Fletcher Stream and Wetland Mitigation Site

As-Built Baseline Monitoring Report

FINAL

Fletcher Stream and Wetland Mitigation Site
NCDMS Contract No. 006997
NCDMS Project No. 100004
DWR# 16-1076
USACE Action ID: SAW-2016-02205
Henderson County, North Carolina
Data Collected: February 1st, 2019 – March 20th, 2019
Date Submitted: April 29th, 2019

Submitted to:

NCDEQ-Division of Mitigation Services
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May 13th, 2019

Harry Tsomides
Project Manager
DENR Division of Mitigation Services
5 Ravenscroft Dr., #102
Asheville, NC 28801

Subject: Draft As-Built Baseline Monitoring Report (Task 6)
Fletcher Site Mitigation Project, Henderson County
French Broad River CU 06010105
DMS Project ID No. 100004 / DEQ Contract #006997

Dear Mr. Tsomides,

Equinox/EWS has reviewed and addressed the comments for the draft As-Built Baseline Monitoring Report and Record Drawings for the Fletcher Site Mitigation Project. This deliverable documents stream and wetland restoration, enhancement and preservation assets totaling 10,011.3 Stream Mitigation Units (SMU) and 8.91 riparian Wetland Mitigation Units (WMU). Comments provided by NCDMS on May 8th, 2019 are listed below with red text indicating how each was addressed:

Section 1.3 - Project Success Criteria

ER standard from mitigation plan (Table 18) is not mentioned. Included in Table 18 from approved mitigation plan.

Continuous 30-day annual surface flow standard from mitigation plan (Table 18) for tributaries is not mentioned. Included in Table 18 from approved mitigation plan.

Vegetation – indicate that the CVS method will be used (per mitigation plan). Added to Table 18 from approved mitigation plan.

Hydrology – indicate that the four bank full events must occur in separate years. Included in Table 18 from approved mitigation plan.

Approved mitigation plan indicated a success hydroperiod of 12%; however the as built report states that the project success criterion is 10%. Please correct to reflect the approved mitigation plan hydroperiod of 12%. Included in Table 18 from approved mitigation plan.

For simplicity and clarity DMS recommends inserting Table 18 (Performance Standards) from mitigation plan if all monitoring performance standards moving forward are being maintained, and indicating no changes; if any variations/omissions from the mitigation plan are being proposed it needs to be explained in detail which ones, and why.

For simplicity as mentioned above, Table 18 from the approved Fletcher Site Mitigation Plan was added to the Fletcher Site As-Built Report. The only change to the table was noting that Carolina Vegetation Survey (CVS) methodology will be used to record and calculate data.

Section 1.4 – Mitigation Components

It is indicated that as-built credits are based on centerline stream lengths from the as-built plan; however the table credits are based on the approved mitigation plan. Please update this section accordingly. This section was updated to note that the credits are based on the Approved Fletcher Site Mitigation Plan.

Section 1.5 – Restoration Type and Approach

Fletcher Creek subsection, paragraph 1 – future tense is used to explain what will happen; please use past tense appropriately to explain what happened. In the Fletcher Creek subsection, paragraph 1 has been updated to past tense.

Section 1.6 – As Built Record Drawings

It is indicated that a sealed set of record drawings are located in Appendix E, however only the sealed as-built survey (Kee) is present in Appendix E. Please add the sealed record drawings (Stantec) to Appendix E. The sealed record drawing has been added to the report.

Many items on this list are not apparent as callouts on the record drawing sheets; please clarify. Please review the bulleted section 1.7 – As-Built Record Drawings. This gives the description of all of the deviations that were deemed significant by the designer.

There are some inconsistencies in this list, for example Raccoon Branch Reach 1c (STA 214+30 to 214+90), five sills appear to have been deleted according to sheet AB-17, not three as indicated. Between STA 214+30 and 214+90 only 3 log sills were omitted. The stationing has been updated to 214+00 to 214+00 to add the additional two log sills that were omitted upstream.

There are several headwater channels noted as being extended; what necessitated these reach extensions? Site conditions had changed from initial survey during a very wet year, a field call was made to extend the headwater channel upstream to help stabilize the channel. The pervious text it located in the as-built report in section 1.7- As-Built Record Drawings.

Weston Creek Reach 1B – Indicates 700 LF of Added Base Ditch With Rip Rap Transition; is this the channel that was intended to be backfilled (see Fill pattern on sheets 35/36 from the Mitigation Plan)? If so, please explain this variation from the design. Was it partially filled or just abandoned and left in place to drain the adjacent field? The ditch was partially filled because water was still traveling onsite from the adjacent field. A rip-rap transitions down to Hoopers Creek was installed to help stabilize the channel. The pervious text it located in the as-built report in section 1.7- As-Built Record Drawings.

Table 1 (Assets)

Please finish table edits requested in the May 7, 2019 email from me. All cold/cool designations, credit summations, etc. need to be accurate. The newly revised Table 1 (Assets) has been added to the report. Cold/cool designations and credit summations are accurate.

General

Monitoring is not mentioned or summarized in the report; any changes to the monitoring plan from the approved mitigation plan should be captured in the report and summarized so the reader understands exactly what has changed, and why. DMS recommends including Mitigation Plan Table 19 (Monitoring Plan Components) and annotating or footnoting any changes, and explaining the rationale behind any changes (quantity per reach veg plots, gauge types, etc.), or a simple bulleted summary and explanation of variations from the approved mitigation plan monitoring approach. The Monitoring Plan Components table from the approved Fletcher Site Mitigation Plan has been added to the report. Asterisks have been added to the report where changes from the Approved Fletcher Site Mitigation Plan were made and a description of these changes and rationale has been written under the table.

Monitoring Features Maps – Recommend using different symbols for the four hydrology monitoring types (blue circles with black symbols); they are hard to distinguish on the printed sheets. The colors for these different symbols on the Monitoring Features Map has been updated.

As Built Survey

No comments – looks great, thank you. N/A

Record Drawings

Please include the record set in the report appendix and generate as part of the single PDF document for posting. Sealed record set has been added to the As-Built report.

Monitoring features need not be shown as red lines on the record set since they appear on the as built survey; recommend that any changes to monitoring features be summarized in the report (see previous comment). Monitoring features remain on the record drawings. Any changes from the Approved Fletcher Site Mitigation Plan are listed in section 1.3 – Monitoring Plan Components.

In general, while the project appears to have been built according to the design with no major variations in lengths, approaches, crossings etc., the record drawing red lines appear to be a copy-and-paste from the as-built survey showing widespread changes. This makes the record set very hard to distinguish minor variations within reason, from more significant changes such as stream extensions, structure type changes and upstream/downstream movements, and other variations that are useful to helping the reader determine field decisions that affected the project design and outcome more meaningfully. DMS recommends reviewing the record drawings and focusing on any deviations from the design outside the range of tolerance for normal variation between design and as built condition; for example, many of the red lines show structure elevation changes of mere inches (in one case, 0.03 feet, or less than half an inch); this would seemingly save the designer time as well on future projects. This has been noted and will be addressed for future projects.

Record set should include planting plan deviations (shown as red lines) from Mitigation Plan sheets P2 through P2a, since it appears multiple species substitutions were made; at a minimum, planting plan changes from mitigation plan to as built conditions should be listed and explained in the report. Two species were entered incorrectly during vegetation data entry into the Carolina Vegetation Survey (CVS) data entry tool. *Acer negundo*

was entered incorrectly as *acer nigrum* and *sambucus canadensis* was entered incorrectly as *salix caroliniana*. The stems/ acre numbers did not change for any of the plots or the site as a whole. All vegetation tables throughout the report have been updated to reflect these changes.

The Equinox project manager for this project is Mr. Drew Alderman. His contact is as follows:

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Sincerely,

Drew Alderman

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1.0 PROJECT SUMMARY

1.1. Project Setting and Background

The Fletcher Stream and Wetland Mitigation Site (Fletcher Site) is located in the French Broad River Basin (CU 06010105). The Fletcher Site also lies within the lower portion of the Cane Creek (HUC 060101050703) watershed which is identified as a Targeted Local Watershed (TLW) according to the 2009 French Broad River Basin Restoration Priorities (RBRP) Plan. Project work at the Fletcher Site was completed in March 2019, and included construction, planting, monitoring feature installation, and fence installation. Through the project work, a total of 9,528 linear feet were restored, 896 linear feet were enhanced through Enhancement II activities, 1,249 linear feet were preserved, and 8.91 acres for wetland were re-established. The Fletcher Site generated a total of 10,011.300 SMU's and 8.910 WMU's. Refer to Table 1 for the project components and mitigation credit information and Figure 2 for the Project Asset Map.

Historic land use at the Fletcher Site has consisted primarily of agriculture and livestock grazing. Additional land use practices, including the excavation of drainage ditches, maintenance and removal of riparian vegetation, and the relocating, dredging, and straightening of on-site streams have contributed to unstable channel characteristics, degraded water quality, and degradation of prior wetlands. Previous stream conditions at the site consisted of incised channels with unstable banks and a limited riparian buffer width. Fletcher Creek and Coates Branch flow though active pastures with livestock access to the streams. The floodplain adjacent to Weston Creek contains approximately 8.91 acres of mapped hydric soils that have been farmed for produce. Previous ditching and farming activities eliminated jurisdictional wetlands. The completed project restored ecological function to the existing streams, wetlands, and riparian corridor by returning streams to a proper relationship with the floodplain, excluding cattle from the riparian buffer, eliminating drainage ditches and spoil piles, removing invasive species, and re-vegetating the riparian buffer with native plant species appropriate for the valley and the watershed conditions. Grading activities improved the groundwater hydrology of the onsite wetlands, increased hydrologic access of the floodplain for overbank flows, and provided attenuation of flood flows.

This project is protected by a 34.81 acre conservation easement and is located approximately 1.1 miles southeast of Fletcher, NC in Henderson County at 35.422278° N, -82.486183° W. The Fletcher Site is bounded by agricultural land and is bisected by Jackson Road.

1.2. Project Goals and Objectives

The project goals address stressors identified in the TLW and priority subwatershed, as outline in the Final Mitigation Plan, and include:

- Provide a network of streams with natural, stable forms that support proper stream functions;
- Improve groundwater hydrology to support recovery of native riparian vegetation;
- Reduce sediment inputs from eroding stream banks to reduce fine sediment loads and percentage of fines in the bed-material load;
- Restore proper sediment transport to support channel stability and bedform diversity;
- Improve substrate quality to facilitate hyporheic flow and support aquatic communities;
- Improve quantity, quality, and diversity of habitats to support healthy aquatic communities;
- Reduce pollutant inputs to the project streams (fecal coliform, nitrogen, phosphorus) to restore a balance to proper nutrient cycles;

- Improve riparian vegetation community to provide temperature regulation of the stream, provide a future source of organic inputs, and aid in long-term channel bank stability;
- Restore areas of former riparian wetlands so that the hydrology and sols will support wetland vegetative communities and wildlife;
- Improve landscape connectivity that allows space for biotic and abiotic process and provides a source and sink for natural populations; and,
- Prevent the site from future impacts of development and agricultural issues.

The following objectives are proposed for accomplishing the above listed goals as outlined in the Final Mitigation Plan:

- Construct stream channels that will maintain proper dimension, pattern, and profile and meet jurisdictional status;
- Construct streams with proper bankfull to floodplain relationship;
- Construct streams that provide naturally stable dimensions and stabilize constructed banks with appropriate bioengineering;
- Construct streams that maintain an appropriate sediment transport balance with the sediment that is supplied by the watershed so that the overall stream profile neither aggrades nor degrades over time;
- Create and improve stream bedform diversity by constructing pools of varied depths and riffles of varied slopes;
- Construct stable riffles that provide an improved diversity of bed material clast and a reduction in fines relative to existing conditions;
- Construct in-stream habitat features from native material to provide diversity of habitat;
- Prevent cattle from access to the streams and riparian areas by installing exclusion fencing;
- Install BMP's in concentrated runoff areas that drain agricultural fields;
- Provide a buffer from agricultural activates and row crops;
- Plant native climax tree species and understory species in the riparian zone;
- Reconstruct stream channels that are properly connected to the riparian wetlands;
- Re-grade topography to eliminate ditches and drainage features;
- Plant native wetland tree and shrub species; and,
- Establish a conservation easement that provides a minimum buffer from future activities in the adjacent watershed.

1.3. Monitoring Plan Components

The monitoring plan from the approved Fletcher Mitigation Site Mitigation Plan is listed below. Changes from the approved Mitigation Plan are denoted with an asterisk (*) and are explained in the next paragraph.

Fletcher Mitigation Site Monitoring Plan Components				
Parameter	**Method**	**Quantity**	**Frequency**	**Notes**
Dimension	Riffle Cross Sections	Fletcher Reach 1 (3)	Years 1, 2, 3, 5 & 7	
		Fletcher Reach 2 (4)		
		Raccoon Reach 1 (1)		
		Coates Reach 1 (3)		
		Weston Reach 1 (3)		
	Pool Cross Sections	Fletcher Reach 1 (3)*	Years 1, 2, 3, 5 & 7	Bank pins will be installed only in areas of concern
		Fletcher Reach 2 (4)		
		Raccoon Reach 1 (1)		
		Coates Reach 1 (3)*		
		Weston Reach 1 (3)		
Pattern	Visual Inspection	None	Bi-annual	Bank pins will be installed only in areas of concern
Profile	Visual Inspection	None	Bi-annual	Additional profile measurements may be required if problems are identified during the monitoring period
Substrate	Pebble Counts	Fletcher Reach 1 (3)	Years 1, 2, 3, 5 & 7	
		Fletcher Reach 2 (4)		
		Raccoon Reach 1 (1)*		
		Coates Reach 1 (3)		
		Weston Reach 1 (3)		
Surface Water Hydrology	Crest Gauge	Fletcher Reach 1 (1)	Bi-annual	The devices will be inspected on a semi-annual basis to document the occurrence of bankfull events on the project
		Fletcher Reach 2 (1)		
		Raccoon Reach 1 (0)*		
		Coates Reach 1 (1)		
		Weston Reach 1 (1)		
	Continuous Gague	Fletcher Reach 2 (1)	Bi-annual	
		Raccoon Reach 1 (1)		
		Coates Reach 1 (1)		
		Weston Reach 1 (1)		
Groundwater Hydrology	Groundwater Gauges	Weston R1 (11)	Annual	Data will be downloaded on a monthly basis during the growing season
Vegetation	Vegetation Plots	Fletcher Reach 1 (7)*	Annual	Vegetation monitoring will follow CVS protocol
		Fletcher Reach 2 (6)*		
		Raccoon Reach 1 (2)		
		Coates Reach 1 (4)		
		Weston Reach 1 (7)		
Invasive and Nuisance Vegetation	Visual	N/a	Semi-annual	Approximate locations of invasive and nuisance vegetation and the occurrence of beaver dams will be mapped
Project Boundary	Visual	N/a	Semi-annual	Locations of fence damage, vegetation damage, boundary encroachments, etc. will be mapped

* Indicates change from Mitigation Plan

Originally in the Fletcher Mitigation Site approved Mitigation Plan there were no pool cross-sections from both Fletcher Reach 1 and Coates Reach 1. One additional pool cross-section was added on both Fletcher Reach 1 and Coats Reach 1 during the as-built. Additionally, there was no pebble count listed for Raccoon Reach 1 in the approved Mitigation Plan. One pebble count was added to Raccoon Reach 1 during the as-built. Lastly, no crest gauge was installed on Raccoon Reach 1. The continuous stage

recorder will act as a crest gauge recording events above the surveyed bankfull elevation at the continuous stage recorder's location. Lastly, due to landscape constraints within the easement, an additional vegetation monitoring plot was added to Fletcher Reach 1 and one vegetation monitoring plot was removed from Fletcher Reach 2. The total number of vegetation monitoring plots for the Fletcher Mitigation Site did not change.

1.4. Project Performance Standards

The stream restoration performance standards for the project will follow accepted and approved criteria based on the Final Mitigation Plan for the Fletcher Mitigation Site (2018). Performance standards conform with the performance criteria provided in The Fletcher Site Mitigation Plan which references the DMS Stream and Wetland Mitigation Plan Template and Guidance (October 2015), the Annual Monitoring Template (April 2015), and the Closeout Report Template (v2.1 March 2015). Performance criteria will be evaluated throughout the seven-year monitoring period; however, if all performance criteria has been successfully met and at least two bankfull or significant geomorphic events have occurred a request will be submitted to discontinue stream and/or vegetation monitoring after five years. The table below provides a list of the performance standards associated with each project objective along with a description of the monitoring approach.

Fletcher Mitigation Site Project Performance Standards		
Objective	**Performance Standard**	**Monitoring Approach**
Construct stream channels that will maintain proper dimension, pattern, and profile, and meet jurisdictional status.	• Riffle section W/D ratios should remain within the range of the appropriate stream type. • BHR should not exceed 1.2. BHR should not change more than 10% in any given monitoring interval. Changes that do occur should indicate a trend toward stability. • Entrenchment Ratios should be ≥ 2.2 for C/E channels and ≥ 1.4 for B channels. • Document continuous flow in tributaries for at least 30 consecutive days in each year.	• Survey of select cross sections and visual assessment. • Continuous stage recorders for base flow on tributaries.
Construct streams with proper bankfull to floodplain relationship.	Four bankfull events or greater, in separate years, will be documented during the monitoring period.	Crest gauges, continuous stage recorders, and debris lines.
Construct streams that provide naturally stable dimensions and stabilize constructed banks with appropriate bioengineering.	Channel banks should generally remain stable. Where bank migration does occur, it should not exceed 20% of the bankfull width for the duration of the monitoring.	Visual assessment and bank pin monitoring as necessary.
Construct streams that maintain an appropriate sediment transport balance with the sediment that is supplied by the watershed so that the overall stream profile neither aggrades nor degrades over time.	Profile adjustments should not indicate significant aggradation or degradation. BHR requirements as stated above.	Resurvey of longitudinal profile if visual assessment indicates potential instability.
Create and improve stream bedform diversity by constructing pools of varied depths and riffles of varied slopes	Profile should maintain a diversity of depths expressed in riffle/pool forms.	Visual assessment
Construct stable riffles that provide an improved diversity of bed material clast and a reduction in fines relative to existing conditions	Substrate material should progress towards or maintain coarser material in riffles and runs with finer material present in pools and glides.	Pebble count measurements at surveyed cross sections
Construct in-stream habitat features from native material to provide a diversity of habitats	In-stream habitat structures should remain intact and functional.	Visual assessment
Prevent cattle from access to the streams and riparian areas by installing exclusion fencing.	Exclusion fencing should remain intact and effective at preventing livestock access.	Visual assessment
Install BMP's in concentrated runoff areas that drain agricultural fields.	None. No maintenance will be performed on BMP's.	None
Provide a buffer from agricultural activities and row crops.	Record conservation easement prior to implementation.	None
Plant native climax tree species and understory species in the riparian zone.	Minimum of 320 stems/ac present at MY-3. Minimum of 260 stems/ac present at MY-5. Minimum of 210 stems/ac present at MY-7.	• Vegetation plots • Carolina Vegetation Survey (CVS) methodology will be used to record data and calculate stems/ac.
Reconstruct stream channels that are properly connected to the riparian wetlands.	Groundwater elevation within 12 inches of the ground surface for 12% of the growing season.	Groundwater monitoring gauges
Re-grade topography to eliminate ditches and drainage features.	Groundwater elevation within 12 inches of the ground surface for 12% of the growing season.	Groundwater monitoring gauges
Plant native wetland tree and shrub species.	Minimum of 320 stems/ac present at MY-3. Minimum of 260 stems/ac present at MY-5. Minimum of 210 stems/ac present at MY-7.	• Vegetation plots • Carolina Vegetation Survey (CVS) methodology will be used to record data and calculate stems/ac.
Establish a conservation easement that provides a minimum buffer from future activities in the adjacent watershed.	Record conservation easement prior to implementation.	None

* Table is based on the approved Fletcher Mitigation Plan; No changes to performace standards, success criteria, or monitoring protocol were made.

1.5. Mitigation Components

The Fletcher Site generated 10,011 SMUs and 8.91 WMUs. Refer to Figure 2 for the project component/ asset map for a visual description of the project assets and Table 1 for project components and mitigation credit information for the Fletcher Site. These credits are based on the Approved Fletcher Site Mitigation Plan.

1.6. Restoration Type and Approach

Boulder and log structures were used to provide vertical stability to the channel, assist in maintaining riffle, run and pool features and to provide habitat features. Run structures were generally placed at the tail-of-riffles to support the upstream riffle grade. Log sills were used in a similar fashion on smaller streams or on flatter grade reaches. Log J-hooks were used to shift the flow away from the outside banks on selected meander bends. Brush-toe structures were installed on the outside of certain meander bends to provide bank stability, increase bank roughness, and provide aquatic habitat.

Re-establishment of the wetlands involved the removal of any overburden material to expose the underlying buried hydric soils. Wetland hydrology was restored by raising the stream bed elevations and filling in the floodplain drainage ditches. Additional grading activities included harvesting usable topsoil material for re-use on portions of the re-graded floodplain, removal of spoil berms, and grading macro-topography to provide for additional retention of surface water and increased habitat diversity. Enhancement of existing wetlands involved stabilizing wetland hydrology and replanting. All Re-establishment areas will be ripped to remove effects of past compaction and planted with native wetland vegetation. Invasive species will be removed and a riparian wetland vegetation community will be established.

Fletcher Creek

The approach for Fletcher Creek Reach 1 was to raise the stream grade so that the proposed bankfull coincides with the partial terrace which lies 18 to 24 inches below the high terrace. This was accomplished by maintaining as much of the existing alignment features as possible. Where practical the high terrace was graded back to form a gentle cross-sloped valley form. This approach allowed the saving several large trees that occupy the lower terrace and exposed the buried 'A' horizon soils adjacent to the channel.

Along Reach 2 the channel was partially raised although the target elevation is not as evident as it is in Reach 1. The upstream end of Reach 2 was so severely degraded that relic terrace features were generally lost. The pre-construction stream assessment identified several stabilized valley slope features that roughly coincide with slope projections of the broader valley form. These features were incorporated into the channel configuration to provide a new channel and valley form. Through the downstream end of Reach 2(A) a high bank feature provided a relatively consistent target for matching the proposed bankfull elevation. The conceptual approach for Reach 2(B) was to reconstruct the channel with a slightly raised bed. Significantly raising the bed elevation through this reach was limited by the grade of the upstream culvert and the relative low slope of the channel.

Raccoon Branch

On Raccoon Branch Reach 1(D) the conceptual approach was to relocate the channel into a natural low in the valley which lies to the left of the present eroded gully. This approach involved removal of the existing cross pipe which will assist in retaining baseflow in the channel.

Coates Branch

The approach for Coates Branch was in three parts. On Reach 1(B) restoration activities included reshaping the valley and filling in the ditch to form a new headwater stream and valley configuration. Along Reach 1(C) the restoration activities included raising the stream to an elevation that is consistent with the buried 'A' horizon, approximately 18 to 24 inches below the terrace. The upper valley slope was graded back to allow for the construction of a small stream/wetland complex with the broader valley form. The intention was to mimic a scenario of an abandoned larger channel that has evolved into a wetland with a small feeder stream. This is a fairly common scenario in the mountain region where past landslides or debris fans have altered primary stream courses and left relic channel forms. Restoration activities on Reach 1(D) included raising the streambed to allow hydrologic connection to the floodplain and Fletcher Creek.

Weston Branch

The conceptual approach for Weston Creek was linked to the restoration approach for the adjacent wetlands. Weston Creek was relocated back into the area that has been mapped as hydric soils. Restoration activities were completed by filling in the existing ditch, removing the berm between the ditch and the field, and regrading portions of the field to provide more suitable wetland topography and grade. The stream channel meanders across the reshaped field to maximize the hydraulic connection between the stream and the restored wetlands.

Fletcher Creek Wetlands (Area A, B, and C)

The enhancement activities on the Fletcher Creek wetlands included primarily planting appropriate wetland vegetation and removing stressors. Wetlands A and B had headcuts that are migrating upstream and threatening to impact groundwater hydrology. These headcuts were stabilized with log sills. Wetland C was protected with exclusion fencing to eliminate the livestock impacts. Additionally, a drainage pipe that was placed to form a stream crossing was removed from this area.

Weston Creek Wetlands (Area D)

The restoration approach for Area D was to re-establish wetland conditions throughout the area identified as having hydric soils. This was accomplished by returning Weston Creek to a stream course that meanders across the proposed wetland area and eliminating topographic features that were detrimental to functioning wetlands. This included grading down existing berm and spoil areas along with filling in existing ditches. Additionally, the overall topography was reshaped to eliminate agriculture furrows and create macro-depressional areas.

1.7. As-Built Record Drawings

A sealed set of the record drawings are located in Appendix E. Adjustments from the design plans are listed below.

Fletcher Creek – Reach 1B

- Sta 106+70 – Alignment Deviation

Fletcher Creek – Reach 1C

- Sta 115+70 - 117+20 – Alignment Deviation
- Sta 124+13 – Alignment Deviation

Fletcher Creek – Reach 2A

- Sta 126+38 – 127+65 – Alignment Deviation
- Sta 132+20 – 133+91 - Alignment Deviation
- Sta 134+22 – Structure shifted upstream
- Sta 136+10 – 137+15 – Alignment Deviation

Fletcher Creek – Reach 2B

- Sta 155+92 – Shifted Piped Crossing Downstream
- Sta 156+27 – Added Brush Run

Raccoon Branch – Reach 1C

- Sta 212+00 – Omitted Debris Placement
- Sta 212+10 – Deleted Log Sill, Headwater Channel Extended Upstream; Site conditions had changed from initial survey during a very wet year, a field call was made to extend the headwater channel upstream to help stabilize the channel.
- Sta 213+01 – Added Log Sill
- Sta 214+00 – 214+90 – Deleted 5 Log Sills, Headwater Channel Extended Upstream; Site conditions had changed from initial survey during a very wet year, a field call was made to extend the headwater channel upstream to help stabilize the channel.

Raccoon Branch – Reach 1D

- Sta 215+00 – 219+11 – Alignment Deviation

Weston Creek – Reach 1B

- Partially filled base ditch along eastern side of easement; ditch was partially filled because water was still traveling onsite from adjacent field. A rip-rap transition down to Hoopers Creek was installed to help stabilize the channel.

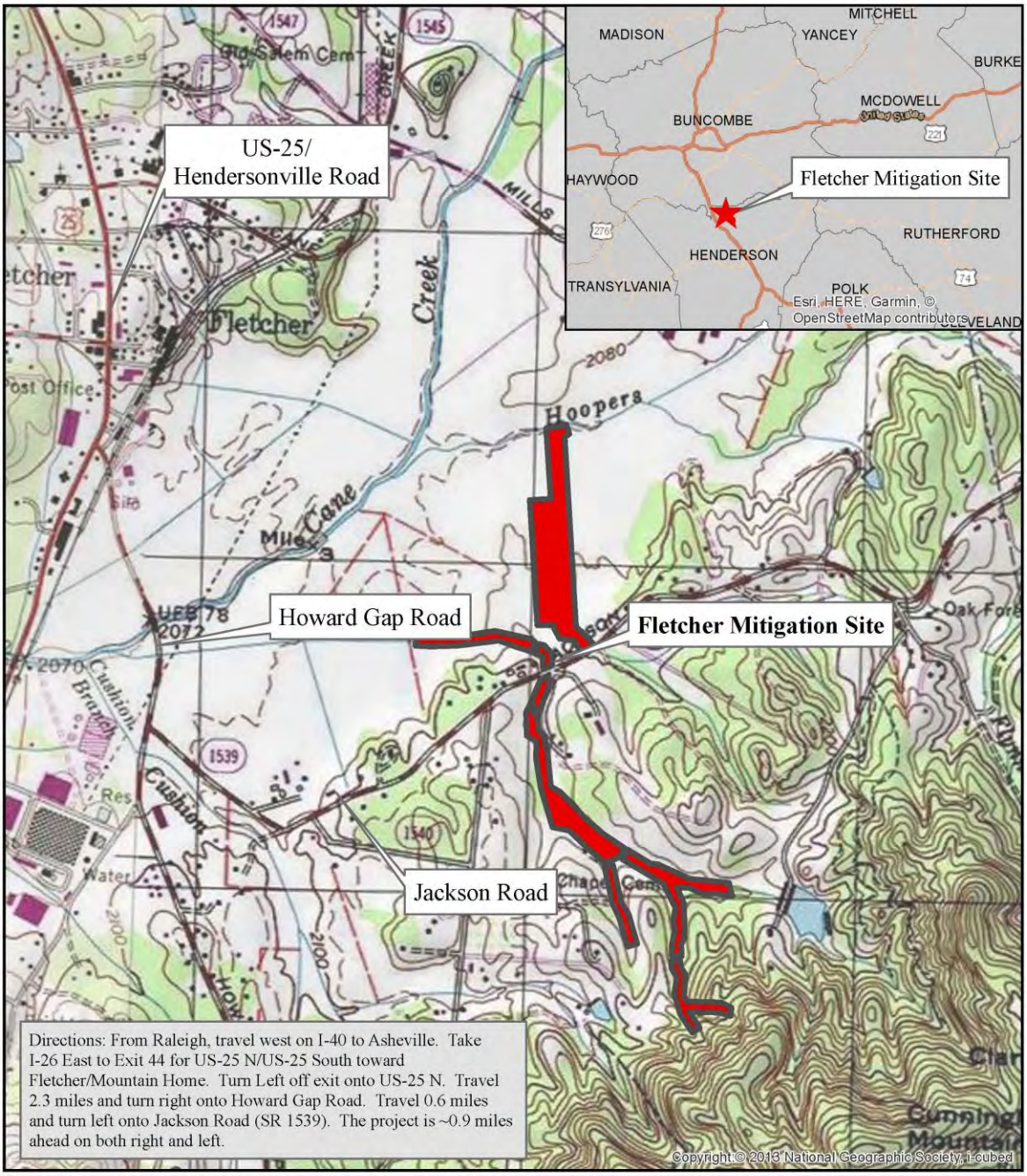
Coates Branch – Reach 1A

- Sta 300+00 – 300+35 – Headwater Channel Extended Downstream
- Sta 300+50 – 300+70 – Headwater Channel Shortened
- Sta 301+50 – 302+25 – Headwater Channel Extended, log sill deleted
- Sta 302+75 – Headwater Channel Extended Downstream
- Sta 303+40 – 307+00 – Alignment Deviation
- Sta 308+25 – 309+00 – Alignment Deviation
- Sta 311+75 – 315+25 – Alignment Deviation
- Sta 316+50 – 319+25 – Alignment Deviation

Weston Creek – Reach 1B

- Sta 420+20 – Added Coir Base Ditch
- Sta 421+00 – 428+00 – Added Base Ditch With Rip Rap Transition

1.8. Vicinity Map



2.0 REFERENCES

Kee Mapping and Survey. 2019. As-Built Survey of Fletcher Creek Restoration Project. Prepared for EW Solutions.

Stantec Consulting, Inc. 2018. Final Mitigation Plan – Fletcher Mitigation Site. . Prepared for North Carolina Department of Environmental Quality, Division of Mitigation Services. DMS Project No. 100004.

Lee, Michael T., R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2008. CVS-EEP Protocol for Recording Vegetation, Version 4.2 (http://cvs.bio.unc.edu/methods.htm)

Appendix A
Background Tables

Table 1. Project Mitigation Assets and Components Fletcher Mitigation Site									
Project Segment	Existing Footage or Acreage	Mitigation Plan Footage or Acreage	Mitigation Category	Restoration Level	Priority Level	Mitigation Ratio (X:1)	Mitigation Plan Credits*	As-Built Centerline Footage or Acreage^	Comments
Fletcher Creek 1a	607	461	Cool	EII	NA	2.5	184.400	461	
Fletcher Creek 1b	498	377	Cool	R	PI	1.0	377.000	378	
Fletcher Creek 1c	1,791	1,540	Cool	R	PI	1.0	1,540.000	1,507	Less 51' for crossing
Fletcher Creek 2a	1,587	1,296	Cool	R	PI/ PII	1.0	1,296.000	1,290	Less 33' for utility crossing; Less than 30' buffer for 86 LF
Fletcher Creek 2b	1,586	1,470	Cool	R	PII	1.0	1,470.000	1,558	Less 33' for outlet protection and 51' and 73' for 2 crossings
Raccoon Branch 1a	489	489	Cool	P	NA	10.0	48.900	489	.001 ac temporary impact to Wetland A
Raccoon Branch 1b	461	461	Cool	P	NA	10.0	46.100	461	.006 ac temporary impact to Wetland B
Raccoon Branch 1c	208	153	Cool	EII	NA	2.5	61.200	153	Less 53' for crossing; Stream length not included in wetlands
Raccoon Branch 1d	354	448	Cool	R	PI	1.0	448.000	440	
Pine Branch 1	380	299	Cool	P	NA	10.0	29.900	299	
Coates Branch Reach 1a	292	282	Cool	EII	NA	2.5	112.800	282	
Coates Branch Reach 1b	598	606	Cool	R	PI	1.0	606.000	598	.016 ac temporary impact to Wetland D
Coates Branch Reach 1c	727	708	Cool	R	PI	1.0	708.000	702	Less 44' for crossing
Coates Branch Reach 1d	318	325	Cool	R	PI	1.0	325.000	321	
Weston Creek 1a	1,645	1,954	Cold	R	PI	1.0	1,954.000	1,916	Less 29' for ROW and outlet protection
Weston Creek 1b	708	804	Cold	R	PI	1.0	804.000	798	
Wetland A	0.03	0.03	RNR	Enh		NC	NC	NC	0.001 ac temporary impact to Wetland A
Wetland B	0.11	0.11	RNR	Enh		NC	NC	NC	0.006 ac temporary impact to Wetland A
Wetland D	0.05	0.05	RNR	Enh		NC	NC	NC	0.016 ac temporary impact to Wetland A
Wetland E	8.910	8.9	RNR	Re-Est		1.0	8.910	8.910	

* Mitigation plan credits account for breaks in conservation easements and are based on design stream stationing and taken from the approved mitigation plan. Mitigation plan credits are the same as the approved mitigation plan.

^ Based on centerline calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

Project Credits

	Stream			Riparian Wetland		Non-Rip	Coastal
Restoration Level	Warm	Cool	Cold	Riverine	Non-Riv	Wetland	Marsh
Restoration	-	6770.000	2758.000	-	-	-	-
Re-establishment				-	8.910	-	-
Rehabilitation				-	-	-	-
Enhancement				-	-	-	-
Enhancement I	-	-	-				
Enhancement II	-	358.400	-				
Creation							
Preservation	-	124.900	-	-	-	-	
Total Credits[%]	**-**	**7253.300**	**2758.000**	-	**8.910**	**-**	**-**

[%] Project credits reflect the sum of credits outlined in the approved mitigation plan.

Table 2. Project Activity and Reporting History Fletcher Mitigation Site		
Activity or Report	**Data Collection Complete**	**Completion or Delivery**
Mitigation Plan	Feb - 2018	Feb - 2018
Mitigation Plan Addendum	-	-
Final Design - Construction Plans	-	Mar - 2018
Construction	-	Mar - 2019
Temporary S&E Mix Applied	-	Mar - 2019
Permanent Seed Mix Applied	-	Mar - 2019
Bare Root and Live Stake Plantings	-	Mar- 2019
Baseline Monitoring Document (Year 0 Monitoring - Baseline)	Mar - 2019	Apr - 2019
Stream Assessment	Mar - 2019	Apr - 2019
Vegetation Assessment	Mar - 2019	
Year 1 Monitoring		
Year 2 Monitoring		
Year 3 Monitoring		
Year 4 Monitoring		
Year 5 Monitoring		
Year 6 Monitoring		
Year 7 Monitoring		

Table 3. Project Contacts	
Fletcher Mitigation Site	
Prime Contractor	EW Solutions 37 Haywood Street, Suite 100 Asheville, NC 28801 David Tuch (828) 253-6856
Designer	Stantec Consulting, Inc 56 College Street, Suite 201 Asheville, North Carolina 28801 Grant Ginn (828) 449-1930
Construction Contractor (North Side)	Penland Contracting, Inc 300 NP&L Loop Franklin, NC 28734 Lewis Penland (828) 421-1753
Construction Contractor (South Side)	Baker Construction 1000 Bat Cave Road Old Fort, NC 28762 Charles Baker (828) 668-5060
Seeding Contractor (North Side)	Penland Contracting, Inc 300 NP&L Loop Franklin, NC 28734 Lewis Penland (828) 421-1753
Seeding Contractor (South Side)	Baker Construction 1000 Bat Cave Road Old Fort, NC 28762 Charles Baker (828) 668-5060
Planting Contractor	Equinox 37 Haywood St. Asheville, North Carolina 28801 Owen Carson (828) 253-6856
As-built Surveys	Kee Mapping 88 Central Ave. Asheville, NC 28801 Brad Kee (828) 575-9021
Seeding Mix Source	SESSCO LLC 209 Cane Creek Rd Fletcher , NC 28732 (828) 654-8991
Live Stakes	Mellow Marsh Farms 1312 Woody Store Road Siler City, NC 27344 (919) 742-1200
Monitoring Performers (Y0)- 2019	Equinox 37 Haywood St. Asheville, North Carolina 28801 Drew Alderman (828) 253-6856

Table 4. Project Baseline Information and Attributes

Project Information

Project Name	Fletcher Stream and Wetland Mitigation Site
County	Henderson
Project Area (acres)	34.8
Project Coordinates (latitude and longitude)	35.422278° N, -82.486183° W

Project Watershed Summary Information

Physiographic Province		Blue Ridge	
River Basin		French Broad River	
USGS Hydrologic Unit 8-digit	6010105	USGS Hydrologic Unit 14-digit	06010105040010
DWR Sub-basin		04-03-02	
Project Drainage Area (acres)		0.52 Fletcher Creek / 0.37 Weston Branch	
Project Drainage Area Percentage of Impervious Area		< 1%	
CGIA Land Use Classification		Agricultural	

Reach Summary Information

Parameters	Fletcher Creek 1A	Fletcher Creek 1B	Fletcher Creek 1C	Fletcher Creek 2A	Fletcher Creek 2B	Raccoon Branch 1A	Raccoon Branch 1B	Raccoon Branch 1C	Raccoon Branch 1D	Pine Branch	Coats Branch 1A	Coats Branch 1B	Coats Branch 1C	Coats Branch 1D	Weston Creek 1A	Weston Creek 1B
Length of Reach (linear feet) ^	457	380	1,541	1,299	1,511	489	461	153	440	304	284	601	708	325	1,982	825
Valley Confinement (Rosgen)	II	II	II	II	VIII	II	II	II	II	II	II	II	II	II	VIII	VIII
Drainage area (miles^2)	0.30	0.30	0.37	0.49	0.52	0.01	0.03	0.04	0.04	0.01	0.02	0.03	0.04	0.07	0.30	0.37
Perrenial, Intermittent, Ephemeral	Perrenial	Perrenial	Perrenial	Perrenial	Perrenial	Intermittent	Perrenial	Perrenial	Perrenial	Perrenial	Intermittent	Perrenial	Perrenial	Perrenial	Perrenial	Perrenial
NCDWR Water Quality Classification	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C: Tr	C: Tr
Stream Classification (existing)	G	G	B, F, G	B, G	B, E, G	B	B	B, G	B, G	B	B, G	B, G	B, F, G	B	E, G	E, G
Stream Classification (proposed)	B4	B4	B4	B4	B5	B4	B4	B4	B4	B4	B4	B4	B4	B4	C5	C5
FEMA classification	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Wetland Summary Information

Parameters	Wetland A	Wetland B	Wetland D	Wetland E
Size of Wetland (acres)	0.03	0.11	0.05	8.91
Wetland Type (non-riparian, riparian riverine or riparian non-riverine)	Riparian	Riparian	Riparian	Riparian
Mapped Soil Series	-	-	-	Ha
Drainage class	-	-	-	poorly
Soil Hydric Status	Hydric	Hydric	Hydric	Hydric
Source of Hydrology	Spring	Spring	Spring	Groundwater
Hydrologic Impairment	Agriculture/ Livestock Grazing	Agriculture/ Livestock Grazing	Agriculture/ Livestock Grazing	Agriculture
Native vegetation community	Mountain Alluvial Forest	Mountain Alluvial Forest	Mountain Alluvial Forest	Mountain Alluvial Forest
Percent composition of exotic invasive vegetation	15%	15%	15%	1%

Regulatory Considerations

Regulation	Applicable?	Resolved?	Supporting Documentation
Waters of the United States – Section 404	Yes	Yes	Jurisdictional Determination
Waters of the United States – Section 401	Yes	Yes	Jurisdictional Determination
Endangered Species Act	Yes	Yes	ERTR
Historic Preservation Act	No	N/A	ERTR
Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA)	No	N/A	N/A
FEMA Floodplain Compliance	Yes	Yes	Yes
Essential Fisheries Habitat	No	N/A	N/A

^ Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

Appendix B
Visual Assessment Data

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Figure 2. Asset Map

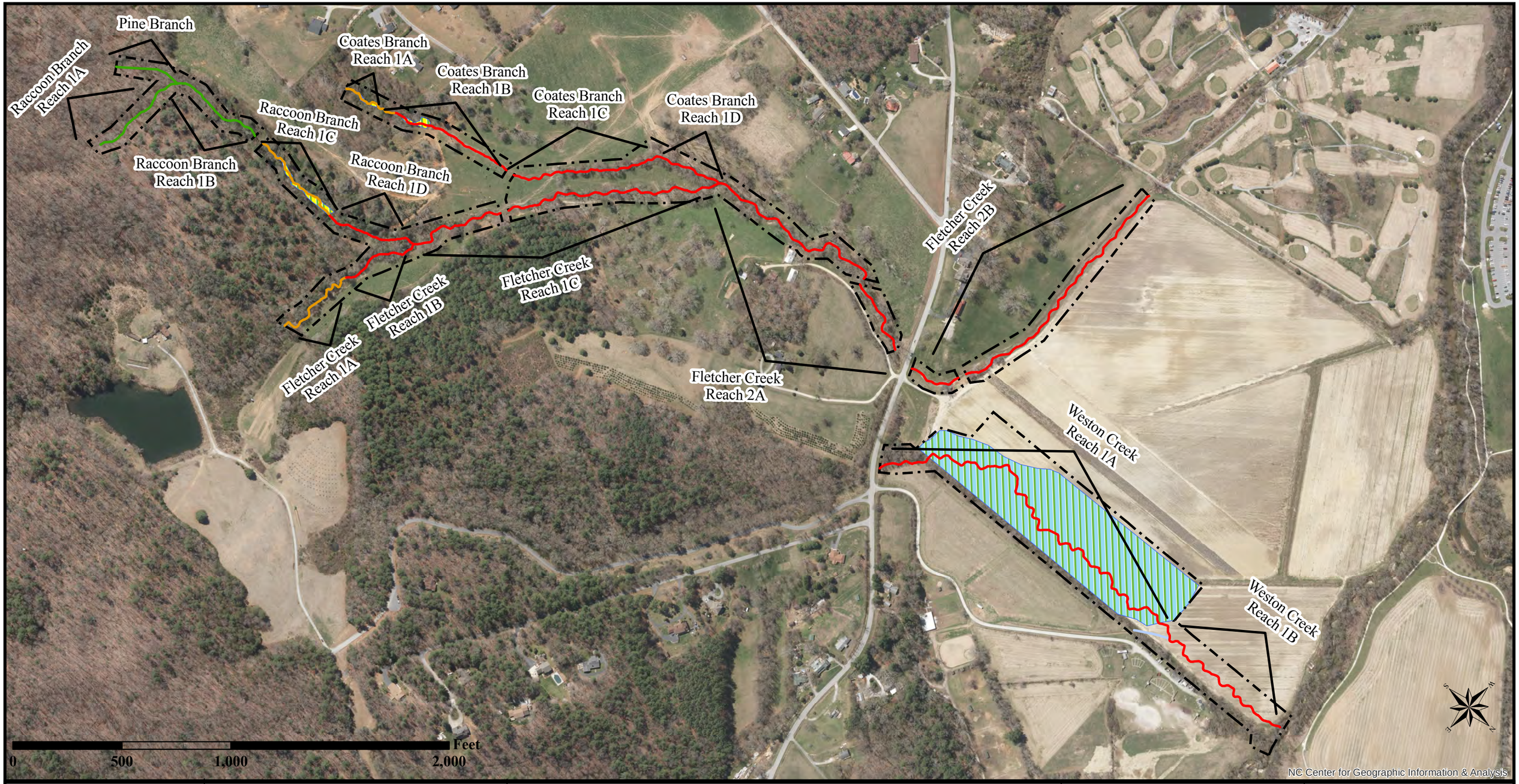

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Figure 2. Asset Map
Fletcher Restoration Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019

Stream Asset Type

- Restoration
- Enhancement II
- Preservation
- No Credit

- Wetland Re-Establishment
- Wetland Enhancement (No Credit)

Notes:
1) Baseline Data Provided by Kee Mapping

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Figure 3. Monitoring Features Map

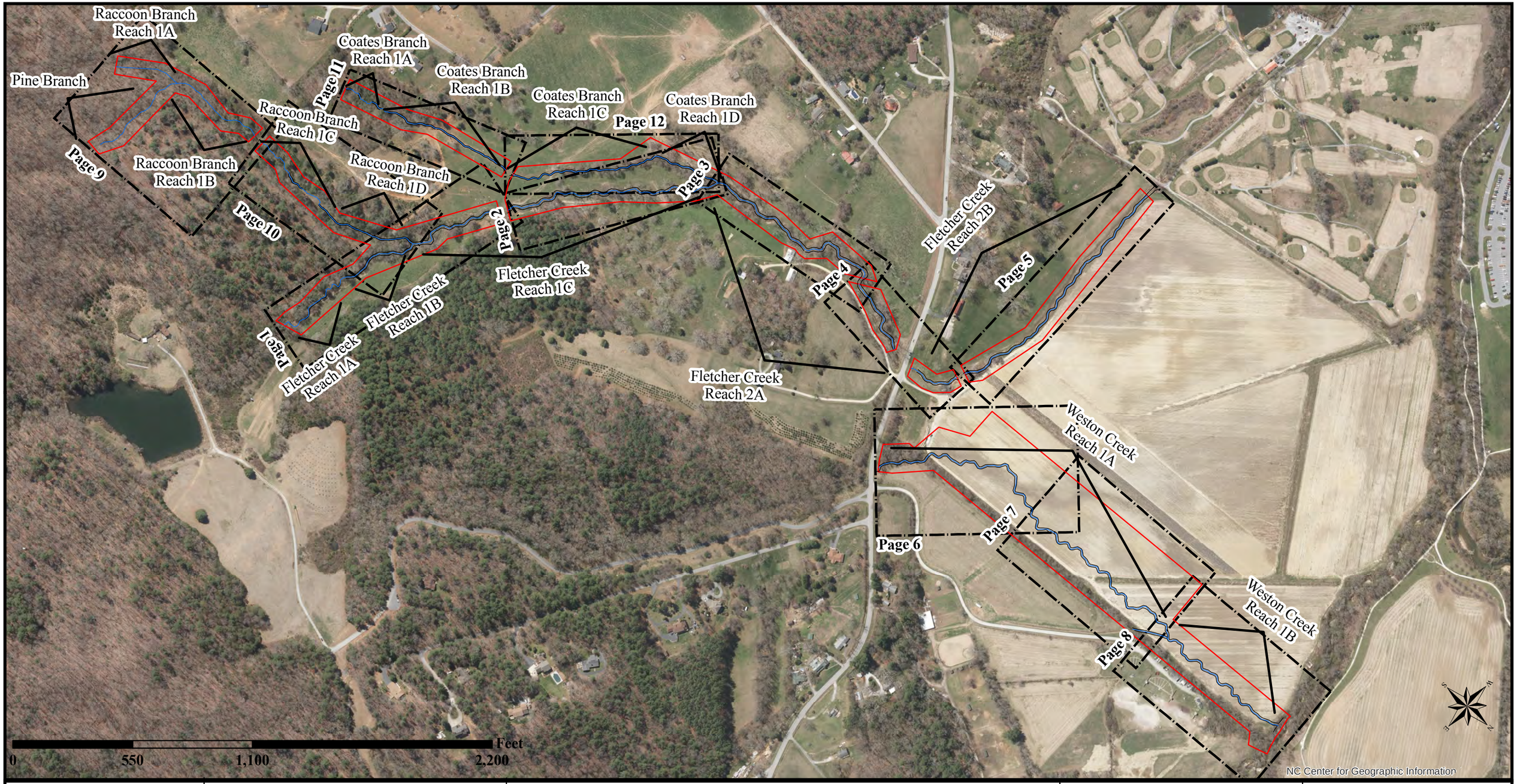

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Overview

Easement
Map Pages
As-Built Top of Bank
As-Built Thalweg

Notes:
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Figure 3. Monitoring Features Map

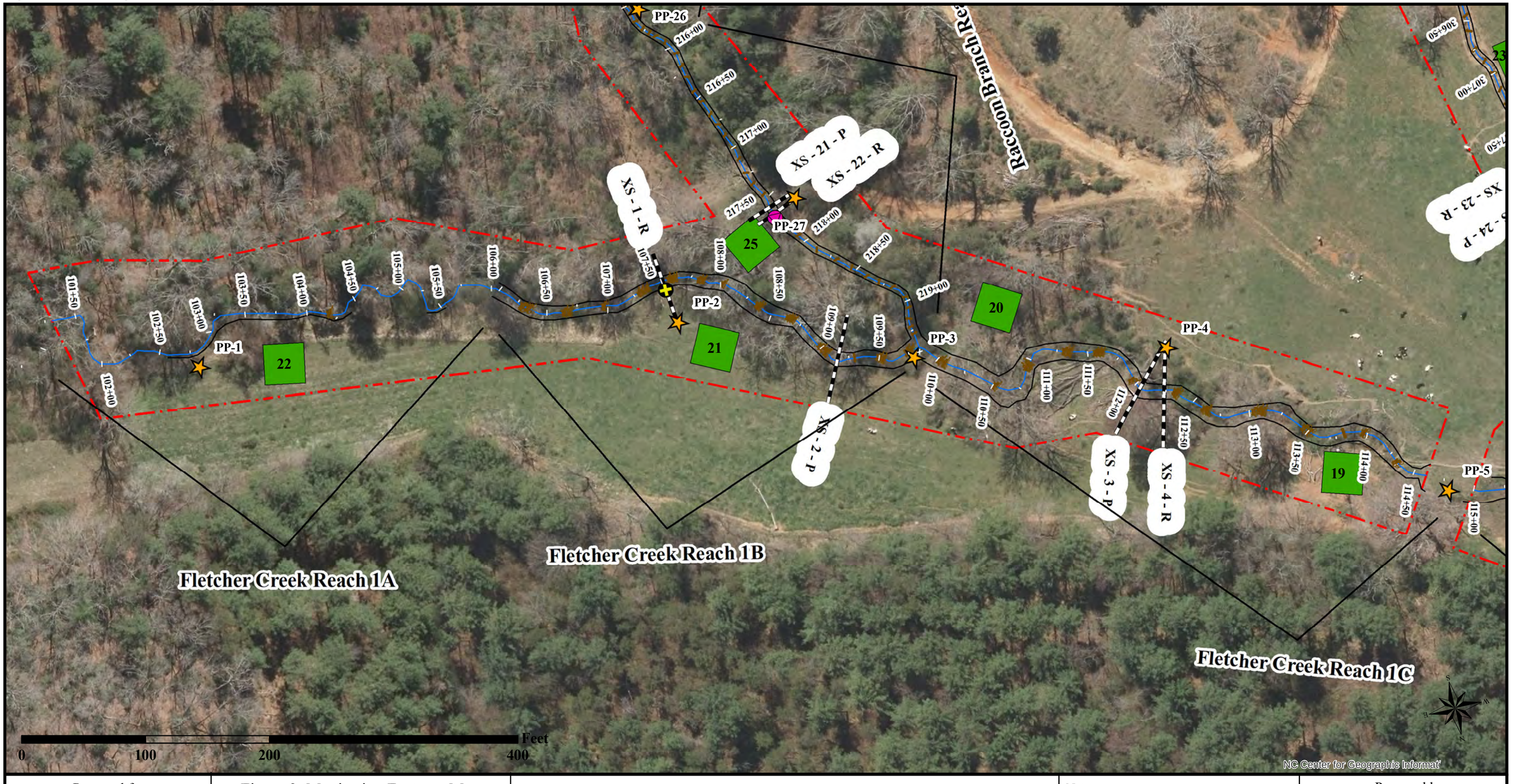

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 1 of 12

- Easement
- Wetland Re-Establishment
- Wetlands Enhancement (No Credit)
- Vegetation Plot
- As-Built Top of Bank
- As-Built Thalweg
- Cross-Section
- Photo Point
- Continuous Stage Recorder
- Crest Gauge
- Groudwater Gauge
- Rain Gauge

Notes:
1) Baseline Data Provided by Kee Mapping

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Figure 3. Monitoring Features Map

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 2 of 12

- Easement
- Wetland Re-Establishment
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Figure 3. Monitoring Features Map

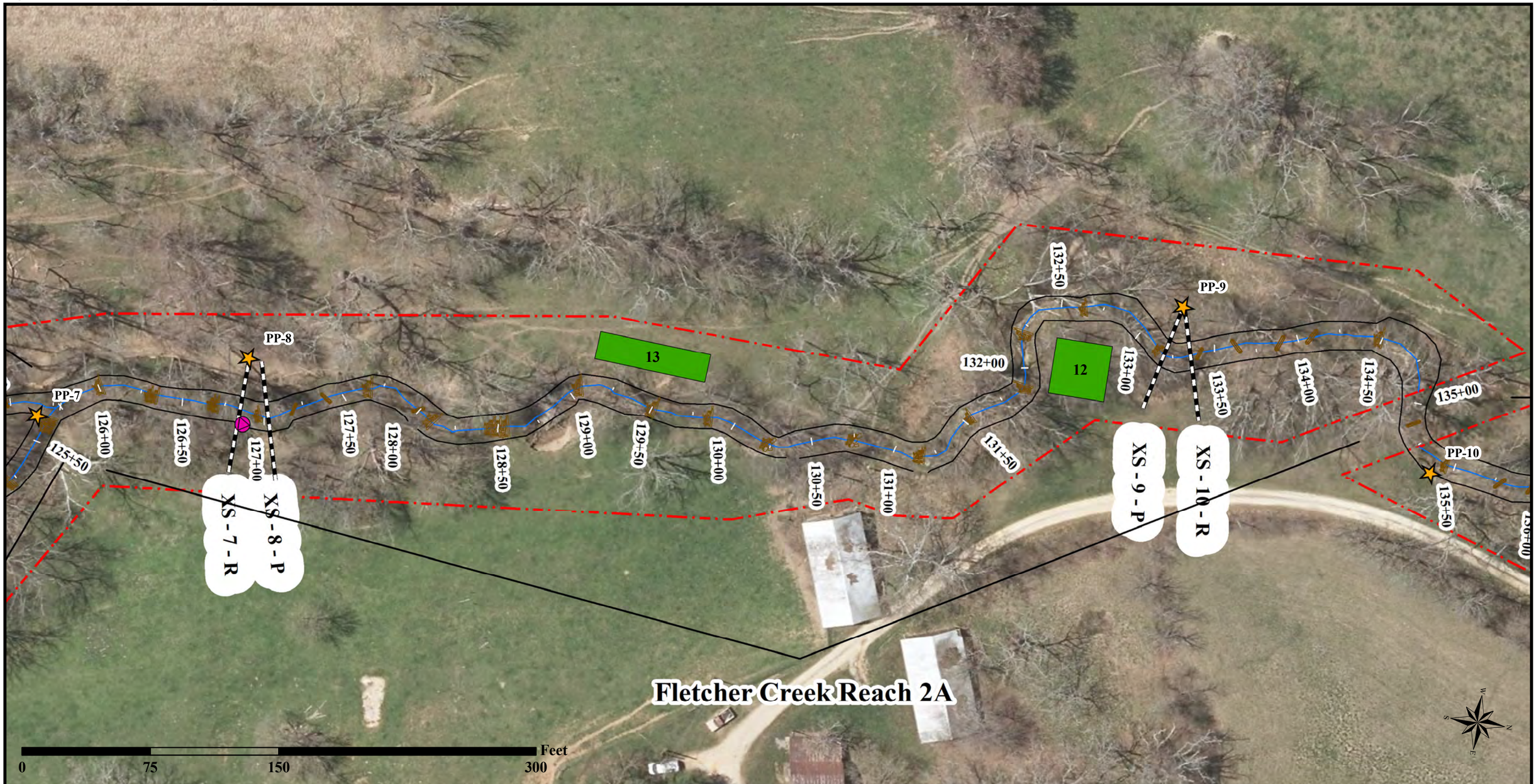

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 3 of 12

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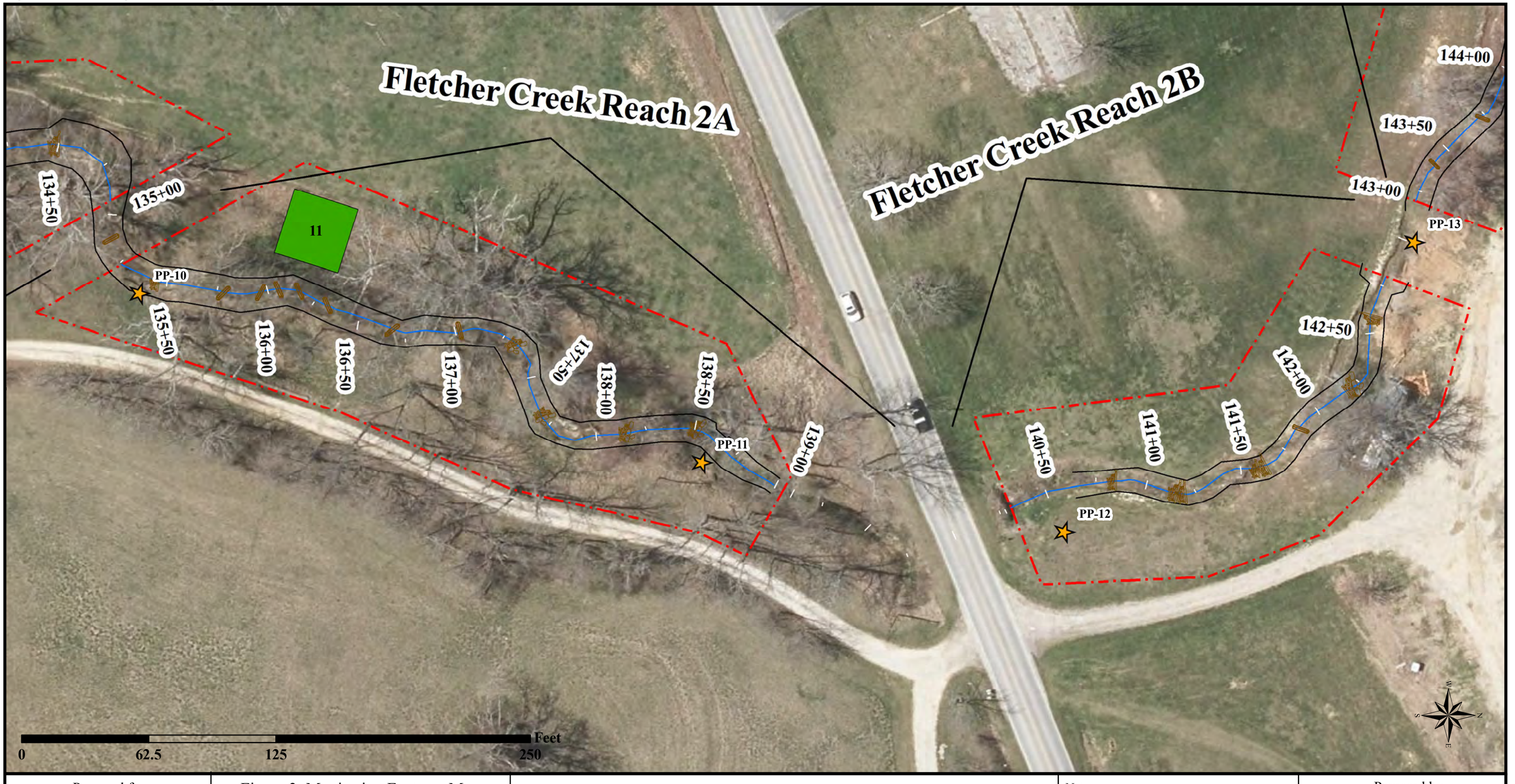

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 4 of 12

- Easement
- Wetland Re-Establishment
- Wetlands Enhancement (No Credit)
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- Photo Point
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- Crest Gauge
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Figure 3. Monitoring Features Map

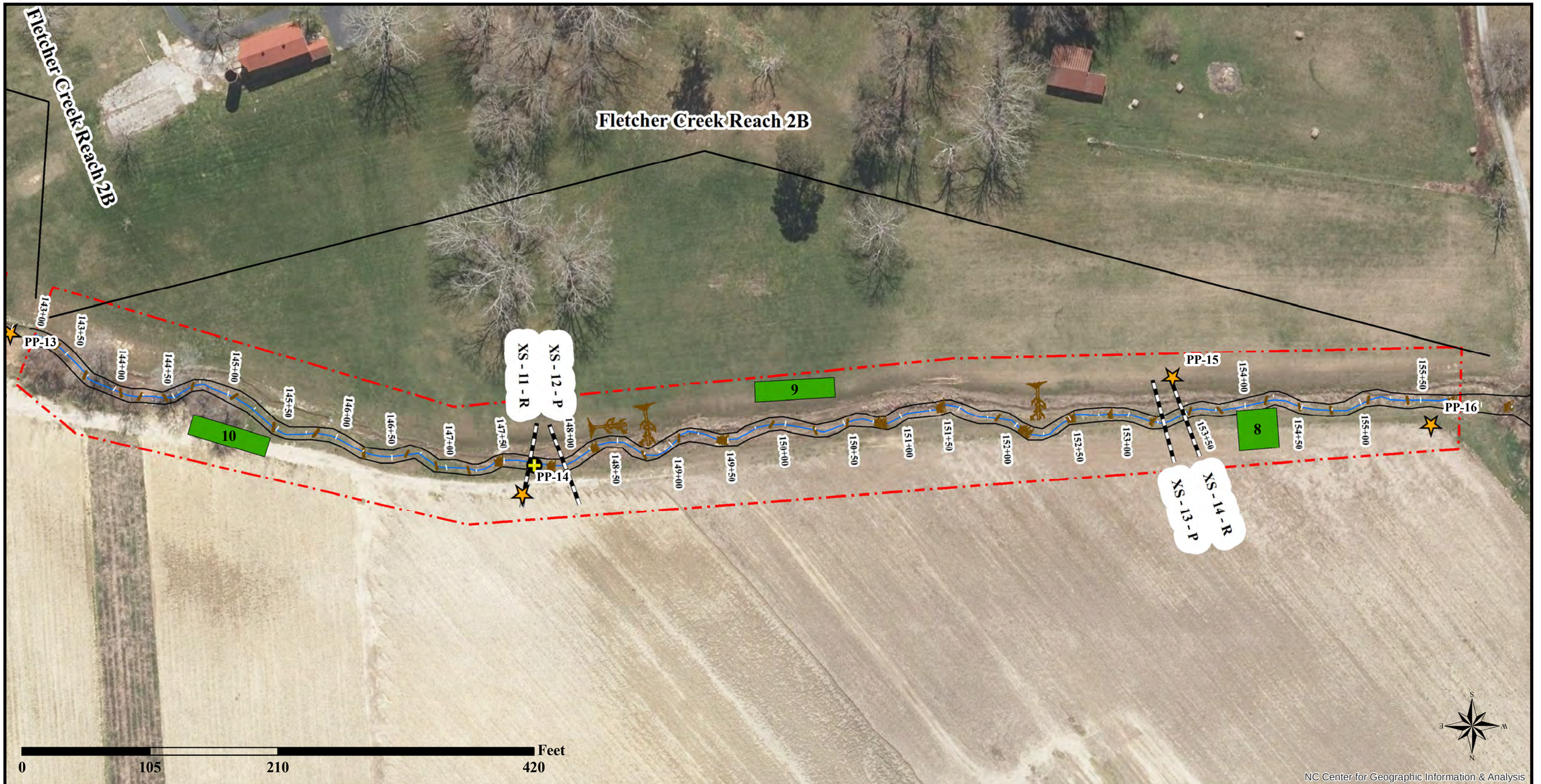

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 5 of 12

- Easement
- Wetland Re-Establishment
- Wetlands Enhancement (No Credit)
- Vegetation Plot
- As-Built Top of Bank
- As-Built Thalweg
- Cross-Section
- Photo Point
- Continuous Stage Recorder
- Crest Gauge
- Groudwater Gauge
- Rain Gauge

Notes:
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Figure 3. Monitoring Features Map

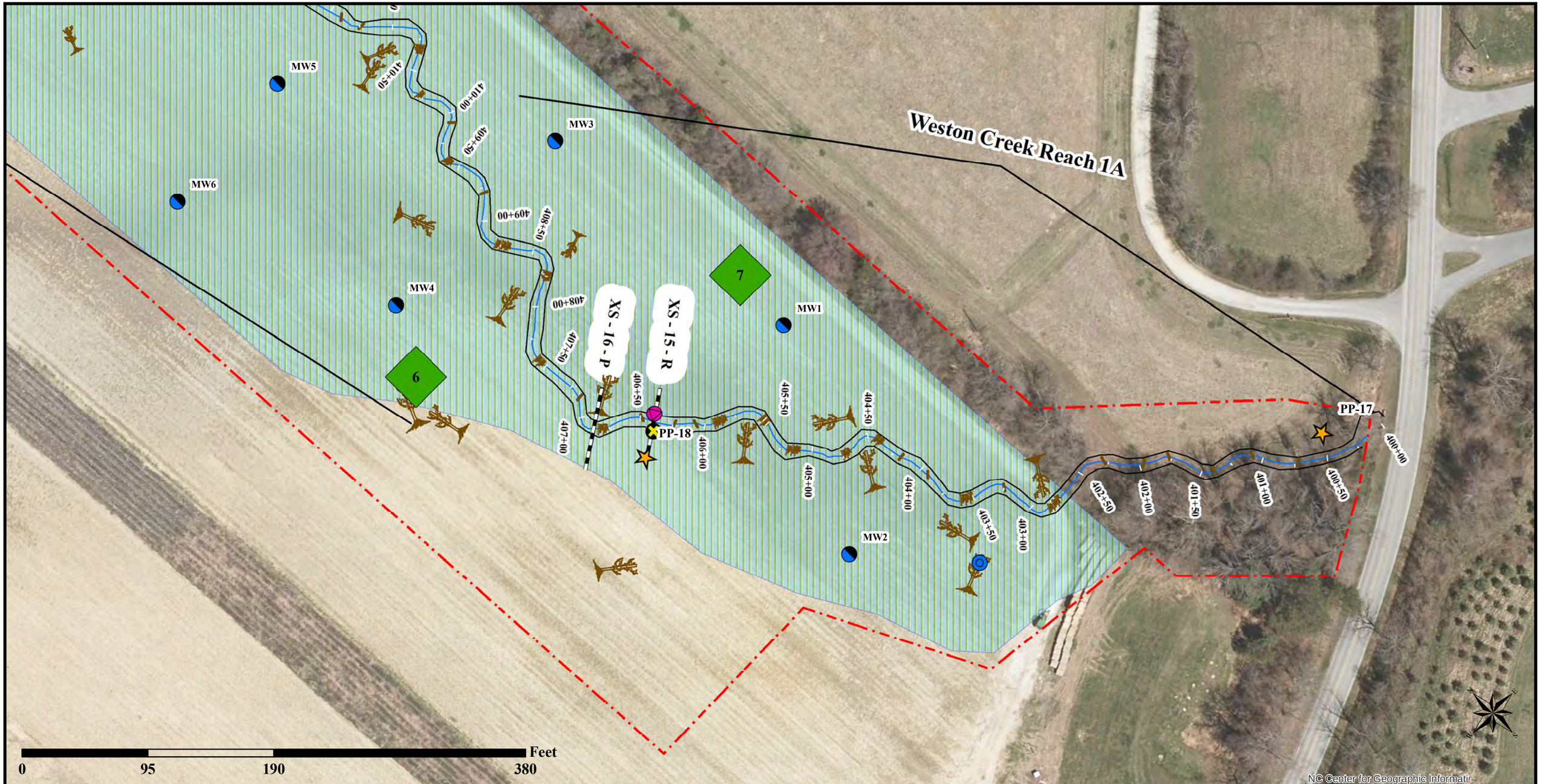

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 6 of 12

- Easement
- Wetland Re-Establishment
- Wetlands Enhancement (No Credit)
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- As-Built Top of Bank
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Notes:
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Figure 3. Monitoring Features Map

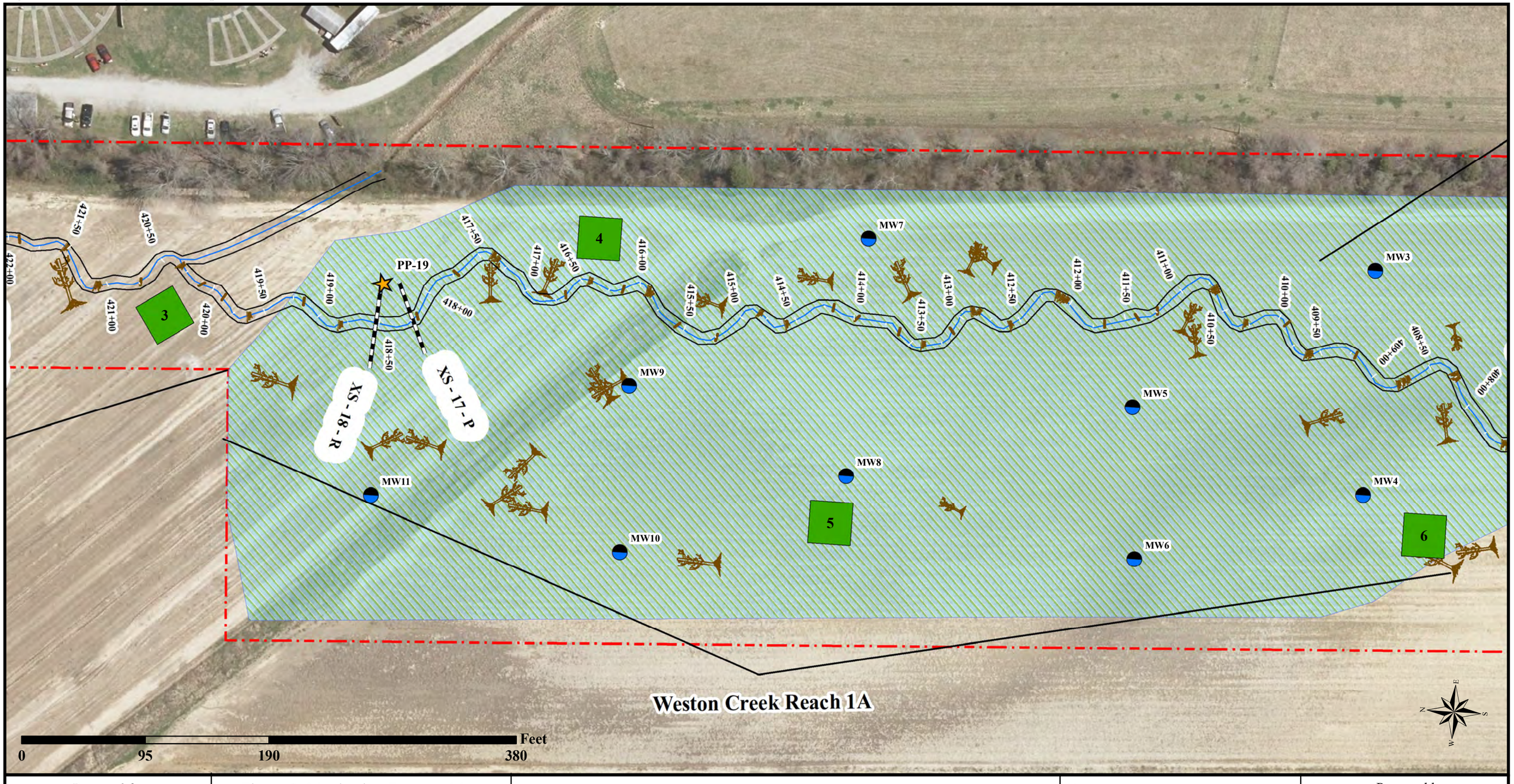

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 7 of 12

- Easement
- Wetland Re-Establishment
- Wetlands Enhancement (No Credit)
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- As-Built Thalweg
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Notes:
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Figure 3. Monitoring Features Map

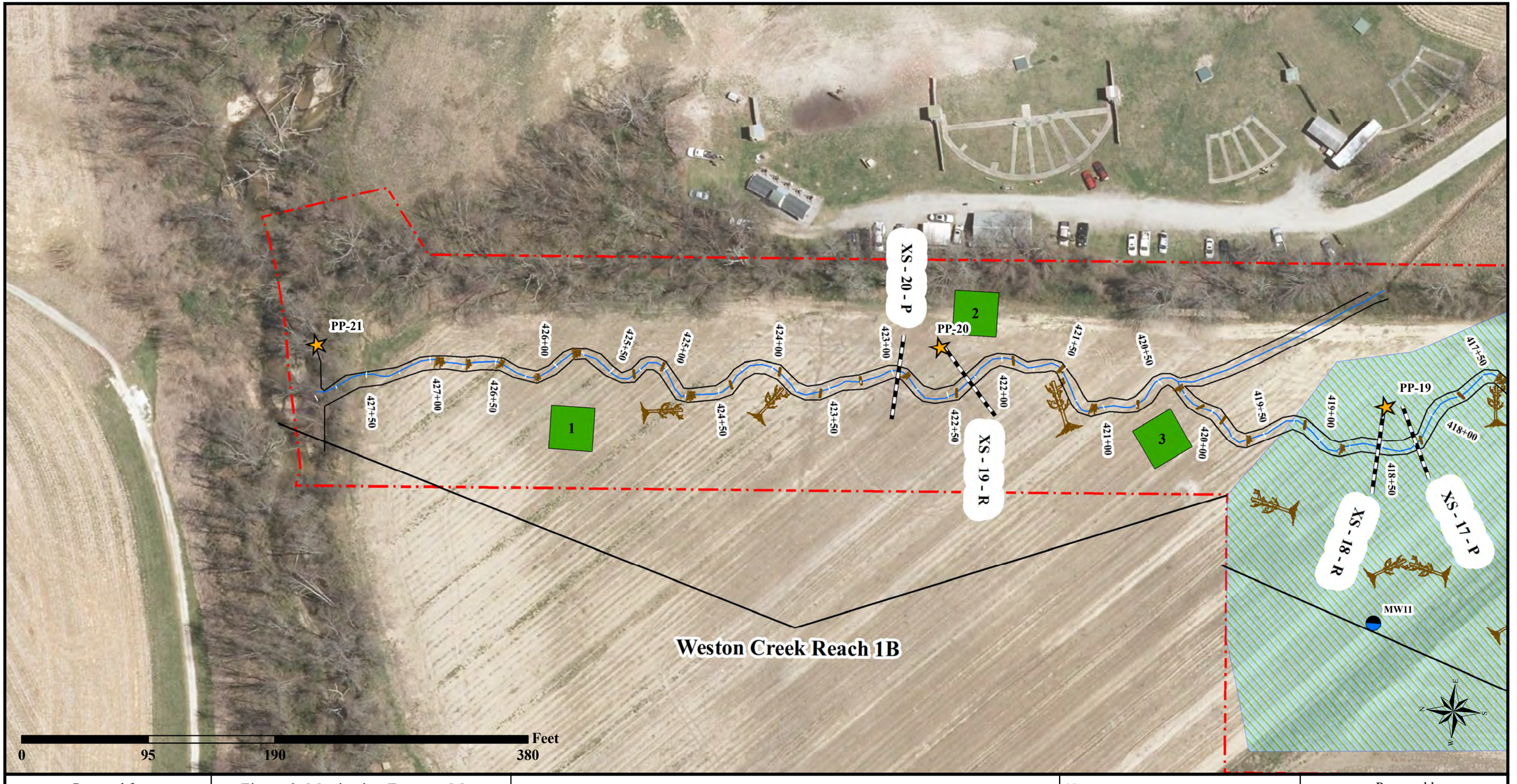

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 8 of 12

- Easement
- Wetland Re-Establishment
- Wetlands Enhancement (No Credit)
- Vegetation Plot
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- As-Built Thalweg
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Notes:
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Figure 3. Monitoring Features Map

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 9 of 12

- Easement
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- Crest Gauge
- Groudwater Gauge
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Notes:
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Figure 3. Monitoring Features Map

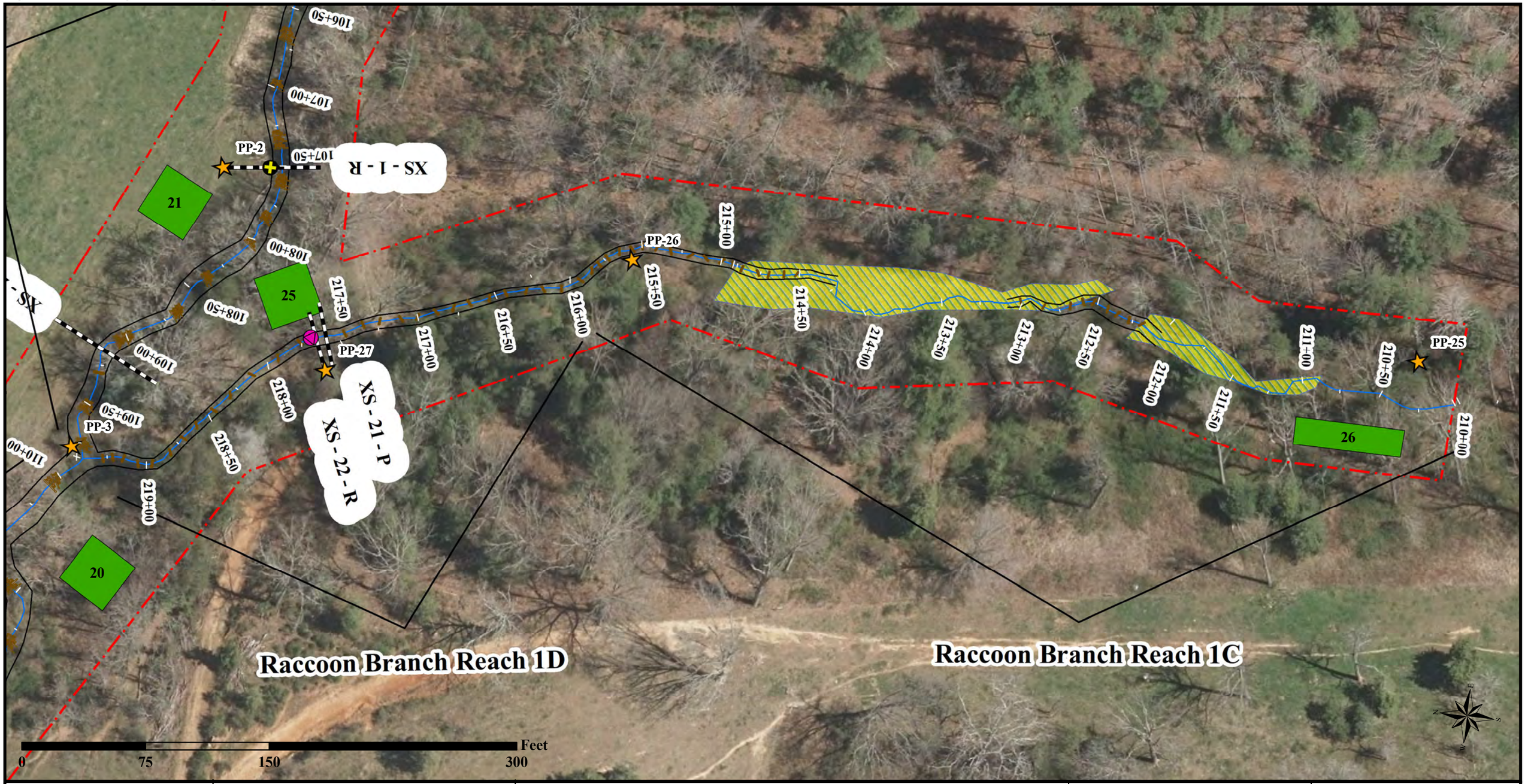

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 10 of 12

- Easement
- Wetland Re-Establishment
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- Crest Gauge
- Groudwater Gauge
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Figure 3. Monitoring Features Map

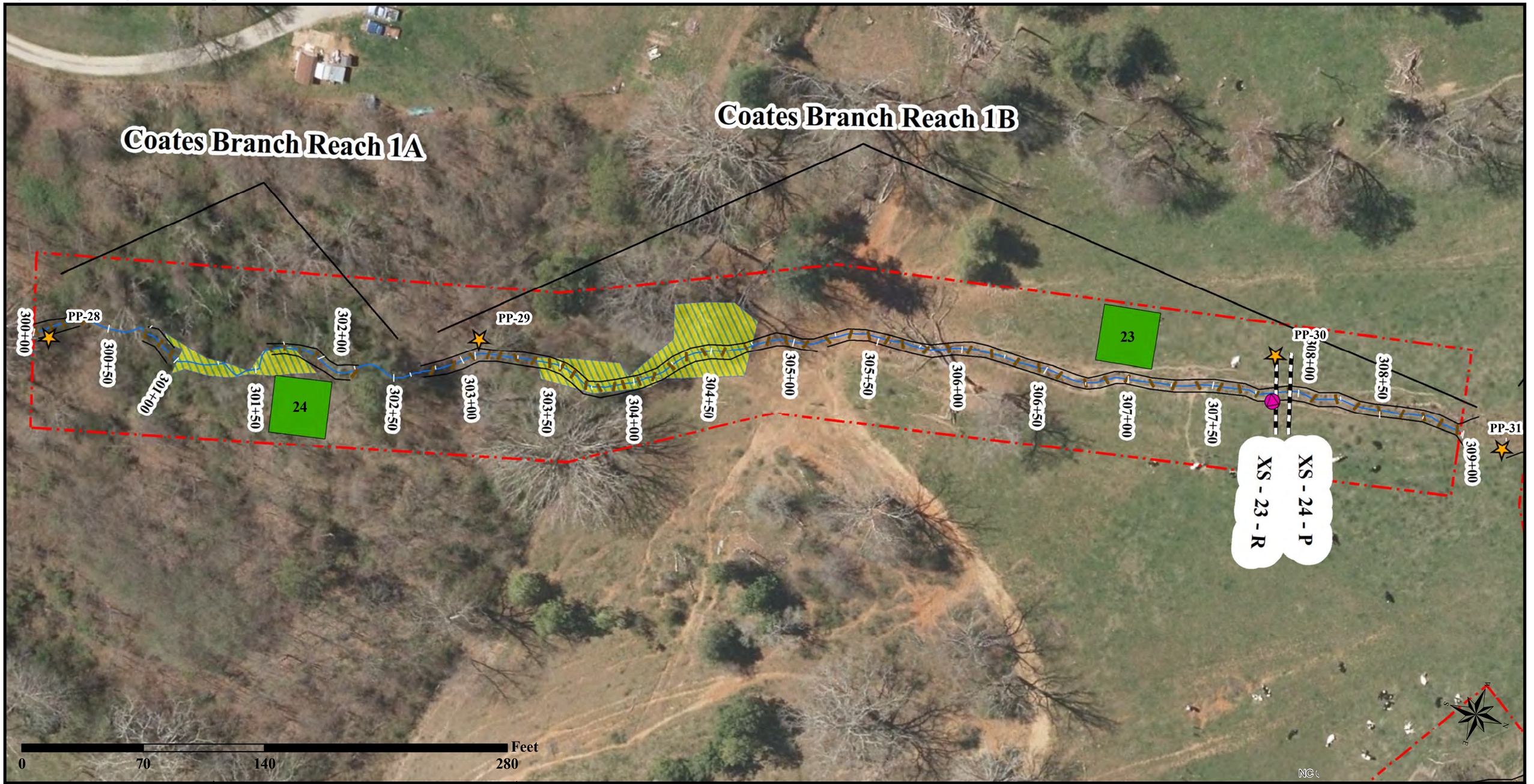

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 11 of 12

- Easement
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Figure 3. Monitoring Features Map

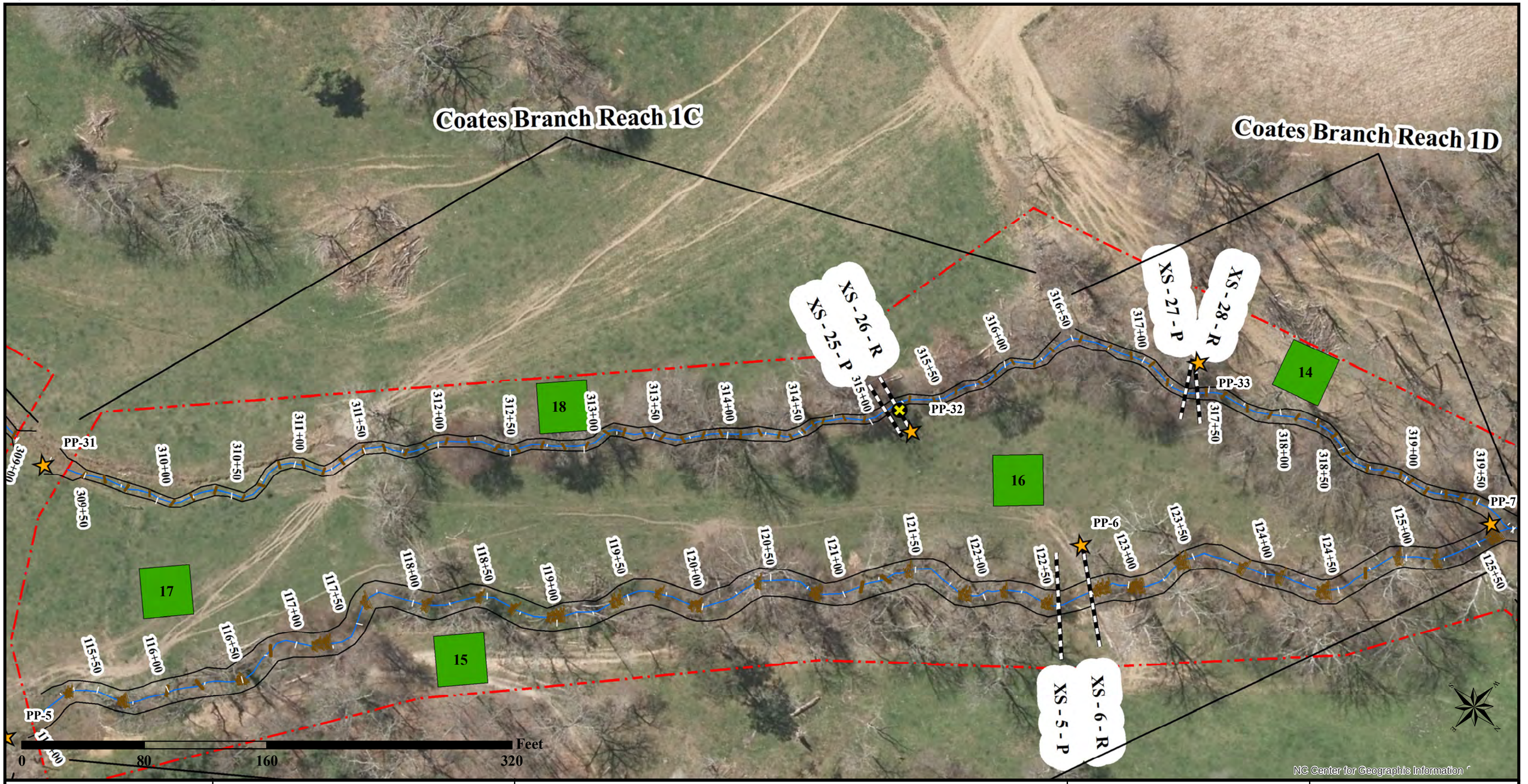

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Figure 3. Monitoring Features Map
Fletcher Mitigation Site
Monitoring Year 0
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
April 2019
Sheet 12 of 12

- Easement
- Wetland Re-Establishment
- Wetlands Enhancement (No Credit)
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- As-Built Thalweg
- Cross-Section
- Photo Point
- Continuous Stage Recorder
- Crest Gauge
- Groudwater Gauge
- Rain Gauge

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Vegetation Plot Photos

Vegetation Monitoring Plot 1

Vegetation Monitoring Plot 2

Vegetation Monitoring Plot 3

Vegetation Monitoring Plot 4

Vegetation Monitoring Plot 5

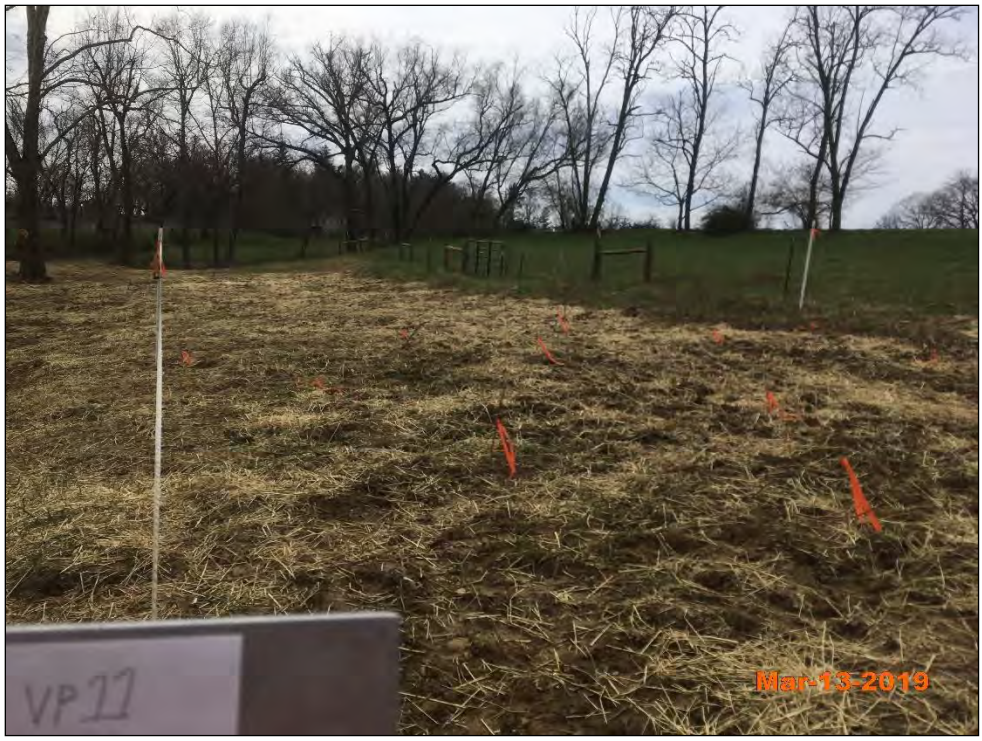
Vegetation Monitoring Plot 6

Vegetation Monitoring Plot 7

Vegetation Monitoring Plot 8

Vegetation Monitoring Plot 9

Vegetation Monitoring Plot 10



Vegetation Monitoring Plot 11

Vegetation Monitoring Plot 12

Vegetation Monitoring Plot 13

Vegetation Monitoring Plot 14

Vegetation Monitoring Plot 15

Vegetation Monitoring Plot 16

Vegetation Monitoring Plot 17

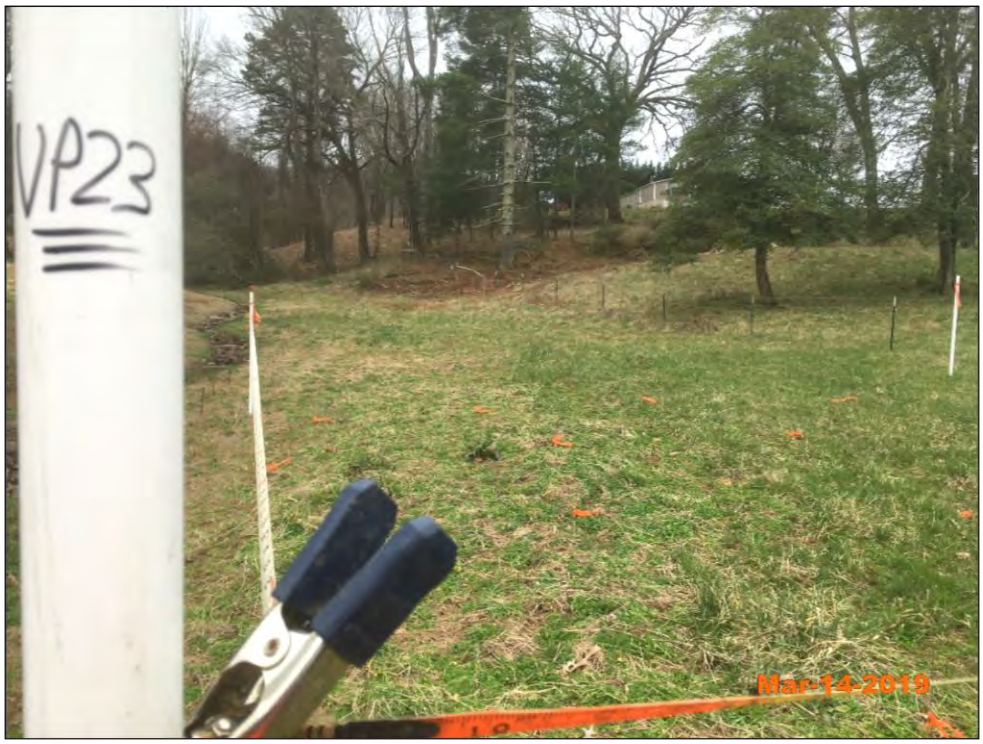
Vegetation Monitoring Plot 18

Vegetation Monitoring Plot 19

Vegetation Monitoring Plot 20

Vegetation Monitoring Plot 21

Vegetation Monitoring Plot 22



Vegetation Monitoring Plot 23

Vegetation Monitoring Plot 24

Vegetation Monitoring Plot 25

Vegetation Monitoring Plot 26

Permanent Photo Stations

Fletcher Creek 1A – Permanent Photo Station 1
Looking Upstream

Fletcher Creek 1A – Permanent Photo Station 1
Looking Downstream

Fletcher Creek 1B – Permanent Photo Station 2
Looking Upstream

Fletcher Creek 1B – Permanent Photo Station 2
Looking Downstream

Fletcher Creek 1B – Permanent Photo Station 3
Looking Upstream

Fletcher Creek 1C – Permanent Photo Station 3
Looking Downstream

Raccoon Branch 1D – Permanent Photo Station 3
Looking Upstream

Fletcher Creek 1C – Permanent Photo Station 4
Looking Upstream

Fletcher Creek 1C – Permanent Photo Station 4
Looking Downstream

Fletcher Creek 1C – Permanent Photo Station 5
Looking Upstream from Crossing

Fletcher Creek 1C – Permanent Photo Station 5
Looking Downstream from Crossing

Fletcher Creek 1C – Permanent Photo Station 6
Looking Upstream

Fletcher Creek 1C – Permanent Photo Station 6
Looking Downstream

Fletcher Creek 1C – Permanent Photo Station 7
Looking Upstream

Fletcher Creek 2A - Permanent Photo Station 7
Looking Downstream

Coats Branch 1D – Permanent Photo Station 7
Looking Upstream

Fletcher Creek 2A – Permanent Photo Station 8
Looking Upstream

Fletcher Creek 2A – Permanent Photo Station 8
Looking Downstream

Fletcher Creek 2A – Permanent Photo Station 9
Looking Upstream

Fletcher Creek 2A – Permanent Photo Station 9
Looking Downstream

Fletcher Creek 2A – Permanent Photo Station 10
Looking Upstream

Fletcher Creek 2A – Permanent Photo Station 10
Looking Downstream

Fletcher Creek 2A – Permanent Photo Station 11
Looking Upstream

Fletcher Creek 2B – Permanent Photo Station 12
Looking Downstream

Fletcher Creek 2B – Permanent Photo Station 13
Looking Upstream from Crossing

Fletcher Creek 2B – Permanent Photo Station 13
Looking Downstream from Crossing

Fletcher Creek 2B – Permanent Photo Station 14
Looking Upstream

Fletcher Creek 2B – Permanent Photo Station 14
Looking Downstream

Fletcher Creek 2B – Permanent Photo Station 15
Looking Upstream

Fletcher Creek 2B – Permanent Photo Station 15
Looking Downstream

Fletcher Creek 2B – Permanent Photo Station 16
Looking Upstream

Weston Creek 1A – Permanent Photo Station 17
Looking Downstream

Weston Creek 1A – Permanent Photo Station 18
Looking Upstream

Weston Creek 1A – Permanent Photo Station 18
Looking Downstream

Weston Creek 1A – Permanent Photo Station 19
Looking Upstream

Weston Creek 1A – Permanent Photo Station 19
Looking Downstream

Weston Creek 1B – Permanent Photo Station 20
Looking Upstream

Weston Creek 1B – Permanent Photo Station 20
Looking Downstream

Weston Creek 1D – Permanent Photo Station 21
Looking Upstream

Pine Branch – Permanent Photo Station 22
Looking Downstream

Raccoon Branch 1A – Permanent Photo Station 23
Looking Downstream

Raccoon Branch 1A – Permanent Photo Station 24
Looking Downstream

Raccoon Branch 1B – Permanent Photo Station 24
Looking Downstream

Pine Branch – Permanent Photo Station 24
Looking Upstream

Raccoon Branch 1B – Permanent Photo Station 25
Looking Upstream

Raccoon Branch 1C – Permanent Photo Station 25
Looking Downstream

Raccoon Branch 1C – Permanent Photo Station 26
Looking Upstream

Raccoon Branch 1D – Permanent Photo Station 26
Looking Downstream

Raccoon Branch 1D – Permanent Photo Station 27
Looking Upstream

Raccoon Branch 1D – Permanent Photo Station 27
Looking Downstream

Coats Branch 1A – Permanent Photo Station 28
Looking Downstream

Coats Branch 1B – Permanent Photo Station 29
Looking Downstream

Coats Branch 1B – Permanent Photo Station 30
Looking Upstream

Coats Branch 1B – Permanent Photo Station 30
Looking Downstream

Coats Branch 1B – Permanent Photo Station 31
Looking Upstream from Crossing

Coats Branch 1C – Permanent Photo Station 31
Looking Downstream from Crossing

Coats Branch 1C – Permanent Photo Station 32
Looking Upstream

Coats Branch 1C – Permanent Photo Station 32
Looking Downstream

Coats Branch 1D – Permanent Photo Station 33
Looking Upstream

Coats Branch 1D – Permanent Photo Station 33
Looking Downstream

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Appendix C
Vegetation Plot Data

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Table 5. Current Plot Data (MY0) 2019
Fletcher Mitigation Site

Current Plot Data (MY0 2019)

Scientific Name	Common Name	Species Type	Plot 1			Plot 2			Plot 3			Plot 4			Plot 5			Plot 6			Plot 7			Plot 8			Plot 9			Plot 10			Plot 11			Plot 12			Plot 13			Plot 14			Plot 15			Plot 16		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer negundo	Box Elder	Tree	3	3	3	3	3	3	3	3	3	6	6	6	2	2	2	2	2	2	2	2	2	3	3	3				7	7	7	1	1	1	4	4	4	2	2	2	2	2	2	3	3	3			
Aronia arbutifolia	Red Chokeberry	Shrub																																															
Asimina triloba	Common Pawpaw	Shrub Tree													1	1	1																													2	2	2
Betula nigra	River Birch	Tree	3	3	3	5	5	5	2	2	2							4	4	4	3	3	3	2	2	2	2	2	2	1	1	1	4	4	4	5	5	5	5	5	5	4	4	4	7	7	7	2	2	2
Carpinus caroliniana	American Hornbeam	Shrub Tree	1	1	1				4	4	4				4	4	4	3	3	3				2	2	2	4	4	4							1	1	1				2	2	2	4	4	4	4	4	4
Cephalanthus occidentalis	Buttonbush	Shrub Tree																																													4	4	4
Cornus amomum	Silky Dogwood	Shrub Tree										1	1	1	3	3	3				2	2	2	1	1	1							4	4	4										2	2	2			
Fraxinus pennsylvanica	Green Ash	Tree	7	7	7	3	3	3	4	4	4				4	4	4	1	1	1	2	2	2	6	6	6	3	3	3	3	3	3	3	3	3	1	1	1	2	2	2	3	3	3	4	4	4	3	3	3
Lindera benzoin	Northern Spicebush	Shrub Tree	1	1	1							3	3	3				1	1	1							4	4	4	2	2	2																	
Liriodendron tulipifera	Tulip Poplar	Tree	3	3	3	4	4	4				1	1	1							1	1	1	4	4	4	5	5	5				1	1	1				1	1	1				2	2	2	1	1	1
Platanus occidentalis	Sycamore	Tree				4	4	4	2	2	2	3	3	3	1	1	1	1	1	1	2	2	2	3	3	3	6	6	6	6	6	6	4	4	4				3	3	3	6	6	6				3	3	3
Salix sericea	Silky Willow	Shrub Tree																																					1	1	1							2	2	2
Sambucus canadensis	Common Elderberry	Shrub Tree										1	1	1				3	3	3	2	2	2																									3	3	3
Stem count			18	18	18	19	19	19	15	15	15	15	15	15	15	15	15	15	15	15	14	14	14	21	21	21	24	24	24	19	19	19	17	17	17	11	11	11	14	14	14	17	17	17	22	22	22	24	24	24
size (ares)			1			1			1			1			1			1			1			1			1			1			1			1			1			1			1			1		
size (ACRES)			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
Species count			6	6	6	5	5	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	6	6	6	5	5	5	6	6	6	4	4	4	6	6	6	5	5	5	6	6	6	9	9	9
Stems per ACRE			728	728	728	769	769	769	607	607	607	607	607	607	607	607	607	607	607	607	567	567	567	850	850	850	971	971	971	769	769	769	688	688	688	445	445	445	567	567	567	688	688	688	890	890	890	971	971	971

Table 5. Current Plot Data (MY0) 2019
Fletcher Mitigation Site

Current Plot Data (MY0 2019)

Scientific Name	Common Name	Species Type	Plot 17			Plot 18			Plot 19			Plot 20			Plot 21			Plot 22			Plot 23			Plot 24			Plot 25			Plot 26			Annual Means MY0 (2019)		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer negundo	Box Elder	Tree	3	3	3	10	10	10	2	2	2	1	1	1	3	3	3	4	4	4													66	66	66
Aronia arbutifolia	Red Chokeberry	Shrub													1	1	1													3	3	3	4	4	4
Asimina triloba	Common Pawpaw	Shrub Tree							1	1	1	5	5	5	3	3	3				2	2	2	4	4	4	3	3	3	7	7	7	28	28	28
Betula nigra	River Birch	Tree	1	1	1	2	2	2				5	5	5	6	6	6	1	1	1													64	64	64
Carpinus caroliniana	American Hornbeam	Shrub Tree	1	1	1	4	4	4	4	4	4										13	13	13							1	1	1	52	52	52
Cephalanthus occidentalis	Buttonbush	Shrub Tree							2	2	2				1	1	1				1	1	1	1	1	1	1	1	1	4	4	4	14	14	14
Cornus amomum	Silky Dogwood	Shrub Tree													1	1	1				1	1	1	1	1	1	4	4	4				20	20	20
Fraxinus pennsylvanica	Green Ash	Tree	4	4	4	2	2	2	1	1	1	3	3	3	3	3	3	2	2	2				3	3	3							67	67	67
Lindera benzoin	Northern Spicebush	Shrub Tree							2	2	2				2	2	2	2	2	2				5	5	5	2	2	2	1	1	1	25	25	25
Liriodendron tulipifera	Tulip Poplar	Tree				1	1	1	2	2	2	3	3	3	1	1	1	1	1	1													31	31	31
Platanus occidentalis	Sycamore	Tree	3	3	3	1	1	1	4	4	4				1	1	1	7	7	7													60	60	60
Salix sericea	Silky Willow	Shrub Tree	1	1	1				2	2	2	1	1	1				1	1	1							1	1	1	2	2	2	11	11	11
Sambucus canadensis	Common Elderberry	Shrub Tree	2	2	2																												11	11	11
Stem count			15	15	15	20	20	20	20	20	20	18	18	18	22	22	22	18	18	18	17	17	17	14	14	14	11	11	11	18	18	18	453	453	453
size (ares)			1			1			1			1			1			1			1			1			1			1			26		
size (ACRES)			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.64		
Species count			7	7	7	6	6	6	9	9	9	6	6	6	10	10	10	7	7	7	4	4	4	5	5	5	5	5	5	6	6	6	13	13	13
Stems per ACRE			607	607	607	809	809	809	809	809	809	728	728	728	890	890	890	728	728	728	688	688	688	567	567	567	445	445	445	728	728	728	705	705	705

P=Planted, T=Planted & Volunteer

Color for Density

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

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Table 6. Vegetation Plot Criteria Attainment Fletcher Mitigation Site		
Vegetation Plot ID	Vegetation Survival Threshold Met?	Tract Mean
1	Yes	100%
2	Yes	
3	Yes	
4	Yes	
5	Yes	
6	Yes	
7	Yes	
8	Yes	
9	Yes	
10	Yes	
11	Yes	
12	Yes	
13	Yes	
14	Yes	
15	Yes	
16	Yes	
17	Yes	
18	Yes	
19	Yes	
20	Yes	
21	Yes	
22	Yes	
23	Yes	
24	Yes	
25	Yes	
26	Yes	

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Appendix D
Stream Measurement and Geomorphology Data

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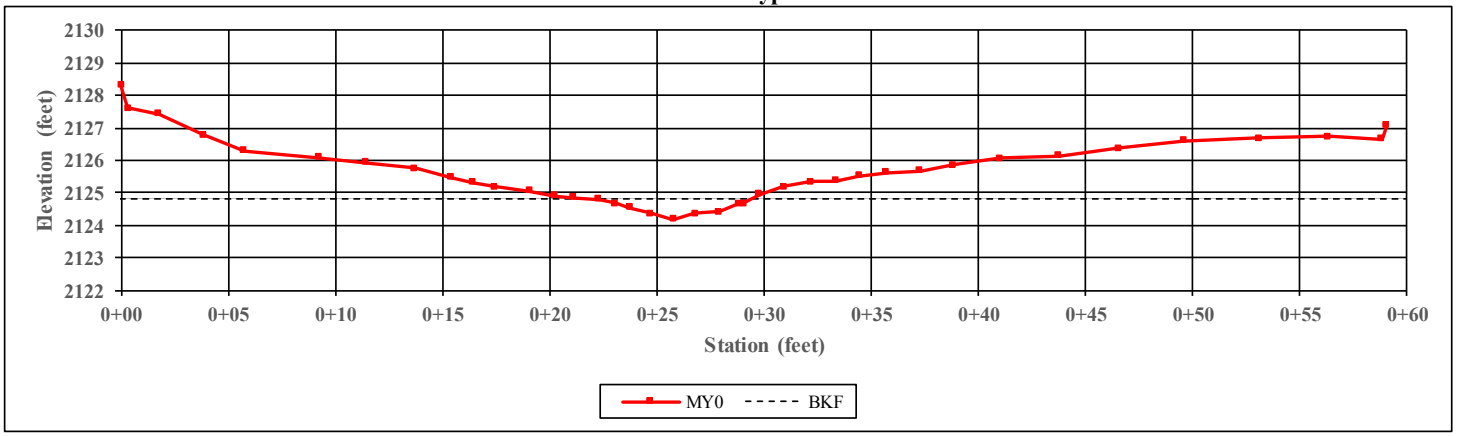
Project Name: Fletcher Mitigation Site **XS Number:** 1 **Station:** 107+51

Reach Name: Fletcher Creek Reach 1B **XS Type:** Riffle



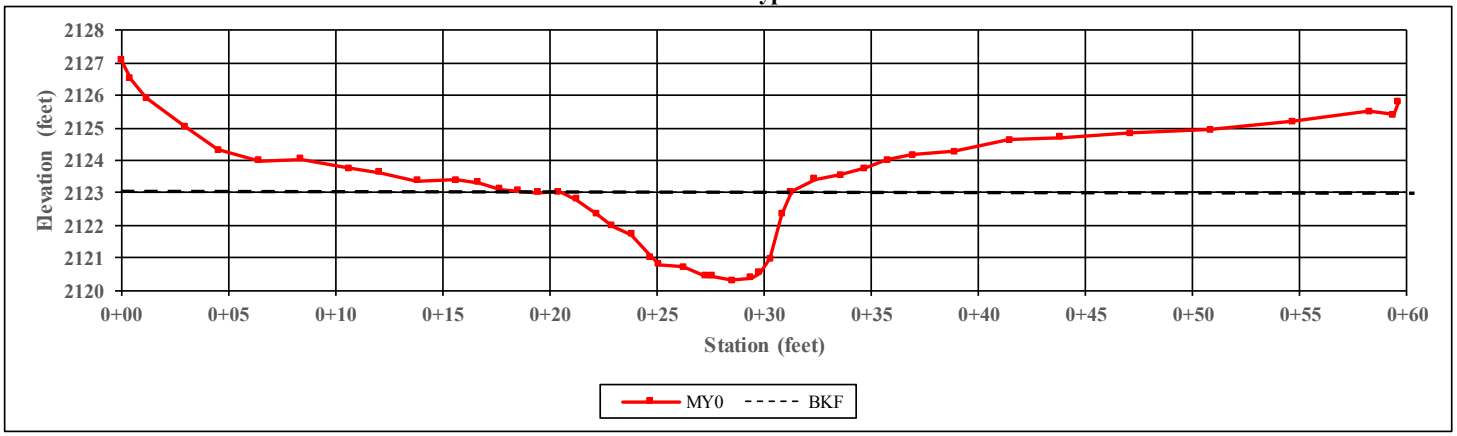
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	7.1	-	-	-	-	-	-	-
Floodprone Width (ft)	20.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.3	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	0.6	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	2.3	-	-	-	-	-	-	-
Width/Depth Ratio	21.4	-	-	-	-	-	-	-
Entrenchment Ratio	2.8	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	0.6	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 2 **Station:** 109+16

Reach Name: Fletcher Creek Reach 1B **XS Type:** Pool



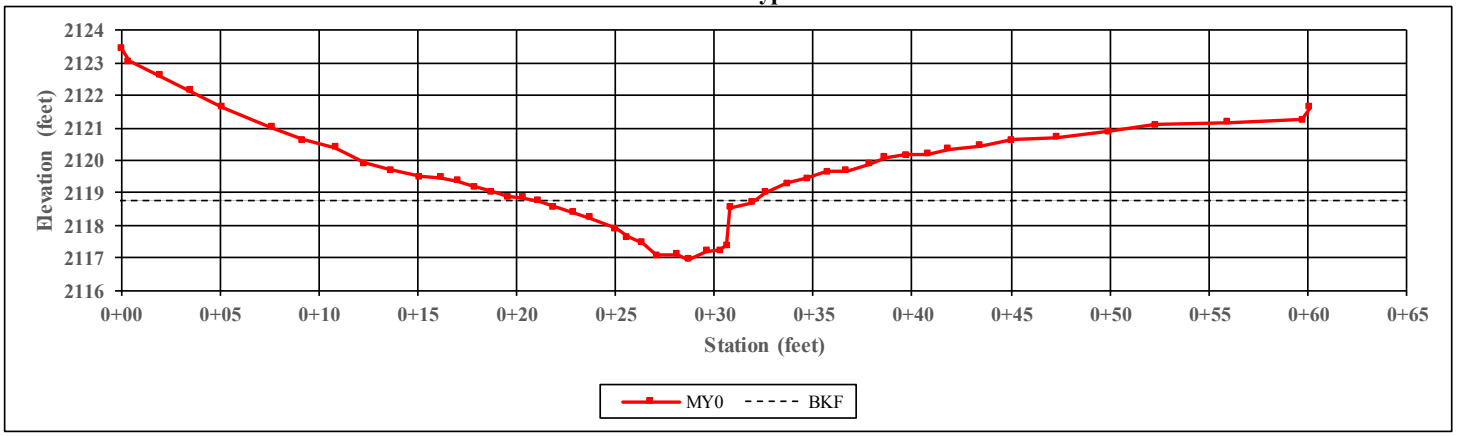
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	10.9	-	-	-	-	-	-	-
Floodprone Width (ft)	60.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	1.7	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	2.7	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	18.3	-	-	-	-	-	-	-
Width/Depth Ratio	6.5	-	-	-	-	-	-	-
Entrenchment Ratio	5.5	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	2.7	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 3 **Station:** 112+04

Reach Name: Fletcher Creek Reach 1C **XS Type:** Pool



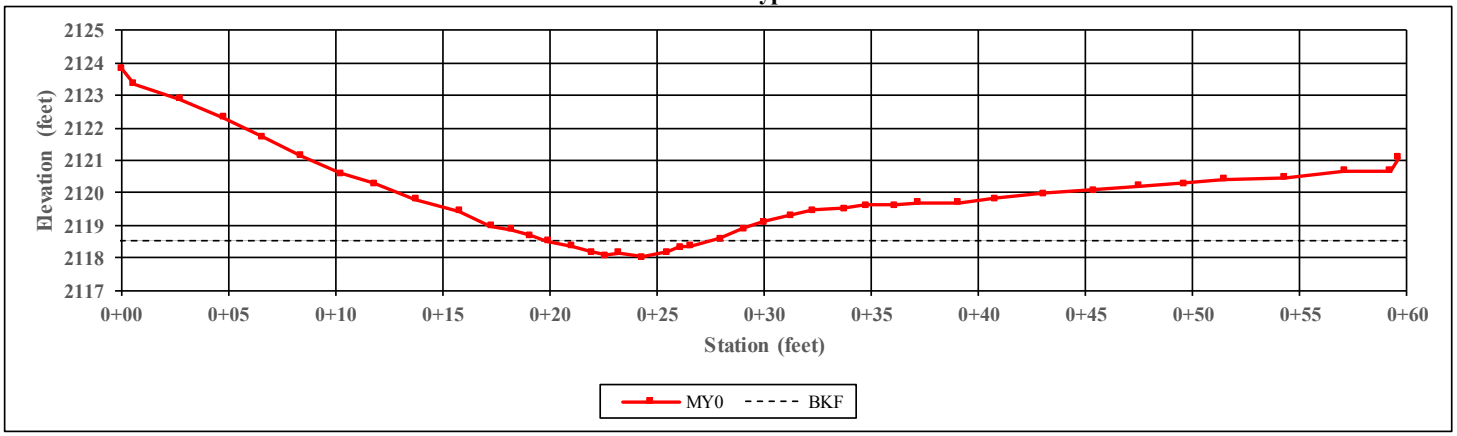
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	10.9	-	-	-	-	-	-	-
Floodprone Width (ft)	40.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.9	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.8	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	10.3	-	-	-	-	-	-	-
Width/Depth Ratio	11.6	-	-	-	-	-	-	-
Entrenchment Ratio	3.7	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.8	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 4 **Station:** 112+24

Reach Name: Fletcher Creek Reach 1C **XS Type:** Riffle



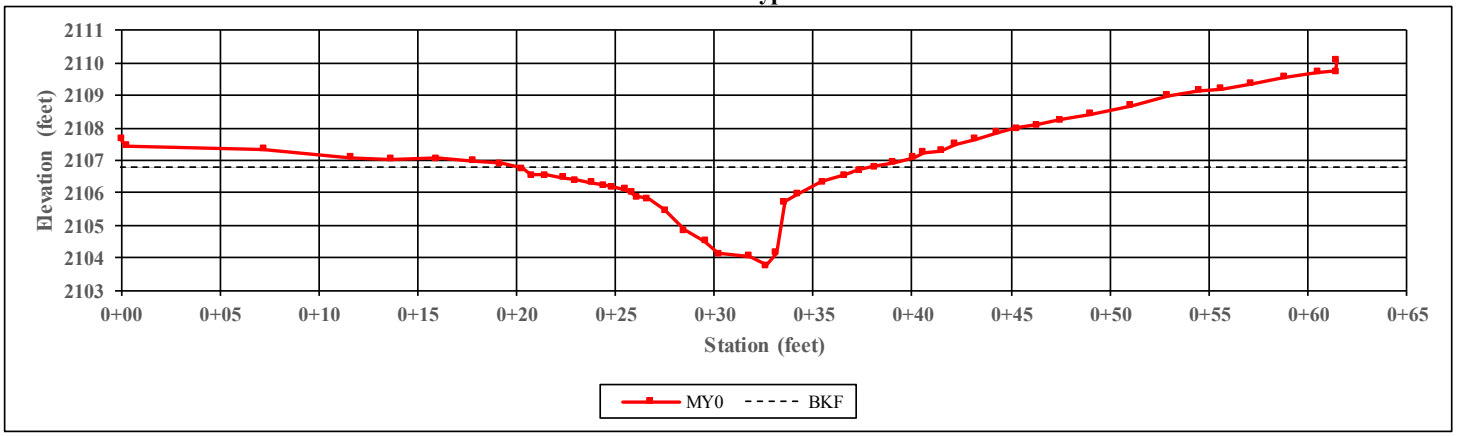
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	7.6	-	-	-	-	-	-	-
Floodprone Width (ft)	10.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.3	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	0.5	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	2.1	-	-	-	-	-	-	-
Width/Depth Ratio	27.6	-	-	-	-	-	-	-
Entrenchment Ratio	1.3	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	0.5	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 5 **Station:** 122+51

Reach Name: Fletcher Creek Reach 1C **XS Type:** Pool



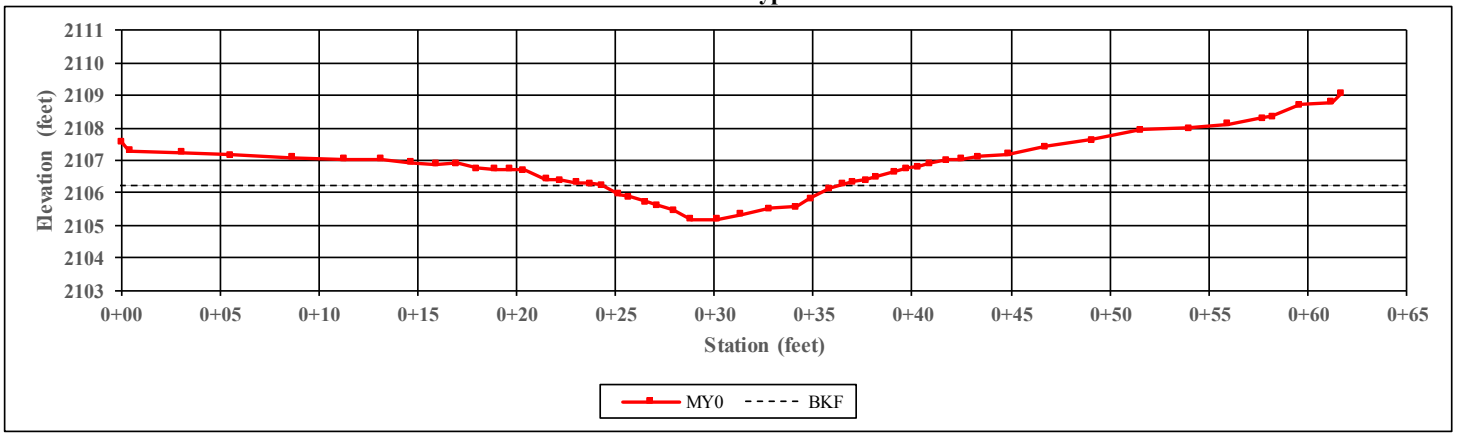
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	16.6	-	-	-	-	-	-	-
Floodprone Width (ft)	60.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	1.2	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	3.0	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	20.3	-	-	-	-	-	-	-
Width/Depth Ratio	13.7	-	-	-	-	-	-	-
Entrenchment Ratio	3.6	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	3.0	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 6 **Station:** 122+74

Reach Name: Fletcher Creek Reach 1C **XS Type:** Riffle



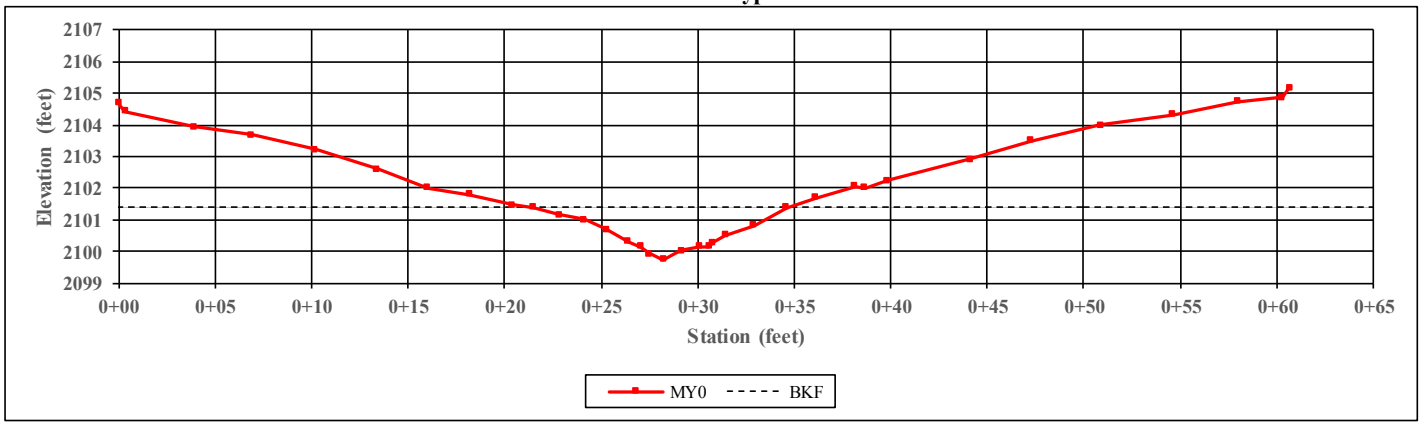
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	12.0	-	-	-	-	-	-	-
Floodprone Width (ft)	50.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.6	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.0	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	7.5	-	-	-	-	-	-	-
Width/Depth Ratio	19.2	-	-	-	-	-	-	-
Entrenchment Ratio	4.2	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.2	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 7 **Station:** 126+85

Reach Name: Fletcher Creek Reach 2A **XS Type:** Riffle



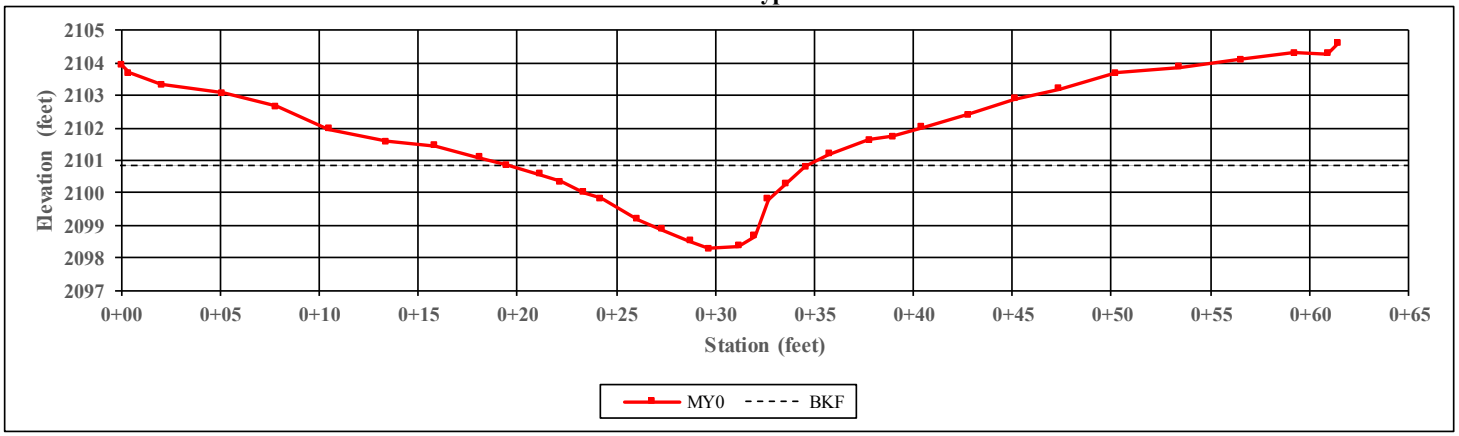
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	13.1	-	-	-	-	-	-	-
Floodprone Width (ft)	35.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.8	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.6	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	10.4	-	-	-	-	-	-	-
Width/Depth Ratio	16.5	-	-	-	-	-	-	-
Entrenchment Ratio	2.7	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.6	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 8 **Station:** 127+03

Reach Name: Fletcher Creek Reach 2A **XS Type:** Pool



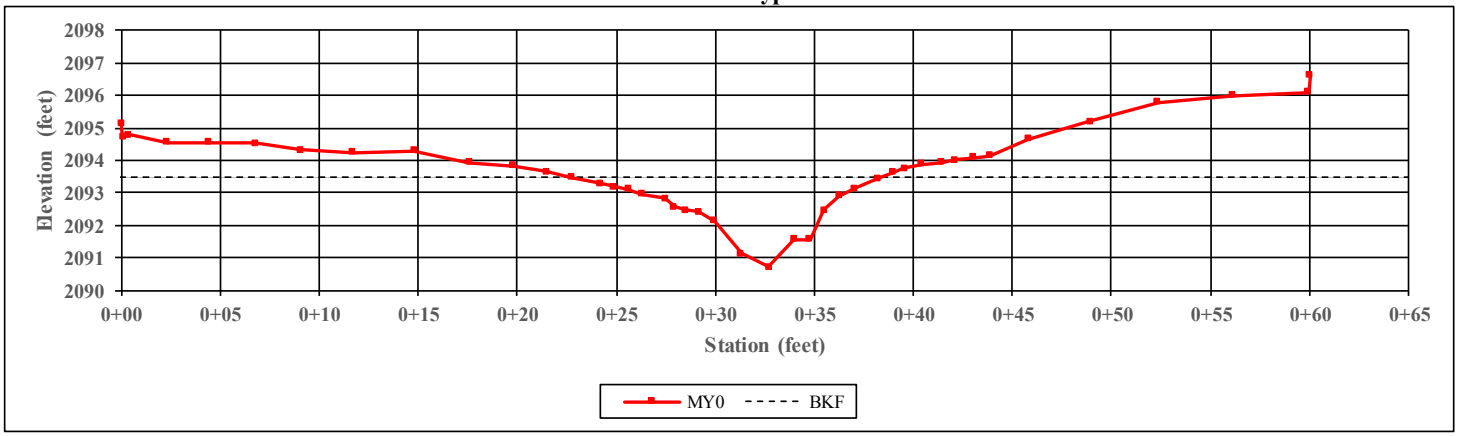
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	15.3	-	-	-	-	-	-	-
Floodprone Width (ft)	50.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	1.3	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	2.6	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	20.5	-	-	-	-	-	-	-
Width/Depth Ratio	11.4	-	-	-	-	-	-	-
Entrenchment Ratio	3.3	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	2.6	-	-	-	-	-	-	-

Left Descending Bank

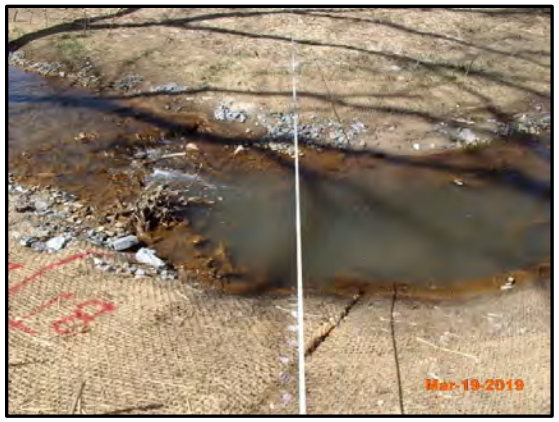
Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 9 **Station:** 133+19

Reach Name: Fletcher Creek Reach 2A **XS Type:** Pool



CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	15.6	-	-	-	-	-	-	-
Floodprone Width (ft)	60.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	1.1	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	2.8	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	16.9	-	-	-	-	-	-	-
Width/Depth Ratio	14.4	-	-	-	-	-	-	-
Entrenchment Ratio	3.9	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	2.8	-	-	-	-	-	-	-

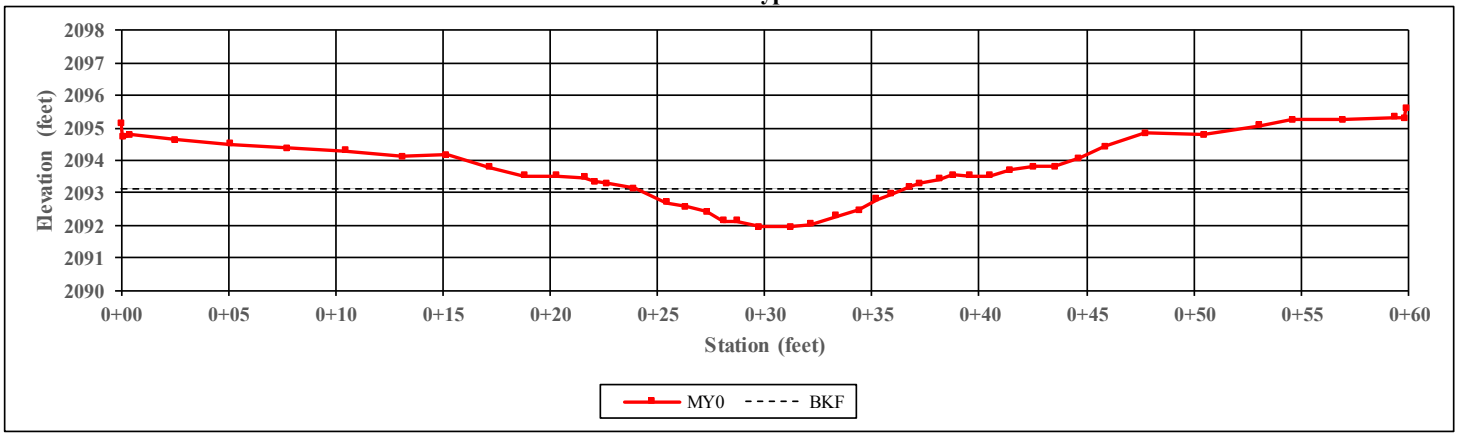


Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 10 **Station:** 133+36

Reach Name: Fletcher Creek Reach 2A **XS Type:** Riffle



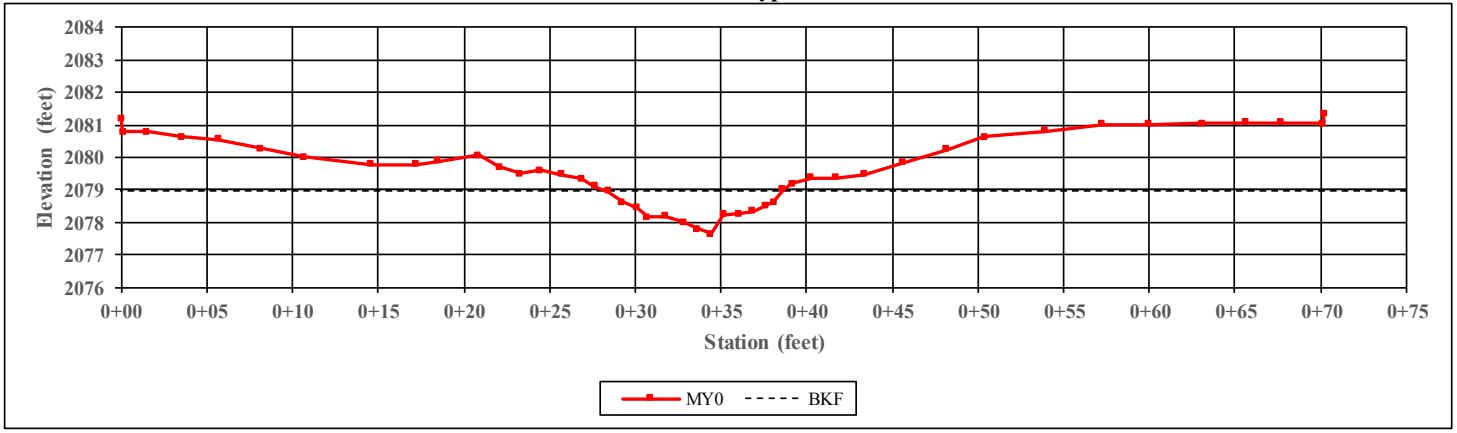
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	12.6	-	-	-	-	-	-	-
Floodprone Width (ft)	50.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.7	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.2	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	9.2	-	-	-	-	-	-	-
Width/Depth Ratio	17.4	-	-	-	-	-	-	-
Entrenchment Ratio	4.0	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.5	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 11 **Station:** 147+71

Reach Name: Fletcher Creek Reach 2B **XS Type:** Riffle



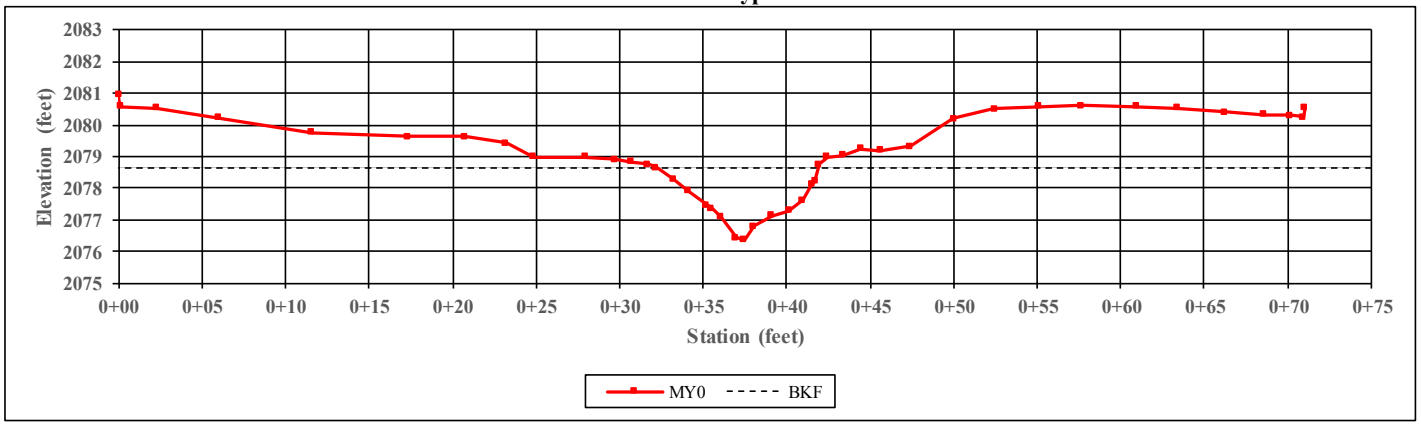
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	10.2	-	-	-	-	-	-	-
Floodprone Width (ft)	40.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.7	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.3	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	7.1	-	-	-	-	-	-	-
Width/Depth Ratio	14.6	-	-	-	-	-	-	-
Entrenchment Ratio	3.9	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.3	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 12 **Station:** 148+00

Reach Name: Fletcher Creek Reach 2B **XS Type:** Pool



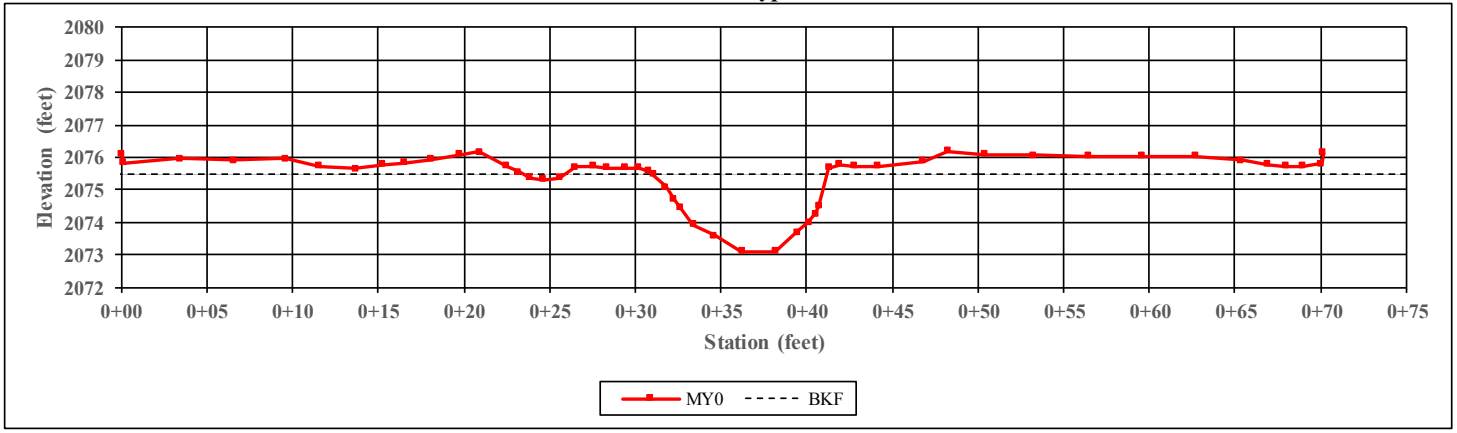
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	9.7	-	-	-	-	-	-	-
Floodprone Width (ft)	70.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	1.2	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	2.3	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	11.7	-	-	-	-	-	-	-
Width/Depth Ratio	8.1	-	-	-	-	-	-	-
Entrenchment Ratio	7.2	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	2.3	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 13 **Station:** 153+30

Reach Name: Fletcher Creek Reach 2B **XS Type:** Pool



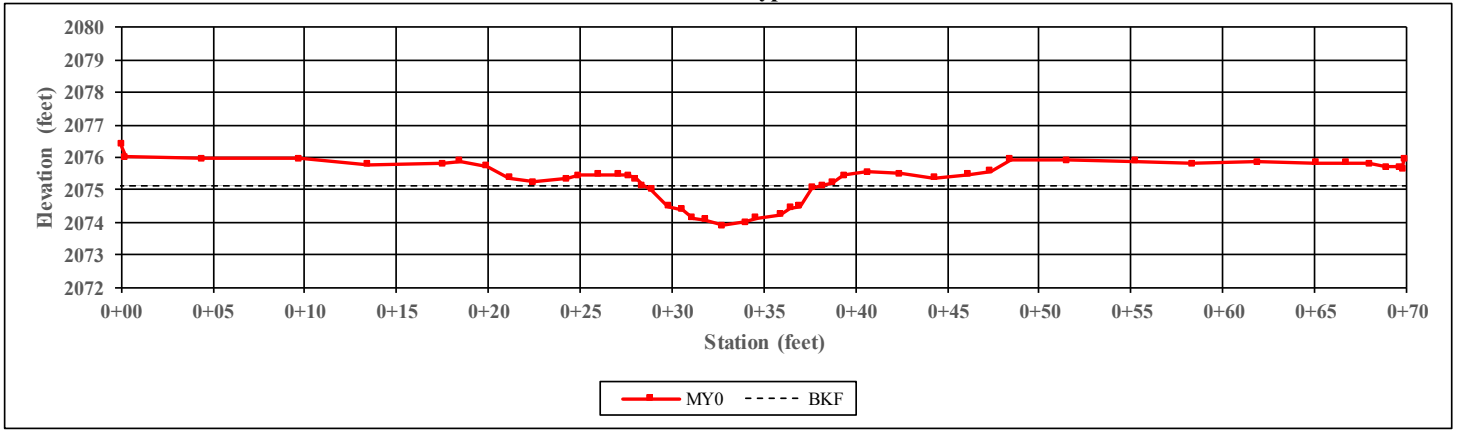
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	10.1	-	-	-	-	-	-	-
Floodprone Width (ft)	70.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	1.6	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	2.4	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	16.4	-	-	-	-	-	-	-
Width/Depth Ratio	6.2	-	-	-	-	-	-	-
Entrenchment Ratio	6.9	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	2.4	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 14 **Station:** 153+48

Reach Name: Fletcher Creek Reach 2B **XS Type:** Riffle



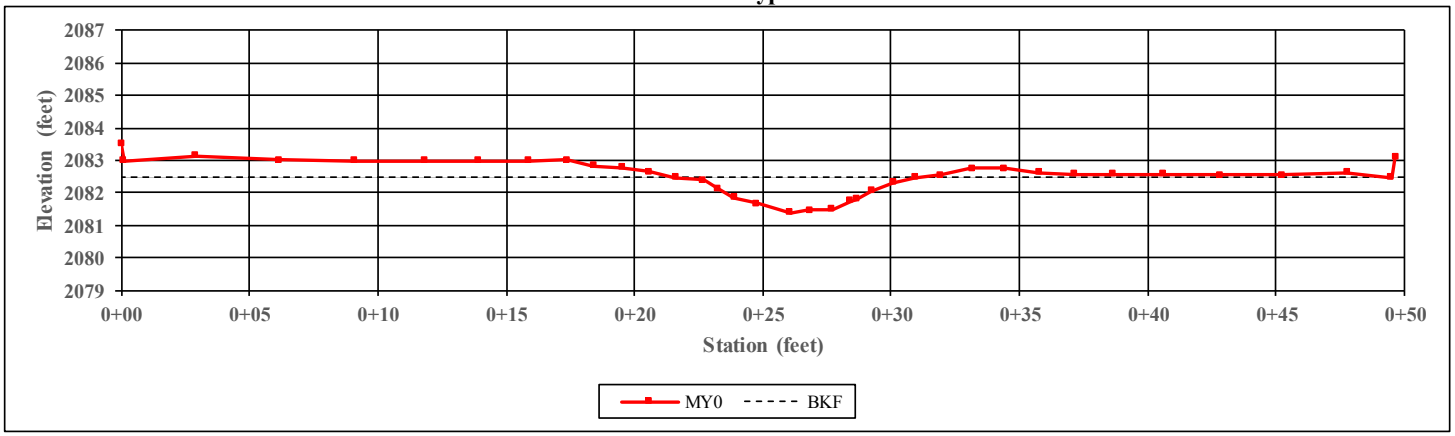
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	9.8	-	-	-	-	-	-	-
Floodprone Width (ft)	70.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.8	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.2	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	7.6	-	-	-	-	-	-	-
Width/Depth Ratio	12.6	-	-	-	-	-	-	-
Entrenchment Ratio	7.2	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.2	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 15 **Station:** 406+40

Reach Name: Weston Creek Reach 1A **XS Type:** Riffle



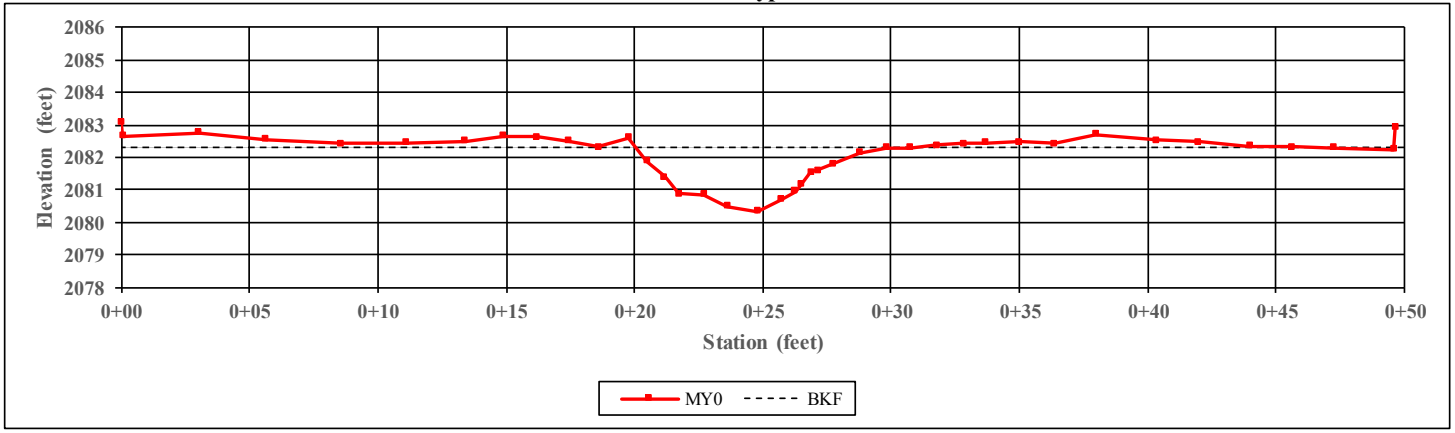
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	9.1	-	-	-	-	-	-	-
Floodprone Width (ft)	50.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.6	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.1	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	5.4	-	-	-	-	-	-	-
Width/Depth Ratio	15.5	-	-	-	-	-	-	-
Entrenchment Ratio	5.5	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.1	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 16 **Station:** 406+87

Reach Name: Weston Creek Reach 1A **XS Type:** Pool



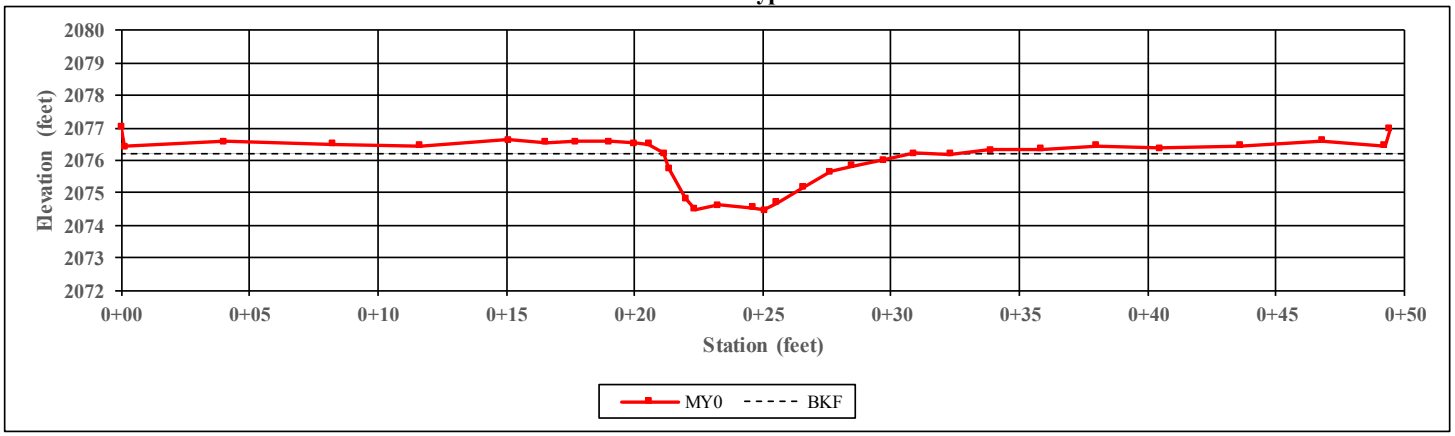
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	9.7	-	-	-	-	-	-	-
Floodprone Width (ft)	50.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	1.1	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	2.0	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	10.4	-	-	-	-	-	-	-
Width/Depth Ratio	9.1	-	-	-	-	-	-	-
Entrenchment Ratio	5.1	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	2.0	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 17 **Station:** 418+23

Reach Name: Weston Creek Reach 1A **XS Type:** Pool



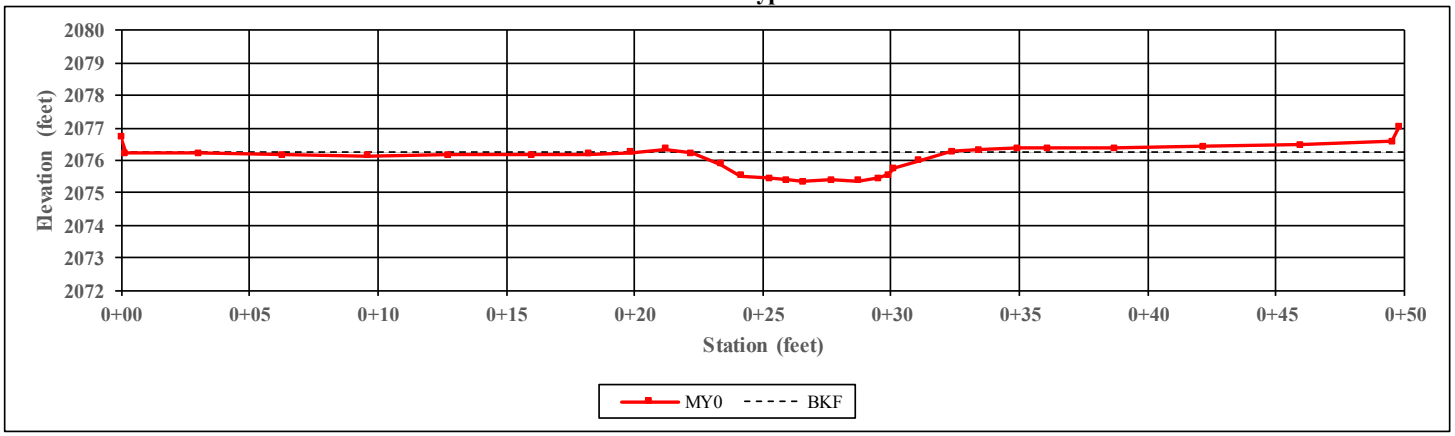
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	9.8	-	-	-	-	-	-	-
Floodprone Width (ft)	50.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	1.0	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.7	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	9.4	-	-	-	-	-	-	-
Width/Depth Ratio	10.1	-	-	-	-	-	-	-
Entrenchment Ratio	5.1	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.7	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 18 **Station:** 418+53

Reach Name: Weston Creek Reach 1A **XS Type:** Riffle



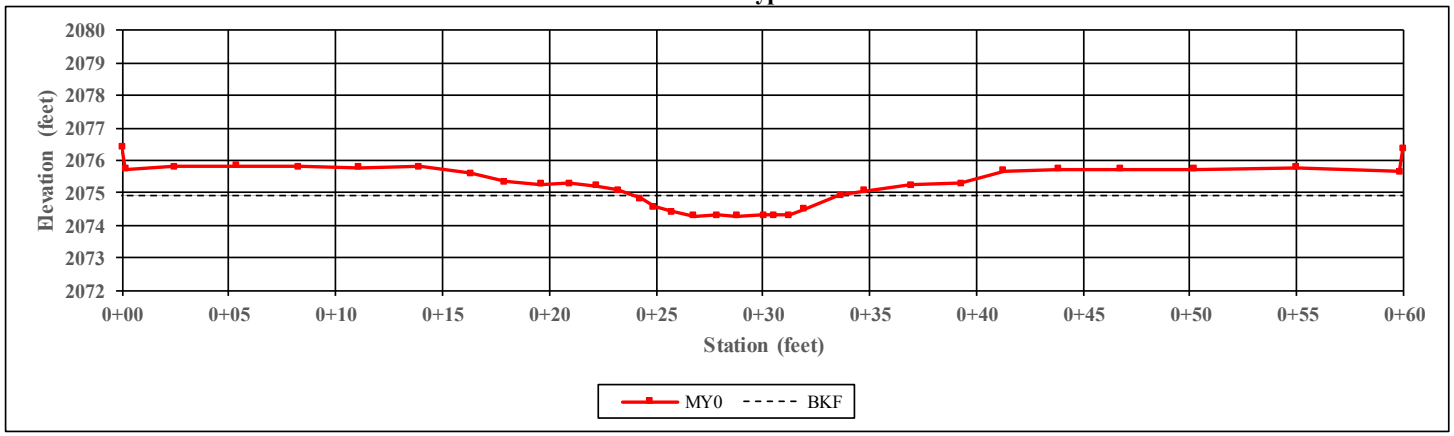
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	10.4	-	-	-	-	-	-	-
Floodprone Width (ft)	50.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.6	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	0.9	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	6.2	-	-	-	-	-	-	-
Width/Depth Ratio	17.4	-	-	-	-	-	-	-
Entrenchment Ratio	4.8	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	0.9	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 19 **Station:** 422+31

Reach Name: Weston Creek Reach 1B **XS Type:** Riffle



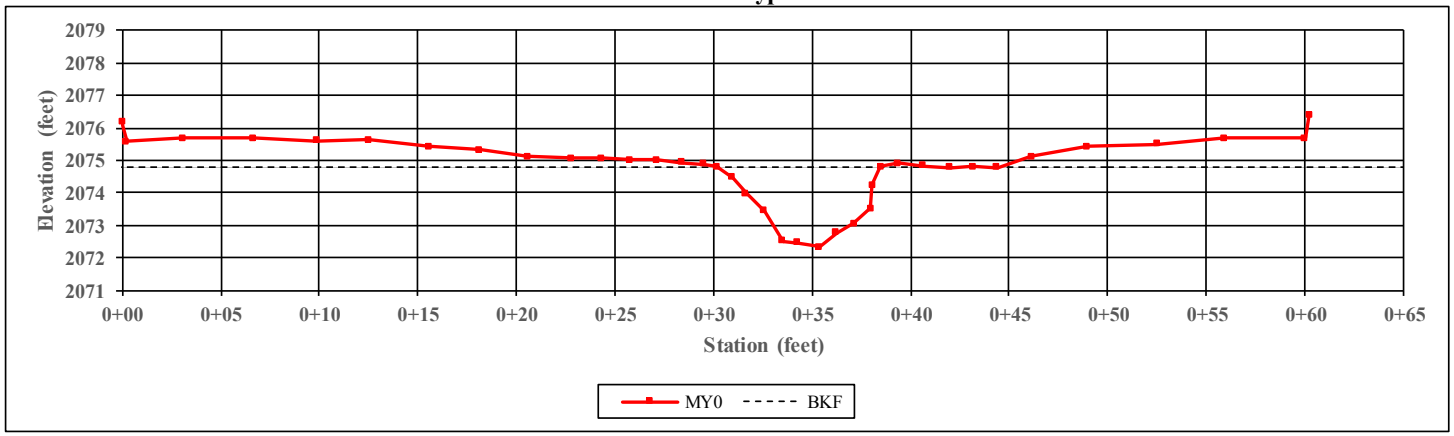
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	9.7	-	-	-	-	-	-	-
Floodprone Width (ft)	40.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.5	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	0.7	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	4.7	-	-	-	-	-	-	-
Width/Depth Ratio	20.4	-	-	-	-	-	-	-
Entrenchment Ratio	4.1	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	0.7	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 20 **Station:** 422+95

Reach Name: Weston Creek Reach 1B **XS Type:** Pool

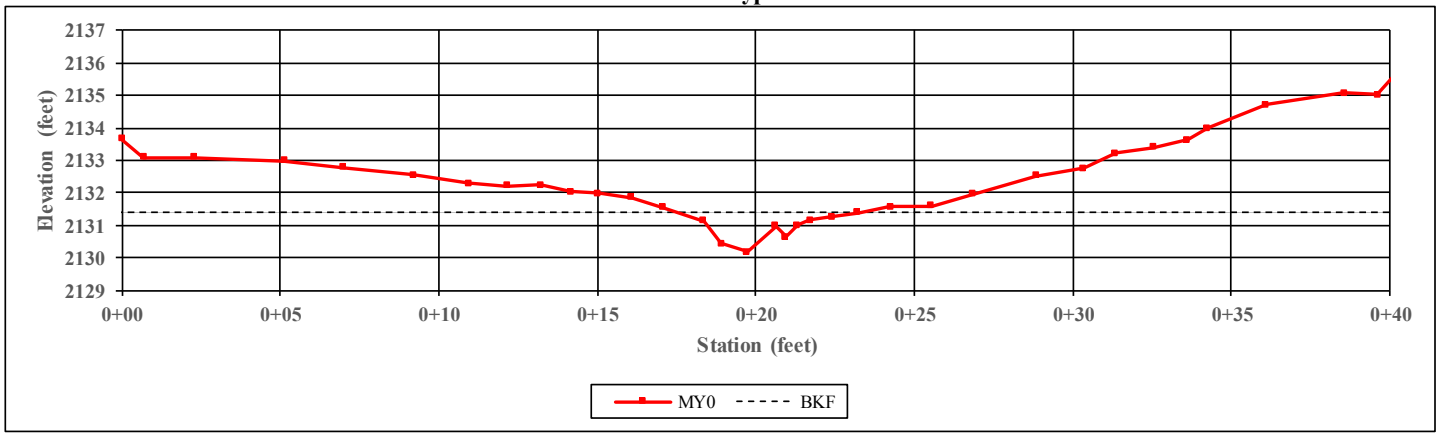


CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	8.3	-	-	-	-	-	-	-
Floodprone Width (ft)	60.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	1.5	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	2.5	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	12.7	-	-	-	-	-	-	-
Width/Depth Ratio	5.4	-	-	-	-	-	-	-
Entrenchment Ratio	7.2	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	2.5	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 21 **Station:** 217+59
Reach Name: Raccoon Branch 1D **XS Type:** Pool

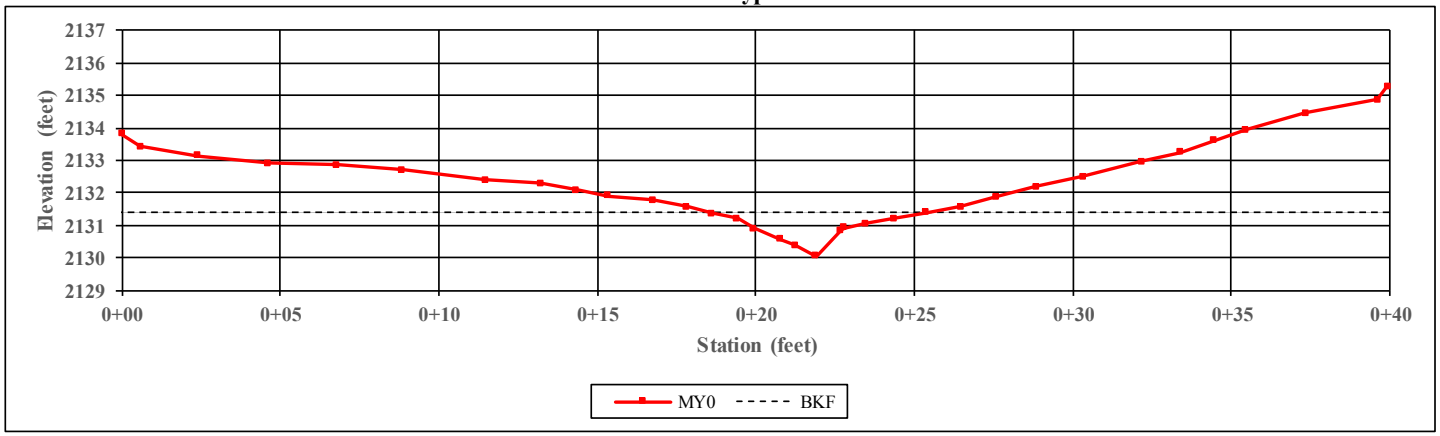


CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	5.6	-	-	-	-	-	-	-
Floodprone Width (ft)	20.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.5	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.2	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	2.7	-	-	-	-	-	-	-
Width/Depth Ratio	11.6	-	-	-	-	-	-	-
Entrenchment Ratio	3.6	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.2	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 22 **Station:** 217+65
Reach Name: Raccoon Branch 1D **XS Type:** Riffle



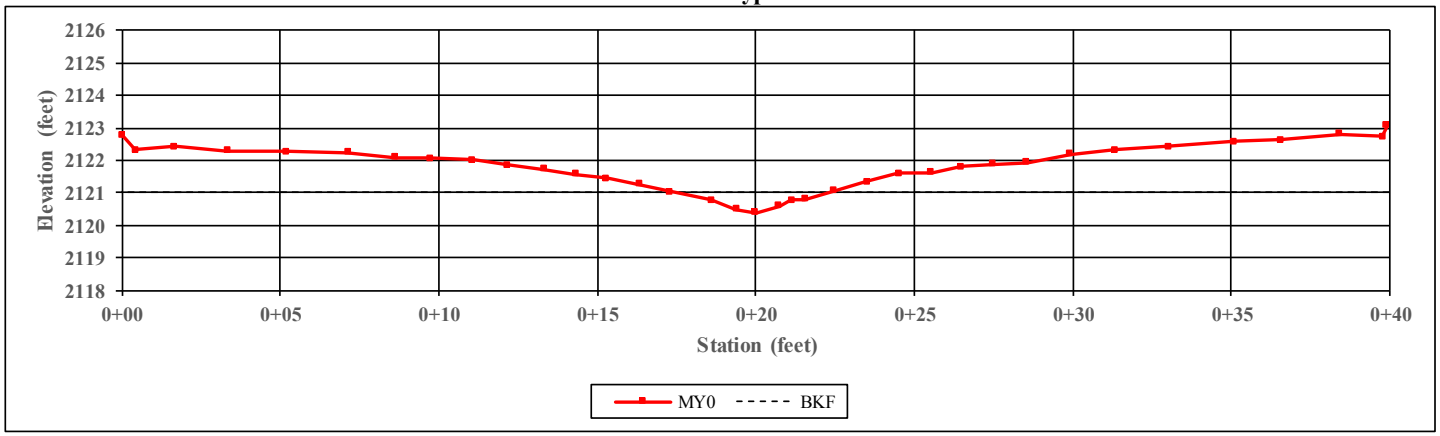
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	6.9	-	-	-	-	-	-	-
Floodprone Width (ft)	20.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.5	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.3	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	3.4	-	-	-	-	-	-	-
Width/Depth Ratio	13.8	-	-	-	-	-	-	-
Entrenchment Ratio	2.9	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.3	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 23 **Station:** 307+87

Reach Name: Coats Branch 1B **XS Type:** Riffle

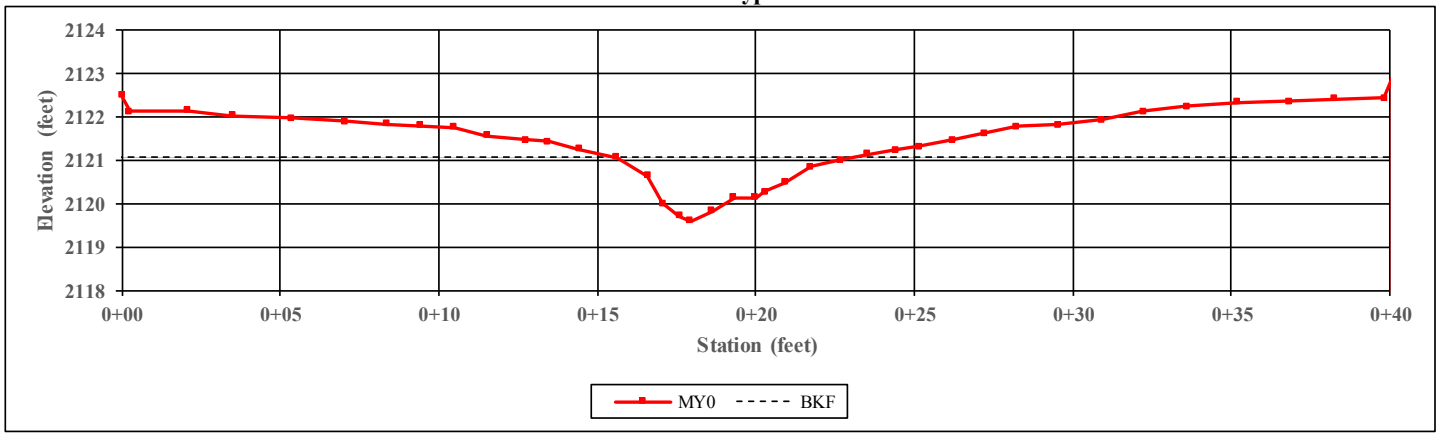


CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	5.2	-	-	-	-	-	-	-
Floodprone Width (ft)	15.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.3	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	0.7	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	1.6	-	-	-	-	-	-	-
Width/Depth Ratio	16.5	-	-	-	-	-	-	-
Entrenchment Ratio	2.9	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	0.7	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 24 **Station:** 307+95
Reach Name: Coats Branch 1B **XS Type:** Pool

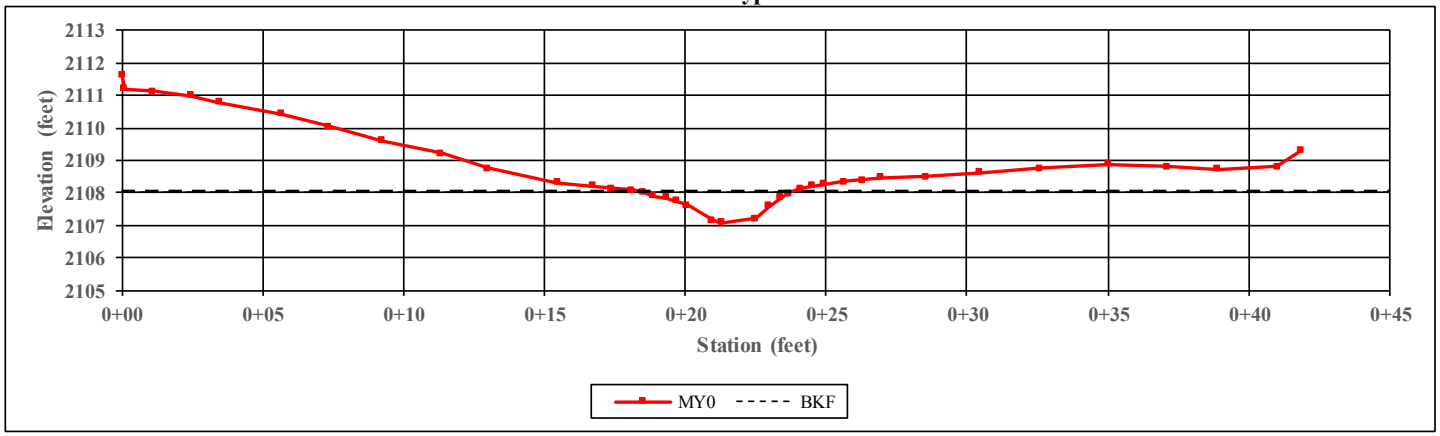


CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	7.4	-	-	-	-	-	-	-
Floodprone Width (ft)	40.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.7	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.5	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	5.1	-	-	-	-	-	-	-
Width/Depth Ratio	10.7	-	-	-	-	-	-	-
Entrenchment Ratio	5.4	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.5	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 25 **Station:** 315+12
Reach Name: Coats Branch 1C **XS Type:** Pool



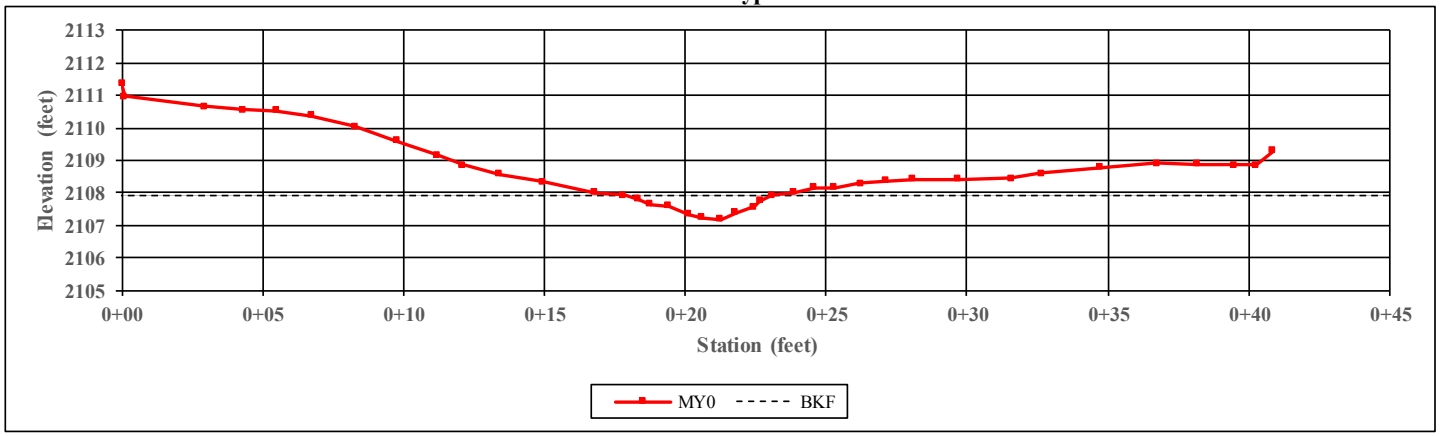
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	5.3	-	-	-	-	-	-	-
Floodprone Width (ft)	20.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.5	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	0.9	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	2.7	-	-	-	-	-	-	-
Width/Depth Ratio	10.5	-	-	-	-	-	-	-
Entrenchment Ratio	3.8	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	0.9	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 26 **Station:** 315+20

Reach Name: Coats Branch 1C **XS Type:** Riffle



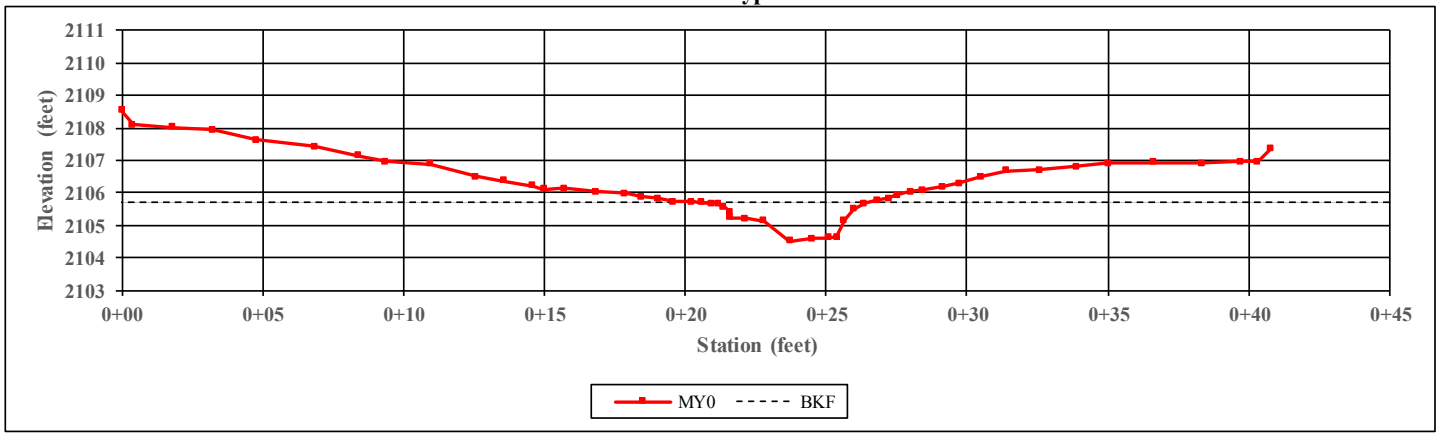
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	5.4	-	-	-	-	-	-	-
Floodprone Width (ft)	20.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.4	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	0.8	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	2.2	-	-	-	-	-	-	-
Width/Depth Ratio	13.5	-	-	-	-	-	-	-
Entrenchment Ratio	3.7	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	0.8	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 27 **Station:** 317+35

Reach Name: Coats Branch 1D **XS Type:** Pool



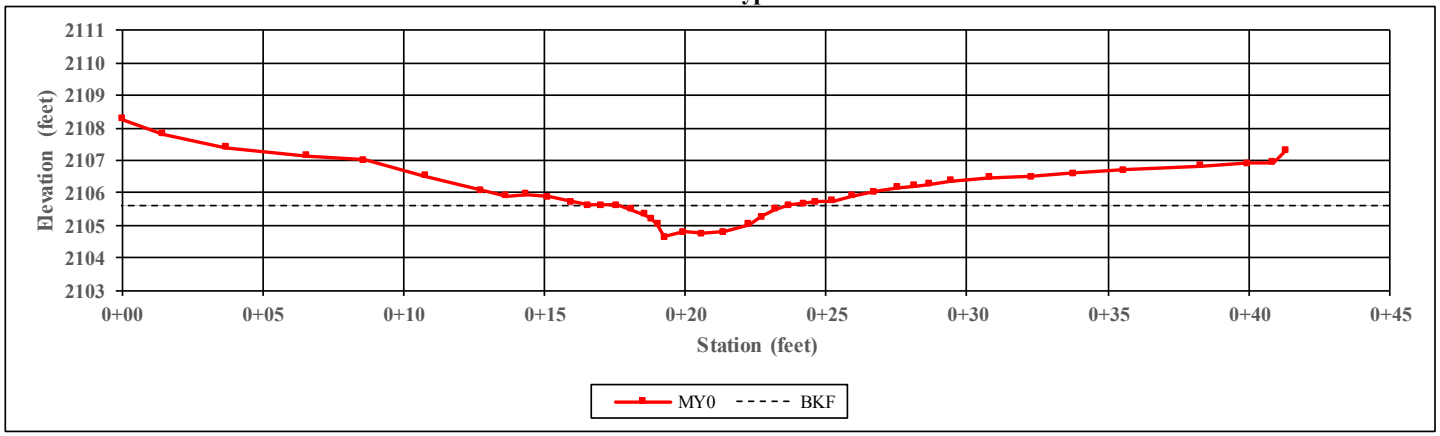
CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	5.9	-	-	-	-	-	-	-
Floodprone Width (ft)	25.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.6	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.2	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	3.7	-	-	-	-	-	-	-
Width/Depth Ratio	9.2	-	-	-	-	-	-	-
Entrenchment Ratio	4.3	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.2	-	-	-	-	-	-	-

Left Descending Bank

Right Descending Bank

Project Name: Fletcher Mitigation Site **XS Number:** 28 **Station:** 317+42

Reach Name: Coats Branch 1D **XS Type:** Riffle

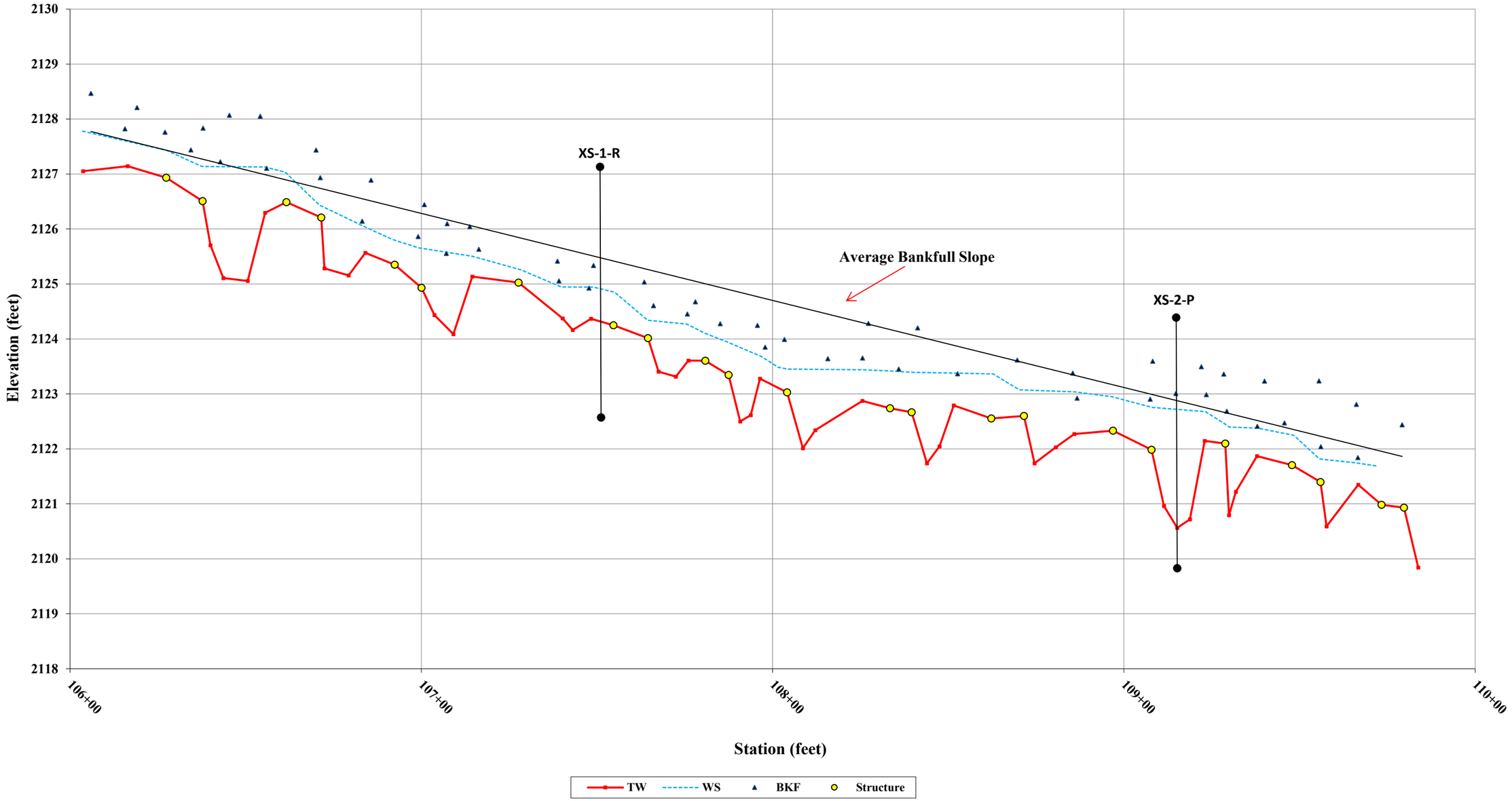


CHANNEL DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)	6.1	-	-	-	-	-	-	-
Floodprone Width (ft)	25.0	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	0.5	-	-	-	-	-	-	-
Bankfull Max Depth (ft)	1.0	-	-	-	-	-	-	-
Bankfull Cross-Sectional Area (ft^2)	3.3	-	-	-	-	-	-	-
Width/Depth Ratio	11.4	-	-	-	-	-	-	-
Entrenchment Ratio	4.1	-	-	-	-	-	-	-
Bank Height Ratio	1.0	-	-	-	-	-	-	-
Low Top of Bank Depth (ft)	1.0	-	-	-	-	-	-	-

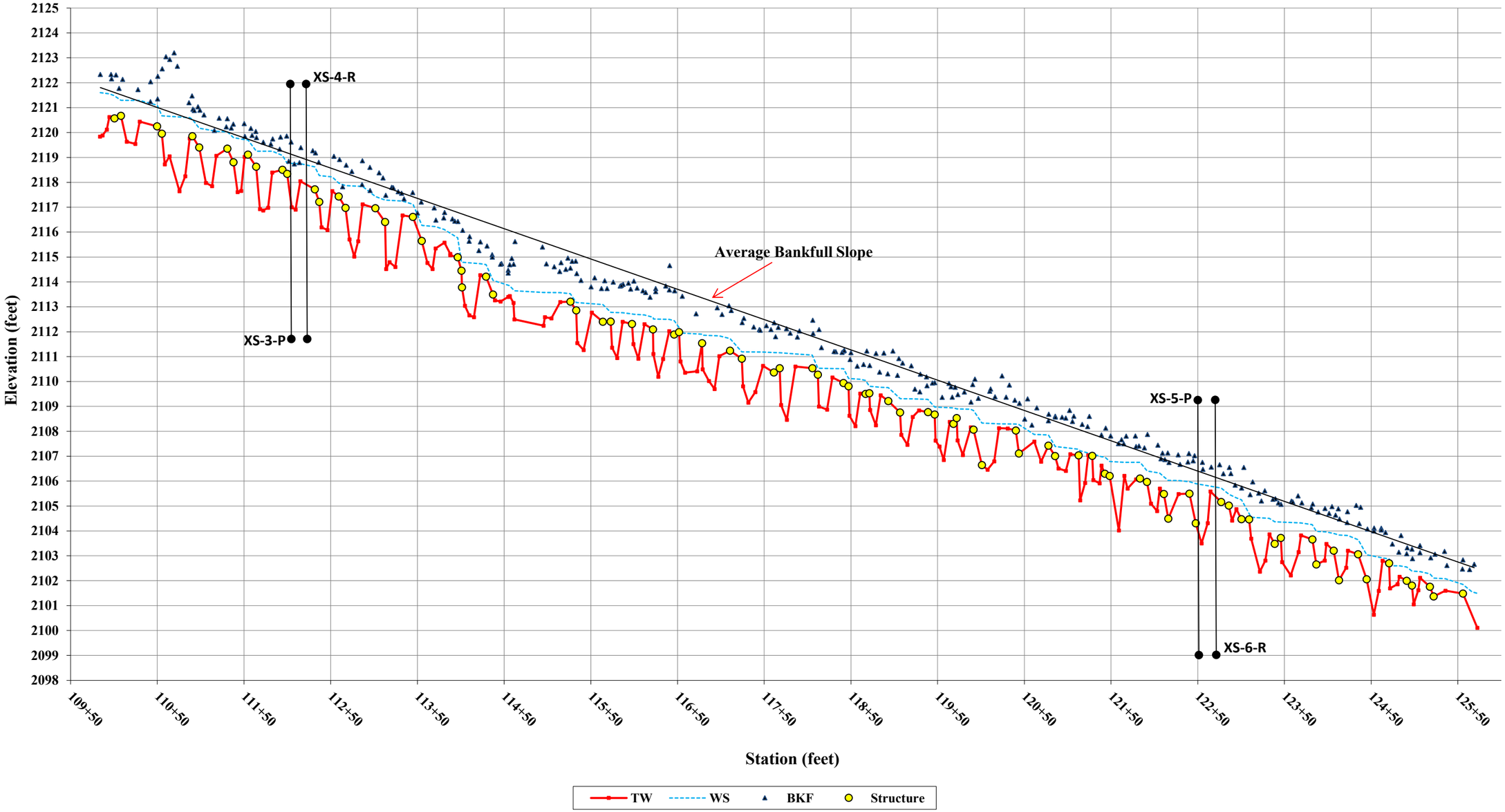
Left Descending Bank

Right Descending Bank

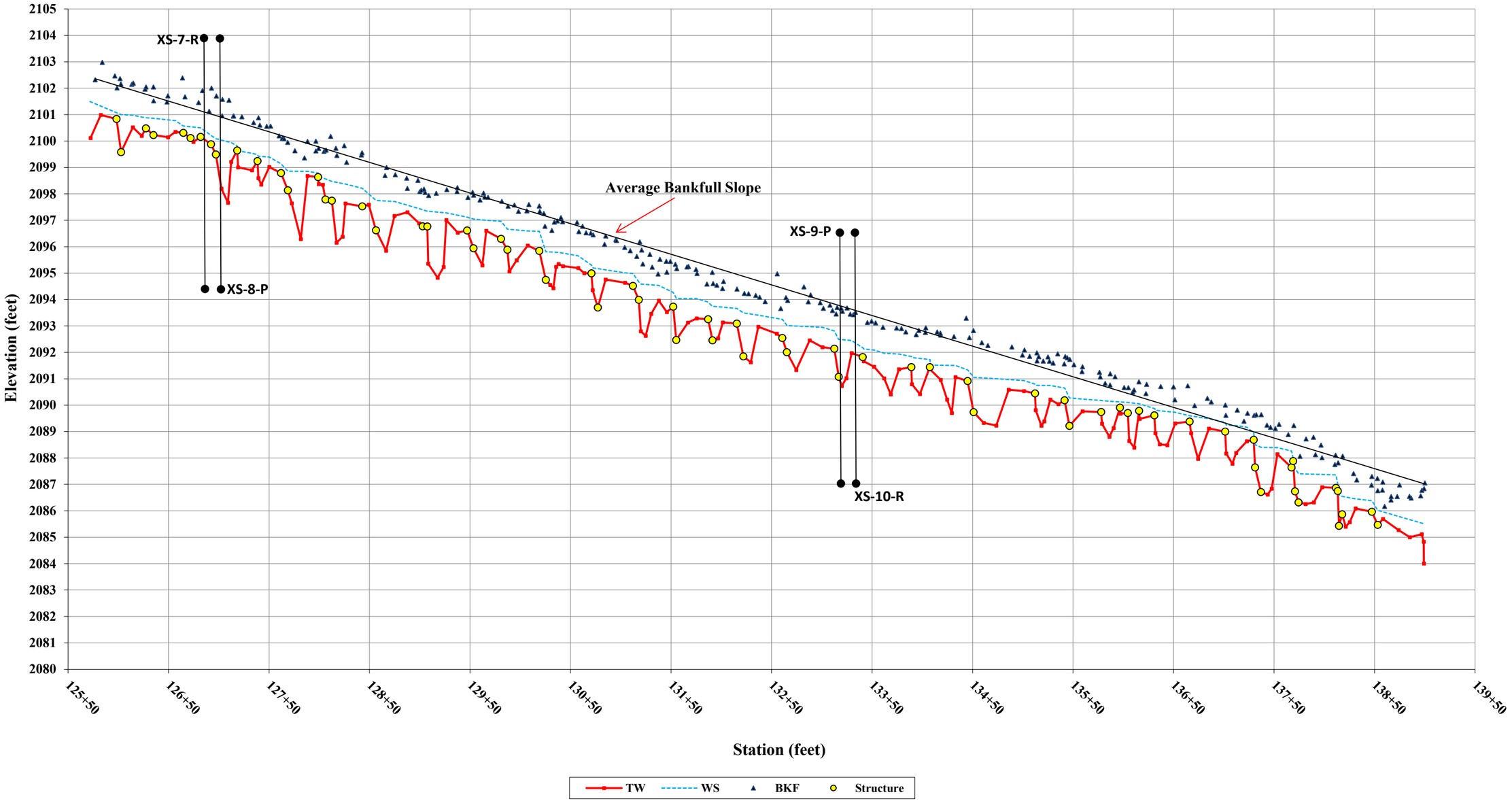
Fletcher Mitigation Site - Fletcher Creek 1B
Longitudinal Profile
Stationing 106+07 to 109+84



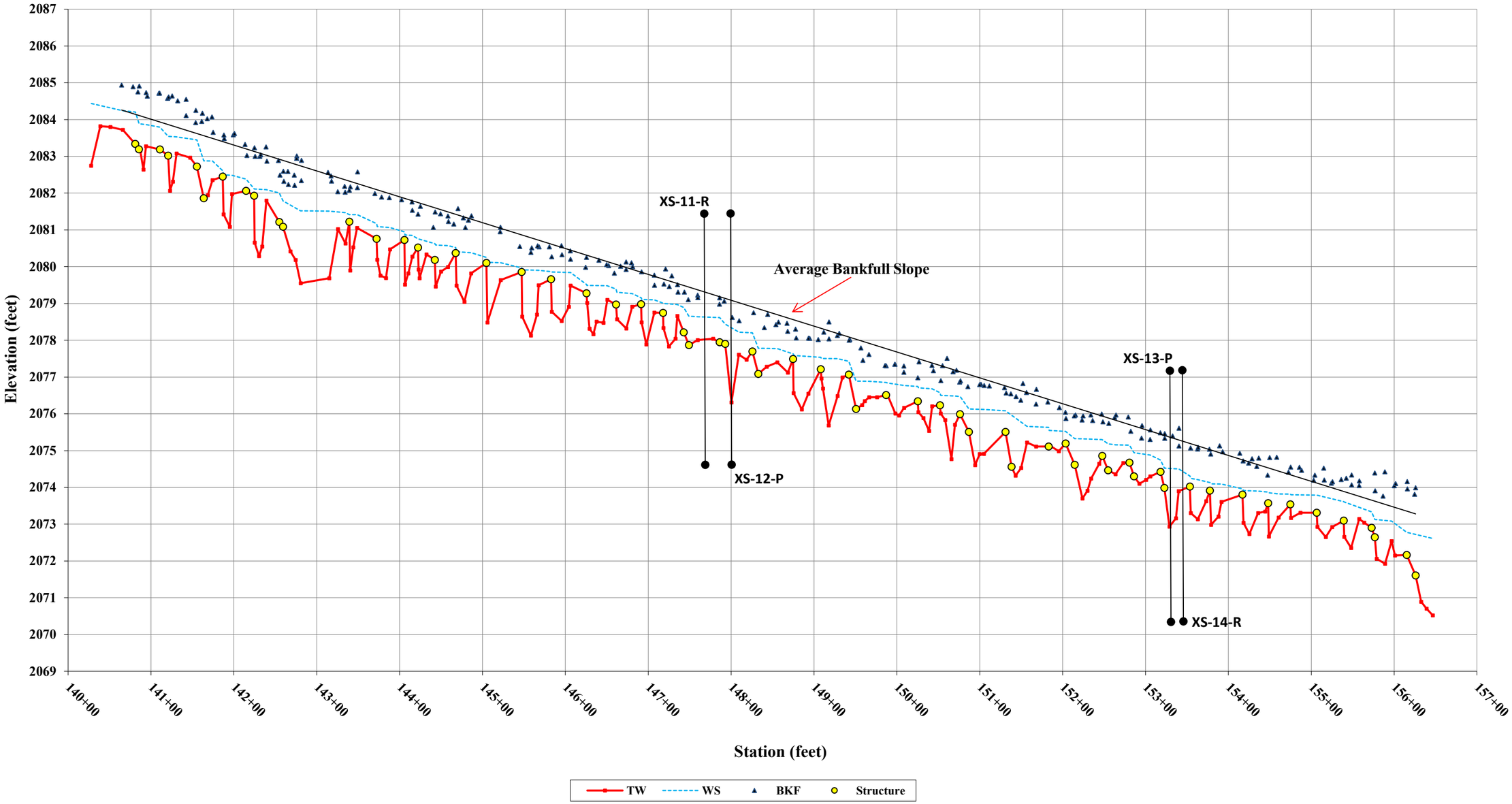
Fletcher Mitigation Site - Fletcher Creek 1C
Longitudinal Profile
Stationing 109+84 to 125+75



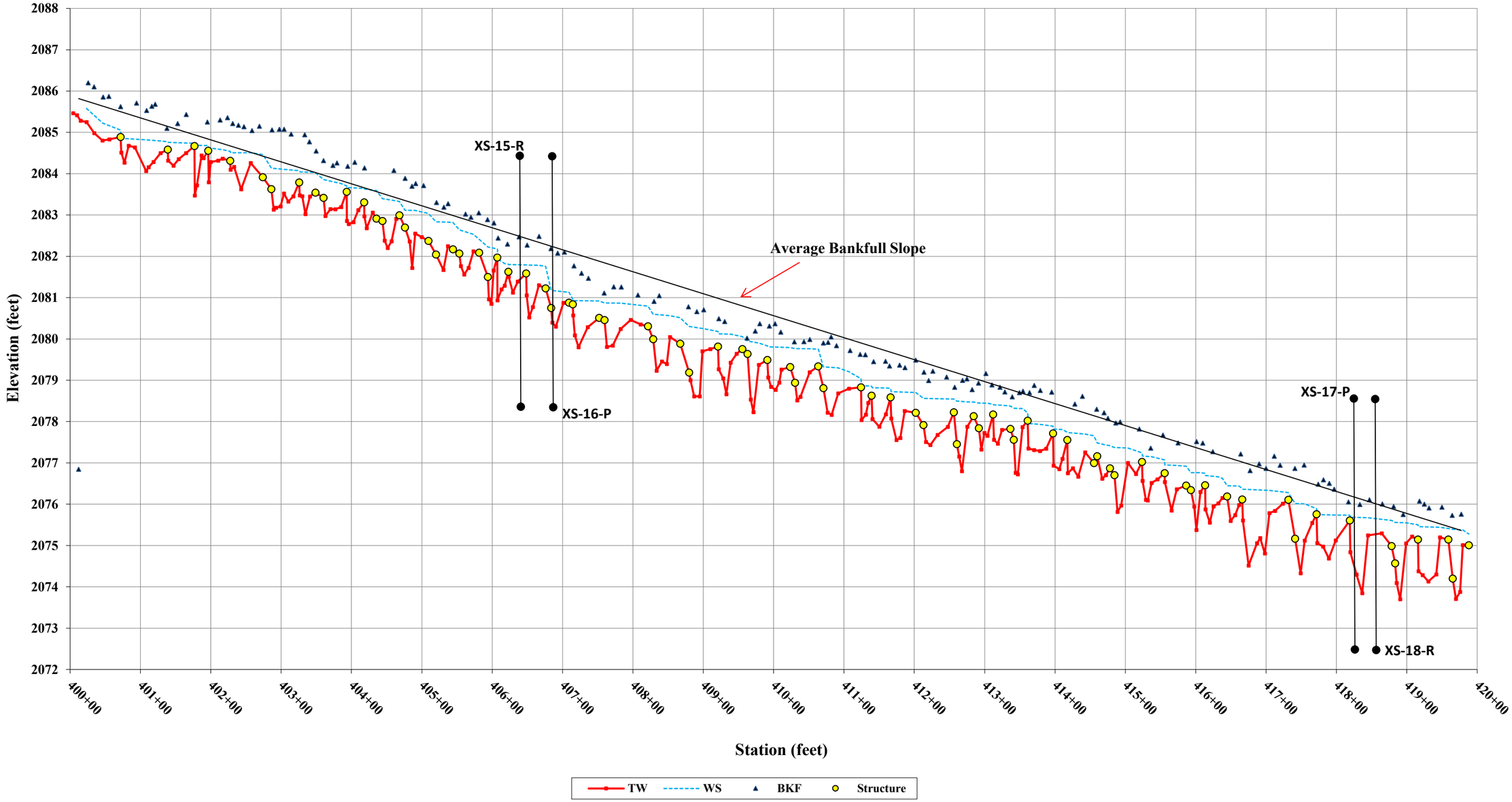
Fletcher Mitigation Site - Fletcher Creek 2A
Longitudinal Profile
Stationing 125+75 to 139+04



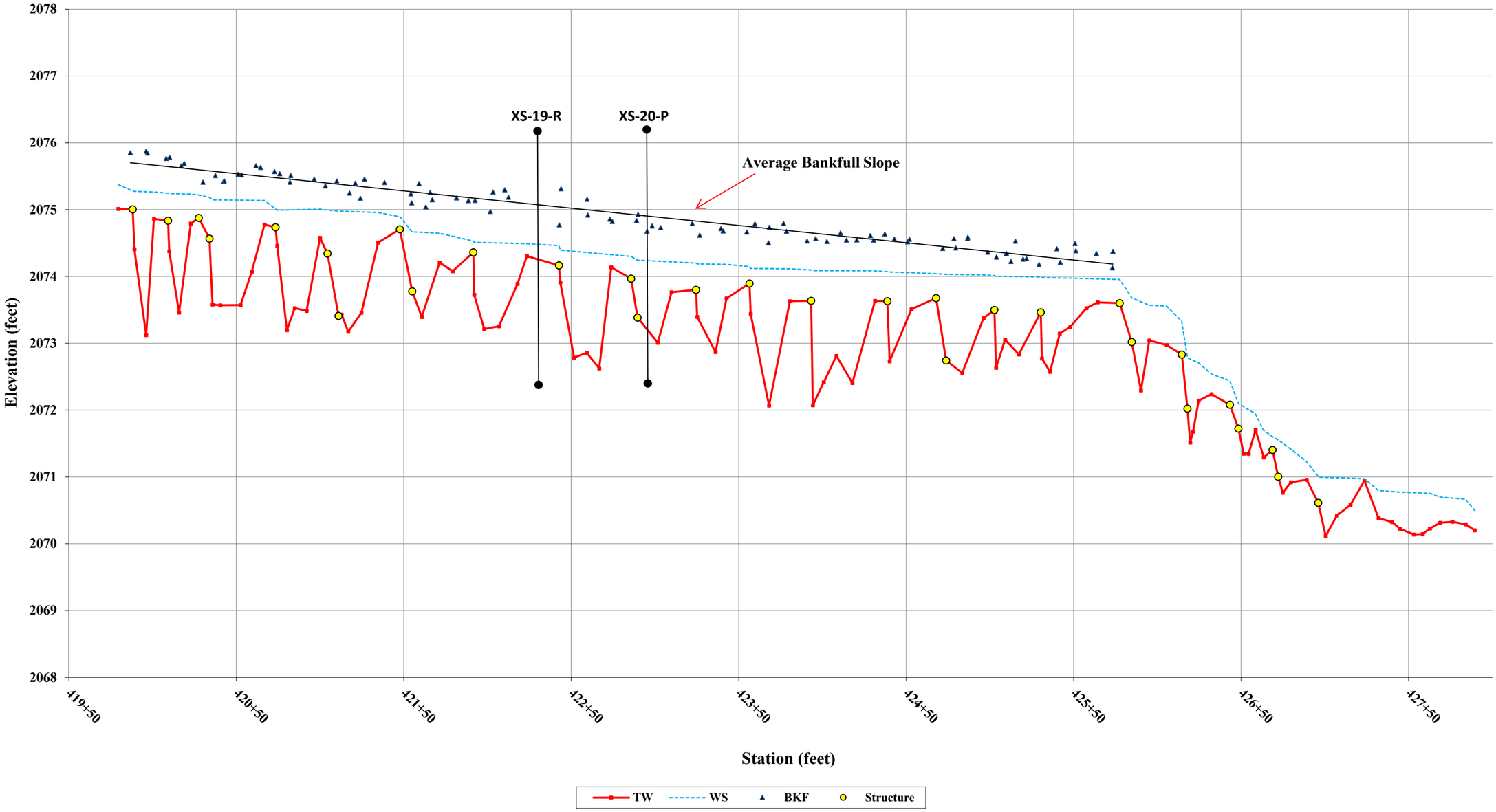
Fletcher Mitigation Site - Fletcher Creek 2B
Longitudinal Profile
Stationing 140+28 to 156+55



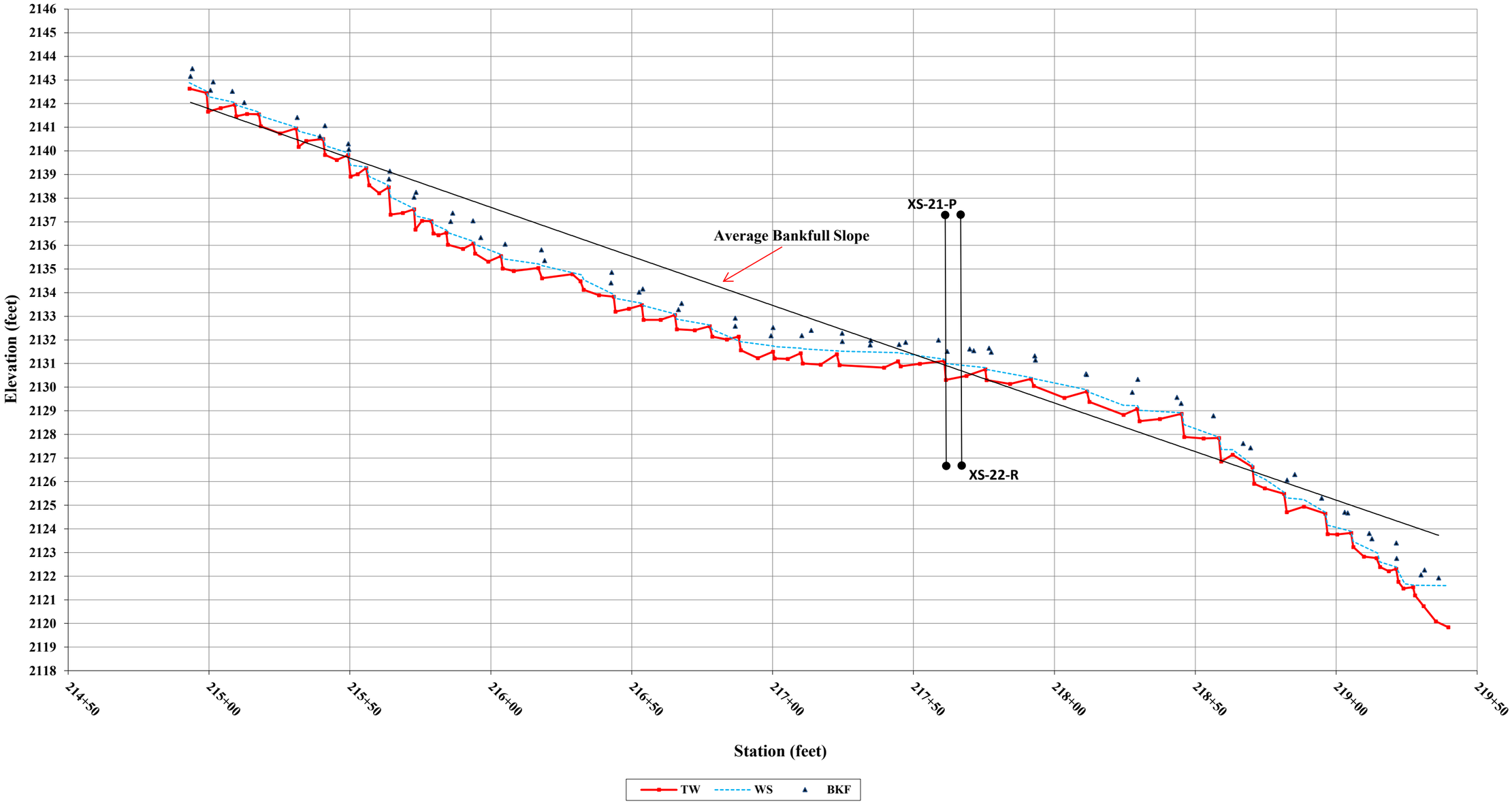
Fletcher Mitigation Site - Weston Creek 1A
Longitudinal Profile
Stationing 400+00 to 419+83



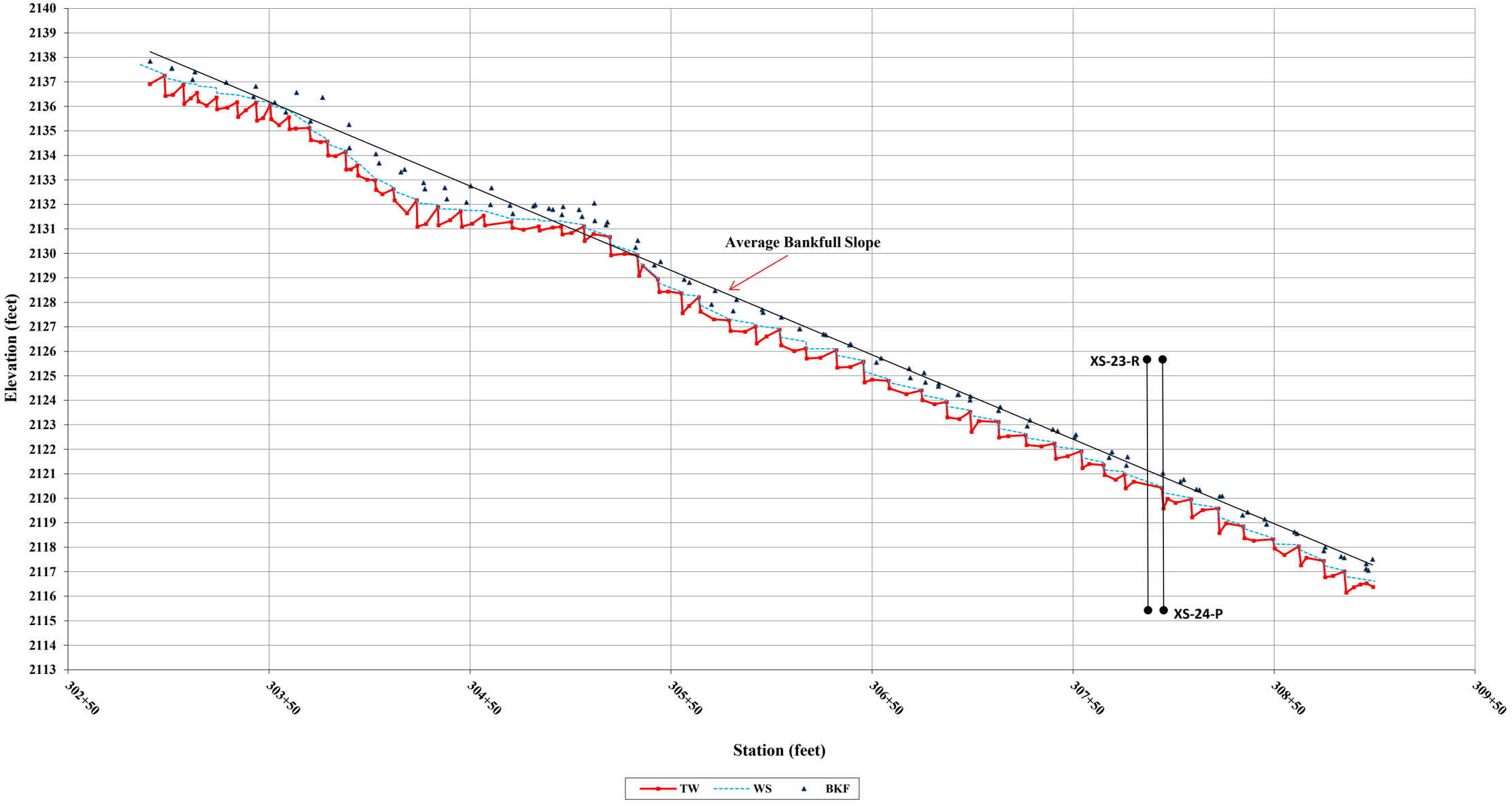
Fletcher Mitigation Site - Weston Creek 1B
Longitudinal Profile
Stationing 419+83 to 427+87



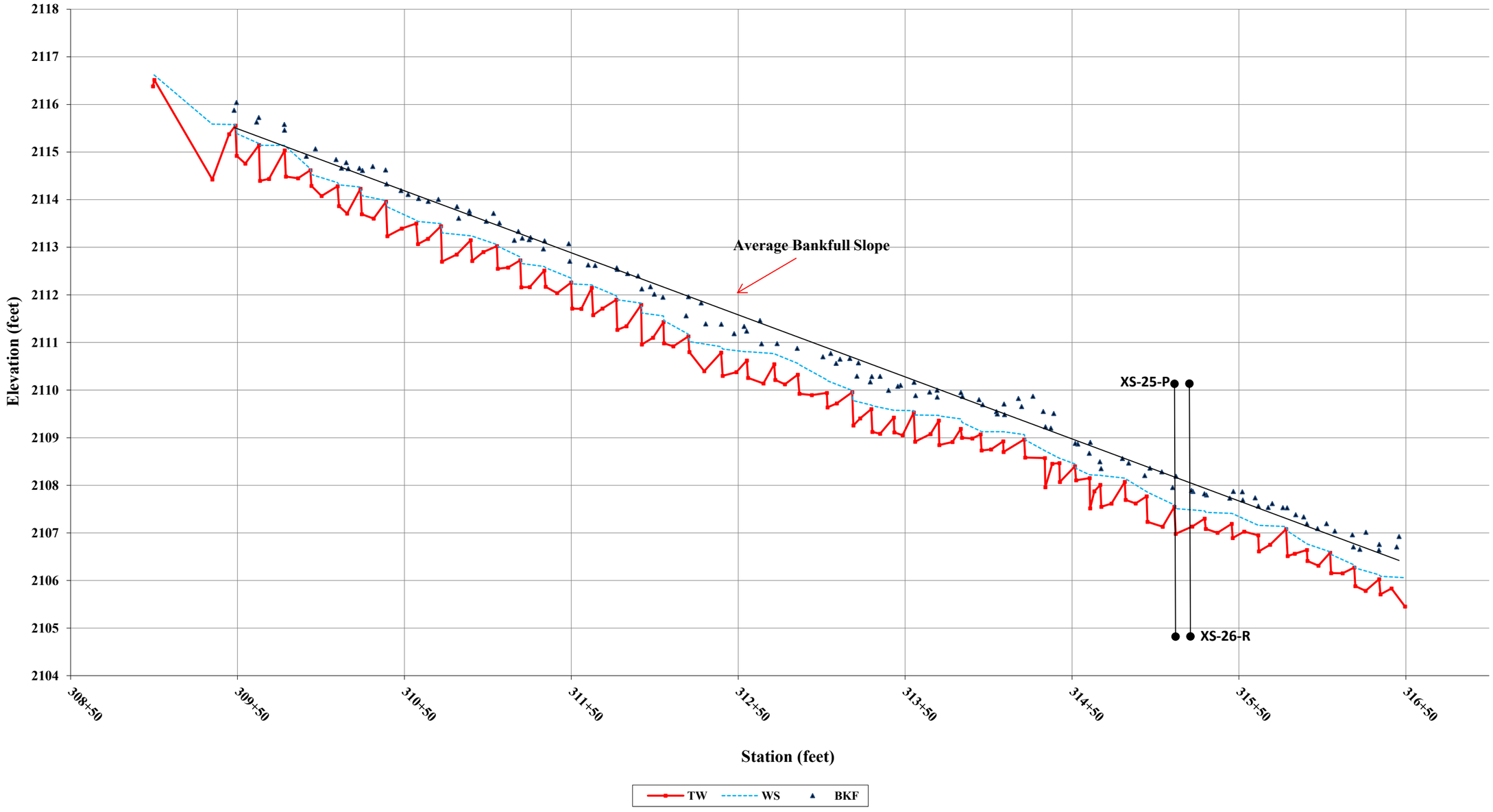
Fletcher Mitigation Site - Raccoon Branch 1D
Longitudinal Profile
Stationing 214+92 to 219+40



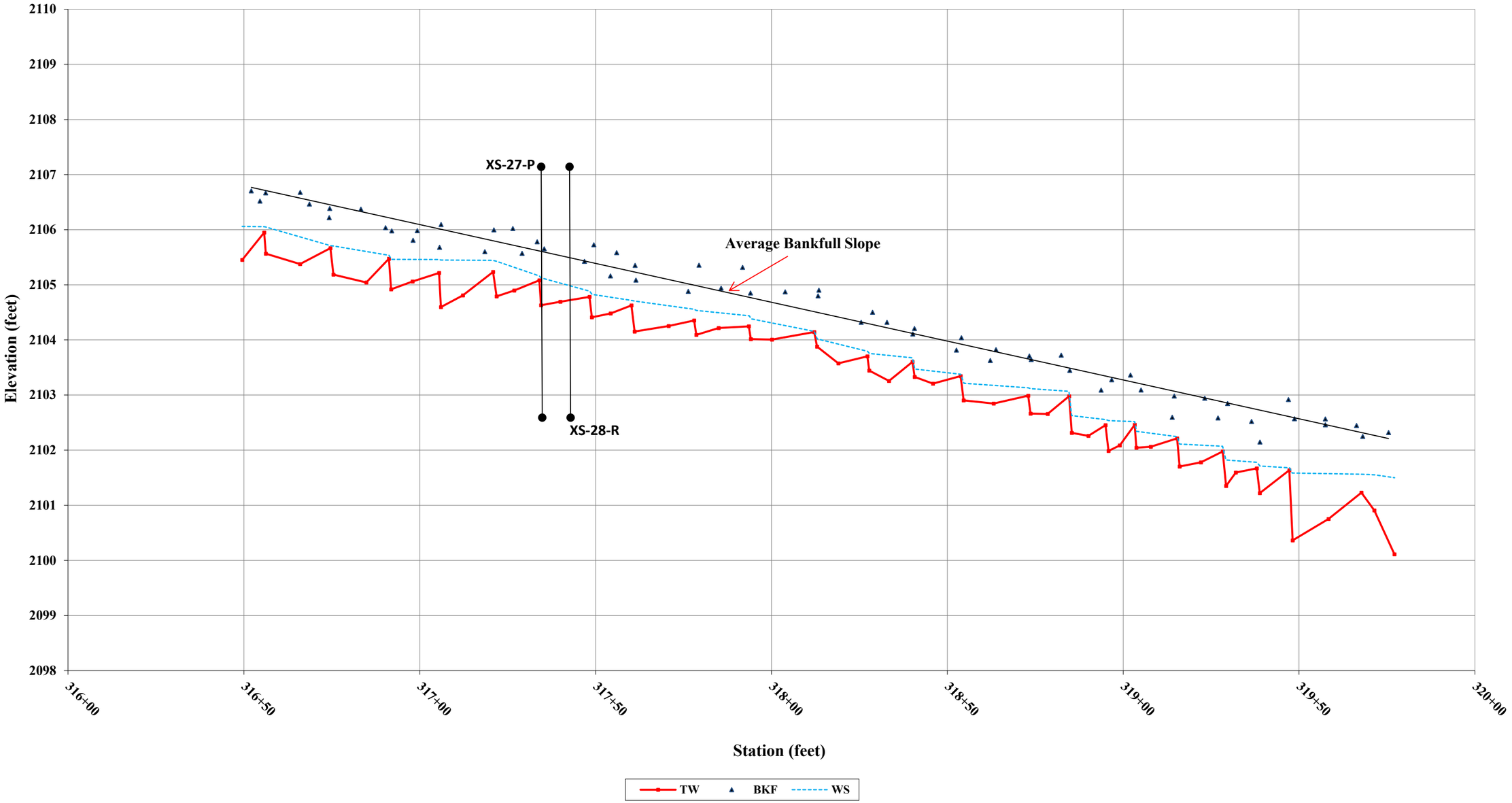
Fletcher Mitigation Site - Coats Branch 1B
Longitudinal Profile
Stationing 302+92 to 308+98



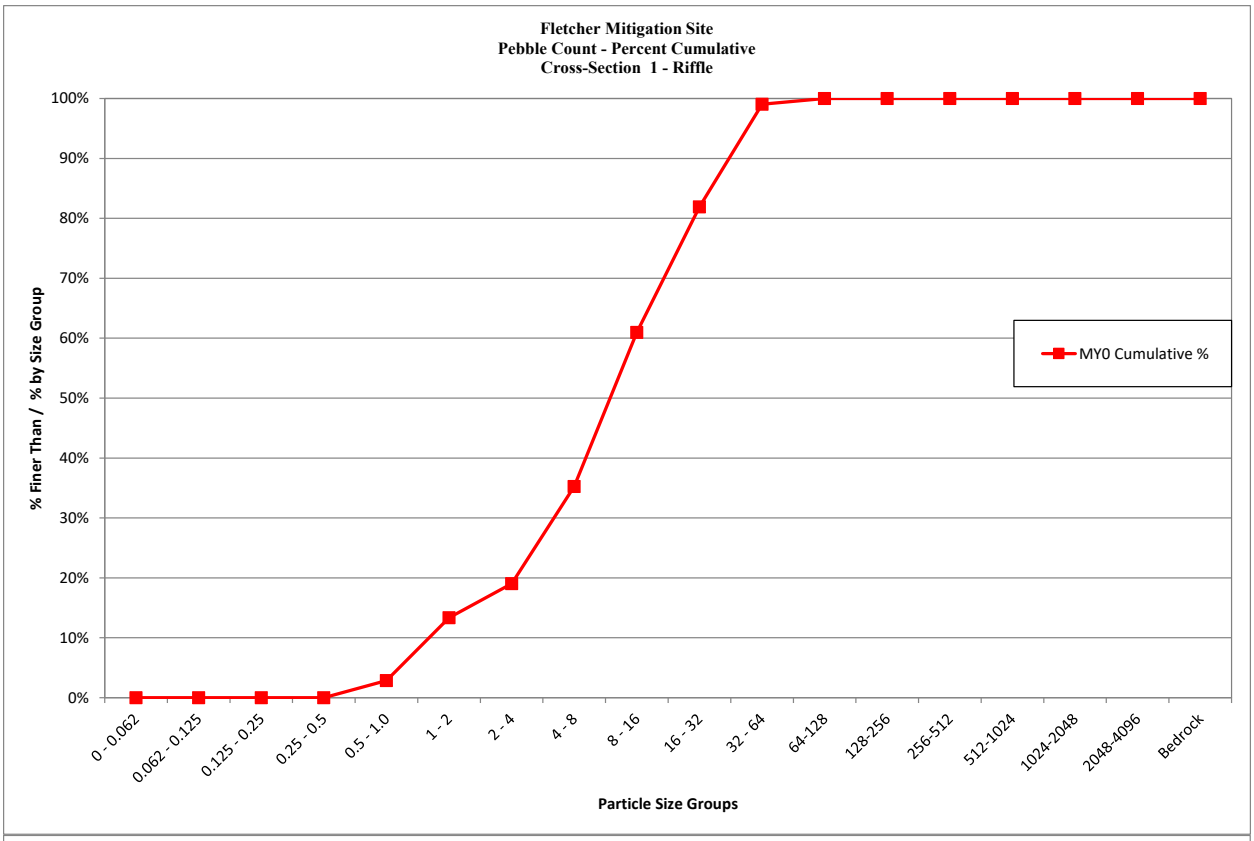
Fletcher Mitigation Site - Coats Branch 1C
Longitudinal Profile
Stationing 308+98 to 316+50

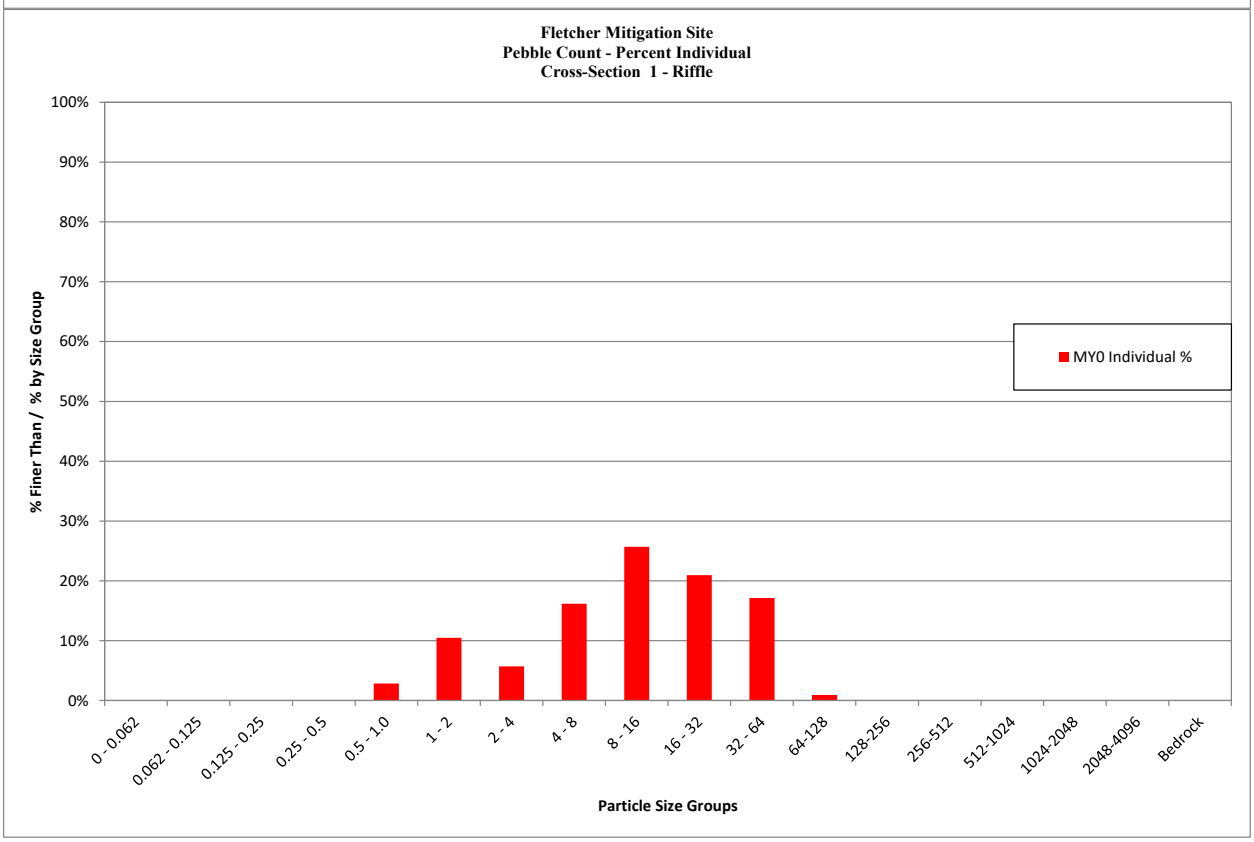


Fletcher Mitigation Site - Coats Branch 1D
Longitudinal Profile
Stationing 316+50 to 319+75

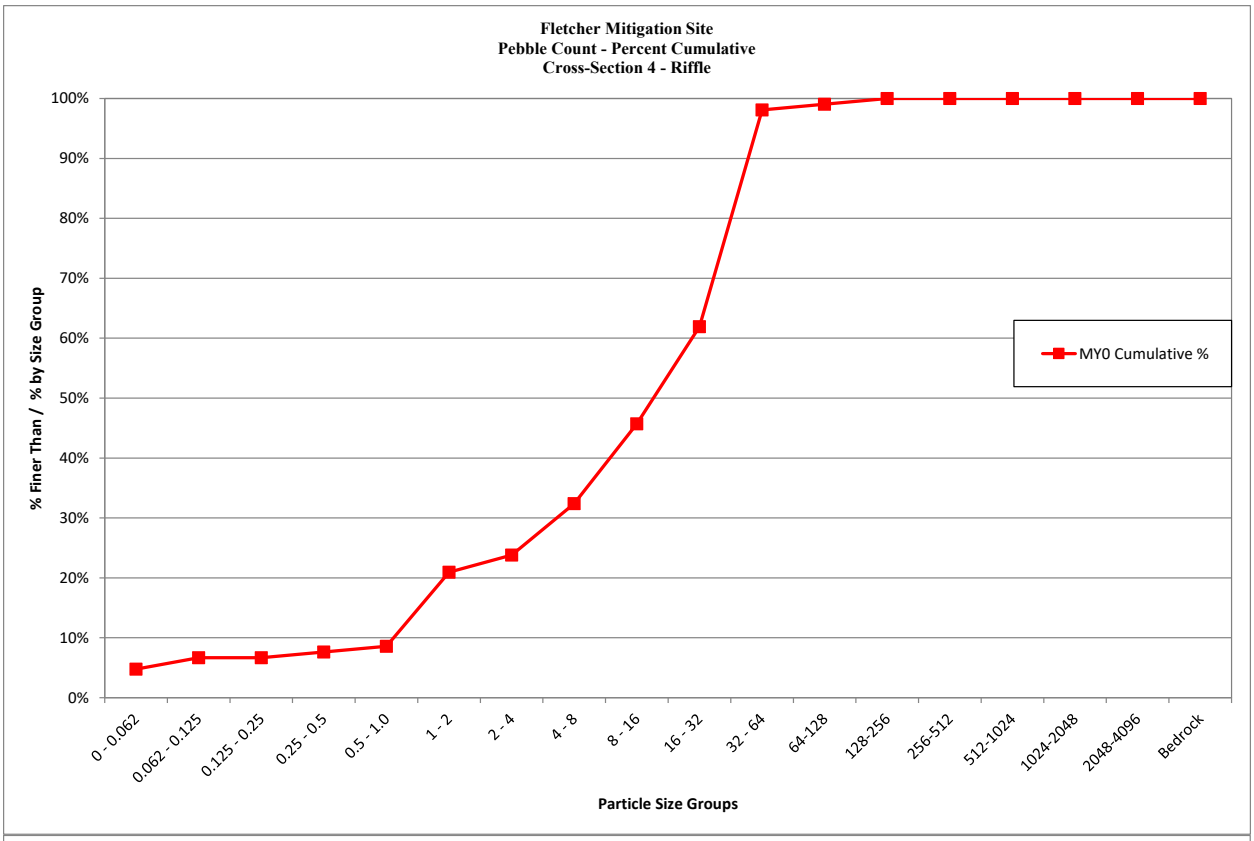


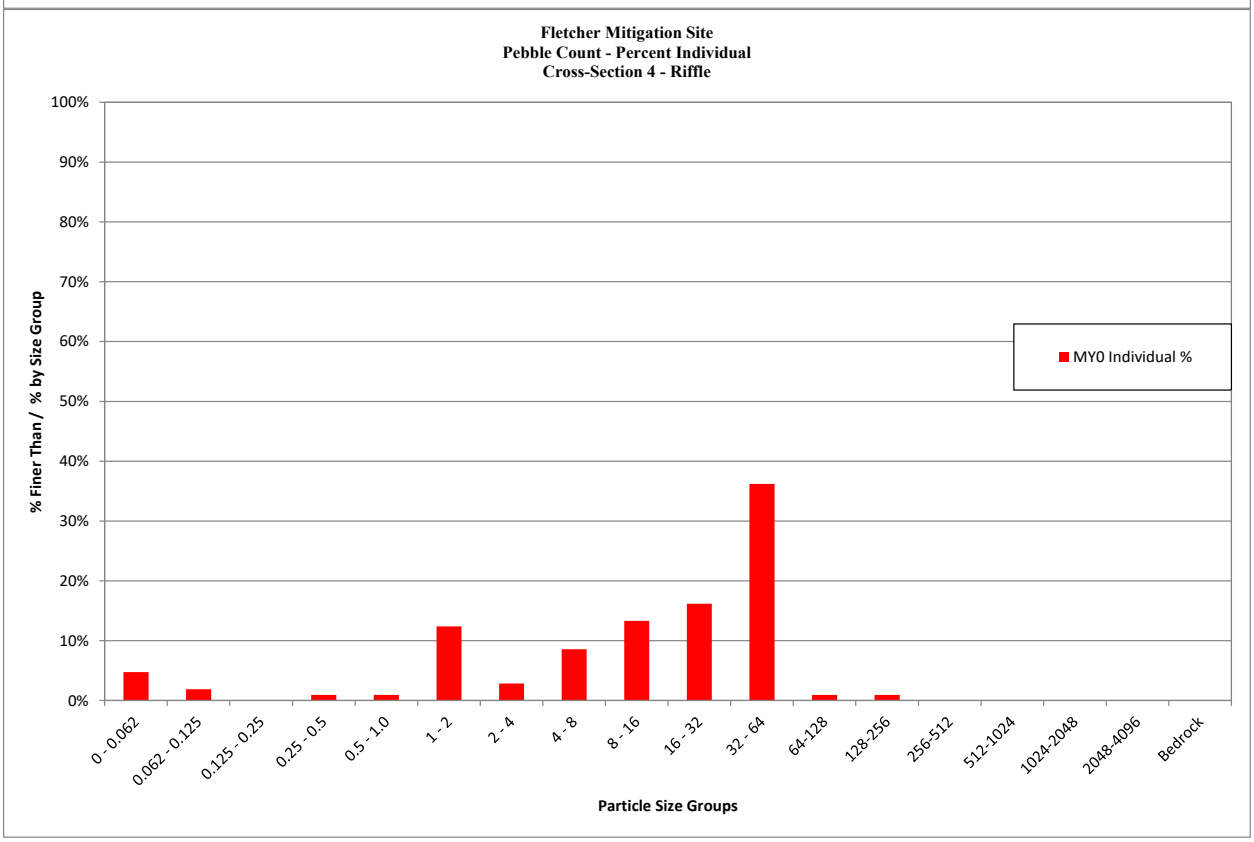
Fletcher Mitigation Site			
Cross Section 1 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	0	0.0%	0%
0.062 - 0.125	0	0.0%	0%
0.125 - 0.25	0	0.0%	0%
0.25 - 0.5	0	0.0%	0%
0.5 - 1.0	3	2.9%	3%
1 - 2	11	10.5%	13%
2 - 4	6	5.7%	19%
4 - 8	17	16.2%	35%
8 - 16	27	25.7%	61%
16 - 32	22	21.0%	82%
32 - 64	18	17.1%	99%
64-128	1	1.0%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**105**	**100%**	**100%**
		Summary Data	
		D50	**12**
		D84	**34**
		D95	**50**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 1 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

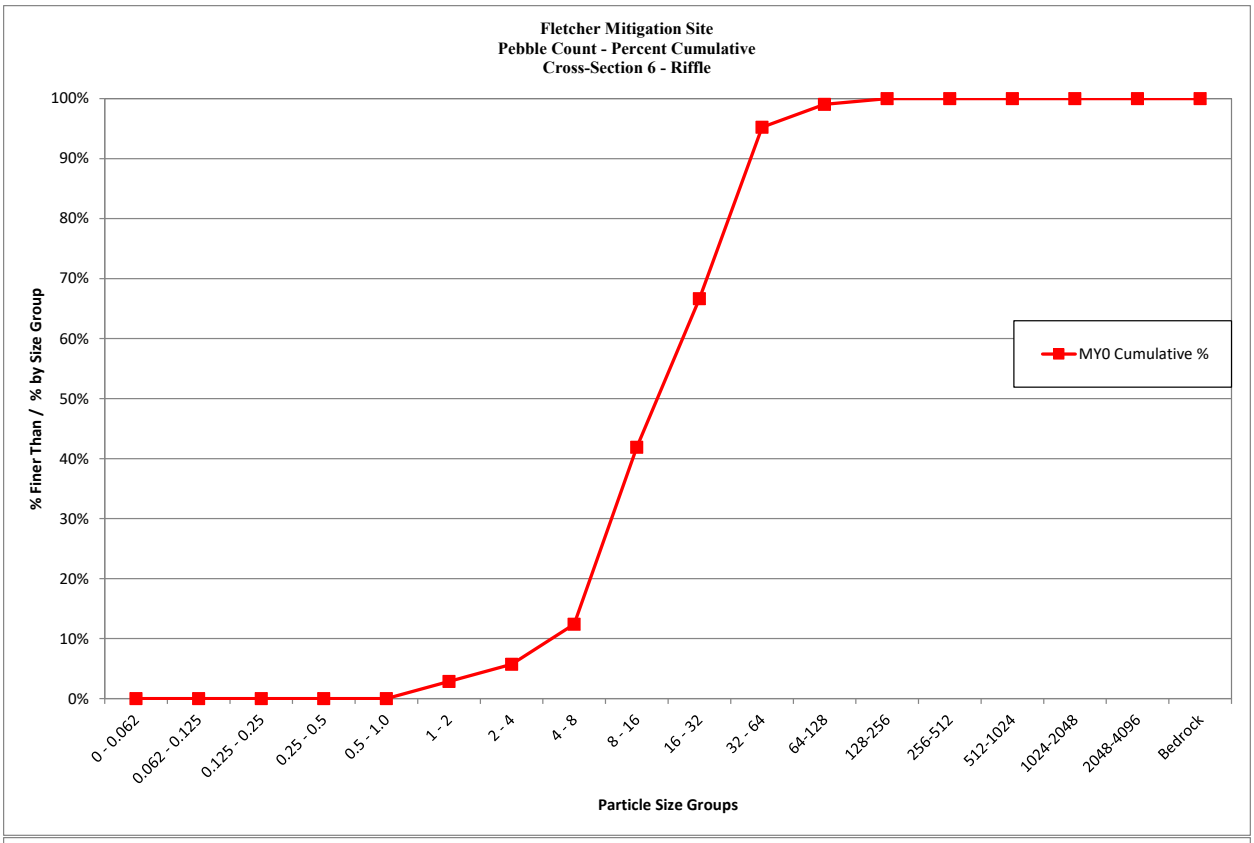

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 1 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

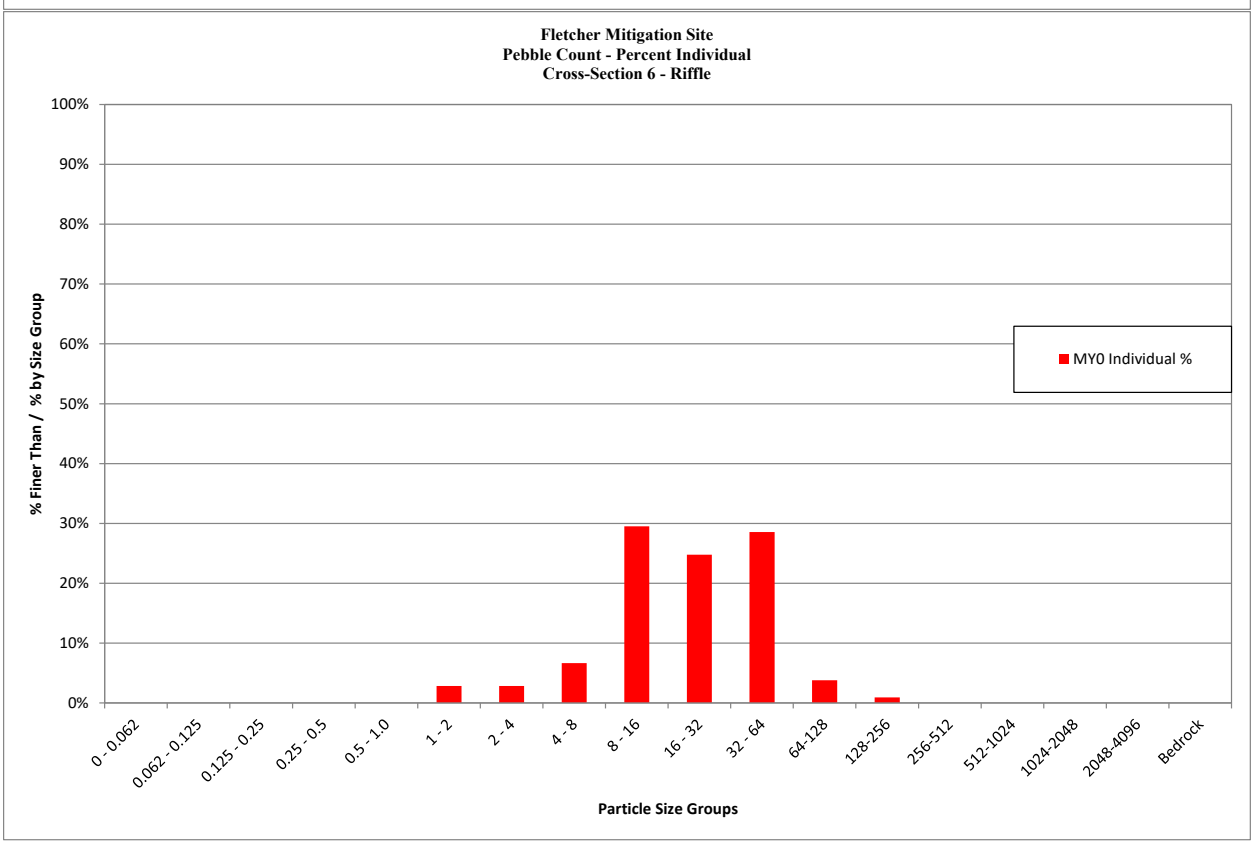
Fletcher Mitigation Site			
Cross Section 4 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	5	4.8%	5%
0.062 - 0.125	2	1.9%	7%
0.125 - 0.25	0	0.0%	7%
0.25 - 0.5	1	1.0%	8%
0.5 - 1.0	1	1.0%	9%
1 - 2	13	12.4%	21%
2 - 4	3	2.9%	24%
4 - 8	9	8.6%	32%
8 - 16	14	13.3%	46%
16 - 32	17	16.2%	62%
32 - 64	38	36.2%	98%
64-128	1	1.0%	99%
128-256	1	1.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**105**	**100%**	**100%**
		Summary Data	
		D50	**18**
		D84	**49**
		D95	**60**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 4 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

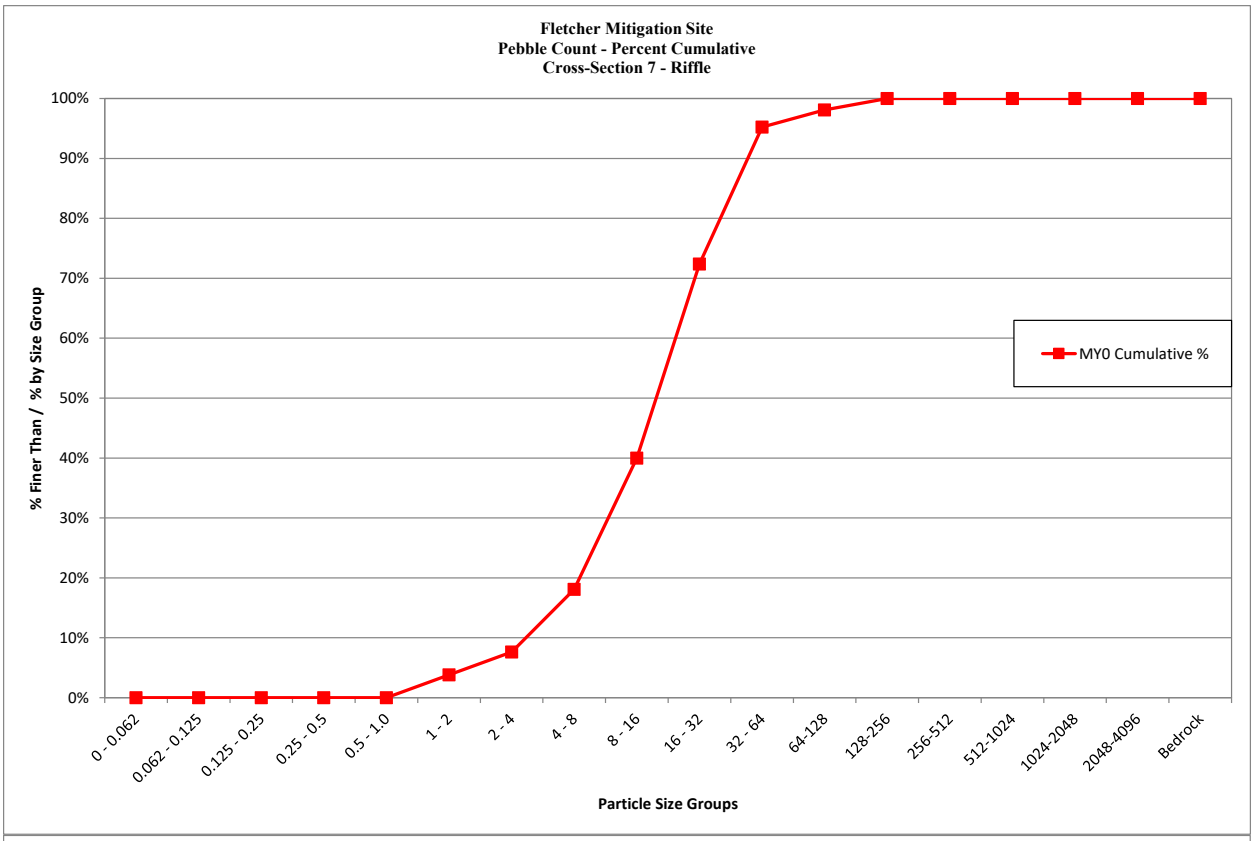

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 4 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

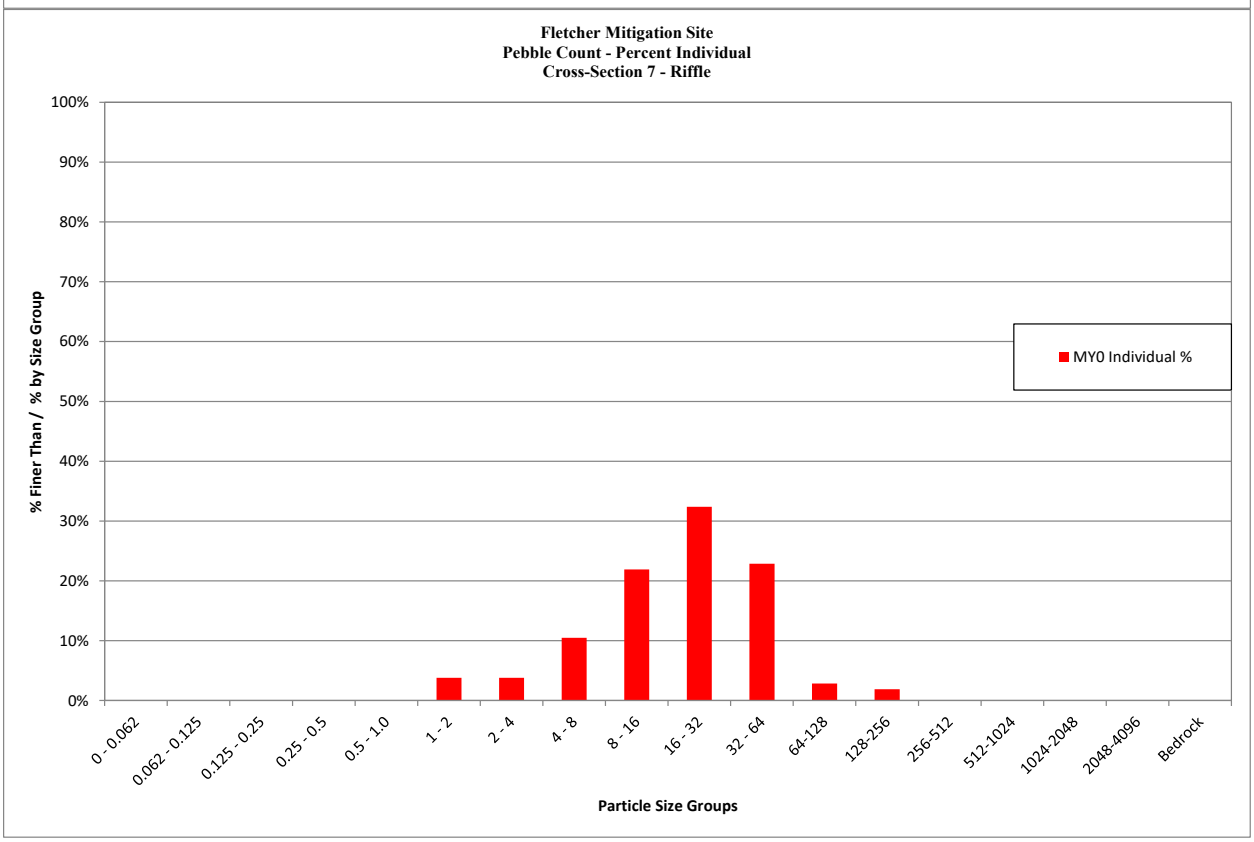
Fletcher Mitigation Site			
Cross Section 6 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	0	0.0%	0%
0.062 - 0.125	0	0.0%	0%
0.125 - 0.25	0	0.0%	0%
0.25 - 0.5	0	0.0%	0%
0.5 - 1.0	0	0.0%	0%
1 - 2	3	2.9%	3%
2 - 4	3	2.9%	6%
4 - 8	7	6.7%	12%
8 - 16	31	29.5%	42%
16 - 32	26	24.8%	67%
32 - 64	30	28.6%	95%
64-128	4	3.8%	99%
128-256	1	1.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**105**	**100%**	**100%**
		Summary Data	
		D50	**19**
		D84	**46**
		D95	**64**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 6 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

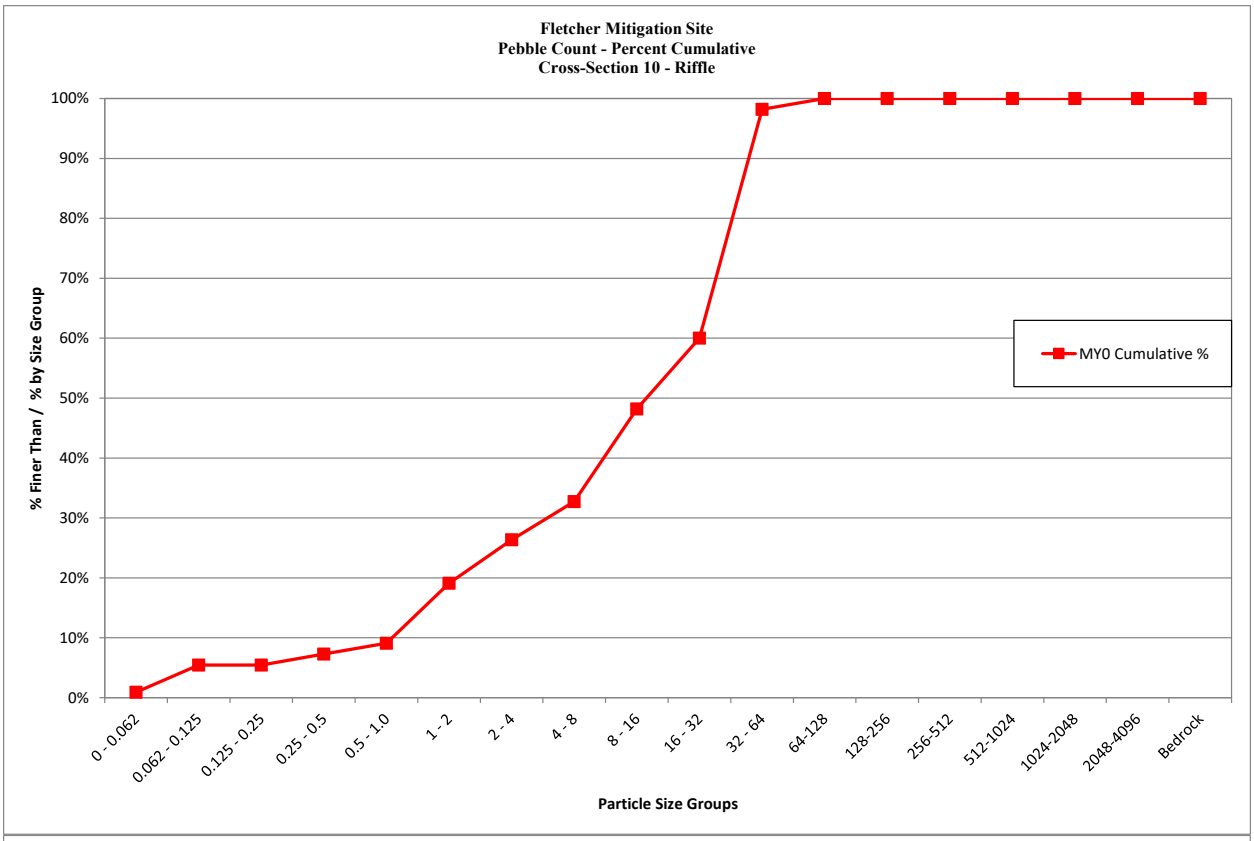

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 6 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

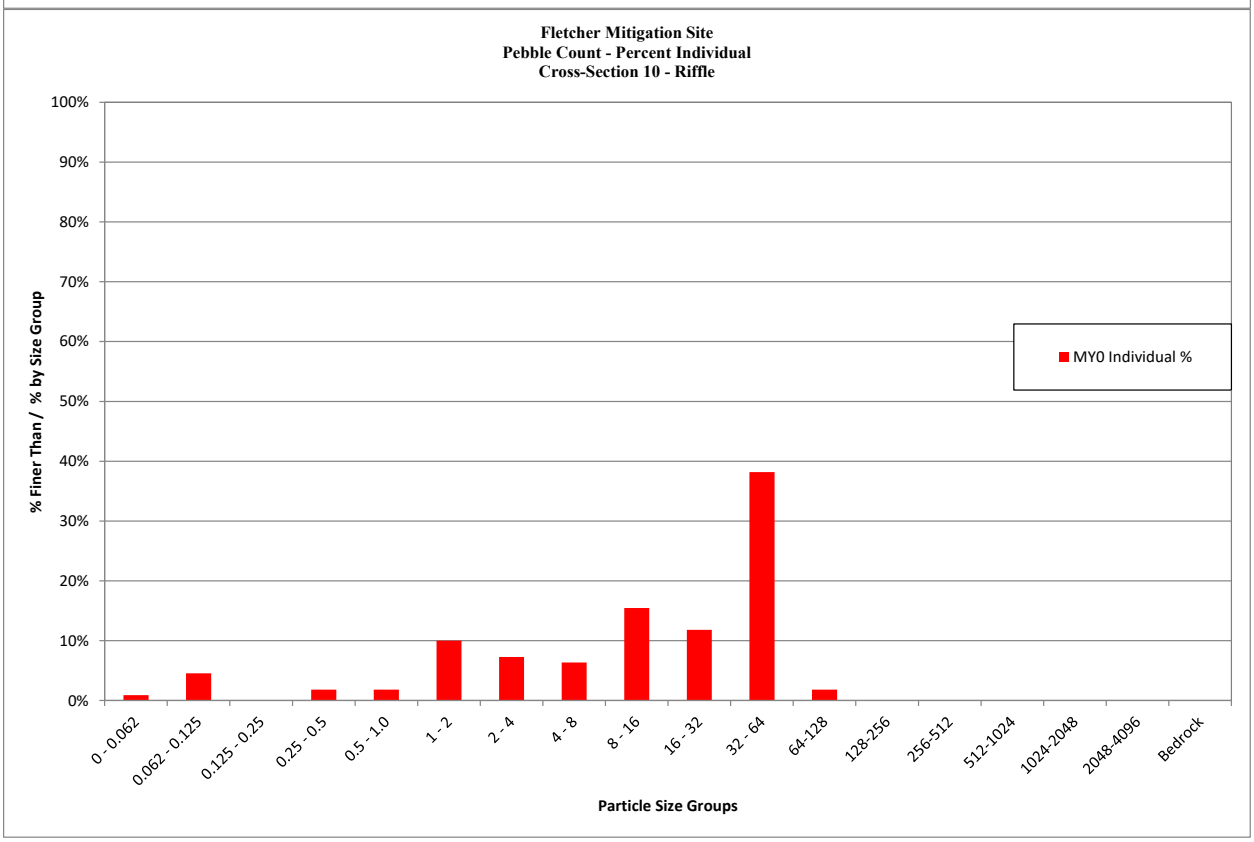
Fletcher Mitigation Site			
Cross Section 7 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	0	0.0%	0%
0.062 - 0.125	0	0.0%	0%
0.125 - 0.25	0	0.0%	0%
0.25 - 0.5	0	0.0%	0%
0.5 - 1.0	0	0.0%	0%
1 - 2	4	3.8%	4%
2 - 4	4	3.8%	8%
4 - 8	11	10.5%	18%
8 - 16	23	21.9%	40%
16 - 32	34	32.4%	72%
32 - 64	24	22.9%	95%
64-128	3	2.9%	98%
128-256	2	1.9%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**105**	**100%**	**100%**
		Summary Data	
		D50	**20**
		D84	**40**
		D95	**63**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 7 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

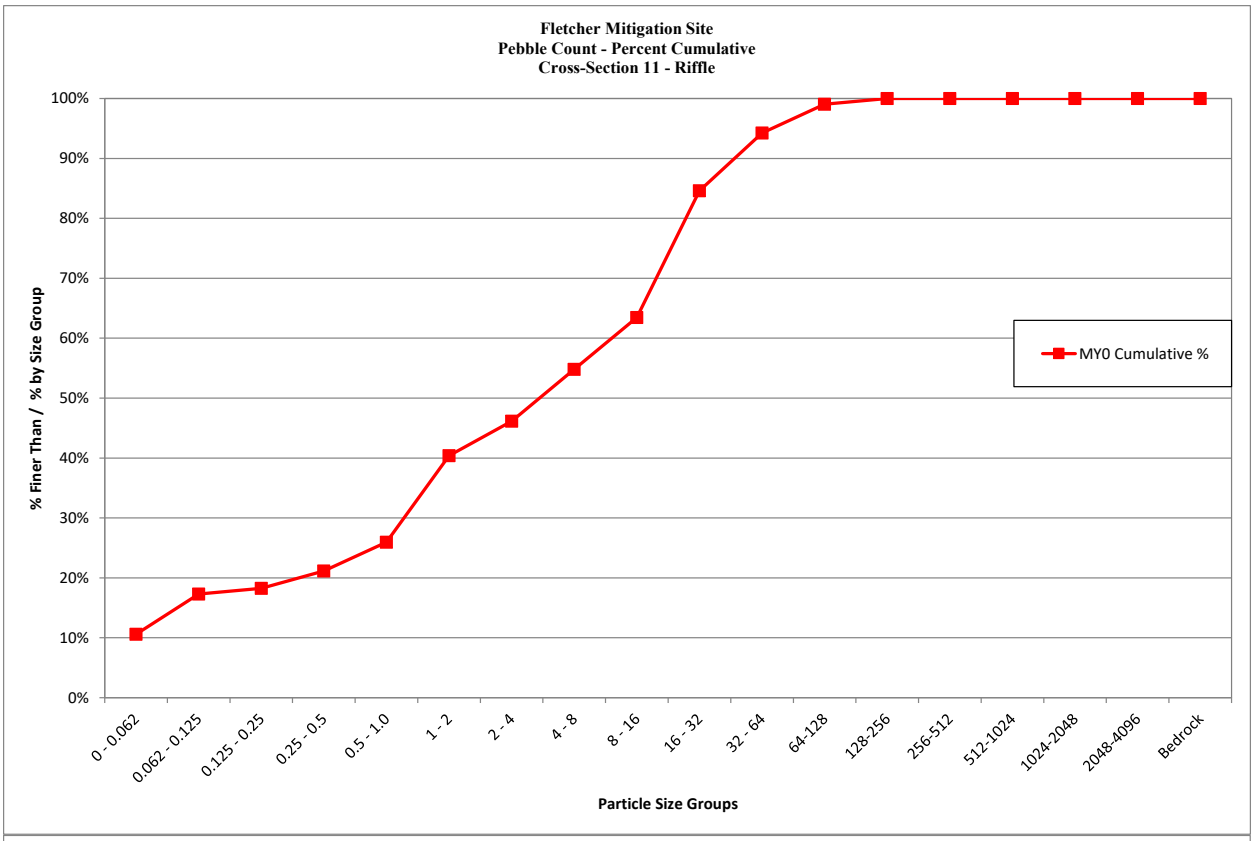

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 7 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

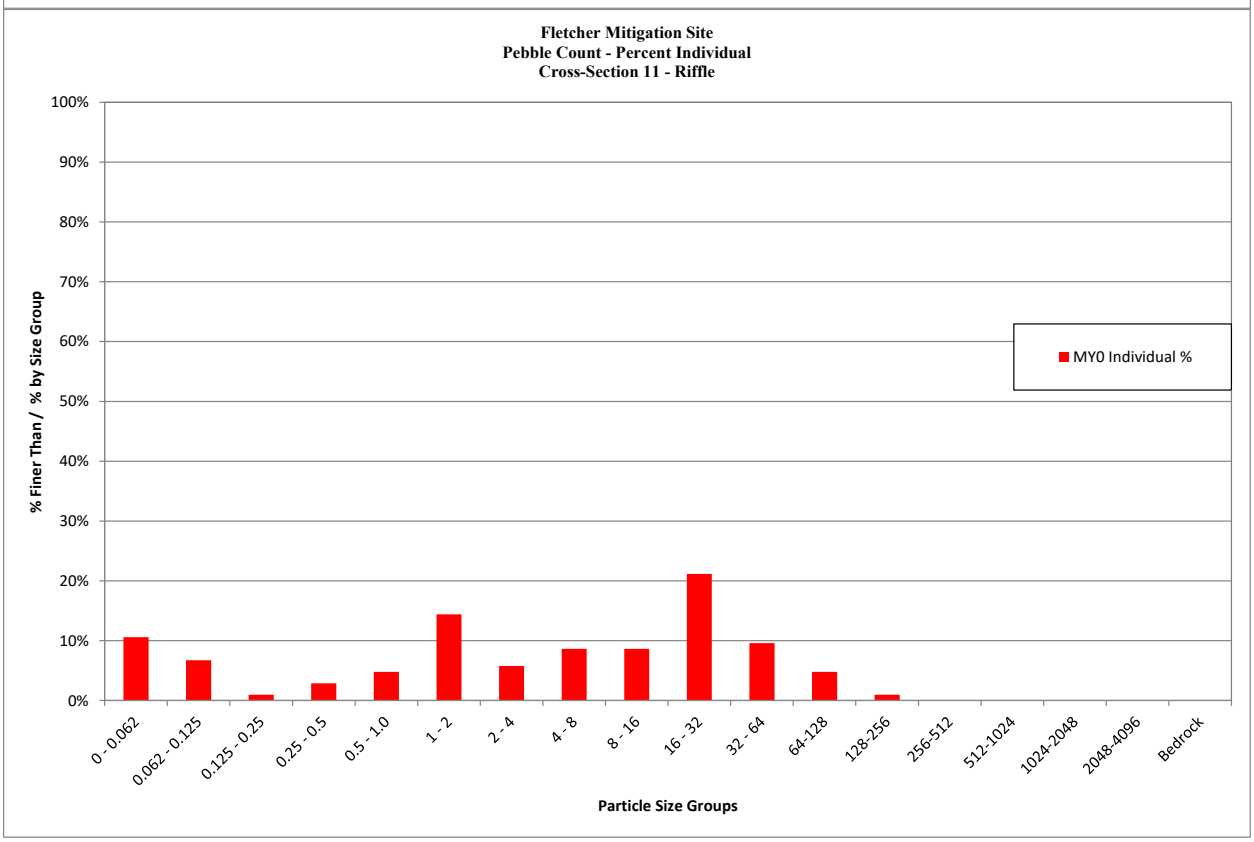
Fletcher Mitigation Site			
Cross Section 10 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	1	0.9%	1%
0.062 - 0.125	5	4.5%	5%
0.125 - 0.25	0	0.0%	5%
0.25 - 0.5	2	1.8%	7%
0.5 - 1.0	2	1.8%	9%
1 - 2	11	10.0%	19%
2 - 4	8	7.3%	26%
4 - 8	7	6.4%	33%
8 - 16	17	15.5%	48%
16 - 32	13	11.8%	60%
32 - 64	42	38.2%	98%
64-128	2	1.8%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**110**	**100%**	**100%**
		Summary Data	
		D50	**18**
		D84	**45**
		D95	**59**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 10 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

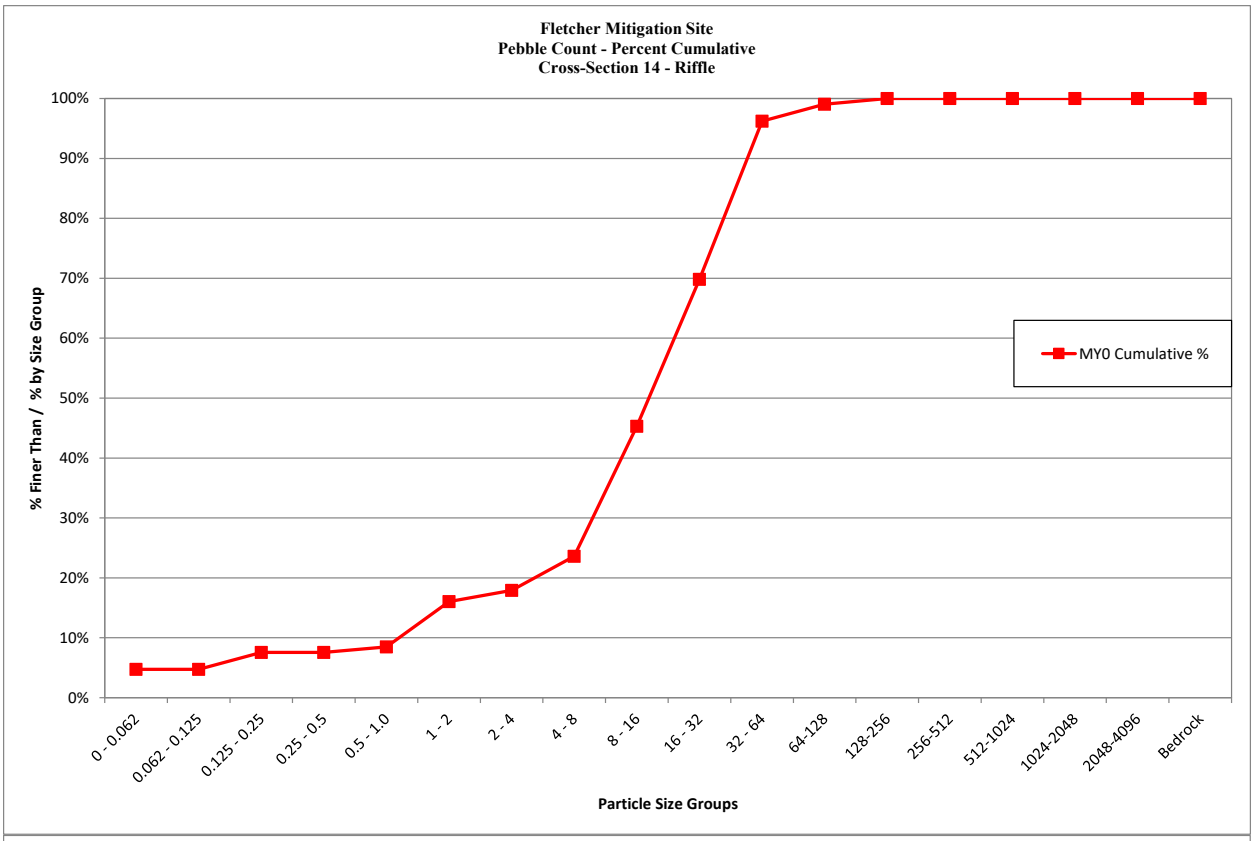

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 10 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

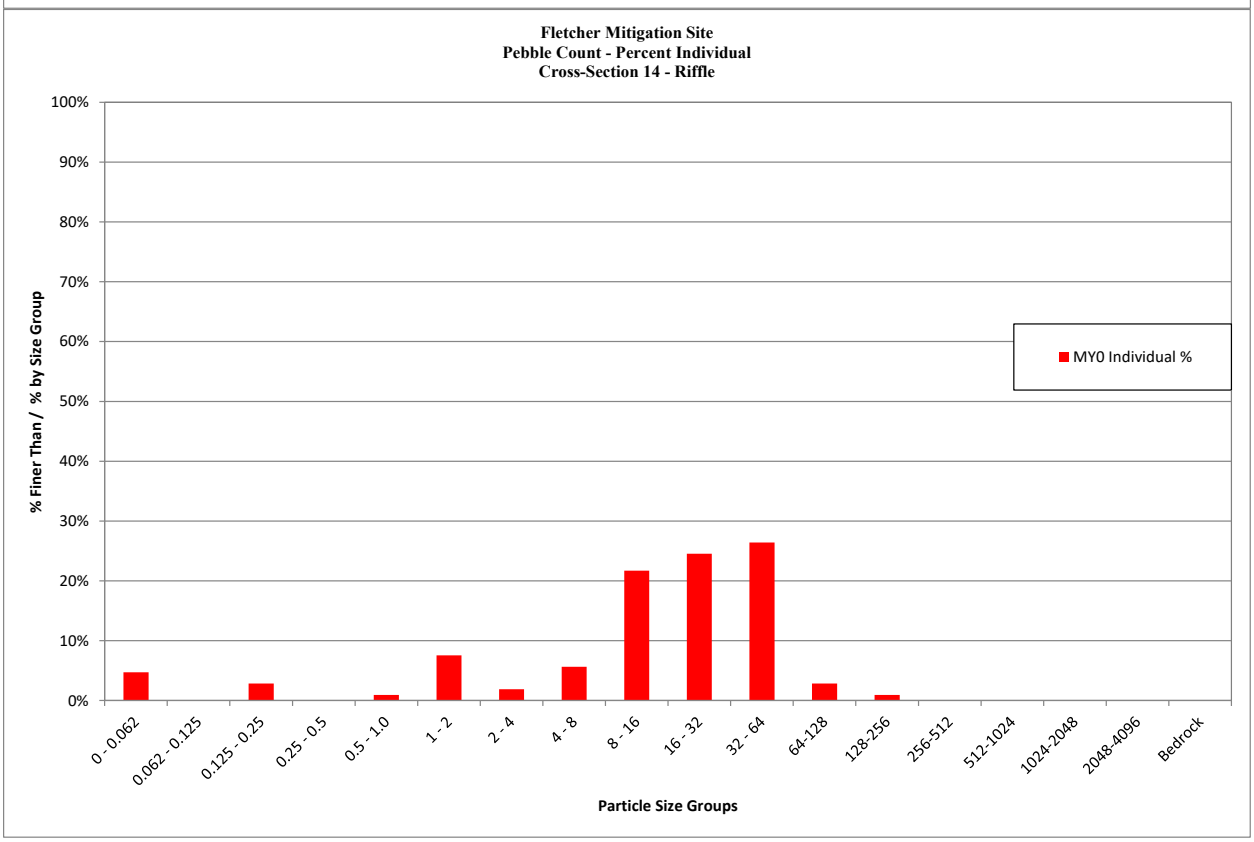
Fletcher Mitigation Site			
Cross Section 11 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	11	10.6%	11%
0.062 - 0.125	7	6.7%	17%
0.125 - 0.25	1	1.0%	18%
0.25 - 0.5	3	2.9%	21%
0.5 - 1.0	5	4.8%	26%
1 - 2	15	14.4%	40%
2 - 4	6	5.8%	46%
4 - 8	9	8.7%	55%
8 - 16	9	8.7%	63%
16 - 32	22	21.2%	85%
32 - 64	10	9.6%	94%
64-128	5	4.8%	99%
128-256	1	1.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**104**	**100%**	**100%**
		Summary Data	
		D50	**5.5**
		D84	**31**
		D95	**70**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 11 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

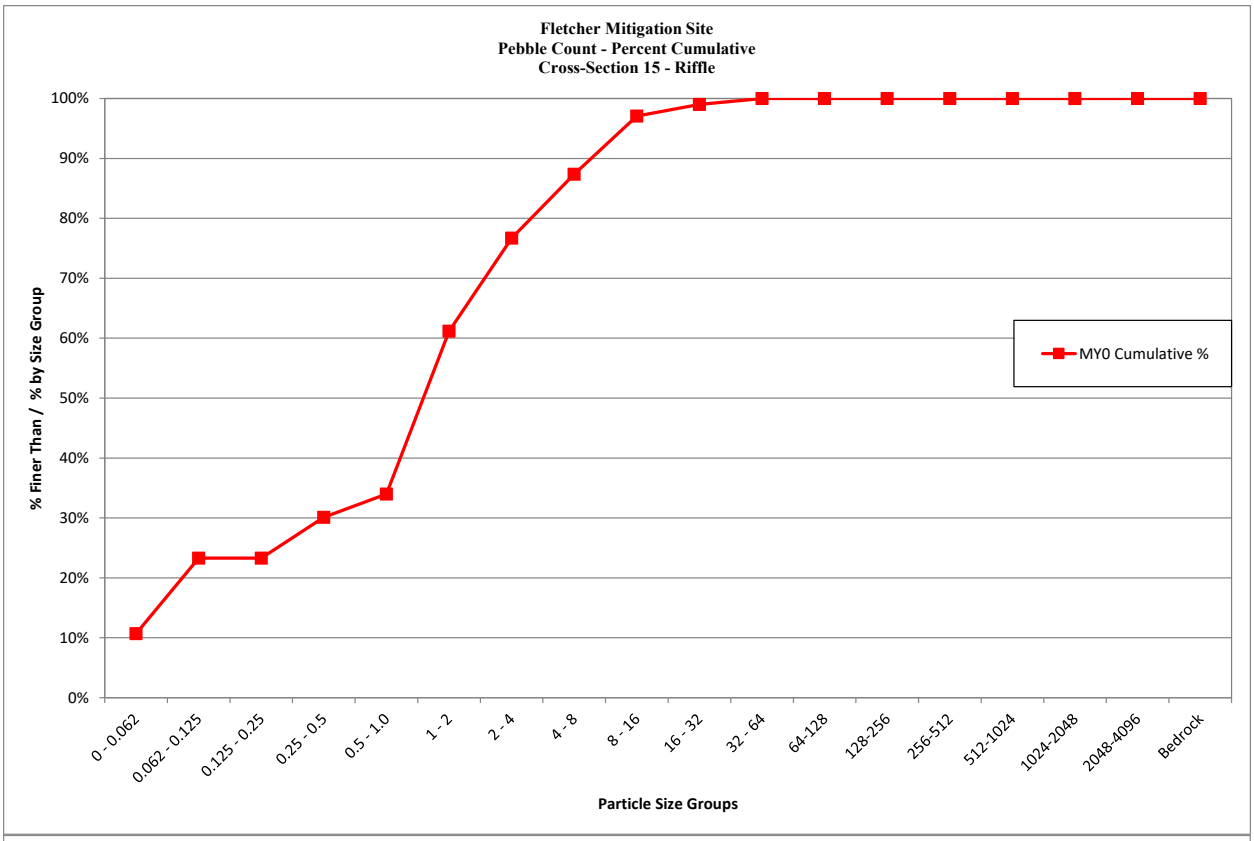

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 11 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

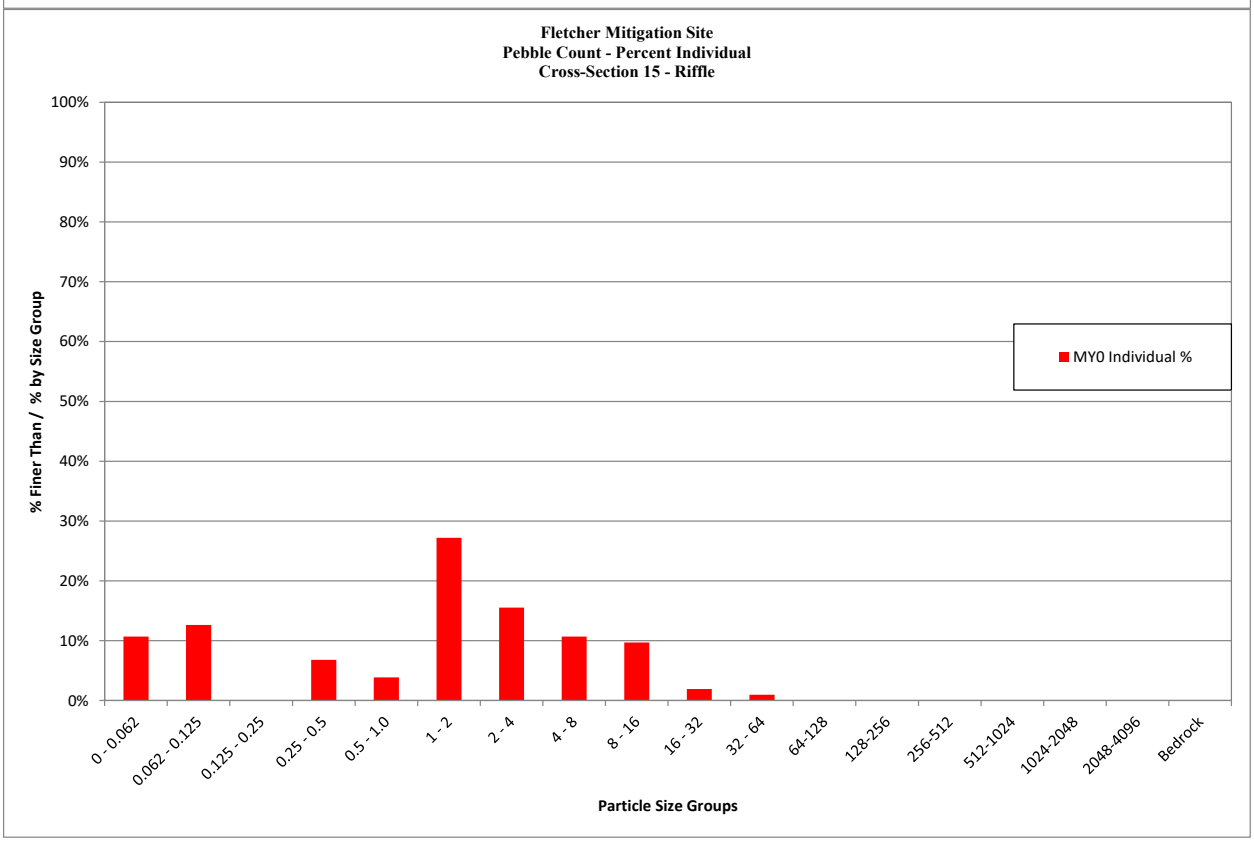
Fletcher Mitigation Site			
Cross Section 14 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	5	4.7%	5%
0.062 - 0.125	0	0.0%	5%
0.125 - 0.25	3	2.8%	8%
0.25 - 0.5	0	0.0%	8%
0.5 - 1.0	1	0.9%	8%
1 - 2	8	7.5%	16%
2 - 4	2	1.9%	18%
4 - 8	6	5.7%	24%
8 - 16	23	21.7%	45%
16 - 32	26	24.5%	70%
32 - 64	28	26.4%	96%
64-128	3	2.8%	99%
128-256	1	0.9%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**106**	**100%**	**100%**
		Summary Data	
		D50	**18**
		D84	**43**
		D95	**61**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 14 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

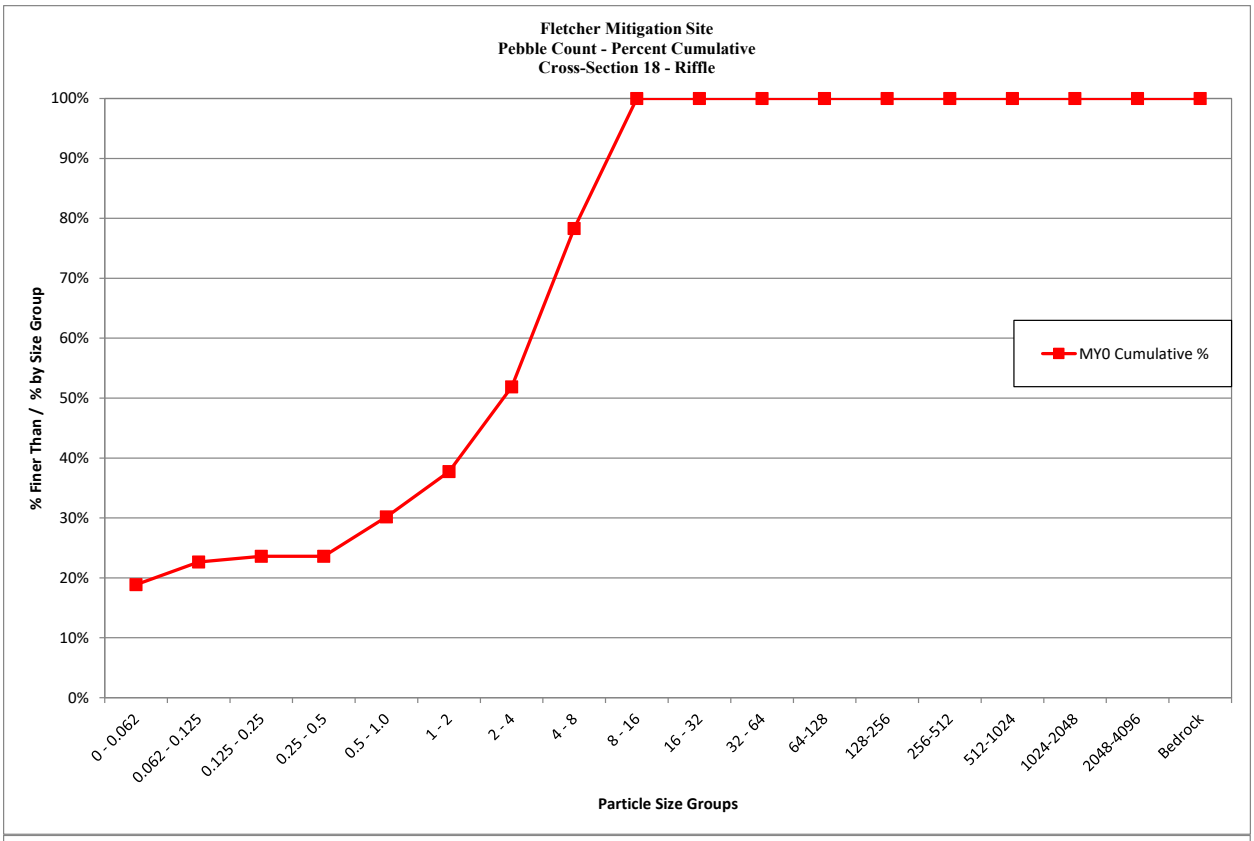

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 14 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

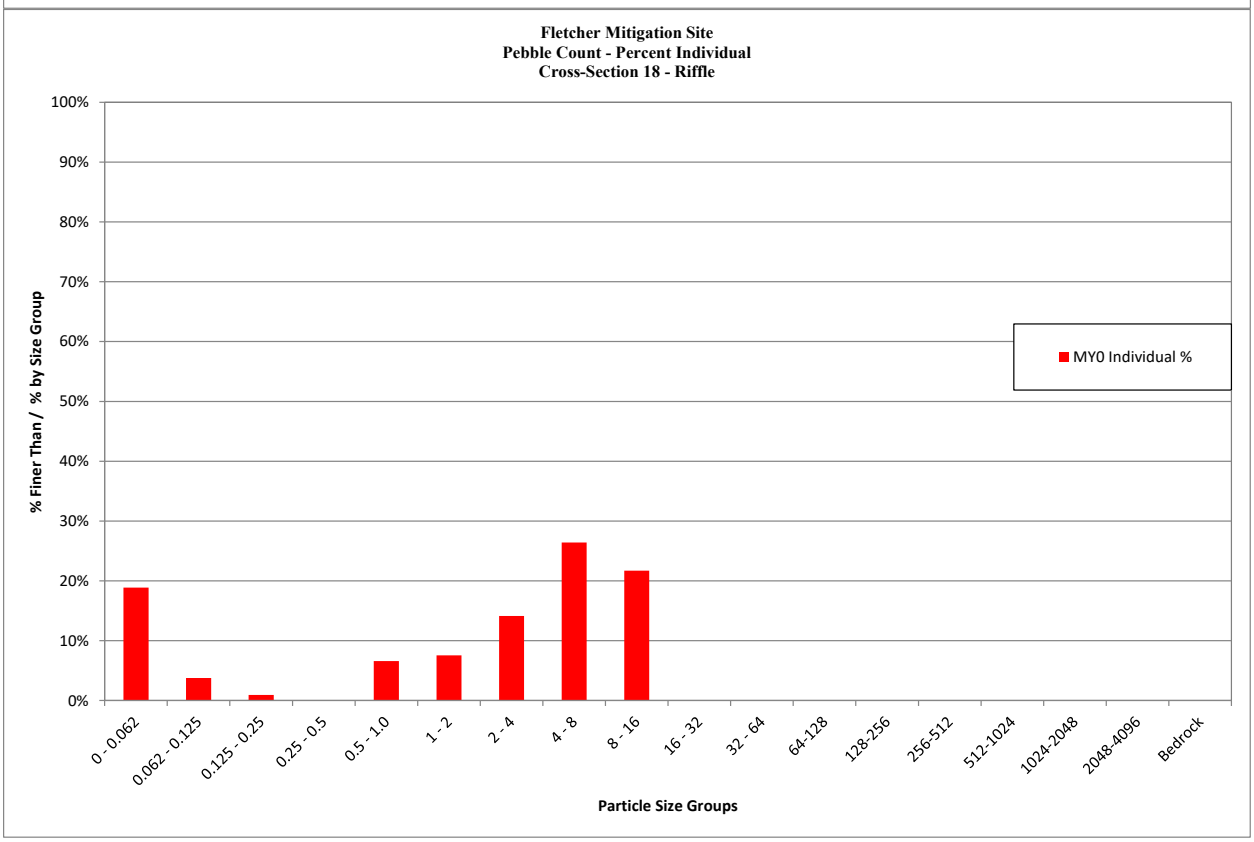
Fletcher Mitigation Site			
Cross Section 15 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	11	10.7%	11%
0.062 - 0.125	13	12.6%	23%
0.125 - 0.25	0	0.0%	23%
0.25 - 0.5	7	6.8%	30%
0.5 - 1.0	4	3.9%	34%
1 - 2	28	27.2%	61%
2 - 4	16	15.5%	77%
4 - 8	11	10.7%	87%
8 - 16	10	9.7%	97%
16 - 32	2	1.9%	99%
32 - 64	1	1.0%	100%
64-128	0	0.0%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**103**	**100%**	**100%**
		Summary Data	
		D50	**1.5**
		D84	**6.2**
		D95	**14**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 15 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

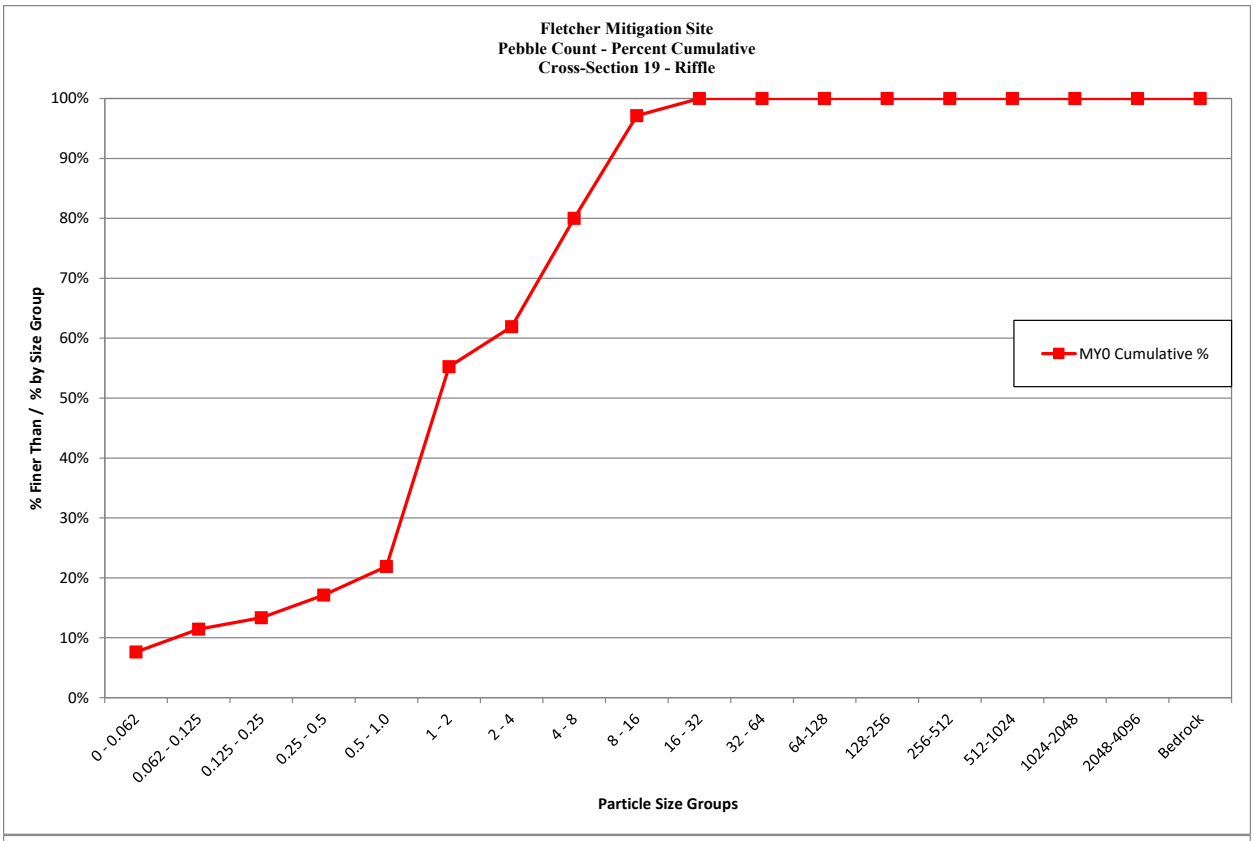

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 15 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

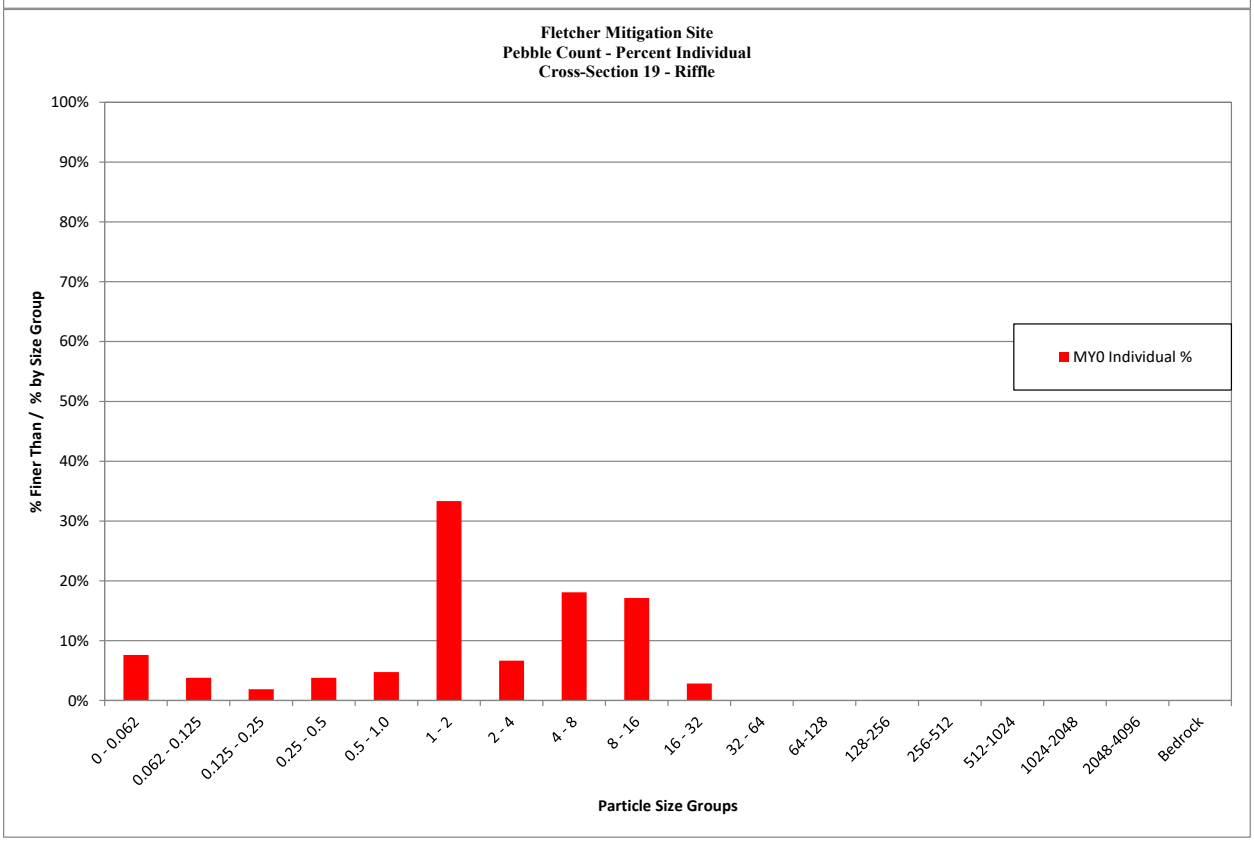
Fletcher Mitigation Site			
Cross Section 18 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	20	18.9%	19%
0.062 - 0.125	4	3.8%	23%
0.125 - 0.25	1	0.9%	24%
0.25 - 0.5	0	0.0%	24%
0.5 - 1.0	7	6.6%	30%
1 - 2	8	7.5%	38%
2 - 4	15	14.2%	52%
4 - 8	28	26.4%	78%
8 - 16	23	21.7%	100%
16 - 32	0	0.0%	100%
32 - 64	0	0.0%	100%
64-128	0	0.0%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**106**	**100%**	**100%**
		Summary Data	
		D50	**3.6**
		D84	**9**
		D95	**12**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 18 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

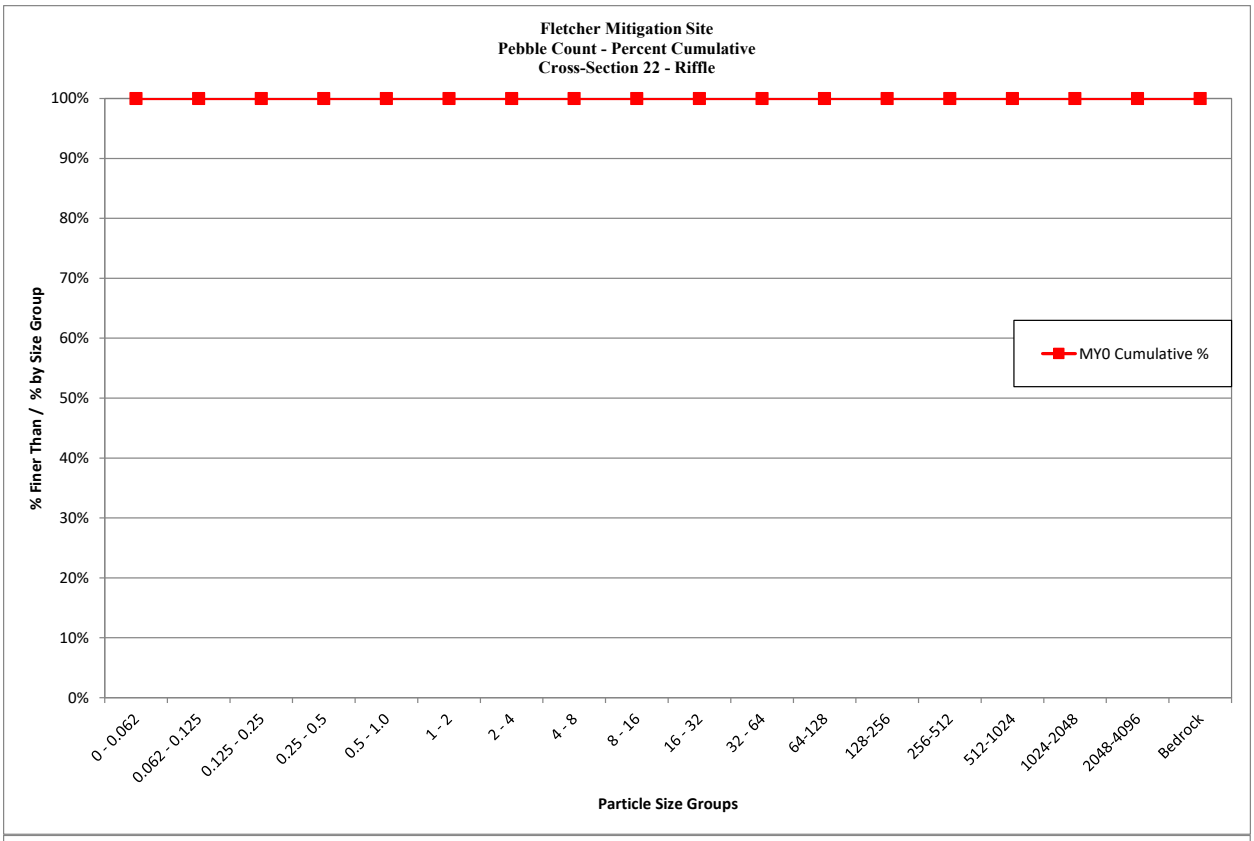

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 18 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

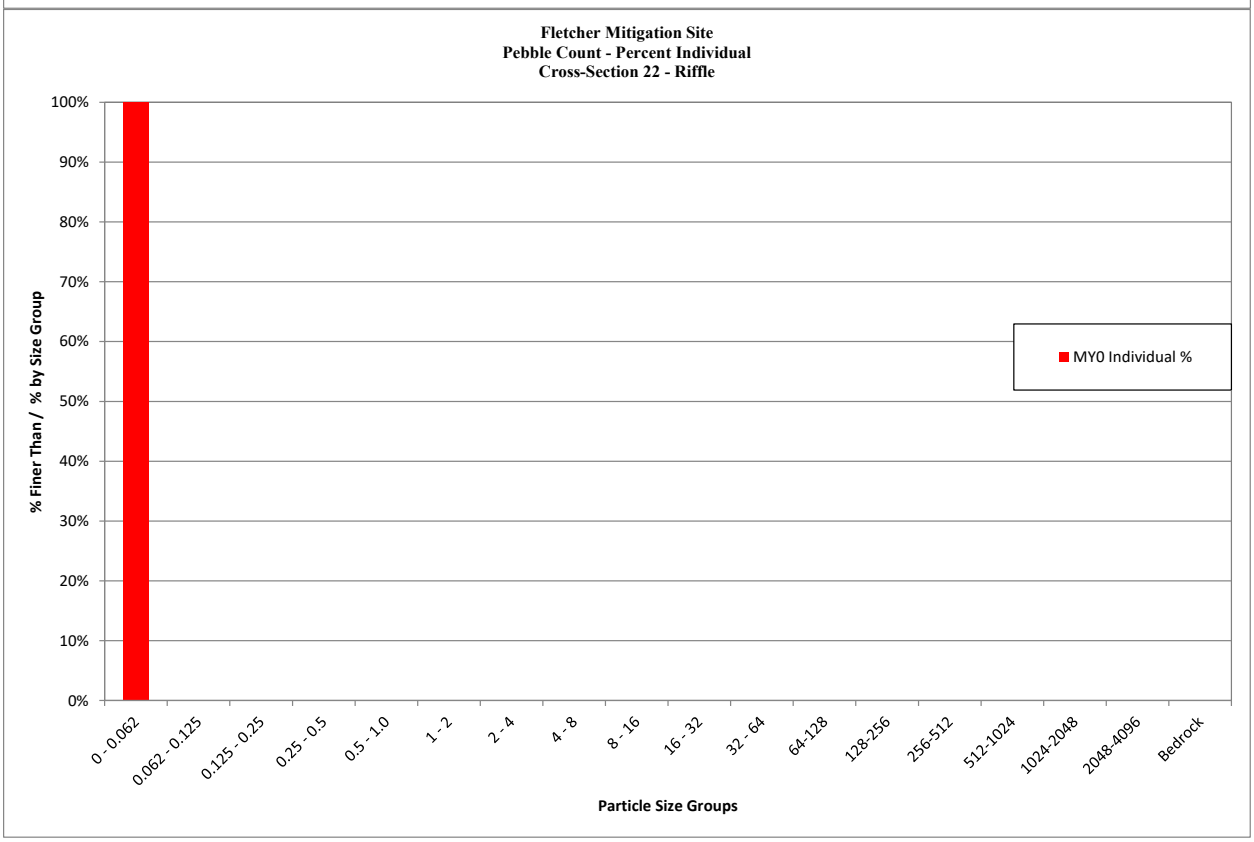
Fletcher Mitigation Site			
Cross Section 19 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	8	7.6%	8%
0.062 - 0.125	4	3.8%	11%
0.125 - 0.25	2	1.9%	13%
0.25 - 0.5	4	3.8%	17%
0.5 - 1.0	5	4.8%	22%
1 - 2	35	33.3%	55%
2 - 4	7	6.7%	62%
4 - 8	19	18.1%	80%
8 - 16	18	17.1%	97%
16 - 32	3	2.9%	100%
32 - 64	0	0.0%	100%
64-128	0	0.0%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**105**	**100%**	**100%**
		Summary Data	
		D50	**1.8**
		D84	**9.3**
		D95	**15**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 19 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

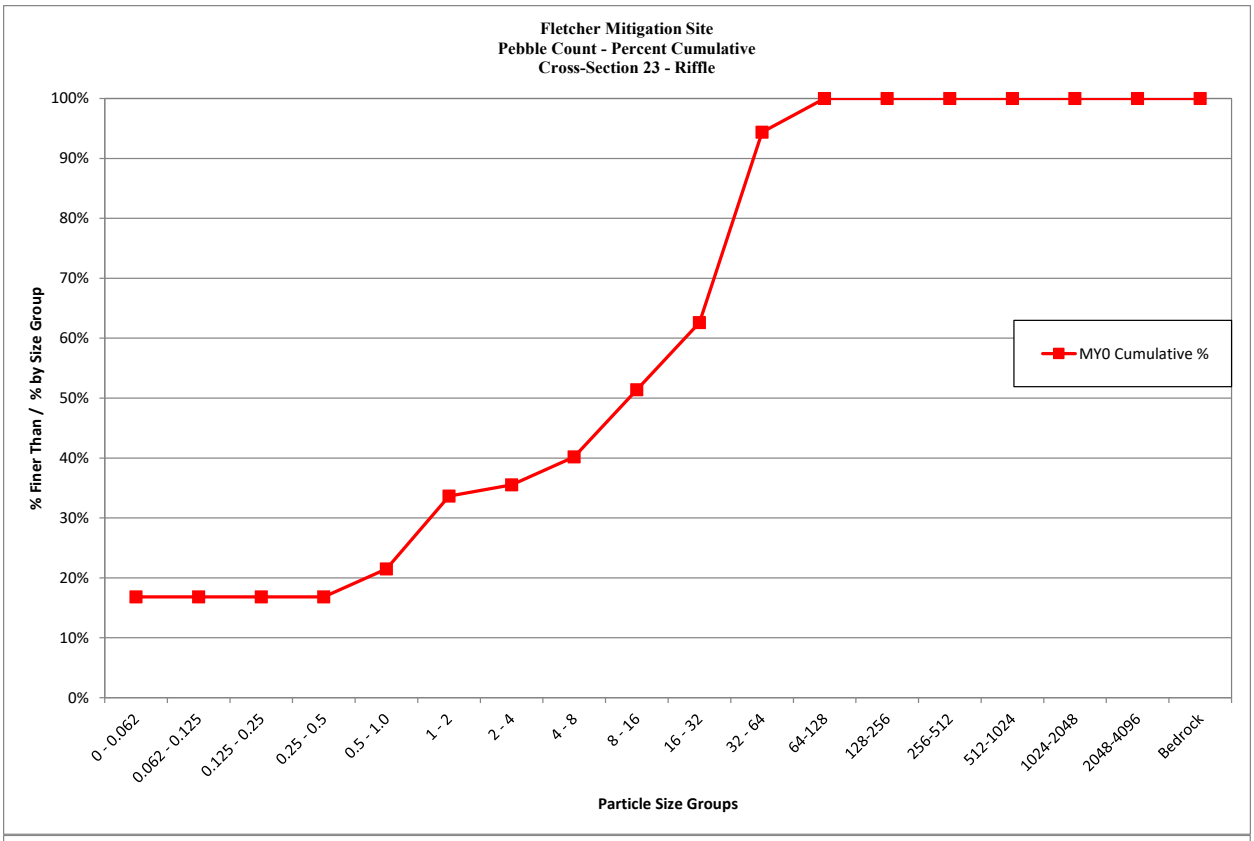

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 19 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

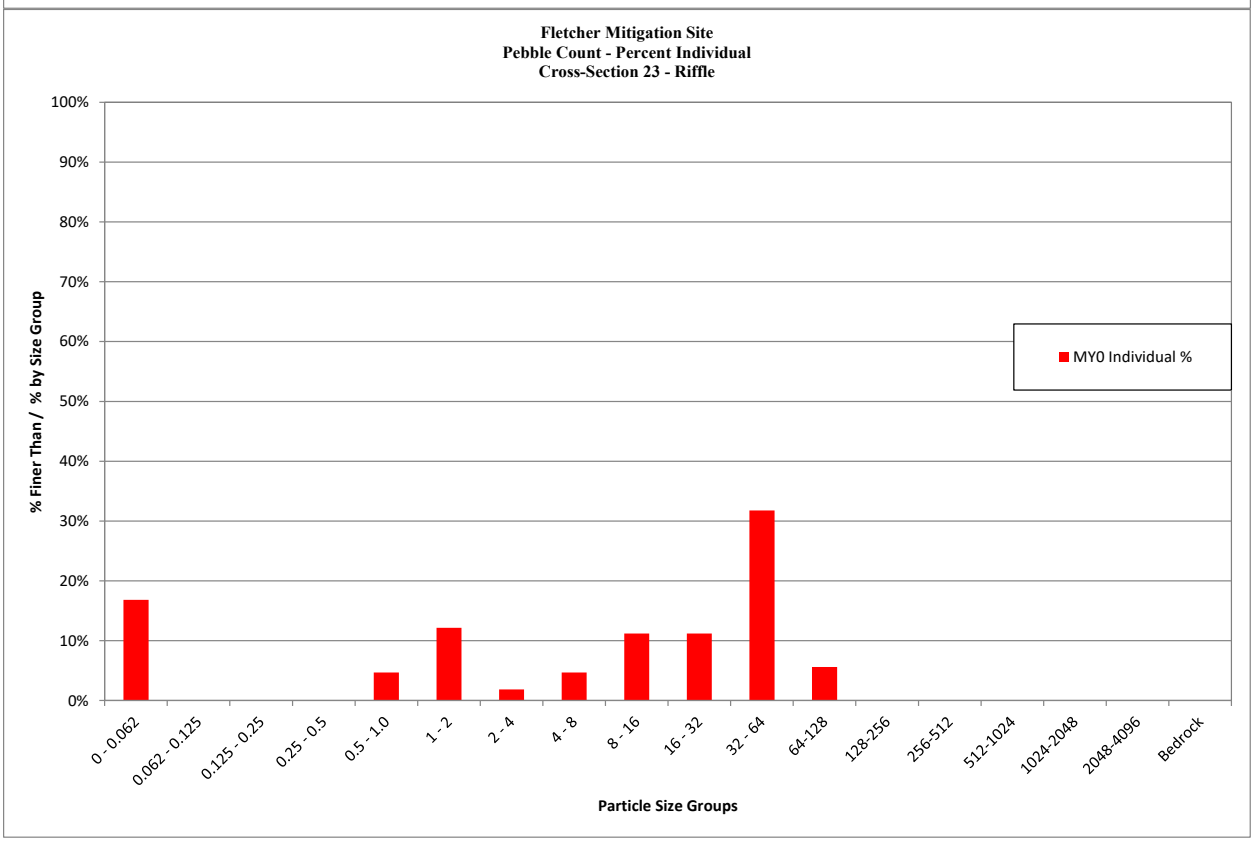
Fletcher Mitigation Site			
Cross Section 22 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	105	100.0%	100%
0.062 - 0.125	0	0.0%	100%
0.125 - 0.25	0	0.0%	100%
0.25 - 0.5	0	0.0%	100%
0.5 - 1.0	0	0.0%	100%
1 - 2	0	0.0%	100%
2 - 4	0	0.0%	100%
4 - 8	0	0.0%	100%
8 - 16	0	0.0%	100%
16 - 32	0	0.0%	100%
32 - 64	0	0.0%	100%
64-128	0	0.0%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**105**	**100%**	**100%**
		Summary Data	
		D50	**0.062**
		D84	**0.062**
		D95	**0.062**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 22 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

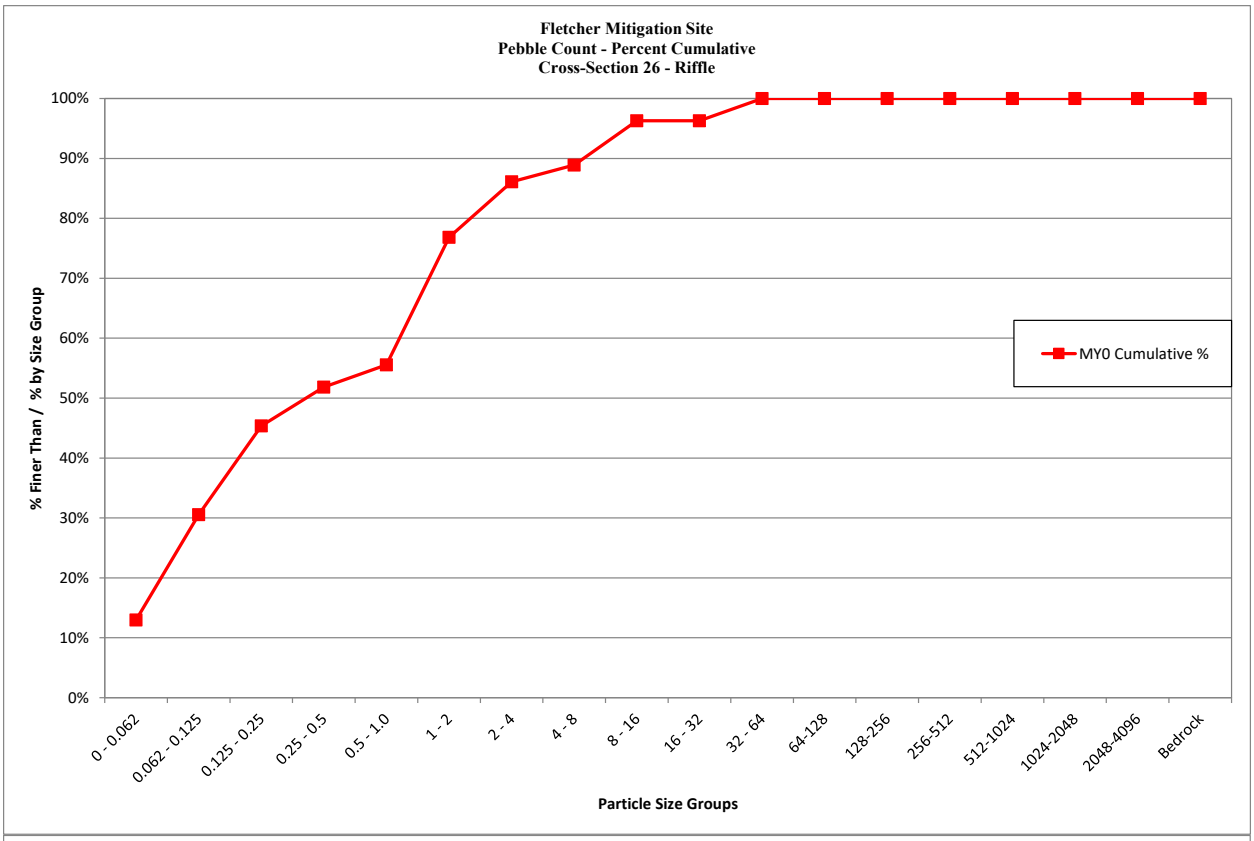

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 22 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

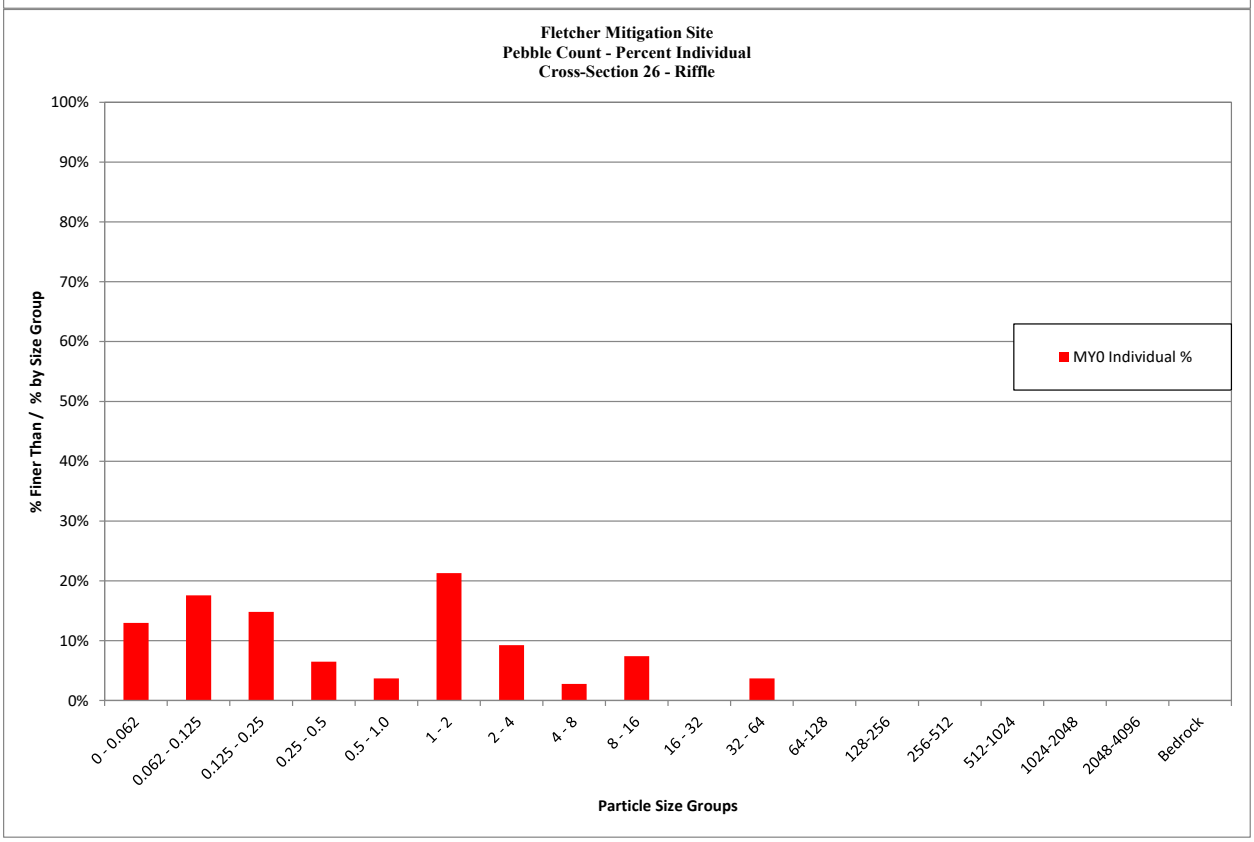
Fletcher Mitigation Site			
Cross Section 23 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	18	16.8%	17%
0.062 - 0.125	0	0.0%	17%
0.125 - 0.25	0	0.0%	17%
0.25 - 0.5	0	0.0%	17%
0.5 - 1.0	5	4.7%	21%
1 - 2	13	12.1%	34%
2 - 4	2	1.9%	36%
4 - 8	5	4.7%	40%
8 - 16	12	11.2%	51%
16 - 32	12	11.2%	63%
32 - 64	34	31.8%	94%
64-128	6	5.6%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**107**	**100%**	**100%**
		Summary Data	
		D50	**15**
		D84	**48**
		D95	**69**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 23 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

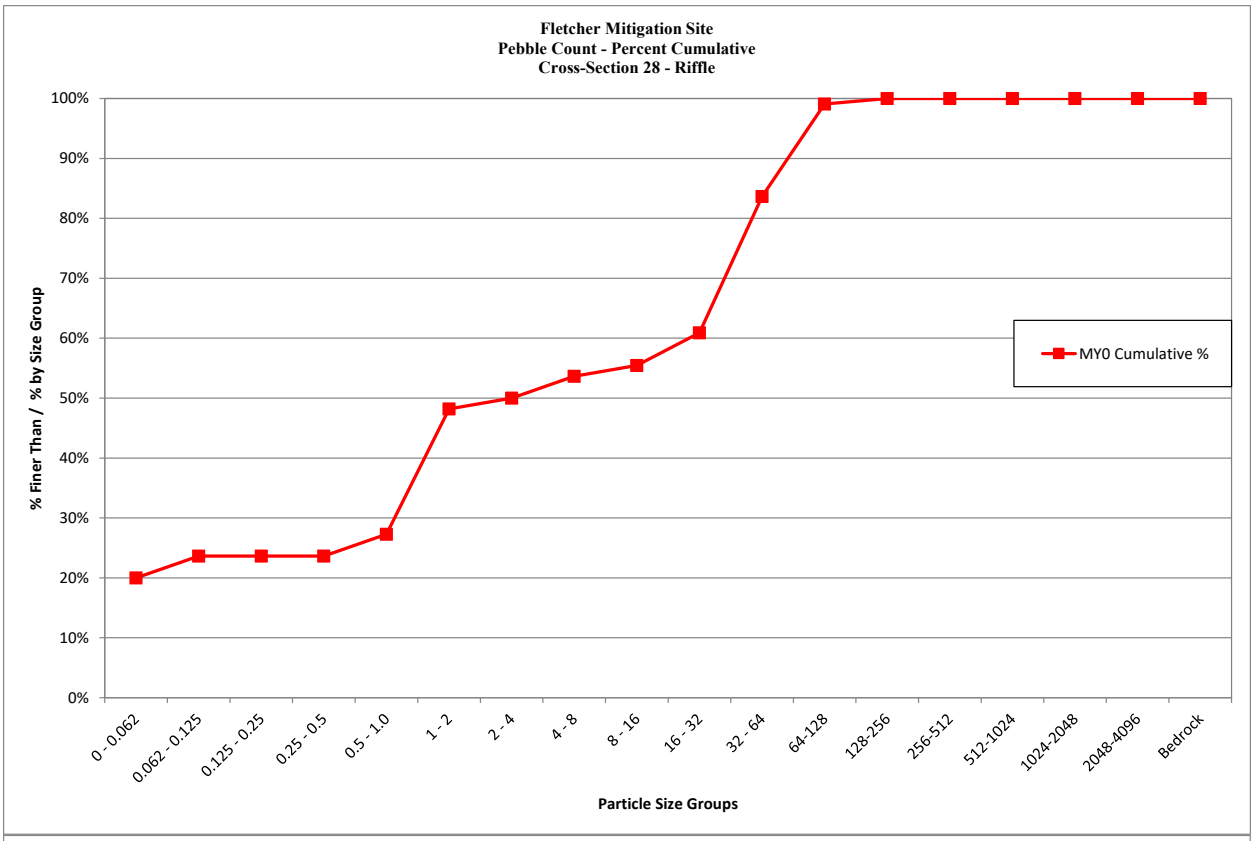

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 23 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

Fletcher Mitigation Site			
Cross Section 26 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	14	13.0%	13%
0.062 - 0.125	19	17.6%	31%
0.125 - 0.25	16	14.8%	45%
0.25 - 0.5	7	6.5%	52%
0.5 - 1.0	4	3.7%	56%
1 - 2	23	21.3%	77%
2 - 4	10	9.3%	86%
4 - 8	3	2.8%	89%
8 - 16	8	7.4%	96%
16 - 32	0	0.0%	96%
32 - 64	4	3.7%	100%
64-128	0	0.0%	100%
128-256	0	0.0%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**108**	**100%**	**100%**
		Summary Data	
		D50	**0.41**
		D84	**3.4**
		D95	**13**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 26 - Riffle
% Finer Than / % by Size Group
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups


Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 26 - Riffle
% Finer Than / % by Size Group
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

Fletcher Mitigation Site			
Cross Section 28 - Riffle			
Monitoring Year - 2019; MY0			
Bed Surface Material Particle Size Class (mm)	**Number**	**% Individual**	**% Cumulative**
0 - 0.062	22	20.0%	20%
0.062 - 0.125	4	3.6%	24%
0.125 - 0.25	0	0.0%	24%
0.25 - 0.5	0	0.0%	24%
0.5 - 1.0	4	3.6%	27%
1 - 2	23	20.9%	48%
2 - 4	2	1.8%	50%
4 - 8	4	3.6%	54%
8 - 16	2	1.8%	55%
16 - 32	6	5.5%	61%
32 - 64	25	22.7%	84%
64-128	17	15.5%	99%
128-256	1	0.9%	100%
256-512	0	0.0%	100%
512-1024	0	0.0%	100%
1024-2048	0	0.0%	100%
2048-4096	0	0.0%	100%
Bedrock	0	0.0%	100%
Total	**110**	**100%**	**100%**
		Summary Data	
		D50	**4**
		D84	**65**
		D95	**87**


Fletcher Mitigation Site
Pebble Count - Percent Cumulative
Cross-Section 28 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

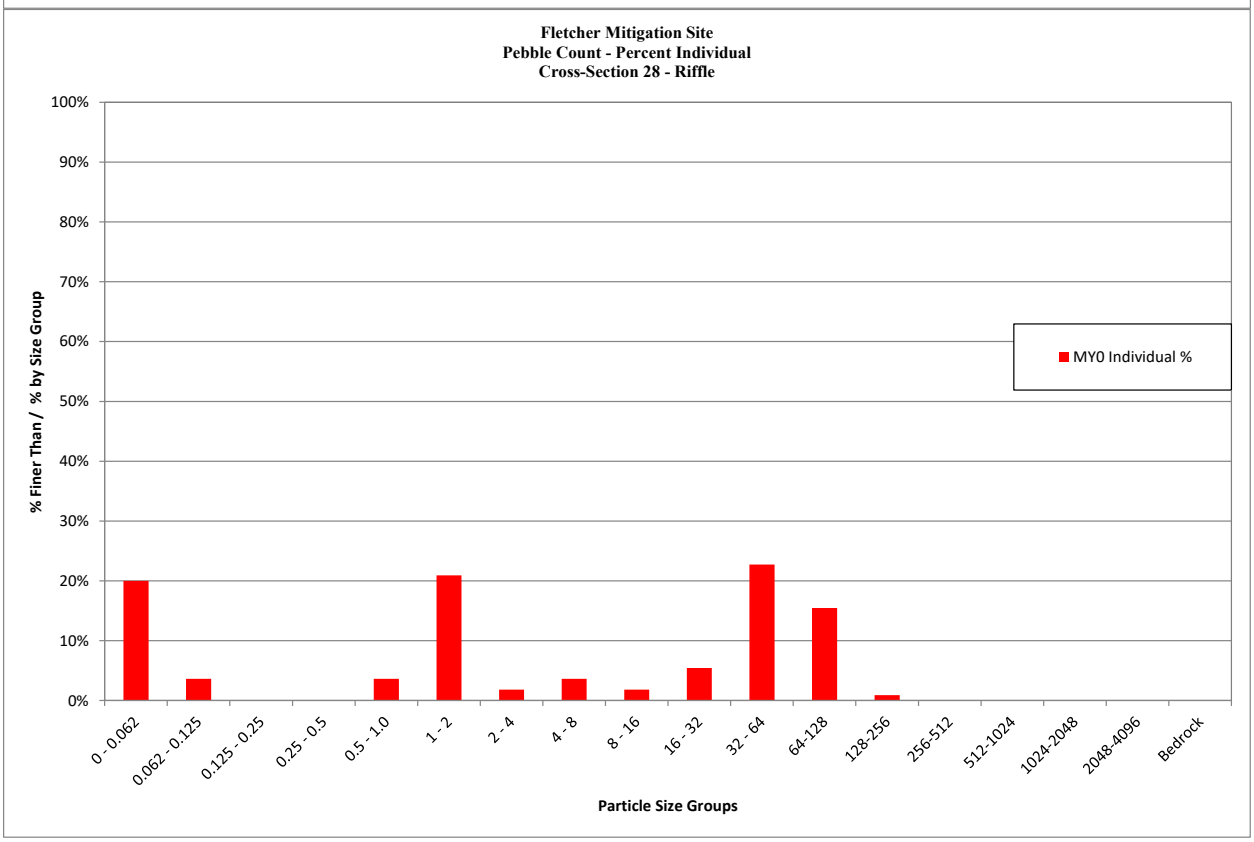

Fletcher Mitigation Site
Pebble Count - Percent Individual
Cross-Section 28 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Finer Than / % by Size Group
MY0 Individual %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size Groups

Table 7. Baseline Stream Data Summary
Fletcher Mitigation Site - Fletcher Creek Reach 1B (380 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	6.1	-	-	8.0	-	-	14.7	-	-	19.5	-	-	-	8.7	-	-	7.1	-	-	-	1
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.0	-	-	-	1
Bankfull Mean Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.3	-	-	-	1
Bankfull Max Depth (ft)				0.7	-	-	0.8	-	-	1.2	-	-	1.4	-	-	-	0.9	-	-	0.6	-	-	-	1
Bankfull Cross Sectional Area (ft^2)		-		4.4	-	-	6.2	-	-	18.0	-	-	27.2	-	-	-	5.5	-	-	2.3	-	-	-	1
Width/Depth Ratio				8.5	-	-	10.5	-	-	12.0	-	-	14	-	-	-	13.6	-	-	21.4	-	-	-	1
Entrenchment Ratio				1.1	-	-	2.1	-	-	1.4	-	-	1.5	-	-	-	2.4	-	-	2.8	-	-	-	1
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	1
d50 (mm)				6.0	-	-	11.0	-	-	60.0	-	-	125	-	-	-	-	-	-	12.0	-	-	-	1
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	8.5	8.0	13.1	2.5	13
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	0.018	0.014	0.044	0.013	13
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1	9.6	9.7	14.4	2.8	12
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	-	1.2	2.0	1.9	2.9	0.5	12
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	23.4	-	39.0	14.6	27.9	29.4	40.5	8.0	11
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	10.3	13.7	17.2	17.7	18.2	17.8	19.0	0.7	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	14.0	-	21.0	17.0	22.7	25.0	26.0	4.9	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	2.6	2.9	3.0	0.6	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.7	18.2	17.8	19.1	0.8	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	-	2.0	2.1	2.0	2.2	0.1	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2				-						-						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						-						-			-					
Stream Power (Transport Capacity) W/m^2				-						-						-			-					
Additional Reach Parameters																								
Drainage Area (mi^2)				0.30						2.35						0.30								
Rosgen Classification				G						B4						B4			B4					
Bankfull Velocity (fps)		-		2.3 - 3.6						-						-								
Bankfull Discharge (cfs)		-		22.0						-						15.0								
Valley Length (ft)				-						-						-			337					
* Channel Thalweg Length (ft)				-						-						-			380					
^ Channel Centerline (ft)				-						-									377					
Sinuosity				-						-						1.11			1.12					
Water Surface Slope (ft/ft)				0.008 - 0.018						0.011 - 0.018						0.016			0.015					
Bankfull Slope (ft/ft)				-						-						-			0.016					
Bankfull Floodplain Area (acres)				-						-														
% of Reach with Eroding Banks				-						-														
Channel Stability or Habitat Metric				Unstable						-														
Biological or Other				-						-														

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 7 Cont'd. Baseline Stream Data Summary
Fletcher Mitigation Site - Fletcher Creek Reach 1C (1,541 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	6.3	-	-	9.3	-	-	14.7	-	-	19.5	-	-	-	9.4	-	7.6	9.8	9.8	12.0	3.1	2
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0	30.0	30.0	50.0	28.3	2
Bankfull Mean Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	0.3	0.5	0.5	0.6	0.2	2
Bankfull Max Depth (ft)				0.6	-	-	0.9	-	-	1.2	-	-	1.4	-	-	-	0.9	-	0.5	0.8	0.8	1.0	0.4	2
Bankfull Cross Sectional Area (ft^2)		-		4.9	-	-	7.5	-	-	18.0	-	-	27.2	-	-	-	6.4	-	2.1	4.8	4.8	7.5	3.8	2
Width/Depth Ratio				8.2	-	-	16.6	-	-	12.0	-	-	14	-	-	-	13.8	-	19.2	23.4	23.4	27.6	6.0	2
Entrenchment Ratio				1.3	-	-	1.7	-	-	1.4	-	-	1.5	-	-	-	2.4	-	1.3	2.7	2.7	4.2	2.0	2
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-		-	1.0	1.0	1.0	1.0	0.0	2
d50 (mm)				5.0	-	-	14.0	-	-	60.0	-	-	125	-	-	-	-	-	18.0	18.5	19.0	19.0	0.71	2
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	10.9	11.1	21.1	4.9	44
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000	0.009	0.007	0.029	0.008	44
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	13.1	12.8	29.0	4.6	44
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	-	1.5	2.8	2.8	4.0	0.6	44
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	31.0	-	51.7	13.5	35.0	34.4	96.1	13.5	43
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	11.2	15.0	18.7	18.7	20.2	19.7	22.3	1.9	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	15.0	-	22.0	17.2	21.0	20.6	25.3	4.1	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	2.2	2.2	2.7	0.5	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	20.2	19.7	22.3	1.9	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-	2.0	2.1	2.1	2.4	0.2	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2				-						-						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						-						-			-					
Stream Power (Transport Capacity) W/m^2				-						-						-			-					
Additional Reach Parameters																								
Drainage Area (mi^2)				0.37						2.35						0.37								
Rosgen Classification				B, F, G						B4						B4			B4					
Bankfull Velocity (fps)		-		-						-						-								
Bankfull Discharge (cfs)		-		25.0						-						18.0								
Valley Length (ft)				-						-						-			1,436					
* Channel Thalweg Length (ft)				-						-						-			1,541					
^ Channel Centerline (ft)				-						-						-			1,540					
Sinuosity				1.24						-						1.10			1.10					
Water Surface Slope (ft/ft)				0.009 - 0.015						0.011 - 0.018						0.012			0.012					
Bankfull Slope (ft/ft)				-						-						-			0.012					
Bankfull Floodplain Area (acres)				-						-														
% of Reach with Eroding Banks				-						-														
Channel Stability or Habitat Metric				Unstable						-														
Biological or Other				-						-														

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 7 Cont'd. Baseline Stream Data Summary
Fletcher Mitigation Site - Fletcher Creek Reach 2A (1,299 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	4.9	-	-	7.9	-	-	14.7	-	-	19.5	-	-	-	10.4	-	12.6	12.9	12.9	13.1	0.3	2
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-		-	35.0	42.5	42.5	50.0	10.6	2
Bankfull Mean Depth (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	0.7	0.8	0.8	0.8	0.0	2
Bankfull Max Depth (ft)				0.8	-	-	1.1	-	-	1.2	-	-	1.4	-	-	-	1.0	-	1.2	1.4	1.4	1.6	0.3	2
Bankfull Cross Sectional Area (ft^2)		-		4.8	-	-	7.9	-	-	18.0	-	-	27.2	-	-	-	7.6	-	9.2	9.8	9.8	10.4	0.9	2
Width/Depth Ratio				5.0	-	-	9.1	-	-	12.0	-	-	14	-	-	-	14.2	-	16.5	17.0	17.0	17.4	0.6	2
Entrenchment Ratio				1.4	-	-	1.9	-	-	1.4	-	-	1.5	-	-	-	2.4	-	2.7	3.3	3.3	4.0	0.9	2
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	1.0	1.0	1.0	0.0	2
d50 (mm)				9.0	-	-	14.0	-	-	60.0	-	-	125.0	-	-	-	-	-	18.0	19.0	20.0	20.0	1.4	2
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	16.0	14.6	32.2	6.7	35
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	0.010	0.008	0.028	0.007	35
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.58	10.8	10.2	25.3	4.2	34
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	1.2	2.5	2.6	3.7	0.7	34
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	34.2	-	57.2	9.4	36.8	37.5	52.2	9.4	33
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	12.6	16.8	21.0	23.8	24.5	24.1	25.5	0.9	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	17.0	-	25.0	16.8	22.1	19.8	29.6	6.7	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	2.1	1.9	2.8	0.6	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.8	24.5	24.1	25.5	0.9	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	-	2.3	2.4	2.3	2.5	0.1	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2							-						-				-					-		
Max Part Size (mm) Mobilized at Bankfull							-						-				-					-		
Stream Power (Transport Capacity) W/m^2							-						-				-					-		
Additional Reach Parameters																								
Drainage Area (mi^2)							0.49						2.35				0.49							
Rosgen Classification							B, G						B4				B4					B4		
Bankfull Velocity (fps)		-					2.0 - 3.4						-				-							
Bankfull Discharge (cfs)		-					32.0						-				22.0							
Valley Length (ft)							-						-				-					1,158		
* Channel Thalweg Length (ft)							-						-				-					1,299		
^ Channel Centerline (ft)							-						-				-					1,296		
Sinuosity							1.35						-				1.17					1.15		
Water Surface Slope (ft/ft)							0.005 - 0.014						0.011 - 0.018				0.012					0.011		
Bankfull Slope (ft/ft)							-						-				-					0.012		
Bankfull Floodplain Area (acres)							-						-											
% of Reach with Eroding Banks							-						-											
Channel Stability or Habitat Metric							Severe						-											
Biological or Other							-						-											

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 7 Cont'd. Baseline Stream Data Summary
Fletcher Mitigation Site - Fletcher Creek Reach 2B (1,510 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	4.4	-	-	10.7	-	-	14.7	-	-	19.5	-	-	-	10.6	-	9.8	10.0	10.0	10.2	0.3	2
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40.0	55.0	55.0	70.0	21.2	2
Bankfull Mean Depth (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	0.7	0.7	0.7	0.8	0.1	2
Bankfull Max Depth (ft)				0.7	-	-	1.0	-	-	1.2	-	-	1.4	-	-	-	1.0	-	1.2	1.3	1.3	1.3	0.1	2
Bankfull Cross Sectional Area (ft^2)	-			3.3	-	-	7.2	-	-	18.0	-	-	27.2	-	-	-	7.9	-	7.1	7.4	7.4	7.6	0.3	2
Width/Depth Ratio				5.2	-	-	15.7	-	-	12.0	-	-	14	-	-	-	14.3	-	12.6	13.6	13.6	14.6	1.4	2
Entrenchment Ratio				1.4	-	-	5.9	-	-	1.4	-	-	1.5	-	-	-	2.3	-	3.9	5.5	5.5	7.2	2.3	2
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	1.0	1.0	1.0	0.0	2
d50 (mm)				-	5.0	-	-	-	-	60.0	-	-	125.0	-	-	-	-	-	5.5	11.8	18.0	18.0	8.8	2
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	16.0	14.6	32.2	6.7	35
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	0.010	0.008	0.028	0.007	35
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.58	10.8	10.2	25.3	4.2	34
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	1.2	2.5	2.6	3.7	0.7	34
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	35.0	-	58.3	9.4	36.8	37.5	52.2	9.4	33
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	12.9	17.2	21.5	18.0	19.9	19.2	22.6	2.4	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	17.0	-	26.0	23.5	25.3	24.8	27.5	2.0	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	2.4	2.3	2.6	0.2	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.9	19.9	19.2	22.6	2.4	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	1.7	1.9	1.8	2.1	0.2	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2				-						-														
Max Part Size (mm) Mobilized at Bankfull				-						-														
Stream Power (Transport Capacity) W/m^2				-						-														
Additional Reach Parameters																								
Drainage Area (mi^2)				0.52						2.35						0.52								
Rosgen Classification				B, E, G						B4						B5			B5					
Bankfull Velocity (fps)	-			1.8 - 2.7						-						-								
Bankfull Discharge (cfs)	-			33.0						-						23.0								
Valley Length (ft)				-						-						-			1,467					
* Channel Thalweg Length (ft)				-						-						-			1,510					
^ Channel Centerline (ft)				-						-						-			1,470					
Sinuosity				1.03						-						1.10			1.10					
Water Surface Slope (ft/ft)				0.004 - 0.01						0.011 - 0.018						0.007			0.011					
Bankfull Slope (ft/ft)				-						-						-			0.012					
Bankfull Floodplain Area (acres)				-						-														
% of Reach with Eroding Banks				-						-														
Channel Stability or Habitat Metric				Unstable						-														
Biological or Other				-						-														

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 7 Cont'd. Baseline Stream Data Summary
Fletcher Mitigation Site - Weston Creek Reach 1A (1,982 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	4.5	-	-	6.3	-	-	6.3	-	-	10.7	-	-	-	8.6	-	9.1	9.8	9.8	10.4	0.9	2
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0	50.0	50.0	50.0	0.0	2
Bankfull Mean Depth (ft)	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	0.6	-	0.6	0.6	0.6	0.6	0.0	2
Bankfull Max Depth (ft)				0.6	-	-	0.7	-	-	1.0	-	-	1.2	-	-	-	0.9	-	0.9	1.0	1.0	1.1	0.1	2
Bankfull Cross Sectional Area (ft^2)		-		2.7	-	-	4.6	-	-	7.7	-	-	10.0	-	-	-	5.5	-	5.4	5.8	5.8	6.2	0.6	2
Width/Depth Ratio				7.4	-	-	10.0	-	-	6.0	-	-	11.0	-	-	-	13.6	-	15.5	16.4	16.4	17.4	1.3	2
Entrenchment Ratio				1.6	-	-	2.6	-	-	2.3	-	-	4.8	-	-	-	4.6	-	4.8	5.1	5.1	5.5	0.5	2
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	1.0	1.0	1.0	0.0	2
d50 (mm)				1.0	-	-	4.0	-	-	13.0	-	-	17.0	-	-	-	-	-	1.5	2.6	3.6	3.6	1.5	2
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	13.3	11.9	38.6	7.8	55
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000	0.004	0.002	0.017	0.004	55
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	13.1	12.8	26.1	4.3	54
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	-	1.1	1.7	1.7	2.6	0.4	54
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	43.0	-	60.2	8.9	35.7	34.4	72.9	12.0	53
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	13.7	27.4	34.3	24.8	27.0	27.2	29.0	2.1	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	10.0	-	17.0	11.0	14.3	14.6	17.4	3.2	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	1.7	1.7	2.0	0.4	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.5	26.9	27.2	29.0	2.3	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-	2.9	3.1	3.2	3.4	0.2	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2							-						-				-					-		
Max Part Size (mm) Mobilized at Bankfull							-						-				-					-		
Stream Power (Transport Capacity) W/m^2							-						-				-					-		
Additional Reach Parameters																								
Drainage Area (mi^2)							0.30						0.25				0.30							
Rosgen Classification							E, G						E4				C5					C5		
Bankfull Velocity (fps)		-					1.8 - 2.2						-				-							
Bankfull Discharge (cfs)		-					21.0						-				15.0							
Valley Length (ft)							-						-				-					1,616		
* Channel Thalweg Length (ft)							-						-				-					1,982		
^ Channel Centerline							-						-				-					1,954		
Sinuosity							1.01						1.60				1.24					1.24		
Water Surface Slope (ft/ft)							0.006 - 0.009						0.008				0.005					0.005		
Bankfull Slope (ft/ft)							-						-				-					0.005		
Bankfull Floodplain Area (acres)							-						-											
% of Reach with Eroding Banks							-						-											
Channel Stability or Habitat Metric							Unstable						-											
Biological or Other							-						-											

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 7 Cont'd. Baseline Stream Data Summary
Fletcher Mitigation Site - Weston Creek Reach 1B (825 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	4.5	-	-	9.6	-	-	6.3	-	-	10.7	-	-	-	9.4	-	-	9.7	-	-	-	1
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	40.0	-	-	-	1
Bankfull Mean Depth (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	0.5	-	-	-	1
Bankfull Max Depth (ft)				0.6	-	-	1.0	-	-	1.0	-	-	1.2	-	-	-	0.9	-	-	0.7	-	-	-	1
Bankfull Cross Sectional Area (ft^2)		-		3.8	-	-	7.8	-	-	7.7	-	-	10	-	-	-	6.3	-	-	4.7	-	-	-	1
Width/Depth Ratio				5.3	-	-	11.9	-	-	6.0	-	-	11	-	-	-	3.3	-	-	20.4	-	-	-	1
Entrenchment Ratio				1.3	-	-	2.2	-	-	2.3	-	-	4.8	-	-	-	4.3	-	-	4.1	-	-	-	1
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	1
d50 (mm)				1.0	-	-	4.0	-	-	13.0	-	-	17.0	-	-	-	-	-	-	1.8	-	-	-	-
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	12.3	12.1	29.1	5.9	21
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000	0.007	0.002	0.031	0.008	21
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	14.8	14.0	26.8	6.9	21
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	-	1.4	2.0	2.0	2.7	0.3	21
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	47.0	-	65.8	19.7	35.2	34.8	68.4	12.1	20
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	14.9	29.9	37.3	27.3	28.4	28.1	29.9	1.3	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	11.0	-	19.0	15.8	19.5	18.2	24.5	4.5	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	2.1	1.9	2.6	0.5	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27.3	28.4	28.1	29.9	1.3	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	-	2.9	3.0	3.0	3.2	0.1	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2						-						-					-				-			
Max Part Size (mm) Mobilized at Bankfull						-						-					-				-			
Stream Power (Transport Capacity) W/m^2						-						-					-				-			
Additional Reach Parameters																								
Drainage Area (mi^2)						0.37						0.25					0.37							
Rosgen Classification						G, E						E4					C5				C5			
Bankfull Velocity (fps)		-				1.8 - 2.3						-					-							
Bankfull Discharge (cfs)		-				25.0						-					18.0							
Valley Length (ft)						-						-					-				708			
* Channel Thalweg Length (ft)						-						-					-				825			
^ Channel Centerline (ft)						-						-					-				804			
Sinuosity						1.01						1.60					1.20				1.17			
Water Surface Slope (ft/ft)						0.005 - 0.007						0.0080					0.009				0.0024			
Bankfull Slope (ft/ft)						-						-					-				0.0026			
Bankfull Floodplain Area (acres)						-						-												
% of Reach with Eroding Banks						-						-												
Channel Stability or Habitat Metric						Unstable						-												
Biological or Other						-						-												

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 7 Cont'd. Baseline Stream Data Summary
Fletcher Mitigation Site - Raccoon Branch Reach 1D (440 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	1.8	-	-	3.4	-	-	14.7	-	-	19.5	-	-	-	6.1	-	-	6.9	-	-	-	1
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	20	-	-	-	1
Bankfull Mean Depth (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.5	-	-	-	1
Bankfull Max Depth (ft)				0.1	-	-	0.2	-	-	1.2	-	-	1.4	-	-	-	0.5	-	-	1.34	-	-	-	1
Bankfull Cross Sectional Area (ft^2)		-		0.4	-	-	0.6	-	-	18	-	-	27.2	-	-	-	2.1	-	-	3.42	-	-	-	1
Width/Depth Ratio				8.0	-	-	25.7	-	-	12	-	-	14.0	-	-	-	17.8	-	-	13.8	-	-	-	1
Entrenchment Ratio				1.7	-	-	2.1	-	-	1.4	-	-	1.5	-	-	-	2.3	-	-	2.91	-	-	-	1
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	1
d50 (mm)				1.0	-	-	2.0	-	-	60.0	-	-	125.0	-	-	-	-	-	-	0.062	-	-	-	1
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	4.5	4.2	7.9	1.7	38.0
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	0.033	0.030	0.085	0.021	38.0
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	5.4	5.0	12.7	2.6	37.0
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	0.6	1.0	1.1	1.4	0.2	37.0
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	20.1	-	33.6	4.1	12.1	11.2	28.8	5.5	35.0
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	6.5	8.7	10.9	6.7	7.5	7.0	8.7	1.1	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	9.0	-	13.0	7.9	10.1	8.5	13.9	3.3	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	1.6	1.3	2.2	0.6	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	7.5	7.0	8.7	1.1	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	-	1.1	1.2	1.1	1.4	0.1	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2				-						-						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						-						-			-					
Stream Power (Transport Capacity) W/m^2				-						-						-			-					
Additional Reach Parameters																								
Drainage Area (mi^2)				0.04						2.35						0.04								
Rosgen Classification				B, G						B4						B4			B4					
Bankfull Velocity (fps)		-		2.4 - 3.4						-						-								
Bankfull Discharge (cfs)		-		4.0						-						3.0								
Valley Length (ft)				-						-						-			413					
* Channel Thalweg Length (ft)				-						-						-			440					
^ Channel Centerline (ft)				-						-						-			448					
Sinuosity				1.09						-						1.05			1.08					
Water Surface Slope (ft/ft)				0.048 - 0.092						0.011 - 0.018						0.048			0.040					
Bankfull Slope (ft/ft)				-						-						-			0.041					
Bankfull Floodplain Area (acres)				-						-														
% of Reach with Eroding Banks				-						-														
Channel Stability or Habitat Metric				Unstable						-														
Biological or Other				-						-														

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 7 Cont'd. Baseline Stream Data Summary
Fletcher Mitigation Site - Coats Branch Reach 1B (601 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	0.9	-	-	1.3	-	-	14.7	-	-	19.5	-	-	-	5.7	-	-	5.2	-	-	-	1
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.0	-	-	-	1
Bankfull Mean Depth (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.3	-	-	-	1
Bankfull Max Depth (ft)				0.2	-	-	0.3	-	-	1.2	-	-	1.4	-	-	-	0.5	-	-	0.7	-	-	-	1
Bankfull Cross Sectional Area (ft^2)		-		0.2	-	-	0.3	-	-	18	-	-	27.2	-	-	-	1.8	-	-	1.6	-	-	-	1
Width/Depth Ratio				5.1	-	-	5.6	-	-	12	-	-	14.0	-	-	-	17.9	-	-	16.5	-	-	-	1
Entrenchment Ratio				2.0	-	-	2.8	-	-	1.4	-	-	1.5	-	-	-	2.4	-	-	2.9	-	-	-	1
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	1
d50 (mm)				1.0	-	-	2.0	-	-	60.0	-	-	125.0	-	-	-	-	-	-	15.0	-	-	-	1
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	6.5	6.3	14.0	2.1	52
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000	0.020	0.016	0.072	0.016	52
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	3.4	3.2	6.3	1.2	51
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	0.24	1.2	1.1	2.5	0.4	51
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	18.8	-	31.4	5.8	11.7	12	18.7	2.5	50
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	6.1	8.1	10.2	9.7	10.6	10.5	11.5	0.9	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	8.0	-	12.0	9.0	11.0	12.0	12.1	1.8	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	1.9	2.1	2.1	0.3	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.7	10.6	10.5	11.5	0.9	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	-	1.7	1.9	1.8	2.0	0.1	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2				-						-						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						-						-			-					
Stream Power (Transport Capacity) W/m^2				-						-						-			-					
Additional Reach Parameters																								
Drainage Area (mi^2)				0.03						2.4						0.03								
Rosgen Classification				B, G						B4						B4			B4					
Bankfull Velocity (fps)		-		1.7 - 2.0						-						-								
Bankfull Discharge (cfs)		-		3.0						-						2.0								
Valley Length (ft)				-						-						-			597					
* Channel Thalweg Length (ft)				-						-						-			601					
^ Channel Centerline (ft)				-						-						-			606					
Sinuosity				1.08						-						1.04			1.05					
Water Surface Slope (ft/ft)				0.03 - 0.034						0.011 - 0.018						0.033			0.033					
Bankfull Slope (ft/ft)				-						-						-			0.033					
Bankfull Floodplain Area (acres)				-						-														
% of Reach with Eroding Banks				-						-														
Channel Stability or Habitat Metric				Severe						-														
Biological or Other				-						-														

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 7 Cont'd. Baseline Stream Data Summary
Fletcher Mitigation Site - Coats Branch Reach 1C (708 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	1.9	-	-	3.4	-	-	14.7	-	-	19.5	-	-	-	6.0	-	-	5.4	-	-	-	1
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	20.0	-	-	-	1
Bankfull Mean Depth (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.4	-	-	-	1
Bankfull Max Depth (ft)				0.2	-	-	0.3	-	-	1.2	-	-	1.4	-	-	-	0.5	-	-	0.8	-	-	-	1
Bankfull Cross Sectional Area (ft^2)		-		0.3	-	-	0.8	-	-	18	-	-	27.2	-	-	-	2.0	-	-	2.2	-	-	-	1
Width/Depth Ratio				10.4	-	-	14.5	-	-	12	-	-	14.0	-	-	-	17.8	-	-	13.5	-	-	-	1
Entrenchment Ratio				1.2	-	-	1.9	-	-	1.4	-	-	1.5	-	-	-	2.3	-	-	3.7	-	-	-	1
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	1
d50 (mm)				9.0	-	-	12.0	-	-	60.0	-	-	125.0	-	-	-	-	-	-	0.4	-	-	-	1
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	7.4	7.7	10.1	1.6	48
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000	0.010	0.010	0.033	0.007	48
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	4.6	4.2	7.3	1.4	48
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	0.6	1.0	1.0	1.4	0.2	49
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	19.8	-	33.0	6.4	14.3	14.6	19.6	2.6	48
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	6.5	8.6	10.8	10.9	11.7	11.6	12.5	0.8	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	9.0	-	13.0	7.0	8.8	7.2	12.1	2.9	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	1.5	1.2	2.1	0.5	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.9	12.1	11.6	13.7	1.5	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	2.3	-	1.8	2.0	1.9	2.1	0.1	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2				-						-						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						-						-			-					
Stream Power (Transport Capacity) W/m^2				-						-						-			-					
Additional Reach Parameters																								
Drainage Area (mi^2)				0.04						2.4						0.04								
Rosgen Classification				B, F, G						B4						B4			B4					
Bankfull Velocity (fps)		-		0.9 - 1.8						-						-								
Bankfull Discharge (cfs)		-		4.0						-						3.0								
Valley Length (ft)				-						-						-			667					
* Channel Thalweg Length (ft)				-						-						-			708					
^ Channel Centerline (ft)				-						-						-			708					
Sinuosity				1.03						-						1.07			1.06					
Water Surface Slope (ft/ft)				0.009 - 0.021						0.011 - 0.018						0.015			0.013					
Bankfull Slope (ft/ft)				-						-						-			0.013					
Bankfull Floodplain Area (acres)				-						-														
% of Reach with Eroding Banks				-						-														
Channel Stability or Habitat Metric				Unstable						-														
Biological or Other				-						-														

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 7 Cont'd. Baseline Stream Data Summary
Fletcher Mitigation Site - Coats Branch Reach 1D (325 feet *)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	-	3.6	-	-	5.0	-	-	14.7	-	-	19.5	-	-	-	6.9	-	-	6.1	-	-	-	1
Floodprone Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.0	-	-	-	1
Bankfull Mean Depth (ft)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.5	-	-	-	1
Bankfull Max Depth (ft)				0.2	-	-	0.3	-	-	1.2	-	-	1.4	-	-	-	0.6	-	-	1.0	-	-	-	1
Bankfull Cross Sectional Area (ft^2)		-		1.0	-	-	1.4	-	-	18	-	-	27.2	-	-	-	2.7	-	-	3.3	-	-	-	1
Width/Depth Ratio				13.0	-	-	18.0	-	-	12	-	-	14.0	-	-	-	17.7	-	-	11.4	-	-	-	1
Entrenchment Ratio				1.7	-	-	1.8	-	-	1.4	-	-	1.5	-	-	-	2.2	-	-	4.1	-	-	-	1
Bank Height Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	1
d50 (mm)				8.0	-	-	14.0	-	-	60.0	-	-	125.0	-	-	-	-	-	-	4.0	-	-	-	1
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	7.2	7.3	11.9	1.8	22
Riffle Slope (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000	0.008	0.006	0.021	0.006	22
Pool Length (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	4.6	4.4	8.1	1.8	22
Pool Max Depth (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	0.9	-	0.6	1.1	1.1	2.2	0.3	22
Pool Spacing (ft)				-	-	-	-	-	-	-	-	-	-	-	-	22.8	-	38.0	8.0	13.9	14.0	19.1	3.2	21
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	7.4	9.9	12.3	11.5	12.7	12.8	13.8	1.2	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	-	-	-	-	-	10.0	-	15.0	4.7	7.0	7.2	9.2	2.3	3
Rc: Bankfull Width (ft/ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	1.0	1.0	1.3	0.3	3
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.5	12.5	12.1	13.8	1.2	3
Meander Width Ratio				-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	1.7	1.8	1.9	2.0	0.1	3
Substrate, Bed and Transport Parameters																								
Reach Shear Stress (Competency) lb/ft^2				-						-						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						-						-			-					
Stream Power (Transport Capacity) W/m^2				-						-						-			-					
Additional Reach Parameters																								
Drainage Area (mi^2)				0.07						2.4						0.07								
Rosgen Classification				B						B4						B4			B4					
Bankfull Velocity (fps)		-		0.9 - 1.3						-						-								
Bankfull Discharge (cfs)		-		7.0						-						5.0								
Valley Length (ft)				-						-						-			311					
* Channel Thalweg Length (ft)				-						-						-			325					
^ Channel Centerline (ft)				-						-						-			325					
Sinuosity				1.05						-						1.12			1.05					
Water Surface Slope (ft/ft)				0.004 - 0.009						0.011 - 0.018						0.015			0.013					
Bankfull Slope (ft/ft)				-						-						-			0.014					
Bankfull Floodplain Area (acres)				-						-														
% of Reach with Eroding Banks				-						-														
Channel Stability or Habitat Metric				Unstable						-														
Biological or Other				-						-														

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

Table 8. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)
Fletcher Mitigation Site

	Cross Section 1 (Riffle) Fletcher Creek Reach 1B								Cross Section 2 (Pool) Fletcher Creek Reach 1B								Cross Section 3 (Pool) Fletcher Creek Reach 1C								Cross Section 4 (Riffle) Fletcher Creek Reach 1C								Cross Section 5 (Pool) Fletcher Creek Reach 1C							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record Elevation (datum) Used	2124.8								2123.0								2118.8								2118.5								2106.8							
Low Bank Height Elevation (datum) Used	2124.8								2123.0								2118.8								2118.5								2106.8							
Bankfull Width (ft)	7.1								10.9								10.9								7.6								16.6							
Floodprone Width (ft)	20.0								60.0								40.0								10.0								60.0							
Bankfull Mean Depth (ft)	0.3								1.7								0.9								0.3								1.2							
Bankfull Max Depth (ft)	0.6								2.7								1.8								0.5								3.0							
Bankfull Cross Sectional Area (ft^2)	2.3								18.3								10.3								2.1								20.3							
Bankfull Width/Depth Ratio	21.4								6.5								11.6								27.6								13.7							
Bankfull Entrenchment Ratio	2.8								5.5								3.7								1.3								3.6							
Bankfull Bank Height Ratio	1.0								1.0								1.0								1.0								1.0							
Low Top of Bank Depth (ft)	0.6								2.7								1.8								0.5								3.0							

	Cross Section 6 (Riffle) Fletcher Creek Reach 1C								Cross Section 7 (Riffle) Fletcher Creek Reach 2A								Cross Section 8 (Pool) Fletcher Creek Reach 2A								Cross Section 9 (Pool) Fletcher Creek Reach 2A								Cross Section 10 (Riffle) Fletcher Creek Reach 2A							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record Elevation (datum) Used	2106.2								2101.4								2100.9								2093.5								2093.1							
Low Bank Height Elevation (datum) Used	2106.2								2101.4								2100.9								2093.5								2093.1							
Bankfull Width (ft)	12.0								13.1								15.3								15.6								12.6							
Floodprone Width (ft)	50.0								35.0								50.0								60.0								50.0							
Bankfull Mean Depth (ft)	0.6								0.8								1.3								1.1								0.7							
Bankfull Max Depth (ft)	1.0								1.6								2.6								2.8								1.2							
Bankfull Cross Sectional Area (ft^2)	7.5								10.4								20.5								16.9								9.2							
Bankfull Width/Depth Ratio	19.2								16.5								11.4								14.4								17.4							
Bankfull Entrenchment Ratio	4.2								2.7								3.3								3.9								4.0							
Bankfull Bank Height Ratio	1.0								1.0								1.0								1.0								1.0							
Low Top of Bank Depth (ft)	1.2								1.6								2.6								2.8								1.5							

	Cross Section 11 (Riffle) Fletcher Creek Reach 2B								Cross Section 12 (Pool) Fletcher Creek Reach 2B								Cross Section 13 (Pool) Fletcher Creek Reach 2B								Cross Section 14 (Riffle) Fletcher Creek Reach 2B							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record Elevation (datum) Used	2079.0								2078.6								2075.5								2075.1							
Low Bank Height Elevation (datum) Used	2079.0								2078.6								2075.5								2075.1							
Bankfull Width (ft)	10.2								9.7								10.1								9.8							
Floodprone Width (ft)	40.0								70.0								70.0								70.0							
Bankfull Mean Depth (ft)	0.7								1.2								1.6								0.8							
Bankfull Max Depth (ft)	1.3								2.3								2.4								1.2							
Bankfull Cross Sectional Area (ft^2)	7.1								11.7								16.4								7.6							
Bankfull Width/Depth Ratio	14.6								8.1								6.2								12.6							
Bankfull Entrenchment Ratio	3.9								7.2								6.9								7.2							
Bankfull Bank Height Ratio	1.0								1.0								1.0								1.0							
Low Top of Bank Depth (ft)	1.3								2.3								2.4								1.2							

Table 8 Cont'd. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)
Fletcher Mitigation Site

	Cross Section 15 (Riffle) Weston Creek 1A								Cross Section 16 (Pool) Weston Creek 1A								Cross Section 17 (Pool) Weston Creek 1A								Cross Section 18 (Riffle) Weston Creek 1A								Cross Section 19 (Riffle) Weston Creek 2B							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record Elevation (datum) Used	2082.5								2082.3								2076.2								2076.3								2074.9							
Low Bank Height Elevation (datum) Used	2082.5								2082.3								2076.2								2076.3								2074.9							
Bankfull Width (ft)	9.1								9.7								9.8								10.4								9.7							
Floodprone Width (ft)	50.0								50.0								50.0								50.0								40.0							
Bankfull Mean Depth (ft)	0.6								1.1								1.0								0.6								0.5							
Bankfull Max Depth (ft)	1.1								2.0								1.7								0.9								0.7							
Bankfull Cross Sectional Area (ft^2)	5.4								10.4								9.4								6.2								4.7							
Bankfull Width/Depth Ratio	15.5								9.1								10.1								17.4								20.4							
Bankfull Entrenchment Ratio	5.5								5.1								5.1								4.8								4.1							
Bankfull Bank Height Ratio	1.0								1.0								1.0								1.0								1.0							
Low Top of Bank Depth (ft)	1.1								2.0								1.7								0.9								0.7							

	Cross Section 20 (Pool) Weston Creek 2B								Cross Section 21 (Pool) Raccoon Branch 1D								Cross Section 22 (Riffle) Raccoon Branch 1D								Cross Section 23 (Riffle) Coats Branch 1B								Cross Section 24 (Pool) Coats Branch 1B							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record Elevation (datum) Used	2074.8								2131.4								2131.4								2121.0								2121.1							
Low Bank Height Elevation (datum) Used	2074.8								2131.4								2131.4								2121.0								2121.1							
Bankfull Width (ft)	8.3								5.6								6.9								5.2								7.4							
Floodprone Width (ft)	60.0								20.0								20.0								15.0								40.0							
Bankfull Mean Depth (ft)	1.5								0.5								0.5								0.3								0.7							
Bankfull Max Depth (ft)	2.5								1.2								1.3								0.7								1.5							
Bankfull Cross Sectional Area (ft^2)	12.7								2.7								3.4								1.6								5.1							
Bankfull Width/Depth Ratio	5.4								11.6								13.8								16.5								10.7							
Bankfull Entrenchment Ratio	7.2								3.6								2.9								2.9								5.4							
Bankfull Bank Height Ratio	1.0								1.0								1.0								1.0								1.0							
Low Top of Bank Depth (ft)	2.5								1.2								1.3								0.7								1.5							

	Cross Section 25 (Pool) Coats Branch 1C								Cross Section 26 (Riffle) Coats Branch 1C								Cross Section 27 (Pool) Coats Branch 1D								Cross Section 28 (Riffle) Coats Branch 1D							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record Elevation (datum) Used	2108.0								2107.9								2105.7								2105.6							
Low Bank Height Elevation (datum) Used	2108.0								2107.9								2105.7								2105.6							
Bankfull Width (ft)	5.3								5.4								5.9								6.1							
Floodprone Width (ft)	20.0								20.0								25.0								25.0							
Bankfull Mean Depth (ft)	0.5								0.4								0.6								0.5							
Bankfull Max Depth (ft)	0.9								0.8								1.2								1.0							
Bankfull Cross Sectional Area (ft^2)	2.7								2.2								3.7								3.3							
Bankfull Width/Depth Ratio	10.5								13.5								9.2								11.4							
Bankfull Entrenchment Ratio	3.8								3.7								4.3								4.1							
Bankfull Bank Height Ratio	1.0								1.0								1.0								1.0							
Low Top of Bank Depth (ft)	0.9								0.8								1.2								1.0							

Table 9. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Fletcher Creek Reach 1B (380 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	7.1	-	-	-	1																																									
Floodprone Width (ft)	-	20.0	-	-	-	1																																									
Bankfull Mean Depth (ft)	-	0.3	-	-	-	1																																									
Bankfull Max Depth (ft)	-	0.6	-	-	-	1																																									
Bankfull Cross-Sectional Area (ft^2)	-	2.3	-	-	-	1																																									
Width/Depth Ratio	-	21.4	-	-	-	1																																									
Entrenchment Ratio	-	2.8	-	-	-	1																																									
Bank Height Ratio	-	1.0	-	-	-	1																																									
Profile																																															
Riffle Length (ft)	4.8	8.5	8.0	13.1	2.5	13																																									
Riffle Slope (ft/ft)	0.002	0.018	0.014	0.044	0.013	13																																									
Pool Length (ft)	5.1	9.6	9.7	14.4	2.8	12																																									
Pool Max Depth (ft)	1.2	2.0	1.9	2.9	0.5	12																																									
Pool Spacing (ft)	14.6	27.9	29.4	40.5	8.0	11																																									
Pattern																																															
Channel Belt Width (ft)	17.7	18.2	17.8	19.0	0.7	3																																									
Radius of Curvature (ft)	17.0	22.7	25.0	26.0	4.9	3																																									
Rc: Bankfull Width (ft/ft)	2.0	2.6	2.9	3.0	0.6	3																																									
Meander Wavelength (ft)	17.7	18.2	17.8	19.1	0.8	3																																									
Meander Width Ratio	2.0	2.1	2.0	2.2	0.1	3																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
*Channel Thalweg Length (ft)	380																																														
Sinuosity (ft)	1.12																																														
Water Surface Slope (Channel) (ft/ft)	0.015																																														
Bankfull Slope (ft/ft)	0.016																																														
Ri% / Ru% / P% / G% / S%	30%	26%	32%	12%	0%																																									

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.
- Information Unavailable
N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Table 9 Cont'd. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Fletcher Creek Reach 1C (1,541 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	7.6	9.8	9.8	12.0	3.1	2																																									
Floodprone Width (ft)	10.0	30.0	30.0	50.0	28.3	2																																									
Bankfull Mean Depth (ft)	0.3	0.5	0.5	0.6	0.2	2																																									
Bankfull Max Depth (ft)	0.5	0.8	0.8	1.0	0.4	2																																									
Bankfull Cross-Sectional Area (ft^2)	2.1	4.8	4.8	7.5	3.8	2																																									
Width/Depth Ratio	19.2	23.4	23.4	27.6	6.0	2																																									
Entrenchment Ratio	1.3	2.7	2.7	4.2	2.0	2																																									
Bank Height Ratio	1.0	1.0	1.0	1.0	0.0	2																																									
Profile																																															
Riffle Length (ft)	3.4	10.9	11.1	21.1	4.9	44																																									
Riffle Slope (ft/ft)	0.000	0.009	0.007	0.029	0.008	44																																									
Pool Length (ft)	6.3	13.1	12.8	29.0	4.6	44																																									
Pool Max Depth (ft)	1.5	2.8	2.8	4.0	0.6	44																																									
Pool Spacing (ft)	13.5	35.0	34.4	96.1	13.5	43																																									
Pattern																																															
Channel Belt Width (ft)	18.7	20.2	19.7	22.3	1.9	3																																									
Radius of Curvature (ft)	17.2	21.0	20.6	25.3	4.1	3																																									
Rc: Bankfull Width (ft/ft)	1.8	2.2	2.2	2.7	0.5	3																																									
Meander Wavelength (ft)	18.7	20.2	19.7	22.3	1.9	3																																									
Meander Width Ratio	2.0	2.1	2.1	2.4	0.2	3																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
*Channel Thalweg Length (ft)	1,541																																														
Sinuosity (ft)	1.10																																														
Water Surface Slope (Channel) (ft/ft)	0.012																																														
Bankfull Slope (ft/ft)	0.012																																														
Ri% / Ru% / P% / G% / S%	32%	19%	38%	11%	0%																																									

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.
- Information Unavailable
N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Table 9 Cont'd. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Fletcher Creek Reach 2A (1,299 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	12.6	12.9	12.9	13.1	0.3	2																																									
Floodprone Width (ft)	35.0	42.5	42.5	50.0	10.6	2																																								
Bankfull Mean Depth (ft)	0.7	0.8	0.8	0.8	0.0	2																																								
Bankfull Max Depth (ft)	1.2	1.4	1.4	1.6	0.3	2																																								
Bankfull Cross-Sectional Area (ft^2)	9.2	9.8	9.8	10.4	0.9	2																																								
Width/Depth Ratio	16.5	17.0	17.0	17.4	0.6	2																																								
Entrenchment Ratio	2.7	3.3	3.3	4.0	0.9	2																																								
Bank Height Ratio	1.0	1.0	1.0	1.0	0.0	2																																								
Profile																																														
Riffle Length (ft)	5.3	16.0	14.6	32.2	6.7	35																																								
Riffle Slope (ft/ft)	0.001	0.010	0.008	0.028	0.007	35																																								
Pool Length (ft)	5.6	10.8	10.2	25.3	4.2	34																																								
Pool Max Depth (ft)	1.2	2.5	2.6	3.7	0.7	34																																								
Pool Spacing (ft)	9.4	36.8	37.5	52.2	9.4	33																																								
Pattern																																														
Channel Belt Width (ft)	23.8	24.5	24.1	25.5	0.9	3																																								
Radius of Curvature (ft)	16.8	22.1	19.8	29.6	6.7	3																																								
Rc: Bankfull Width (ft/ft)	1.6	2.1	1.9	2.8	0.6	3																																								
Meander Wavelength (ft)	23.8	24.5	24.1	25.5	0.9	3																																								
Meander Width Ratio	2.3	2.4	2.3	2.5	0.1	3																																								
Additional Reach Parameters																																														
Rosgen Classification	B4																																													
*Channel Thalweg Length (ft)	1,299																																													
Sinuosity (ft)	1.15																																													
Water Surface Slope (Channel) (ft/ft)	0.011																																													
Bankfull Slope (ft/ft)	0.012																																													
Ri% / Ru% / P% / G% / S%	44%	15%	29%	12%	0%																																								

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Table 9 Cont'd. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Fletcher Creek Reach 2B (1,510 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	9.8	10.0	10.0	10.2	0.3	2																																								
Floodprone Width (ft)	40.0	55.0	55.0	70.0	21.2	2																																								
Bankfull Mean Depth (ft)	0.7	0.7	0.7	0.8	0.1	2																																								
Bankfull Max Depth (ft)	1.2	1.3	1.3	1.3	0.1	2																																								
Bankfull Cross-Sectional Area (ft^2)	7.1	7.4	7.4	7.6	0.3	2																																								
Width/Depth Ratio	12.6	13.6	13.6	14.6	1.4	2																																								
Entrenchment Ratio	3.9	5.5	5.5	7.2	2.3	2																																								
Bank Height Ratio	1.0	1.0	1.0	1.0	0.0	2																																								
Profile																																														
Riffle Length (ft)	5.3	16.0	14.6	32.2	6.7	35																																								
Riffle Slope (ft/ft)	0.001	0.010	0.008	0.028	0.007	35																																								
Pool Length (ft)	5.6	10.8	10.2	25.3	4.2	34																																								
Pool Max Depth (ft)	1.2	2.5	2.6	3.7	0.7	34																																								
Pool Spacing (ft)	9.4	36.8	37.5	52.2	9.4	33																																								
Pattern																																														
Channel Belt Width (ft)	18.0	19.9	19.2	22.6	2.4	3																																								
Radius of Curvature (ft)	23.5	25.3	24.8	27.5	2.0	3																																								
Rc: Bankfull Width (ft/ft)	2.2	2.4	2.3	2.6	0.2	3																																								
Meander Wavelength (ft)	17.9	19.9	19.2	22.6	2.4	3																																								
Meander Width Ratio	1.7	1.9	1.8	2.1	0.2	3																																								
Additional Reach Parameters																																														
Rosgen Classification	B5																																													
*Channel Thalweg Length (ft)	1,510																																													
Sinuosity (ft)	1.10																																													
Water Surface Slope (Channel) (ft/ft)	0.011																																													
Bankfull Slope (ft/ft)	0.012																																													
Ri% / Ru% / P% / G% / S%	44%	15%	29%	12%	0%																																								

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Table 9 Cont'd. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Weston Creek Reach 1A (1,982 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	9.1	9.8	9.8	10.4	0.9	2																																									
Floodprone Width (ft)	50.0	50.0	50.0	50.0	0.0	2																																								
Bankfull Mean Depth (ft)	0.6	0.6	0.6	0.6	0.0	2																																								
Bankfull Max Depth (ft)	0.9	1.0	1.0	1.1	0.1	2																																								
Bankfull Cross-Sectional Area (ft^2)	5.4	5.8	5.8	6.2	0.6	2																																								
Width/Depth Ratio	15.5	16.4	16.4	17.4	1.3	2																																								
Entrenchment Ratio	4.8	5.1	5.1	5.5	0.5	2																																								
Bank Height Ratio	1.0	1.0	1.0	1.0	0.0	2																																								
Profile																																														
Riffle Length (ft)	4.3	13.3	11.9	38.6	7.8	55																																								
Riffle Slope (ft/ft)	0.000	0.004	0.002	0.017	0.004	55																																								
Pool Length (ft)	5.7	13.1	12.8	26.1	4.3	54																																								
Pool Max Depth (ft)	1.1	1.7	1.7	2.6	0.4	54																																								
Pool Spacing (ft)	8.9	35.7	34.4	72.9	12.0	53																																								
Pattern																																														
Channel Belt Width (ft)	24.8	27.0	27.2	29.0	2.1	3																																								
Radius of Curvature (ft)	11.0	14.3	14.6	17.4	3.2	3																																								
Rc: Bankfull Width (ft/ft)	1.3	1.7	1.7	2.0	0.4	3																																								
Meander Wavelength (ft)	24.5	26.9	27.2	29.0	2.3	3																																								
Meander Width Ratio	2.9	3.1	3.2	3.4	0.2	3																																								
Additional Reach Parameters																																														
Rosgen Classification	C5																																													
*Channel Thalweg Length (ft)	1,982																																													
Sinuosity (ft)	1.24																																													
Water Surface Slope (Channel) (ft/ft)	0.005																																													
Bankfull Slope (ft/ft)	0.005																																													
Ri% / Ru% / P% / G% / S%	38%	15%	36%	11%	0%																																								

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Table 9 Cont'd. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Weston Creek Reach 1B (825 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	9.7	-	-	-	1																																								
Floodprone Width (ft)	-	40.0	-	-	-	1																																								
Bankfull Mean Depth (ft)	-	0.5	-	-	-	1																																								
Bankfull Max Depth (ft)	-	0.7	-	-	-	1																																								
Bankfull Cross-Sectional Area (ft^2)	-	4.7	-	-	-	1																																								
Width/Depth Ratio	-	20.4	-	-	-	1																																								
Entrenchment Ratio	-	4.1	-	-	-	1																																								
Bank Height Ratio	-	1.0	-	-	-	1																																								
Profile																																														
Riffle Length (ft)	4.5	12.3	12.1	29.1	5.9	21																																								
Riffle Slope (ft/ft)	0.000	0.007	0.002	0.031	0.008	21																																								
Pool Length (ft)	5.6	14.8	14.0	26.8	6.9	21																																								
Pool Max Depth (ft)	1.4	2.0	2.0	2.7	0.3	21																																								
Pool Spacing (ft)	19.7	35.2	34.8	68.4	12.1	20																																								
Pattern																																														
Channel Belt Width (ft)	27.3	28.4	28.1	29.9	1.3	3																																								
Radius of Curvature (ft)	15.8	19.5	18.2	24.5	4.5	3																																								
Rc: Bankfull Width (ft/ft)	1.7	2.1	1.9	2.6	0.5	3																																								
Meander Wavelength (ft)	27.3	28.4	28.1	29.9	1.3	3																																								
Meander Width Ratio	2.9	3.0	3.0	3.2	0.1	3																																								
Additional Reach Parameters																																														
Rosgen Classification	C5																																													
*Channel Thalweg Length (ft)	825																																													
Sinuosity (ft)	1.17																																													
Water Surface Slope (Channel) (ft/ft)	0.0024																																												
Bankfull Slope (ft/ft)	0.0026																																													
Ri% / Ru% / P% / G% / S%	35%	9%	42%	14%	0%																																								

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Table 9 Cont'd. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Raccoon Branch Reach 1D (440 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	6.9	-	-	-	1																																									
Floodprone Width (ft)	-	20.0	-	-	-	1																																									
Bankfull Mean Depth (ft)	-	0.5	-	-	-	1																																									
Bankfull Max Depth (ft)	-	1.3	-	-	-	1																																									
Bankfull Cross-Sectional Area (ft^2)	-	3.4	-	-	-	1																																									
Width/Depth Ratio	-	13.8	-	-	-	1																																									
Entrenchment Ratio	-	2.9	-	-	-	1																																									
Bank Height Ratio	-	1.0	-	-	-	1																																									
Profile																																															
Riffle Length (ft)	1.5	4.5	4.2	7.9	1.7	38																																									
Riffle Slope (ft/ft)	0.003	0.033	0.030	0.085	0.021	38																																									
Pool Length (ft)	1.7	5.4	5.0	12.7	2.6	37																																									
Pool Max Depth (ft)	0.6	1.0	1.1	1.4	0.2	37																																									
Pool Spacing (ft)	4.1	12.1	11.2	28.8	5.5	35																																									
Pattern																																															
Channel Belt Width (ft)	6.7	7.5	7.0	8.7	1.1	3																																									
Radius of Curvature (ft)	7.9	10.1	8.5	13.9	3.3	3																																									
Rc: Bankfull Width (ft/ft)	1.2	1.6	1.3	2.2	0.6	3																																									
Meander Wavelength (ft)	6.7	7.5	7.0	8.7	1.1	3																																									
Meander Width Ratio	1.1	1.2	1.1	1.4	0.1	3																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
*Channel Thalweg Length (ft)	440																																														
Sinuosity (ft)	1.08																																														
Water Surface Slope (Channel) (ft/ft)	0.040																																														
Bankfull Slope (ft/ft)	0.041																																														
Ri% / Ru% / P% / G% / S%	39%	0%	46%	8%	6%																																									

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.
- Information Unavailable
N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Table 9 Cont'd. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Coats Branch Reach 1B (606 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	5.2	-	-	-	1																																									
Floodprone Width (ft)	-	15.0	-	-	-	1																																									
Bankfull Mean Depth (ft)	-	0.3	-	-	-	1																																									
Bankfull Max Depth (ft)	-	0.7	-	-	-	1																																									
Bankfull Cross-Sectional Area (ft^2)	-	1.6	-	-	-	1																																									
Width/Depth Ratio	-	16.5	-	-	-	1																																									
Entrenchment Ratio	-	2.9	-	-	-	1																																									
Bank Height Ratio	-	1.0	-	-	-	1																																									
Profile																																															
Riffle Length (ft)	3.0	6.5	6.3	14.0	2.1	52																																									
Riffle Slope (ft/ft)	0.000	0.020	0.016	0.072	0.016	52																																									
Pool Length (ft)	1.2	3.4	3.2	6.3	1.2	51																																									
Pool Max Depth (ft)	0.2	1.2	1.1	2.5	0.4	51																																									
Pool Spacing (ft)	5.8	11.7	12.0	18.7	2.5	50																																									
Pattern																																															
Channel Belt Width (ft)	9.7	10.6	10.5	11.5	0.9	3																																									
Radius of Curvature (ft)	9.0	11.0	12.0	12.1	1.8	3																																									
Rc: Bankfull Width (ft/ft)	1.5	1.9	2.1	2.1	0.3	3																																									
Meander Wavelength (ft)	9.7	10.6	10.5	11.5	0.9	3																																									
Meander Width Ratio	1.7	1.9	1.8	2.0	0.1	3																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
*Channel Thalweg Length (ft)	601																																														
Sinuosity (ft)	1.05																																														
Water Surface Slope (Channel) (ft/ft)	0.033																																														
Bankfull Slope (ft/ft)	0.033																																														
Ri% / Ru% / P% / G% / S%	56%	0%	28%	10%	6%																																									

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.
- Information Unavailable
N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Table 9 Cont'd. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Coats Branch Reach 1C (708 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	5.4	-	-	-	1																																									
Floodprone Width (ft)	-	20.0	-	-	-	1																																									
Bankfull Mean Depth (ft)	-	0.4	-	-	-	1																																									
Bankfull Max Depth (ft)	-	0.8	-	-	-	1																																									
Bankfull Cross-Sectional Area (ft^2)	-	2.2	-	-	-	1																																									
Width/Depth Ratio	-	13.5	-	-	-	1																																									
Entrenchment Ratio	-	3.7	-	-	-	1																																									
Bank Height Ratio	-	1.0	-	-	-	1																																									
Profile																																															
Riffle Length (ft)	3.8	7.4	7.7	10.1	1.6	48																																									
Riffle Slope (ft/ft)	0.000	0.010	0.010	0.033	0.007	48																																									
Pool Length (ft)	1.2	4.6	4.2	7.3	1.4	48																																									
Pool Max Depth (ft)	0.6	1.0	1.0	1.4	0.2	49																																									
Pool Spacing (ft)	6.4	14.3	14.6	19.6	2.6	48																																									
Pattern																																															
Channel Belt Width (ft)	10.9	11.7	11.6	12.5	0.8	3																																									
Radius of Curvature (ft)	7.0	8.8	7.2	12.1	2.9	3																																									
Rc: Bankfull Width (ft/ft)	1.2	1.5	1.2	2.1	0.5	3																																									
Meander Wavelength (ft)	10.9	12.1	11.6	13.7	1.5	3																																									
Meander Width Ratio	1.8	2.0	1.9	2.1	0.1	3																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
*Channel Thalweg Length (ft)	708																																														
Sinuosity (ft)	1.06																																														
Water Surface Slope (Channel) (ft/ft)	0.013																																														
Bankfull Slope (ft/ft)	0.013																																														
Ri% / Ru% / P% / G% / S%	52%	0%	32%	11%	5%																																									

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Table 9 Cont'd. Monitoring Data - Stream Reach Data Summary
Fletcher Mitigation Site - Coats Branch Reach 1D (325 feet *)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	6.1	-	-	-	1																																									
Floodprone Width (ft)	-	25.0	-	-	-	1																																									
Bankfull Mean Depth (ft)	-	0.5	-	-	-	1																																									
Bankfull Max Depth (ft)	-	1.0	-	-	-	1																																									
Bankfull Cross-Sectional Area (ft^2)	-	3.3	-	-	-	1																																									
Width/Depth Ratio	-	11.4	-	-	-	1																																									
Entrenchment Ratio	-	4.1	-	-	-	1																																									
Bank Height Ratio	-	1.0	-	-	-	1																																									
Profile																																															
Riffle Length (ft)	4.1	7.2	7.3	11.9	1.8	22																																									
Riffle Slope (ft/ft)	0.000	0.008	0.006	0.021	0.006	22																																									
Pool Length (ft)	1.8	4.6	4.4	8.1	1.8	22																																									
Pool Max Depth (ft)	0.6	1.1	1.1	2.2	0.3	22																																									
Pool Spacing (ft)	8.0	13.9	14.0	19.1	3.2	21																																									
Pattern																																															
Channel Belt Width (ft)	11.5	12.7	12.8	13.8	1.2	3																																									
Radius of Curvature (ft)	4.7	7.0	7.2	9.2	2.3	3																																									
Rc: Bankfull Width (ft/ft)	0.7	1.0	1.0	1.3	0.3	3																																									
Meander Wavelength (ft)	11.5	12.5	12.1	13.8	1.2	3																																									
Meander Width Ratio	1.7	1.8	1.9	2.0	0.1	3																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
*Channel Thalweg Length (ft)	325																																														
Sinuosity (ft)	1.05																																														
Water Surface Slope (Channel) (ft/ft)	0.013																																														
Bankfull Slope (ft/ft)	0.014																																														
Ri% / Ru% / P% / G% / S%	52%	0%	33%	10%	5%																																									

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

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Appendix E
As-Built Survey and Record Drawings Plan Set

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AN AS-BUILT SURVEY FOR:

EW SOLUTIONS, LLC.

"FLETCHER SITE MITIGATION PROJECT"

HENDERSON COUNTY, NORTH CAROLINA

THE STATE OF NORTH CAROLINA,
NCDEQ: DIVISION OF MITIGATION SERVICES

"FLETCHER SITE MITIGATION PROJECT"
SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

CERTIFICATE OF SURVEY AND ACCURACY

I, DREW VAN DUINKERKEN, CERTIFY THAT THE GROUND TOPOGRAPHIC SURVEY PORTION OF THIS PROJECT WAS COMPLETED UNDER MY DIRECT SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY DIRECT SUPERVISION; THAT THIS SURVEY WAS PERFORMED AT THE 95% CONFIDENCE LEVEL TO MEET THE FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS; THAT THIS SURVEY WAS PERFORMED TO THE CLASS A HORIZONTAL AND CLASS C VERTICAL WHERE APPLICABLE; THAT THE ORIGINAL DATA WAS OBTAINED BETWEEN THE DATES OF 12/17/18 & 03/22/19; THAT THE CONTOURS SHOWN AS BROKEN LINES MAY NOT MEET THE STATED STANDARD AND ALL COORDINATES ARE BASED ON NAD 83 (NSRS 2011) AND ALL ELEVATIONS ARE BASED ON NAVD 88; THAT THE GPS PORTION OF THIS PROJECT WAS TO PERFORM A GRID TIE TO THE NC STATE PLANE COORDINATE SYSTEM AND INFORMATION USED IS SHOWN & NOTED HEREON; THAT THIS MAP MEETS THE SPECIFICATIONS FOR TOPOGRAPHIC SURVEYS AS STATED IN TITLE 21, CHAPTER 56, SECTION .1606; THAT THIS MAP WAS NOT PREPARED IN ACCORDANCE WITH G.S. 47-30, AS AMENDED AND DOES NOT REPRESENT AN OFFICIAL BOUNDARY SURVEY.

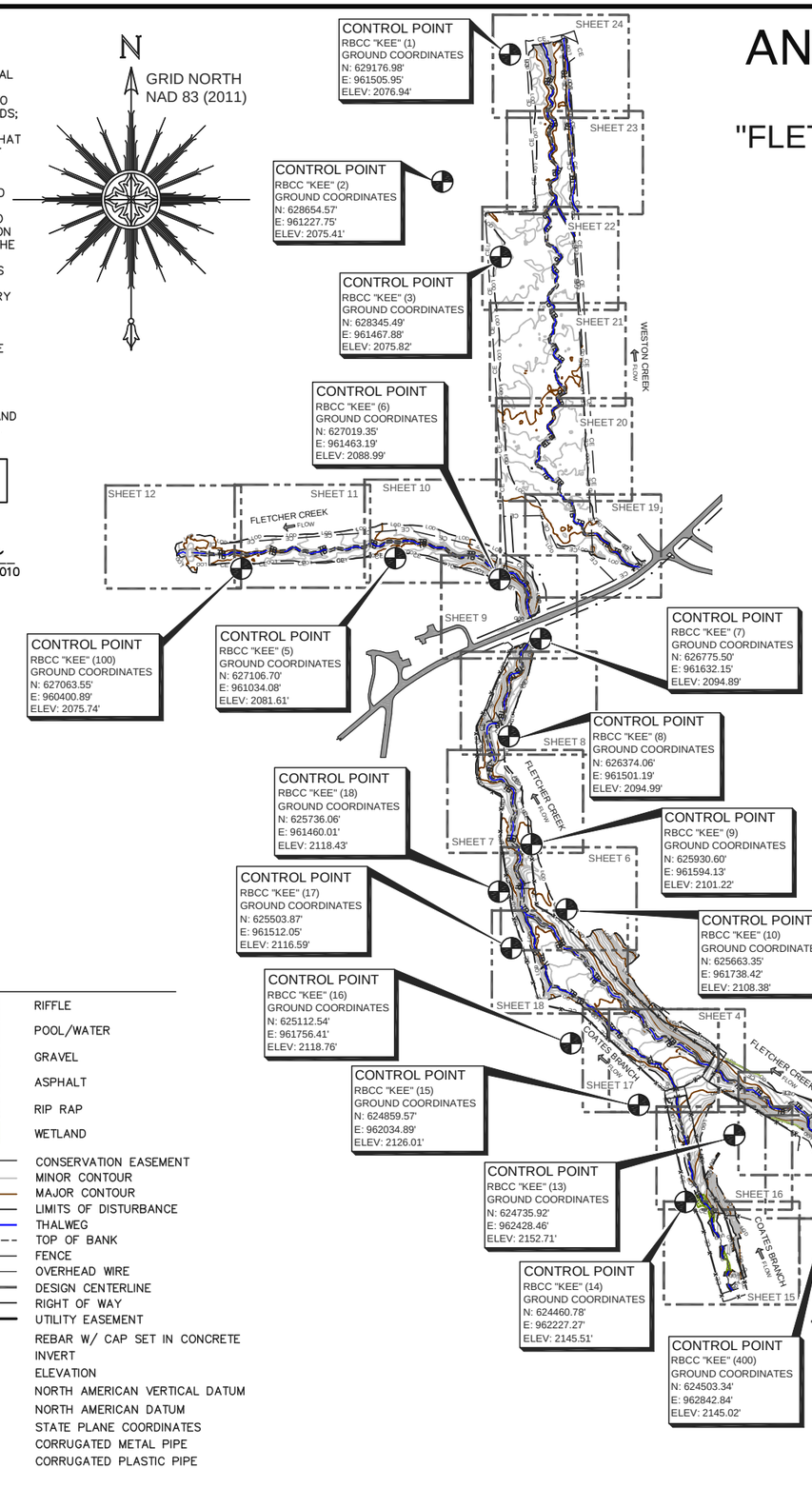
GPS METADATA
SEE SURVEY CONTROL MAP FOR EW SOLUTIONS, LLC BY KEE MAPPING & SURVEYING, PA (LICENSE # C-3039); SIGNED, SEALED AND DATED ON JANUARY 12, 2017 BY NOLAN R. CARMACK, NC PLS (LICENSE #5076).

WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 26TH DAY OF APRIL, 2019, A.D.

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN

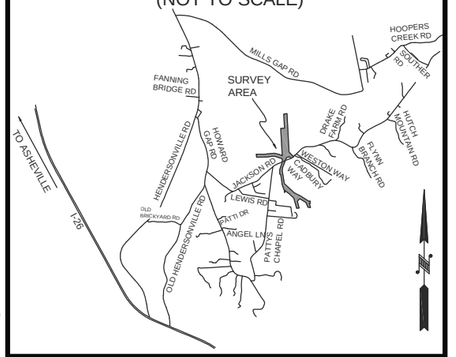
THIS DOCUMENT IS NOT VALID UNLESS SIGNED AND SEALED.

DocuSigned by:
Drew Duinkerken
DREW VAN DUINKERKEN, PLS L-5010
56DF6392ADFF4B9...



VICINITY MAP

(NOT TO SCALE)



SURVEYOR'S NOTES:

1. ALL DISTANCES AND COORDINATES ARE GROUND MEASUREMENTS IN US SURVEY FEET UNLESS OTHERWISE NOTED.
2. PROPERTY SUBJECT TO ALL EASEMENTS, RIGHT OF WAYS AND RESTRICTIONS THAT ARE RECORDED, UNRECORDED, WRITTEN AND UNWRITTEN.
3. CONSERVATION EASEMENT BOUNDARIES SHOWN HEREON WERE TAKEN FROM A PLAT OF SURVEY ENTITLED: "A CONSERVATION EASEMENT SURVEY FOR THE STATE OF NORTH CAROLINA, NCDEQ: DIVISION OF MITIGATION SERVICES, "FLETCHER STREAM AND WETLAND SITE", PREPARED BY KEE MAPPING & SURVEYING, AND RECORDED IN PB 2017 SLIDES 10959, 10960 & 10961 OF THE HENDERSON COUNTY REGISTRY.
4. HENDERSON COUNTY GIS WEBSITE USED TO IDENTIFY ADJOINING PROPERTY OWNERS.
5. BY GRAPHIC DETERMINATION, A PORTION OF THE SUBJECT PROPERTY APPEARS TO LIE WITHIN A SPECIAL FLOOD HAZARD AREA (SFHA) AS DETERMINED BY THE F.E.M.A. MAP#s 3700966200J DATED 10/02/2008.
6. STATE PLANE COORDINATES AND ELEVATIONS WERE DERIVED FROM THE CONTROL & EXISTING CONDITIONS TOPOGRAPHIC SURVEY PREPARED BY KEE MAPPING & SURVEYING. THE HORIZONTAL DATUM IS NAD 83 (2011) AND THE VERTICAL DATUM IS NAVD(88). ALL COORDINATES SHOWN HEREON ARE GROUND MEASUREMENTS IN US SURVEY FEET.
7. UTILITIES WERE LOCATED BASED ON VISIBLE ABOVE GROUND STRUCTURES, THEREFORE THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE OR MAY BE PRESENT AND NOT SHOWN HEREON. CALL 1-800-632-4949 BEFORE DIGGING.
8. STATIONING FOR PLAN AND PROFILES ARE BASED OFF OF DESIGN CENTERLINES PROVIDED BY EW SOLUTIONS, LLC.
9. CONTOUR INTERVAL: 1 FOOT
   VERTICAL DATUM: NAVD 88
10. AREA OF LIMITS OF DISTURBANC: 29.94 ACRES
11. WETLANDS SHOWN HEREON WERE DELINEATED AND PROVIDED BY EW SOLUTIONS, LLC.

SHEET #	SHEET TITLE
1	COVER SHEET - FLETCHER SITE MITIGATION PROJECT
2	STREAM DATA: "BEGIN FLETCHER CREEK"
3	STREAM DATA: "FLETCHER CREEK INTERSECTION WITH RACCOON BRANCH"
4	STREAM DATA: "FLETCHER CREEK"
5	STREAM DATA: "FLETCHER CREEK"
6	STREAM DATA: "FLETCHER CREEK INTERSECTION WITH COATES BRANCH"
7	STREAM DATA: "FLETCHER CREEK"
8	STREAM DATA: "FLETCHER CREEK"
9	STREAM DATA: "FLETCHER CREEK"
10	STREAM DATA: "FLETCHER CREEK"
11	STREAM DATA: "FLETCHER CREEK"
12	STREAM DATA: "END FLETCHER CREEK"
13	STREAM DATA: "BEGIN RACCOON BRANCH"
14	STREAM DATA: "RACCOON BRANCH INTERSECTION WITH FLETCHER CREEK"
15	STREAM DATA: "BEGIN COATES BRANCH"
16	STREAM DATA: "COATES BRANCH"
17	STREAM DATA: "COATES BRANCH"
18	STREAM DATA: "COATES BRANCH INTERSECTION WITH FLETCHER CREEK"
19	STREAM DATA: "BEGIN WESTON CREEK"
20	STREAM DATA: "WESTON CREEK"
21	STREAM DATA: "WESTON CREEK"
22	STREAM DATA: "WESTON CREEK"
23	STREAM DATA: "WESTON CREEK"
24	STREAM DATA: "END WESTON CREEK"
25	STREAM DATA: "CROSS SECTION PROFILES 1-8 "
26	STREAM DATA: "CROSS SECTION PROFILES 9-19"
27	STREAM DATA: "CROSS SECTION PROFILES 20-28"
28	STREAM DATA: "LONGITUDINAL PROFILE- FLETCHER CREEK"
29	STREAM DATA: "LONGITUDINAL PROFILE- FLETCHER CREEK"
30	STREAM DATA: "LONGITUDINAL PROFILE- FLETCHER CREEK"
31	STREAM DATA: "LONGITUDINAL PROFILE- FLETCHER CREEK"
32	STREAM DATA: "LONGITUDINAL PROFILE- RACCOON BRANCH"
33	STREAM DATA: "LONGITUDINAL PROFILE- COATES BRANCH"
34	STREAM DATA: "LONGITUDINAL PROFILE- COATES BRANCH"
35	STREAM DATA: "LONGITUDINAL PROFILE- WESTON CREEK"
36	STREAM DATA: "LONGITUDINAL PROFILE- WESTON CREEK"
37	STREAM DATA: "LONGITUDINAL PROFILE- WESTON CREEK"

LEGEND

#	STRUCTURE NUMBER
●	5/8" RBCC (CROSS-SECTION REBAR)
⊕	5/8" RBCC (AS NOTED)
⊖	GROUNDWATER GAUGE
⊕	GAUGE (AS NOTED)
●	UTILITY POLE
	DECIDUOUS TREE (AS NOTED)
	LOG SILL
	BRUSH RUN W/ LOG
	BRUSH RUN W/ BOULDER
	FLOODPLAIN DEBRIS
	SOIL LIFT
	BRUSH TOE

	RIFFLE
	POOL/WATER
	GRAVEL
	ASPHALT
	RIP RAP
	WETLAND
CE	CONSERVATION EASEMENT
	MINOR CONTOUR
	MAJOR CONTOUR
LOD	LIMITS OF DISTURBANCE
	THALWEG
TB	TOP OF BANK
X	FENCE
OW	OVERHEAD WIRE
	DESIGN CENTERLINE
	RIGHT OF WAY
	UTILITY EASEMENT
RBCC	REBAR W/ CAP SET IN CONCRETE
INV	INVERT
ELEV	ELEVATION
NAVD	NORTH AMERICAN VERTICAL DATUM
NAD	NORTH AMERICAN DATUM
SPC	STATE PLANE COORDINATES
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE

THIS MAP IS NOT FOR RECORDATION, SALES, OR CONVEYANCES AND DOES NOT COMPLY WITH G.S. 47-30 MAPPING REQUIREMENTS.

SHEET SIZE: 11"X 17"

SHEET:

1 OF 37

Kee MAPPING & SURVEYING
P.O. Box 2566
Asheville, NC 28802
(828) 575-9021
www.keemap.com
License # C-3039

FLETCHER CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
1	2126.51	BRUSH RUN W/ BOULDER
2	2126.21	BRUSH RUN W/ LOG

GRID NORTH
NAD 83 (2011)

0' 40' 80' 120'

ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 DREW VAN DUINKERKE LAND SURVEYOR

DocuSigned by:
Drew Duinkerke
56DF8392ABFE4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
BEGIN FLETCHER CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 - 03/22/19	
JOB: #1811142-AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
2 OF 37

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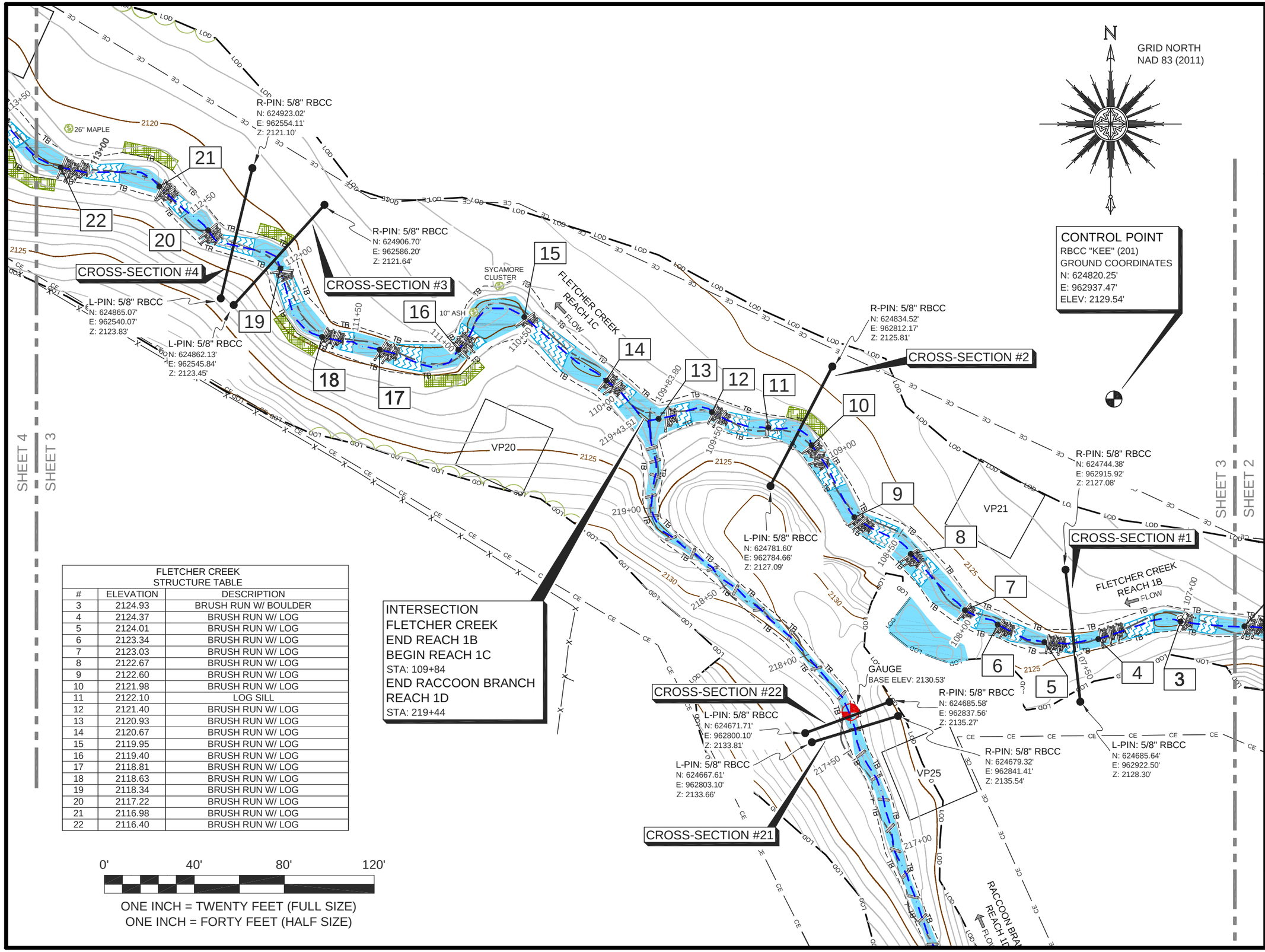

FLETCHER CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
3	2124.93	BRUSH RUN W/ BOULDER
4	2124.37	BRUSH RUN W/ LOG
5	2124.01	BRUSH RUN W/ LOG
6	2123.34	BRUSH RUN W/ LOG
7	2123.03	BRUSH RUN W/ LOG
8	2122.67	BRUSH RUN W/ LOG
9	2122.60	BRUSH RUN W/ LOG
10	2121.98	BRUSH RUN W/ LOG
11	2122.10	LOG SILL
12	2121.40	BRUSH RUN W/ LOG
13	2120.93	BRUSH RUN W/ LOG
14	2120.67	BRUSH RUN W/ LOG
15	2119.95	BRUSH RUN W/ LOG
16	2119.40	BRUSH RUN W/ LOG
17	2118.81	BRUSH RUN W/ LOG
18	2118.63	BRUSH RUN W/ LOG
19	2118.34	BRUSH RUN W/ LOG
20	2117.22	BRUSH RUN W/ LOG
21	2116.98	BRUSH RUN W/ LOG
22	2116.40	BRUSH RUN W/ LOG

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN

Docusigned by:
Drew Duinkerken
56DF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
FLETCHER CREEK
INTERSECTION WITH
RACCOON BRANCH

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET: 3 OF 37

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SHEET 18

SHEET 17

SHEET 5 | SHEET 4

SHEET 4 | SHEET 3

SHEET 17

SHEET 16

SHEET 17

SHEET 16

FLETCHER CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
23	2115.65	BRUSH RUN W/ BOULDER
24	2114.45	BRUSH RUN W/ BOULDER
25	2113.49	BRUSH RUN W/ BOULDER
26	2112.86	BRUSH RUN W/ LOG
27	2112.41	BRUSH RUN W/ LOG
28	2112.31	LOG SILL
29	2112.09	LOG SILL
30	2111.98	BRUSH RUN W/ LOG
31	2111.54	LOG SILL
32	2110.91	BRUSH RUN W/ LOG
33	2110.53	BRUSH RUN W/ LOG
34	2110.27	BRUSH RUN W/ LOG
35	2109.81	BRUSH RUN W/ LOG
36	2109.53	BRUSH RUN W/ LOG
37	2108.76	BRUSH RUN W/ LOG

0' 40' 80' 120'

ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

FLETCHER CREEK REACH 1C FLOW

COATES BRANCH REACH 1C FLOW

COATES BRANCH REACH 1B FLOW

VP15

VP17

VP18

VP19

24" OAK

24" SYCAMORE

42" POPLAR

14" DECIDUOUS

24" CMP
INV IN: 2113.40'
INV OUT: 2113.35'

60" CMP
INV IN: 2112.50'
INV OUT: 2112.24'

24" CMP
INV IN: 2113.49'
INV OUT: 2113.47'

36" CMP
INV IN: 2116.52'
INV OUT: 2114.43'

N

GRID NORTH
NAD 83 (2011)

CONTROL POINT
RBCC "KEE" (15)
GROUND COORDINATES
N: 624859.57'
E: 962034.89'
ELEV: 2126.01'

END COATES BRANCH REACH 1B
BEGIN COATES BRANCH REACH 1C
STA: 308+99

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 5010 LAND SURVEYOR DRAWN VAN DUINKERKEN

DocuSigned by:
Drawn Duinkerken
56DF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
FLETCHER CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET: 4 OF 37

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SHEET 6

SHEET 5

SHEET 18

SHEET 17

SHEET 5

SHEET 4

CROSS-SECTION #28

CROSS-SECTION #6

CROSS-SECTION #5

CROSS-SECTION #27

CROSS-SECTION #26

CROSS-SECTION #25

R-PIN: 5/8" RBCC
N: 625496.94'
E: 961807.57'
Z: 2109.04'

R-PIN: 5/8" RBCC
N: 625484.76'
E: 961830.21'
Z: 2110.07'

R-PIN: 5/8" RBCC
N: 625449.58'
E: 961660.01'
Z: 2107.30'

L-PIN: 5/8" RBCC
N: 625447.80'
E: 961770.28'
Z: 2107.58'

R-PIN: 5/8" RBCC
N: 625437.87'
E: 961666.06'
Z: 2107.34'

L-PIN: 5/8" RBCC
N: 625440.43'
E: 961787.61'
Z: 2107.64'

L-PIN: 5/8" RBCC
N: 625418.94'
E: 961632.30'
Z: 2108.26'

L-PIN: 5/8" RBCC
N: 625416.43'
E: 961631.38'
Z: 2108.54'

R-PIN: 5/8" RBCC
N: 625314.00'
E: 961791.60'
Z: 2109.30'

R-PIN: 5/8" RBCC
N: 625313.09'
E: 961798.48'
Z: 2109.30'

GAUGE
BASE ELEV: 2107.53'

L-PIN: 5/8" RBCC
N: 625274.94'
E: 961779.63'
Z: 2111.36'

L-PIN: 5/8" RBCC
N: 625272.64'
E: 961787.82'
Z: 2111.63'

FLETCHER CREEK
REACH 1C
FLOW

COATES BRANCH
REACH 1C
FLOW

END COATES BRANCH
REACH 1C
BEGIN COATES BRANCH
REACH 1D
STA: 316+50

VP14

VP16

VP18

30" SYCAMORE

40" SYCAMORE

30" POPLAR

18" SYCAMORE

42" POPLAR

20" CHERRY

20" MAPLE

26" MAPLE

TRIPLE MAPLE

24" SYCAMORE

51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36

123+50 123+00 122+50 122+00 121+50 121+00 120+50 120+00 119+50 119+00 118+50 318+00 317+50 317+00 316+50 316+00 315+50 315+00 314+50 314+00 313+50 313+00 312+50

2110 2115 2120 2125

GRID NORTH
NAD 83 (2011)

N

0' 40' 80' 120'

ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

FLETCHER CREEK
STRUCTURE TABLE

#	ELEVATION	DESCRIPTION
38	2108.68	BRUSH RUN W/ LOG
39	2108.53	BRUSH RUN W/ LOG
40	2106.64	BRUSH RUN W/ LOG
41	2107.11	BRUSH RUN W/ LOG
42	2107.01	BRUSH RUN W/ LOG
43	2107.04	LOG SILL
44	2107.02	LOG SILL
45	2106.21	BRUSH RUN W/ LOG
46	2105.97	BRUSH RUN W/ LOG
47	2104.49	BRUSH RUN W/ LOG
48	2104.31	BRUSH RUN W/ LOG
49	2105.02	BRUSH RUN W/ LOG
50	2104.46	BRUSH RUN W/ LOG
51	2103.72	BRUSH RUN W/ LOG

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5020 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by:
Drew Duinkerken
06DF6592ABFF488...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
FLETCHER CREEK

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

5 OF 37

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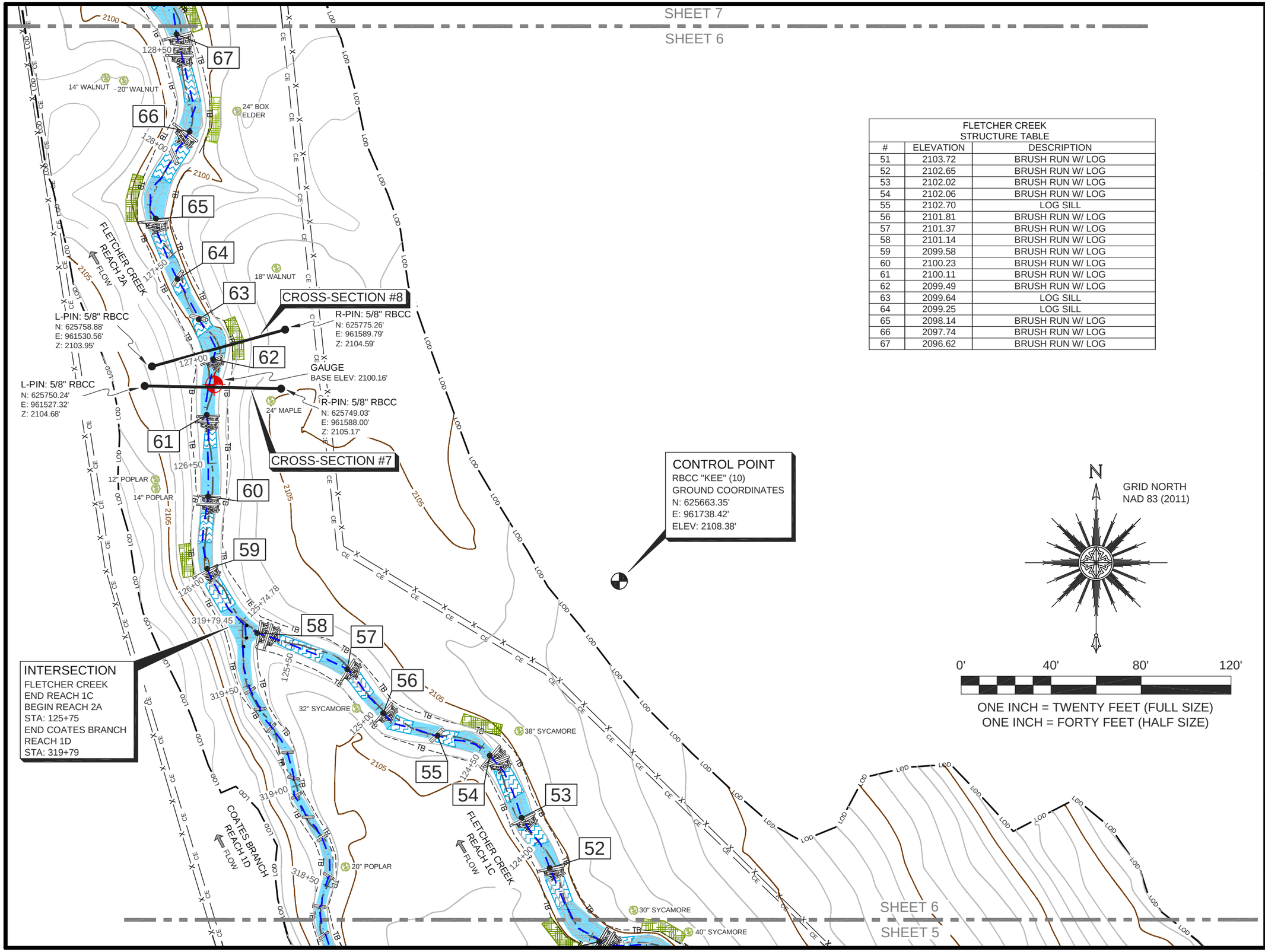
SHEET 7
SHEET 6



SHEET 6
SHEET 5

FLETCHER CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
51	2103.72	BRUSH RUN W/ LOG
52	2102.65	BRUSH RUN W/ LOG
53	2102.02	BRUSH RUN W/ LOG
54	2102.06	BRUSH RUN W/ LOG
55	2102.70	LOG SILL
56	2101.81	BRUSH RUN W/ LOG
57	2101.37	BRUSH RUN W/ LOG
58	2101.14	BRUSH RUN W/ LOG
59	2099.58	BRUSH RUN W/ LOG
60	2100.23	BRUSH RUN W/ LOG
61	2100.11	BRUSH RUN W/ LOG
62	2099.49	BRUSH RUN W/ LOG
63	2099.64	LOG SILL
64	2099.25	LOG SILL
65	2098.14	BRUSH RUN W/ LOG
66	2097.74	BRUSH RUN W/ LOG
67	2096.62	BRUSH RUN W/ LOG

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 DREW VAN DUINKERKEN LAND SURVEYOR

DocuSigned by: Drew Duinkerken 560F6592ABFE4EB...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
FLETCHER CREEK
INTERSECTION WITH
COATES BRANCH

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:

6 OF 37

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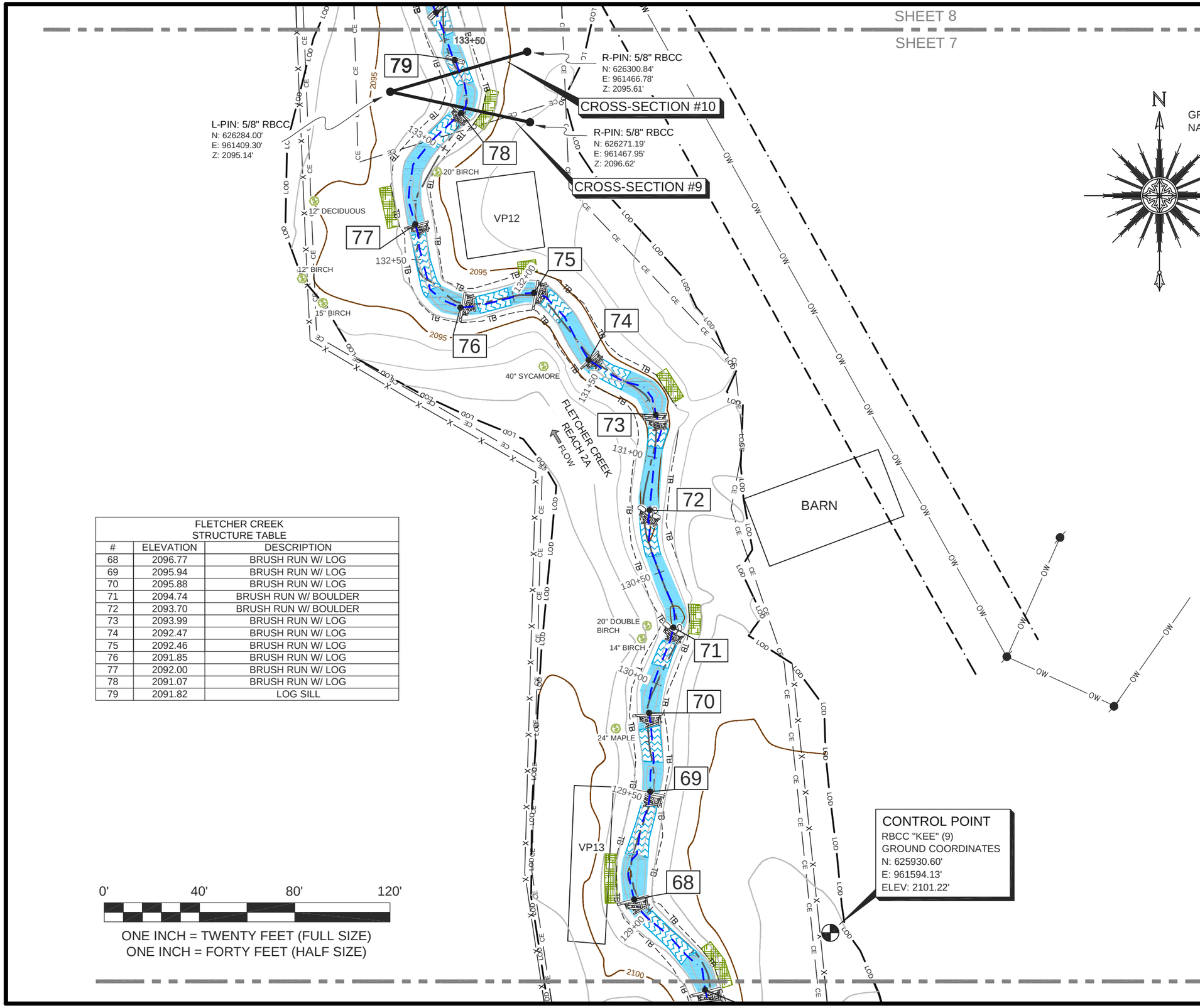
SHEET 8

SHEET 7



FLETCHER CREEK
STRUCTURE TABLE

#	ELEVATION	DESCRIPTION
68	2096.77	BRUSH RUN W/ LOG
69	2095.94	BRUSH RUN W/ LOG
70	2095.88	BRUSH RUN W/ LOG
71	2094.74	BRUSH RUN W/ BOULDER
72	2093.70	BRUSH RUN W/ BOULDER
73	2093.99	BRUSH RUN W/ LOG
74	2092.47	BRUSH RUN W/ LOG
75	2092.46	BRUSH RUN W/ LOG
76	2091.85	BRUSH RUN W/ LOG
77	2092.00	BRUSH RUN W/ LOG
78	2091.07	BRUSH RUN W/ LOG
79	2091.82	LOG SILL

SHEET 7

SHEET 6

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-4310 SURVEYOR: DREW VAN DUINKERKEN

Docusigned by:
Drew Duinkerken
96DF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
FLETCHER CREEK

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

7 OF 37

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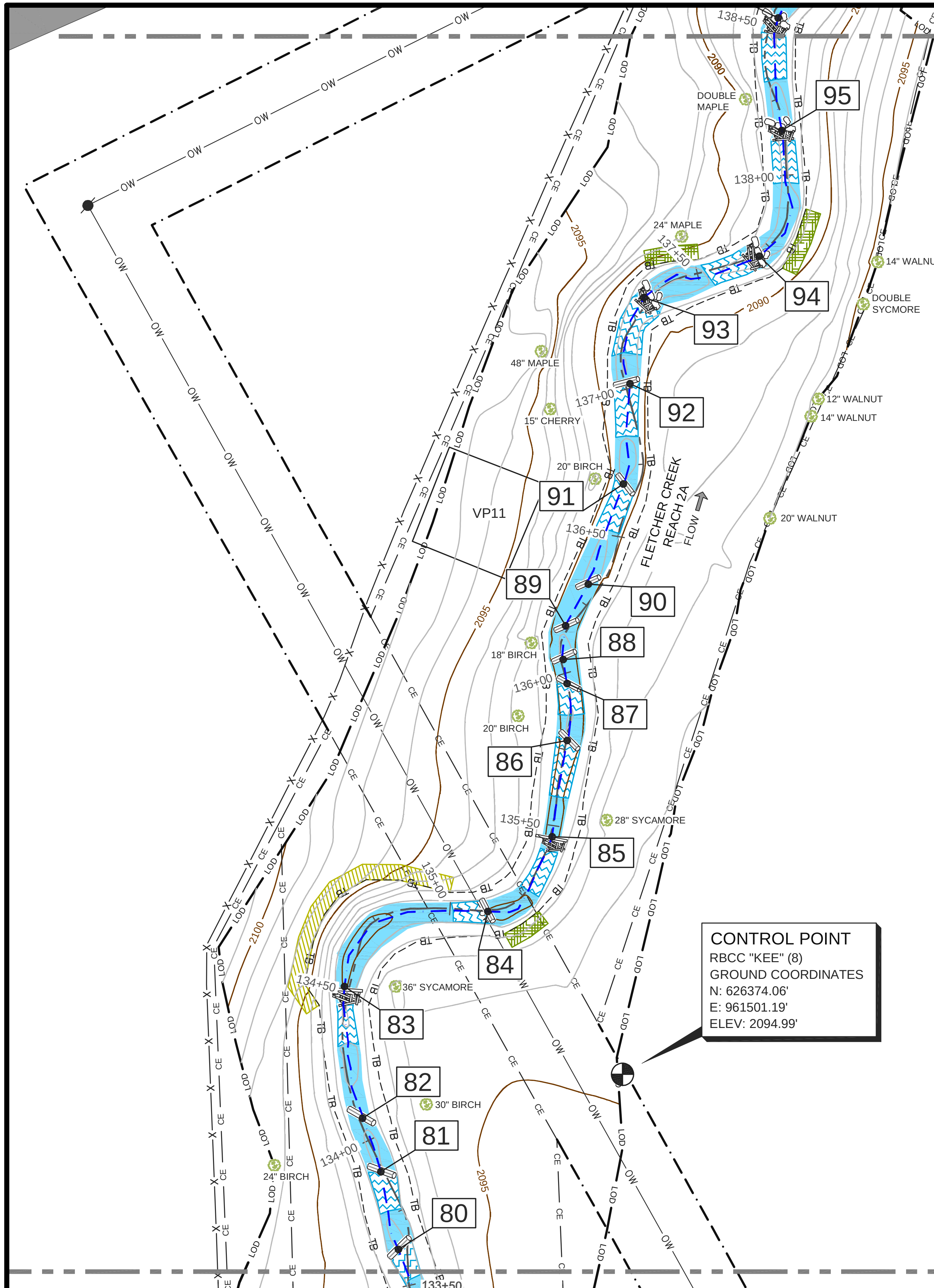
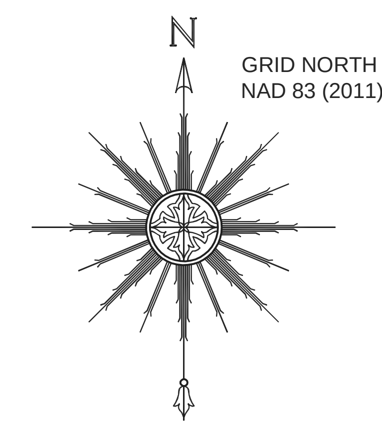


FLETCHER CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
80	2091.47	LOG SILL
81	2091.44	LOG SILL
82	2091.44	LOG SILL
83	2089.74	BRUSH RUN W/ LOG
84	2090.45	LOG SILL
85	2089.21	BRUSH RUN W/ LOG
86	2089.74	LOG SILL
87	2089.91	LOG SILL
88	2089.70	LOG SILL
89	2089.79	LOG SILL
90	2089.61	LOG SILL
91	2089.38	LOG SILL
92	2089.00	LOG SILL
93	2087.64	BRUSH RUN W/ BOULDER
94	2086.73	BRUSH RUN W/ BOULDER
95	2085.43	BRUSH RUN W/ BOULDER



0' 40' 80' 120'

ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL L-5000 LAND SURVEYOR DREW VAN DUINKERKEN
DocuSigned by: Drew Duinkerken

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
FLETCHER CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142-AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET: 8 OF 37

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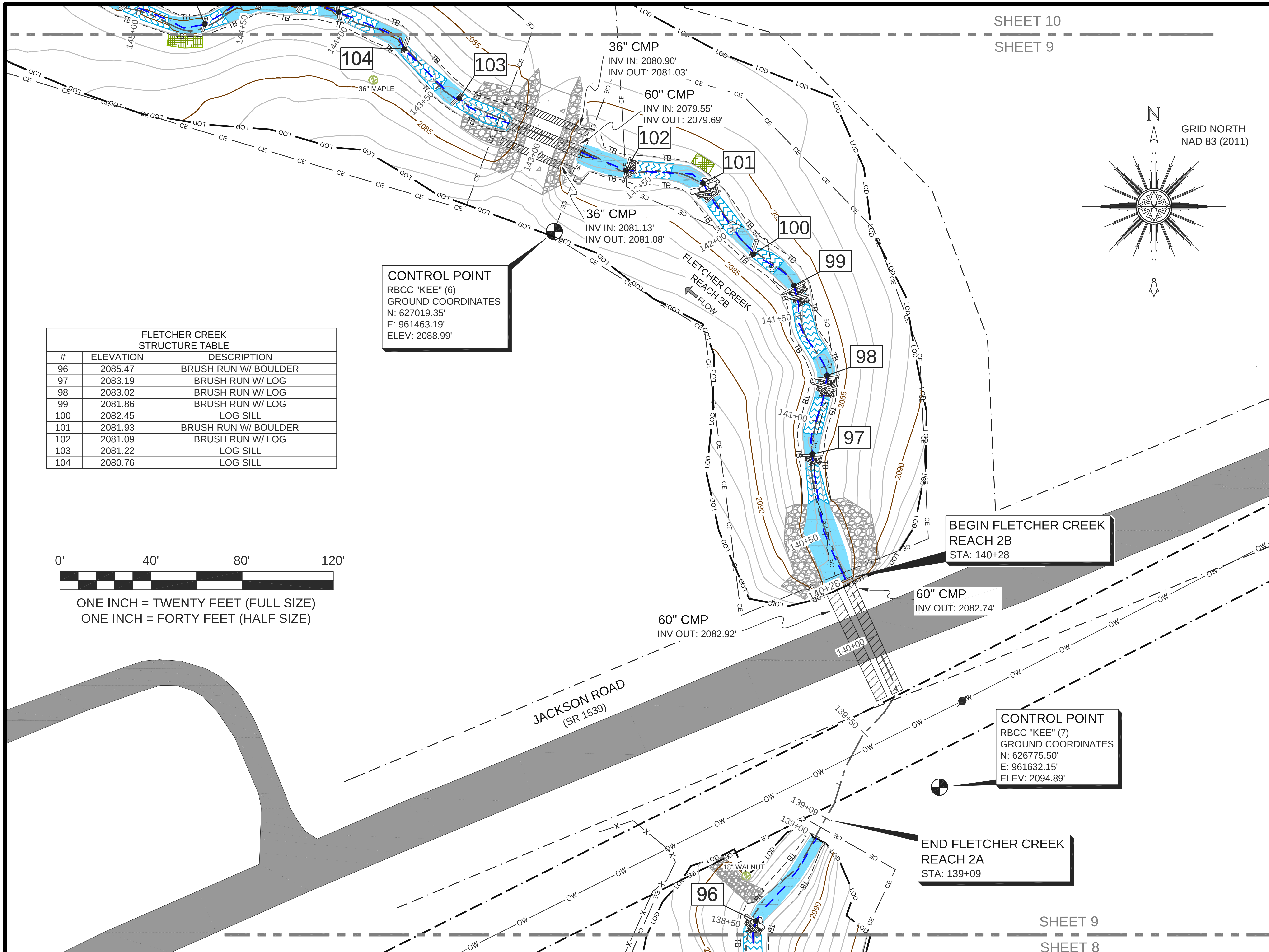

FLETCHER CREEK
STRUCTURE TABLE

#	ELEVATION	DESCRIPTION
96	2085.47	BRUSH RUN W/ BOULDER
97	2083.19	BRUSH RUN W/ LOG
98	2083.02	BRUSH RUN W/ LOG
99	2081.86	BRUSH RUN W/ LOG
100	2082.45	LOG SILL
101	2081.93	BRUSH RUN W/ BOULDER
102	2081.09	BRUSH RUN W/ LOG
103	2081.22	LOG SILL
104	2080.76	LOG SILL

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN
DocuSigned by:
Drew Duinkerken

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
FLETCHER CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142-AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
9 OF 37

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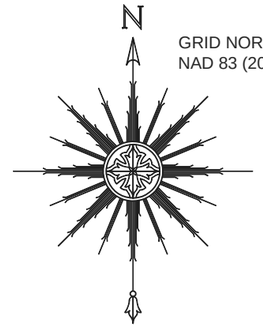
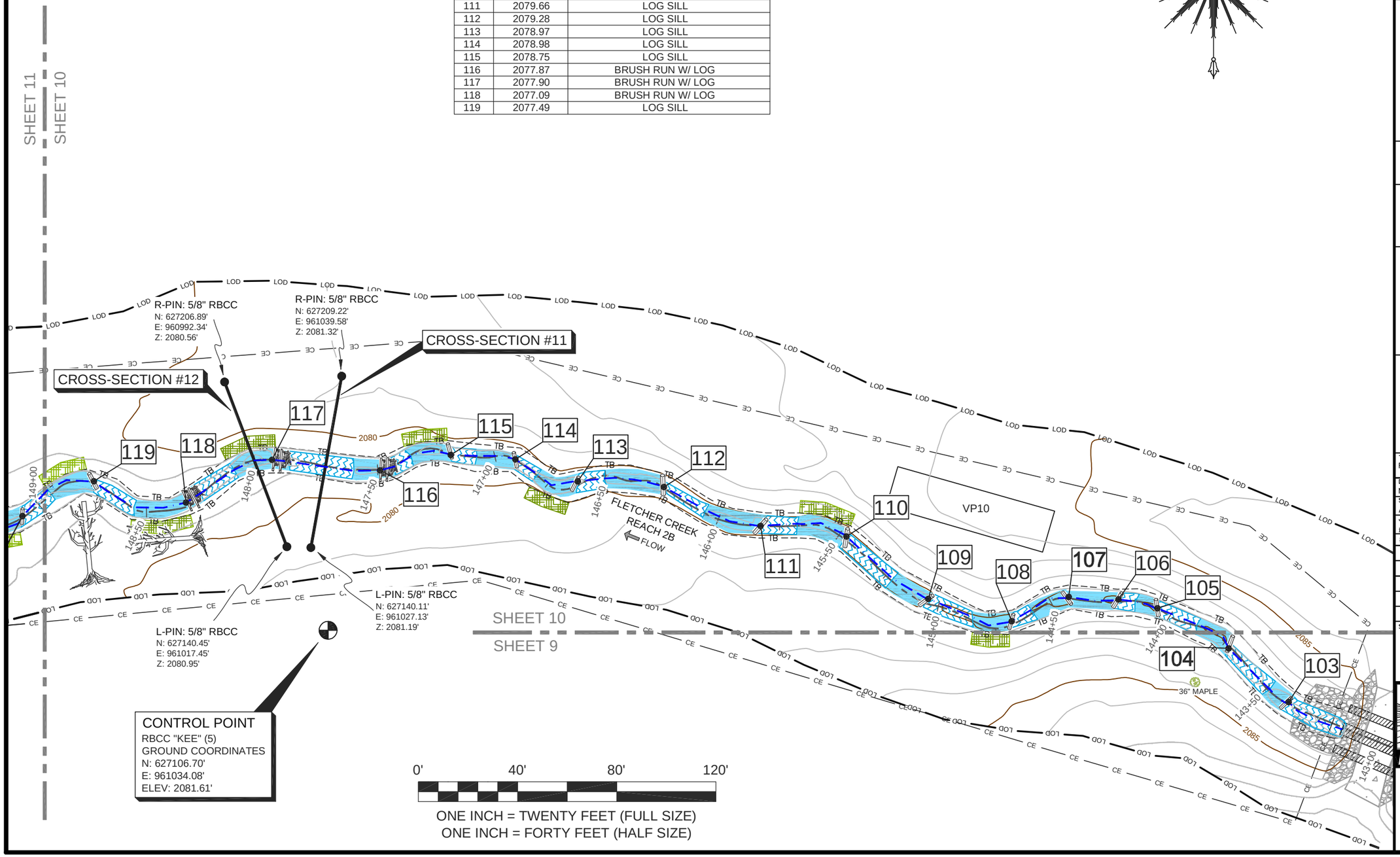
FLETCHER CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
105	2080.73	LOG SILL
106	2080.52	LOG SILL
107	2080.18	LOG SILL
108	2080.37	LOG SILL
109	2080.10	LOG SILL
110	2079.86	LOG SILL
111	2079.66	LOG SILL
112	2079.28	LOG SILL
113	2078.97	LOG SILL
114	2078.98	LOG SILL
115	2078.75	LOG SILL
116	2077.87	BRUSH RUN W/ LOG
117	2077.90	BRUSH RUN W/ LOG
118	2077.09	BRUSH RUN W/ LOG
119	2077.49	LOG SILL





SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by:
Drew Duinkerken
06DF6592ABFF488...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
FLETCHER CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
10 OF 37

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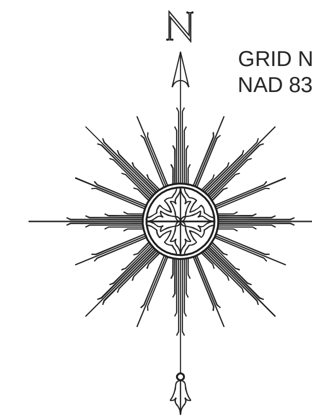
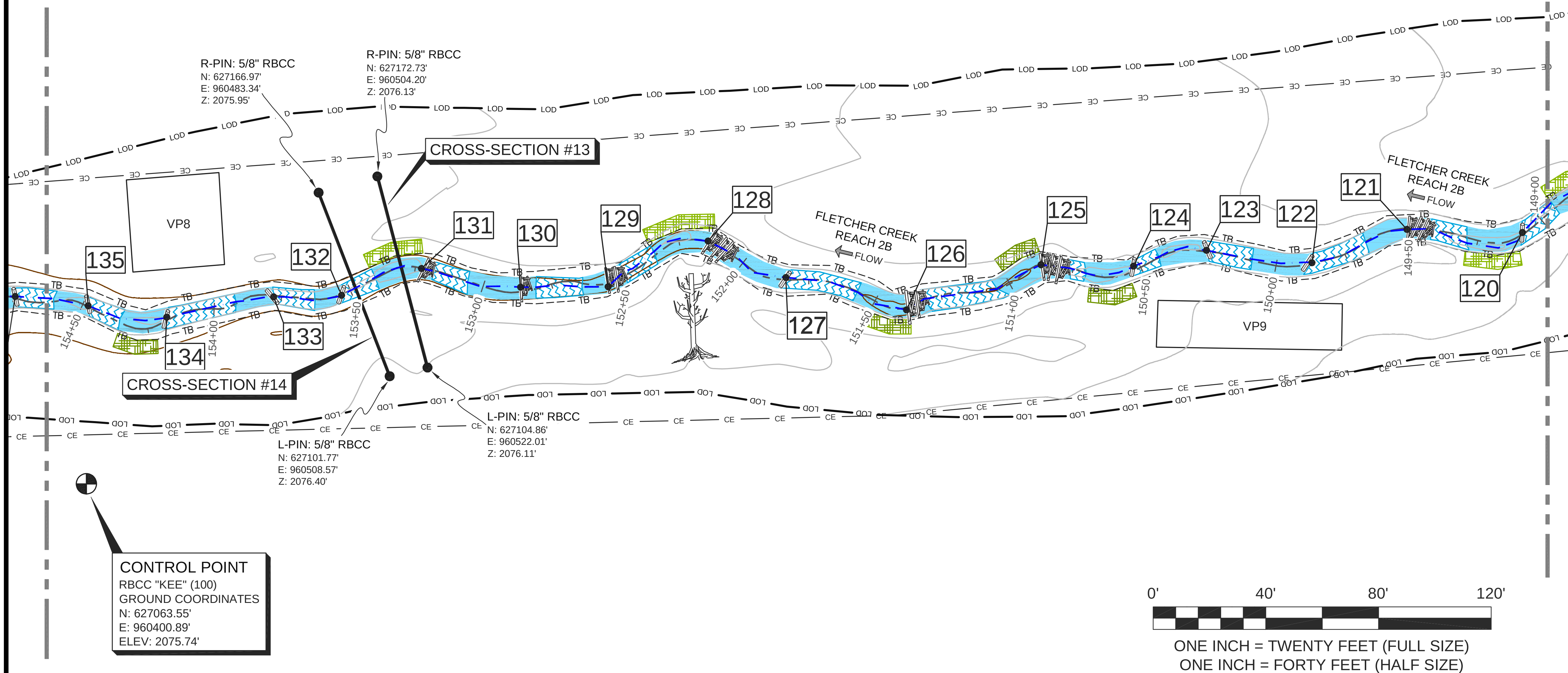
License # C–3039

FLETCHER CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
120	2077.21	LOG SILL
121	2076.13	BRUSH RUN W/ LOG
122	2076.51	LOG SILL
123	2076.34	LOG SILL
124	2076.23	LOG SILL
125	2075.51	BRUSH RUN W/ LOG
126	2074.56	BRUSH RUN W/ LOG
127	2075.11	LOG SILL
128	2074.61	BRUSH RUN W/ LOG
129	2074.46	BRUSH RUN W/ LOG
130	2074.30	BRUSH RUN W/ LOG
131	2073.99	BRUSH RUN W/ LOG
132	2074.02	LOG SILL
133	2073.92	LOG SILL
134	2073.81	LOG SILL
135	2073.57	LOG SILL





SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by: Drew Duinkerken

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
FLETCHER CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142-AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:

11 OF 37

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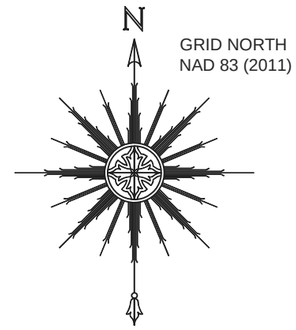
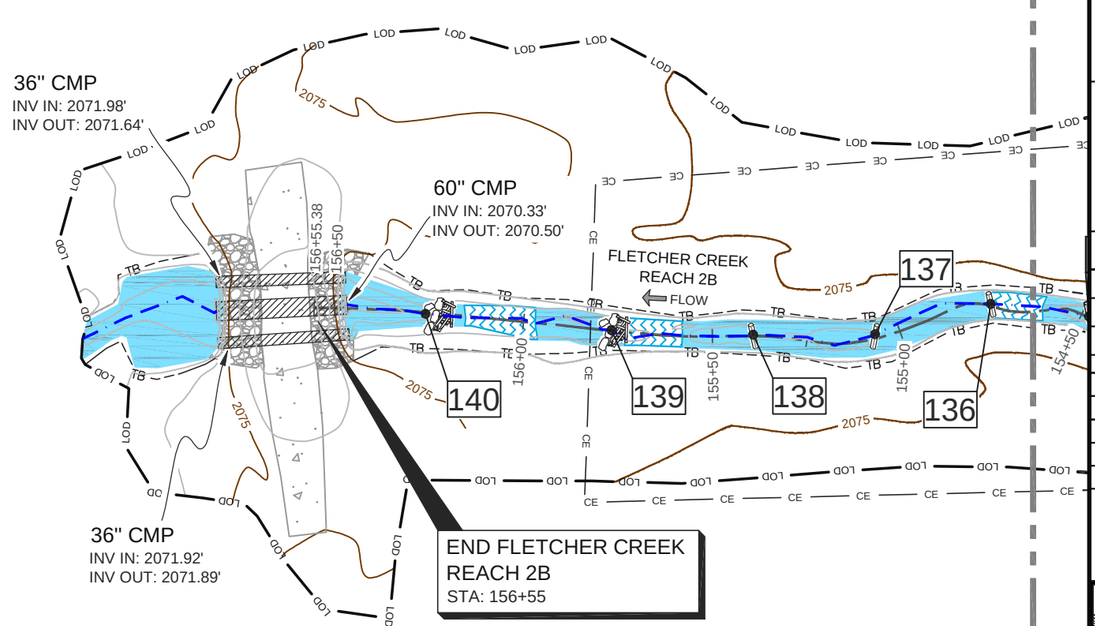
License # C-3039

FLETCHER CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
136	2073.54	LOG SILL
137	2073.31	LOG SILL
138	2073.10	LOG SILL
139	2072.65	BRUSH RUN W/ BOULDER
140	2071.61	BRUSH RUN W/ BOULDER



GRID NORTH
NAD 83 (2011)



SHEET 12

SHEET 11

0' 40' 80' 120'

ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by:
Drew Duinkerken
96DF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
END FLETCHER CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
12 OF 37

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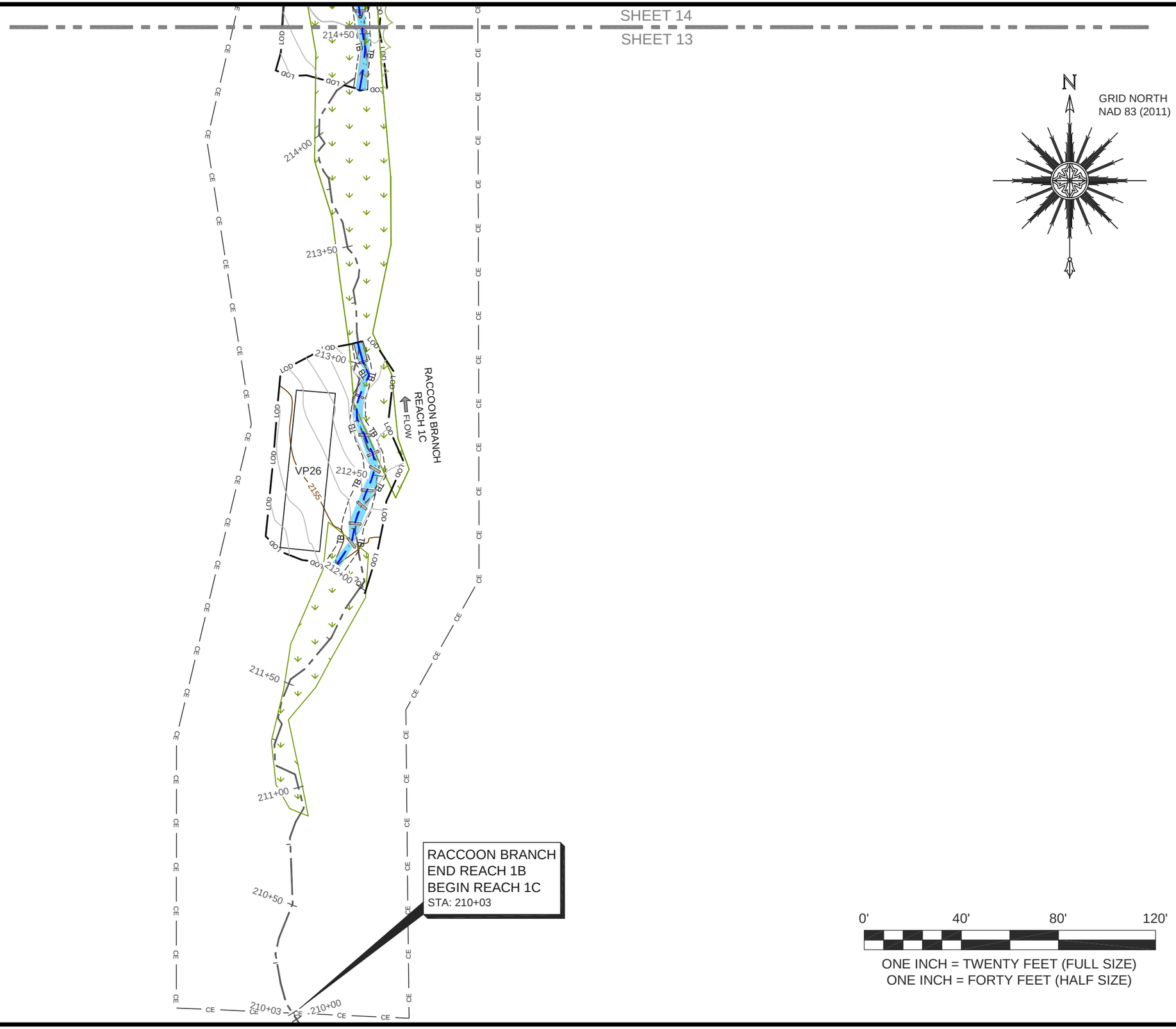

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-3640 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by: Drew Duinkerken 66DF6592AEFF4B6...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
BEGIN RACCOON BRANCH

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

13 OF 37

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License # C–3039

INTERSECTION
FLETCHER CREEK
END REACH 1B
BEGIN REACH 1C
STA: 109+84
END RACCOON BRANCH
REACH 1D
STA: 219+44

CROSS-SECTION #22

CROSS-SECTION #21

CROSS-SECTION #1

L-PIN: 5/8" RBCC
N: 624781.60'
E: 962784.66'
Z: 2127.09'

L-PIN: 5/8" RBCC
N: 624671.71'
E: 962800.10'
Z: 2133.81'

L-PIN: 5/8" RBCC
N: 624667.61'
E: 962803.10'
Z: 2133.66'

R-PIN: 5/8" RBCC
N: 624744.38'
E: 962915.92'
Z: 2127.08'

R-PIN: 5/8" RBCC
N: 624685.58'
E: 962837.56'
Z: 2135.27'

R-PIN: 5/8" RBCC
N: 624679.32'
E: 962841.41'
Z: 2135.54'

L-PIN: 5/8" RBCC
N: 624685.64'
E: 962922.50'
Z: 2128.30'

GAUGE
BASE ELEV: 2130.53'

VP20
VP21
VP25

FLETCHER CREEK
REACH 1B
FLOW

RACCOON BRANCH
REACH 1D
FLOW

28" POPLAR

FLETCHER CREEK
END REACH 1A
BEGIN REACH 1B
STA: 106+07

CONTROL POINT
RBCC "KEE" (300)
GROUND COORDINATES
N: 624640.07'
E: 963023.07'
ELEV: 2144.56'

CONTROL POINT
RBCC "KEE" (400)
GROUND COORDINATES
N: 624503.34'
E: 962842.84'
ELEV: 2145.02'

RACCOON BRANCH
END REACH 1C
BEGIN REACH 1D
STA: 214+92

SHEET 3
SHEET 2
SHEET 14
SHEET 13

N
GRID NORTH
NAD 83 (2011)

0' 40' 80' 120'
ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL L-4310 LAND SURVEYOR DREW VAN DUINKERKEN
DocuSigned by:
Drew VanDuinkerken
56DF6592ABFF4B8...
PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:
FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:
STREAM DATA:
END RACCOON BRANCH
INTERSECTION WITH FLETCHER CREEK

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

#	DATE	REVISIONS

SHEET:
14 OF 37

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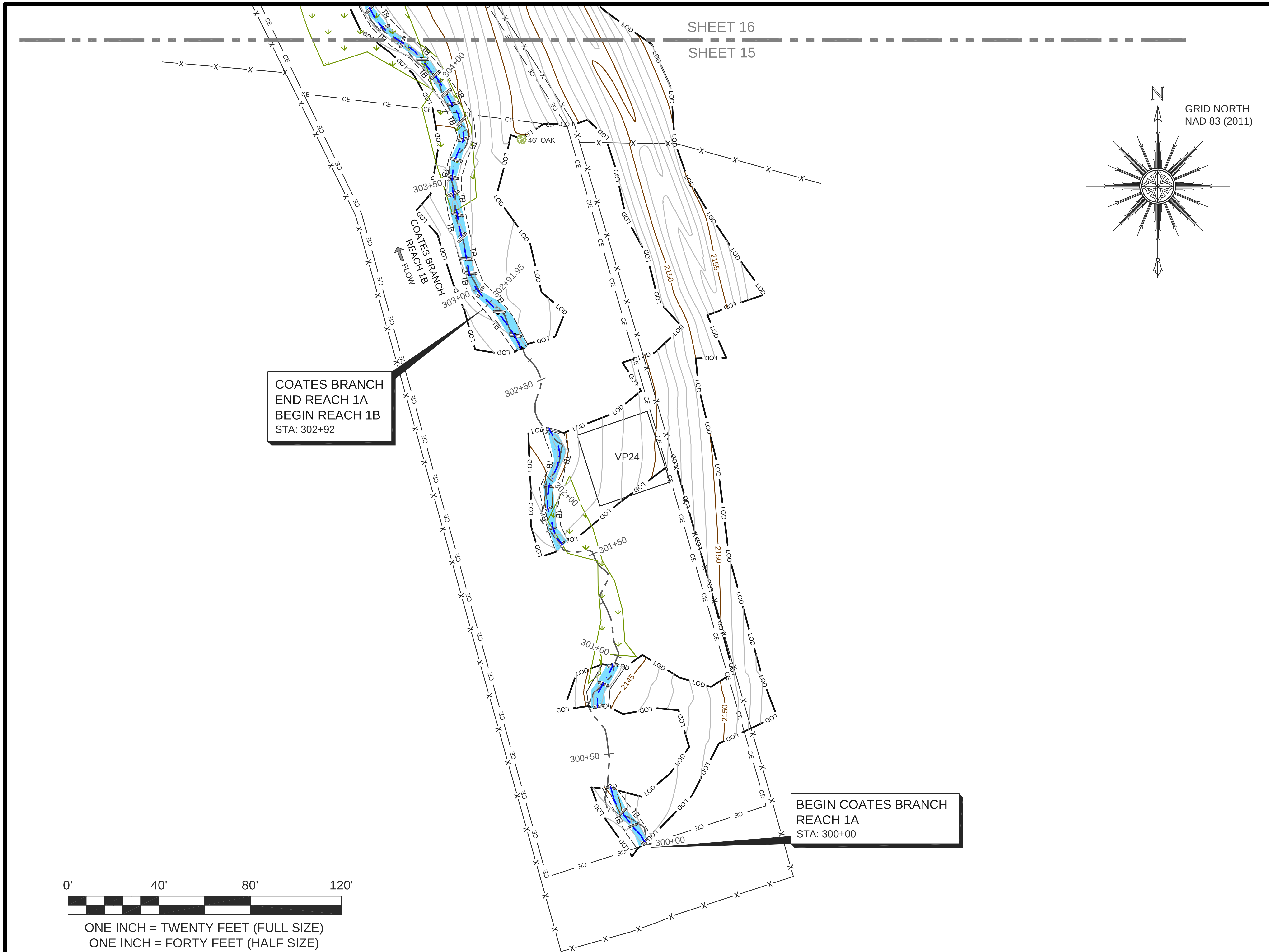

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DEAN VAN DUINKERKEN

DocuSigned by: Dean Duinkerken

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
BEGIN COATES BRANCH

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:

15 OF 37

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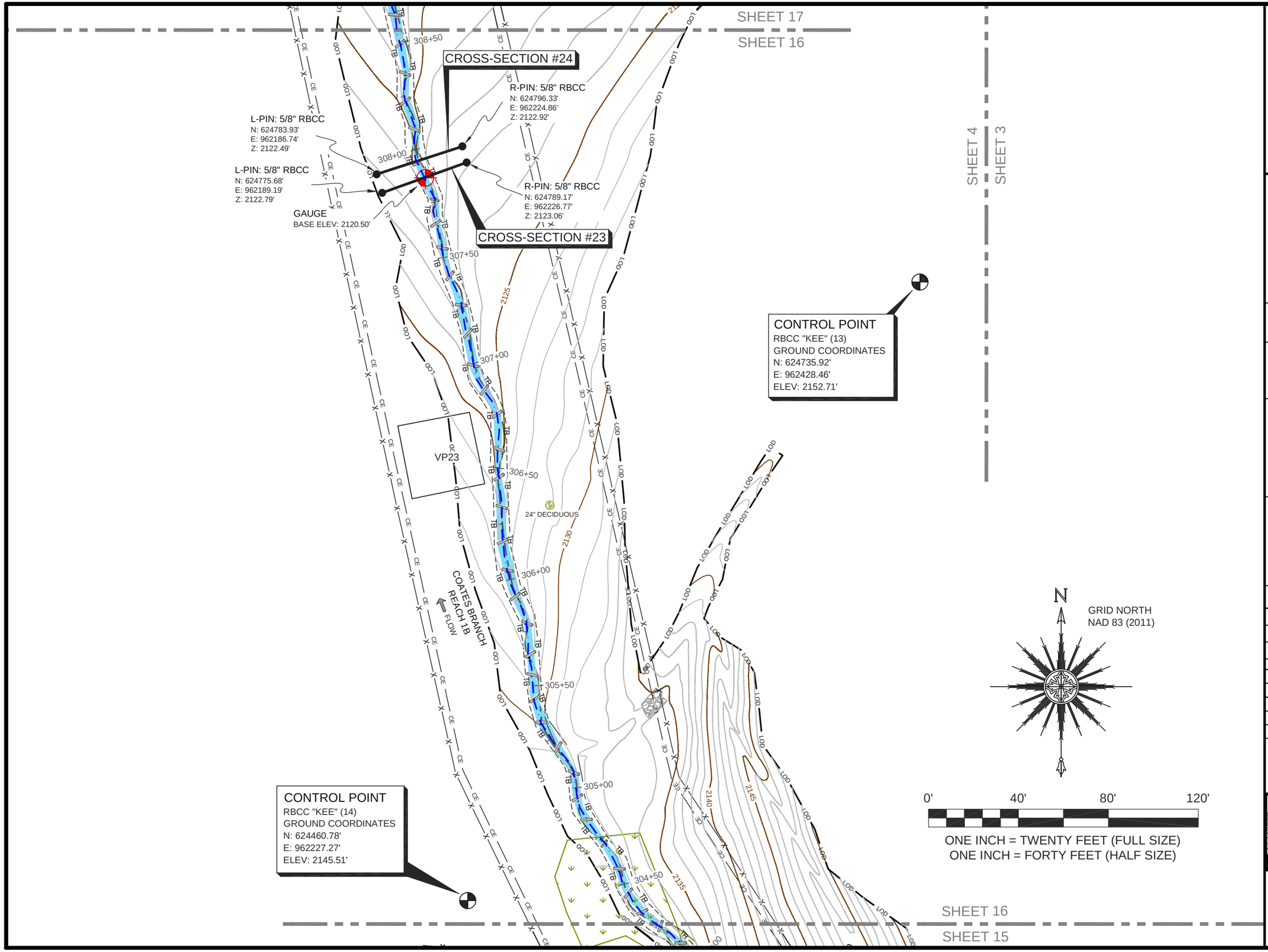

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-3930 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by: Drew Duinkerken 56DF6692ABFF458...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE
MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
COATES BRANCH

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:

16 OF 37

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License # C–3039

SHEET 18

SHEET 17

SHEET 5

SHEET 4

N

GRID NORTH
NAD 83 (2011)

0' 40' 80' 120'

ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

CONTROL POINT
RBCC "KEE" (15)
GROUND COORDINATES
N: 624859.57'
E: 962034.89'
ELEV: 2126.01'

END COATES BRANCH REACH 1B
BEGIN COATES BRANCH REACH 1C
STA: 308+99

SHEET 17

SHEET 16

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DELL VAN DUINKERKEN

DocuSigned by:
Dell Duinkerken
560F6592AFFF458...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
COATES BRANCH

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET: 17 OF 37

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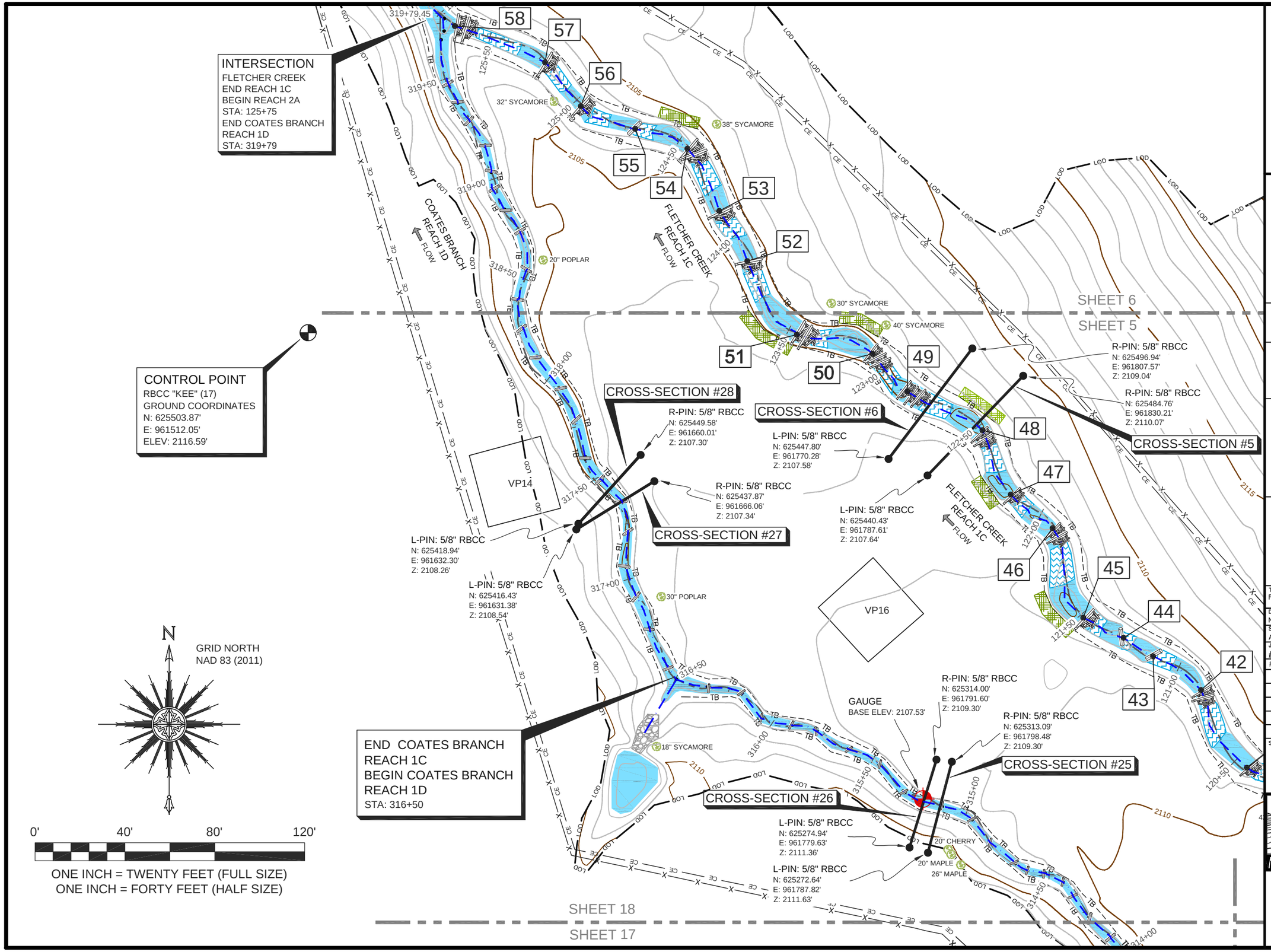

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by: Drew Duinkerken 56DF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
END COATES BRANCH
INTERSECTION WITH
FLETCHER CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:

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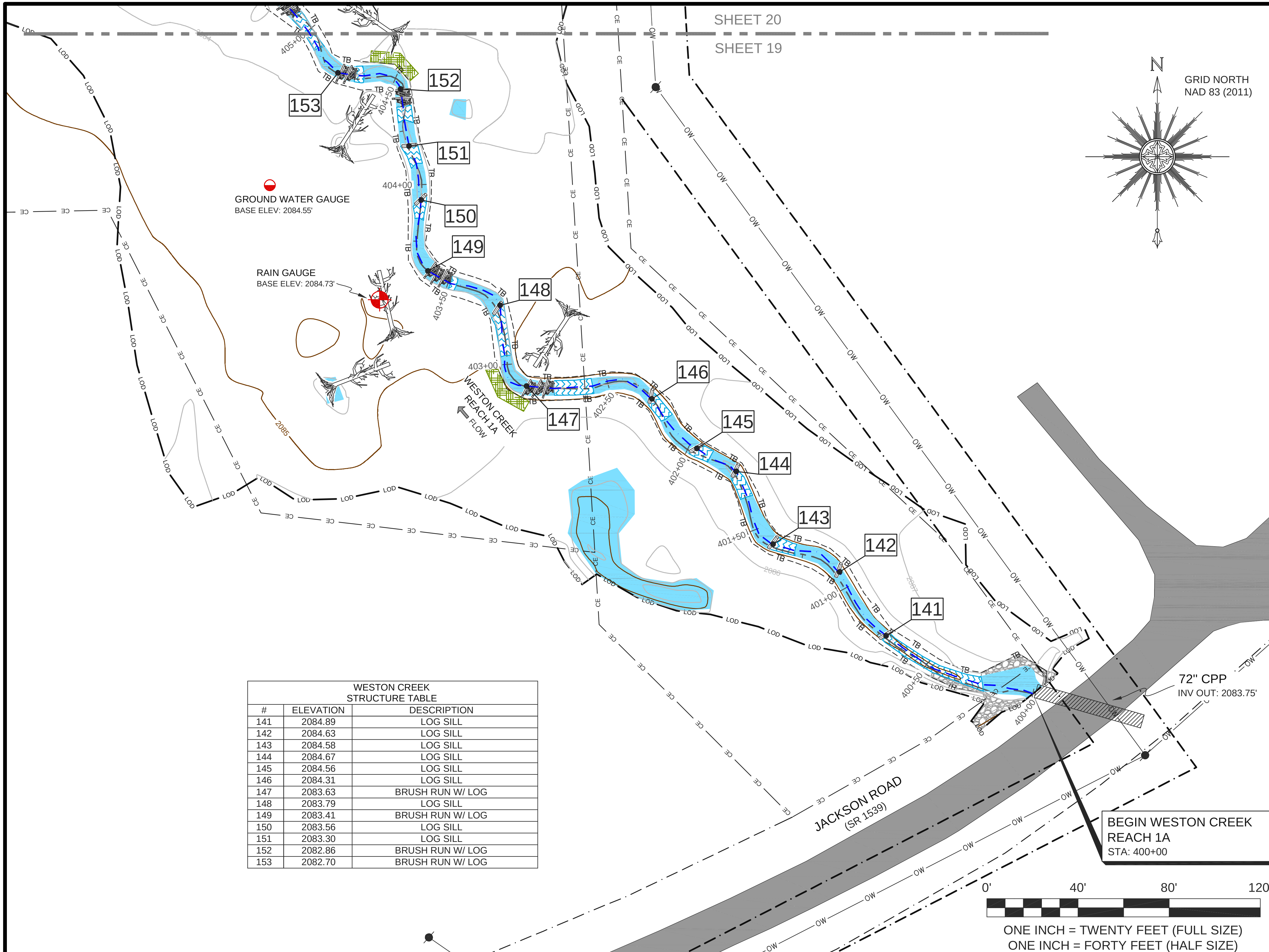

WESTON CREEK
STRUCTURE TABLE

#	ELEVATION	DESCRIPTION
141	2084.89	LOG SILL
142	2084.63	LOG SILL
143	2084.58	LOG SILL
144	2084.67	LOG SILL
145	2084.56	LOG SILL
146	2084.31	LOG SILL
147	2083.63	BRUSH RUN W/ LOG
148	2083.79	LOG SILL
149	2083.41	BRUSH RUN W/ LOG
150	2083.56	LOG SILL
151	2083.30	LOG SILL
152	2082.86	BRUSH RUN W/ LOG
153	2082.70	BRUSH RUN W/ LOG

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by: Drew Duinkerken 66DF0592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE
MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
BEGIN WESTON CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142-AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

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SHEET 21

SHEET 20

WESTON CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
154	2082.04	BRUSH RUN W/ LOG
155	2082.07	BRUSH RUN W/ LOG
156	2081.50	BRUSH RUN W/ LOG
157	2081.97	LOG SILL
158	2081.63	LOG SILL
159	2081.58	LOG SILL
160	2080.75	BRUSH RUN W/ LOG
161	2080.84	LOG SILL
162	2080.46	BRUSH RUN W/ LOG
163	2080.00	BRUSH RUN W/ LOG
164	2079.19	BRUSH RUN W/ LOG
165	2079.82	LOG SILL
166	2079.64	BRUSH RUN W/ LOG
167	2079.49	LOG SILL

0' 40' 80' 120'

ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

N

GRID NORTH
NAD 83 (2011)

166 167 165 164 163 162 161 160 159 158 157 156 155 154

410+00 409+50 409+00 408+50 408+00 407+50 407+00 406+50 406+00 405+50 405+00

2080 2081 2082 2083 2084 2085

GROUND WATER GAUGE
BASE ELEV: 2080.58'

GROUND WATER GAUGE
BASE ELEV: 2081.45'

GROUND WATER GAUGE
BASE ELEV: 2083.13'

GAUGE
BASE ELEV: 2081.44'

GAUGE
BASE ELEV: 2081.71'

VP6

VP7

R-PIN: 5/8" RBCC
N: 627503.59'
E: 961637.48'
Z: 2082.94'

R-PIN: 5/8" RBCC
N: 627474.19'
E: 961671.51'
Z: 2083.11'

CROSS-SECTION #16

L-PIN: 5/8" RBCC
N: 627476.17'
E: 961596.09'
Z: 2083.10'

CROSS-SECTION #15

L-PIN: 5/8" RBCC
N: 627446.55'
E: 961630.23'
Z: 2083.53'

SHEET 20

SHEET 19

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-3810 LAND SURVEYOR DEREK VAN DUINKERKEN

DocuSigned by:
Derek Duinkerken
560F6592ABFF4BA...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
WESTON CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
20 OF 37

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SHEET 22

SHEET 21

SHEET 21

SHEET 20

182
181
180
179
178
177
176
175
174
173
172
171
170
169
168

415+00
414+50
414+00
413+50
413+00
412+50
412+00
411+50
411+00
410+50

VP5

GROUND WATER GAUGE
BASE ELEV: 2078.75'

GROUND WATER GAUGE
BASE ELEV: 2079.12'

GROUND WATER GAUGE
BASE ELEV: 2079.76'

GROUND WATER GAUGE
BASE ELEV: 2079.14'

WESTON CREEK
REACH 1A
FLOW

2078
2079
2080

WESTON CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
168	2078.94	BRUSH RUN W/ LOG
169	2078.81	BRUSH RUN W/ LOG
170	2078.83	LOG SILL
171	2078.63	LOG SILL
172	2078.59	LOG SILL
173	2077.91	BRUSH RUN W/ LOG
174	2077.45	BRUSH RUN W/ LOG
175	2077.84	BRUSH RUN W/ LOG
176	2078.17	LOG SILL
177	2077.56	BRUSH RUN W/ LOG
178	2078.02	LOG SILL
179	2077.71	LOG SILL
180	2077.56	LOG SILL
181	2077.16	BRUSH RUN W/ LOG
182	2076.71	BRUSH RUN W/ LOG

0' 40' 80' 120'

ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

N
GRID NORTH
NAD 83 (2011)

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by:
Drew Duinkerken
96DF6692ABFF458...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
WESTON CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
21 OF 37

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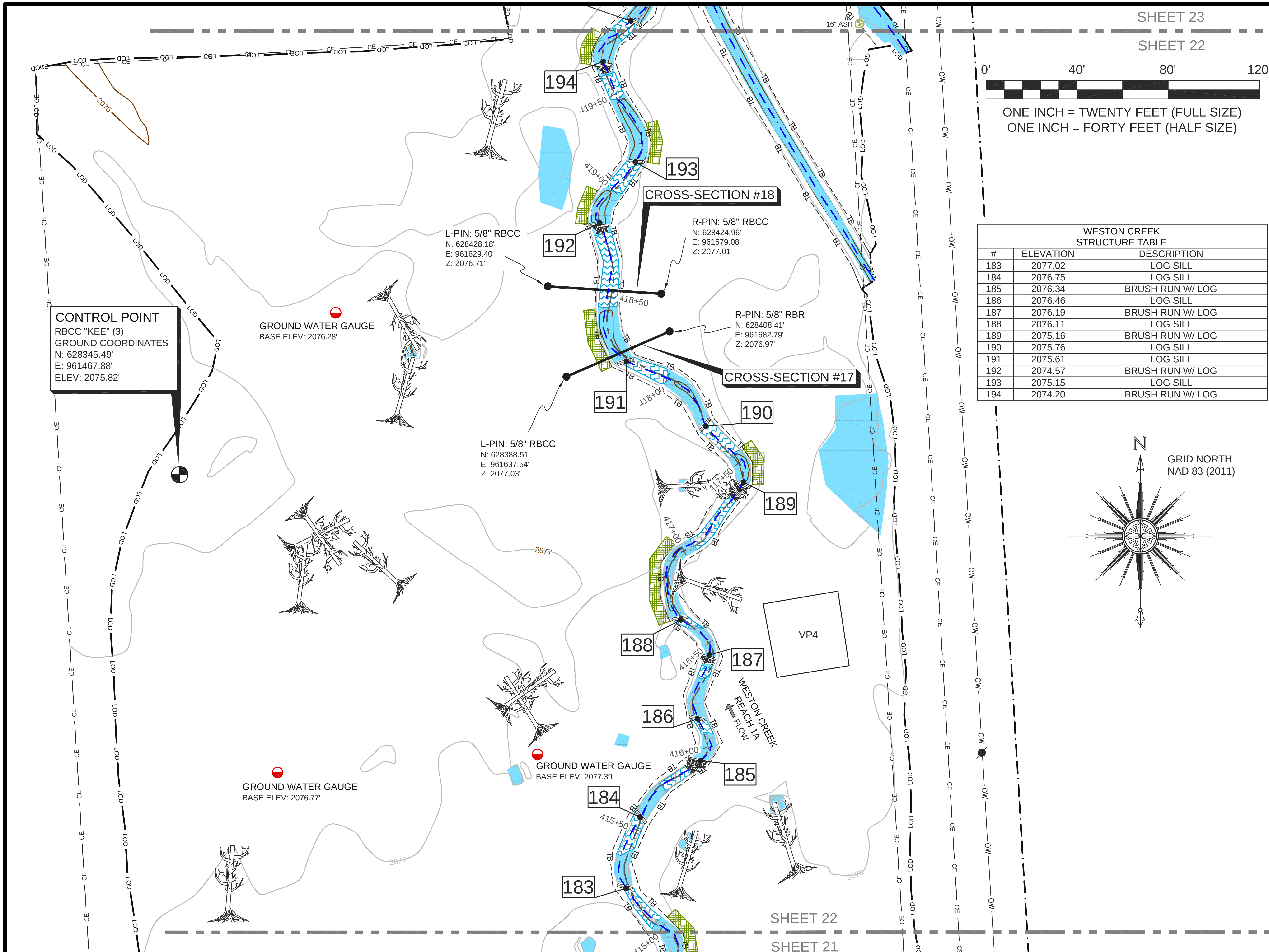

WESTON CREEK STRUCTURE TABLE

#	ELEVATION	DESCRIPTION
183	2077.02	LOG SILL
184	2076.75	LOG SILL
185	2076.34	BRUSH RUN W/ LOG
186	2076.46	LOG SILL
187	2076.19	BRUSH RUN W/ LOG
188	2076.11	LOG SILL
189	2075.16	BRUSH RUN W/ LOG
190	2075.76	LOG SILL
191	2075.61	LOG SILL
192	2074.57	BRUSH RUN W/ LOG
193	2075.15	LOG SILL
194	2074.20	BRUSH RUN W/ LOG

SEAL: NORTH CAROLINA PROFESSIONAL LAND SURVEYOR SEAL L-5010 DREW VAN DUINKERK

DocuSigned by: Drew Duinkerken 56BF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
WESTON CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142-AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET: 22 OF 37

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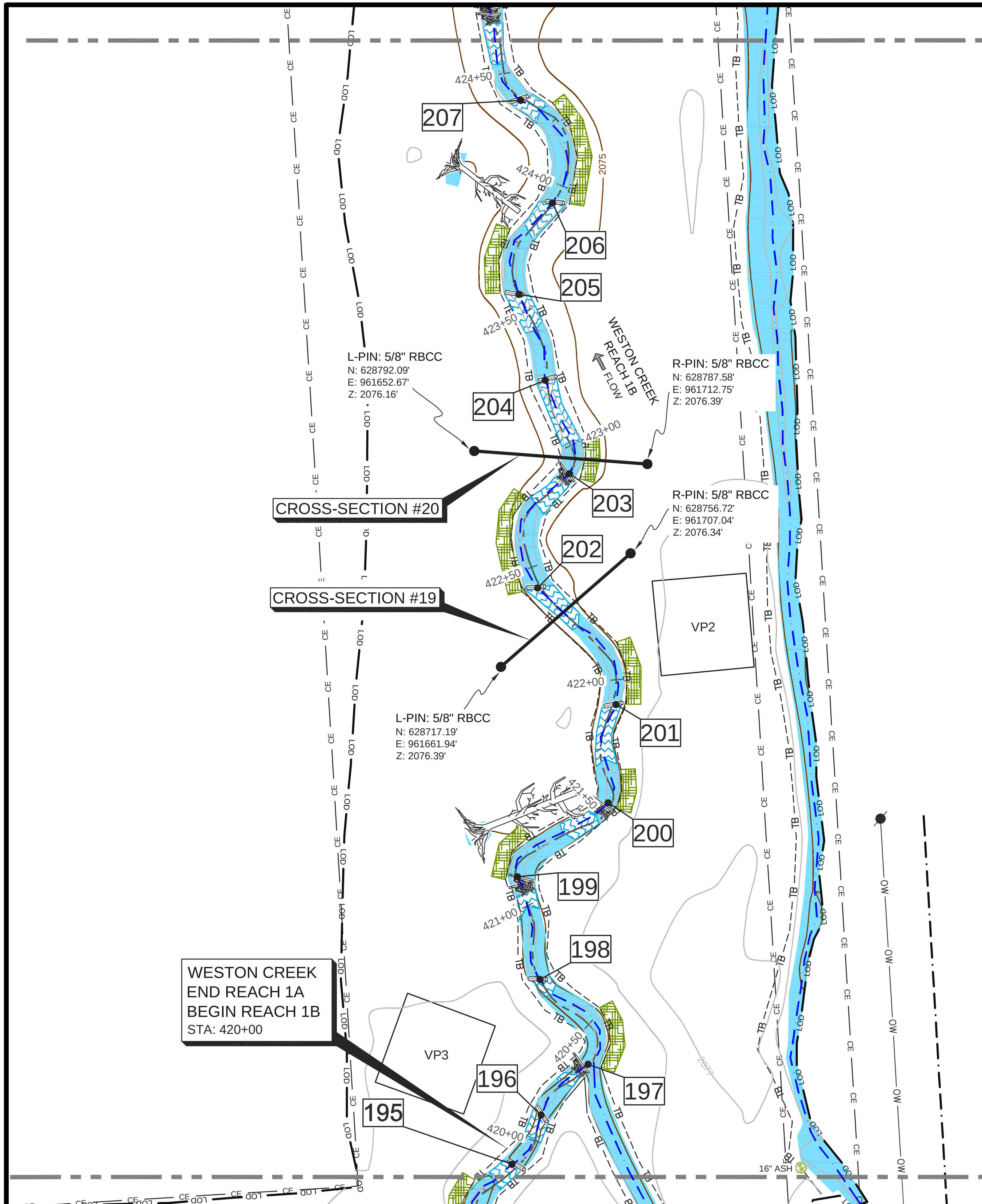
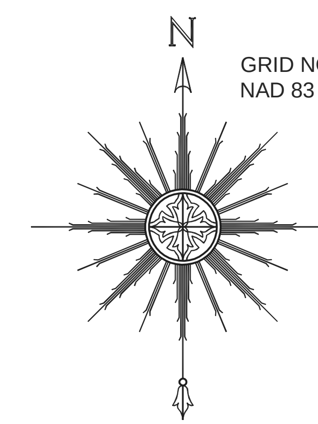


WESTON CREEK STRUCTURE TABLE

#	ELEVATION	DESCRIPTION
195	2075.01	LOG SILL
196	2074.83	LOG SILL
197	2074.57	BRUSH RUN W/ LOG
198	2074.74	LOG SILL
199	2073.41	BRUSH RUN W/ LOG
200	2073.78	BRUSH RUN W/ LOG
201	2074.36	LOG SILL
202	2074.17	LOG SILL
203	2073.38	BRUSH RUN W/ LOG
204	2073.80	LOG SILL
205	2073.89	LOG SILL
206	2073.64	LOG SILL
207	2073.63	LOG SILL



GRID NORTH
NAD 83 (2011)

0' 40' 80' 120'

ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DEWEY VAN DUINKERKEN

DocuSigned by:
Dew Duinkerken
5BDF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE
MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
WESTON CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142-AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
23 OF 37

Kee
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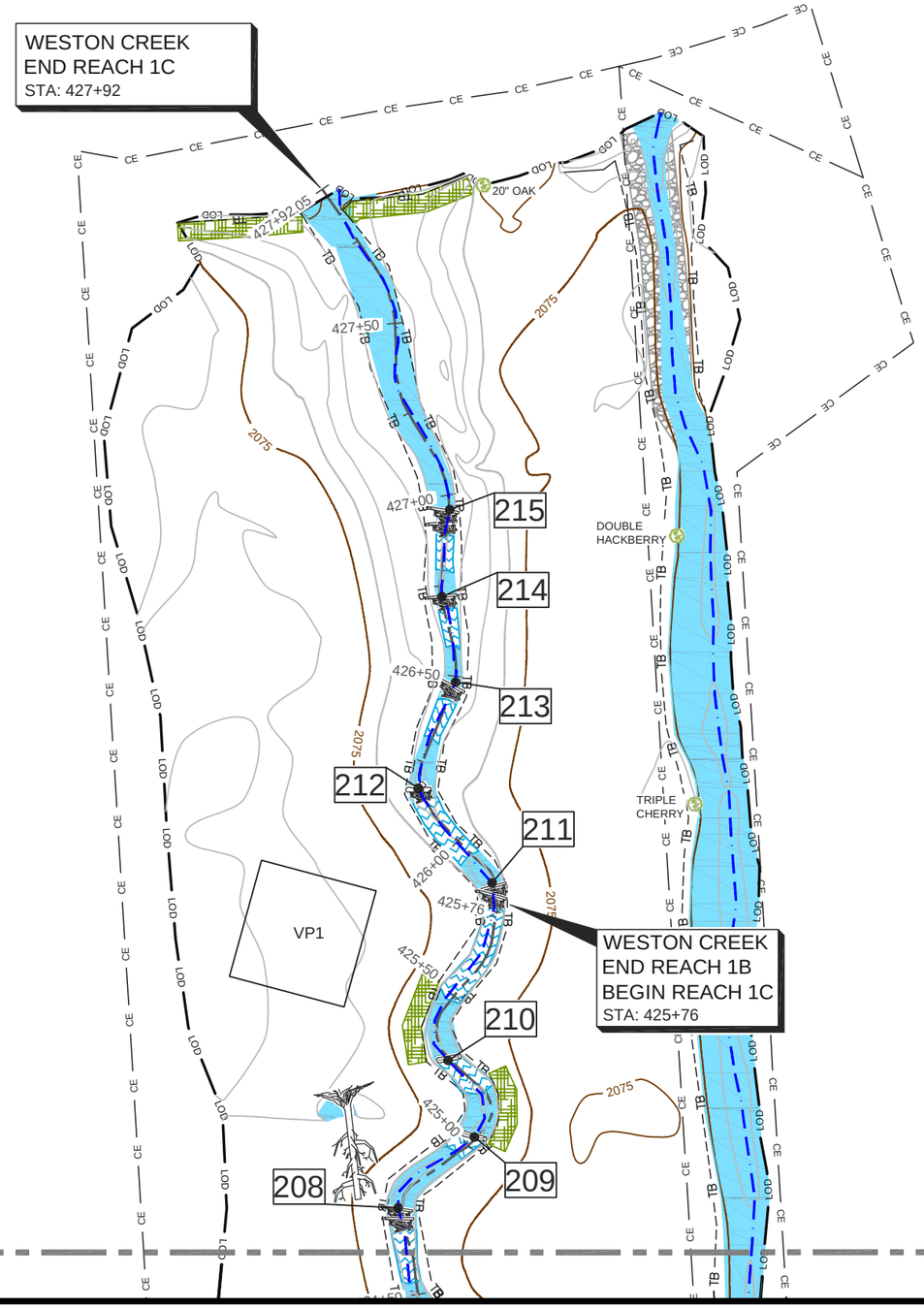
www.keemap.com
License # C-3039

CONTROL POINT
RBCC "KEE" (1)
GROUND COORDINATES
N: 629176.98'
E: 961505.95'
ELEV: 2076.94'



WESTON CREEK STRUCTURE TABLE		
#	ELEVATION	DESCRIPTION
208	2072.74	BRUSH RUN W/ LOG
209	2073.50	LOG SILL
210	2073.46	LOG SILL
211	2073.02	BRUSH RUN W/ LOG
212	2072.02	BRUSH RUN W/ BOULDER
213	2071.72	BRUSH RUN W/ LOG
214	2071.00	BRUSH RUN W/ LOG
215	2070.61	BRUSH RUN W/ LOG

N
GRID NORTH
NAD 83 (2011)

0' 40' 80' 120'
ONE INCH = TWENTY FEET (FULL SIZE)
ONE INCH = FORTY FEET (HALF SIZE)

SHEET 24
SHEET 23

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 5010 LAND SURVEYOR DREW VAN DUINKERKEN
DocuSigned by: Drew Duinkerken 56DF6592ABFF4B8...
PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:
FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:
STREAM DATA:
END WESTON CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
24 OF 37

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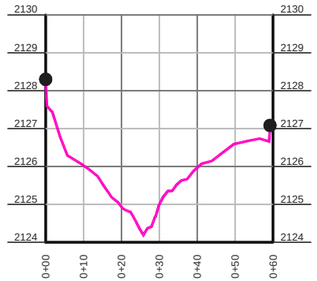
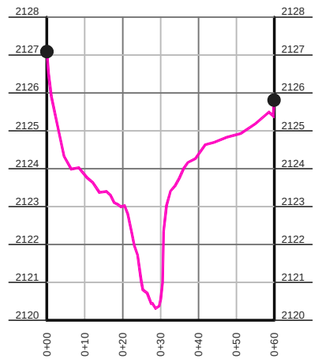
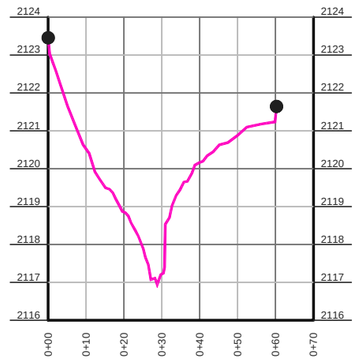


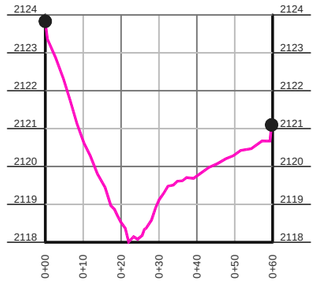
CROSS-SECTION #1-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



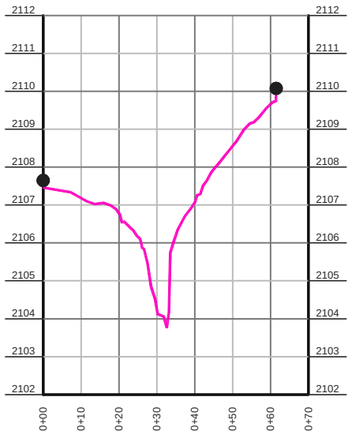
CROSS-SECTION #2-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



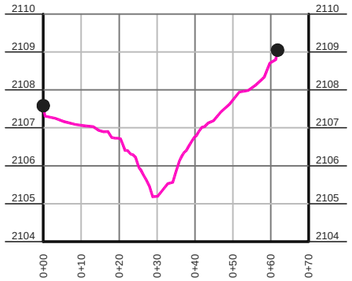
CROSS-SECTION #3-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



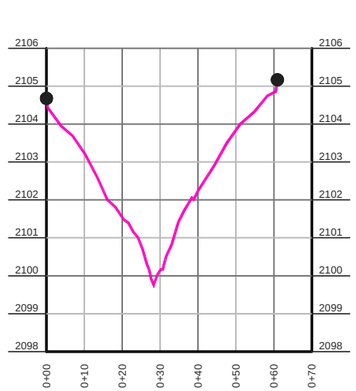
CROSS-SECTION #4-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



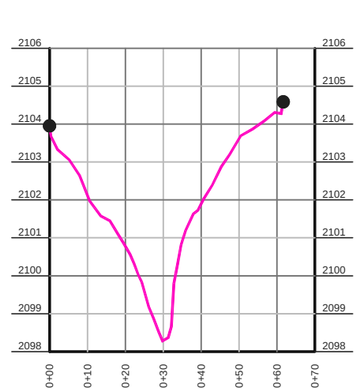
CROSS-SECTION #5-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



CROSS-SECTION #6-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



CROSS-SECTION #7-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



CROSS-SECTION #8-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

LEGEND

● CROSS–SECTION REBAR

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by:
Drew Duinkerken
560F6592AEF1488...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
CROSS SECTION PROFILES
1-8

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
25 OF 37

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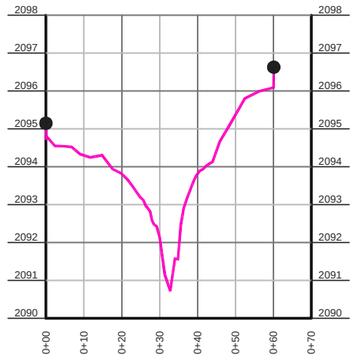
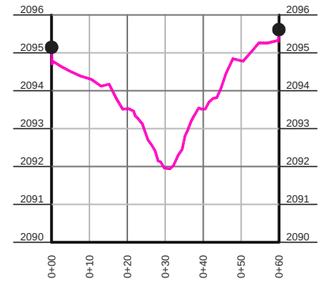
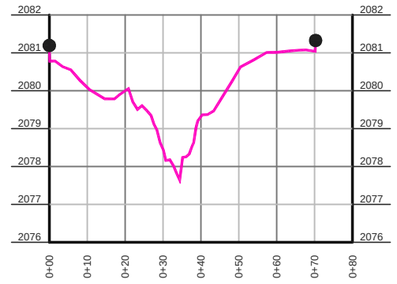


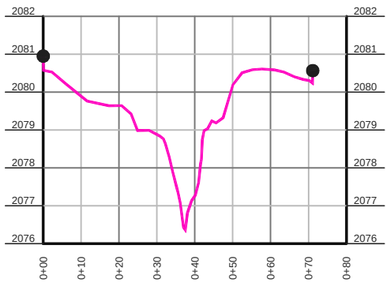
CROSS-SECTION #9-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



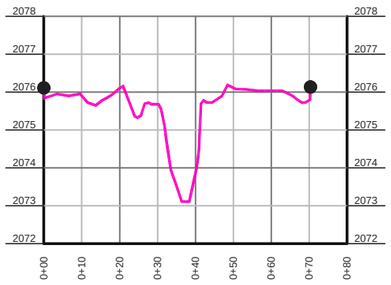
CROSS-SECTION #10-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



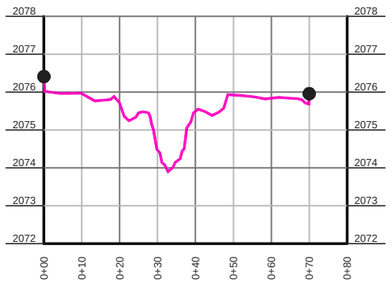
CROSS-SECTION #11-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



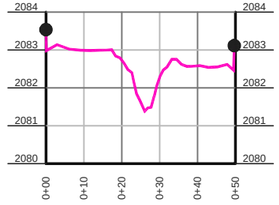
CROSS-SECTION #12-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



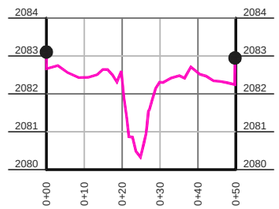
CROSS-SECTION #13-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



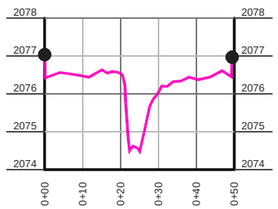
CROSS-SECTION #14-FLETCHER CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



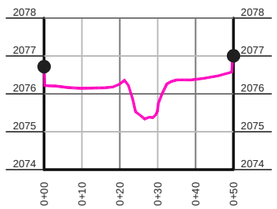
CROSS-SECTION #15-WESTON CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



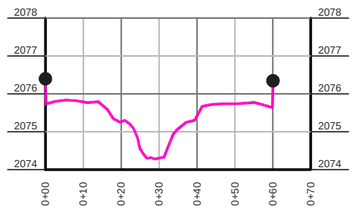
CROSS-SECTION #16-WESTON CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



CROSS-SECTION #17-WESTON CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



CROSS-SECTION #18-WESTON CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



CROSS-SECTION #19-WESTON CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

LEGEND

● CROSS-SECTION REBAR

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 DREW VAN DUINKERKEN LAND SURVEYOR

DocuSigned by:
Drew Duinkerken
56DF6592AB5R4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
CROSS SECTION PROFILES
9-19

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142-AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

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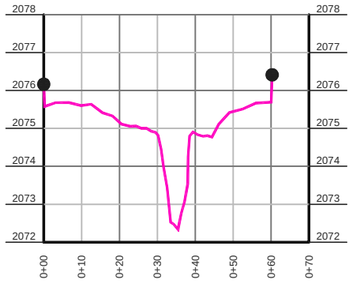
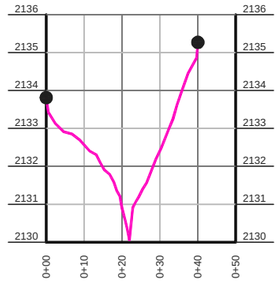
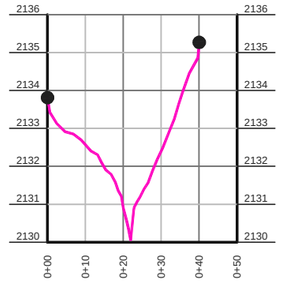


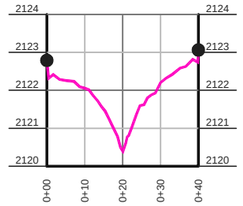
CROSS-SECTION #20-WESTON CREEK
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



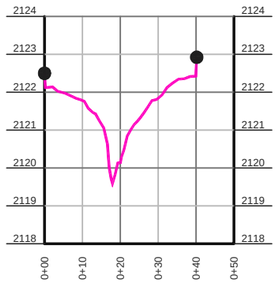
CROSS-SECTION #21-RACCOON BRANCH
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



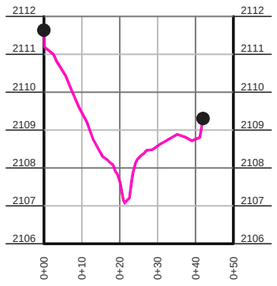
CROSS-SECTION #22-RACCOON BRANCH
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



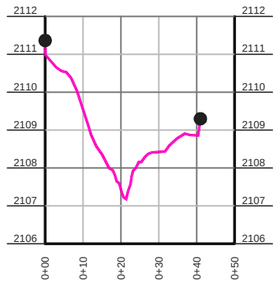
CROSS-SECTION #23-COATES BRANCH
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



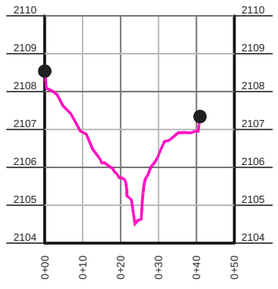
CROSS-SECTION #24-COATES BRANCH
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



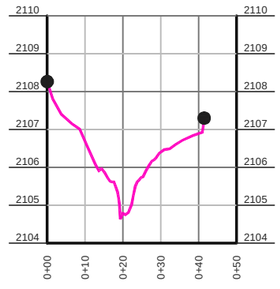
CROSS-SECTION #25-COATES BRANCH
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



CROSS-SECTION #26-COATES BRANCH
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



CROSS-SECTION #27-COATES BRANCH
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



CROSS-SECTION #28-COATES BRANCH
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

LEGEND

● CROSS-SECTION REBAR

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by:
Drew Duinkerken
56DF6592AB1F4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
CROSS SECTION PROFILES
20-28

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:
27 OF 37

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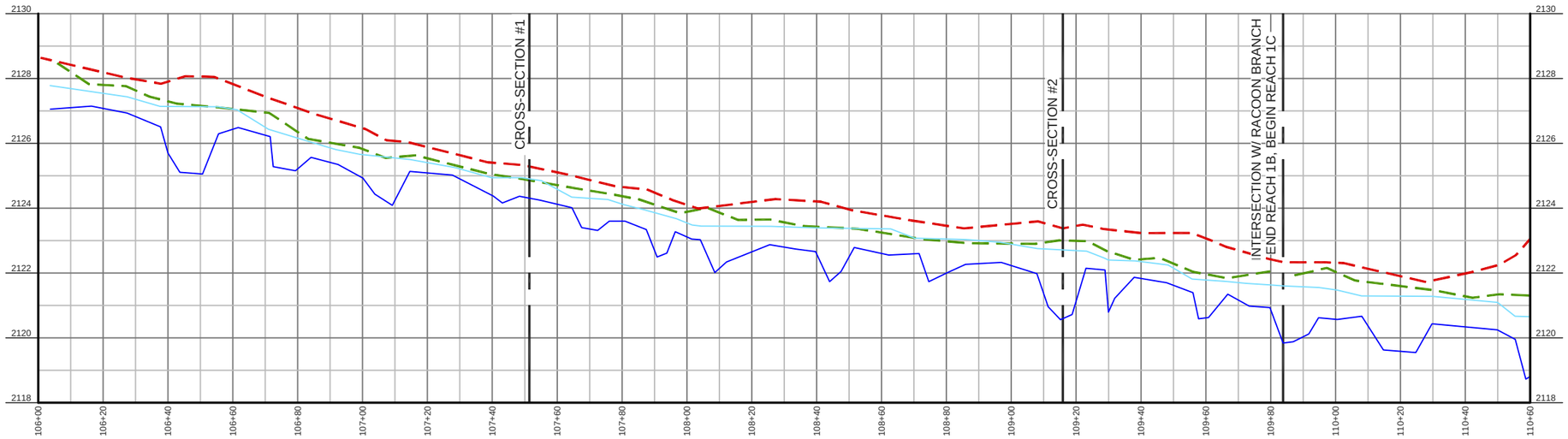

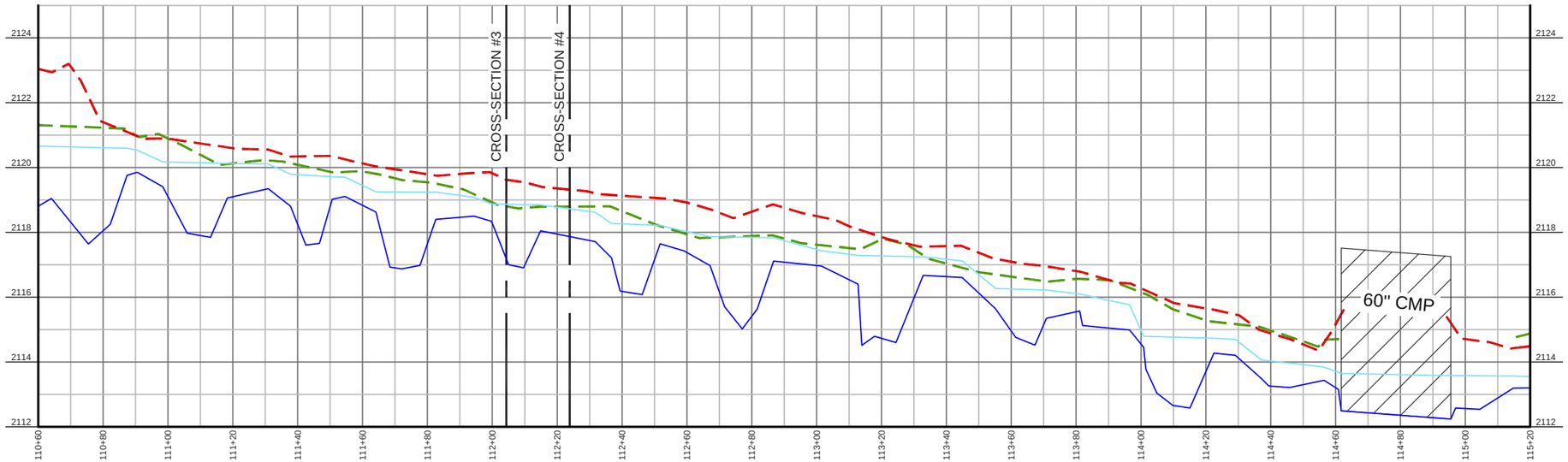

LONGITUDINAL PROFILE- FLETCHER CREEK

HORIZONTAL: 1" = 40'

VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by:
Drew Duinkerken
96DF6592AB7F4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
FLETCHER CREEK

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

28 OF 37

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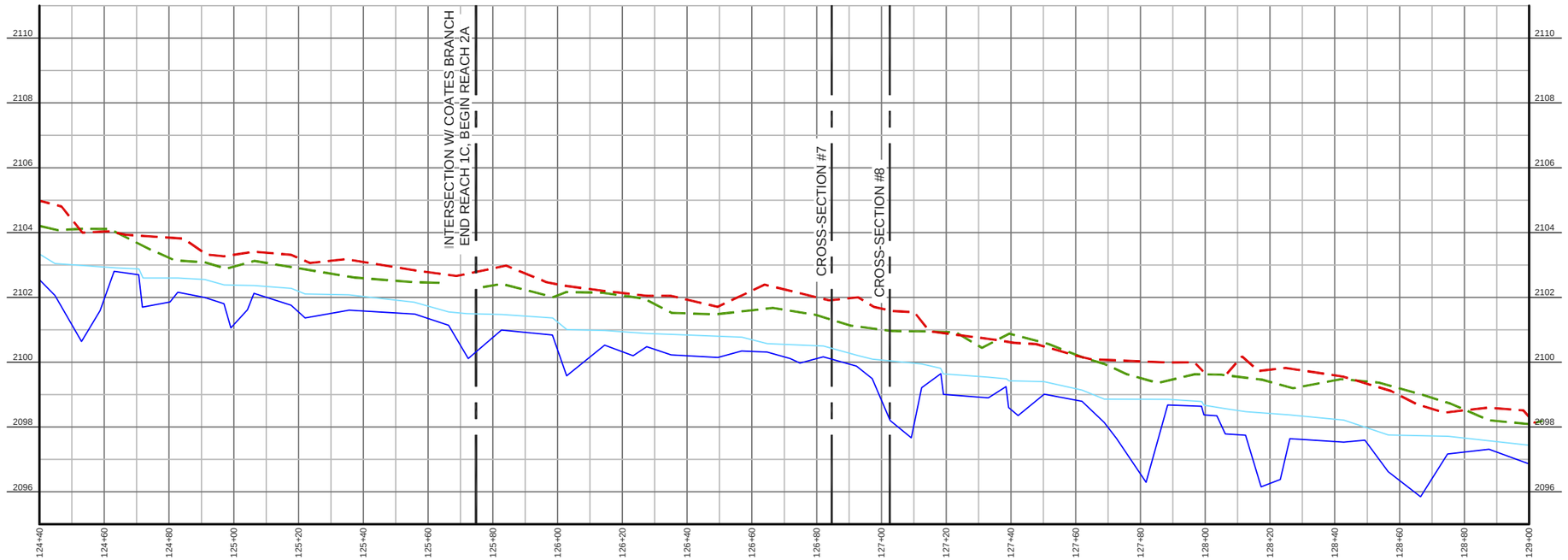

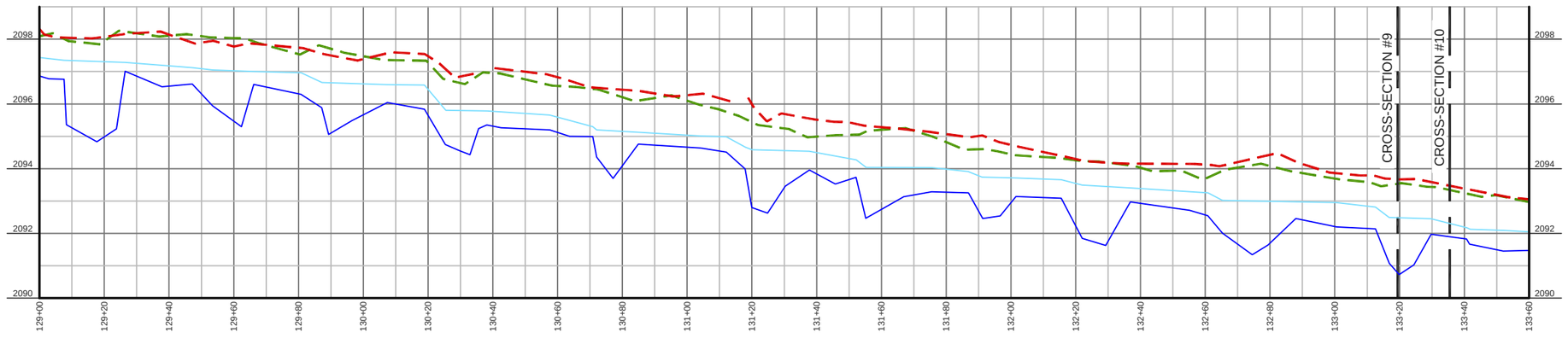

LONGITUDINAL PROFILE- FLETCHER CREEK

HORIZONTAL: 1" = 40'
VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 5210 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by: Drew Duinkerken 56DF6592ABFF458...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
FLETCHER CREEK

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

29 OF 37

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Asheville, NC 28802
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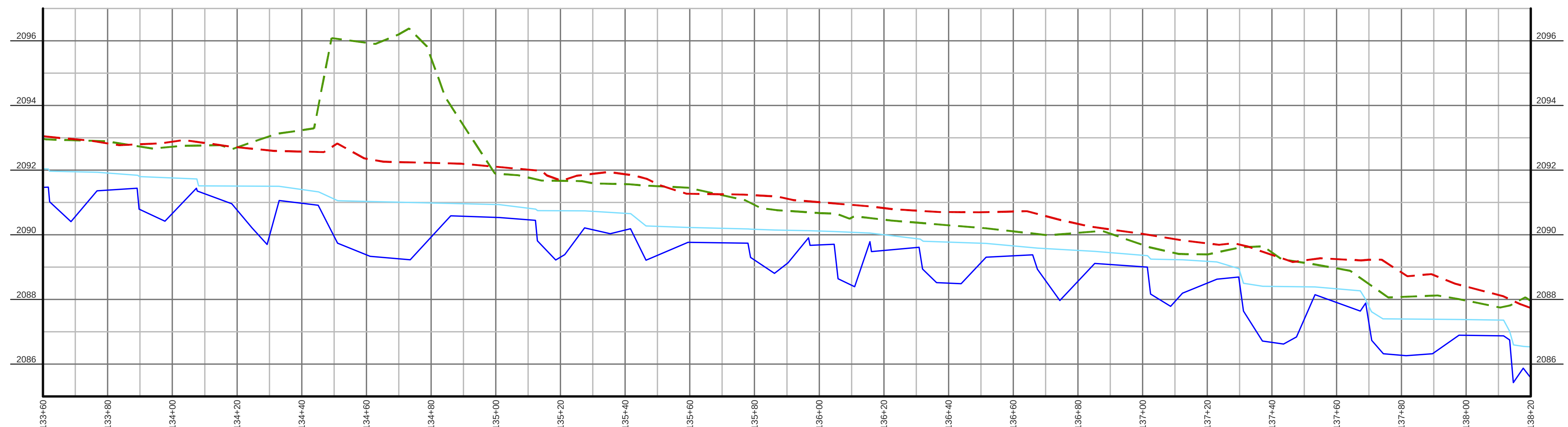
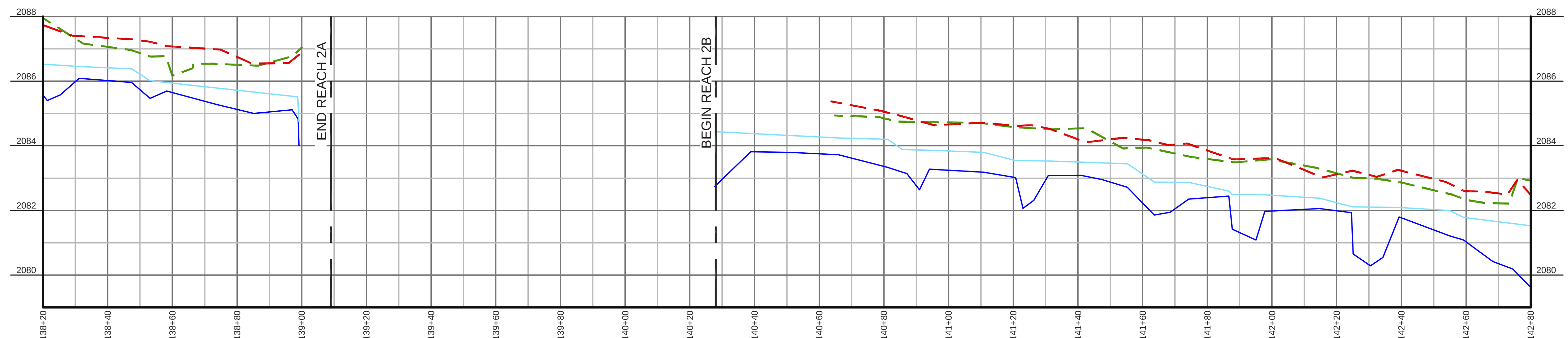




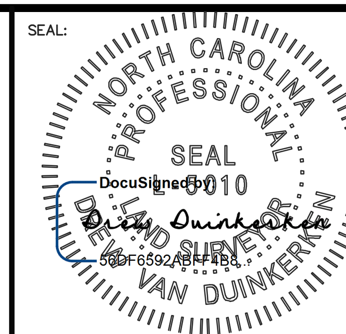
LONGITUDINAL PROFILE- FLETCHER CREEK

HORIZONTAL: 1" = 40'
VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:



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NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

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EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE
MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
FLETCHER CREEK

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:

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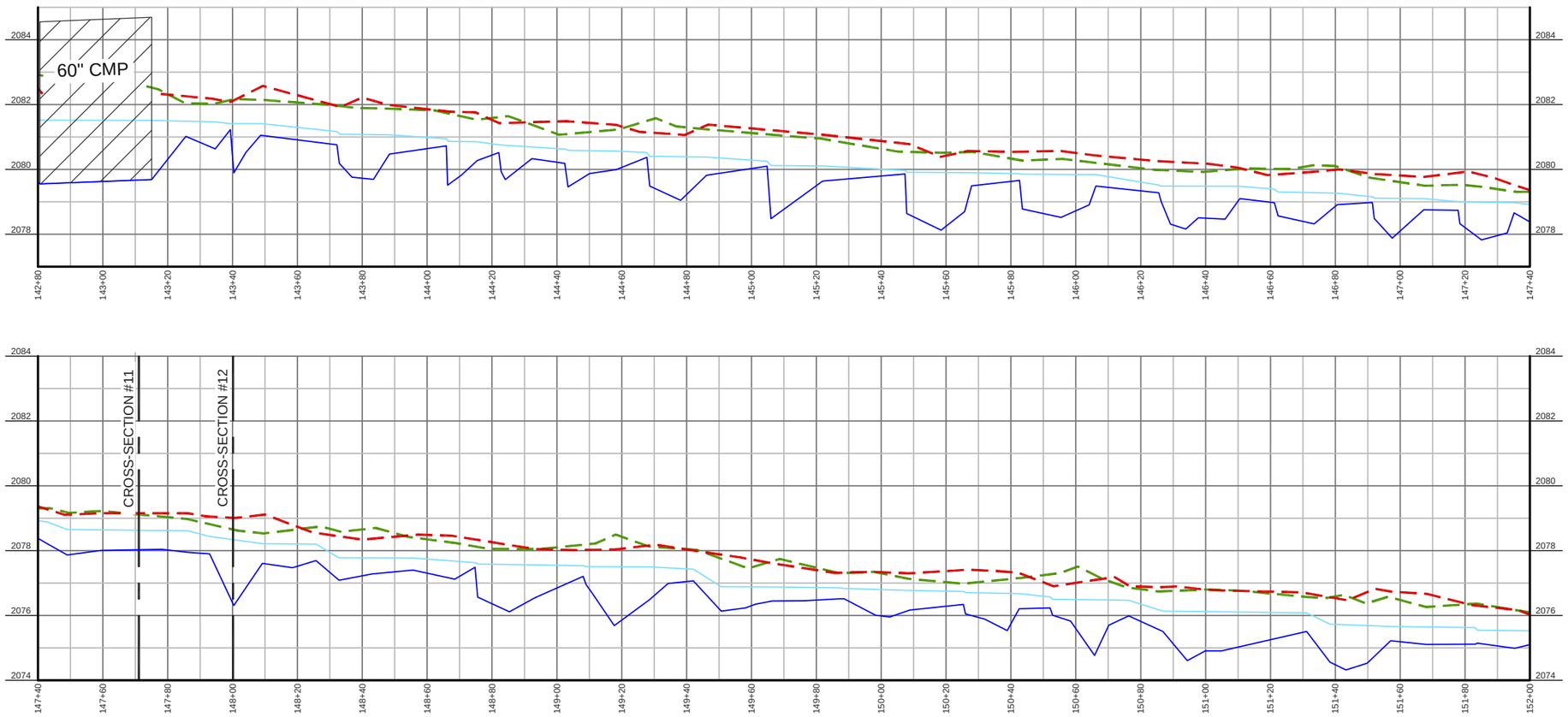

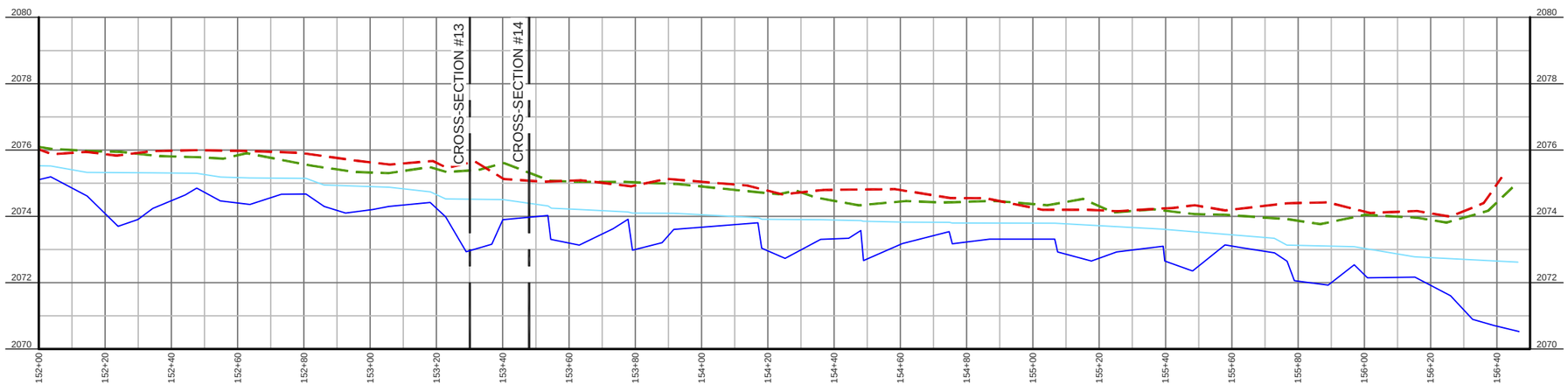

LONGITUDINAL PROFILE- FLETCHER CREEK

HORIZONTAL: 1" = 40'

VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-3810 LAND SURVEYOR DEREK VAN DUINKERKEN

DocuSigned by: Derek Duinkerken 58DF6592ABFF4B5...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
FLETCHER CREEK

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

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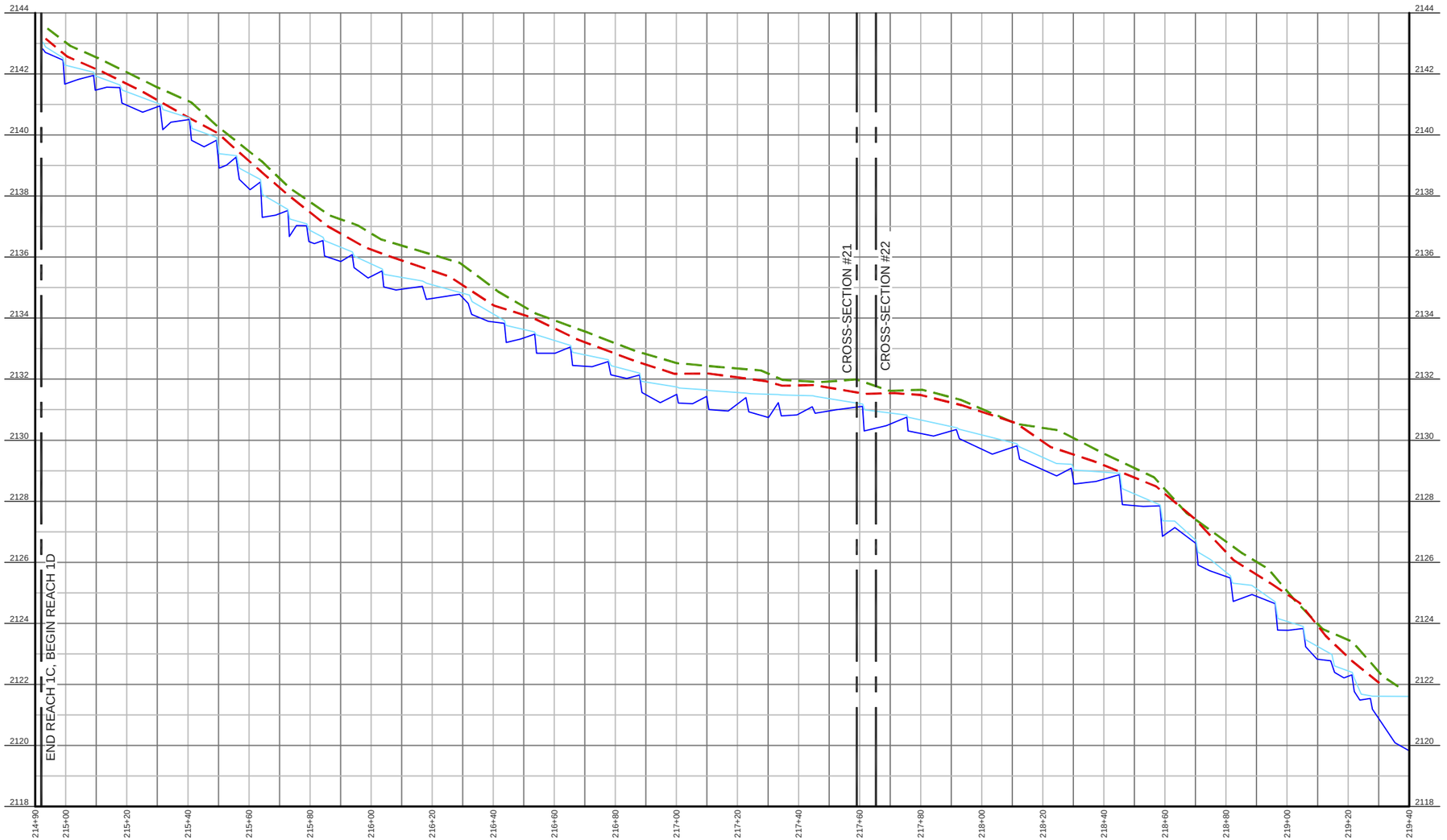

LONGITUDINAL PROFILE- RACCOON BRANCH

HORIZONTAL: 1" = 40'
VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by:
Drew Duinkerken
56DF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
RACCOON BRANCH

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142-AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

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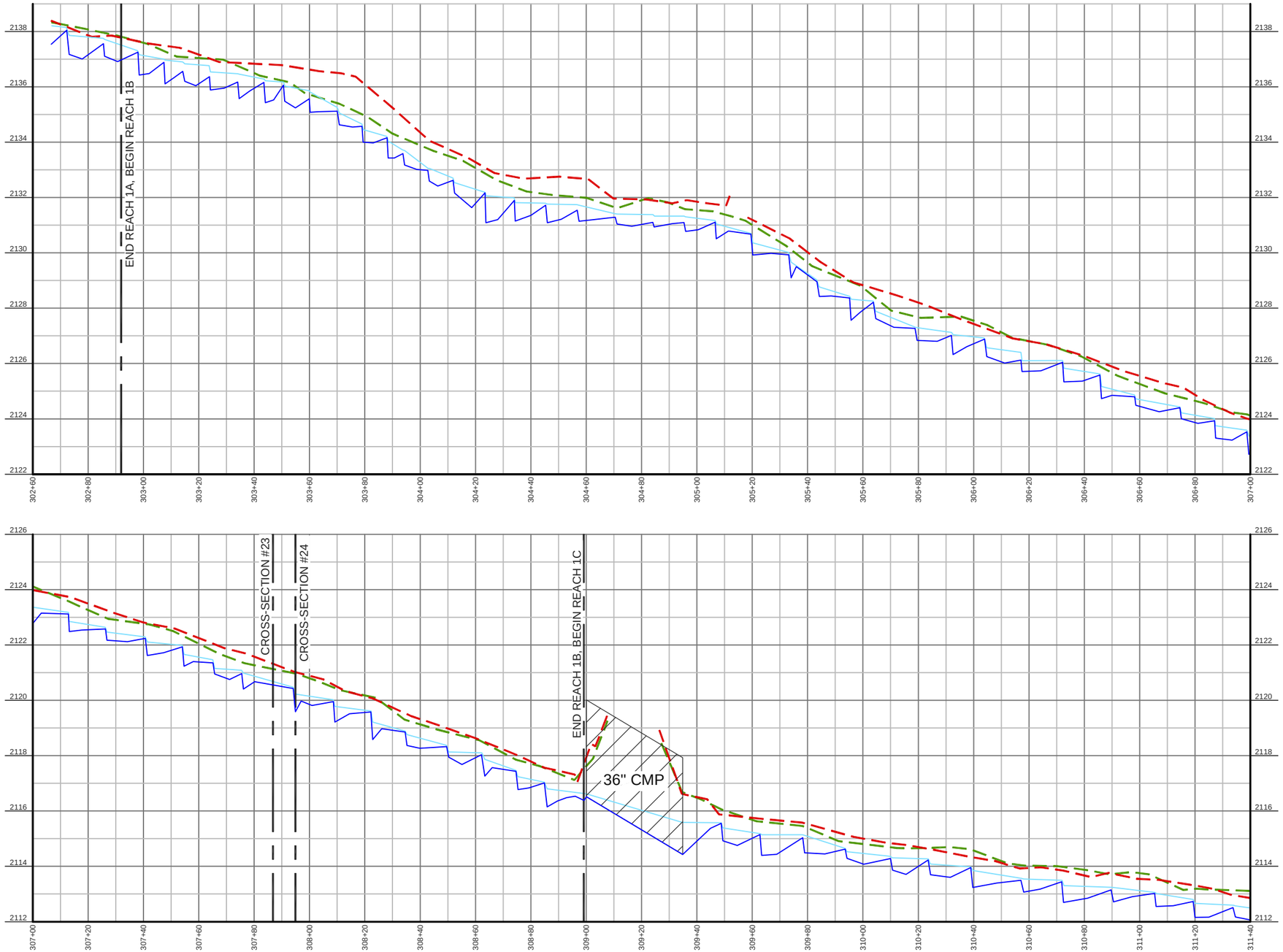

LONGITUDINAL PROFILE- COATES BRANCH

HORIZONTAL: 1" = 40'

VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DEREK VAN DUINKERKEN

DocuSigned by: Derek Duinkerken 50DF6592AFFF45B...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
COATES BRANCH

TOWNSHIP: FLETCHER	COUNTY: HENDERSON	STATE: NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:

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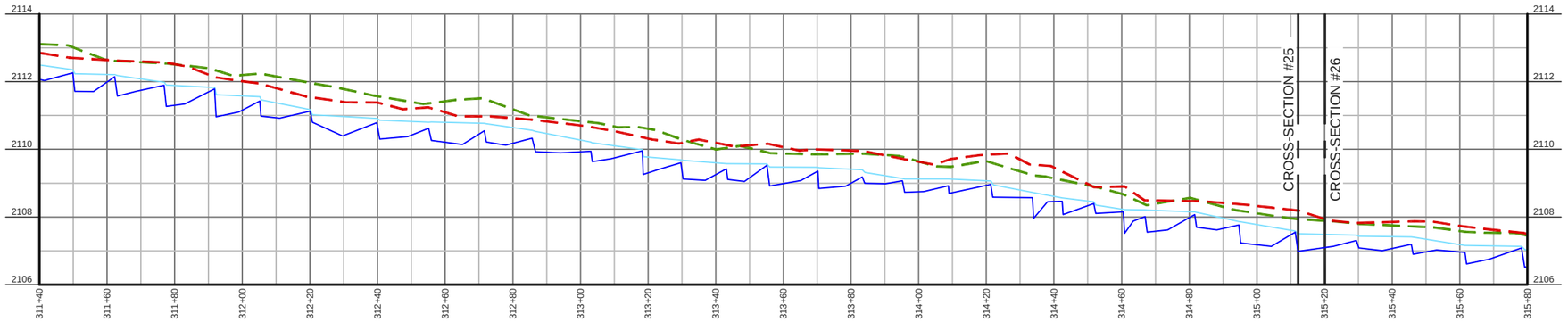

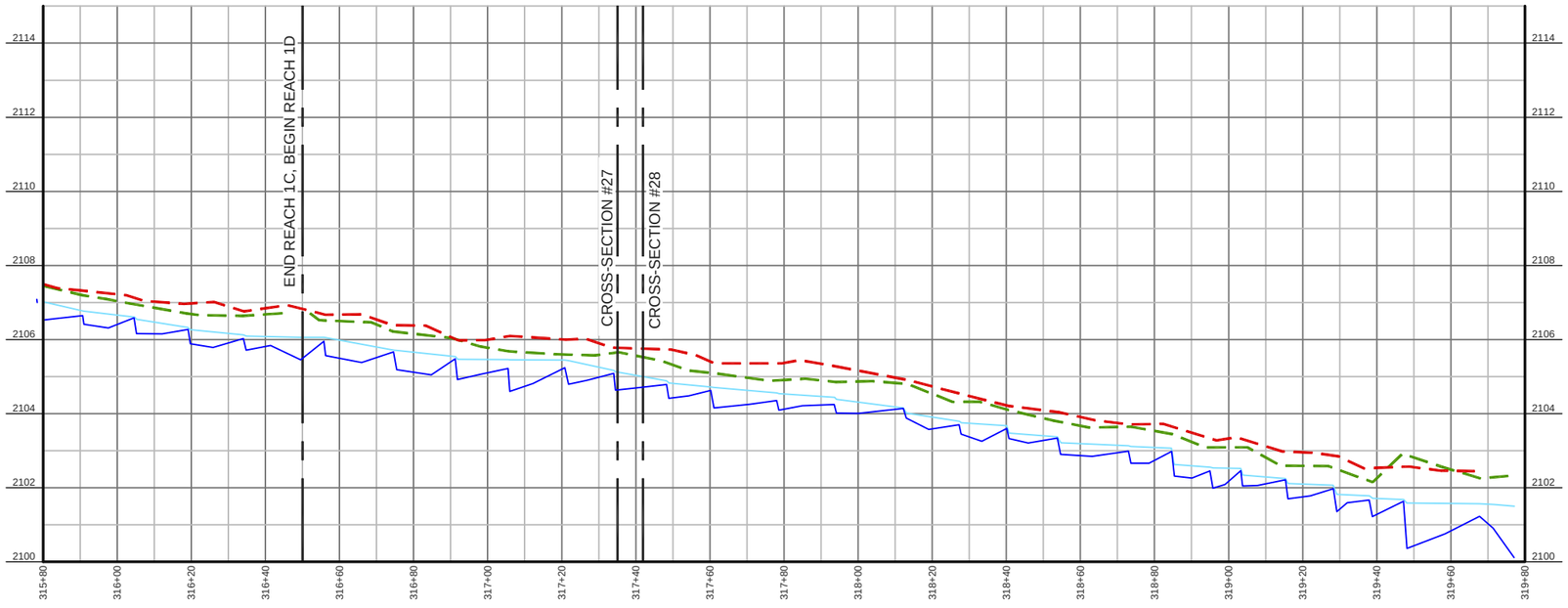

LONGITUDINAL PROFILE- COATES BRANCH

HORIZONTAL: 1" = 40'

VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-3810 LAND SURVEYOR DEE VAN DUINKERKEN

DocuSigned by: Dee Duinkerken 58DF6592ABFF4B4...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
COATES BRANCH

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

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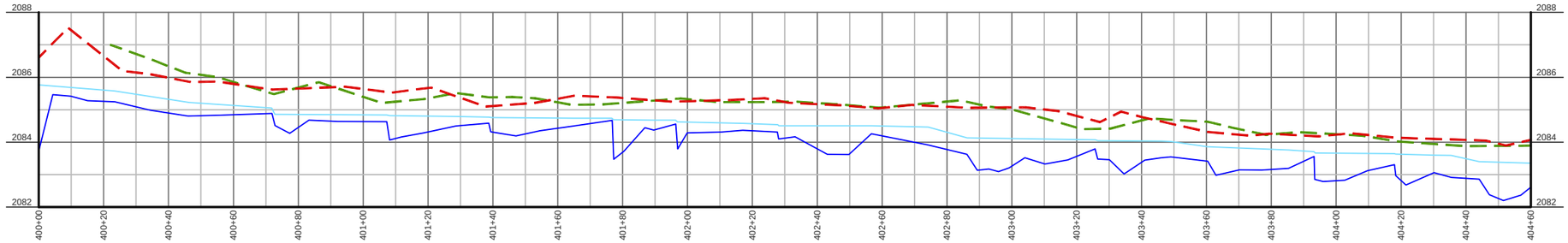

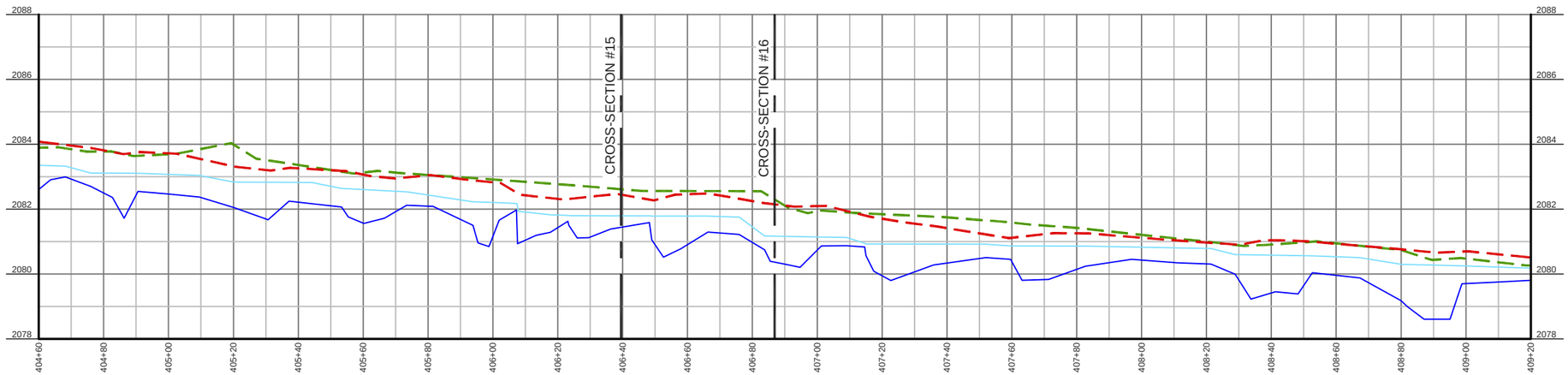

LONGITUDINAL PROFILE- WESTON CREEK

HORIZONTAL: 1" = 40'
VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 5010 LAND SURVEYOR DAVID VAN DUINKERKEN

DocuSigned by: David Van Duinkerken 56DF6592A3FF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
COATES BRANCH

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY: NH/JA	CHECKED BY: LDP/PBK	SURVEY BY: CB,NMH,LDP,JM,AC
SCALE: AS SHOWN	SURVEY DATES: 12/17/19 – 03/22/19	
JOB: #1811142–AB	SHEET SIZE: (HALF SIZE) 11" X 17"	

#	DATE	REVISIONS

SHEET:

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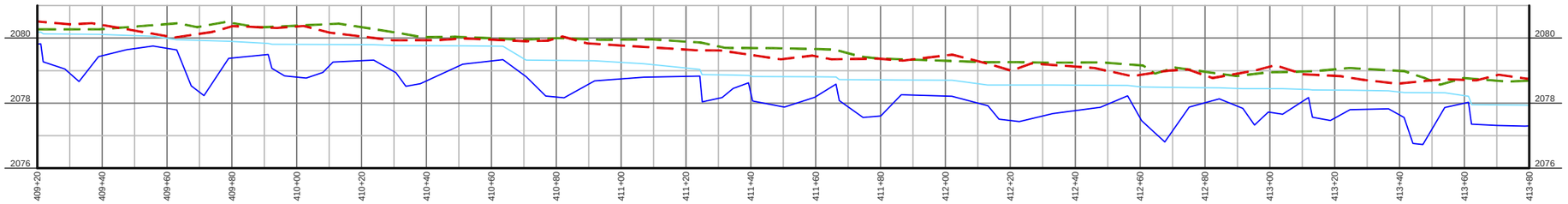

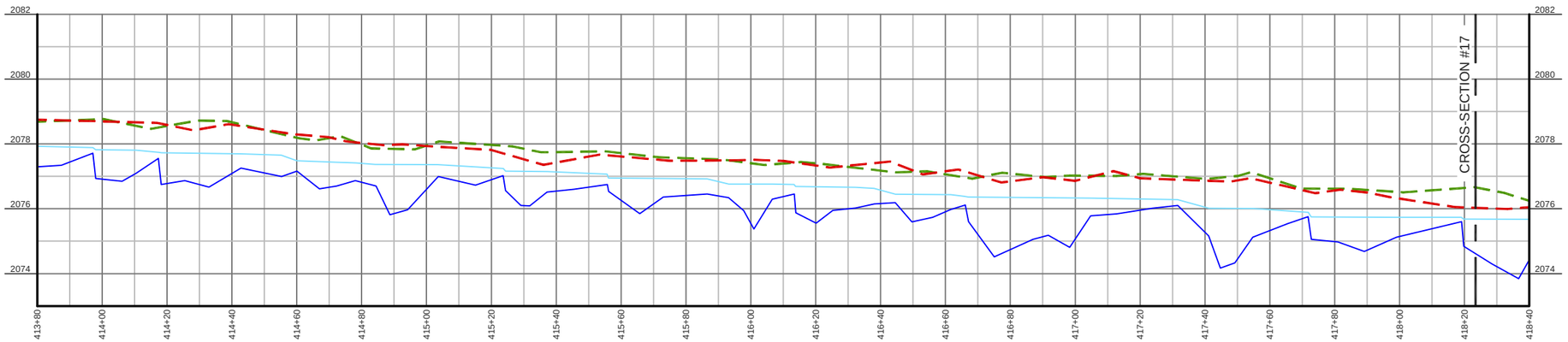

LONGITUDINAL PROFILE- WESTON CREEK

HORIZONTAL: 1" = 40'
VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL L-5010 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by:
Drew Duinkerken
56DF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
WESTON CREEK

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

#	DATE	REVISIONS

SHEET:

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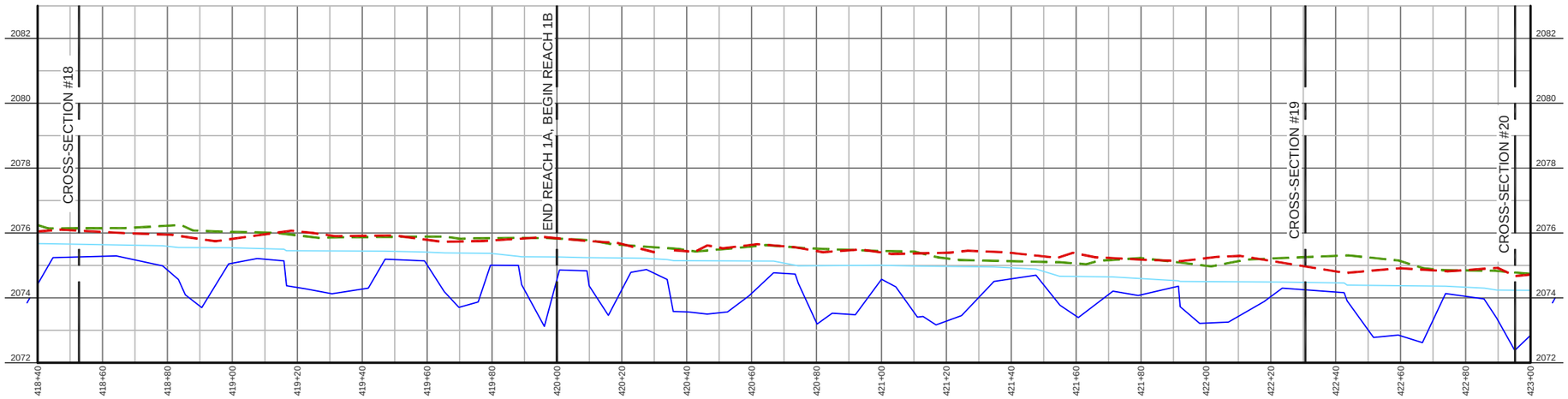

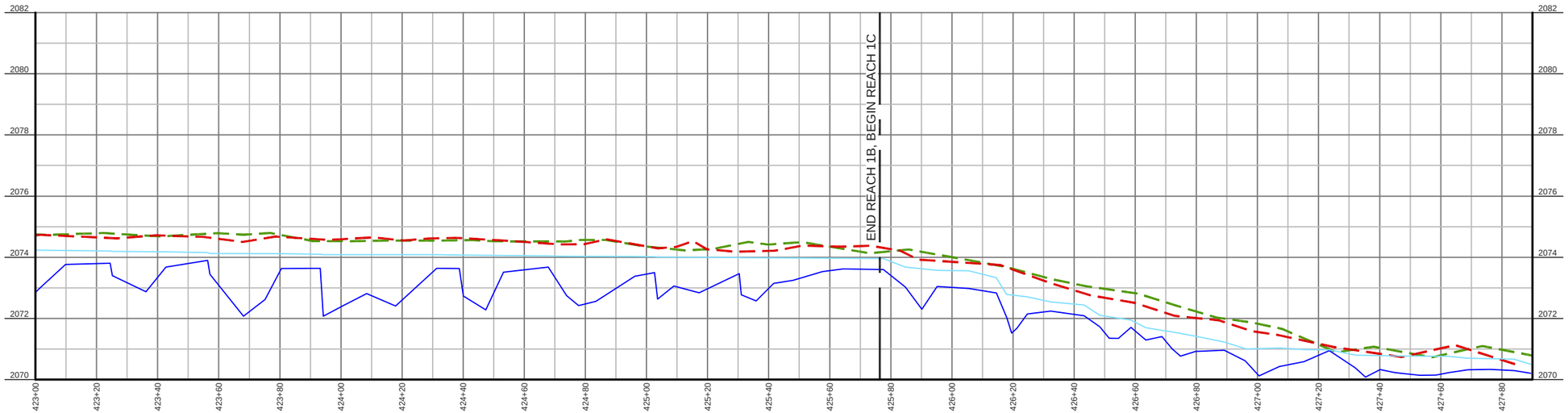

LONGITUDINAL PROFILE- WESTON CREEK

HORIZONTAL: 1" = 40'

VERTICAL: 1" = 4'

LEGEND

- THALWEG
- WATER SURFACE
- RIGHT TOP OF BANK
- LEFT TOP OF BANK

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 5210 LAND SURVEYOR DREW VAN DUINKERKEN

DocuSigned by: Drew Duinkerken 56DF6592ABFF4B8...

PLEASE REFER TO THE COVERSHEET FOR THE STATEMENT OF CERTIFICATION

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES & LEGEND

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

AN AS-BUILT SURVEY FOR:
EW SOLUTIONS, LLC.

SPO FILE NO's. 45-CZ, 45-DA, & 45-DB
SPO FILE NO's. 45-CY, 45-CX
DMS PROJECT NO. 100004

PROJECT:

FLETCHER SITE MITIGATION PROJECT

SHEET TITLE:

STREAM DATA:
LONGITUDINAL PROFILE
WESTON CREEK

TOWNSHIP:	COUNTY:	STATE:
FLETCHER	HENDERSON	NORTH CAROLINA
DRAWN BY:	CHECKED BY:	SURVEY BY:
NH/JA	LDP/PBK	CB,NMH,LDP,JM,AC
SCALE:	SURVEY DATES:	
AS SHOWN	12/17/19 – 03/22/19	
JOB:	SHEET SIZE: (HALF SIZE)	
#1811142–AB	11" X 17"	

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SHEET:

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