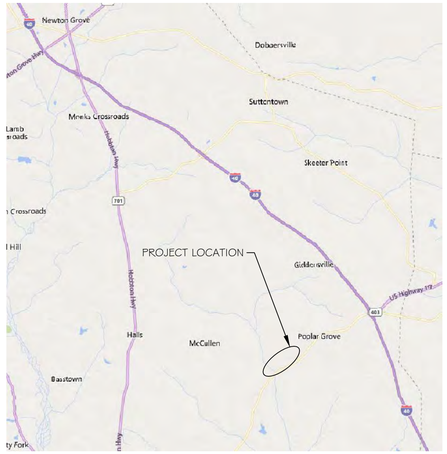
DRAWING NAME
20200258-AS BUILT.DWG

SIX RUNS RECORD DRAWINGS

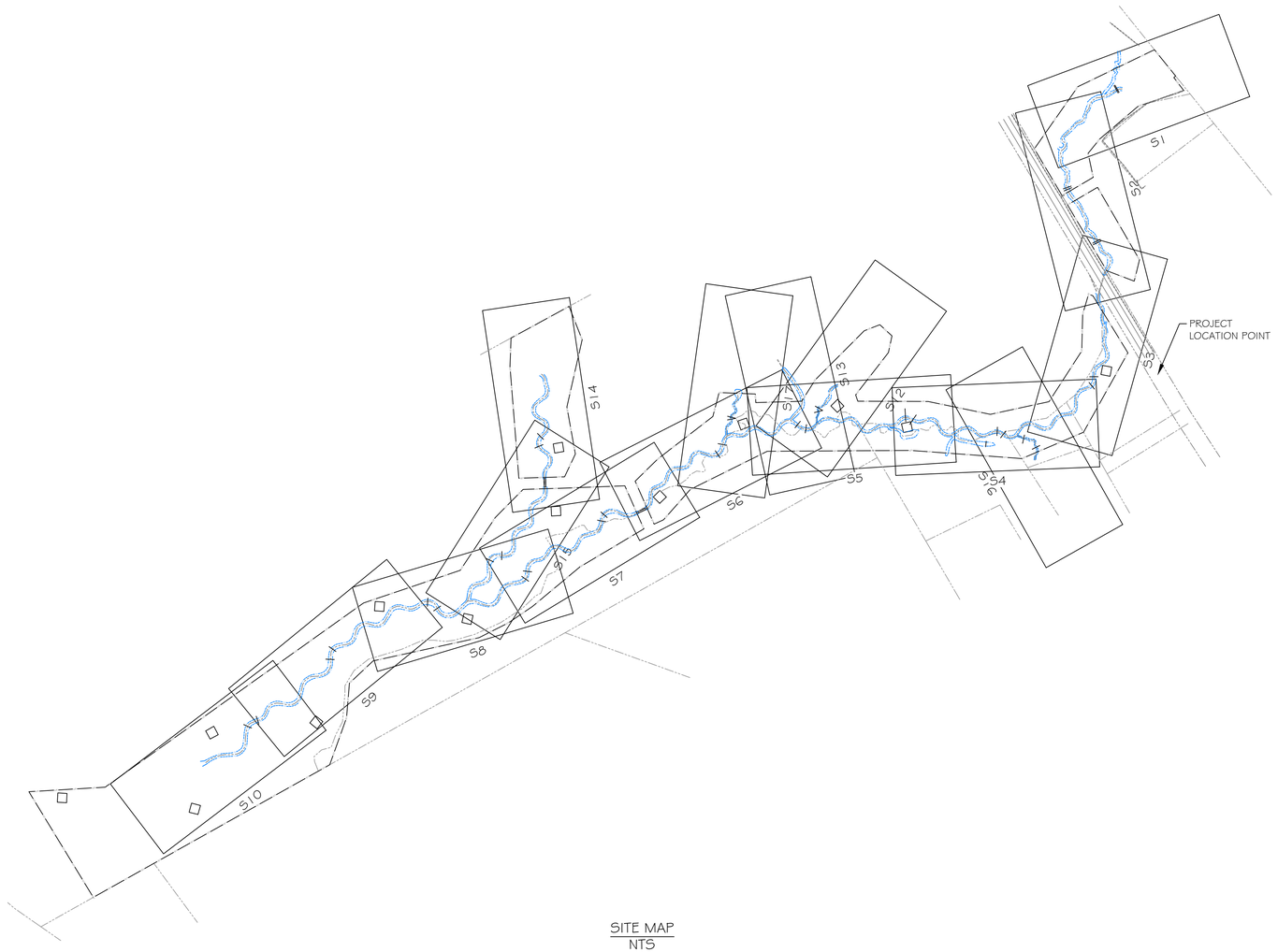
SAMPSON COUNTY, NORTH CAROLINA
(35.0962, -78.2297)

CAPE FEAR RIVER BASIN/ HUC: 03030006110010
AUGUST 2023

RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
3600 GLENWOOD AVE, SUITE 100
RALEIGH, NC 27612



VICINITY MAP
NTS



SITE MAP
NTS

Sheet List Table	
Sheet Number	Sheet Title
--	COVER
S1	REACH BB
S2	REACH BB
S3	REACH BB
S4	REACH BB
S5	REACH BB
S6	REACH BB
S7	REACH BB
S8	REACH BB
S9	REACH BB
S10	REACH BB
S11	REACH DE2
S12	REACH DE3
S13	REACH DE4
S14	REACH DE4
S15	REACH DE7
S16	REACH DE8
W1	WETLANDS

PROJECT DIRECTORY

DESIGNED BY:
RESOURCE ENVIRONMENTAL SOLUTIONS, LLC
3600 GLENWOOD AVE, SUITE 100
RALEIGH, NC 27612

DESIGNED FOR:
LINDSAY CROCKER
NC DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF MITIGATION SERVICES
217 WEST JONES ST., SUITE 300A
RALEIGH, NC 27603

SURVEYED BY:
MATRIX EAST, PLLC
906 N. QUEEN ST., SUITE A
KINSTON, NC 28501

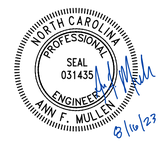
DMS PROJECT #: 100170
CONTRACT #: 0303-01
USACE ACTION ID #: SAW-2020-01964
RFP #: 16-20190303

AS-BUILT TOPOGRAPHY AND PLANIMETRICS SURVEY WAS PROVIDED BY MATRIX EAST, PLLC (NC FIRM LICENSE NUMBER P-0221, CHRISTOPHER K. PADERICK, NC PLS L-4189), DATED JUNE 21, 2023

res
3600 Glenwood Ave, Suite 100
Raleigh, NC 27612
Main: 919.829.9909
www.res.us

Engineering Services Provided By:
RES Environmental Operating Company, LLC
License: F-1428

SEAL



PLOT DATE:
8/16/2023

REVISIONS:

RELEASED FOR:
RECORD DRAWINGS

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

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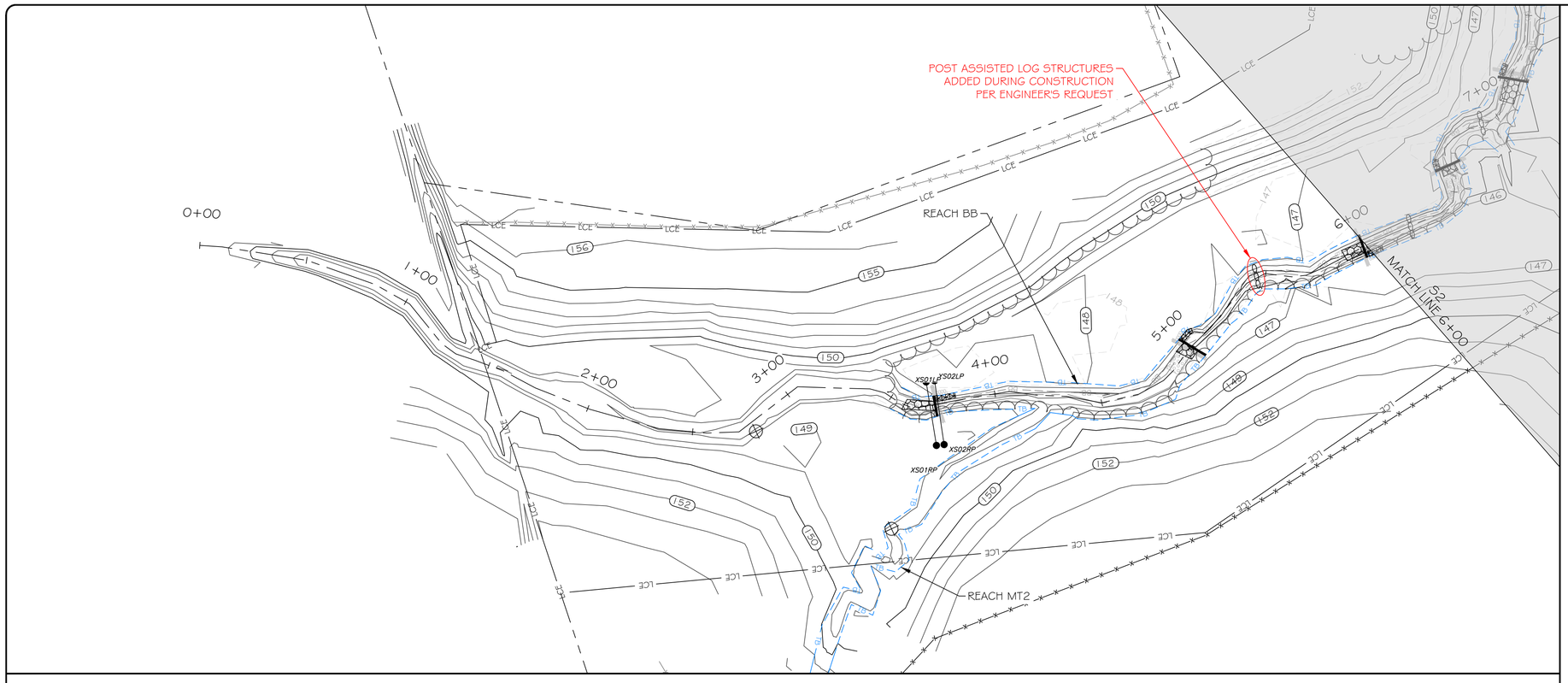
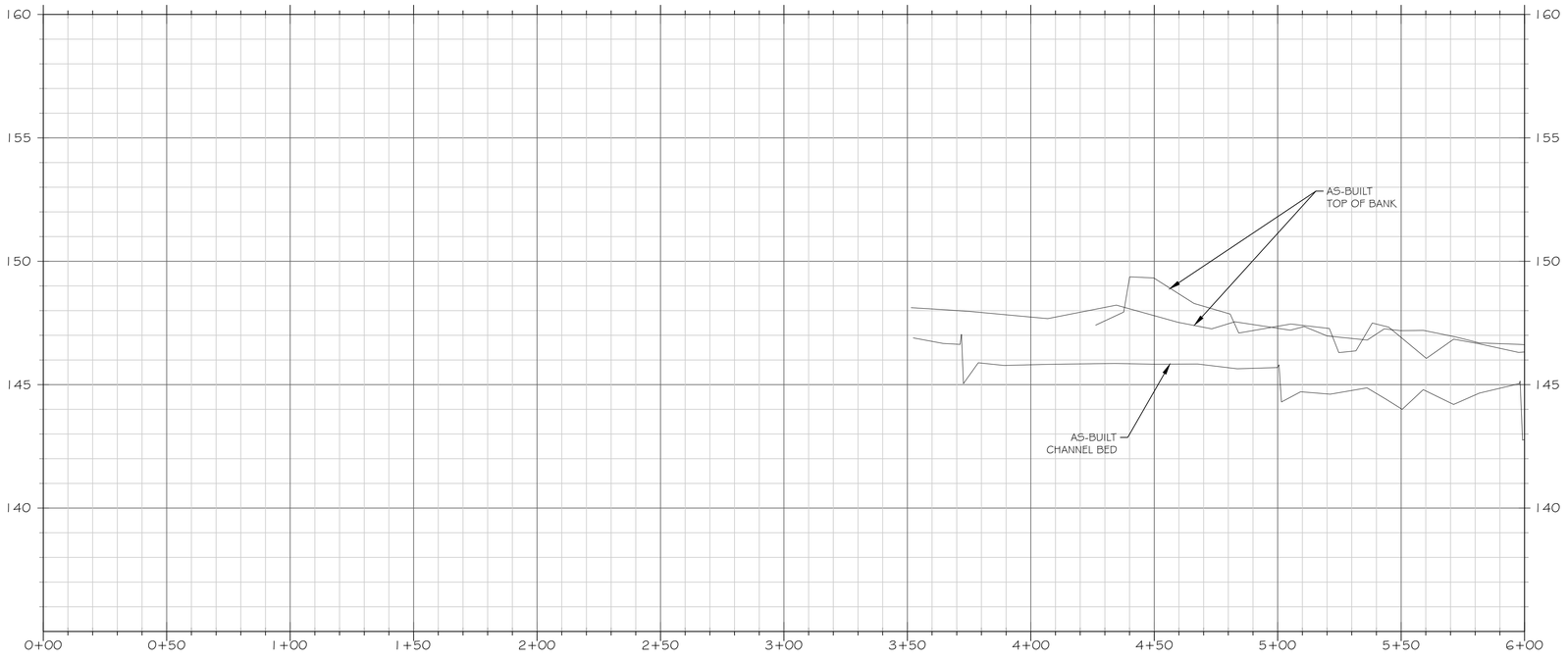


LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT — LCE
- WETLAND
- TREELINE
- AS-BUILT CONTOUR MAJOR — 50
- AS-BUILT CONTOUR MINOR — 46
- PROPOSED CONTOUR MAJOR — 50
- PROPOSED CONTOUR MINOR — 46
- EXISTING FENCING
- AS-BUILT FENCING
- AS-BUILT TOP OF BANK — TB
- AS-BUILT BOTTOM OF BANK — BB
- PROPOSED TOP OF BANK
- AS-BUILT BRUSH TOE PROTECTION
- PROPOSED BRUSH TOE PROTECTION
- AS-BUILT ENGINEERED SEDIMENT PACK
- PROPOSED ENGINEERED SEDIMENT PACK
- AS-BUILT POST ASSISTED LOG STRUCTURE
- AS-BUILT LOG STRUCTURE
- PROPOSED LOG STRUCTURE
- AS-BUILT ROCK STRUCTURE
- PROPOSED ROCK STRUCTURE
- AS-BUILT STONE TOE
- PROPOSED STONE TOE
- AS-BUILT CONSTRUCTED RIFFLE
- PROPOSED CONSTRUCTED RIFFLE
- GROUNDWATER MONITORING WELL (W)
- STAGE RECORDER
- FLOW GAUGE
- MONITORING CROSS SECTION
- VEGETATION MONITORING PLOT — VP#

NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED



SCALE: HOR 1"=30'; VERT 1"=3'

res
3600 Glenwood Ave, Suite 100
Raleigh, NC 27612
Main: 919.829.9909
www.res.us

Engineering Services Provided By:
RES Environmental Operating Company, LLC
License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN 8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S1

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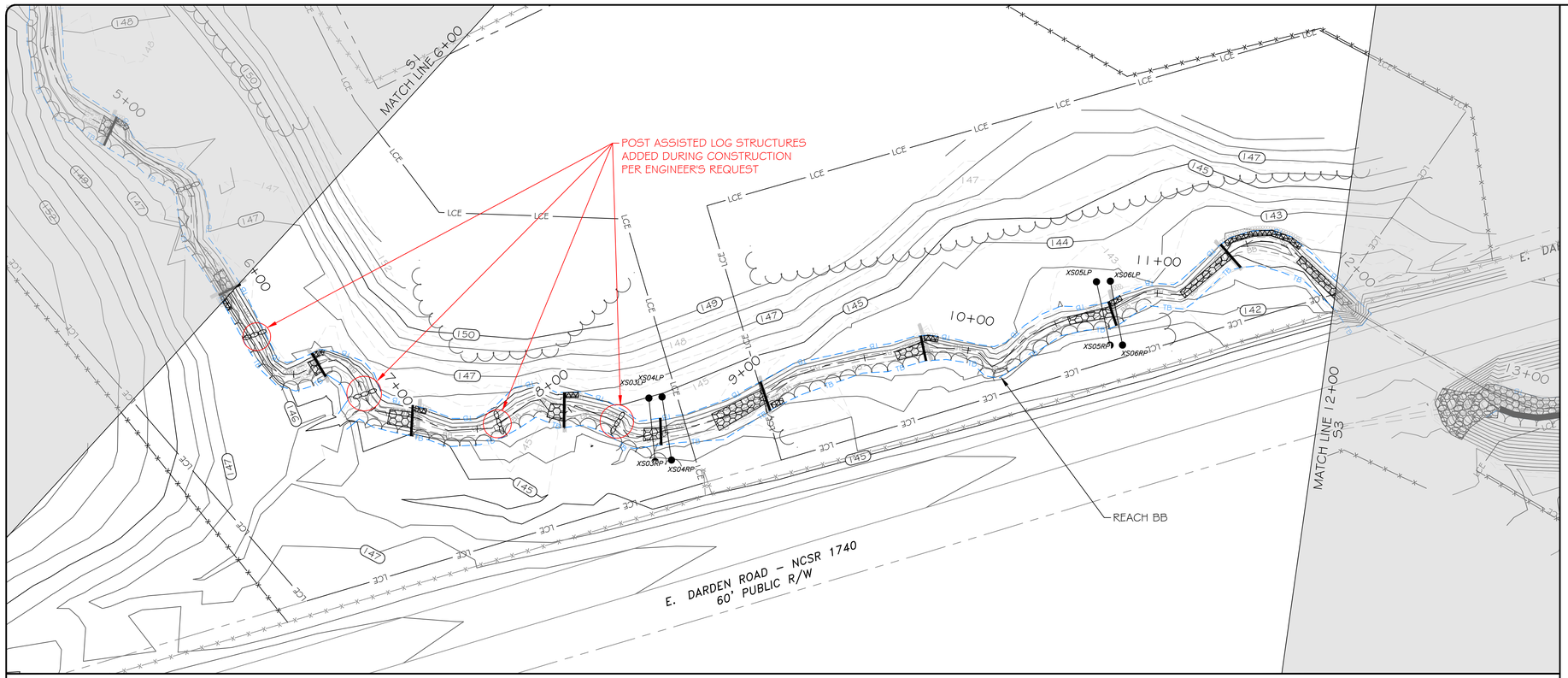

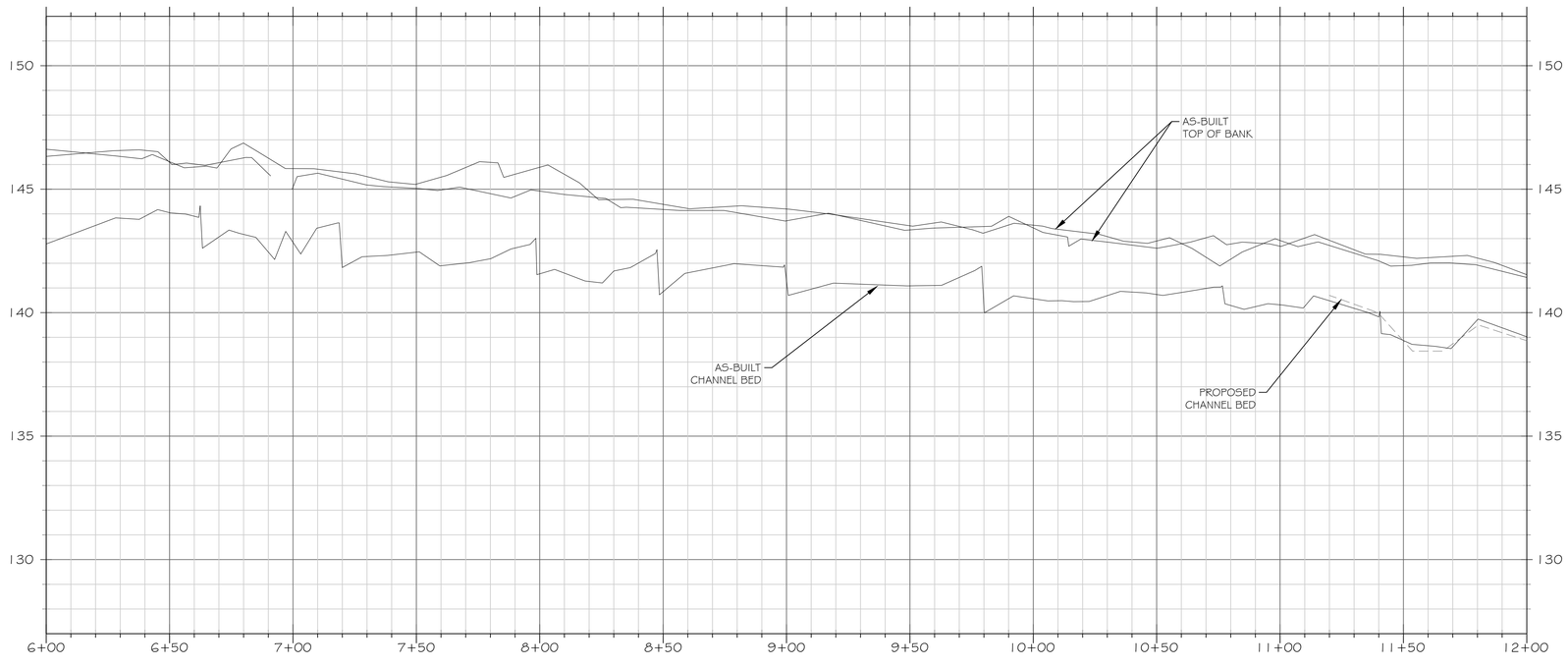

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT — LCE
- WETLAND
- TREELINE
- AS-BUILT CONTOUR MAJOR — 50
- AS-BUILT CONTOUR MINOR — 46
- PROPOSED CONTOUR MAJOR — 50
- PROPOSED CONTOUR MINOR — 46
- EXISTING FENCING
- AS-BUILT FENCING
- AS-BUILT TOP OF BANK — TB
- AS-BUILT BOTTOM OF BANK — BB
- PROPOSED TOP OF BANK
- AS-BUILT BRUSH TOE PROTECTION
- PROPOSED BRUSH TOE PROTECTION
- AS-BUILT ENGINEERED SEDIMENT PACK
- PROPOSED ENGINEERED SEDIMENT PACK
- AS-BUILT POST ASSISTED LOG STRUCTURE
- AS-BUILT LOG STRUCTURE
- PROPOSED LOG STRUCTURE
- AS-BUILT ROCK STRUCTURE
- PROPOSED ROCK STRUCTURE
- AS-BUILT STONE TOE
- PROPOSED STONE TOE
- AS-BUILT CONSTRUCTED RIFFLE
- PROPOSED CONSTRUCTED RIFFLE
- GROUNDWATER MONITORING WELL (W)
- STAGE RECORDER
- FLOW GAUGE
- MONITORING CROSS SECTION
- VEGETATION MONITORING PLOT (VP#)

NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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3600 Glenwood Ave, Suite 100
Raleigh, NC 27612
Main: 919.829.9909
www.res.us

Engineering Services Provided By:
RES Environmental Operating Company, LLC
License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN
8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER: S2

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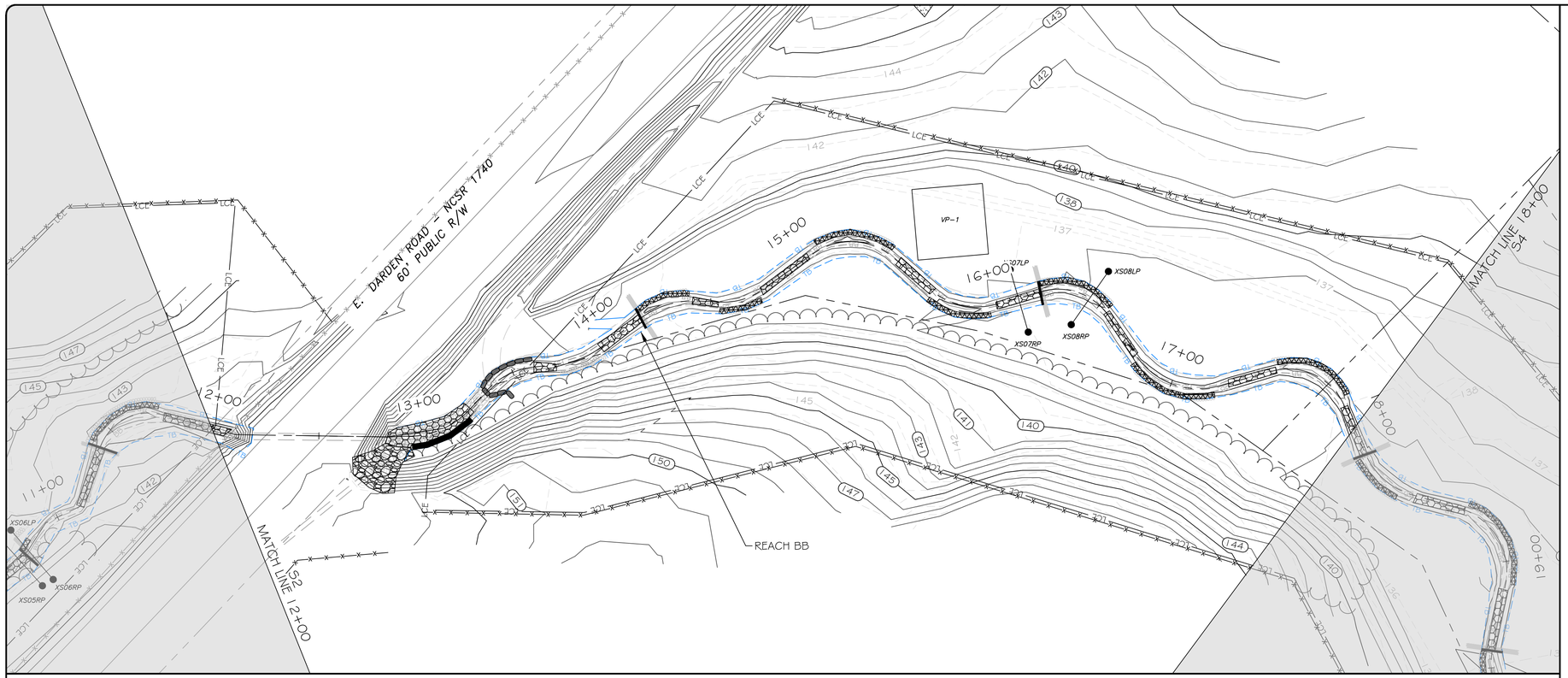

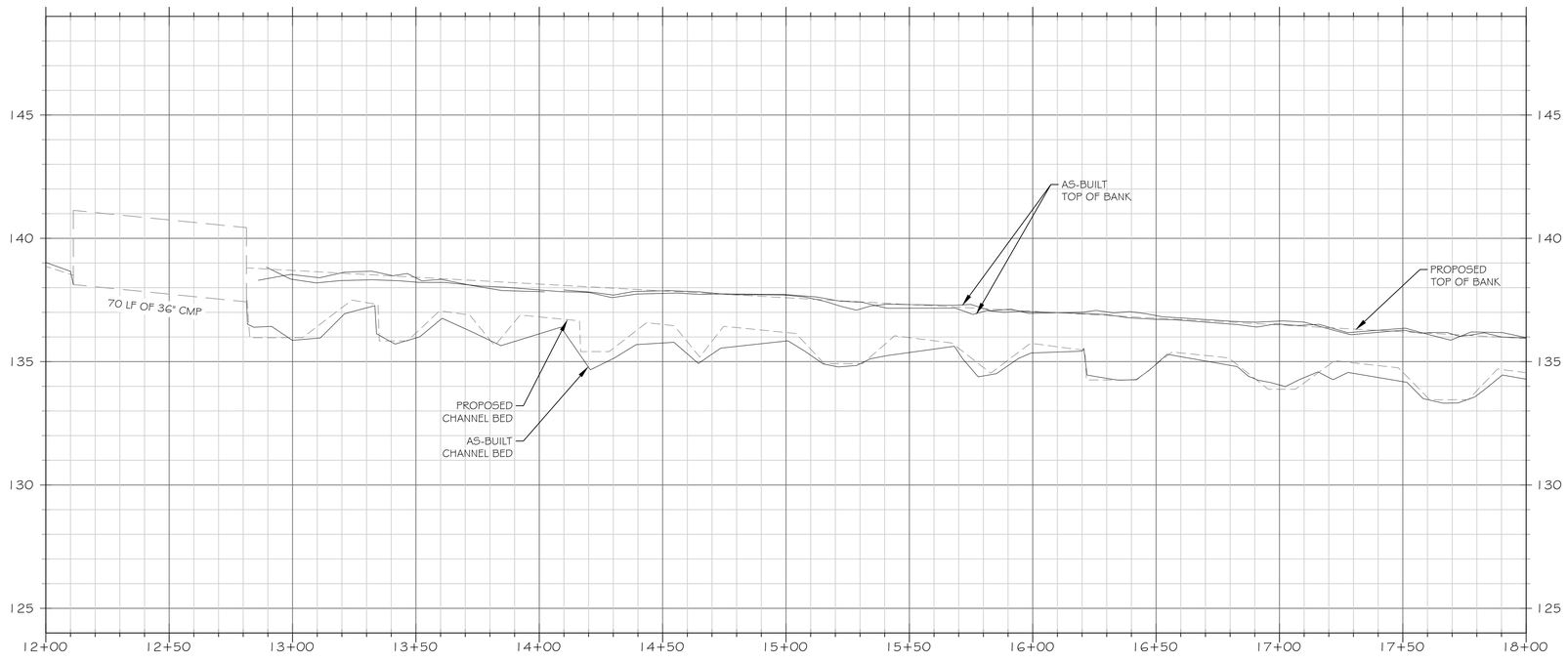

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT — LCE
- WETLAND
- TREELINE
- AS-BUILT CONTOUR MAJOR — 50
- AS-BUILT CONTOUR MINOR — 46
- PROPOSED CONTOUR MAJOR — 50
- PROPOSED CONTOUR MINOR — 46
- EXISTING FENCING
- AS-BUILT FENCING
- AS-BUILT TOP OF BANK — TB
- AS-BUILT BOTTOM OF BANK — BB
- PROPOSED TOP OF BANK
- AS-BUILT BRUSH TOE PROTECTION
- PROPOSED BRUSH TOE PROTECTION
- AS-BUILT ENGINEERED SEDIMENT PACK
- PROPOSED ENGINEERED SEDIMENT PACK
- AS-BUILT POST ASSISTED LOG STRUCTURE
- AS-BUILT LOG STRUCTURE
- PROPOSED LOG STRUCTURE
- AS-BUILT ROCK STRUCTURE
- PROPOSED ROCK STRUCTURE
- AS-BUILT STONE TOE
- PROPOSED STONE TOE
- AS-BUILT CONSTRUCTED RIFFLE
- PROPOSED CONSTRUCTED RIFFLE
- GROUNDWATER MONITORING WELL (W)
- STAGE RECORDER
- FLOW GAUGE
- MONITORING CROSS SECTION
- VEGETATION MONITORING PLOT (VP#)

NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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Main: 919.829.9909
www.res.us

Engineering Services Provided By:
RES Environmental Operating Company, LLC
License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN
8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S3

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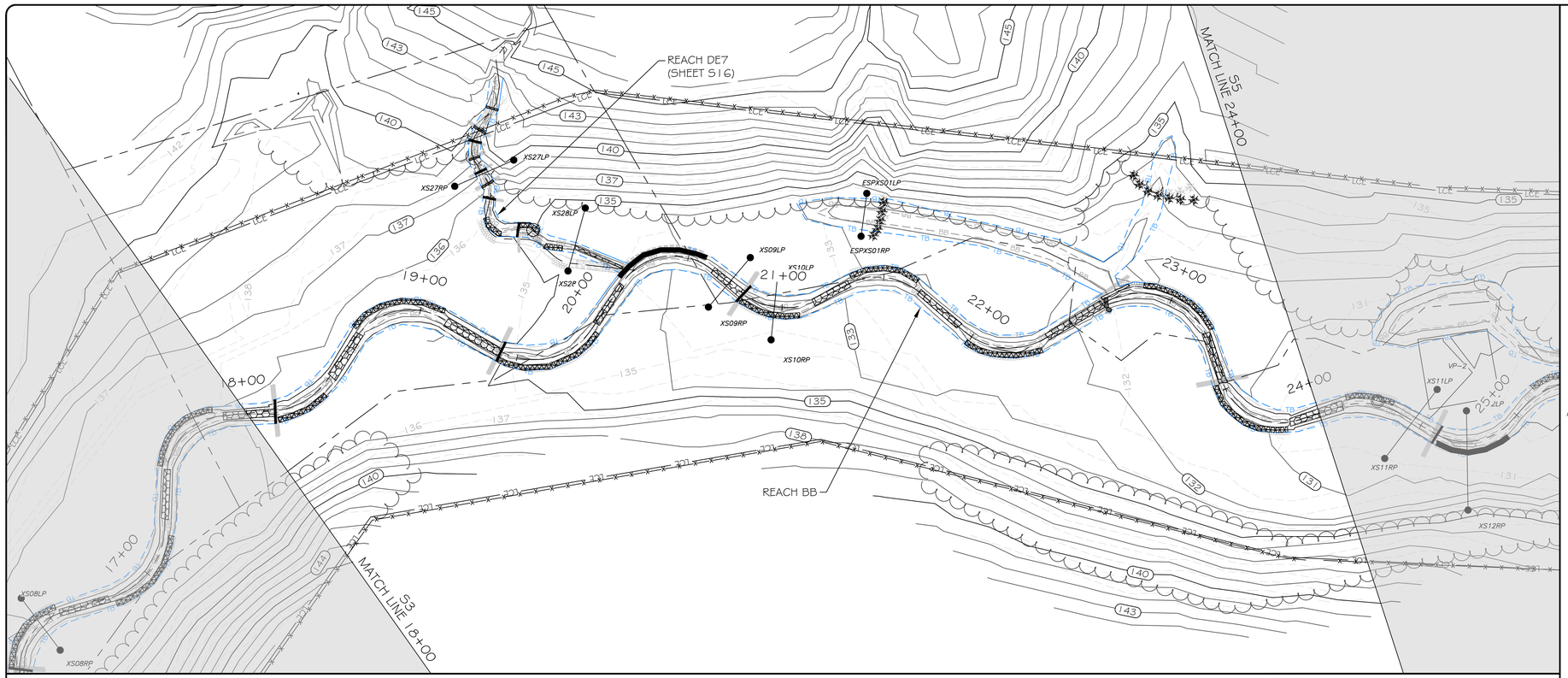

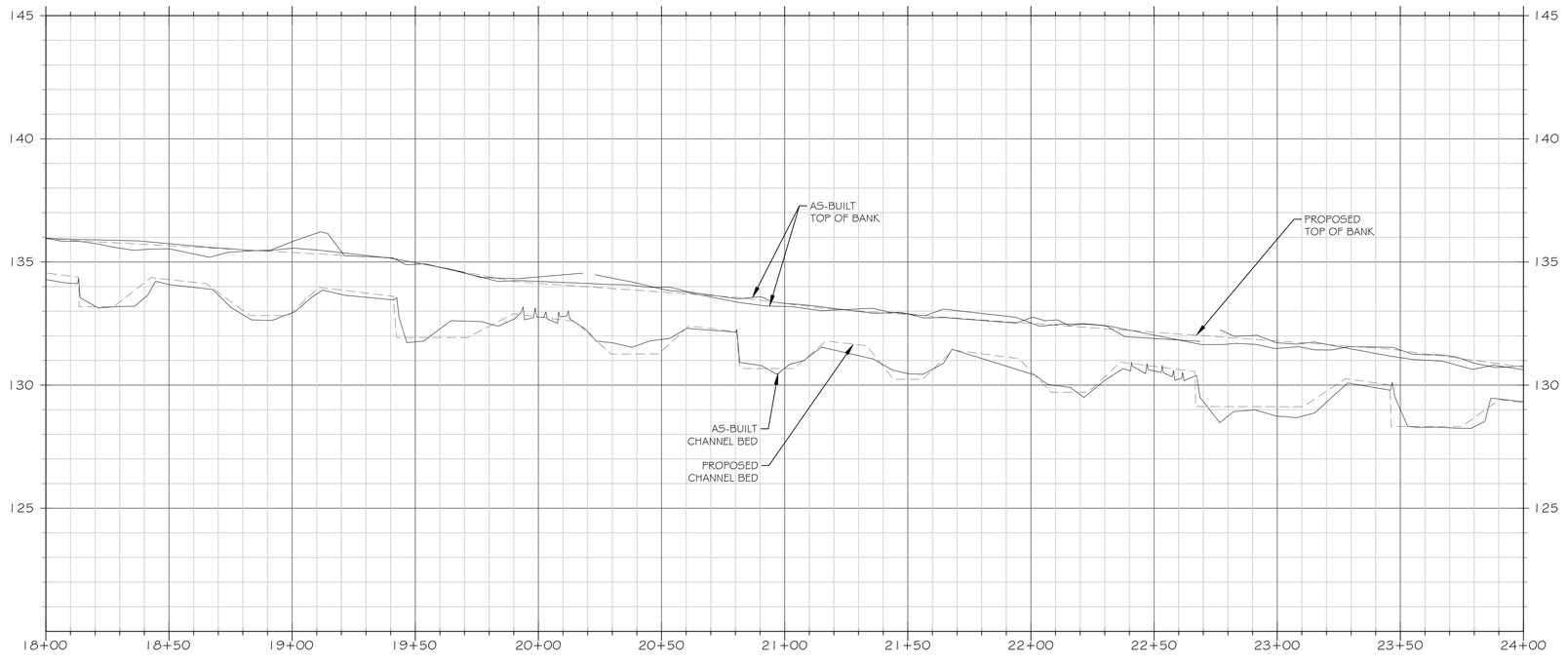

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT — LCE
- WETLAND
- TREELINE
- AS-BUILT CONTOUR MAJOR — 50
- AS-BUILT CONTOUR MINOR — 46
- PROPOSED CONTOUR MAJOR — 50
- PROPOSED CONTOUR MINOR — 46
- EXISTING FENCING
- AS-BUILT FENCING
- AS-BUILT TOP OF BANK — TB
- AS-BUILT BOTTOM OF BANK — BB
- PROPOSED TOP OF BANK
- AS-BUILT BRUSH TOE PROTECTION
- PROPOSED BRUSH TOE PROTECTION
- AS-BUILT ENGINEERED SEDIMENT PACK
- PROPOSED ENGINEERED SEDIMENT PACK
- AS-BUILT POST ASSISTED LOG STRUCTURE
- AS-BUILT LOG STRUCTURE
- PROPOSED LOG STRUCTURE
- AS-BUILT ROCK STRUCTURE
- PROPOSED ROCK STRUCTURE
- AS-BUILT STONE TOE
- PROPOSED STONE TOE
- AS-BUILT CONSTRUCTED RIFFLE
- PROPOSED CONSTRUCTED RIFFLE
- GROUNDWATER MONITORING WELL (W)
- STAGE RECORDER
- FLOW GAUGE
- MONITORING CROSS SECTION
- VEGETATION MONITORING PLOT — VP#

NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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Main: 919.829.9909
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Engineering Services Provided By:
RES Environmental Operating Company, LLC
License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN 8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S4

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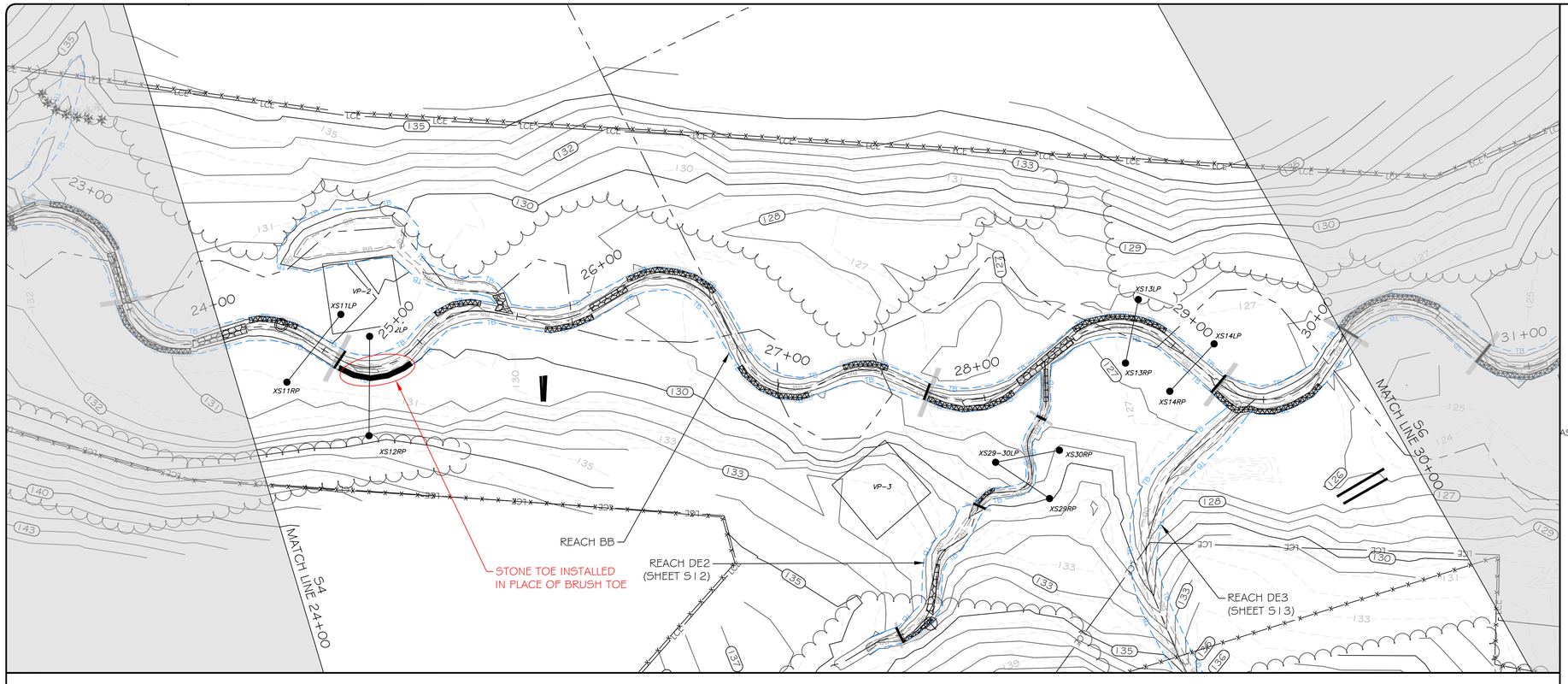

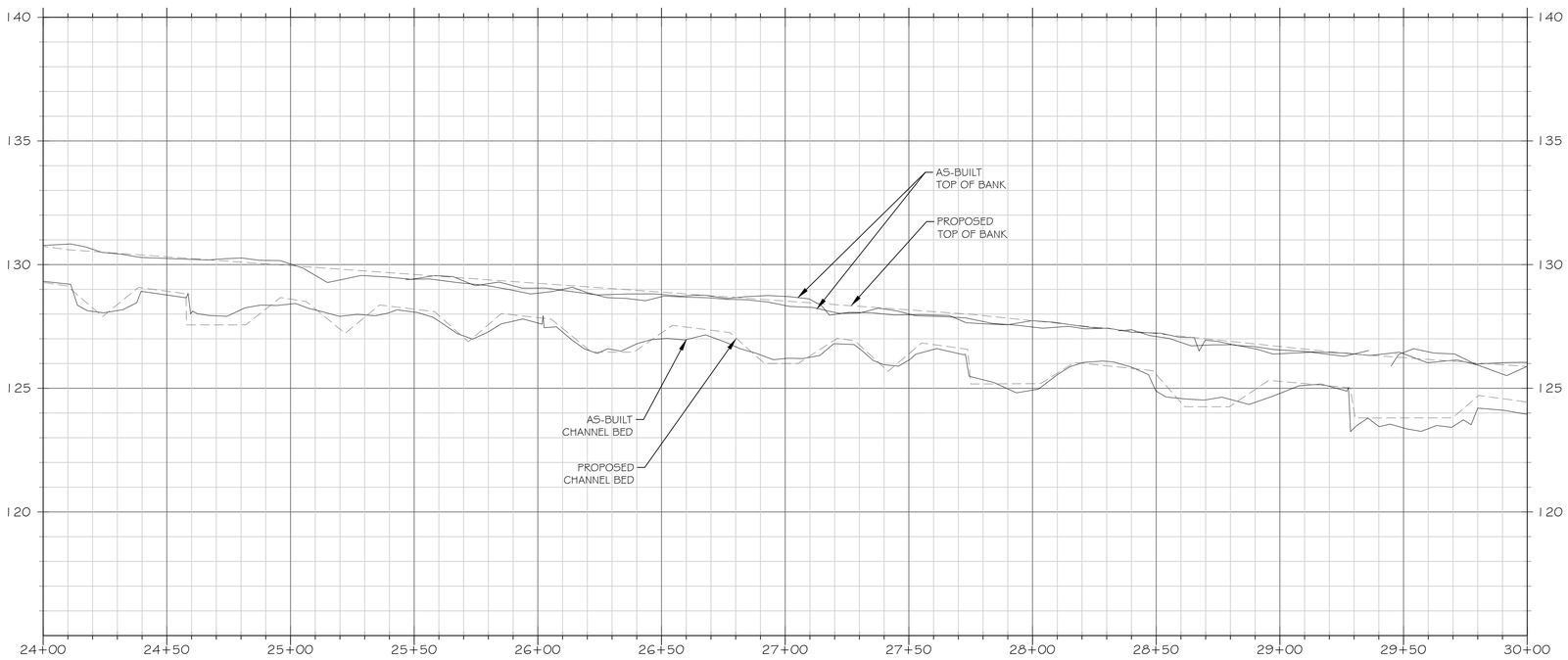

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT — LCE
- WETLAND
- TREELINE
- AS-BUILT CONTOUR MAJOR — 50
- AS-BUILT CONTOUR MINOR — 46
- PROPOSED CONTOUR MAJOR — 50
- PROPOSED CONTOUR MINOR — 46
- EXISTING FENCING
- AS-BUILT FENCING
- AS-BUILT TOP OF BANK — TB
- AS-BUILT BOTTOM OF BANK — BB
- PROPOSED TOP OF BANK
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- AS-BUILT CONSTRUCTED RIFFLE
- PROPOSED CONSTRUCTED RIFFLE
- GROUNDWATER MONITORING WELL (W)
- STAGE RECORDER
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- MONITORING CROSS SECTION
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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN
8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S5

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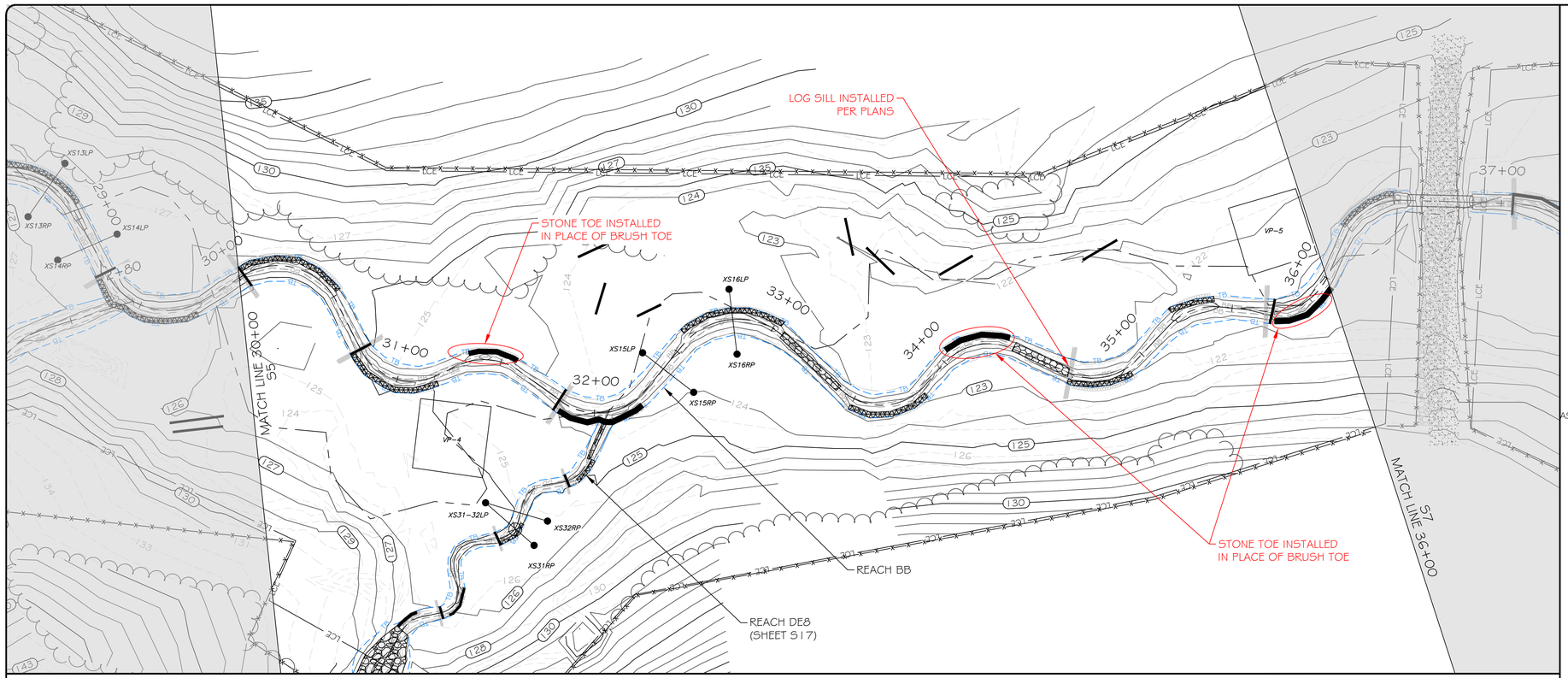

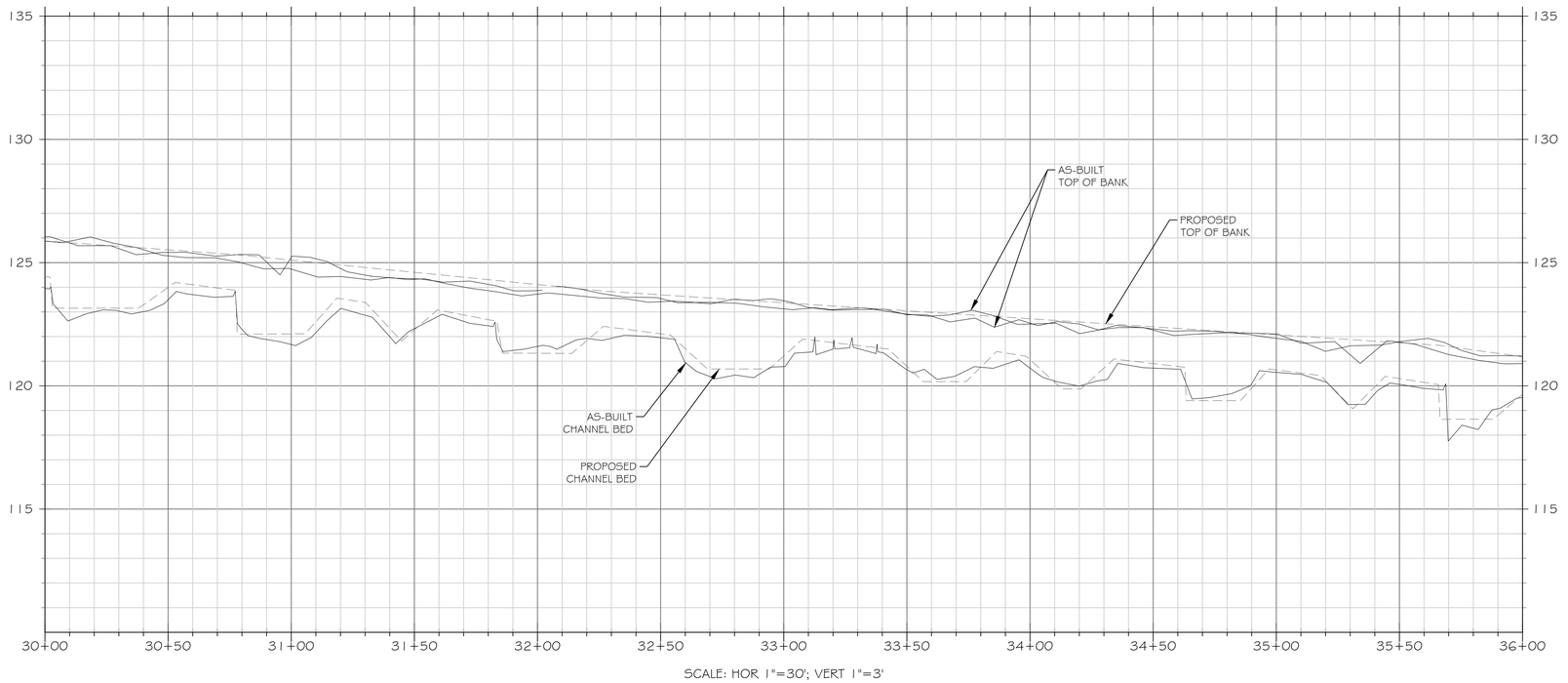

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT (LCE)
- WETLAND
- TREELINE
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- AS-BUILT CONTOUR MINOR (46)
- PROPOSED CONTOUR MAJOR (50)
- PROPOSED CONTOUR MINOR (46)
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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN 8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER: S6

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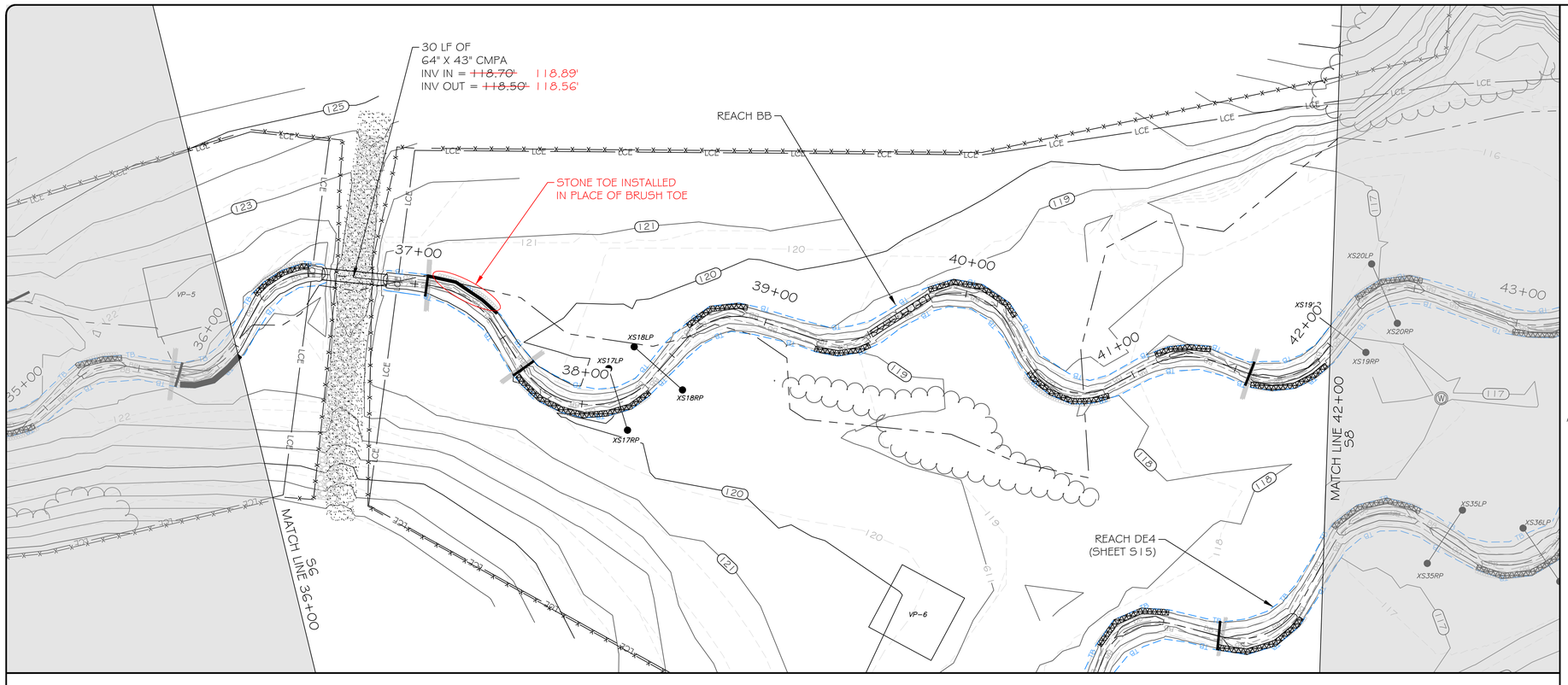

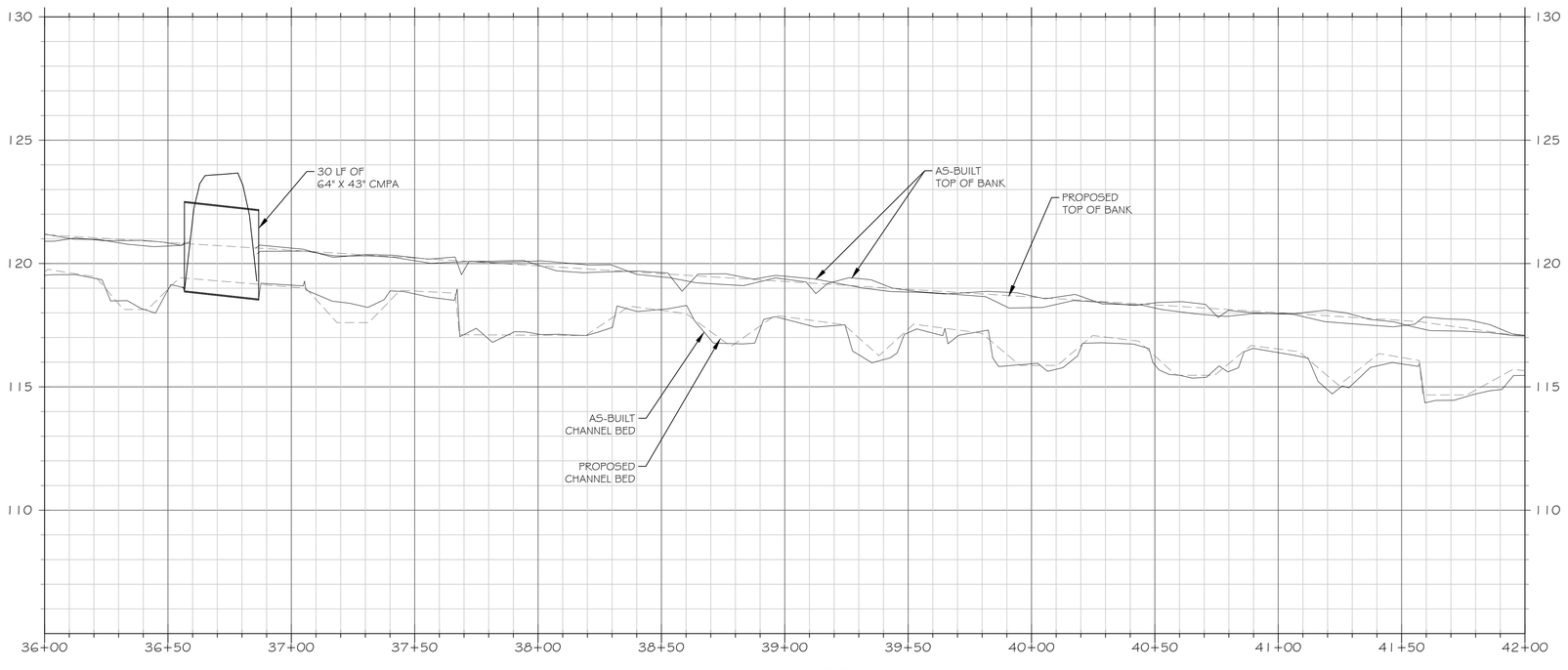

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT (LCE)
- WETLAND
- TREELINE
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NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN
8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S7

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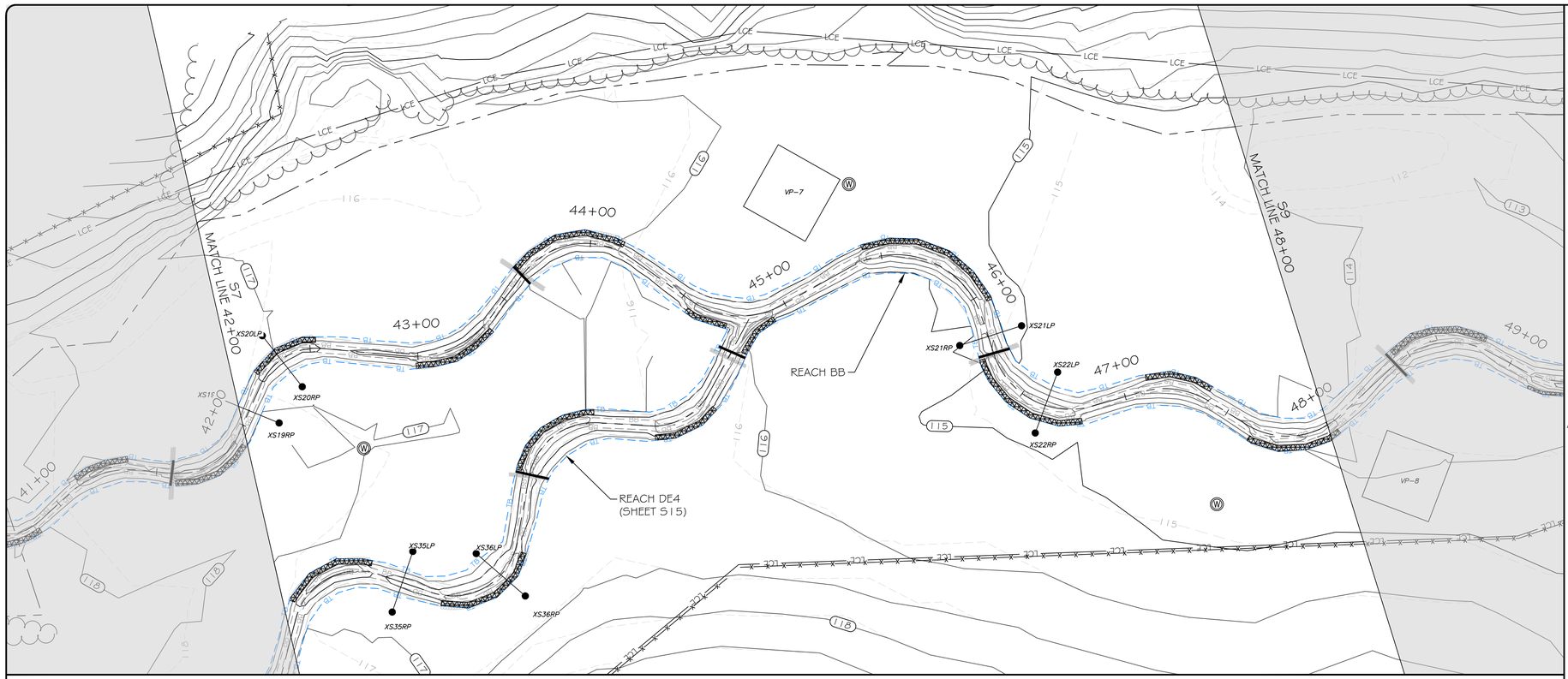

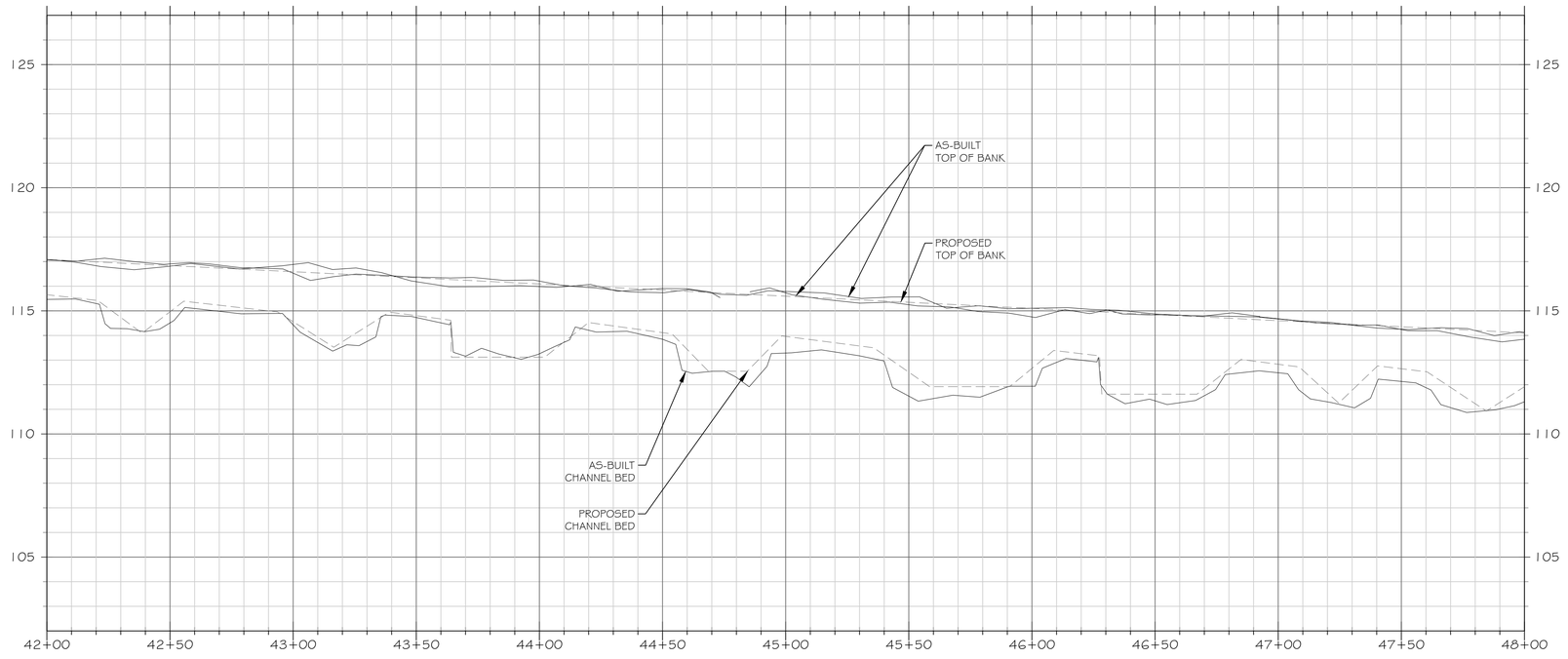

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

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- LIMITS OF PROPOSED CONSERVATION EASEMENT (LCE)
- WETLAND
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NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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Engineering Services Provided By:
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License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN 8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S8

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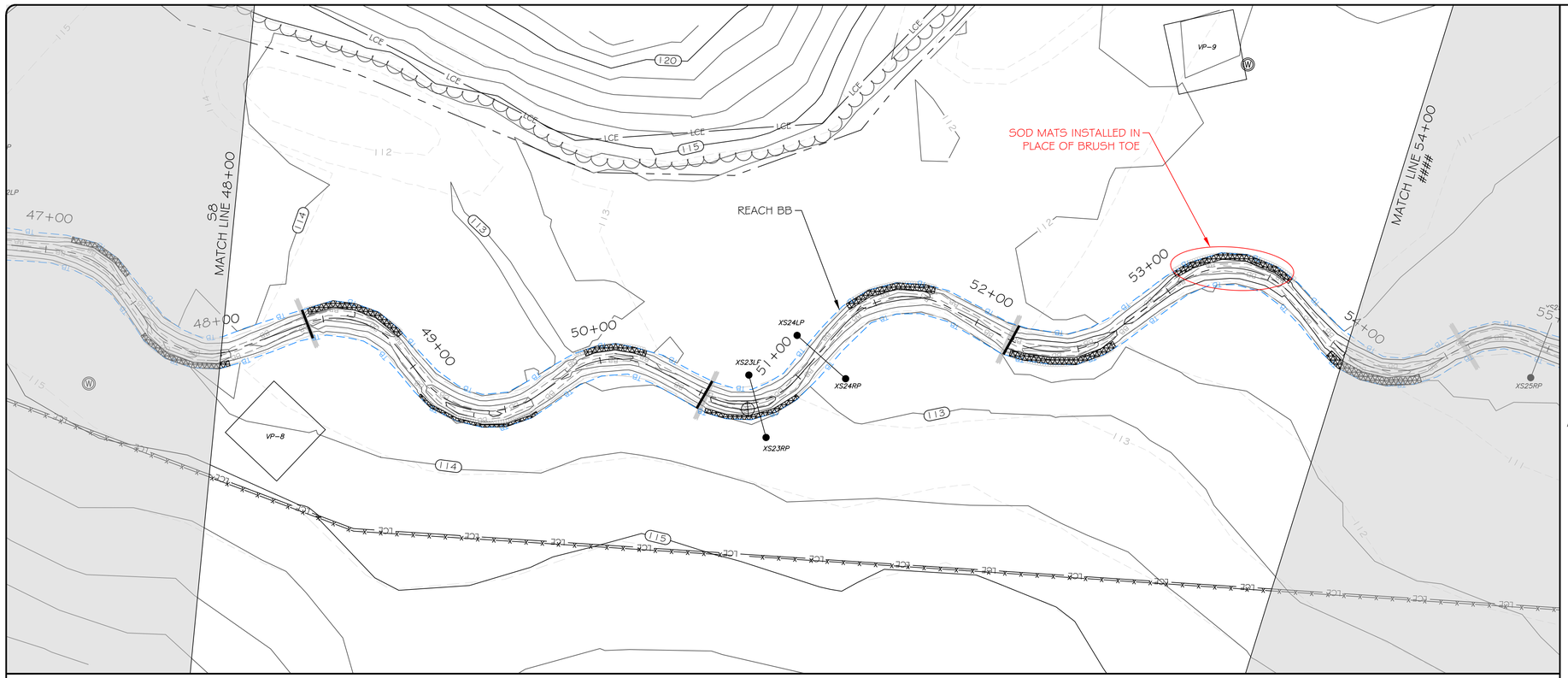

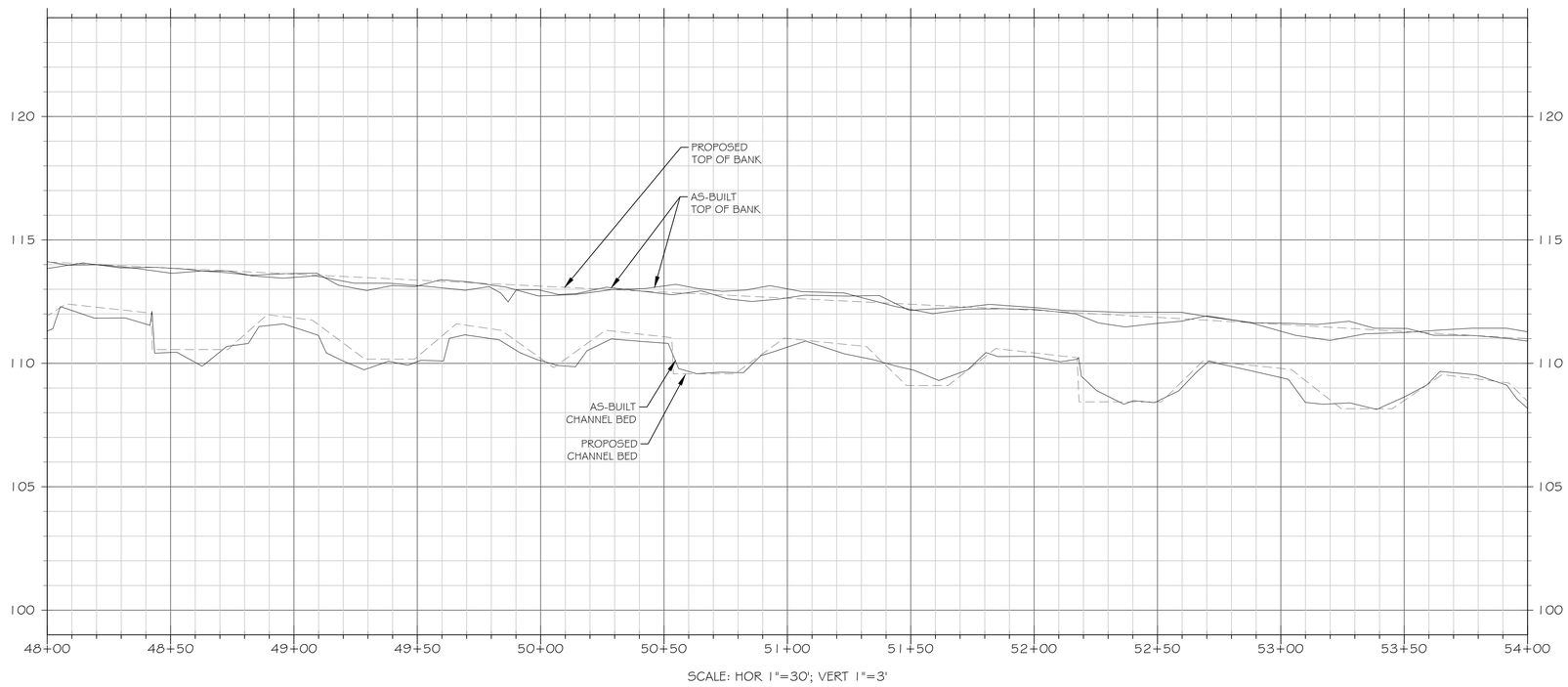

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT (LCE)
- WETLAND
- TREELINE
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NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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Engineering Services Provided By:
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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN 8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S9

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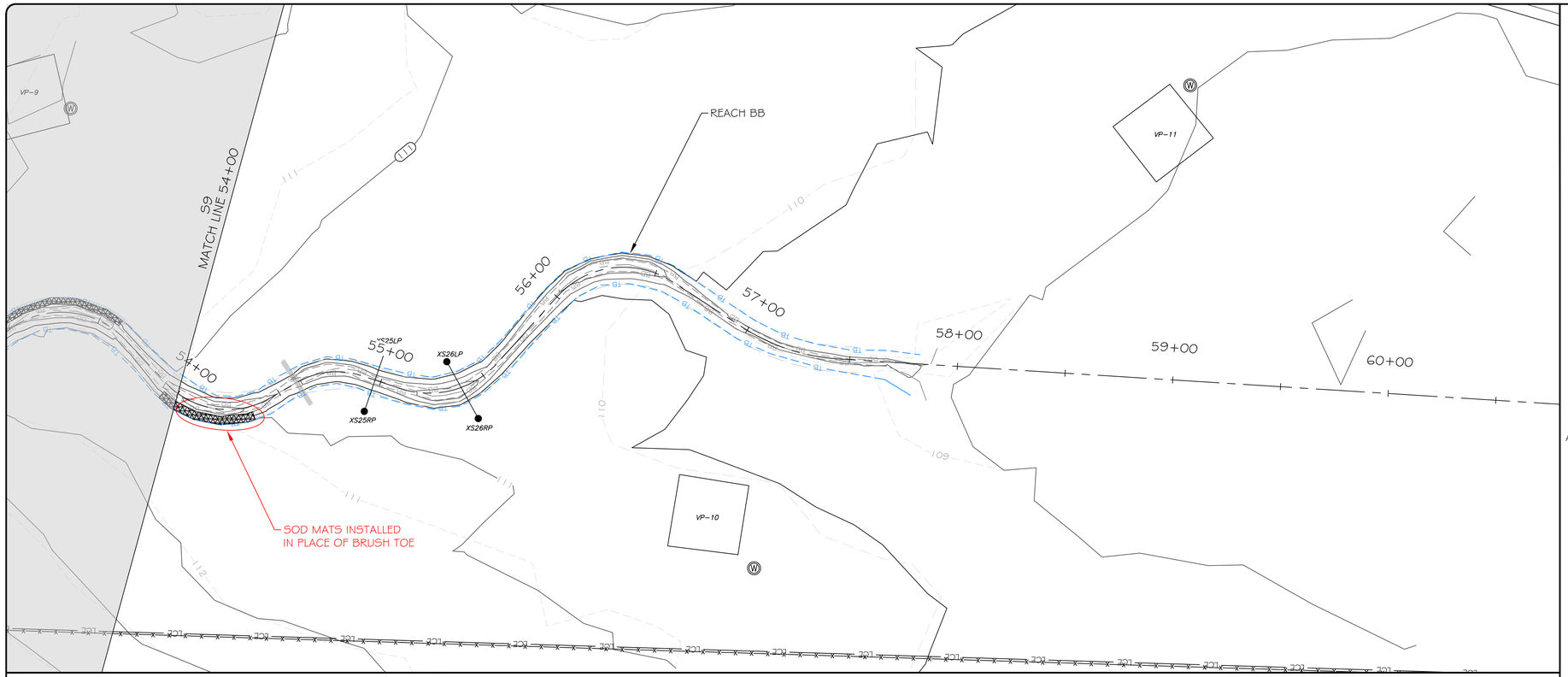

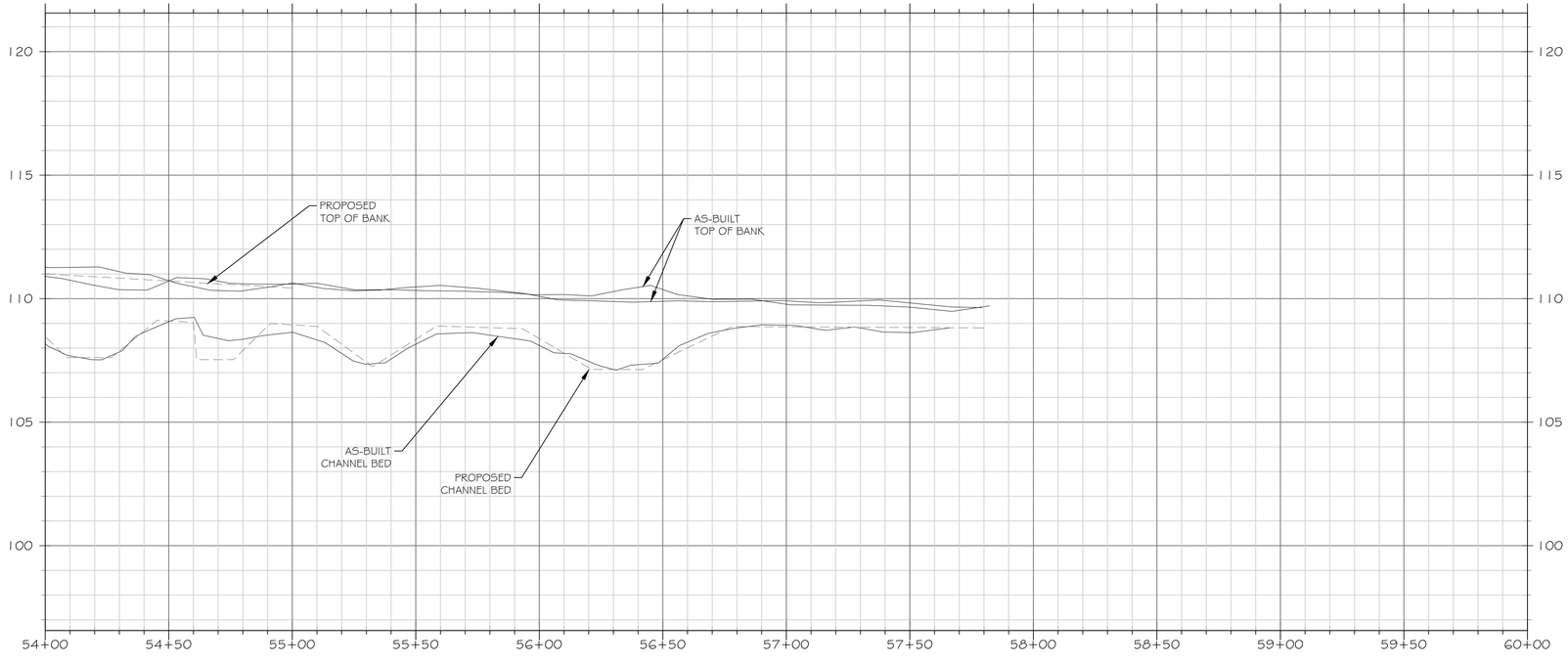

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT — LCE
- WETLAND
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- AS-BUILT CONTOUR MAJOR — 50
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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN 8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
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PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH BB

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S10

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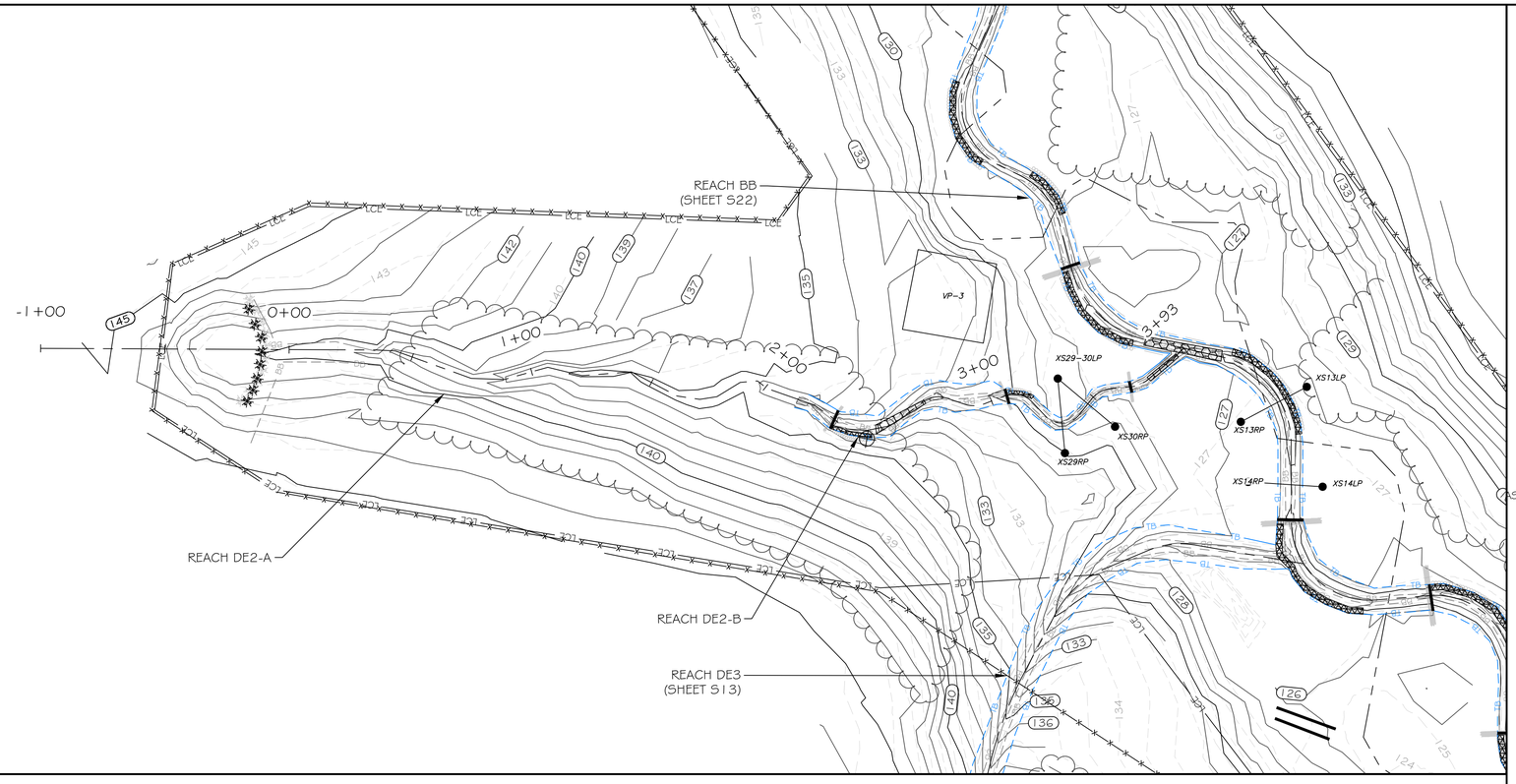

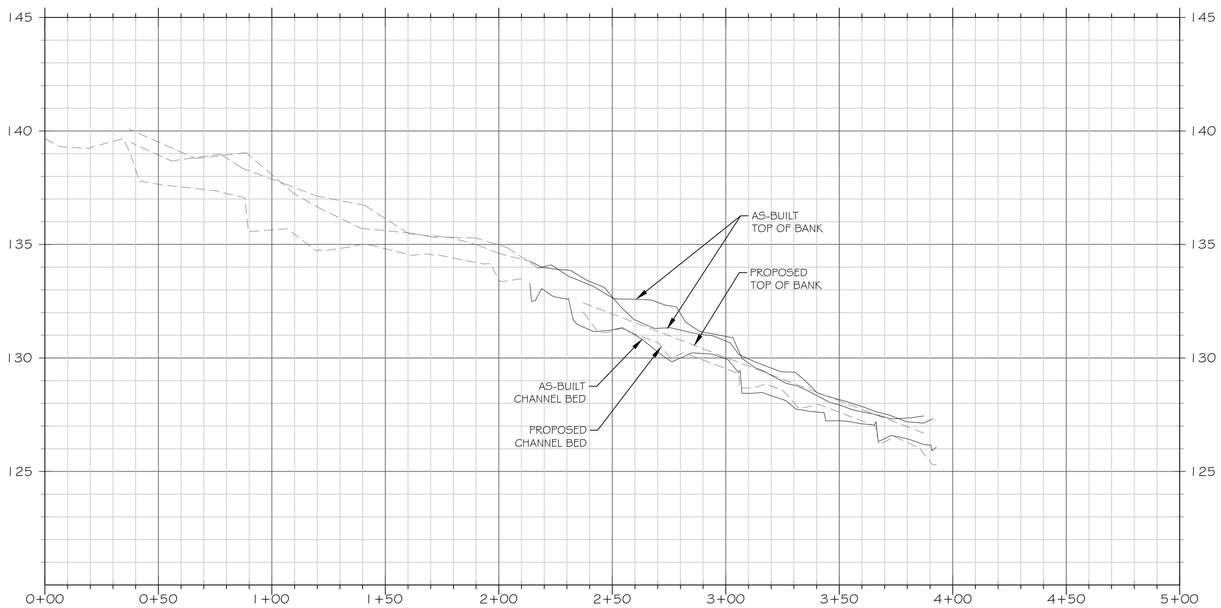

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN
8/16/23

FULL SCALE: 1"=30
0 30 60
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PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH DE2

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S11

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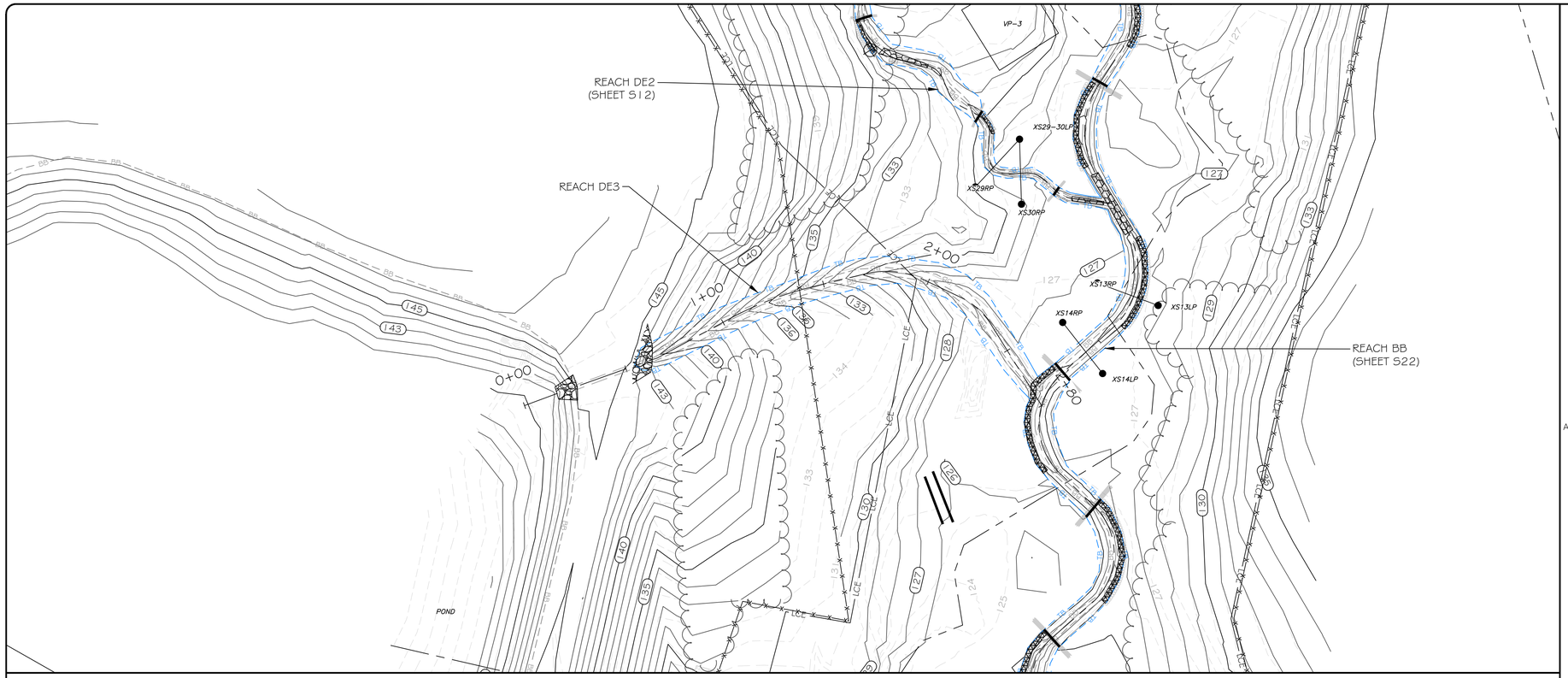

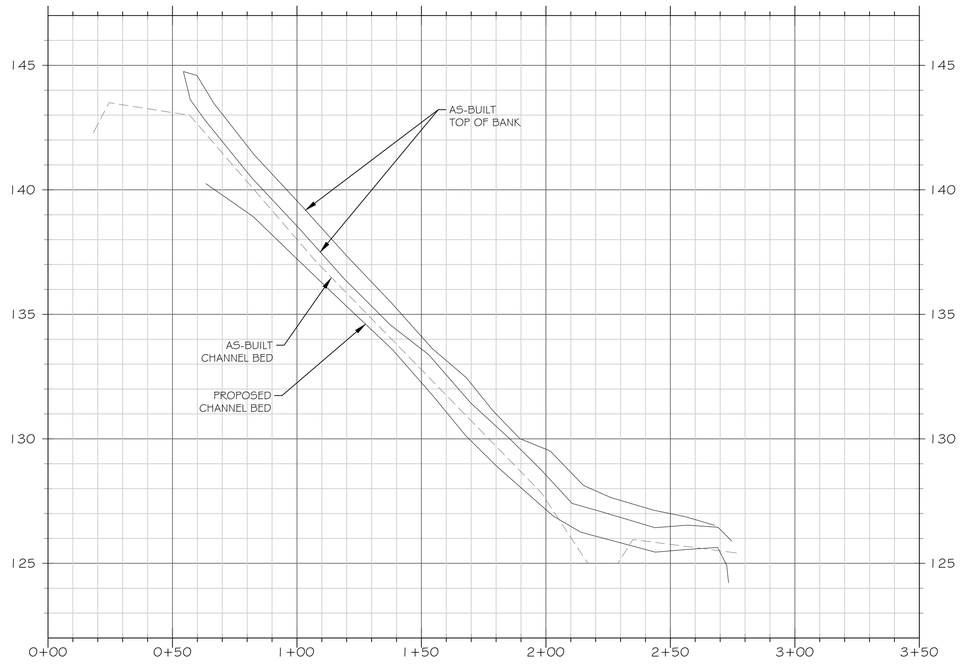

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

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- AS-BUILT CONSTRUCTED RIFFLE
- PROPOSED CONSTRUCTED RIFFLE
- GROUNDWATER MONITORING WELL (W)
- STAGE RECORDER
- FLOW GAUGE
- MONITORING CROSS SECTION
- VEGETATION MONITORING PLOT (VP#)

NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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Engineering Services Provided By:
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License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN
8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH DE3

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S12

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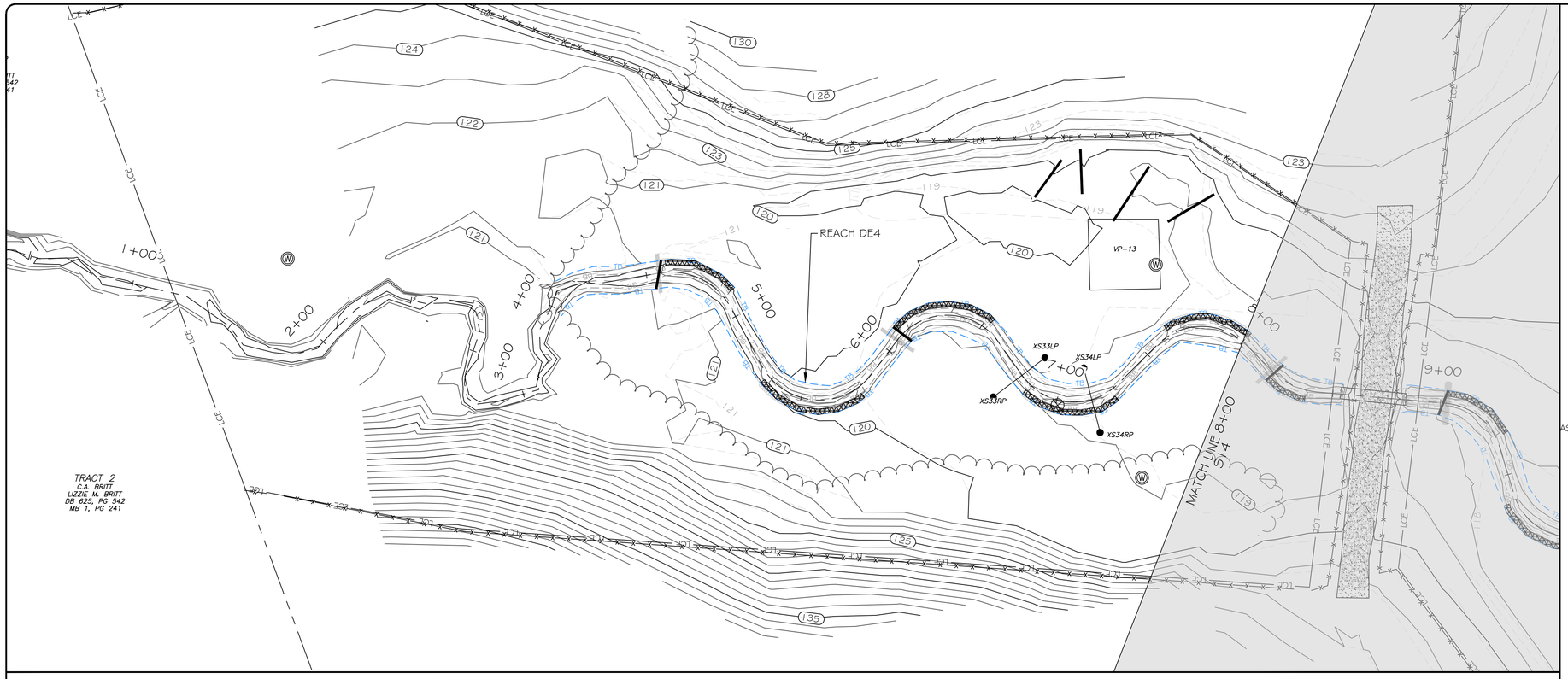

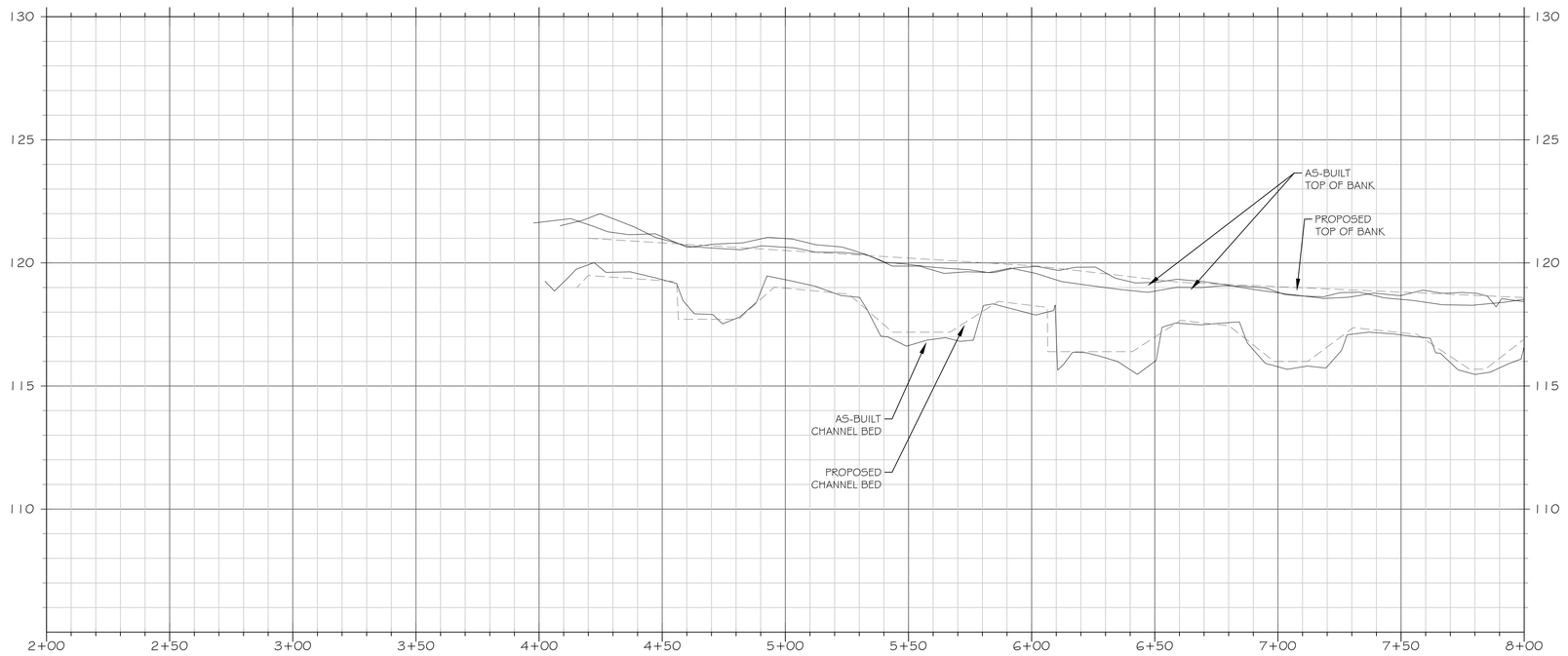

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT (LCE)
- WETLAND
- TREELINE
- AS-BUILT CONTOUR MAJOR (50)
- AS-BUILT CONTOUR MINOR (46)
- PROPOSED CONTOUR MAJOR (50)
- PROPOSED CONTOUR MINOR (46)
- EXISTING FENCING
- AS-BUILT FENCING
- AS-BUILT TOP OF BANK (TB)
- AS-BUILT BOTTOM OF BANK (BB)
- PROPOSED TOP OF BANK
- AS-BUILT BRUSH TOE PROTECTION
- PROPOSED BRUSH TOE PROTECTION
- AS-BUILT ENGINEERED SEDIMENT PACK
- PROPOSED ENGINEERED SEDIMENT PACK
- AS-BUILT POST ASSISTED LOG STRUCTURE
- AS-BUILT LOG STRUCTURE
- PROPOSED LOG STRUCTURE
- AS-BUILT ROCK STRUCTURE
- PROPOSED ROCK STRUCTURE
- AS-BUILT STONE TOE
- PROPOSED STONE TOE
- AS-BUILT CONSTRUCTED RIFFLE
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- FLOW GAUGE
- MONITORING CROSS SECTION
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NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN 8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

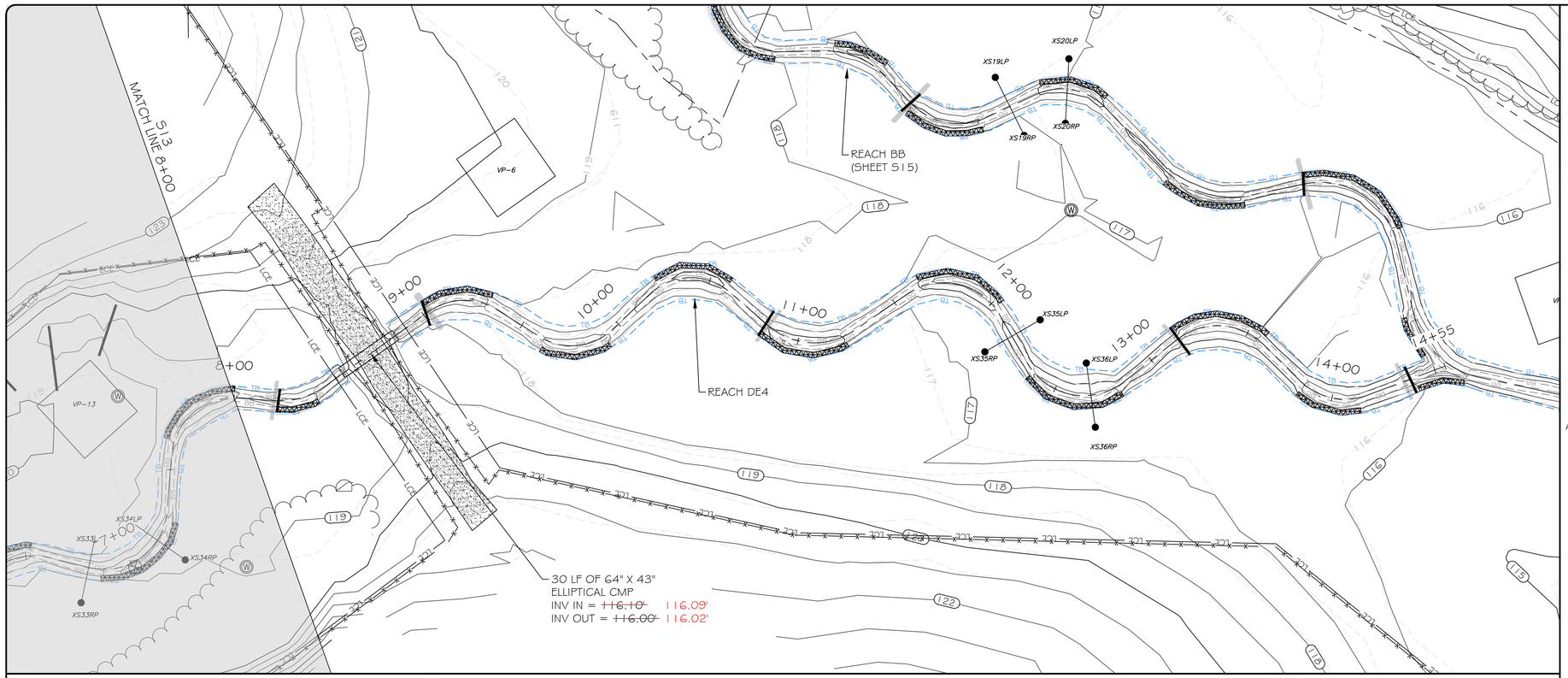
DRAWING TITLE: REACH DE4

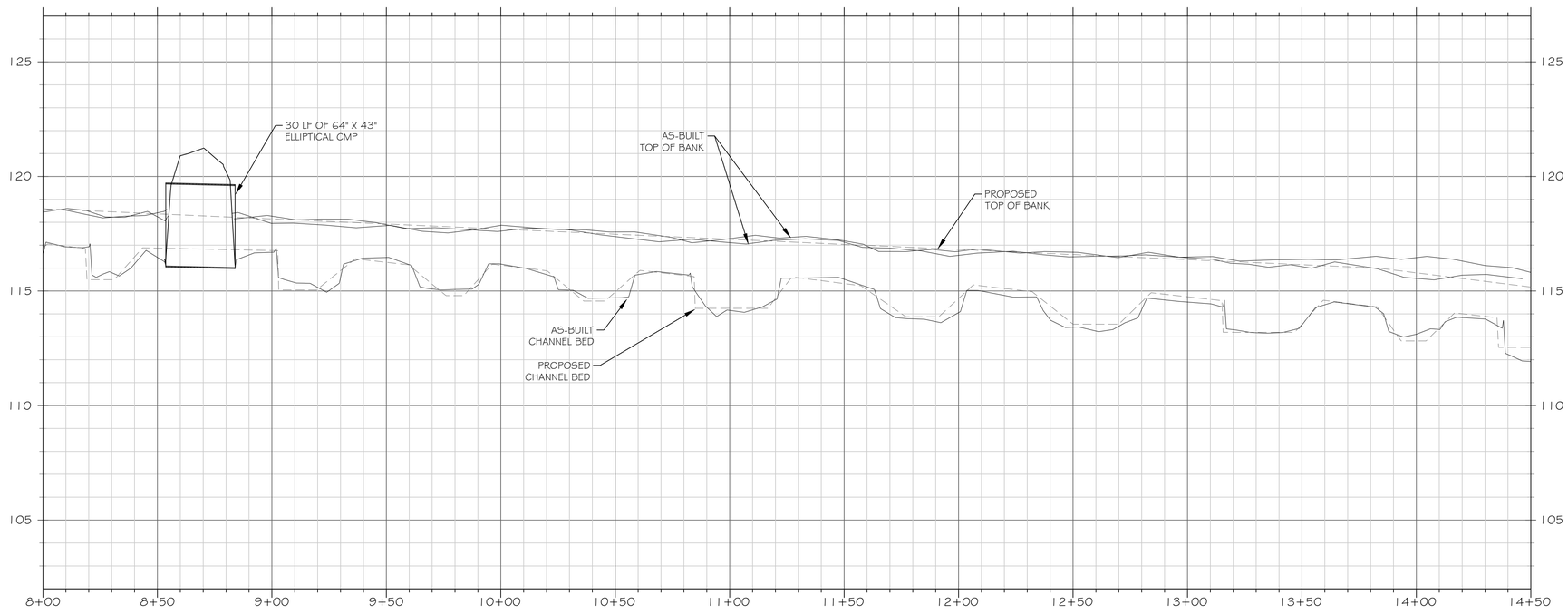
PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S13

FILE NAME:R:\Resca\Projects\103205-Six Runs\ABRD\103205_RD_DESIGN.dwg SAVED BY: Tswartzfager





SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT (LCE)
- WETLAND
- TREELINE
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NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN
8/16/23

FULL SCALE: 1"=30
0 30 60
2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH DE4

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER: S14

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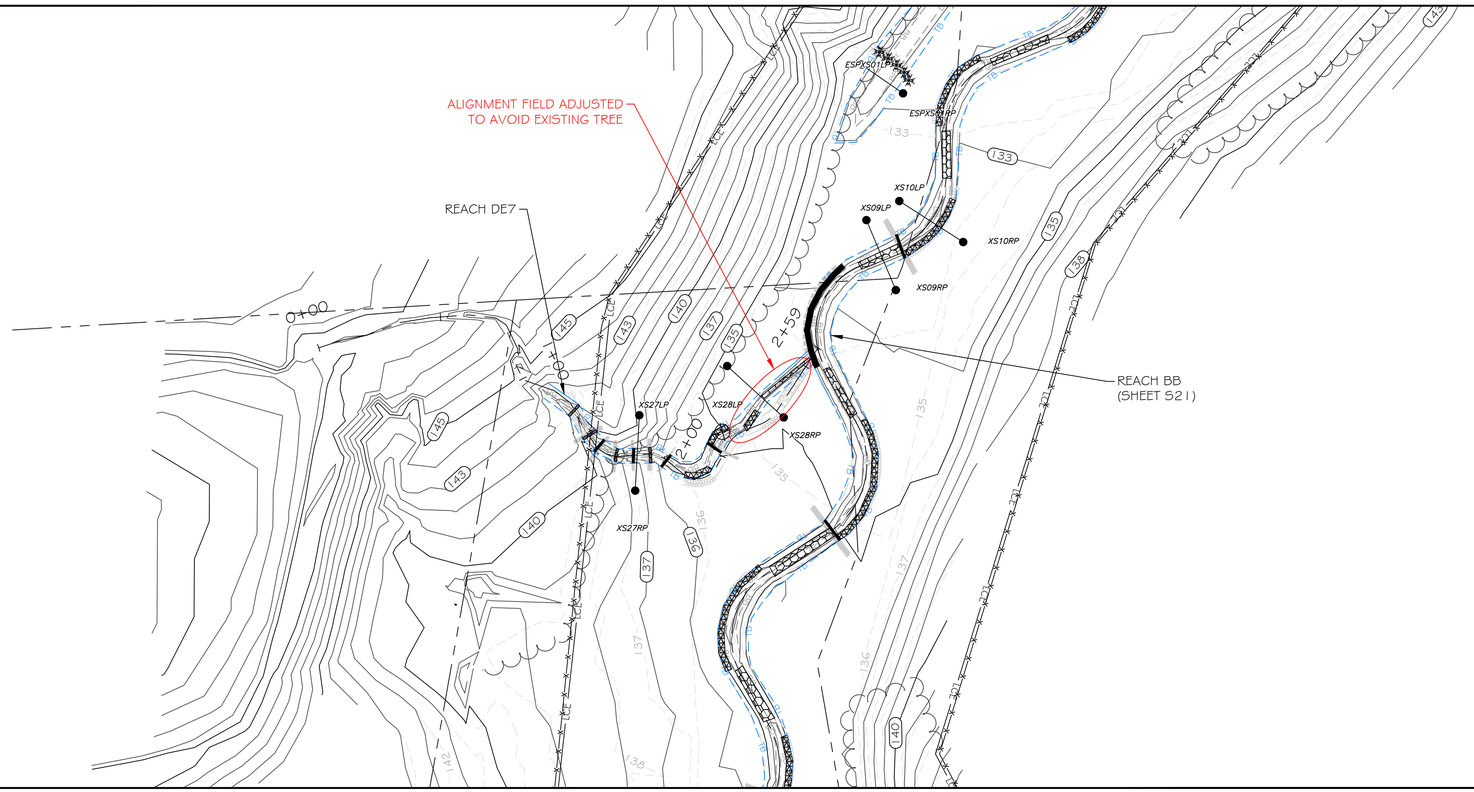

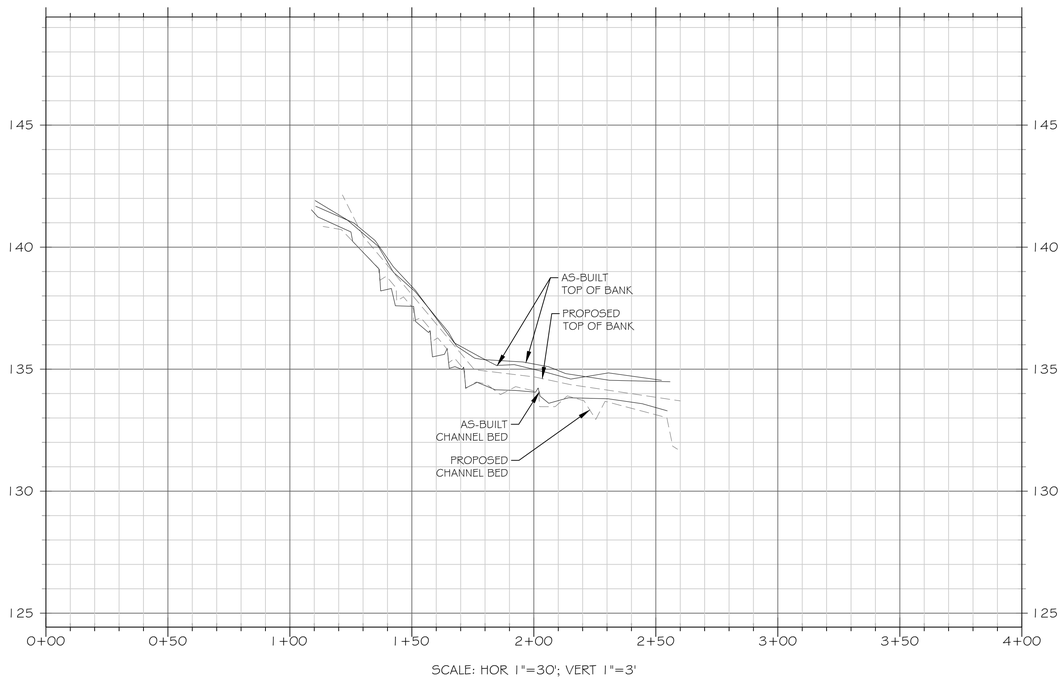

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT (LCE)
- WETLAND
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License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN
8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: REACH DE7

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S15

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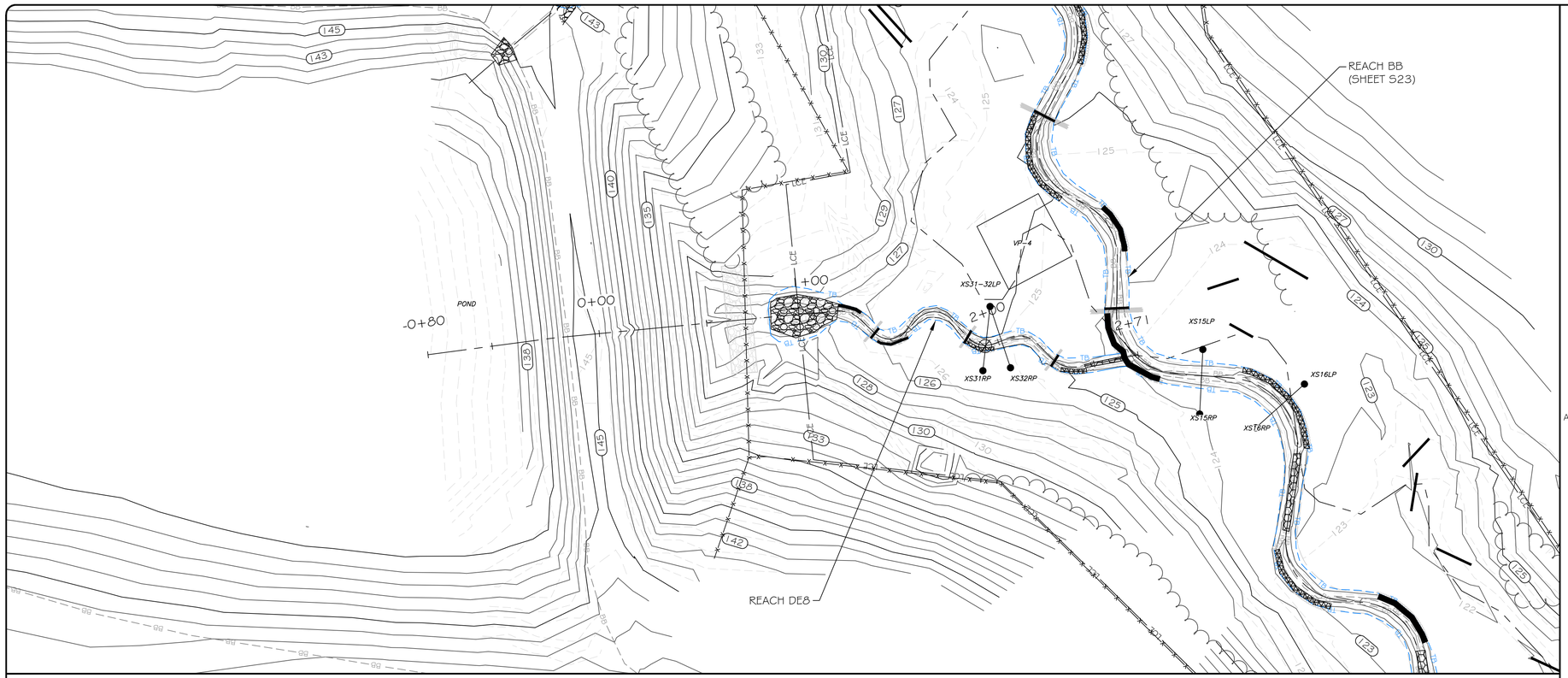

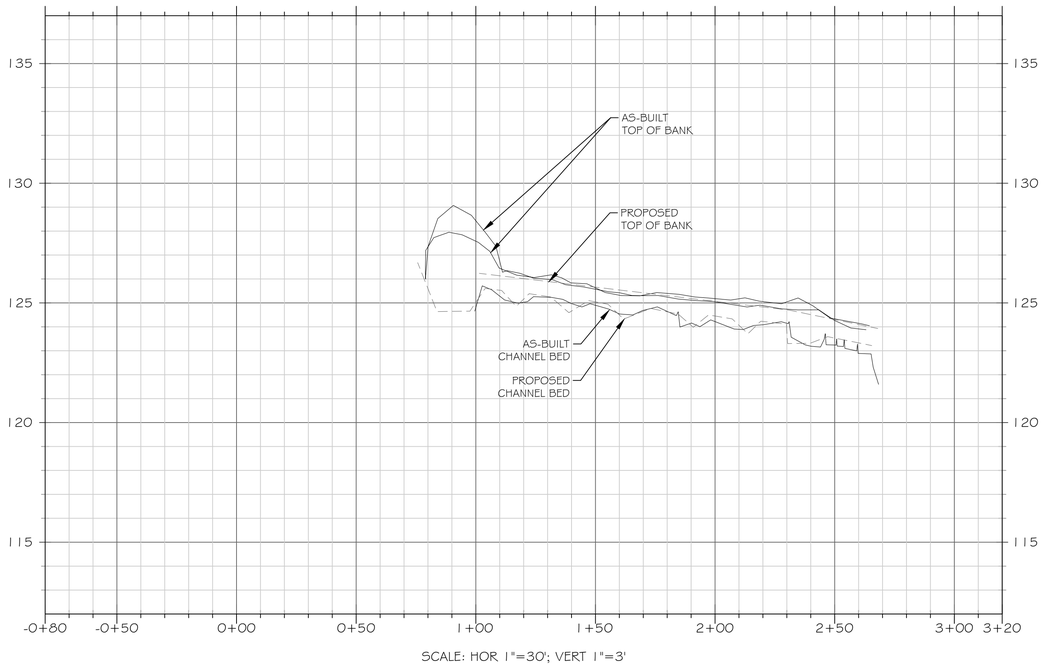

SCALE: HOR 1"=30'; VERT 1"=3'

LEGEND

- PROPERTY LINE
- LIMITS OF PROPOSED CONSERVATION EASEMENT (LCE)
- WETLAND
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NOTE: ALL SIGNIFICANT CHANGES FROM THE DESIGN ARE SHOWN IN RED

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License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN
8/16/23

FULL SCALE: 1"=30

0 30 60

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE:
8/16/2023

REVISIONS:

RELEASED FOR:
RECORD DRAWINGS

PROJECT NAME:
SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE:
REACH DE8

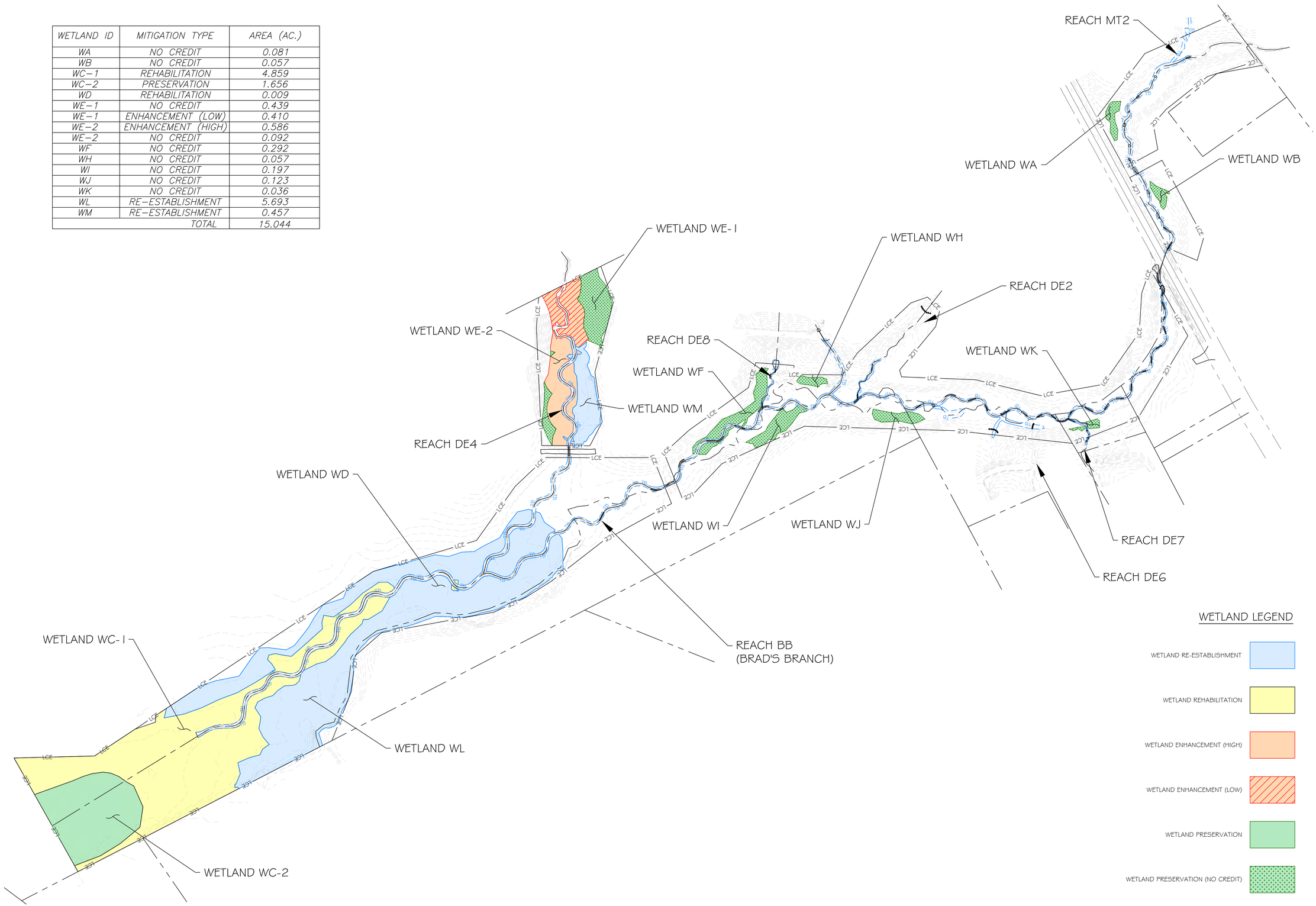
PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

S16

FILE NAME:R:\Reicad\Projects\103205-Six Runs\ABRD\103205_RD_DESIGN.dwg SAVED BY: Tswartzfager

WETLAND ID	MITIGATION TYPE	AREA (AC.)
WA	NO CREDIT	0.081
WB	NO CREDIT	0.057
WC-1	REHABILITATION	4.859
WC-2	PRESERVATION	1.656
WD	REHABILITATION	0.009
WE-1	NO CREDIT	0.439
WE-1	ENHANCEMENT (LOW)	0.410
WE-2	ENHANCEMENT (HIGH)	0.586
WE-2	NO CREDIT	0.092
WF	NO CREDIT	0.292
WH	NO CREDIT	0.057
WI	NO CREDIT	0.197
WJ	NO CREDIT	0.123
WK	NO CREDIT	0.036
WL	RE-ESTABLISHMENT	5.693
WM	RE-ESTABLISHMENT	0.457
	TOTAL	15.044



WETLAND LEGEND

- WETLAND RE-ESTABLISHMENT
- WETLAND REHABILITATION
- WETLAND ENHANCEMENT (HIGH)
- WETLAND ENHANCEMENT (LOW)
- WETLAND PRESERVATION
- WETLAND PRESERVATION (NO CREDIT)

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Main: 919.829.9909
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Engineering Services Provided By:
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License: F-1428

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031435 ENGINEER ANN F. MULLEN 8/16/23

FULL SCALE: 1"=150

0 150 300

2" = FULL SCALE
1" = HALF SCALE

PLOT DATE: 8/16/2023

REVISIONS:

RELEASED FOR: RECORD DRAWINGS

PROJECT NAME: SIX RUNS RECORD DRAWINGS
SAMPSON COUNTY, NORTH CAROLINA

DRAWING TITLE: WETLANDS

PROJECT NUMBER:	103205
PROJECT MANAGER:	JRM
DESIGNED:	AFM
DRAWN:	SLB
CHECKED:	TRS

SHEET NUMBER:

W1

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