AS-BUILT BASELINE MONITORING REPORT

Final

WYANT LANDS MITIGATION SITE
Lincoln County, NC
DEQ Contract No. 7244
DMS Project No. 100067

Catawba River Basin HUC 03050102
(03050103 Expanded Service Area)

USACE Action ID No. SAW-2017-02609
NCDEQ DWR#: 2018-0177
RFP #: 16-007133

Data Collection Period: March 2021 – August 2021 Submission Date: January 14, 2022

PREPARED FOR:

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

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USACE Action ID No. SAW-2017-02609
NCDEQ DWR#: 2018-0177

PREPARED BY:

Wildlands Engineering, Inc.
1430 South Mint Street, Suite 104
Charlotte, NC 28203

Phone: 704.332.7754
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January 14, 2022

ATTN: CESAW-RG/Browning
Ms. Kim Browning
US Army Corps of Engineers – Wilmington District
69 Darlington Avenue
Wilmington, NC 28403-1343

RE: Wyant Lands Mitigation Site As-Built/MY0
Lincoln County, NC
Response to NCIRT Review Comments
USACE Action ID No: SAW-2017-02609
NCDMS Project No: 100067

Dear Ms. Browning:

Wildlands Engineering, Inc. (Wildlands) has reviewed USACE's and NCDWR's comments from the As-Built/MY0 review of the Wyant Lands Mitigation Site in Lincoln County, NC. The following Wildlands' responses to *USACE's and NCDWR's comments* are noted below.

USACE MY0 Comments, Casey Haywood

1. *Concur with DWR's comments below, and would support withholding partial stream credit if the crossing on both sides of Wyant Road has been repaired/stabilized by credit release.*

   Wildlands Response: See response to DWR comment #4 below.

2. *An email received on November 18, 2021 from Paul Wiesner indicated Wildlands would be installing the livestock watering structures/tanks the week of 11/29/2021. Please confirm these were installed.*

   Wildlands Response: Installation of cattle watering devices at the Wyant property has been completed by Wildlands Construction.

3. *Ok with the red line planting changes, to include the addition of red mulberry.*

   Wildlands Response: Wildlands acknowledges the approved addition of red mulberry.

DWR MY0 comments, Erin Davis:

1. *DWR requests that the methodology to determine the extent of the growing season be set and consistent throughout monitoring. If you're selecting to use the WETS table dates now, please do not ask to switch in MY5 to soil and bud burst for that year.*

   Wildlands Response: Wildlands plans to use the NRCS WETS table dates to determine the growing season.

2. *Please consider using approved planting plan species not installed due to availability issues in future supplemental planting efforts (if appropriate).*

Wildlands Response: The project addendum is using the same planting plan as the original project area. Some of the unavailable species may become available for the addendum planting but if listed species are unavailable, Wildlands will use the same approved planting list for supplemental plantings.

3. *There were 14 grade control structures positioned at the end of riffles that were not installed as proposed. DWR requests that special attention be given to these areas during the annual visual assessment to confirm no evidence of developing headcuts.*

   Wildlands Response: Wildlands will visually assess each of the 14 areas where grade control structures were removed once a monitoring season to ensure stability at the tail of riffle. If any instability is observed, it will be noted on the CCPV maps.

4. *It's DWR understanding that Wildlands to working to resolve the severe bank instability and sediment loading occurring within the stream crossings on either side of Wyant Road observed by the IRT during the October 2020 site visit. DWR is very concerned about associated water quality impacts. If a remediation effort has not been implemented by the April DMS credit release meeting, DWR will likely recommend at least partial withholding of MY1 stream credits.*

   Wildlands Response: Wildlands is implementing additional vegetative methods (seed and straw) to the areas of concern. Wildlands will evaluate the condition of the crossings prior to addendum construction and if deemed necessary will use more hardened methods (add rock or similar) to stabilize the crossing areas and reduce sediment inputs from the ford crossings into the project streams. Wildlands anticipates addendum construction to be performed prior to the April DMS credit release meeting.

One (1) hard copy of the Final As-Built and Baseline Monitoring report is included with this comment response letter. Please contact me at 865-207-8835 if you have any questions.

Sincerely,

Eric Neuhaus, PE
Project Manager
eneuhaus@wildlandseng.com

CC: Erin Davis
Stream/Wetland Mitigation Coordinator
NC Division of Water Resources
1617 Mail Service Center
Raleigh, NC 27699-1617

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
TIM BAUMGARTNER
Director

NORTH CAROLINA
Environmental Quality

October 22, 2021

Mr. Eric Neuhaus, PE
Wildlands Engineering, Inc.
167-B Haywood Road
Asheville, NC 28806

Subject: Draft As-Built Baseline Monitoring Report (MY0) and Record Drawings & Mitigation Plan Addendum for the
Wyant Lands Mitigation Site
Catawba River Basin – CU# 03050102 – Lincoln County
DMS Project ID No. 100067
Contract # 7244

Mr. Neuhaus:

On October 13, 2021, the NCDEQ – Division of Mitigation Services (DMS) received the Draft As-Built Baseline Monitoring Report (MY0), Record Drawings & Mitigation Plan Addendum for the Wyant Lands Mitigation site from Wildlands Engineering, Inc.

The MY0 report establishes the as-built conditions at the project site. Anticipated mitigation on the site (MY0) includes 6,238 linear feet of stream restoration; 376 linear feet of stream enhancement (Level 1); 926 linear feet of stream enhancement (Level 2); 11.0 acres of wetland re-establishment; and 3.2 acres of wetland rehabilitation for a total of 6,863.700 Stream Mitigation Units (SMUs) & 13.1 Wetland Mitigation Units (WMUs). The following are our comments on the draft documents:

As-Built Baseline Monitoring Report (MY0)

General: In the report text, please briefly reference and discuss the 404 project permit condition #3 and as-built wetland grading. Please reference Record Drawing sheet 2.1 and any additional sheets necessary to address the USACE issued permit condition in the report text.

General: If available, please provide the soil boring profiles for the monitoring well gauges installed on the site. This can be included as a separate report appendix.

Section 2.4 Wetlands: Please note that the IRT has indicated that if soil temperature and bud burst data are utilized to amend the start of the growing season, project data will also need to be utilized to adjust the end of the growing season. DMS recommends utilizing the North Carolina WETS table for the project growing season as established in the IRT approved mitigation plan.

Section 3.1.1 Dimension: Table 18 (not Table 19) established the # of cross sections in the IRT approved mitigation plan. Please update the text accordingly.

Section 3.1.4 Photo Reference Points: Based on IRT concerns**,** feedback and the 10/18/21 IRT site visit, DMS recommends additional photo points at all project crossing areas (upstream and downstream); particularly the crossing beneath Wyant Road. These additional photo points can be added in the MY1 (2021) report.

5.1.12 Fencing: In the report text, please also note the type of fencing installed to exclude livestock from the project conservation easement. If multiple fencing types were utilized, please describe in the report text.

Table 1: The As-Built acreage for Wetland Rehabilitation appears to be incorrect (typo). The Wetland Rehabilitation acreage should be 3.200 acres. Please review, confirm and update the document accordingly.

Table 7: Cross-section #13 is noted as a pool in Table 7 but is noted as a riffle in the cross-section plots. This is also the cross-section that was relocated in August 2021. Please review Table 7 and the cross-section plots and update as necessary to confirm that they are consistent.

Record Drawings:

- Sheet 1.1 notes; "Pools have filled with offsite sediment. Expect sediment to clear as channel stabilizes." Please also discuss this in the report text.

MY0 - Digital Support File Comments:

- Please include the sealed standalone as-built .DWG file and a .PDF file (Kee Surveying) with the final digital submission.

- Please submit the mobile vegetation plots as polygons rather than points.

- Wetland_Rehabilitation (OID 6), Wetland_Re_Establishment (OID 2), and Wetland_Re_Establishement (OID 4) overlap with one another. Also, Wetland_Rehabilitation (OID 8) and Wetland_Re_Establishement (OID 4) overlap with one another. Please review and correct these wetland asset overlaps.

- Wetland_Rehabilitation (OID 1) and Wetland_Re_Establishment (OID 1) are both outside of the easement. Please exclude these features from the submission.

- UT3_R3_Lower overlaps and extends past the confluence with Wyant_Creek_R2. Please use snapping to correct this issue.

- Please confirm that the feature with Name UT3_R3 is in fact UT2_R3 and update the Name attribute if this is true.

- The Shape_Area of the merged features included in Wetland_Re_Establishment is equal to 11.213 ac, compared to the 11.0 ac reported in the asset table. After correcting the

overlaps outlined above, please revise these features so that they reflect the reported as-built condition.

Mitigation Plan Addendum:

- DMS recommends calling the document a Mitigation Plan ***Addendum*** on the cover and remainder of the document and attachments.

- **Executive Summary & Section 1.0**: The addendum notes; "*In March 2021, Wildlands completed construction of the initial Wyant Lands Mitigation Site (Site) which involved the restoration and enhancement of approximately 7,558 existing linear feet (LF) of Wyant Creek and three unnamed tributaries (UT1 – UT3), as well as the re-establishment and rehabilitation of 14.8 acres of wetlands.*" The MY0 report notes a total of 7,540 linear feet (LF) of perennial and intermittent stream a total of 14.2 acres of restored riparian wetlands. Please review and update the addendum so the document is consistent with the MY0 report and record drawings.

- **Section 5.3 Amendment Existing Hydrology:** If available, please provide the soil boring profiles for the four (4) pre-construction monitoring well gauges installed on the site. This can be included as a separate appendix.

- **Table 11:** Recommend updating the "*Mitigation Plan Footage/ Acreage*" cell to "Mitigation Plan Addendum Footage/ Acreage" to avoid confusion.

- **Table 11:** Please QA/QC and update the Total Stream Mitigation Credit cell to 231.600 SMUs. Please QA/QC and update the Total Wetland Mitigation credit cell to 4.563 WMUs. The most recent DMS mitigation plan asset table should be utilized to avoid rounding errors that conflict with the DMS asset database (CRM).

- **Table 12:** Please QA/QC and update the Total Stream Mitigation Credit cell to 7,095.300 SMUs. Please QA/QC and update the Total Wetland Mitigation credit cell to 17.663 WMUs. The most recent DMS mitigation plan asset table should be utilized to avoid rounding errors that conflict with the DMS asset database (CRM).

- Per the recent IRT site visit on 10/18/2021, please be sure to describe the existing and proposed vegetation in the addendum text and tables.

- Per the recent IRT site visit on 10/18/2021, please provide a LIDAR map of the additional wetland area and the initial soil evaluation from the project mitigation plan (S&EC (Kevin Martin; LSS)). These documents should be referenced in the addendum text as necessary.

- Please reference and update the addendum as necessary to reflect IRT conversations and meeting notes from the recent 10/18/2021 site visit.

Mitigation Plan Addendum - Digital Support File Comments:

- The Amendment_Proposed_Stream intersects with the previously submitted mitigation plan feature for UT1 Reach 1/2 and moves past the confluence. Please use snapping to connect the endpoint of Ammendment_Proposed_Stream to UT1 Reach 1/2.

- There are multiple overlapping features both within the Ammendment_Proposed_Wetlands shapefile and between the Ammendment_Proposed_Wetlands shapefile and the previously submitted mitigation plan wetland asset features. Please edit to ensure there are no overlaps, and update Table 12 in the Mitigation Plan Amendment document accordingly.

- Combining the previously submitted mitigation plan wetland re-establishment feature with the Ammendment_Proposed_Wetlands features for wetland re-establishment produces a total area of 14.95 ac, compared to 14.42 in Table 12 of the Mitigation Plan Amendment. Once overlapping areas are removed, please verify that the reported areas reflect the combined area of the previously submitted mitigation plan wetland asset features and the proposed amendment features.

- DMS has attached a shapefile with the overlaps for the addendum features referenced in the comments above.

At your earliest convenience, please provide a written response letter addressing the DMS comments provided and the revised/ updated electronic As-Built Baseline Monitoring Report (MY0), Record Drawings & Mitigation Plan Addendum. Please also provide the revised/ updated final digital support files. **The comment response letter should be included in the revised report after the report cover.**

If you have any questions, please contact me at any time at (828) 273-1673 or email me at paul.wiesner@ncdenr.gov

Sincerely,

Paul Wiesner

Paul Wiesner
Western Regional Supervisor
NCDEQ – Division of Mitigation Services
5 Ravenscroft Dr., Suite 102
Asheville, NC 28801
(828) 273-1673 Mobile

cc: file

WILDLANDS
ENGINEERING

MEMORANDUM

TO: Paul Wiesner, NC DMS

FROM: Eric Neuhaus, PE

DATE: November 16, 2021

RE: Wyant Lands Mitigation Site Draft As-Built Baseline Monitoring Report (MY0) & Record Drawings
Lincoln County, NC
Catawba River Basin 03050102
Response to NCDMS MY0 Comments

This memo documents NCDMS's review comments of the Draft As-Built Baseline Monitoring Report (MY0) and Record Drawings for the Wyant Lands Mitigation Site (*in italics*) received from Paul Wiesner on 8/22/2021, the project team's responses, and where the revisions have been included in the associated reports.

As-Built Baseline Monitoring Report (MY0)

- ***General:*** *In the report text, please briefly reference and discuss the 404 project permit condition #3 and as-built wetland grading. Please reference Record Drawing sheet 2.1 and any additional sheets necessary to address the USACE issued permit condition in the report text.*
    - The USACE 404 project permit condition #3 was described in the Wetland Mitigation (Re-establishment and Rehabilitation) section of the baseline monitoring report. A copy of the Section 404 NWP27 is now provided in Appendix 5 for reference.
- ***General:*** *If available, please provide the soil boring profiles for the monitoring well gauges installed on the site. This can be included as a separate report appendix.*
    - The monitoring well installation soil boring profiles are now provided in Appendix 2 of the baseline monitoring report.
- ***Section 2.4 Wetlands:*** *Please note that the IRT has indicated that if soil temperature and bud burst data are utilized to amend the start of the growing season, project data will also need to be utilized to adjust the end of the growing season. DMS recommends utilizing North Carolina WETS table for the project growing season as established in the IRT approved mitigation plan.*
    - Wildlands acknowledges project data will also need to be utilized to adjust the end of the growing season if the start of the growing season is amended based on temperature and bud burst data. Wildlands utilized the North Carolina WETS tables to establish the monitoring growing season dates of March 27th to November 6th. Wildlands will continue to use the dates provided by the NC WETS tables in future monitoring reports unless conditions observed in the field are inconsistent with the published dates. If growing season dates are adjusted based on soil temperature in future monitoring

reports, Wildlands will evaluate both the beginning and end of the proposed growing season.

- ***Section 3.1.1 Dimension:*** *Table 18 (not Table 19) established the # of cross sections in the IRT approved mitigation plan. Please update text accordingly.*
    - The text in section 3.1.1 was corrected to say Table 18.
- ***Section 3.1.4 Photo Reference Points:*** *Based on IRT concerns, feedback and the 10/18/2021 IRT site visit, DMS recommends additional photo points at all project crossing areas (upstream and downstream); particularly the crossing beneath Wyant Road. These additional photo points can be added in the MY1 (2021) report.*
    - Wildlands added additional photo points at the upstream and downstream of installed culvert crossings and will provide the additional photos associated with the photo points in the MY1 report.
- ***5.1.12 Fencing:*** *In the report text, please also note the type of fencing installed to exclude livestock from the project conservation easement. If multiple fencing types were utilized, please describe in the report text.*
    - Section 5.1.12 Fencing was updated to include specific fencing types.
- ***Table 1:*** *The As-Built Acreage for Wetland Rehabilitation appears to be incorrect (typo). The Wetland Rehabilitation acreage should be 3.200 acres. Please review, confirm and update the document accordingly.*
    - Wetland Rehabilitation acreage in Table 1 was updated to 3.155 based on the as-built wetland polygons and overlap corrections provided in NCDMS comments.
- ***Table 7:*** *Cross-section #13 is noted as a pool in Table 7 but is notes as a riffle in the cross-section plots. This is also the cross-section that was relocated in August 2021. Please review Table 7 and the cross-section plots and update as necessary to confirm that they are consistent.*
    - Cross-section #13 was mislabeled in Table 7 as a pool. Table 7 was updated to correct the cross-section label to riffle.

Record Drawings:

- ***Sheet 1.1 notes:*** *"Pools have filled with offsite sediment. Expect sediment to clear as channel stabilizes." Please also discuss this in the report text.*
    - Text was added to Section 5.1 of the report discussing the sediment within the upstream pools of Wyant Creek Reach 1.

MY0 – Digital Support File Comments:

- *Please include the sealed standalone as-built .DWG file and a .PDF file (Kee Surveying) with the final digital submission.*
    - The Kee Mapping and Surveying sealed as-built survey .PDF file was added to the digital files submitted with the MY0 report. Wildlands is not provided a .DWG sheet set of the as-built file. Digital data contained within the as built is included in the Wyant_100067_MY0_submittal.gdb.
- *Please submit the mobile vegetation plots as polygons rather than points.*

- Mobile vegetation plots were converted to polygons rather than points in the digital submittal file.

- *Wetland_Rehabilitation (OID 6), Wetland_Re_Establishment (OID 2), and Wetland_Re_Establishment (OID 4), overlap with one another. Also, Wetland_Rehabilitation (OID 8) and Wetland_Re_Establishment (OID 4) overlap with one another. Please review and correct these wetland asset overlaps.*
    - Wetland asset overlaps identified within the digital file were corrected. A revised digital submittal is included with this comment response memorandum.
- *Wetland_Rehabilitation (OID 1) and Wetland_Re_Establishment (OID 1) are both outside of the easement. Please exclude these features from the submission.*
    - These features were removed from the revised digital submittal included with this comment response memorandum.
- *UT3_R3_Lower overlaps and extends past the confluence with Wyant_Creek_R2. Please use snapping to correct this issue.*
    - The alignment error was corrected in the digital submittal file.
- *Please confirm that the feature with Name UT3_R3 is in fact UT2_R3 and update the Name attribute if this is true.*
    - UT3_R3 was revised to UT2_R3. The reach was incorrectly named in the original digital submittal file. Wildlands has corrected this error.
- *The Shape_Area of the merged features included in Wetland_Re_Establishment is equal to 11.213 ac, compared to the 11.0 ac reported in the asset table. After correcting the overlaps outlined above, please revise these features so that they reflect the reported as-built condition.*
    - The overlapping features in the wetland asset features were corrected and as-built Wetland Re-establishment acreage was revised to 10.992 acres in Table 1 within Appendix 1 based on the as-built condition.

EXECUTIVE SUMMARY

Wildlands Engineering, Inc. (Wildlands) implemented a full-delivery stream and wetland mitigation project at the Wyant Lands Mitigation Site (Site) for the North Carolina Department of Environmental Quality (DEQ) Division of Mitigation Services (DMS). The project restored and enhanced a total of 7,540 linear feet (LF) of perennial and intermittent stream and restored 14.2 acres of riparian wetlands within Lincoln County, NC. The project is providing 6,859.67 warm stream mitigation units (SMUs) and 13.095 riparian wetland mitigation units (WMU) for the Catawba River Basin HUC 03050103. The proposed Site is located outside of the targeted local watershed (TLW) listing, but after an exhaustive search of the TLWs to meet the mitigation needs of DMS, Wildlands evaluated sites in the non-TLW area, and the Wyant Site was the most appropriate site to meet the DMS need.

The Site's immediate drainage area as well as the surrounding watershed has a long history of agricultural activity. Stream and wetland functional stressors for the Site were related to both historic and current land use practices. Major stream stressors for the Site include livestock trampling and fecal coliform inputs, lack of stabilizing stream bank and riparian vegetation, active erosion, and incision. The effects of these stressors resulted in channel instability, degraded water quality, and the loss of both aquatic and riparian habitat throughout the Site's watershed when compared to reference conditions. The project approach for the Site focused on evaluating the Site's existing functional condition and evaluating its potential for recovery and need for intervention. The Site was selected based on its potential to support the objectives and goals of multiple conservation and watershed planning documents such as the 2010 Catawba River Basinwide Water Quality Plan (WQP), the 2007 (amended in 2013) Catawba River Basin Restoration Priorities (RBRP) report, and the 2015 North Carolina Wildlife Resource Communion's (NCWRC) Wildlife Action Plan (WAP).

The project excludes livestock, creates stable stream banks, converts pasture to forest, and implements best management practices (BMPs) to filter agricultural runoff. These actions address stressors identified in the WQP, the RBRP, and the WAP by reducing fecal, nutrient, and sediment inputs to project streams, and ultimately to the Catawba River, and reconnect instream and terrestrial habitats on the Site to upstream and downstream resources. Approximately 41.3-acres of land has been placed under permanent conservation easement to protect the Site in perpetuity. The established project goals include:

- Improve stream channel stability,
- Treat concentrated agricultural run-off,
- Improve in-stream habitat,
- Restore and enhance native floodplain and wetland vegetation,
- Restore wetland hydrology, soils, and plant communities.
- Exclude livestock from streams, and
- Permanently protect the project Site from harmful uses.

The Site's construction and as-built survey were completed from March - June 2021. Planting and baseline vegetation data collection occurred in late March and April 2021, respectively. Installation of monitoring features and sediment data collection was completed in March 2021. Fencing installation was completed in July 2021. Minimal adjustments were made during construction and specific changes are detailed in Section 5.1. Baseline (MY0) profiles and cross-section dimensions closely match the design parameters with little variation. The Site has been built as designed and is expected to meet the upcoming monitoring year's success criteria.

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APPENDICES

Section 1.0 PROJECT GOALS, BACKGROUND, AND ATTRIBUTES

1.1 Project Location and Setting

The Wyant Lands Mitigation Site (Site) is located in Lincoln County, NC approximately 5.3 miles northwest of the City of Lincolnton and approximately 2 miles south of the Catawba County/Lincoln County border (Figure 1). The project includes wetland re-establishment and rehabilitation along with the restoration and enhancement of tributaries to Pott Creek.

The Site contains three unnamed tributaries (UTs) to Wyant Creek (UT1, UT2, UT3) and the mainstem of Wyant Creek, which has been broken into four reaches and flows in a south easterly direction through the Site. Multiple riparian wetlands exist on-site and have been re-established or rehabilitated to offset impairments within the Catawba River Basin HUC 03050103.

The overall Site topography consists of gently rolling, well-rounded hills with long low ridges. Wyant Creek originates off-site and its watershed consists predominantly in active row crops. The channel flows through an unconfined alluvial valley at a moderate slope that flattens as it approaches Wyant Road and ultimately the floodplain of Pott Creek. UT1 originates from an on-site farm pond and flows east through an unconfined alluvial valley, adjacent to an active cattle pasture, before its confluence with Wyant Creek. Both UT2 and UT3 flow through a moderately sloped and moderately confined alluvial valley. Prior to construction, UT2 had a limited forested buffer and heavy cattle access. UT3 which also originates from an on-site farm pond, was previously channelized and moved against the right valley wall to accommodate agricultural infrastructure in the left floodplain. All of the reach watersheds are encompassed by the Pott Creek watershed, which is defined by forested and agricultural land use with sporadic development of rural homes and extends south past June Bug Road. Across Pott Creek and adjacent to the project area, there is an existing conservation easement held by the NC Division of Mitigation Services (DMS), formerly NC Ecosystem Enhancement Program, known as the Pott Creek I Mitigation Bank.

Pre-construction conditions are outlined in Table 4 of Appendix 1 and Table 6 of Appendix 2.

1.2 Project Goals and Objectives

The Site is providing numerous ecological benefits within the Catawba River Basin. The project goals were established with careful consideration to address stressors that were identified in the 2010 Catawba River Basinwide Water Quality Plan (WQP), the 2007 (amended in 2013) Catawba River Basin Restoration Priorities (RBRP) report, and the 2015 North Carolina Wildlife Resource Commission's (NCWRC) Wildlife Action Plan (WAP). The project has improved stream functions through stream restoration and the conversion of maintained agricultural fields into riparian buffer within the Catawba River Basin, while creating a functional riparian corridor at the Site level. Improvements are outlined below as project goals and objectives.

Goal	Objective	Expected Outcomes
Exclude livestock from stream channels.	Install fencing around conservation easements adjacent to cattle pastures.	Reduce and control sediment inputs; Reduce and manage nutrient inputs; Improve agricultural management activities

Goal	Objective	Expected Outcomes
Improve the stability of stream channels.	Construct stream channels that will maintain a stable pattern and profile. Stabilize stream bed and banks using bank vegetation, bank revetments, and in-stream structures to protect restored/enhanced channels.	Reduce and control sediment inputs; Contribute to protection, or improvement, of a Water Supply and Nutrient-Sensitive Water.
Improve instream habitat.	Install habitat features such as constructed riffles, cover logs, and brush toes into restored/enhanced streams. Add woody materials to channel beds. Construct pools of varying depth.	Improve aquatic communities in project streams.
Reconnect channels with floodplains and riparian wetlands.	Reconstruct stream channels with appropriate bankfull dimensions and depth relative to the existing floodplain.	Reduce shear stress on channel; Hydrate adjacent wetland areas; Filter ot pollutants from overbank flows.
Restore wetland hydrology, soils, and plant communities.	Restore and enhance riparian wetlands by raising stream beds, plugging existing ditches, removing berm material over relic hydric soils, and planting native wetland species.	Improve terrestrial habitat; Contribute to protection of or improvement of a Water Supply and Nutrient-Sensitive Water.
Restore and enhance native floodplain vegetation.	Plant native tree species in riparian zone where currently insufficient.	Reduce and control sediment inputs; Reduce and manage nutrient inputs; Provide a canopy to shade streams and reduce thermal loadings; Contribute to protection and/or improvement of a Water Supply and Nutrient-Sensitive Water.
Permanently protect the project Site from harmful uses.	Establish conservation easements on the Site.	Ensure that development and agricultural uses that would damage the Site or reduce the benefits of the project are prevented.

1.3 Project Structure, Restoration Type and Approach

The final mitigation plan was approved in December of 2019. Construction activities were completed in March 2021 by Baker Grading and Landscaping. Kee Mapping and Surveying, PLLC completed the as-built survey in June 2021. Following construction, Bruton Natural Systems, Inc. completed riparian planting in March 2020.

A copy of the final sealed survey is included in Appendix 4. Field adjustments made during construction are described in further detail in Section 5.1 and depicted in the record drawings in Appendix 4. Please refer to Appendix 1 for detailed project activity, history, contact information, and watershed/site background information.

1.3.1 Project Structure

Project mitigation components are outlined in the Mitigation Assets and Components Table (Table 1) and depicted in the Monitoring Plan View Maps (Figures 3.0 - 3.3) that are located in Appendix 1.

1.3.2 Restoration Type and Approach

The mitigation approaches for the streams on the Site were developed to achieve the maximum potential for functional uplift relative to the existing conditions on the Site. The Site plan includes elements of stream restoration, enhancement I (EI), and enhancement II (EII). These efforts are extended to the stream origin on UT1, UT2, and UT3; thereby, creating a holistic, watershed scale restoration for much of the Site.

Restoration and EI reaches were designed to create stable, functional stream channels with improved dimension and profile. Pattern adjustments were conducted on restoration reaches and along UT3 Reach 1 even though it is only receiving EI credit . Cross-sectional areas were sized for frequent overbank flows. Bedforms were stabilized and varied with the use of in-stream structures to reduce channel erosion and improve aquatic habitat. Restoration reaches were constructed as priority 1. Priority 2 restoration was used to transition grade from existing elevations. The EII reaches were constructed to retain their existing dimension, pattern, and profile. Work conducted consisted primarily of fencing out cattle, correcting trampled banks, and stabilizing isolated areas of bank erosion.

The project Site is protected in perpetuity with the implementation of a conservation easement. Fencing was installed outside of the easement to exclude cattle from the project area. Invasive vegetation such as Chinese Privet, tree-of-heaven, and multi-flora rose were treated by either excavation or herbicide, and streambanks and floodplains were planted with native woody and herbaceous species as depicted in the planting plan of the record drawings located in Appendix 4. Ring Sprays were utilized during MY0 to release planted stems from competition with fescue dominant pasture grasses from adjacent fields.

Work conducted on UT2 Reach 1 and a northern extension to the wetland complex, located in the Pott Creek floodplain, is being proposed as part of an amendment to the project. UT2 Reach 1 will consist of priority 1 restoration and the added wetland complex will consist of a mix of wetland re-establishment, rehabilitation, and creation. The conservation easement will extend to encompass the additional wetland area. Invasive species along UT2 Reach 1 will likely be removed by excavation during the construction of the channel; however, if needed, invasive species will be treated throughout the remainder of the amendment area. Native riparian and wetland vegetation will be planted as depicted in the project amendment's planting plan.

Wyant Creek

Wyant Creek Reach 1 originates from an existing off-site culvert located at the northwest corner of the Site. This section of the creek, outside the conservation easement, was originally proposed for restoration, though no credit was being received for the work. It was initially being done to raise the stream elevation to meet the existing roadway culvert and improve aquatic passage, as well as stablize the area. However, Wildlands was unable to obtain access to the property, between the road culvert and to the project's conservation easement. In order to connect the constructed channel with the existing channel's alignment, a re-alignment of the first 39 LF of constructed channel was needed. Thirty feet of this re-alignment is located within the conservation easement and applicable for credit. Therefore, the difference from the design length of 37 LF inside the easement to the constructed length of 30 LF results in a loss of 7 LF available for credit.

At the upstream extent of the conservation easement, the reach flows southeast toward Wyant Road for approximately 1,475 LF and ends downstream of its confluence with UT1. Reach 2 begins at station 115+28, flows south, and turns east just upstream of its confluence with UT2. Reach 2 ends and Reach 3 begins upstream of the Wyant Road culvert at station 121+05. Reach 3 continues east under Wyant Road to its confluence with UT3 at station 125+43 where Reach 4 begins. Reach 4 continues east through an upgraded channel crossing and a rehabilitated section of the wetland complex before discharging into Pott Creek at station 145+65. Two best management practices (BMPs) were established along Wyant Creek to treat agricultural run-off and are described below.

Mitigation along Wyant Creek mostly followed a priority I restoration approach except at tie-ins with an existing channel or culvert elevation. In-stream structures were installed to hold grade, provide bank protection, and create habitat. These included rock sills, log sills, constructed riffles, log j-hooks, brush toe, and cover logs.

UT1

UT1 originates on-site from an existing farm pond's 6-inch pipe. A ford crossing was installed upstream of the conservation easement from station 200+52 – 200+70. The reach begins within the conservation easement at station 201+08 and continues east to its confluence with Wyant Creek Reach 1 at station 207+12. Priority 1 restoraton was implemented along the channel and in-stream structures consist of rock sills, log sills, constructed riffles, and brush toe.

UT2

UT2 Reach 1 originates from an existing on-site pond and flows northeast to its terminus at an easement crossing that allows for an existing overhead utility line. As previously stated, UT2 Reach 1 was originally proposed as an EII approach; however, this approach was not implemented because a design amendment to implement priority 1 restoration was negotiated after the submittal of the project's Mitigation Plan (2019).

An enhancement II approach was implemented along UT2 Reach 2. The reach begins at station 307+26 and flows northeast to an internal easement crossing and the start of UT2 Reach 3 at station 312+42. UT2 Reach 3 flows approximately 1,042 LF to its confluence with Wyant Creek Reach 2. UT2 Reach 3 was constructed as a priority I restoration stream. In-stream structures consist of rock sills, log sills, constructed riffles, j-hooks, and brush toe. A ford crossing was installed near the end of Reach 3 within a internal easement break.

UT3

UT3 Reach 1 originates on-site at an outlet of an existing farm pond that is located east of Wyant Road. UT3 Reach 1 begins inside the conservation easement at station 400+29 and flows northeast for approximately 376 LF. Priority II restoration was conducted along Reach 1 to tie the design channel to the existing channel's elevation and to transition the channel to priority I restoration at Reach 2. Here, the valley widens and priority 1 continues downstream to the confluence of Wyant Creek at the reach break between Wyant Creek Reach 3 and 4. In-stream structures such as rock sills, log sills, constructed riffles, brush toe, cover logs were implemented to provide grade control, bank stability, and in-stream habitat.

Wetland Mitigation (Re-establishment and Rehabilitation)

The project's wetland restoration includes a combination of wetland re-establishment and wetland rehabilitation. Mitigation design was conducted for approximately 14.2-acres of historically altered bottomland wetlands in the floodplain of Pott Creek. The implementation of priority 1 restoration along Wyant Creek Reach 4 and through the rehabilitated wetland complex, will restore the natural water table elevation and overbank flooding regime. To improve wetland hydrology, grading, backfilling ditches, and removing overburden from pre-construction areas of ditch maintenance and field crowns were conducted throughout the wetland complex; however, among these areas grading was only conducted to a depth greater than 12-inches in isolated areas of heavy agricultural manipulation.

The United States Army Corps of Engineers (USACE) issued the Section 404 Nation Wide Permit (NWP) 27 on July 9th, 2020 with 3 separate special conditions (Appendix 5). Special condtion #3 refers to the amount of wetland grading that exceeds 12 inches of depth in wetland assest areas. The conditions states: " As-built grade lines shall be provided and red-lined if different from the design sheets. Provide the total acres graded for wetland assets for each of the three cut depth categories. Additionally, provide a table of wetland grading that exceeds 12 inches, differentiating grading to remove field crowns, areas of ditch side-cast piles, and other areas. Site grading to a depth greater than 12 inches within proposed wetland asset areas will be considered wetland establishment and will be subject to a 3:1 ratio, with the exception of field crown and

ditch side-cast removal. Additionally, any proposed wetland areas graded for field crown or ditch side-cast removal to a depth of great than 12" that exceeds 5% of the total grading within wetland asset area will be considered wetland establishment and will be subject to a 3:1 ratio." Sheet 2.1 within the record drawings provided in Appendix 4 compares proposed and as-built grading in three categories based on depth. Tables shown on the exhibitprovide the as-built cut exceeding 12" in field crown and side cast removal areas as well as total cut within the wetland over 12 inches. The grading generally met the permtting condtion reference above and was reduced from the mitigation to limit overburden removal where possible. The as-built grading depths in field crown and side cast removal areas did not exceed 5% of the total grading within wetland asset areas.

BMPs

Two BMPs were installed along Wyant Creek. BMP 1 was installed in the left floodplain near the Wyant Creek Reach 1 and Reach 2 break. BMP 2 was installed in the right floodplain of Wyant Creek Reach 3 and the left floodplain of UT3. BMP1 is a step-pool stormwater conveyance (SPSC) consisting of short riffles, rock steps, and pools implemented to stabilize an existing headcut and trap agricultural sediments from the adjacent drainage area. BMP2 is constructed wetland with an inflow and outflow comprised of a series of constructed riffles and rock sills. BMP2 was planted with native wetland vegetation as outlined in the Planting Plan of the Site's Record Drawings.

1.4 Project History, Contacts and Attribute Data

The Site was restored by Wildlands through a Full Delivery contract with DMS. Tables 2, 3, and 4 in Appendix 1 provide detailed information regarding the project activity and reporting history, project contacts, and project baseline information and attributes.

Section 2.0 PERFORMANCE STANDARDS

The stream performance criteria for the Site will follow approved performance criteria presented in the Wyant Lands Mitigation Site Mitigation Plan (2019) and is based on the performance criteria presented in the DMS Stream and Wetland Mitigation Plan Template and Guidance (June 2017) and the NC Interagency Review Team (IRT) Wilmington District Stream and Wetland Compensatory Mitigation Update (10/24/2016). Annual monitoring and semi-annual Site visits will be conducted to assess the condition of the finished project. Specific performance standard components are proposed for stream morphology and stream and wetland hydrology and vegetation. Performance standards will be evaluated throughout the seven-year postconstruction monitoring period. The monitoring program designed to verify that performance standards are met is described in Section 3.

2.1 Streams

2.1.1 Dimension

Riffle cross-sections on the restoration reaches should be stable and should show little change in bankfull area, bank height ratio, and width-to-depth ratio. Riffle cross-sections should fall within the parameters defined for channels of the appropriate stream type. If any changes do occur, these changes will be evaluated to assess whether the stream channel is showing signs of instability. Indicators of instability include a vertically incised thalweg or eroding banks. However, if changes in the channel indicate a movement toward stability or enhanced habitat, such as a decrease in the width-to-depth ratio in meandering channels or an increase in pool depth, remedial action would not be taken.

2.1.2 Pattern and Profile

A longitudinal profile was conducted as part of the as-built survey to provide a baseline for comparison should it become necessary to perform longitudinal profile surveys later during monitoring and to ensure accordance with design plans. Annual longitudinal profile surveys are not required during the seven-year monitoring period unless other indicators during the annual monitoring indicate a trend toward vertical and lateral instability. If a longitudinal profile is deemed necessary, monitoring will follow standards as described in the 2016 NCIRT Stream and Wetland Mitigation Guidance for the necessary reaches.

Visual assessments and photo documentation should indicate that streams are remaining stable and do not indicate a trend toward vertical or lateral instability. Signs of instability may include bank scour, bank migration, and bed incision.

2.1.3 Substrate

A pebble count was conducted at each surveyed riffle to characterize the pavement during the baseline monitoring only. A reach-wide pebble count will be performed in each restoration reach for monitoring years 1, 2, 3, 5 and 7. Reach-wide counts will be conducted for classification purposes. Restoration reaches should show maintenance of coarser materials in the riffle features and finer particles in the pool features. Riffles may fine over the course of monitoring due to the stabilization of contributing watershed sediment sources.

2.1.4 Photo Documentation

Photographs should illustrate the Site's vegetation and morphological stability on an annual basis. Cross-section photos should demonstrate no excessive erosion or degradation of the banks. Longitudinal photos should indicate the absence of persistent mid-channel bars or vertical incision. Grade control structures should remain stable. Deposition of sediment on the bank side of vane arms is preferable. Maintenance of scour pools on the channel side of vane arms is expected.

2.1.5 Hydrology Documentation

Automated pressure transducers will document stream hydrology and will be used on mitigation reaches

that implement restoration approaches throughout the seven-year monitoring period. Henceforth, these devices will be referred to as "crest gages (CG)" for those recording bankfull events and "stream gages (SG)" for those recording baseflow.

Bankfull Events

The occurrence of bankfull events will be documented on restoration reaches throughout the monitoring period. Four bankfull flow events must be documented on each reach within the seven-year monitoring period. The four bankfull events must occur in separate years. Evidence of bankfull events, such as the occurrence of debris lines and sediment deposition, will be documented with photos when possible. Stream monitoring will continue until performance standards in the form of four bankfull events in separate years have been documented.

Baseflow Monitoring

As requested by the NC Division of Water Resources (DWR) of the NCIRT, baseflow will be documented on UT1 to track the frequency and duration of stream flow events. Continuous surface water flow must occur every year for at least 30 consecutive days during the prescribed monitoring period. This 30-day period can occur at any point during the year. Additional monitoring may be required if surface water flow cannot be documented due to abnormally dry conditions. Stream gages will be monitored to document 30 days of continuous flow. Evidence of channel flow will be documented with a photo when possible.

2.2 Vegetation

The final vegetative success criteria will be the survival of 210 planted stems per acre in the riparian corridors at the end of the required monitoring period (MY7). The interim measure of vegetative success for the site will be the survival of at least 320 native species stems per acre at the end of the third monitoring year (MY3) and at least 260 stems per acre at the end of the fifth monitoring year (MY5). In NC piedmont counties, planted trees must average 7 feet in height in each plot at the end of MY5 and 10 feet in height at Year 7. However, it is anticipated that areas proposed for wetland restoration will incur periods of inundation, and woody vegetation growth may be hindered in these areas resulting in stunted heights. Therefore, Wildlands will evaluate vigor and height of vegetation plots in wetland restoration areas on a case-by-case basis and will discuss any potential issues within annual monitoring reports. The extent of invasive species coverage will also be monitored and controlled as necessary throughout the required monitoring period. There is no performance success criteria associated with shaded area planting.

2.3 Visual Assessments

Visual assessments should support the specific performance standards for each metric as described above.

2.4 Wetlands

As requested by the NCDWR of the NCIRT, the Site's proposed performance standard for wetland hydrology shall be free groundwater surface within 12 inches of the ground surface for a minimum of 12% (27 consecutive days) of the growing season for Lincoln County under normal precipitation conditions. Growing season dates for the project area are defined as March 27th to November 6th (224 days) by the Lincolnton 4W North Carolina WETS table for 50% probability of soil temperatures greater than 28 degrees Fahrenheit.

If a wetland zone does not meet the performance standard for a given monitoring year, rainfall patterns will be analyzed, and the hydrograph will be compared to that of the reference wetlands to assess whether atypical weather conditions occurred during the monitoring period.

2.5 Schedule and Reporting

Monitoring reports will be prepared in the fall of each year of monitoring and submitted to DMS. Based on the DMS Annual Monitoring Report Format, Data Requirements, and Content Guidance (June 2017), the monitoring reports will include the following:

- Project background which includes project objectives, project structure, restoration type and approach, location and setting, history and background,
- Project Asset Map of major project elements,
- Photographs showing views of the restored Site taken from fixed point stations,
- Current Conditions Plan View Maps (CCPV) with monitoring features and current problem areas noted such as stability and easement encroachment based on the cross-section surveys and annual visual assessments,
- Assessment of the stability of the stream based on the cross-sections,
- Vegetative data as described above including the identification of any invasion by undesirable plant species,
- A description of damage by animals or vandalism,
- Maintenance issues and recommended remediation measures will be detailed and documented, and
- Wildlife observations.

Section 3.0 MONITORING PLAN & METHODOLOGY

Annual monitoring will consist of collecting morphologic, vegetative, and hydrologic data to assess the project success based on the restoration goals, as outlined in the Wyant Lands Mitigation Site Mitigation Plan (2020). Monitoring requirements will follow guidelines outlined in the DMS Annual Monitoring Report Format, Data Requirements, and Content Guidance (June 2017) and the NCIRT Stream and Wetland Mitigation Guidance (October 2016). Installed monitoring devices and plot locations closely mimic the locations of those proposed in the Site's Mitigation Plan. Deviations from these locations were made when professional judgement deemed them necessary to better represent as-built field conditions or when installation of the device in the proposed location was not physically feasible.

Project success will be assessed by measuring channel dimension, substrate composition, vegetation, surface and ground water hydrology, and by analyzing photographs and performing visual assessments. Any high priority problem areas identified, such as unstable stream banks, bed instability, aggradation/degradation, and/or poor vegetation establishment will be evaluated on a case-by-case basis. The problem areas will be visually noted and reported to DMS staff in the annual report. Standard DMS monitoring reports will be submitted in monitoring years 1, 2, 3, 5, and 7. Monitoring activities in years 4 and 6 will be documented in a memorandum to include a project summary update, annual photos, and updated monitoring plan map. Closeout will occur seven years beyond completion of construction or once performance standards are met. All survey data will be georeferenced to North Carolina State Plane coordinates. Refer to Table 5 in Appendix 1 for the monitoring component summary.

3.1 Streams

Geomorphic assessments follow guidelines outlined in the Stream Channel Reference Sites: An Illustrated Guide to Field Techniques (Harrelson et al., 1994), methodologies utilized in the Rosgen stream assessment and classification documents (Rosgen, 1994 and 1996), and in the Stream Restoration: A Natural Channel Design Handbook (Doll et al., 2003). Please refer to Figures 3.0 through 3.3 in Appendix 1 for monitoring locations discussed below.

3.1.1 Dimension

To assess channel dimension performance, 18 permanent cross-sections were installed along stream restoration or enhancement I reaches to represent approximately 50% riffles and 50% pools as defined in Table 18 of the Mitigation Plan. Cross-section locations were chosen in the field to be representative of the typical dimensions for each project reach. Each cross-section is permanently marked with rebar installed in concrete and ½ inch PVC pipes. Cross-section surveys will include points measured at all breaks in slope, including top of bank, bankfull, edge of water, and thalweg. Cross-section surveys will be conducted in monitoring years one, two, three, five, and seven. Photographs will be taken of the cross-sections looking upstream and downstream during the survey assessment.

3.1.2 Pattern and Profile

Longitudinal profile surveys will not be conducted during the seven-year post-construction monitoring period unless other indicators during the annual monitoring indicate a trend toward vertical and lateral instability. If a longitudinal profile is deemed necessary, monitoring will follow standards as described in the Stream Mitigation Guidelines issued in October 2016 by the NCIRT for the necessary reaches. Stream pattern and profile will be assessed visually as described below in Section 3.1.6.

3.1.3 Substrate

Reach-wide pebble counts will be performed on each restoration reach for classification purposes only and will be conducted in monitoring years one, two, three, five, and seven. Riffle 100-count substrate sampling was collected in each surveyed riffle cross-section during the baseline monitoring only to characterize pavement at as-built.

3.1.4 Photo Reference Points

A total of 20 permanent photograph reference points were established along the stream reaches and the floodplain area after construction. Photographs will be taken once a year to visually document stability for the seven-year monitoring period. Permanent markers were established and located with GPS equipment so that the same locations and view directions on the Site are photographed each year. Photos will be used to monitor all stream reaches.

Longitudinal reference photos were established along the channel by taking a photo looking upstream and downstream. Cross-sectional photos will be taken of each permanent cross-section looking upstream and downstream.

3.1.5 Hydrology Documentation

Bankfull Events

The occurrence of bankfull events will be documented throughout the seven-year monitoring period using pressure transducers, photographs, and visual assessments such as debris lines. Three gages were installed in surveyed cross-sections and set to record bankfull events every four hours. Two of the gages were CG's, which were installed along the restoration reaches of Wyant Creek Reach 3 and UT2 Reach 3. The third gage was a SG, which was installed on UT1. The gages will be downloaded semi-annually to determine if a bankfull event has occurred. Photographs will be used to document the occurrence of debris lines and sediment deposition observed during field visits. The transducer data will be plotted and included in the annual monitoring reports.

Baseflow Monitoring

In addition, UT1 will be monitored for baseflow throughout the seven-year monitoring period to document 30 days of continuous flow in each monitoring year. The SG installed on UT1 to document bankfull events will also document flow conditions and was set to record every 2 hours. Evidence of channel flow will be documented with a photo when possible. Transducer data will be plotted and included in the annual monitoring reports.

3.1.6 Visual Assessment

Visual assessments will be performed along stream reaches on a semi-annual basis during the seven-year monitoring period. Areas of concern, such as channel instability (i.e., lateral and/or vertical instability and in-stream structure failure, instability, and/or piping), poor vegetation health and/or establishment (i.e. low stem density, bare areas, high mortality rates, and/or invasive species), easement encroachment, beaver activity, and/or livestock trespass will be mapped, photographed, and described in the annual monitoring reports. Problem areas will be re-evaluated during each subsequent visual assessment. Should remedial actions be required, recommendations will be provided in the annual monitoring report.

3.2 Vegetation

Vegetation monitoring quadrants (23 permanent and 8 mobile) were installed across the Site to measure the survival of the planted trees. Vegetative plot monitoring will occur between July 1st and leaf drop during post-construction monitoring years 1, 2, 3, 5, and 7. Permanent plots will be monitored in accordance with the guidelines and procedures outlined in the 2016 NCIRT Stream and Wetland Mitigation Guidance to assess vegetative success. For both permanent and mobile plots, all woody stems, including exotic and invasive species, should be counted. Supplemental plantings and volunteer plants must be present for at least two growing seasons before counting toward performance standards in monitoring years five and seven. Exotic/invasive species will not count toward success of performance standards.

A total of 23 permanent vegetation plots were established within the project easement. Of those 23

permanent plots, 11 were placed within the wetland re-establishment and rehabilitation zones. Permanent vegetation plots were randomly established within the open, planted stream riparian buffer and wetland areas to capture the heterogeneity of the designed vegetative communities. The locations of permanent vegetation plots were chosen using the same distribution throughout the planting areas, as shown in the Site's Mitigation Plan, and to best represent the planted areas within the easement.

All of the permanent vegetative plots were established either as a standard 10-meter by 10-meter square plot.The vegetation plot corners have been marked and are recoverable either through field identification or with the use of a GPS unit. Reference photographs were taken at the origin looking diagonally across the plot to the opposite corner. Subsequent assessments in monitoring years one, two, three, five, and seven, following baseline survey, will capture the same reference photograph locations.

Beginning in MY1, individual permanent plot data will include diameter, height, density, and percent survival. Planted woody stems were marked and mapped in MY0 and will be re-marked, if needed, during subsequent monitoring year assessments using a known origin so they can be found. Mortality will be determined from the difference between the baseline year's living planted stems and the current year's living planted stems.

To evaluate complete vegetation performance for the Site, 8 mobile vegetation plots were established in MY0, for use in MY1, using a circular or 100 m^2 square/rectangular plot. Mobile plots will be re-established in different and random locations throughout the open, planted conservation easement in monitoring years 2, 3, 5, and 7. These locations will be geographically recorded and depicted in the CCPV maps for the corresponding monitoring assessment year. Mobile vegetation plot assessments will document the number of stems, number and type of species, and stem height within the plot.

Please refer to Figures 3.0 through 3.3 in Appendix 1 for the permanent and mobile (MY0/MY1) vegetation monitoring plot locations.

3.3 Wetlands

Monitoring will be conducted for seven years after construction to evaluate the hydrologic state of the restored wetland areas. Eleven groundwater monitoring wells equipped with pressure transducers were installed in April 2021 per USACE recommended procedures to assess hydrology in re-establishment and rehabilitation areas. Pressure transducers (In-situ Level TROLL® 100) will record groundwater pressure at least twice daily. Data from the wells will be downloaded at regular intervals and included in annual monitoring reports to evaluate successful attainment of hydroperiod criterion. Groundwater well locations closely mimic those of the Site's Mitigation Plan and are shown in Appendix 1 (Figures 3.0-3.3).

Section 4.0 ADAPTIVE MANAGEMENT AND CONTINGENCY PLAN

4.1 Adaptive Management Plan

Wildlands will perform maintenance as needed on the mitigation project. A physical inspection of the Site shall be conducted a minimum of once per year throughout the post-construction monitoring period or until performance standards are met. These site inspections may identify site components and features that require routine maintenance. Routine maintenance should be most often expected in the first two years following site construction. The need for maintenance will be evaluated annually during monitoring activities. Maintenance may include the following activities.

Component/ Feature	Maintenance through project close-out
Stream	Routine channel maintenance and repair activities may include chinking of in-stream structures to prevent piping, securing of loose coir matting, and supplemental installations of live stakes and other target vegetation along the channel – these shall be conducted where success criteria are threatened or at the discretion of the Designer. Areas where storm water and floodplain flows intercept the channel may also require maintenance to prevent bank failures and head-cutting. Beaver activity will be monitored and beaver dams on project streams will typically be removed, at the discretion of the Designer, during the monitoring period to allow for bank stabilization and stream development outside of this type of influence.
BMP	Routine BMP Maintenance and repair activities may include chinking of BMP structures to prevent piping and securing of loose coir fiber matting.
Wetlands	Routine wetland maintenance and repair activities may include supplemental installations of target vegetation within the wetland. Areas where storm water and floodplain flows intercept the wetland may also require maintenance to prevent scour that adversely and persistently threatens wetland habitat or function.
Vegetation	Vegetation shall be maintained to ensure the health and vigor of the targeted community. Routine vegetation maintenance and repair activities may include supplemental planting, pruning, mulching, and fertilizing. Exotic invasive plant species treatment will be conducted per the Invasive Species Treatment Plan, outlined in Appendix 9 of the Wyant Lands Mitigation Plan (2020), and in accordance with NC Department of Agriculture (NCDA) rules and regulations.
Site Boundary	Site boundaries shall be identified in the field to ensure clear distinction between the mitigation site and adjacent properties. Boundaries may be identified by fence, marker, bollard, post, tree-blazing, or other means as allowed by site conditions and/or conservation easement. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as-needed basis.

The Wildlands Team will develop necessary adaptive measures or implement appropriate remedial actions in the event that the Site or a specific component of the Site fails to achieve the success criteria outlined above. The project-specific monitoring plan developed during the design phase identifies an appropriate threshold for maintenance intervention based on the monitored items. Any actions implemented will be designed to achieve the success criteria specified previously and will include a work schedule and updated monitoring criteria. If, during annual monitoring it is determined the Site's ability to achieve Site performance standards are jeopardized, Wildlands will notify the members of the DMS and work with them to develop contingency plans and remedial actions.

Section 5.0 AS-BUILT CONDITION (BASELINE)

The Site construction and planting, as well as the installation of monitoring features were completed by April 7th, 2021. The as-built survey, which included developing an as-built topographic surface and locating the channel boundaries, structures, and cross-sections, was completed by the beginning of June 2021, and the sediment data was collected by mid-April. Cross-section 13 was inadvertently installed in the wrong area. So, in early August, the cross-section was reinstalled and resurveyed, and the sediment was re-sampled. The collection of vegetative data was completed by mid-April. Fencing installation was completed and surveyed by July 27, 2021.

5.1 Record Drawings

A sealed half-size record drawing is located in Appendix 4 and includes redlines for any significant field adjustments made during construction that were different from the design plans. Specific changes by each project area are detailed below:

5.1.1 Wyant Creek Reach 1

- Sta. 100+00 – 100+82: Channel realignment conducted because Wildlands was unable to obtain access to the upstream property, between the road culvert and to the project's conservation easement, to conduct restoration activities and tie the channel to the culvert. Alignment deviation resulted in a total loss of 43 LF of stream length of which 30 LF of channel is inside the conservation easement and applicable for credit. Therefore, the difference from the design length of 37 LF inside the easement to the constructed length of 30 LF results in a loss of 7 LF available for credit. The realignment resulted in the following changes:
    - Sta. 100+00 – Sta. 100+46: Removed upstream riffle, pool, and brush toe and added a log j-hook.
    - Sta. 100+82: A rock sill was added at the tail of the riffle for stability.
- Sta. 100+51: Added swale and concentrated flow outlet protection to catch runoff from adjacent pasture.
- Sta. 100+70 – 104+00: Pools along this upstream section of Wyant Creek Reach 1 were excavated to the approved mitigation plan profile during construction. However, the project received approximately 5 inches of rain between 11/11/2020 and 11/13/2020 and upstream sediments from active agricultural within the drainage area were carried into the project. These sediments filled portions of the upstream profile as noted on Sheet 1.1. Sediment from this event appeared isolated based on rain events received later during construction, and fine sediment within these pools has been observed moving through the system.
- Sta. 105+20: Removed log sill because a design evaluation of the stream profile after the Mitigation Plan submittal deemed the structure as unnecessary.
- Sta. 107+36 and 112+58: Removed boulder sill because a design evaluation of the stream profile after the Mitigation Plan submittal deemed the structures as unnecessary.
- Sta. 114+01: Added log sill for grade control downstream of tributary confluence.
- Sta. 114+22: Cover log replaced with brush toe for stability.

5.1.2 Wyant Creek Reach 2

- Sta. 115+50: Log sills within the SPSC were replaced by boulder sills due to lack of baseflow in drainage swale.
- Sta. 115+50: Log sill at the toe of the SPSC was not installed to facilitate channel transition.
- Sta. 116+51: Removed log sill because a structure was not needed based on stream profile.
- Sta. 116+72: Cover log added for stability.

5.1.3 Wyant Creek Reach 3

- Sta. 121+89: Reduced depth of pool downstream of the double barrel culvert because it was deemed unnecessary.

5.1.4 Wyant Creek Reach 4

- Sta. 127+22: Removed boulder sill because structure was not needed based on the stream profile.
- Sta. 130+59: Shortened riffle, extended pool, and moved log sill from station 130+79 upstream to facilitate culvert tie-in to channel elevation. This change resulted in a drop of the riffle elevation, as shown in the corresponding profile alignment.
- Sta. 130+94: Added brush toe to stabilize the left bank at the culvert outlet.
- Sta. 133+15: Removed boulder sill because a design evaluation of the stream profile after the Mitigation Plan submittal deemed the structure as unnecessary.
- Sta. 134+34 and 134+82: Added brush toe to both sides of cover log to provide additional stability.
- Sta. 142+44: Removed boulder sill because a design evaluation of the stream profile after the Mitigation Plan submittal deemed the structure as unnecessary.
- Sta. 143+81: Added a boulder sill for stability and grade control.
- Sta. 144+62 and 145+52 (Profile): Riffle elevations were decreased to accommodate changes in Site conditions at the Pott Creek confluence between existing conditions and construction.
- Sta. 144+93: Outlet installed to stabilize localized drainage.

5.1.5 UT1

- Sta. 200+37: Riffle was not installed to reduce wetland impact. Stream was stable.

5.1.6 UT2 Reach 1

- Sta. 300+00 – 304+11: Proposed enhancement II level activities, such as removing and/or treating invasive species and supplemental planting were not conducted. This reach is being proposed for restoration as part of the included mitigation plan amendment. Invasive removal via grading will occur as part of the proposed amendment work.

5.1.7 UT2 Reach 2

- Sta. 311+82 – 312+43: Channel profile adjusted to stabilize channel upstream of the restoration work.
- Sta. 312+00, 312+26, and 312+38: Log sills added for stability and grade control.

5.1.8 UT2 Reach 3

- Sta. 312+86: Boulder sill added below culvert outlet for stability and grade control.
- Sta. 313+77: Removed boulder sill because a design evaluation of the stream profile after the Mitigation Plan submittal deemed the structure as unnecessary.
- Sta. 315+56: Removed log sill because a design evaluation of the stream profile after the Mitigation Plan submittal deemed the structure as unnecessary.
- Sta. 316+11 and 316+64: Removed boulder sills because a design evaluation of the stream profile after the Mitigation Plan submittal deemed the structures as unnecessary.
- Sta. 320+34 – 320+86 (Profile): To save existing trees, the profile elevation was adjusted (a loss of a pool and the extension of the riffe) to accommodate the change in the riffle and pool sequence along the channel.
- Sta. 320+54: Extended brush toe for additional stability.
- Sta. 320+62: Removed log sill to save existing trees.
- Sta. 320+82: Extended riffle for stability and grade control.

5.1.9 UT3 Reach 1

- Sta. 400+83: Removed log sill because a design evaluation of the stream profile after the Mitigation

Plan submittal deemed the structure as unnecessary.
- Sta. 400+85: Added an additional step pool feature to filter runoff before it enters the project area.
- Sta. 402+26: Removed log sill because a design evaluation of the stream profile after the Mitigation Plan submittal deemed the structure as unnecessary.
- Sta. 403+55: Removed boulder sill because a design evaluation of the stream profile after the Mitigation Plan submittal deemed the structure as unnecessary.

5.1.10 UT3 Reach 2

- Sta. 404+37: Log Sill added to control grade and improve stability.
- Sta. 404+79: Brush toe not installed to save trees.
- Sta. 406+09 and 406+24: Cross-section 13 was moved from a pool at station 406+24 to a riffle at station 406+09 after survey was completed because it was indavertantly installed in the wrong location. Therefore, XS13 was re-installed in the correct location and re-surveyed by Wildlands using a total station.

5.1.11 Vegetation Planting Plan

As previously stated, bare root planting was completed by March 31, 2021. Changes to the as-built planting list were made to account for the species availability at the time of planting and spacing within the wetland re-establishment area was reduced to account for any mortality that may occur in that area. Specific changes to the plant species lists are outlined below.

Riparian Planting Zone –

- The following bareroot species was removed from the planting list due to the lack of availability at the time of planting: Tag Alder (*Alnus serrulata*).
- The remaining species' "Percent of Stems" were adjusted accordingly.
- Station 100+00 – 100+46: No work was conducted nor was the area disturbed; therefore, no planting was conducted between Wyant Rd. and the upstream extent of the project area.
- Station 100+46: On Sheet 3.2 at the upstream extent of the project, the riparian planting zone was adjusted to match the channel realignment.
- Station 119+00 – 120+51: Repairs were conducted within this area after the end of the planting season. The area will be replanted in the upcoming planting season.
- Station 300+00 – 304+11: Supplemental planting and invasive treatments were not conducted within this area due to the potential disturbance that will occur from the proposed project amendment. The area will be planted as described in the project admendment.

Understory Planting Zone –

- The following bareroot species were removed from the planting list due to the lack of available species at the time of planting: Winterberry (*Ilex verticillata*), cucumbertree (*Magnolia acuminata*), American Hazelnut (*Corylus americana*).
- The following bareroot species was added to the planting list to increase species diversity: Red mulberry (*Morus rubra*).
- The remaining species' "Percent of Stems" were adjusted accordingly.

Streambank Planting Zone –

- The species in the streambank planting zone remained consistent with the Mitigation Plan with only slight adjustments to the planted percentages based on the total number of live stakes increasing. See the planting plan on Sheet 2.1 of the record drawings for adjusted percentages.

Wetland Planting Zone –

- The following bareroot species were removed from the planting list due to the lack of available species at the time of planting: Tag Alder (*Alnus serrulata*), Swamp Rose (*Rosa Palustris*).
- The remaining species' "Percent of Stems" were adjusted accordingly.

- Wetland zone spacing was reduced from 12” x 12” to 12” x 6” to encourage habitat establishment.
- The wetland BMP on sheet 3.4 was planted with wetland species based on field conditinos, the planting zone of the BMP’s footprint was changed from riparian to wetland.

Stabilization Seeding Zone –

- Stabilization seeding was conducted within the entire limits of disturbance (LOD) excluding farm roads. The associated hatch was extended to the LOD.

5.1.12 Fencing

- The livestock exclusion fence constructed on site is 6 inchwood post with high tensile woven wire with one strand of barbed wire along the top of the fence. The crossings consist of high tensile smooth wire over the bankfull dimension to prevent snags with swinging welded cattle panels mounted below the bankfull dimension.
- Fence was not installed along the north and east sides of the wetland complex. The field east of the complex is used for crop production and there is no potential for cattle intrusion. The field north of the complex is proposed as part of the mitigation plan addendum. Fencing will be extended north along the amended conservation easement boundary and tied to existing fencing along the northern property line.
- Fence was installed along the upstream extent of UT2 Reach 1, as well as along the right conservation easement boundary of the reach. Existing fence at the upstream extent was determined unsuitable for cattle exclusion and was supplemented with the additional fence to prevent issues in the future.
- The pond at the upstream extent of UT2 Reach 1 was noted to be fenced by the property owner within the approved mitigation plan. Based on negotiations with the property owner, this pond fencing was installed by Wildlands along with other fence installations.

5.2 Baseline Data Assessment

MY0 was conducted between March and August 2021. Cross-section and longitudinal profile data collection were completed by the surveyor by June 4, 2021. The incorrect placement of XS 13 was noticed during the post-processing of the data. Cross-section 13 was re-collected in its current location on 8/4/2021. The collection of sediment and vegetative data were completed by mid-April 2021; however, XS 13 was recollected when it was reinstalled. Locations of the monitoring features are depicted in Figures 3.0 through 3.3 in Appendix 1. The first annual monitoring assessment (MY1) will be conducted in the late fall 2021 to early winter of 2022. The projcet will be monitored for a total of seven years, with the final monitoring activities scheduled for 2027.

5.2.1 Morphological State of the Channel

Please refer to Appendix 2 for summary data tables, morphological plots, and stream photographs.

Profile

The MY0 profiles generally match the profile design parameters. As-built channel slopes calculated for restoration and enhancement I reaches varied slightly from those of design; however, as-built reviews showed no visual indicators of vertically instability. Variations from the design profile often reflect field changes during construction as a result of field conditions and do not constitute a problem or indicate a need for remedial actions. Channels profiles will continue to be assessed visually during the CCPV Site walks.

Dimension

The MY0 dimension numbers closely match the design parameters with minor variations. Over time the channel dimensions are likely to adjust as vegetation becomes established and channel processes move sediment through system. These would not be indicators of instability in and of themselves. On-site as-built reviews showed no visual indicators of lateral instability.

Substrate

Reach-wide pebble counts were performed on each restoration reach to establish stream classification at baseline conditions, and riffle 100-count substrate sampling was collected at each surveyed riffle cross-section to characterize pavement at as-built. Sediment analysis results were similar to design parameters, with most reaches having a median particle size classification of medium gravel to very coarse gravel. Variations immediately after construction are normal because coarser materials are used to provide immediate grade control on the newly constructed channel. Over time, the channel will continue to move gravels and finer sediments into the system creating a mix of coarse substrate in the riffles and fine sediments in the pools. On-site as-built reviews showed no visual indicators of instability within riffle or pools.

Bankfull Events

Bankfull events recorded following completion of construction will be reported in the Year 1 monitoring report.

5.2.2 Vegetation

The overall MY0 planted density ranged from 445 stems/acre to 607 stems/acre. The overall MY0 planted density for mobile vegetation plots ranged from 445 stems/acre to 607 stems/acre. All plots exceed the interim measure of vegetative success of at least 320 planted stems per acre required at the end of the third monitoring year. Summary data and photographs of each plot can be found in Appendix 3. Deviations from the Mitigation Plan's planting plan are outlined in Section 5.19, as well as on Sheets 3.0 through 3.8 of the record drawings in Appendix 4.

5.2.3 Wetlands

Groundwater gage data will be reported in the MY1 report.

Section 6.0 CREDIT RELEASE SCHEDULE

All credit releases will be based on the total credit generated as reported by the as-built survey of the mitigation Site. Under no circumstances shall any mitigation project be debited until the necessary Department of the Army (DA) authorization has been received for its construction or the District Engineer (DE) has otherwise provided written approval for the project in the case where no DA authorization is required for construction of the mitigation project. The DE, in consultation with the NCIRT, will determine if performance standards have been satisfied sufficiently to meet the requirements of the release schedules below. In cases where some performance standards have not been met, credits may still be released depending on the specifics of the case. Monitoring may be required to restart or be extended, depending on the extent to which the Site fails to meet the specified performance standard. The release of project credits will be subject to the criteria described as follows:

Table A: Credit Release Schedule – Stream Credits – *Wyant Lands Mitigation Site*

Credit Release Milestone	Monitoring Year	Credit Release Activity	Interim Release	Total Released
2	0	Completion of all initial physical and biological improvements made pursuant to the Mitigation Plan – see requirements below	30%	30%
3	1	Year 1 monitoring report demonstrates that channels are stable and interim performance standards have been met	10%	40%
4	2	Year 2 monitoring report demonstrates that channels are stable and interim performance standards have been met	10%	50%
5	3	Year 3 monitoring report demonstrates that channels are stable and interim performance standards have been met	10%	60%
6	4*	Year 4 monitoring report demonstrates that channels are stable and interim performance standards have been met	5%	65% (75%**)
7	5	Year 5 monitoring report demonstrates that channels are stable and interim performance standards have been met	10%	75% (85%**)
8	6*	Year 6 monitoring report demonstrates that channels are stable and interim performance standards have been met	5%	80% (90%**)
9	7	Year 7 monitoring report demonstrates that channels are stable and interim performance standards have been met	10%	90% (100%**)

*Vegetation data may not be required with monitoring reports submitted during these monitoring years unless otherwise required by the Mitigation Plan or directed by the NCIRT.

**10% reserve of credits to be held back until the bankfull event performance standard has been met

Table B: Credit Release Schedule – Wetland Credits – *Wyant Lands Mitigation Site*

Credit Release Milestone	Monitoring Year	Credit Release Activity	Interim Release	Total Released
2	0	Completion of all initial physical and biological improvements made pursuant to the Mitigation Plan – see requirements below	30%	30%
3	1	Year 1 monitoring report demonstrates that interim performance standards have been met	10%	40%
4	2	Year 2 monitoring report demonstrates that interim performance standards have been met	10%	50%
5	3	Year 3 monitoring report demonstrates that interim performance standards have been met	15%	65%
6	4*	Year 4 monitoring report demonstrates that interim performance standards have been met	5%	70%

Credit Release Milestone	Monitoring Year	Credit Release Activity	Interim Release	Total Released
7	5	Year 5 monitoring report demonstrates that interim performance standards have been met	15%	85%
8	6*	Year 6 monitoring report demonstrates that interim performance standards have been met	5%	90%
9	7	Year 7 monitoring report demonstrates that interim performance standards have been met	10%	100%

*Vegetation data may not be required with monitoring reports submitted during these monitoring years unless otherwise required by the Mitigation Plan or directed by the NCIRT.

For this NCDMS project, no initial release of credits is provided. To account for this, the 15% credit release typically associated with the Site establishment is held until completion of all initial physical and biological improvements made pursuant to the Mitigation Plan. In order for NCDMS to receive the 30% release (shown in Tables A and B as Milestone 2), they must comply with the credit release requirements stated in Section IV(I)(3) of the approved NCDMS instrument.

Section 7.0 REFERENCES

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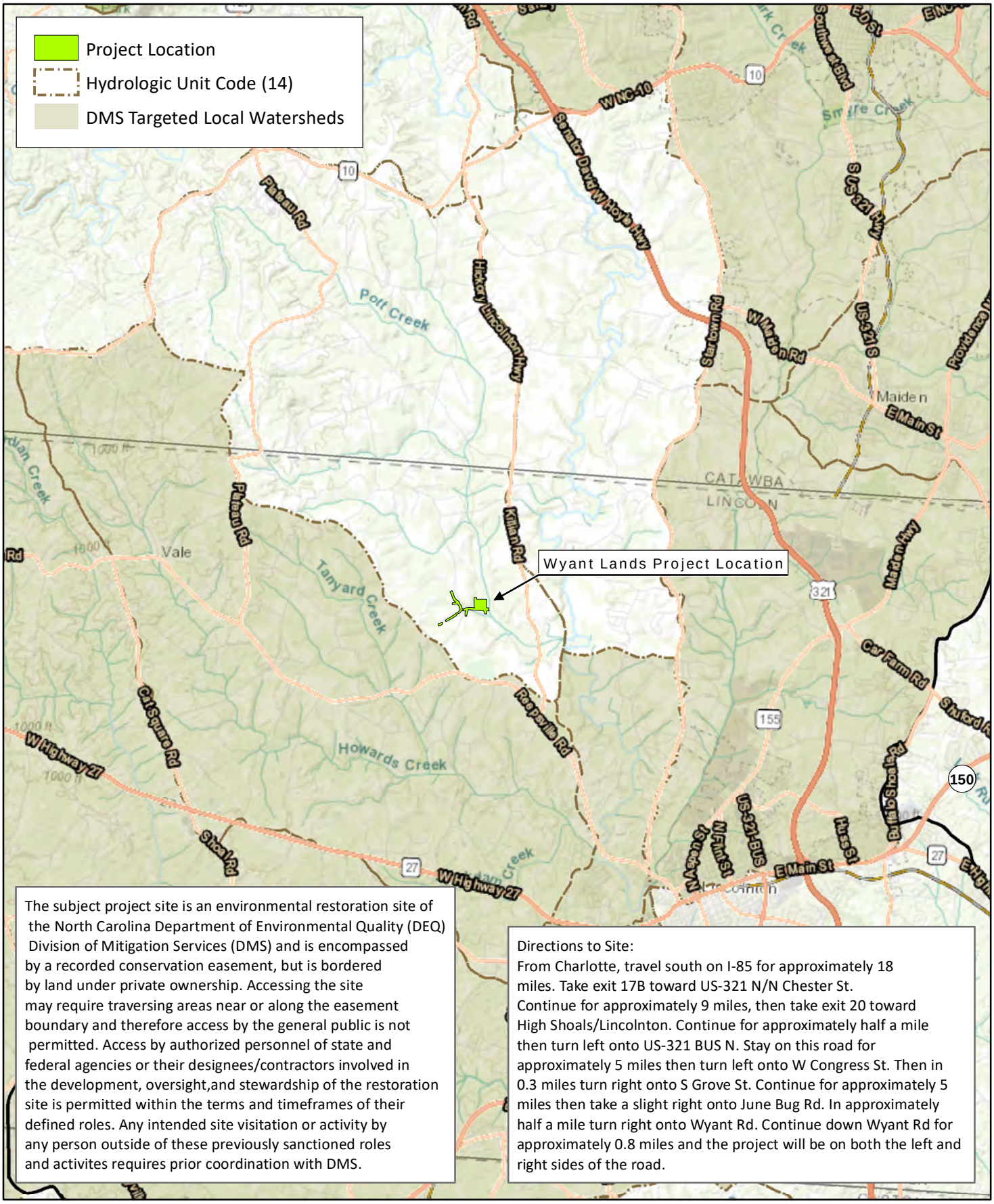
APPENDIX 1. General Figures, Tables, and Documentation



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

Directions to Site:
From Charlotte, travel south on I-85 for approximately 18 miles. Take exit 17B toward US-321 N/N Chester St. Continue for approximately 9 miles, then take exit 20 toward High Shoals/Lincolnton. Continue for approximately half a mile then turn left onto US-321 BUS N. Stay on this road for approximately 5 miles then turn left onto W Congress St. Then in 0.3 miles turn right onto S Grove St. Continue for approximately 5 miles then take a slight right onto June Bug Rd. In approximately half a mile turn right onto Wyant Rd. Continue down Wyant Rd for approximately 0.8 miles and the project will be on both the left and right sides of the road.

WILDLANDS ENGINEERING

0 0.5 1 2 3 Miles

N

Figure 1 Project Vicinity Map
Wyant Lands Mitigation Site
Catwaba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2021

Lincoln County, NC

Conservation Easement
Project Parcels
Internal Crossings
Wetland Re-Establishment
Wetland Rehabilitation
BMP
Existing Wetlands
Reach Breaks
Restoration
Enhancement I
Enhancement II
Not For Credit
Realignment
Fence Line
Bankfull
Existing Alignment
Non-Project Streams

WYANT CREEK R1
WYANT CREEK R2
WYANT CREEK R3
WYANT CREEK R4
POTT CREEK
UT1
UT2 R3
UT2 R2
UT2 R1
UT3 R2
UT3 R1
W-K
W-O
W-M
W-L
W-N
W-H
W-I
W-G
W-P
Pond was also fenced to eclude cattle access. Fence location is approximate.
Wyant Rd
2015 Aerial Imagery

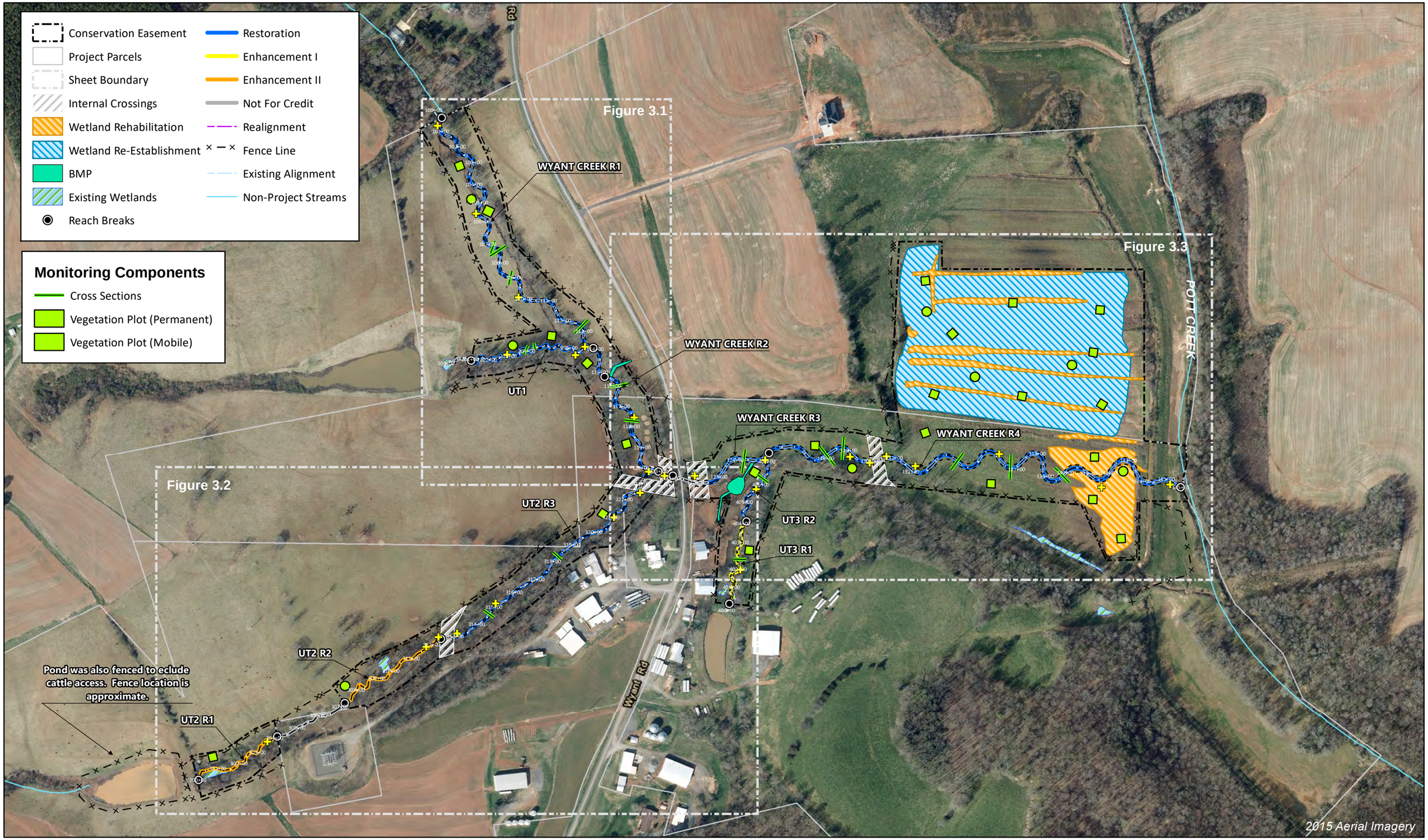
WILDLANDS ENGINEERING

0 162.5 325 650 975 Feet

N

Figure 2 Project Component/Asset Map
Wyant Lands Mitigation Site
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2021

Lincoln County, NC



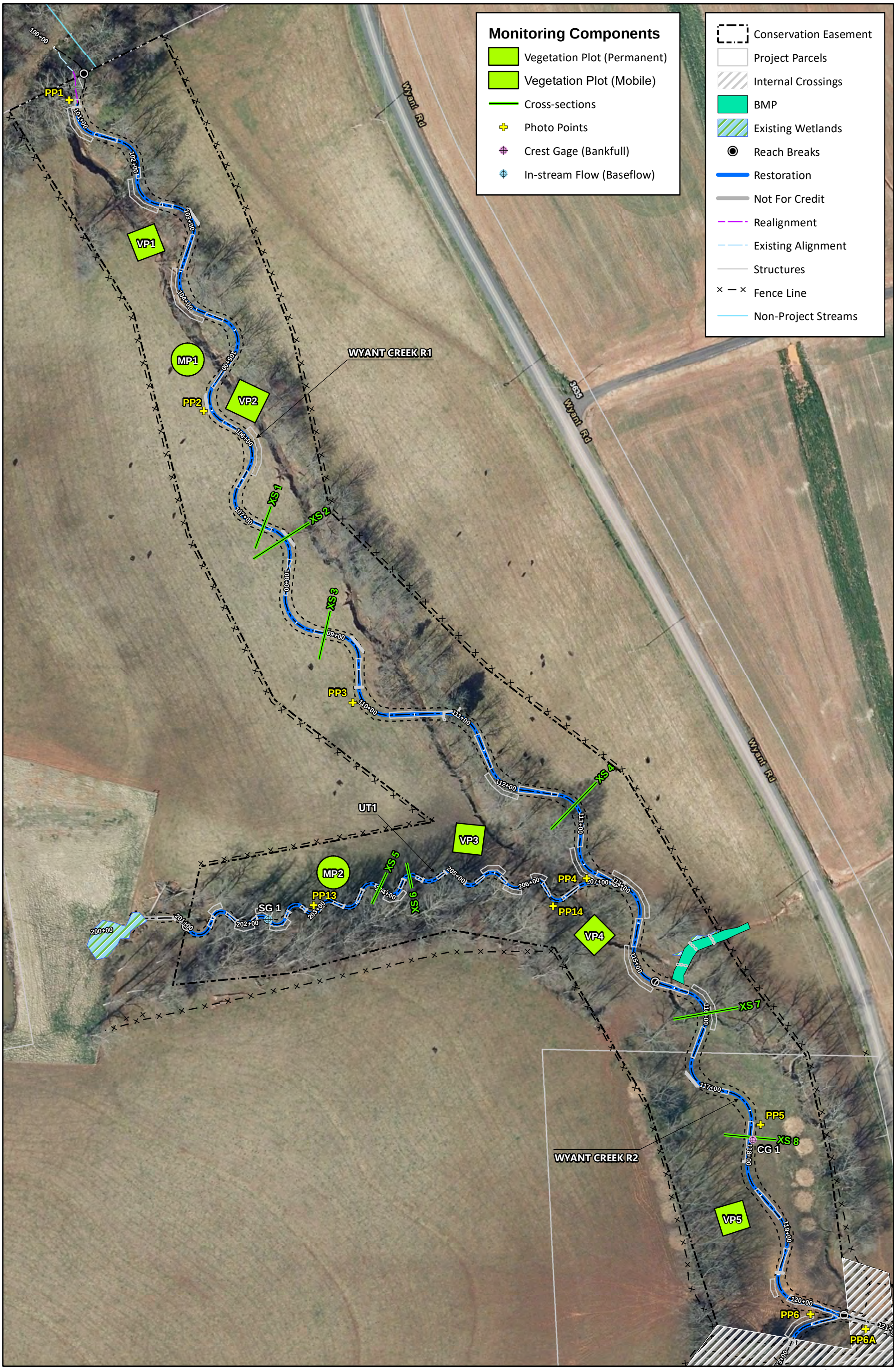
WILDLANDS ENGINEERING

0 162.5 325 650 975 Feet

N

Figure 3.0 Monitoring Plan View Map (Overview)
Wyant Lands Mitigation Site
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2021

Lincoln County, NC



WILDLANDS ENGINEERING

0 50 100 200 300 Feet

Figure 3.1 Monitoring Plan View Map
Wyant Lands Mitigation Site
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2021

Lincoln County, NC

Conservation Easement
Project Parcels
Internal Crossings
BMP
Existing Wetlands
Reach Breaks
Restoration
Enhancement I
Enhancement II
Not For Credit
Structures
Fence Line

Monitoring Components

Vegetation Plot (Permanent)
Vegetation Plot (Mobile)
Cross-sections
Photo Points
Crest Gage (Bankfull)

UT2 R3
UT2
UT2 R2
UT2 R1
UT3 R1
Wyant Rd
Wyant Rd
PP6
PP6A
PP6B
PP18A
PP18
VP14
VP6
PP
VP15
XS 12
PP19
XS10
PP17
CG 2
XS 9
PP16B
PP16A
PP16
MP4
PP15B
PP15A
PP15
VP13
Pond was also fenced to exclude cattle access. Fence location is approximate.
120+00
323+88
121+00
325+00
122+00
123+00
406+00
405+00
404+00
403+00
401+00
400+00
322+00
320+00
319+00
318+00
317+00
316+00
314+00
313+00
312+00
311+00
310+00
309+00
308+00
307+00
306+00
305+00
304+00
303+00
302+00
301+00
300+00

2015 Aerial Imagery

WILDLANDS ENGINEERING

0 75 150 300 450 Feet

N

Figure 3.2 Monitoring Plan View Map
Wyant Lands Mitigation Site
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2021

Lincoln County, NC

Conservation Easement
Project Parcels
Internal Crossings
Wetland Re-Establishment
Wetland Rehabilitation
BMP
Reach Breaks
Restoration
Enhancement I
Not For Credit
Structures
Fence Line
Non-Project Streams

Monitoring Components

Vegetation Plot (Permanent)
Vegetation Plot (Mobile)
Cross-sections
Photo Points
Groundwater Wells
Crest Gage (Bankfull)

WILDLANDS ENGINEERING

0 75 150 300 450 Feet

Figure 3.3 Monitoring Plan View Map
Wyant Lands Mitigation Site
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2021

Lincoln County, NC

Table 1. Mitigation Assets and Components

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Project Components								
Project Area /Reach	**Existing Footage (LF) or Acreage**	**Mitigation Plan Footage/ Acreage[1, 2]**	**Mitigation Category**	**Restoration Level**	**Priority Level**	**Mitigation Ratio (X:1)**	**As-Built Footage/Acreage[3]**	**Notes[3]**
Wyant Reach 1	1,170.000	1,482.000	Warm	Restoration	P1	1.000	1,475.000	Reach assets revised per As-Built Survey
Wyant Reach 2	715.000	523.000		Restoration	P1	1.000	523.000	
Wyant Reach 3	290.000	295.000		Restoration	P1	1.000	295.000	
Wyant Reach 4	1,800.000	1,972.000		Restoration	P1	1.000	1,971.000	Reach assets revised per As-Built Survey
UT1	542.000	604.000	Warm	Restoration	P1	1.000	604.000	
UT2 Reach 1[4]	430.000	411.000	Warm	Enhancement II	N/A	2.500	411.000	
UT2 Reach 2	320.000	515.000		Enhancement II	N/A	2.500	515.000	
UT2 Reach 3	500.000	1,042.000	Warm	Restoration	P1	1.000	1,042.000	
UT3 Reach 1	650.000	374.000	Warm	Enhancement I	P1	1.500	376.000	Reach assets revised per As-Built Survey
UT3 Reach 2		326.000	Warm	Restoration	P1	1.000	328.000	Reach assets revised per As-Built Survey
Wetland Re-Establishment (Wetland Group 1)	11.000	11.000	Warm	Restoration	N/A	1.000	10.992	Area assets revised per As-Built Survey
Wetland Rehabilitation (Wetland Group 2)	3.840	3.200	Warm	Restoration	N/A	1.500	3.155	Area assets revised per As-Built Survey

Notes:

1. Internal culvert crossing and external break excluded from the credited stream footage.
2. No direct credit for BMP's on site.
3. Mitigation Assets were revised based on As-Built footages and acreages due to the implementation of a Mitigation Plan Addendum for additional assets at the project.
4. Credits from UT2 Reach 1 approved within the mitgation plan will not be released until approval of the Mitigation Plan Addendum Baseline Monitoring Report.

Project Credits							
Restoration Level	**Stream**			**Riparian Wetland**		**Non-Riparian Wetland**	**Coastal Marsh**
	Warm	**Cool**	**Cold**	**Riverine**	**Non-Riv**		
Restoration	6,238.000	N/A	N/A	N/A	N/A	N/A	N/A
Re-establishment				10.992	N/A	N/A	N/A
Rehabilitation				2.103	N/A	N/A	N/A
Enhancement				N/A	N/A	N/A	N/A
Enhancement I	250.667	N/A	N/A				
Enhancement II	370.400	N/A	N/A				
Creation				N/A	N/A	N/A	N/A
Preservation	N/A	N/A	N/A	N/A	N/A	N/A	
Totals[1,2]	**6,859.067**	**N/A**	**N/A**	**13.095**	**N/A**	**N/A**	**N/A**

1. Mitigation Assets were revised based on As-Built footages and acreages due to the implementation of a Mitigation Plan Addendum for additional assets at the project.
2. Credits from UT2 Reach 1 approved within the mitgation plan will not be released until approval of the Mitigation Plan Addenudum Baseline Monitoring Report.

Table 2. Project Activity and Reporting History

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Activity or Report		Data Collection Complete	Completion or Delivery
404 Permit		April 2020	May 2020
Mitigation Plan		October 2018 - April 2020	April 2020
Final Design - Construction Plans		August 2020	August 2020
Construction		October 2020 - March 2021	March 2021
Temporary S&E mix applied to entire project area[1]		February 2021	March 2021
Permanent seed mix applied to reach/segments[1]		February 2021	March 2021
Bare root and live stake plantings for reach/segments		March 2021	April 2021
Baseline Monitoring (Year 0)	Stream Survey	April - June 2021	October 2021
	Vegetation Survey	April 2021	
	Remediation	N/A	N/A
	Encroachment		
Year 1 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 2 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 3 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 4 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 5 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 6 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 7 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		

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

Table 3. Project Contact Table

Wyant Lands Mitigation Site
DMS Project No. 100083
Monitoring Year 0 - 2021

Designers Eric Nehaus, PE	**Wildlands Engineering, Inc.** 167-B Haywood Rd Asheville, NC 28806 828.774.5547
Construction Contractors	**Baker Grading & Landscaping, Inc.** 1000 Bat Cave Road Old Fort, NC 28762
Planting Contractor	**Bruton Natural Systems, Inc.** PO Box 1197 Fremont, NC 27830
Seeding Contractor	**Baker Grading & Landscaping, Inc.** 1000 Bat Cave Road Old Fort, NC 28762
Seed Mix Sources	**Green Resource LLC**
Nursery Stock Suppliers	
Bare Roots Live Stakes	**Bruton Natural Systems, Inc.**
Herbaceous Plugs	**Wetland Plants Inc.**
Monitoring Performers	**Wildlands Engineering, Inc.**
Monitoring, POC	Kristi Suggs (704) 332.7754 x.110

Table 4. Project Information and Attributes
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Project Information	
Project Name	Wyant Lands Mitigation Site Lincoln County
Project Area (acres)	41.3
Project Coordinates (latitude and longitude)	35° 32' 3.8"N 81° 19' 20.47"W
Planted Acreage (Acre of Woody Stems Planted)	41.3 acres (full planting with inclusion of mitigation plan amendment)

Project Watershed Summary Information	
Physiographic Province	Piedmont Physiographic Province
River Basin	Catawba River
USGS Hydrologic Unit 8-digit	03050102
USGS Hydrologic Unit 14-digit	03050102040020
DWR Sub-basin	03-08-35
Project Drainage Area (acres)	671
Project Drainage Area Percentage of Impervious Area	0.9%
2011 NLCD Land Use Classification	Cultivated (70%), Forest (16%), Grassland/herbaceous (7%), Shrubland (2%), Residential (5%), Open Water (0%)

Reach Summary Information

Parameters	Wyant CreeK R1	Wyant CreeK R2	Wyant CreeK R3	Wyant CreeK R4	UT1	UT2 R1	UT2 R2	UT2 R3	UT3 R1	UT3 R2
Length of reach (linear feet) - Post-Restoration	1,477	577	361	2,022	604	411	516	1,094	376	**328**
Valley confinement (Confined, moderately confined, unconfined)	Unconfined	Unconfined	Unconfined	Unconfined	Unconfined	Moderately Confined	Moderately Confined	Confined	Moderately Confined	Moderately Confined
Drainage area (acres)	371	422	633	671	54	77	102	126	82	84
Perennial (P), Intermittent (I), Ephemeral (E)	P	P	P	P	P	P	P	P	P	P
NCDWR Water Quality Classification	WS-IV									
Morphological Description (stream type) - Pre-Restoration	G5	G5	G5	G5	C5	N/A	N/A	G4	G5	**G5**
Morphological Description (stream type) - Post-Restoration	C4	C4	C4	C4	C4b	N/A	N/A	B4	C4b	C4b
Evolutionary trend (Simon's Model) - Pre- Restoration	III;IV	I	I	III	I;II	III	III	III	III	**IV**
FEMA classification	Zone AE				N/A					

Regulatory Considerations

Regulation	Applicable?	Resolved?	Supporting Documentation
Waters of the United States - Section 404	Yes	Yes	USACE Action ID #SAW-2017-02609
Waters of the United States - Section 401	Yes	Yes	DWR# 18-0177
Division of Land Quality (Erosion and Sediment Control)	Yes	Yes	NPDES Construction Stormwater General Permit NCG010000
Endangered Species Act	Yes	Yes	Categorical Exclusion Document in Mitigation Plan
Historic Preservation Act	Yes	Yes	Categorical Exclusion Document in Mitigation Plan
Coastal Zone Management Act (CZMA)/Coastal Area Management	No	N/A	N/A
FEMA Floodplain Compliance	Yes	Yes	FLDD19-06199
Essential Fisheries Habitat	No	N/A	N/A

Table 5. Monitoring Component Summary

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Parameter	Monitoring Feature	Quantity/ Length by Reach				Frequency	Notes
		Wyant	UT1	UT2	UT3		
Dimension	Riffle Cross-Sections	7	1	1	2	Year 1, 2, 3, 5, and 7	1
	Pool Cross-Sections	5	1	1	0		
Pattern	Pattern	N/A	N/A	N/A	N/A	N/A	2
Profile	Longitudinal Profile	N/A	N/A	N/A	N/A	N/A	
Substrate	Reach wide (RW) pebble count	4 RW	1 RW	1 RW	2 RW	Year 1, 2, 3, 5, and 7	3
Hydrology	Crest Gage (CG)/ Stream Gage (SG)	1 CG	1 SG	1 CG	N/A	Semi- Annual	4
Vegetation	CVS Level 2 Vegetation Plots	16 – Open Area, 15 Wetland Area				Year 1, 2, 3, 5, and 7	5
Wetlands	Groundwater Wells	11				Quarterly	
Visual Assessment		Y	Y	Y	Y	Semi-Annual	
Exotic and nuisance vegetation						Semi-Annual	6
Project Boundary						Semi-Annual	7
Reference Photos	Photographs	27				Annual	

1. Cross-sections will be permanently marked with rebar to establish location. Surveys will include points measured at all breaks in slope, including top of bank, bankfull, edge of water, and thalweg.

2. Pattern and profile will be assessed visually during semi-annual site visits. Longitudinal profile will be collected during as-built baseline monitoring survey only, unless observations indicate lack of stability and profile survey is warranted in additional years.

3. Riffle 100-count substrate sampling will be collected for surveyed cross-sections during the baseline monitoring only. Substrate assessments in subsequent monitoring years will consist of reachwide substrate monitoring.

4. Crest gages(CG) and/or stream gages (SG) will be monitored using automated pressure transducers. CGs are to record bank full events at least twice a day, while SGs are to record baseflow at least every 3 hours. Both will be inspected quarterly or semi-annually. Evidence of bankfull and stream flow events will be documented with a photo when possible. In some cases both bankfull events and baseflow are monitored on a channel. When this occurs, the gage will still be shown as SG on corresponding documentation and maps to designate that baseflow is also being monitored.

5. Both mobile and permanent vegetation plots will be utilized to evaluate the vegetation performance for the open and wetland areas planted. Permanent vegetation monitoring plot assessments will follow CVS Level 2 protocols. Mobile vegetation monitoring plot assessments will document number of planted stems and species. Planted shaded areas will be visually assessed.

6. Locations of exotic and nuisance vegetation will be mapped.

7. Locations of vegetation damage, boundary encroachments, etc. will be mapped.

APPENDIX 2. Morphological Summary Data and Plots

Table 6. Baseline Stream Data Summary
Wyant Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

	Pre-Existing Condition																							
Parameter	**Wyant Creek R1**			**Wyant Creek R2**			**Wyant Creek R3**			**Wyant Creek R4**			**UT1**			**UT2 R3**			**UT3 R1**			**UT3 R2**		
	Min	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**
Dimension and Substrate - Riffle																								
Bankfull Width (ft)	11.1		1	10.8		1	17.9		1	17.1		1	1.5		1	5.9		1	-		N/A	6.1		1
Floodprone Width (ft)	18.9		1	15.4		1	15.6		1	-		1	8.1		1	11.0		1	-		N/A	18.8		1
Bankfull Mean Depth (ft)	1.1		1	0.9		1	1.5		1	1.2		1	0.4		1	0.7		1	-		N/A	0.7		1
Bankfull Max Depth (ft)	1.7		1	1.3		1	1.9		1	1.5		1	0.3		1	0.9		1	-		N/A	1.2		1
Bankfull Cross-sectional Area (ft^2)	11.1		1	10.8		1	17.9		1	17.1		1	1.5		1	5.9		1	-		N/A	6.1		1
Width/Depth Ratio	9.3		1	12.5		1	7.8		1	12.6		1	13.4		1	12.8		1	-		N/A	12.9		1
Entrenchment Ratio[1]	1.9		1	1.3		1	1.3		1	-		1	1.8		1	1.3		1	-		N/A	2.1		1
Bank Height Ratio	2.7		1	3.2		1	3.0		1	2.4		1	6.0		1	4.7		1	-		N/A	3.3		1
Max part size (mm) mobilized at bankfull	-		N/A	-		N/A	-		N/A	-		N/A	-		N/A	-		N/A	-		N/A	-		N/A
Rosgen Classification	G5		1	G5		1	G5		1	G5		1	C5/4		1	G4		1	-		N/A	G5		1
Bankfull Discharge (cfs)	3.8		1	3.0		1	3.3		1	4.1		1	2.6		1	3.7		1	-		N/A	4.0		1
Sinuosity	1.2		1	1.2		1	1.1		1	1.1		1	1.0		1	1.2		1	-		N/A	1.1		1
Bankfull/Channel Slope (ft/ft)[2]	0.0110		1	0.0075		1	0.0057		1	0.0048		1	0.0100		1	0.0190		1	-		N/A	0.0210		1
	Design																							
Parameter	**Wyant Creek R1**			**Wyant Creek R2**			**Wyant Creek R3**			**Wyant Creek R4**			**UT1**			**UT2 R3**			**UT3 R1**			**UT3 R2**		
	Min	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**
Dimension and Substrate - Riffle																								
Bankfull Width (ft)	12.9		1	13.8		1	17.7		1	19.6		1	4.9		1	9.3		1	7.7		1	7.7		1
Floodprone Width (ft)	39.0	65.0	2	30.0	69.0	2	39.0	89.0	2	43.0	98.0	2	11.0	25.0	2	13.0	47.0	2	17.0	39.0	2	17.0	39.0	2
Bankfull Mean Depth (ft)	1.0		1	1.0		1	1.3		1	1.4		1	0.3		1	0.7		1	0.6		1	0.6		1
Bankfull Max Depth (ft)	1.2	1.6	2	1.3	1.7	2	1.5	2.0	2	1.7	2.2	2	0.4	0.6	2	0.8	1.1	2	0.7	1.0	2	0.7	1.0	2
Bankfull Cross-sectional Area (ft^2)	12.6		1	14.4		1	22.2		1	27.2		1	1.7		1	6.6		1	4.7		1	4.7		1
Width/Depth Ratio	13.0		1	13.0		1	14.0		1	14.0		1	14.0		1	13.0		1	12.0		1	12.0		1
Entrenchment Ratio[1]	3.0	5.0	2	2.2	5.0	2	2.2	5.0+	2	2.2	5.0+	2	2.2	5.0	2	1.4	5.0	2	2.2	5.0	2	2.2	5.0	2
Bank Height Ratio	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2
Max part size (mm) mobilized at bankfull	36	88	2	27	72	2	25	69	2	17	52	2	27	73	2	25	69	2	-		N/A	48	108	2
Rosgen Classification	C4		1	C4		1	C4		1	C4		1	C4b		1	B4		1	C4b		1	C4b		1
Bankfull Discharge (cfs)	43.0		1	45.0		1	70.0		1	72.0		1	4.0		1	26.0		1	17.0		1	17.0		1
Sinuosity	1.2		1	1.2		1	1.2		1	1.3		1	1.2		1	1.1		N/A	1.2		N/A	1.2		N/A
Bankfull/Channel Slope (ft/ft)[2]	0.0088	0.0095	2	0.0059	0.0064	2	0.0050	0.0117	2	0.0029	0.0031	2	0.0188	0.0225	2	0.0182	0.0200	2	0.0206	0.0247	2	0.0207	0.0248	2
	As-Built/ Baseline																							
Parameter	**Wyant Creek R1**			**Wyant Creek R2**			**Wyant Creek R3**			**Wyant Creek R4**			**UT1**			**UT2 R3**			**UT3 R1**			**UT3 R2**		
	Min	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**
Dimension and Substrate - Riffle																								
Bankfull Width (ft)	10.8	12.7	2	14.0		1	18.0		1	17.5	19.3	3	5.2		1	8.8		1	7.6		1	9.8		1
Floodprone Width (ft)	50.7	55.9	2	59.1		1	87.8		1	81.8	93.8	3	39.2		1	31.0		1	26.8		1	31.5		1
Bankfull Mean Depth (ft)	0.8	1.0	2	0.9		1	1.2		1	1.2	1.3	3	0.3		1	0.4		1	0.5		1	0.4		1
Bankfull Max Depth (ft)	1.5		2	1.7		1	1.9		1	2.0	2.3	3	0.5		1	0.7		1	0.8		1	0.8		1
Bankfull Cross-sectional Area (ft^2)[1]	10.3	10.6	2	12.9		1	21.5		1	21.7	25.9	3	1.6		1	3.8		1	4.2		1	4.0		1
Width/Depth Ratio	11.3	15.2	2	15.1		1	15.0		1	13.3	15.3	3	16.8		1	20.4		1	14.0		1	24.4		1
Entrenchment Ratio[1]	4.0	5.2	2	4.2		1	4.9		1	4.3	5.1	3	7.6		1	3.5		1	3.5		1	3.2		1
Bank Height Ratio	1.0		2	1.0		1	1.0		1	1.0		3	1.0		1	1.0		1	1.0		1	1.0		1
Max part size (mm) mobilized at bankfull	1.1		1	2.0		1	13.3		1	0.9		1	1.0		1	37.9		1	19.0		1	35.9		1
Rosgen Classification	C4			C4			C4			C4			C4b			B4			C4b			C4b		
Bankfull Discharge (cfs)	25.8	28.7	2	51.1		1	49.5		1	70.7	84.4	2	3.27		1	11.1		1	14.3		1	9.9		1
Sinuosity	1.24		1	1.19		1	1.12		1	1.25		1	1.21		1	1.09		1	1.20		1	1.20		1
Bankfull/Channel Slope (ft/ft)[2]	0.0061		1	0.013		1	0.003		1	0.006		1	0.015		1	0.021		1	0.021		1	0.015		1

1. ER for the baseline/monitoring parameters are based on the width of the cross-section, in lieu of assuming the width across the floodplain.
(---): Data was not provided, N/A: Not Applicable

Table 7. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

	Wyant Creek R1 Cross Section 1 Riffle								Wyant Creek R1 Cross Section 2 Pool								Wyant Creek R1 Cross Section 3 Riffle							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	798.56								798.24								797.30							
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0								N/A								1.0							
Thalweg Elevation (ft)	797.05								794.01								795.76							
LTOB[2] Elevation (ft)	798.56								798.24								797.30							
LTOB[2] Max Depth (ft)	1.5								4.2								1.5							
LTOB[2] Cross Sectional Area (ft^2)	10.6								25.5								10.3							
	Wyant Creek R1 Cross Section 4 Pool								**UT1 Cross Section 5 Riffle**								**UT1 Cross Section 6 Pool**							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	794.30								798.18								797.15							
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A								1.0								N/A							
Thalweg Elevation (ft)	791.06								797.69								795.69							
LTOB[2] Elevation (ft)	794.30								798.18								797.15							
LTOB[2] Max Depth (ft)	3.2								0.5								1.5							
LTOB[2] Cross Sectional Area (ft^2)	24.7								1.6								5.6							
	Wyant Creek R2 Cross Section 7 Pool								**Wyant Creek R2 Cross Section 8 Riffle**								**UT2 Cross Section 9 Riffle**							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	791.51								790.54								806.26							
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A								1.0								1.0							
Thalweg Elevation (ft)	789.13								788.88								805.55							
LTOB[2] Elevation (ft)	791.51								790.54								806.26							
LTOB[2] Max Depth (ft)	2.4								1.7								0.7							
LTOB[2] Cross Sectional Area (ft^2)	18.9								12.9								3.8							
	UT2 Cross Section 10 Pool								**Wyant Creek R3 Cross Section 11 Riffle**															
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**								
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	800.58								784.20															
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A								1.0															
Thalweg Elevation (ft)	798.62								782.35															
LTOB[2] Elevation (ft)	800.58								784.20															
LTOB[2] Max Depth (ft)	2.0								1.9															
LTOB[2] Cross Sectional Area (ft^2)	8.6								21.5															

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

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

Table 7. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)

Wyant Lands Mitigation Site

DMS Project No. 100067

Monitoring Year 0 - 2021

	UT3 Cross Section 12 Riffle								UT3 Cross Section 13 Riffle								Wyant Creek R4 Cross Section 14 Riffle							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	791.99								785.83								782.26							
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0								1.0								1.0							
Thalweg Elevation (ft)	791.16								785.03								780.24							
LTOB[2] Elevation (ft)	791.99								785.83								782.26							
LTOB[2] Max Depth (ft)	0.8								0.8								2.0							
LTOB[2] Cross Sectional Area (ft^2)	4.2								4.0								21.7							
	Wyant Creek R4 Cross Section 15 Pool								**Wyant Creek R4 Cross Section 16 Riffle**								**Wyant Creek R4 Cross Section 17 Pool**							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	782.09								776.54								774.81							
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A								1.0								N/A							
Thalweg Elevation (ft)	776.62								774.30								770.18							
LTOB[2] Elevation (ft)	782.09								776.54								774.81							
LTOB[2] Max Depth (ft)	5.5								2.2								4.6							
LTOB[2] Cross Sectional Area (ft^2)	67.8								23.1								57.2							
	Wyant Creek R4 Cross Section 18 Riffle																							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**																
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	774.06																							
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0																							
Thalweg Elevation (ft)	771.78																							
LTOB[2] Elevation (ft)	774.06																							
LTOB[2] Max Depth (ft)	2.3																							
LTOB[2] Cross Sectional Area (ft^2)	25.9																							

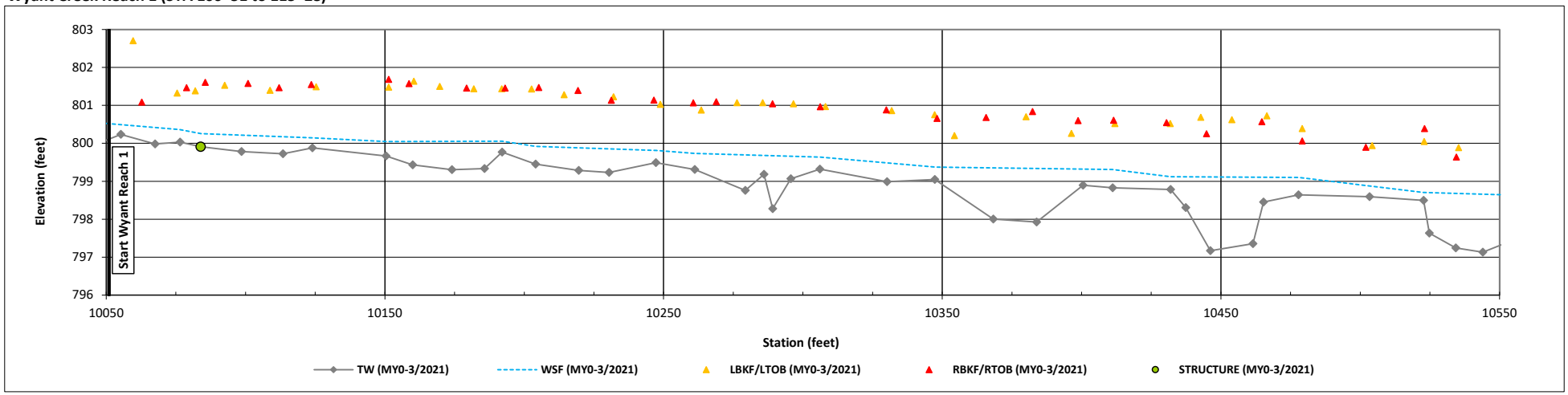
[1]Bank Height Ratio (BHR) takes the As-built bankful area as the basis for adjusting each subsequent years bankfull elevation.

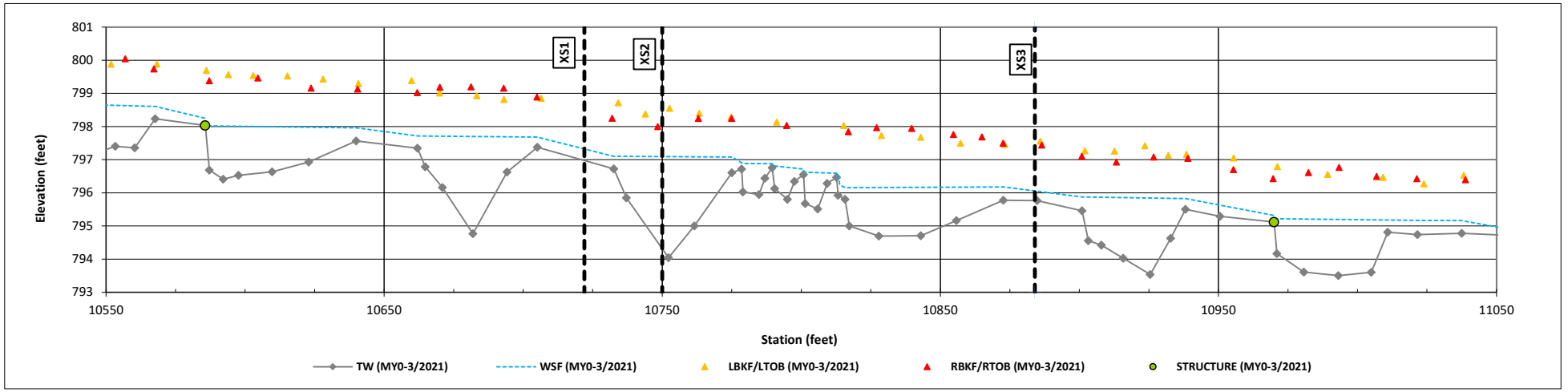
[2]LTOB Area and Max depth - These are based on the LTOB elevation for each years survey (The same elevation used for the LTOB in the BHR calculation). Area below the LTOB elevation will be used and tracked for each year as above. The difference between the LTOB elevation and the thalweg elevation (same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

Longitudinal Profile Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant Creek Reach 1 (STA 100+51 to 115+28)

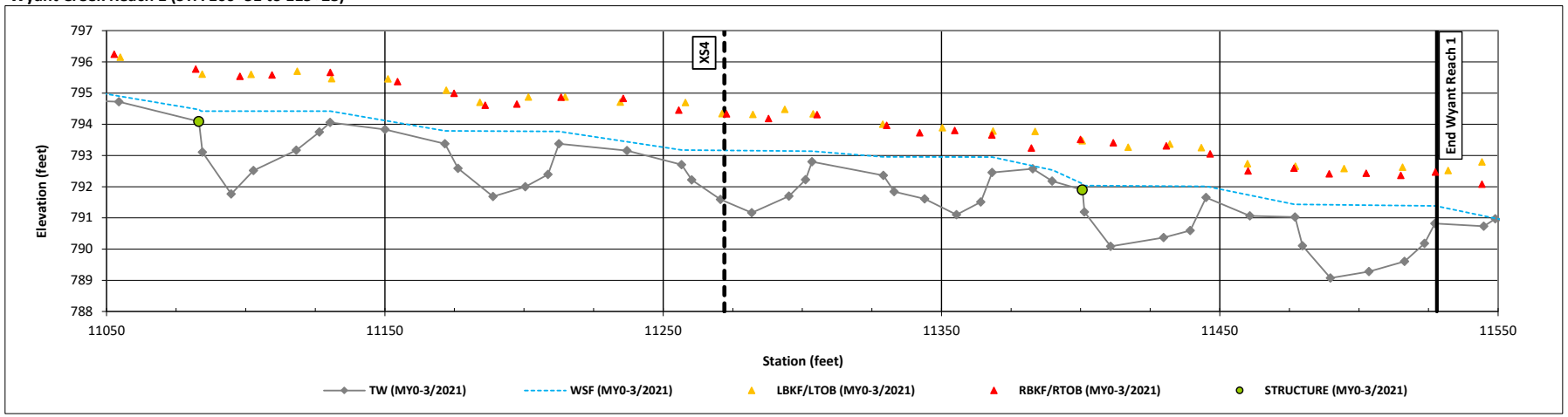




Longitudinal Profile Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

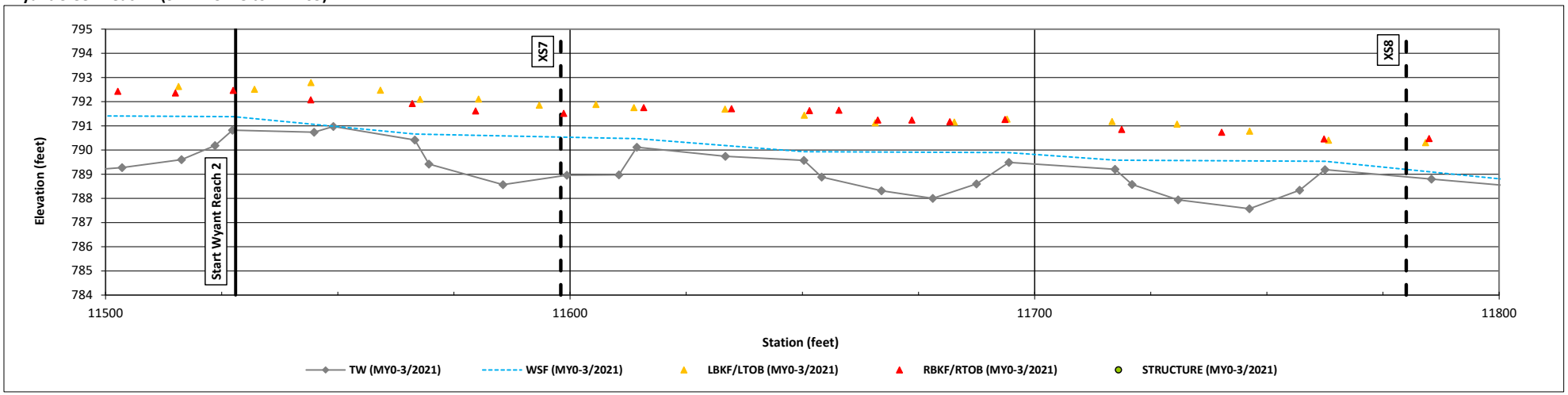
Wyant Creek Reach 1 (STA 100+51 to 115+28)

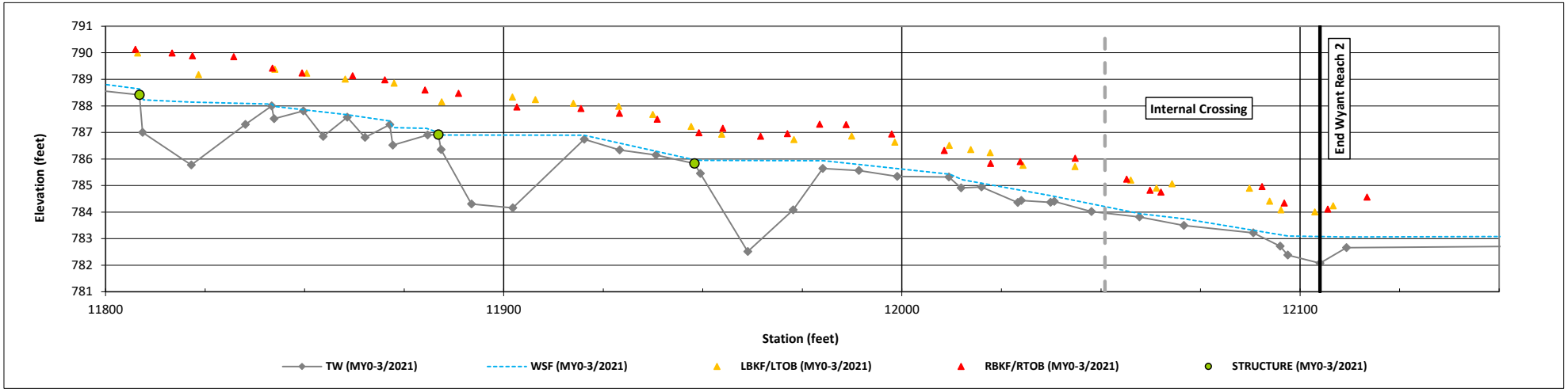


Longitudinal Profile Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant Creek Reach 2 (STA 115+28 to 121+05)

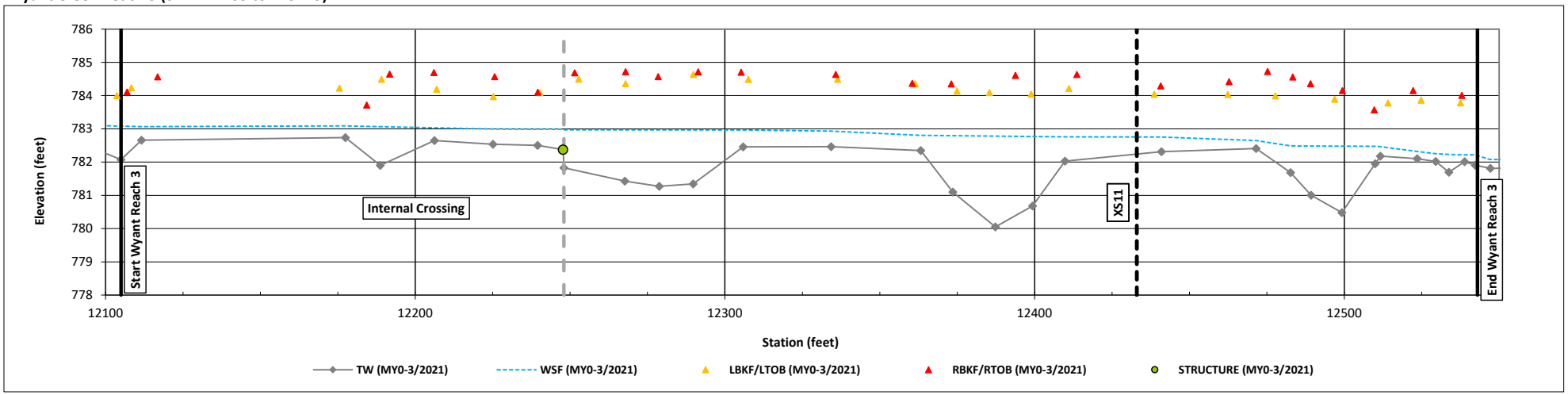




Longitudinal Profile Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant Creek Reach 3 (STA 121+05 to 125+43)



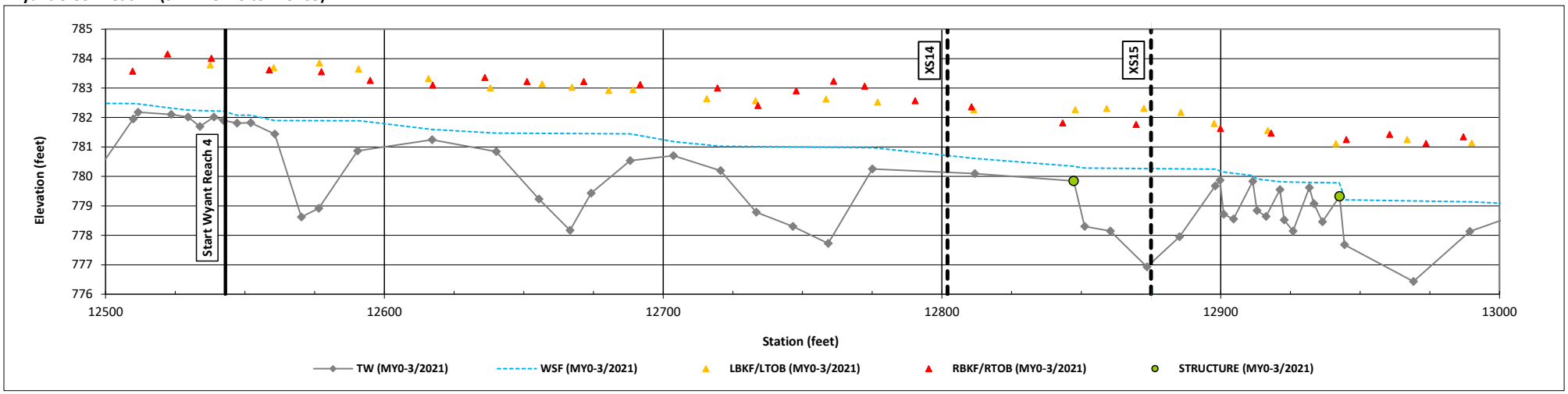
Longitudinal Profile Plots

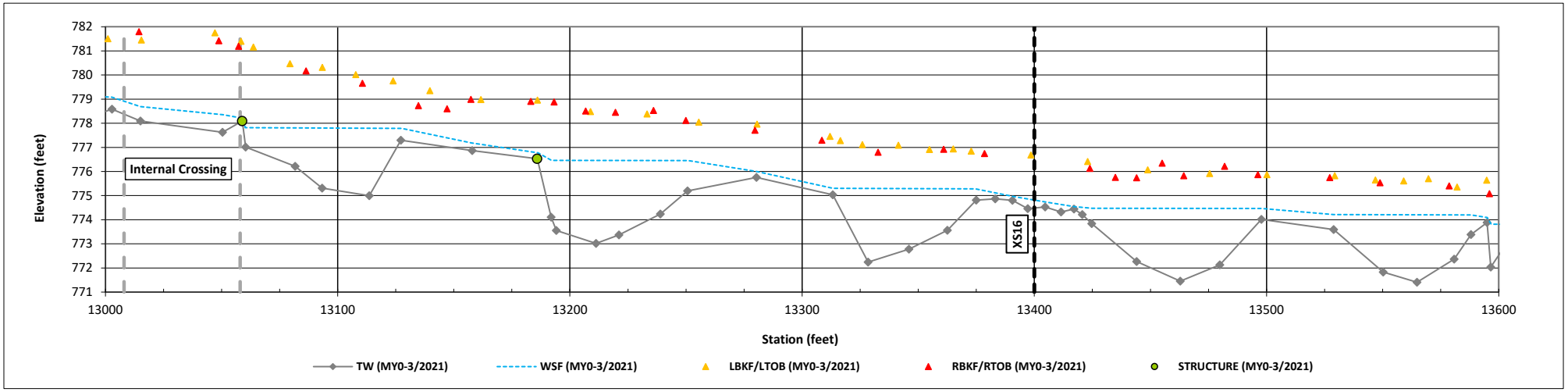
Wyant Lands Mitigation Site

DMS Project No. 100067

Monitoring Year 0 - 2021

Wyant Creek Reach 4 (STA 125+43 to 145+65)

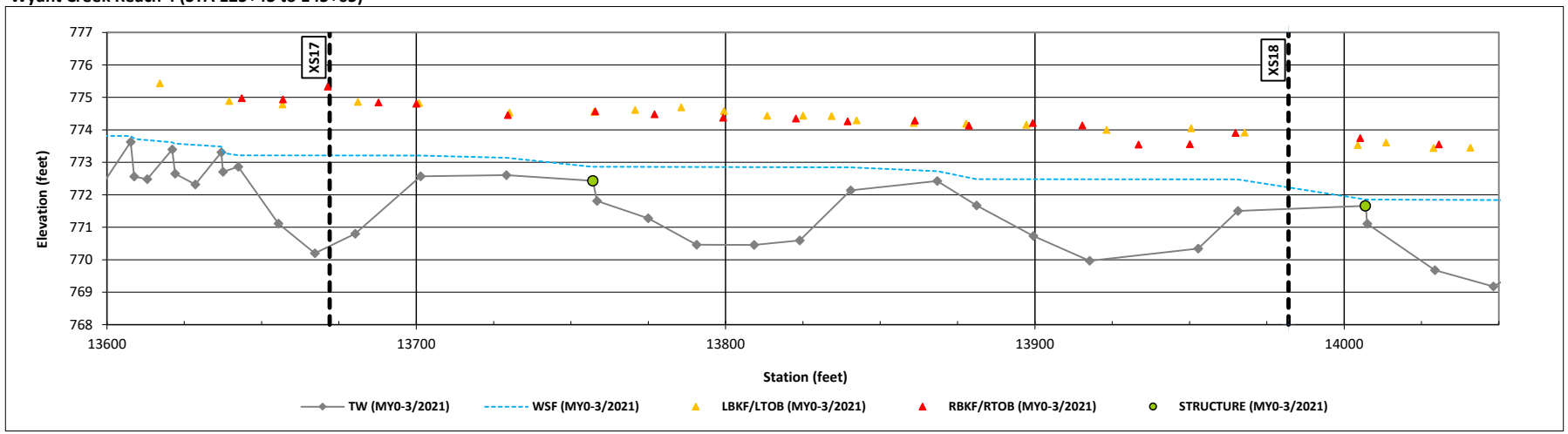


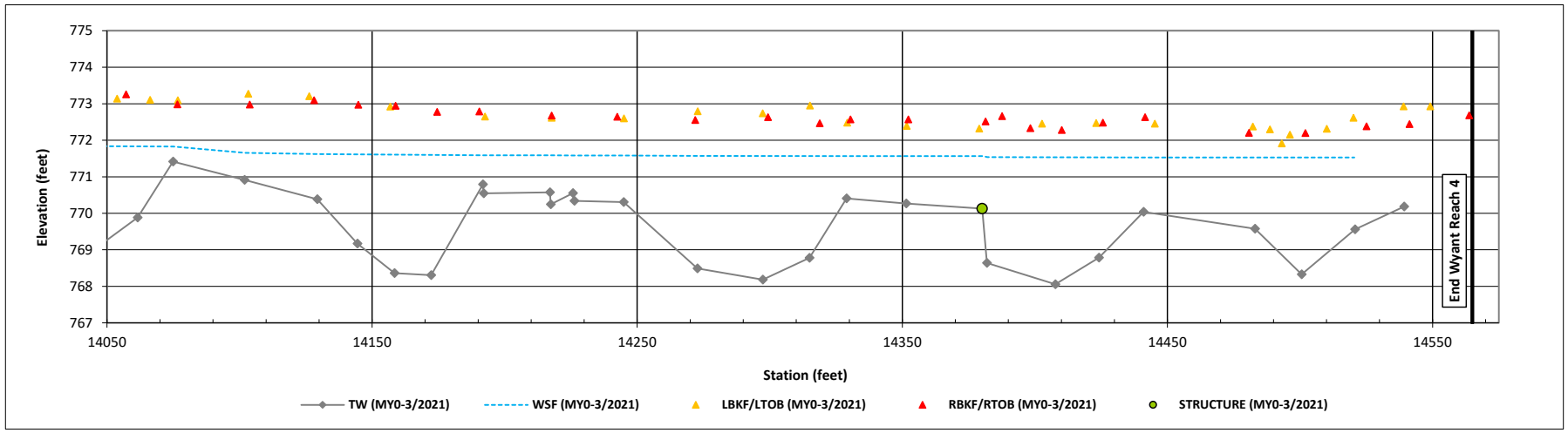


Longitudinal Profile Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant Creek Reach 4 (STA 125+43 to 145+65)

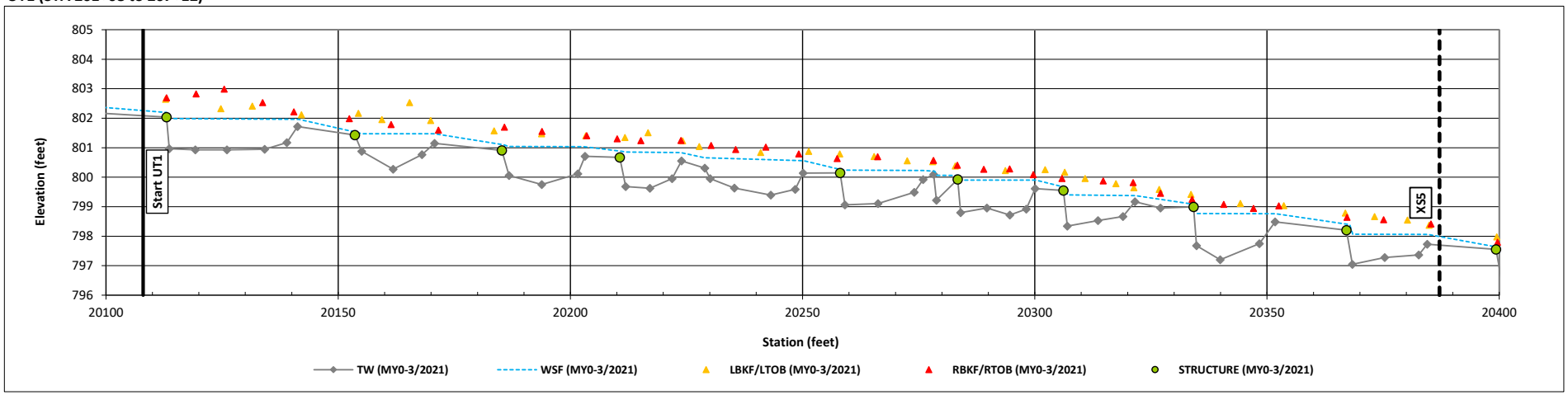


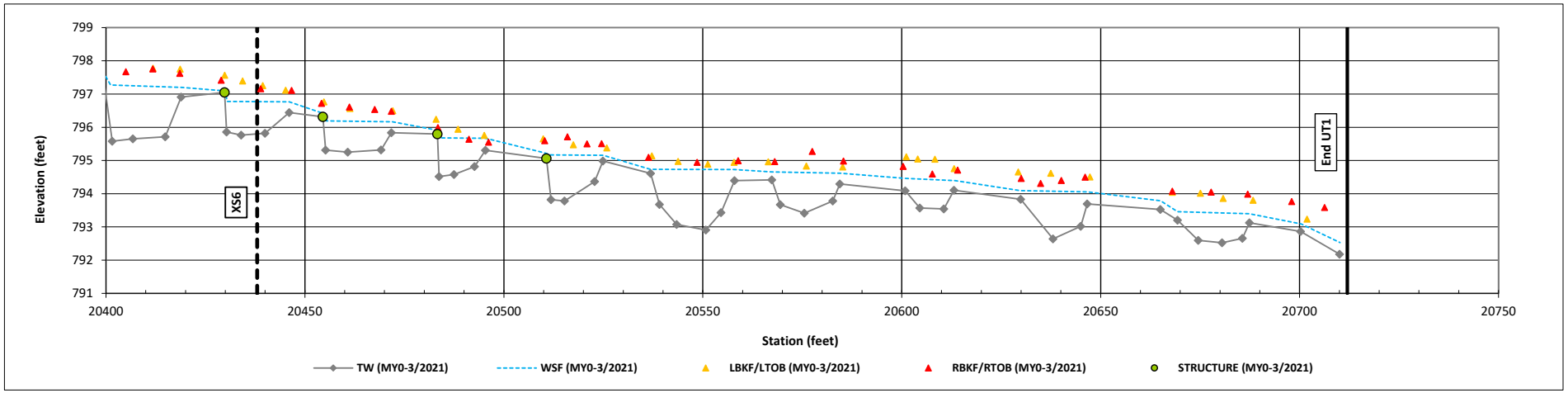


Longitudinal Profile Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT1 (STA 201+08 to 207+12)





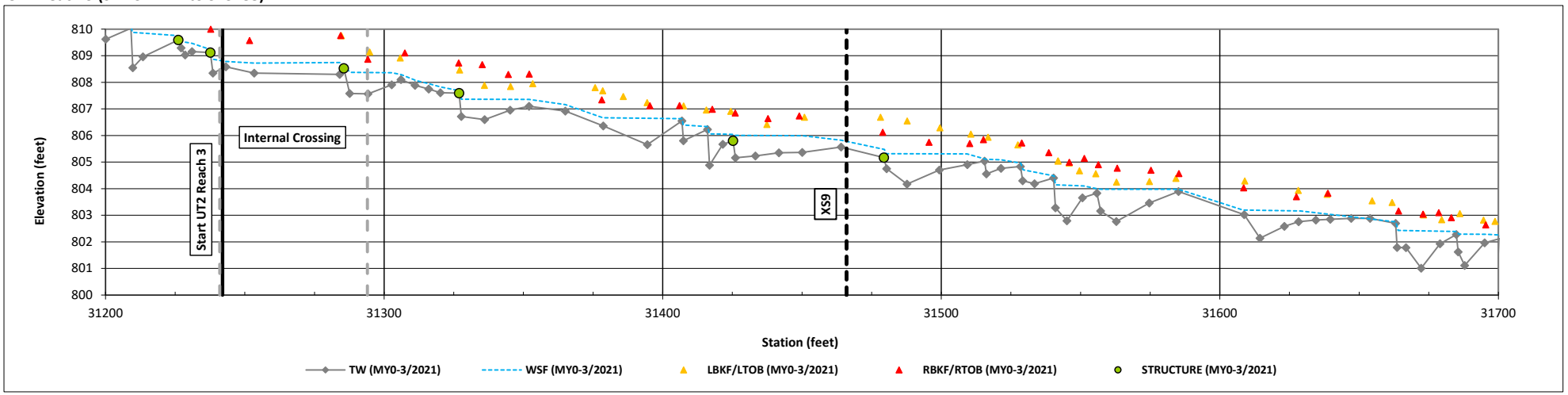
Longitudinal Profile Plots

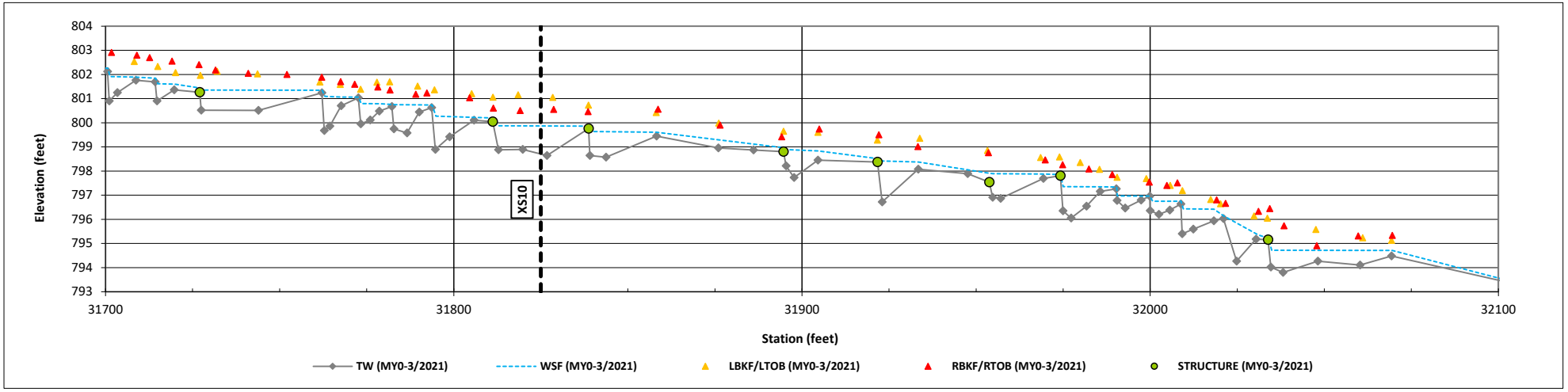
Wyant Lands Mitigation Site

DMS Project No. 100067

Monitoring Year 0 - 2021

UT2 Reach 3 (STA 312+42 to 323+88)





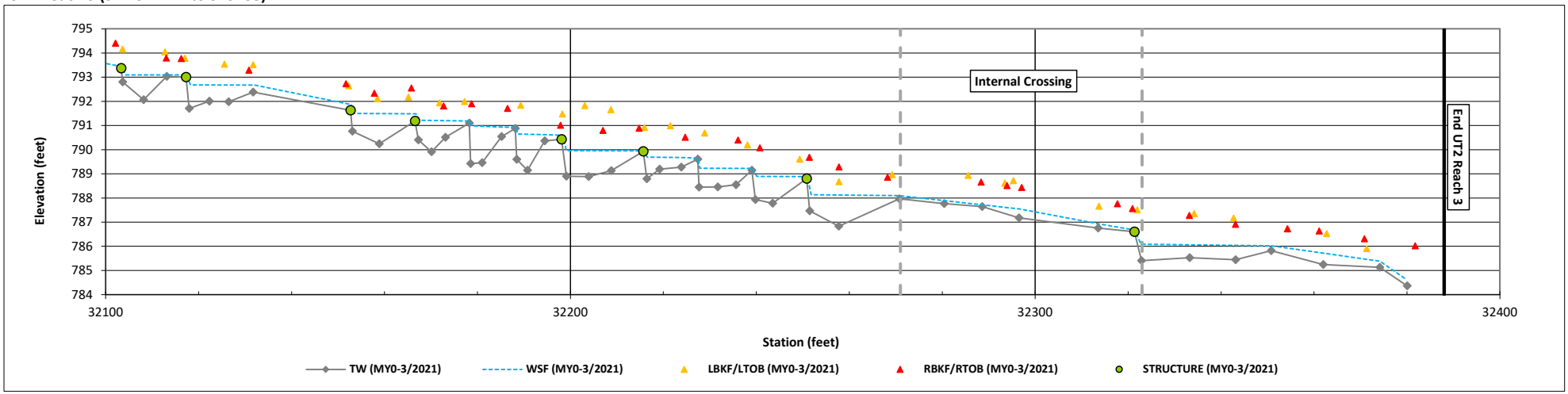
Longitudinal Profile Plots

Wyant Lands Mitigation Site

DMS Project No. 100067

Monitoring Year 0 - 2021

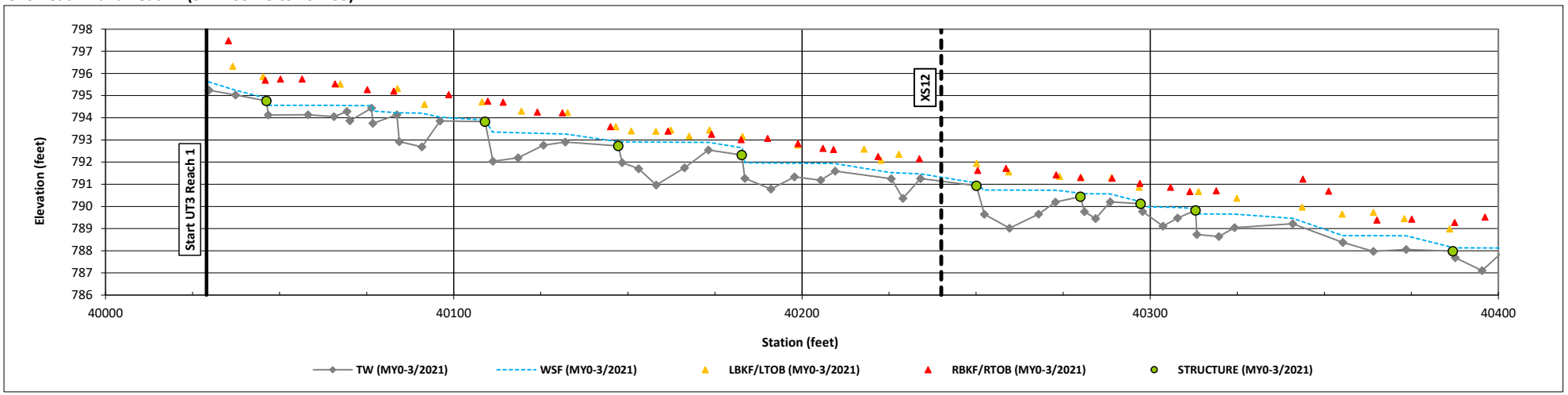
UT2 Reach 3 (STA 312+42 to 323+88)

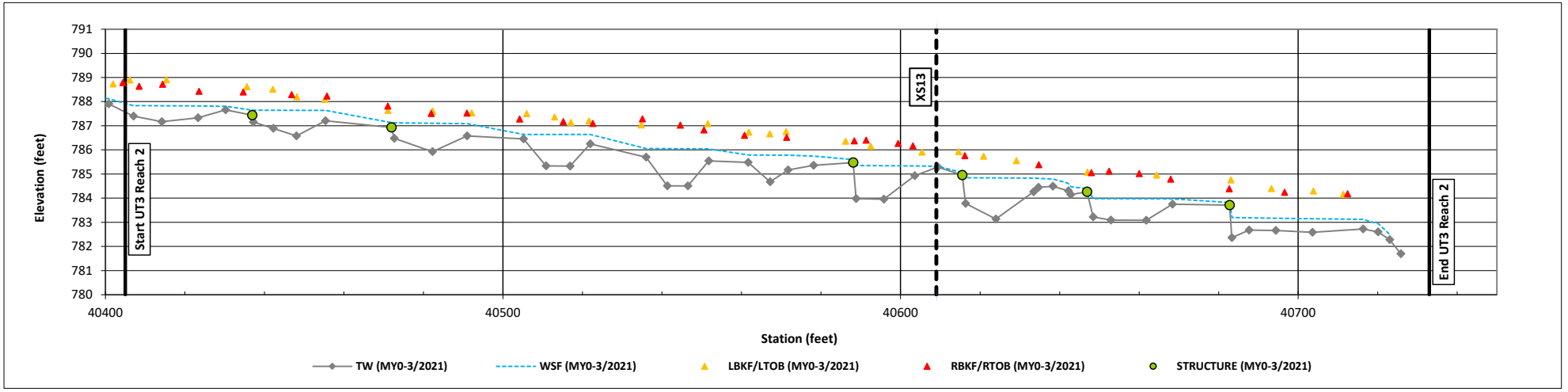


Longitudinal Profile Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT3 Reach 1 and Reach 2 (STA 400+29 to 407+33)

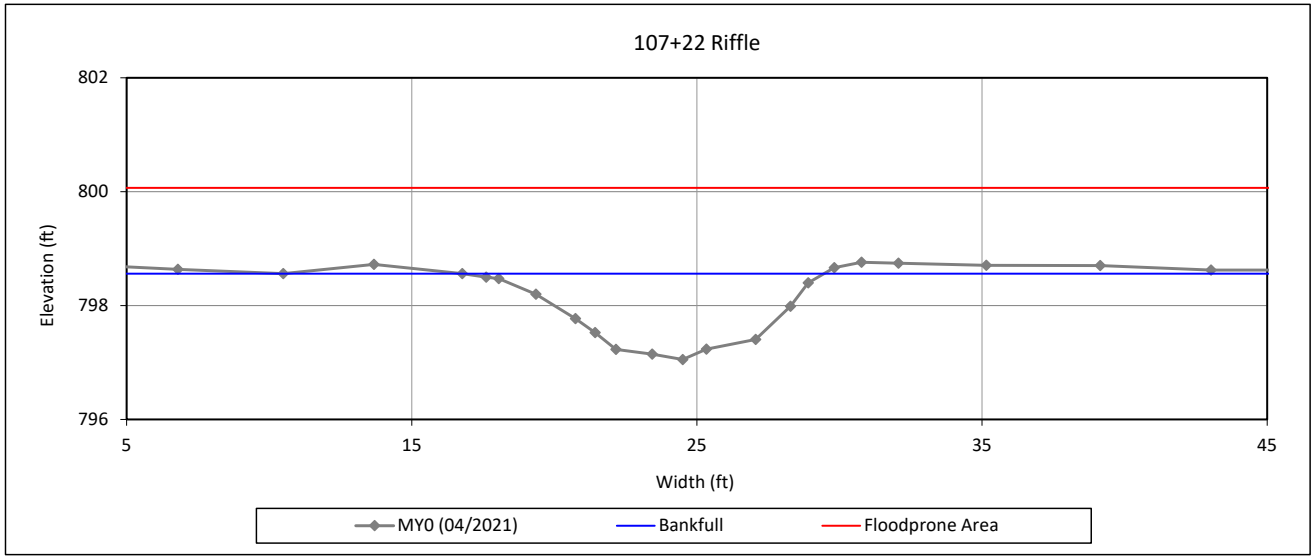




Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 1-Wyant Creek R1



Bankfull Dimensions	
10.6	x-section area (ft.sq.)
12.7	width (ft)
0.8	mean depth (ft)
1.5	max depth (ft)
13.2	wetted perimeter (ft)
0.8	hydraulic radius (ft)
15.2	width-depth ratio
50.7	W flood prone area (ft)
4.0	entrenchment ratio
1.0	low bank height ratio

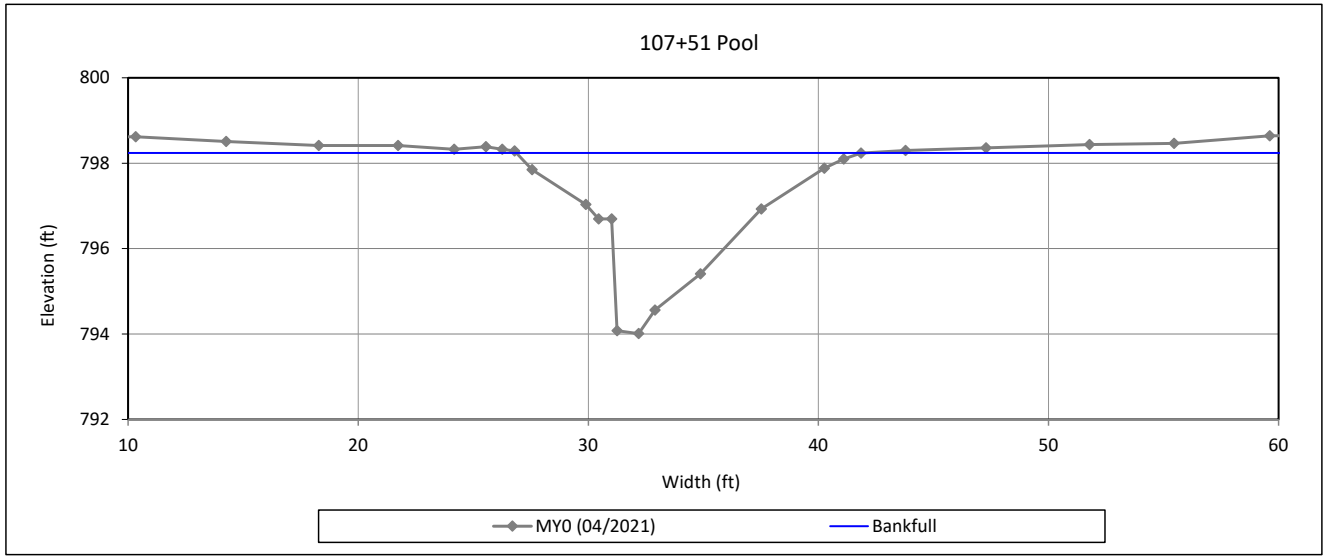
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 2-Wyant Creek R1



Bankfull Dimensions	
25.5	x-section area (ft.sq.)
15.1	width (ft)
1.7	mean depth (ft)
4.2	max depth (ft)
18.8	wetted perimeter (ft)
1.4	hydraulic radius (ft)
8.9	width-depth ratio

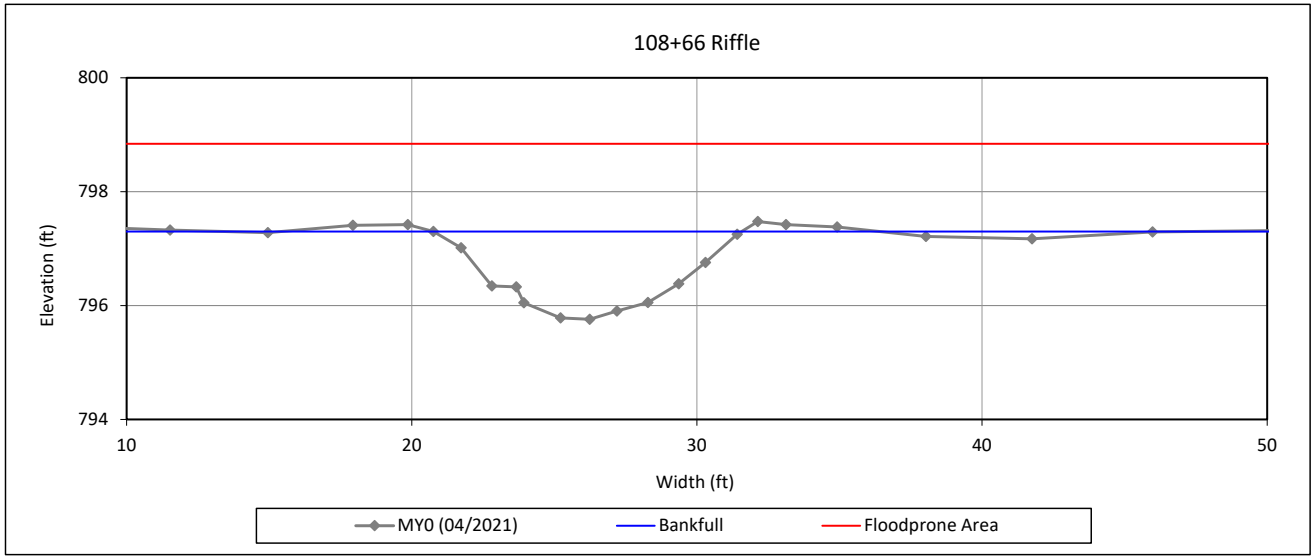
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 3-Wyant Creek R1



Bankfull Dimensions	
10.3	x-section area (ft.sq.)
10.8	width (ft)
1.0	mean depth (ft)
1.5	max depth (ft)
11.4	wetted perimeter (ft)
0.9	hydraulic radius (ft)
11.3	width-depth ratio
55.9	W flood prone area (ft)
5.2	entrenchment ratio
1.0	low bank height ratio

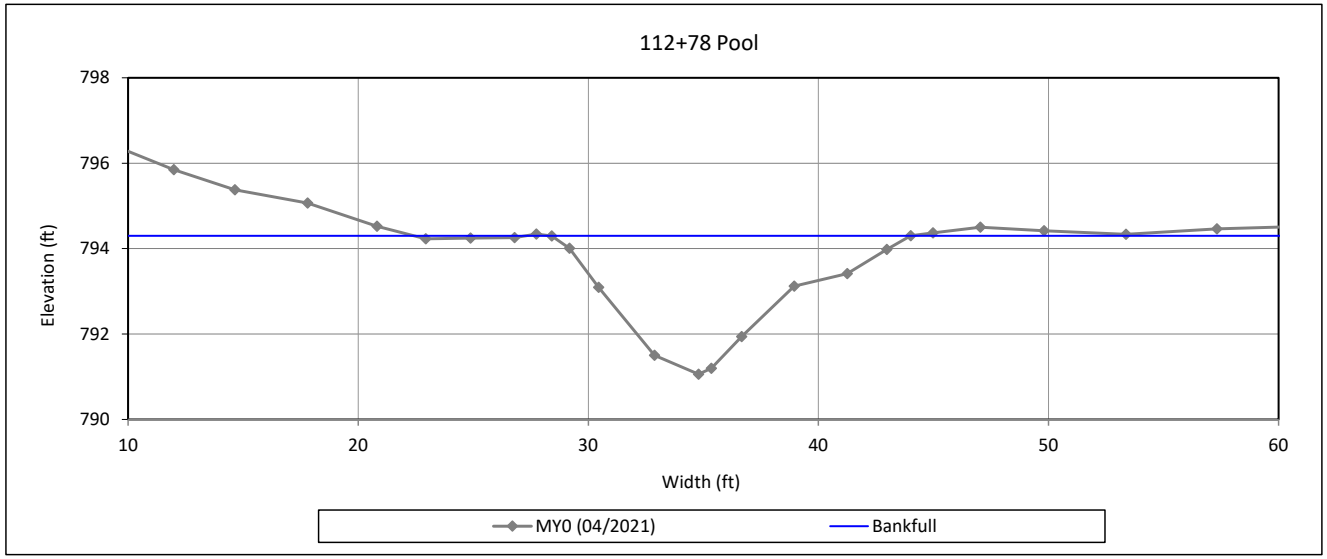
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 4-Wyant Creek R1



Bankfull Dimensions	
24.7	x-section area (ft.sq.)
16.5	width (ft)
1.5	mean depth (ft)
3.2	max depth (ft)
18.0	wetted perimeter (ft)
1.4	hydraulic radius (ft)
11.0	width-depth ratio

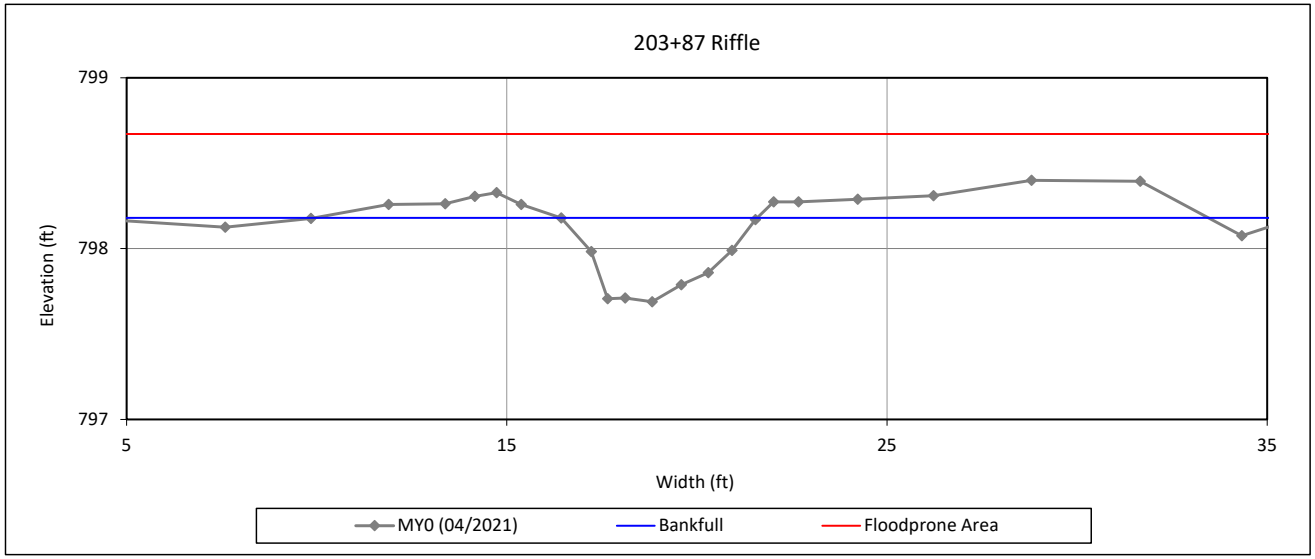
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 5 - UT1



Bankfull Dimensions	
1.6	x-section area (ft.sq.)
5.2	width (ft)
0.3	mean depth (ft)
0.5	max depth (ft)
5.3	wetted perimeter (ft)
0.3	hydraulic radius (ft)
16.8	width-depth ratio
39.2	W flood prone area (ft)
7.6	entrenchment ratio
1.0	low bank height ratio

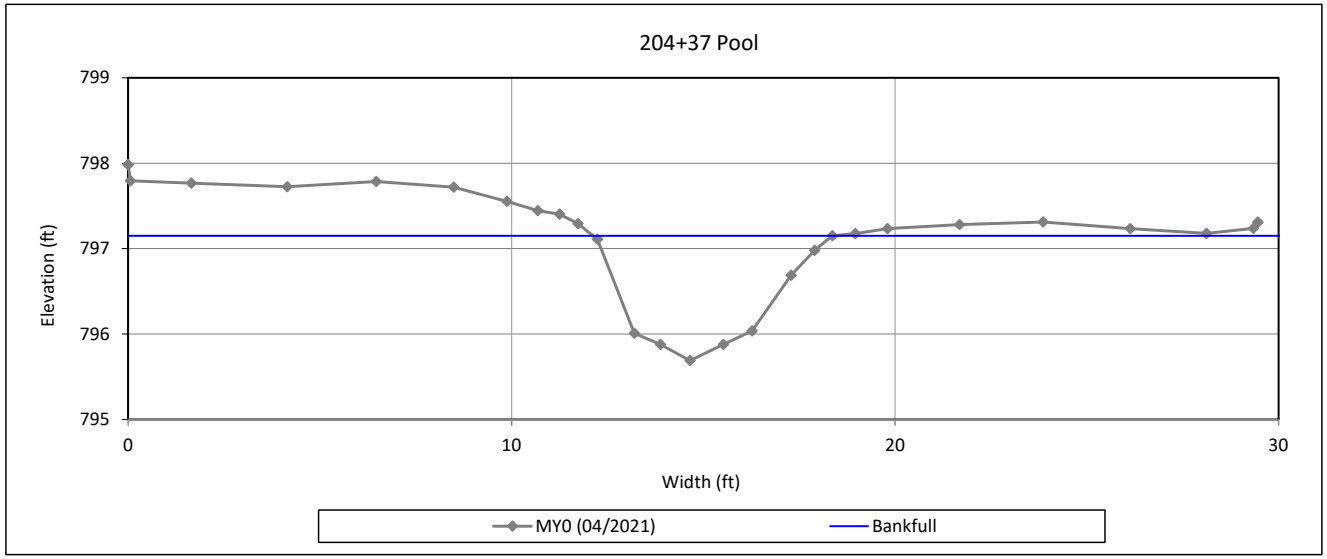
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 6 - UT1



Bankfull Dimensions	
5.6	x-section area (ft.sq.)
6.2	width (ft)
0.9	mean depth (ft)
1.5	max depth (ft)
7.1	wetted perimeter (ft)
0.8	hydraulic radius (ft)
7.0	width-depth ratio

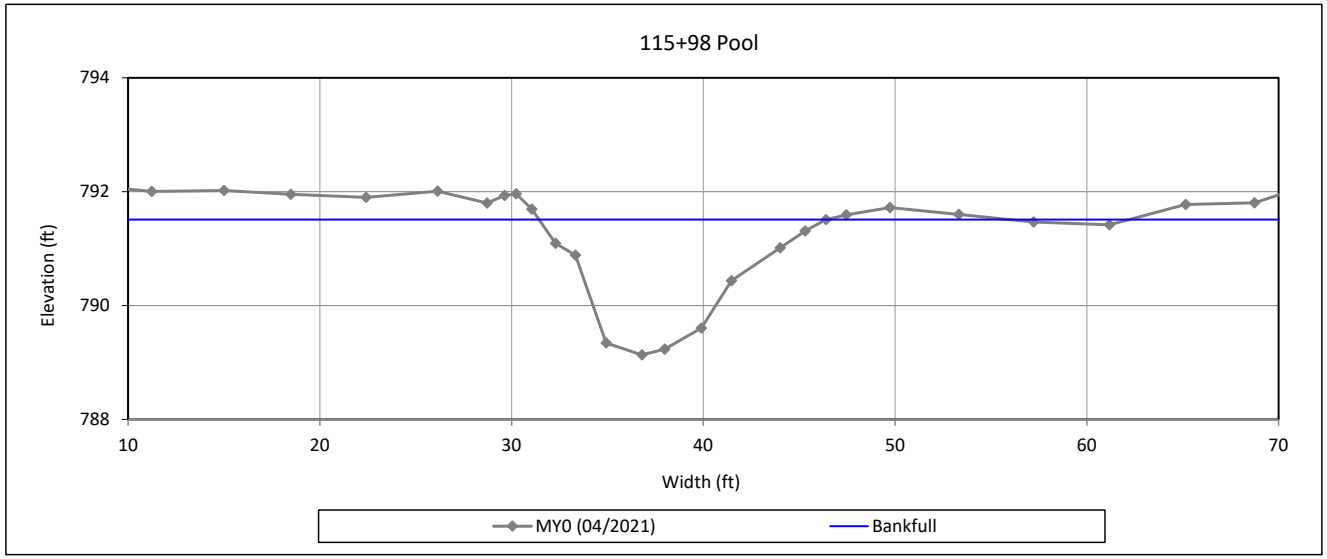
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 7 - Wyant Creek R2



Bankfull Dimensions	
18.9	x-section area (ft.sq.)
15.0	width (ft)
1.3	mean depth (ft)
2.4	max depth (ft)
16.1	wetted perimeter (ft)
1.2	hydraulic radius (ft)
11.9	width-depth ratio

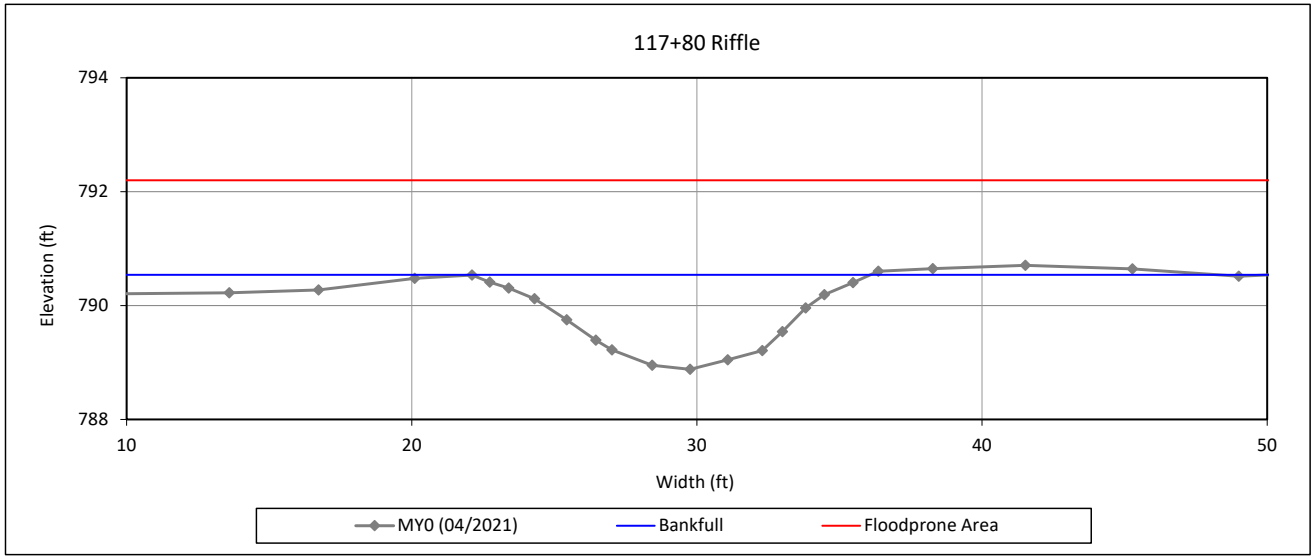
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 8 - Wyant Creek R2



Bankfull Dimensions	
12.9	x-section area (ft.sq.)
14.0	width (ft)
0.9	mean depth (ft)
1.7	max depth (ft)
14.5	wetted perimeter (ft)
0.9	hydraulic radius (ft)
15.1	width-depth ratio
59.1	W flood prone area (ft)
4.2	entrenchment ratio
1.0	low bank height ratio

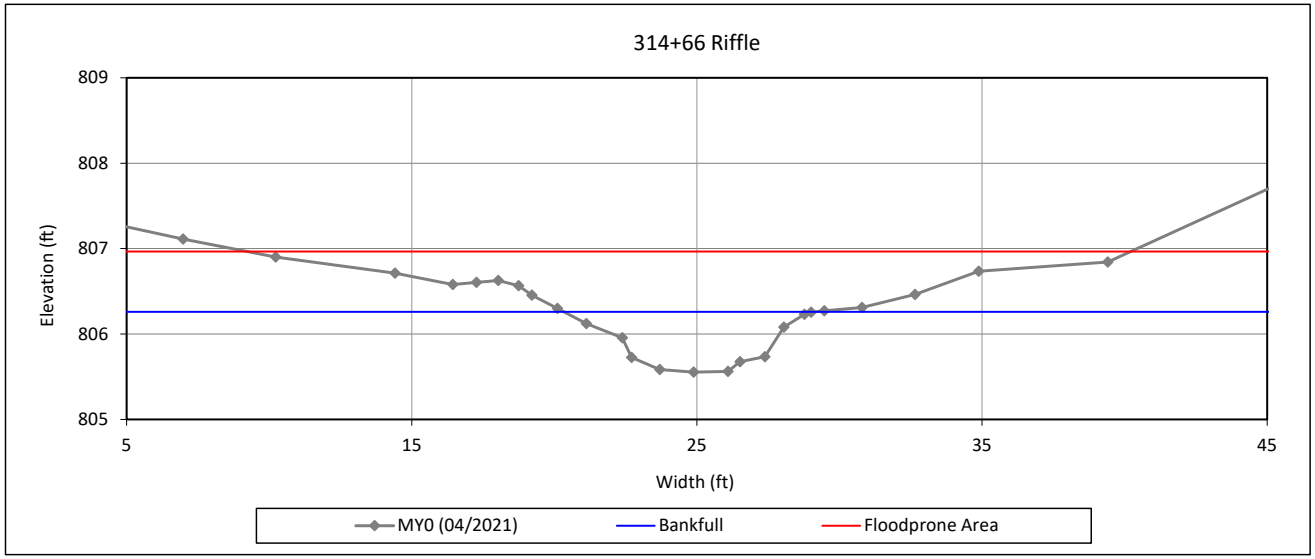
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 9 - UT2 R3



Bankfull Dimensions	
3.8	x-section area (ft.sq.)
8.8	width (ft)
0.4	mean depth (ft)
0.7	max depth (ft)
9.0	wetted perimeter (ft)
0.4	hydraulic radius (ft)
20.4	width-depth ratio
31.0	W flood prone area (ft)
3.5	entrenchment ratio
1.0	low bank height ratio

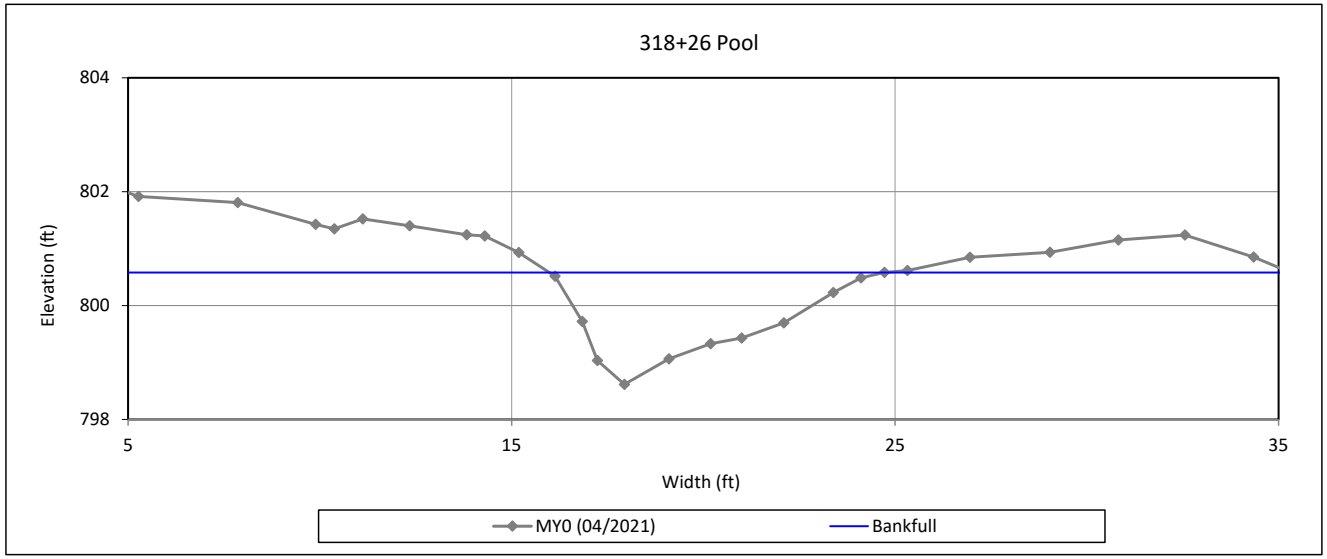
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 10-UT2 R2



Bankfull Dimensions	
8.6	x-section area (ft.sq.)
8.7	width (ft)
1.0	mean depth (ft)
2.0	max depth (ft)
9.9	wetted perimeter (ft)
0.9	hydraulic radius (ft)
8.8	width-depth ratio

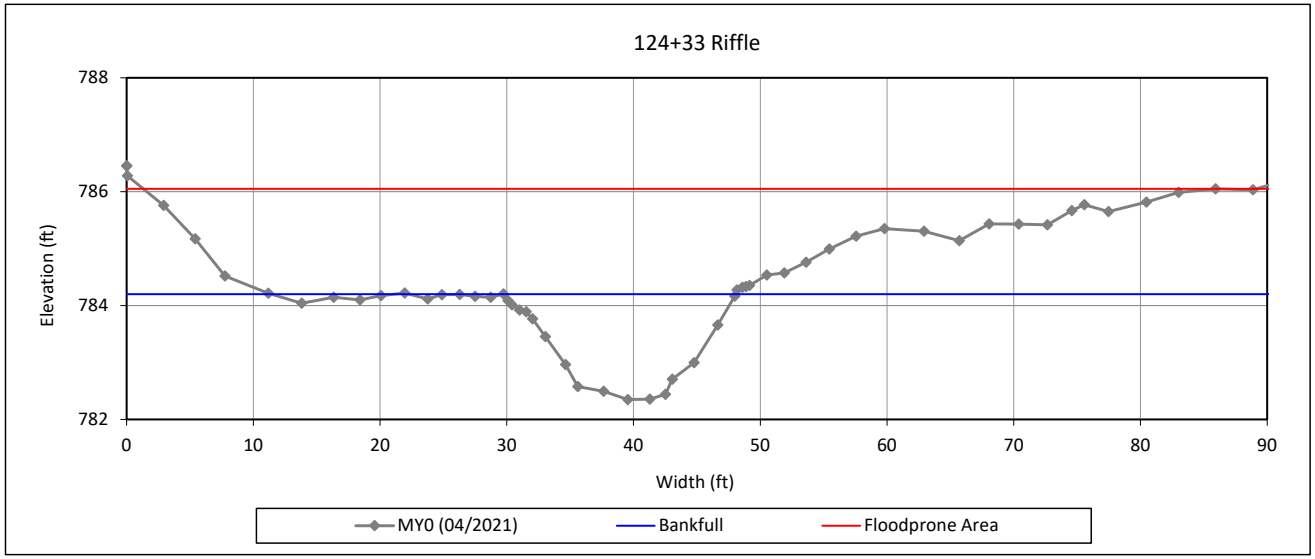
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 11-Wyant Creek R3



Bankfull Dimensions	
21.5	x-section area (ft.sq.)
18.0	width (ft)
1.2	mean depth (ft)
1.9	max depth (ft)
18.5	wetted perimeter (ft)
1.2	hydraulic radius (ft)
15.0	width-depth ratio
87.8	W flood prone area (ft)
4.9	entrenchment ratio
1.0	low bank height ratio

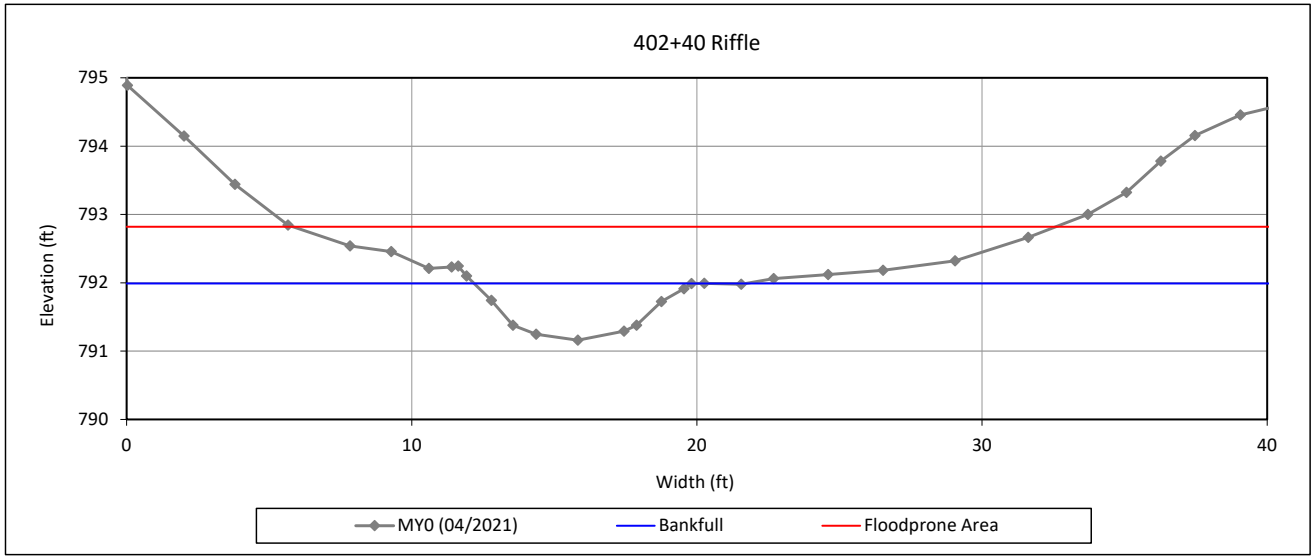
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 12-UT3 R1



Bankfull Dimensions	
4.2	x-section area (ft.sq.)
7.6	width (ft)
0.5	mean depth (ft)
0.8	max depth (ft)
7.9	wetted perimeter (ft)
0.5	hydraulic radius (ft)
14.0	width-depth ratio
26.8	W flood prone area (ft)
3.5	entrenchment ratio
1.0	low bank height ratio

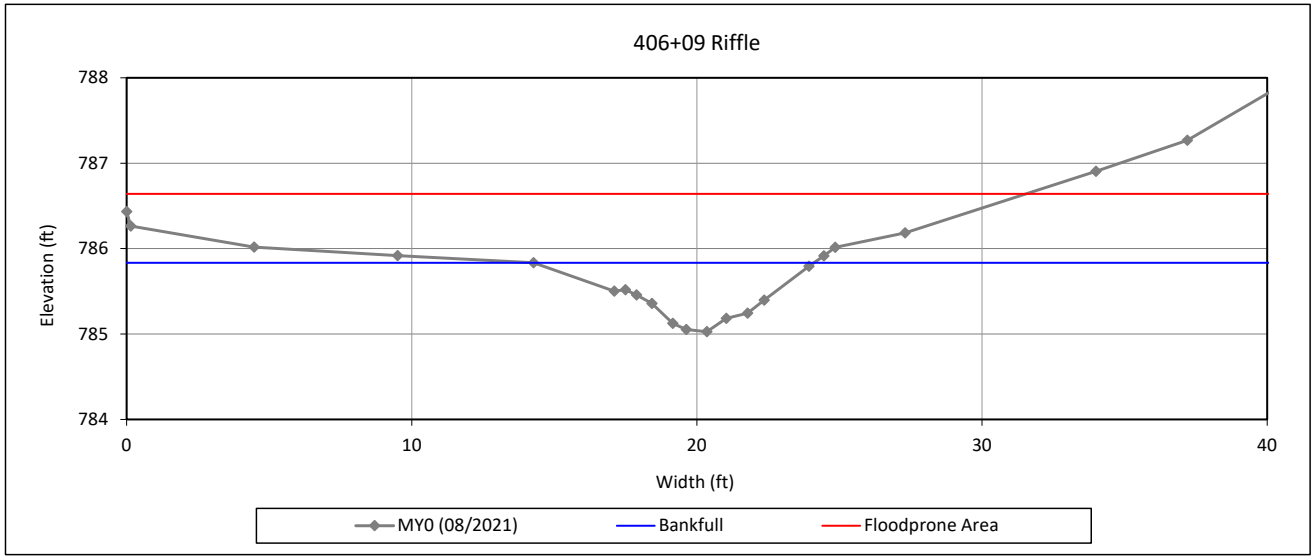
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 13-UT3 R2



Bankfull Dimensions	
4.0	x-section area (ft.sq.)
9.8	width (ft)
0.4	mean depth (ft)
0.8	max depth (ft)
10.0	wetted perimeter (ft)
0.4	hydraulic radius (ft)
24.4	width-depth ratio
31.5	W flood prone area (ft)
3.2	entrenchment ratio
1.0	low bank height ratio

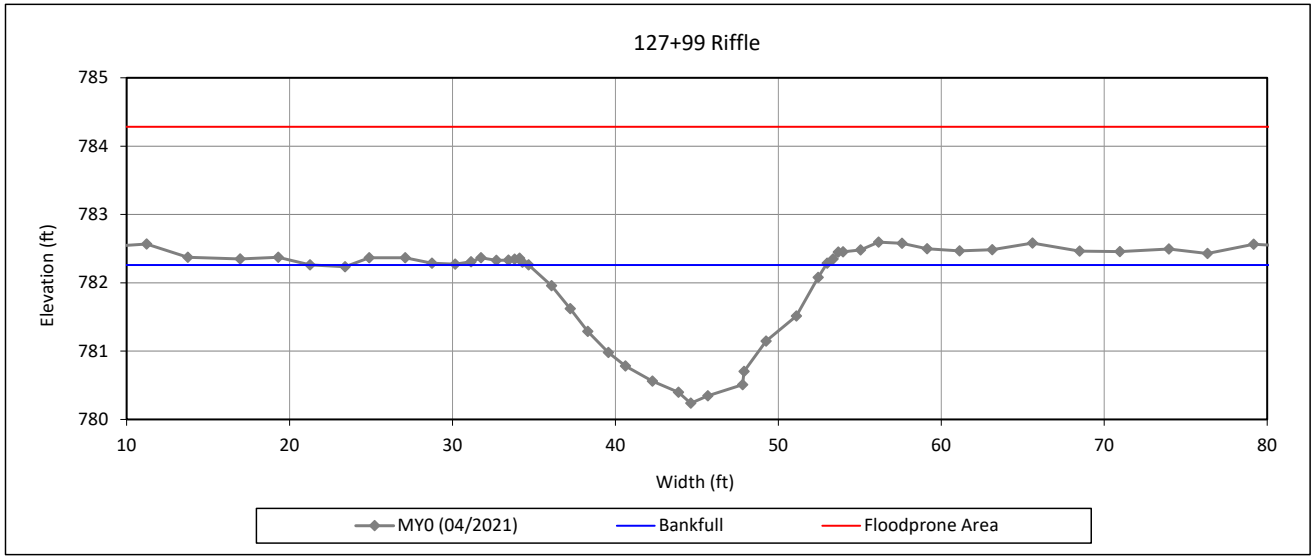
Survey Date: 08/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 14 - Wyant Creek R4



Bankfull Dimensions	
21.7	x-section area (ft.sq.)
18.3	width (ft)
1.2	mean depth (ft)
2.0	max depth (ft)
18.9	wetted perimeter (ft)
1.2	hydraulic radius (ft)
15.3	width-depth ratio
93.8	W flood prone area (ft)
5.1	entrenchment ratio
1.0	low bank height ratio

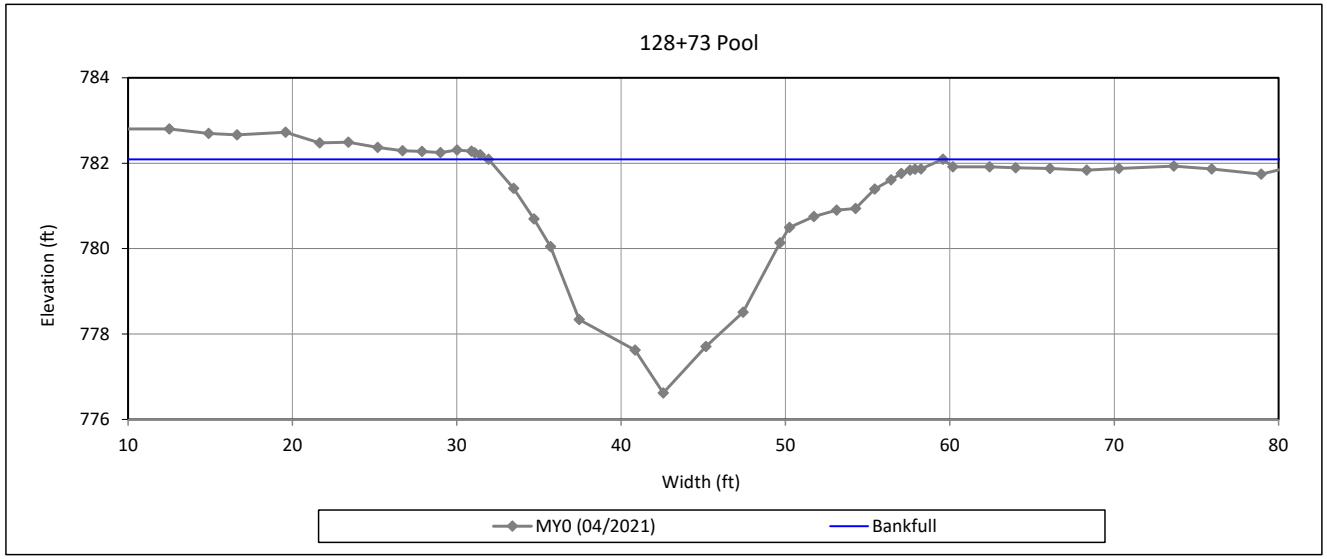
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 15-Wyant Creek R4



Bankfull Dimensions	
67.8	x-section area (ft.sq.)
27.6	width (ft)
2.5	mean depth (ft)
5.5	max depth (ft)
30.4	wetted perimeter (ft)
2.2	hydraulic radius (ft)
11.3	width-depth ratio

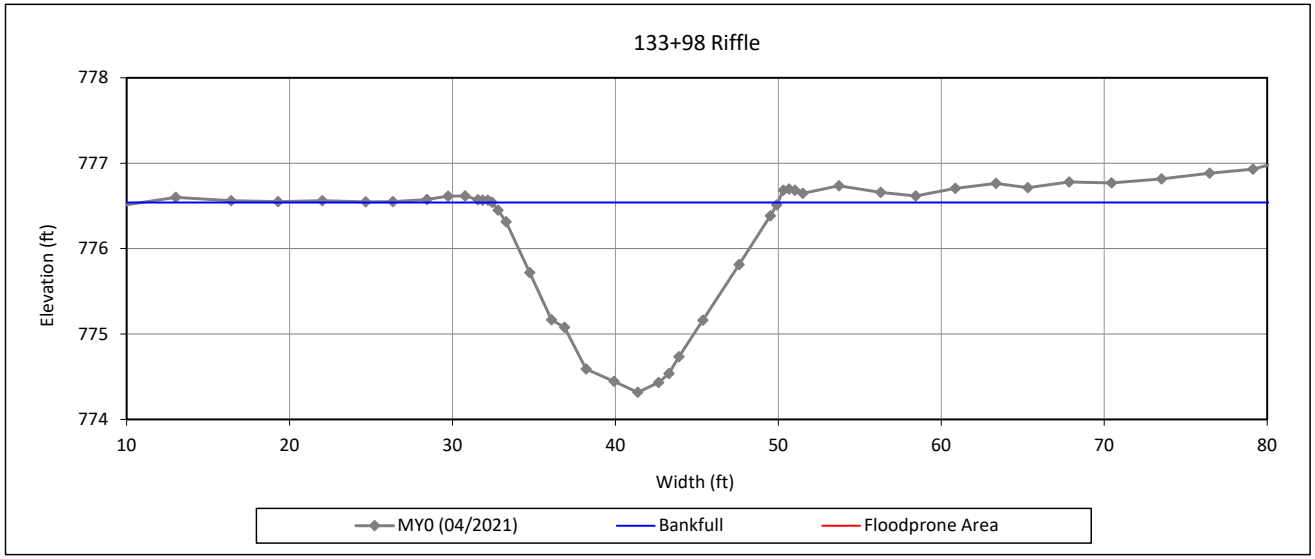
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 16 - Wyant Creek R4



Bankfull Dimensions	
23.1	x-section area (ft.sq.)
17.5	width (ft)
1.3	mean depth (ft)
2.2	max depth (ft)
18.2	wetted perimeter (ft)
1.3	hydraulic radius (ft)
13.3	width-depth ratio
81.8	W flood prone area (ft)
4.7	entrenchment ratio
1.0	low bank height ratio

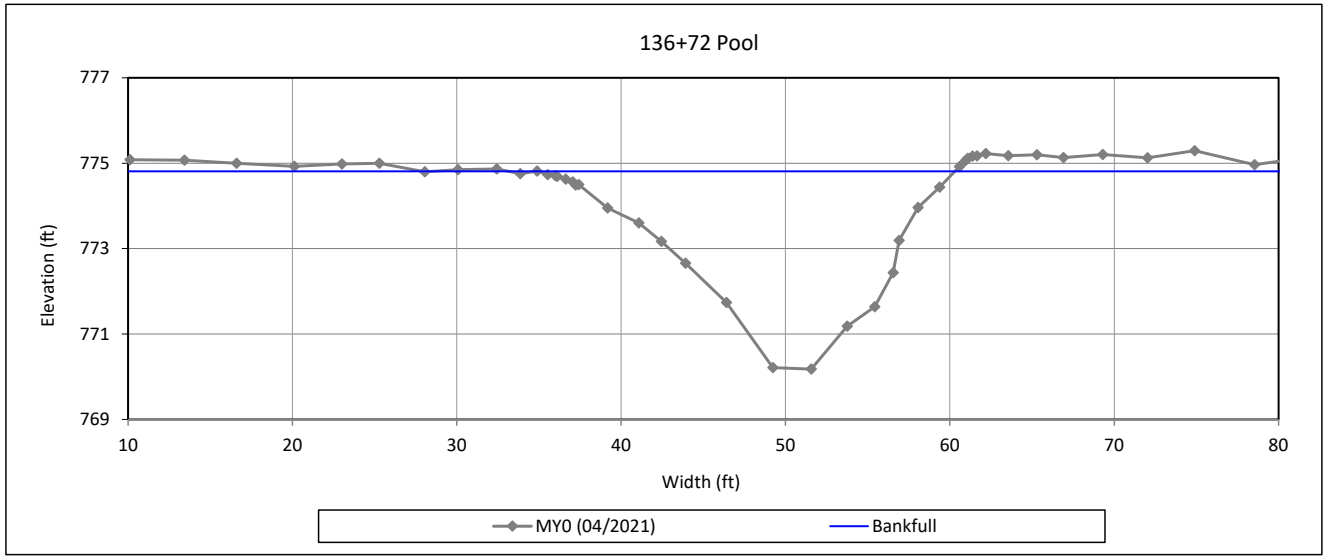
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 17 - Wyant Creek R4



Bankfull Dimensions	
57.2	x-section area (ft.sq.)
25.4	width (ft)
2.3	mean depth (ft)
4.6	max depth (ft)
27.6	wetted perimeter (ft)
2.1	hydraulic radius (ft)
11.3	width-depth ratio

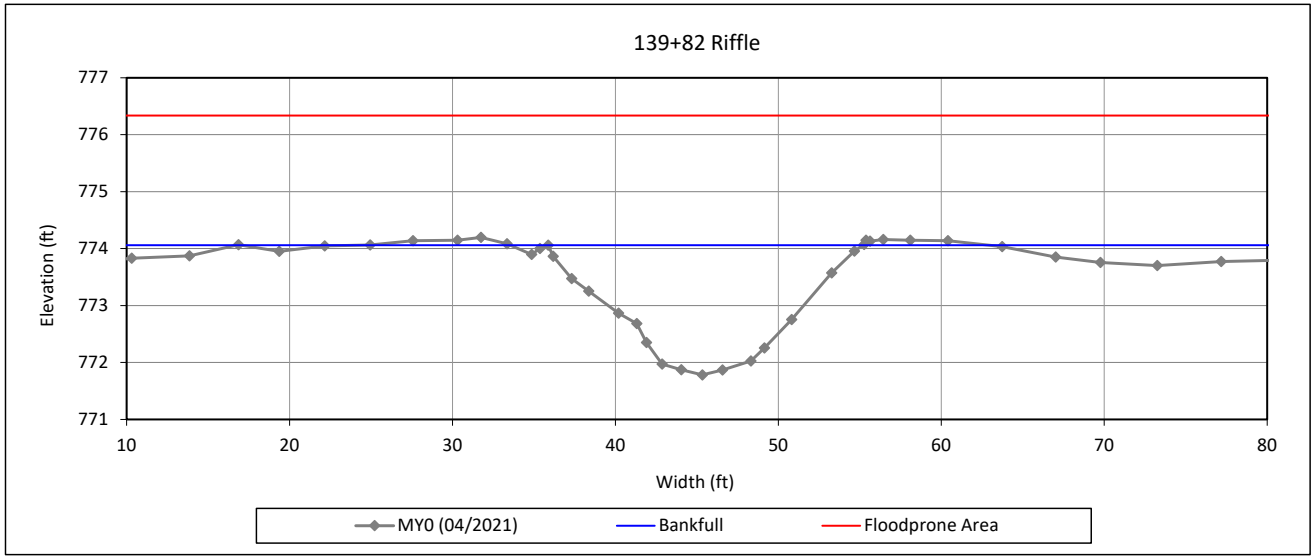
Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Cross-Section 18 - Wyant Creek R4



Bankfull Dimensions	
25.9	x-section area (ft.sq.)
19.3	width (ft)
1.3	mean depth (ft)
2.3	max depth (ft)
20.0	wetted perimeter (ft)
1.3	hydraulic radius (ft)
14.4	width-depth ratio
82.9	W flood prone area (ft)
4.3	entrenchment ratio
1.0	low bank height ratio

Survey Date: 04/2021
Field Crew: Kee Mapping & Surveying

View Downstream

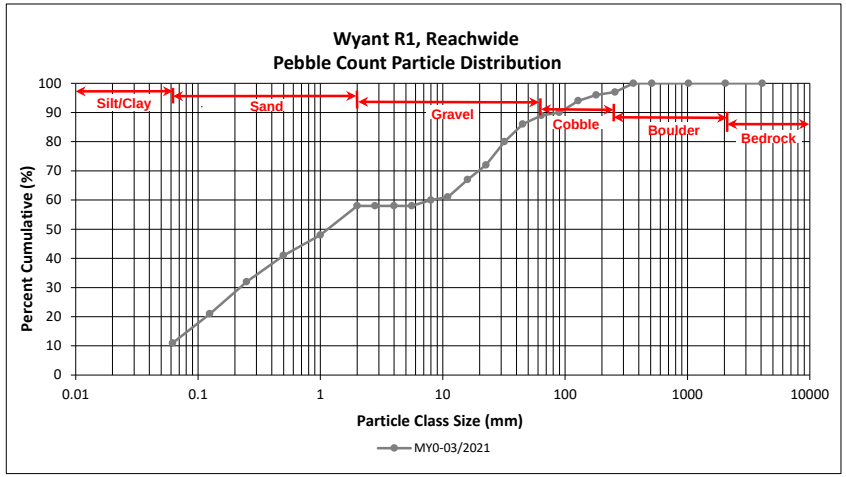
Reachwide and Cross-Section Pebble Count Plots

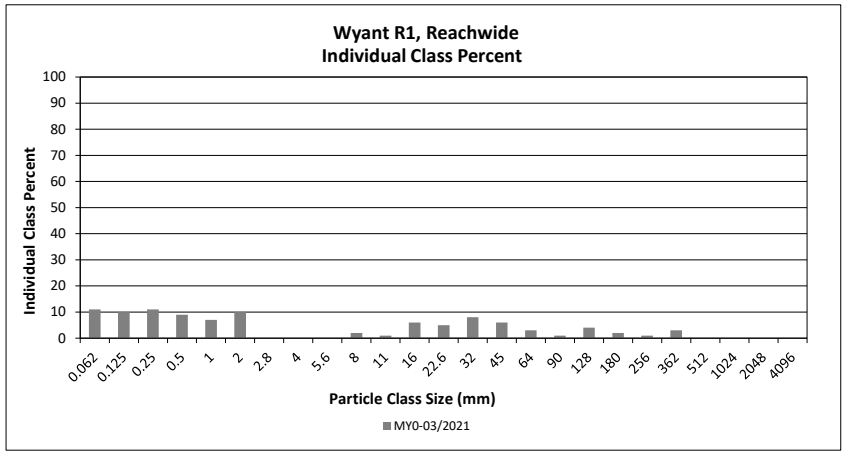
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R1, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	10	11	11	11
SAND	Very fine	0.062	0.125		10	10	10	21
	Fine	0.125	0.250		11	11	11	32
	Medium	0.25	0.50		9	9	9	41
	Coarse	0.5	1.0	4	3	7	7	48
	Very Coarse	1.0	2.0	5	5	10	10	58
GRAVEL	Very Fine	2.0	2.8					58
	Very Fine	2.8	4.0					58
	Fine	4.0	5.6					58
	Fine	5.6	8.0	2		2	2	60
	Medium	8.0	11.0	1		1	1	61
	Medium	11.0	16.0	6		6	6	67
	Coarse	16.0	22.6	4	1	5	5	72
	Coarse	22.6	32	7	1	8	8	80
	Very Coarse	32	45	6		6	6	86
	Very Coarse	45	64	3		3	3	89
COBBLE	Small	64	90	1		1	1	90
	Small	90	128	4		4	4	94
	Large	128	180	2		2	2	96
	Large	180	256	1		1	1	97
BOULDER	Small	256	362	3		3	3	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.1
D_{35} =	0.3
D_{50} =	1.1
D_{84} =	40.2
D_{95} =	151.8
D_{100} =	362.0





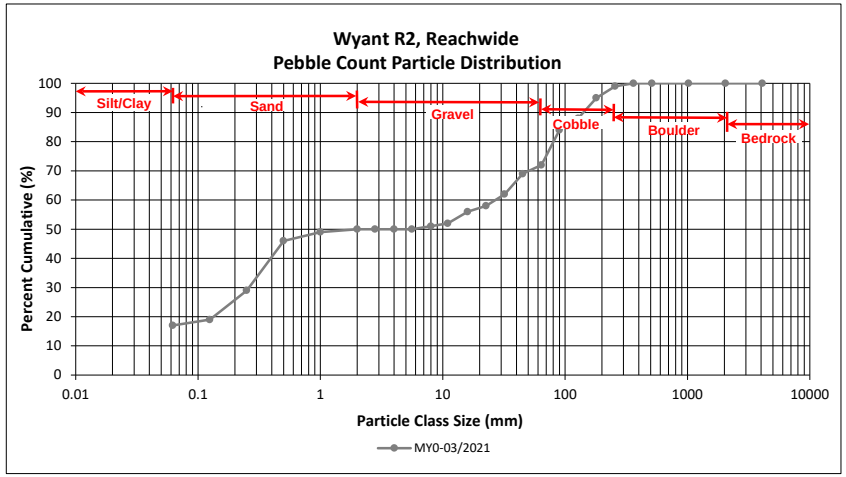
Reachwide and Cross-Section Pebble Count Plots

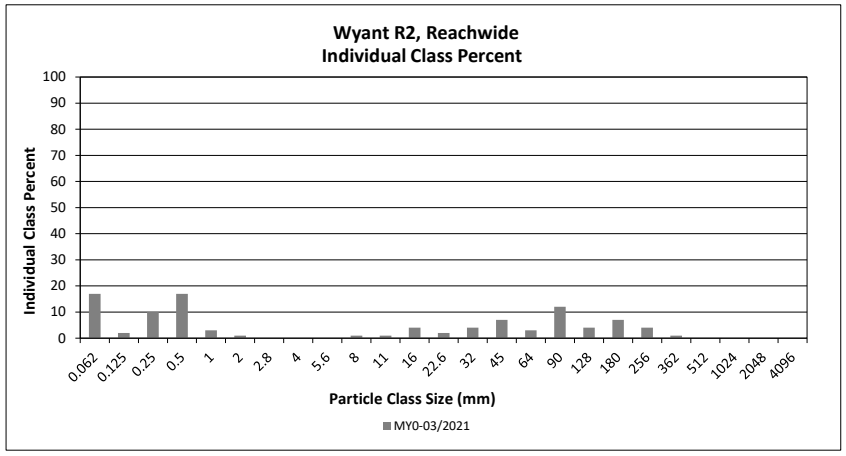
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R2, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	16	17	17	17
SAND	Very fine	0.062	0.125		2	2	2	19
	Fine	0.125	0.250		10	10	10	29
	Medium	0.25	0.50		17	17	17	46
	Coarse	0.5	1.0		3	3	3	49
	Very Coarse	1.0	2.0	1		1	1	50
GRAVEL	Very Fine	2.0	2.8					50
	Very Fine	2.8	4.0					50
	Fine	4.0	5.6					50
	Fine	5.6	8.0	1		1	1	51
	Medium	8.0	11.0	1		1	1	52
	Medium	11.0	16.0	3	1	4	4	56
	Coarse	16.0	22.6	2		2	2	58
	Coarse	22.6	32	4		4	4	62
	Very Coarse	32	45	6	1	7	7	69
	Very Coarse	45	64	3		3	3	72
COBBLE	Small	64	90	12		12	12	84
	Small	90	128	4		4	4	88
	Large	128	180	7		7	7	95
	Large	180	256	4		4	4	99
BOULDER	Small	256	362	1		1	1	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	50	50	100	100	100

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.3
D_{50} =	2.0
D_{84} =	90.0
D_{95} =	180.0
D_{100} =	362.0





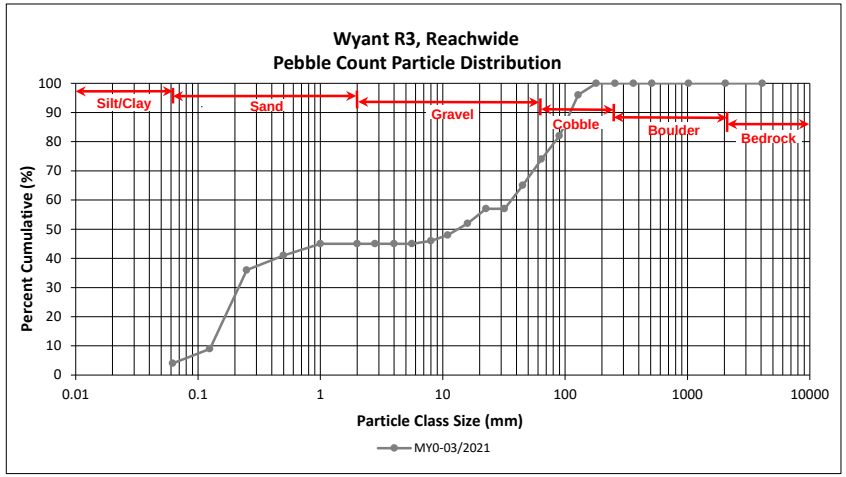
Reachwide and Cross-Section Pebble Count Plots

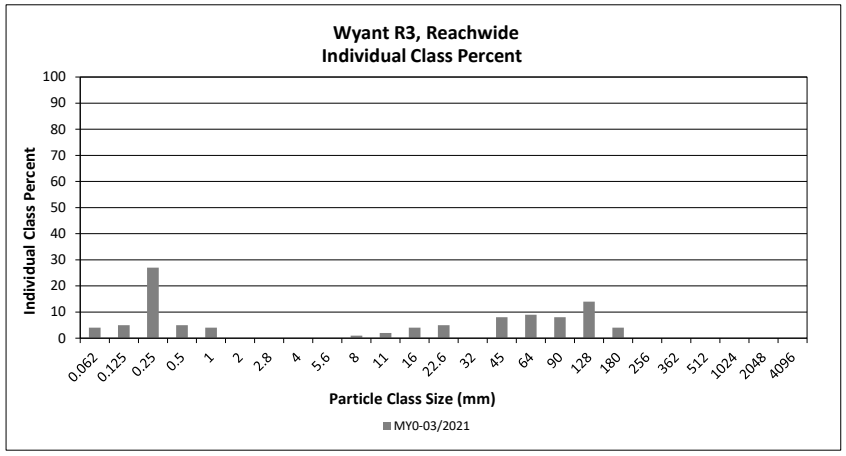
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R3, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		4	4	4	4
SAND	Very fine	0.062	0.125		5	5	5	9
	Fine	0.125	0.250	2	25	27	27	36
	Medium	0.25	0.50	2	3	5	5	41
	Coarse	0.5	1.0		4	4	4	45
	Very Coarse	1.0	2.0					45
GRAVEL	Very Fine	2.0	2.8					45
	Very Fine	2.8	4.0					45
	Fine	4.0	5.6					45
	Fine	5.6	8.0	1		1	1	46
	Medium	8.0	11.0		2	2	2	48
	Medium	11.0	16.0	3	1	4	4	52
	Coarse	16.0	22.6	2	3	5	5	57
	Coarse	22.6	32					57
	Very Coarse	32	45	7	1	8	8	65
	Very Coarse	45	64	7	2	9	9	74
COBBLE	Small	64	90	8		8	8	82
	Small	90	128	14		14	14	96
	Large	128	180	4		4	4	100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.1
D_{35} =	0.2
D_{50} =	13.3
D_{84} =	94.6
D_{95} =	124.8
D_{100} =	180.0





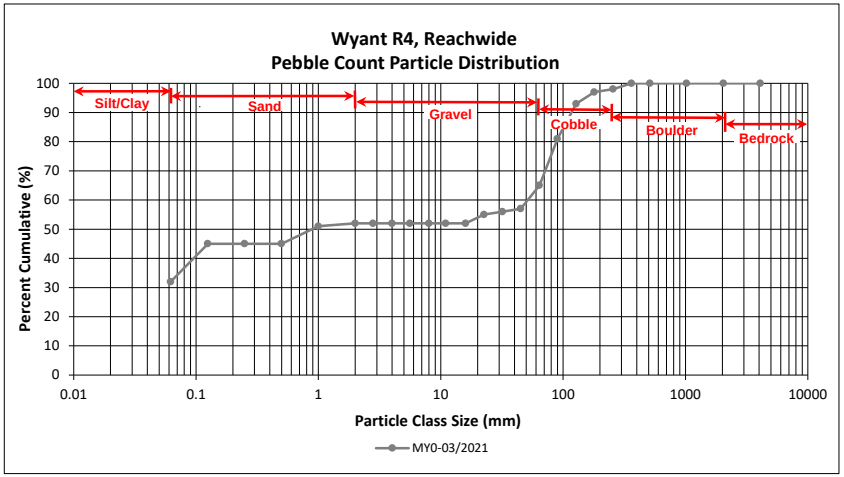
Reachwide and Cross-Section Pebble Count Plots

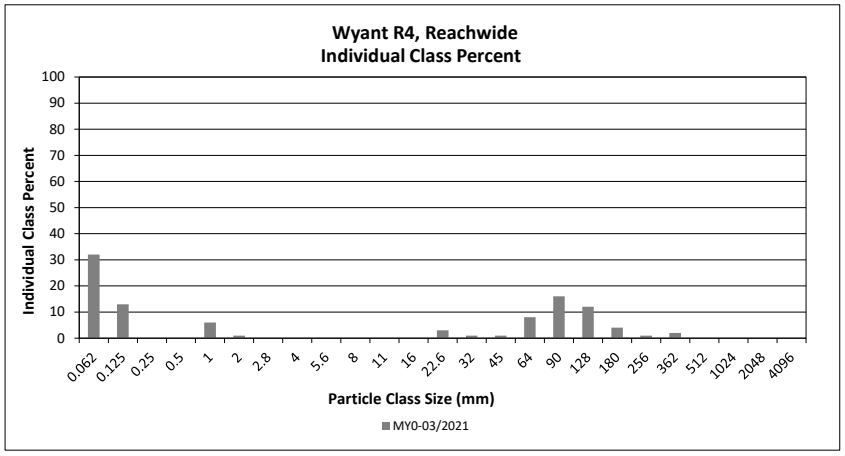
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R4, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		32	32	32	32
SAND	Very fine	0.062	0.125		13	13	13	45
	Fine	0.125	0.250					45
	Medium	0.25	0.50					45
	Coarse	0.5	1.0	1	5	6	6	51
	Very Coarse	1.0	2.0	1		1	1	52
GRAVEL	Very Fine	2.0	2.8					52
	Very Fine	2.8	4.0					52
	Fine	4.0	5.6					52
	Fine	5.6	8.0					52
	Medium	8.0	11.0					52
	Medium	11.0	16.0					52
	Coarse	16.0	22.6	3		3	3	55
	Coarse	22.6	32	1		1	1	56
	Very Coarse	32	45	1		1	1	57
	Very Coarse	45	64	8		8	8	65
COBBLE	Small	64	90	16		16	16	81
	Small	90	128	12		12	12	93
	Large	128	180	4		4	4	97
	Large	180	256	1		1	1	98
BOULDER	Small	256	362	2		2	2	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.1
D_{50} =	0.9
D_{84} =	98.3
D_{95} =	151.8
D_{100} =	362.0





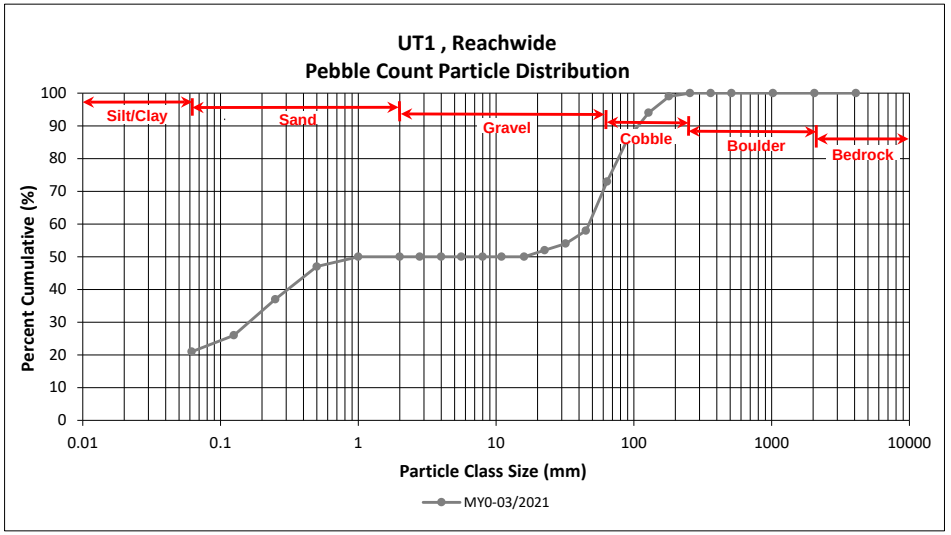
Reachwide and Cross-Section Pebble Count Plots

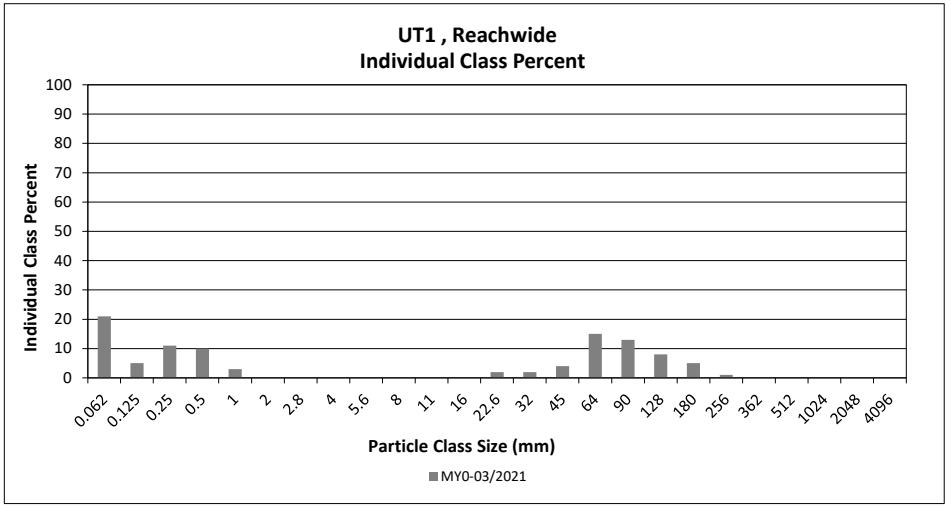
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT1 , Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		21	21	21	21
SAND	Very fine	0.062	0.125		5	5	5	26
	Fine	0.125	0.250		11	11	11	37
	Medium	0.25	0.50		10	10	10	47
	Coarse	0.5	1.0		3	3	3	50
	Very Coarse	1.0	2.0					50
GRAVEL	Very Fine	2.0	2.8					50
	Very Fine	2.8	4.0					50
	Fine	4.0	5.6					50
	Fine	5.6	8.0					50
	Medium	8.0	11.0					50
	Medium	11.0	16.0					50
	Coarse	16.0	22.6	2		2	2	52
	Coarse	22.6	32	2		2	2	54
	Very Coarse	32	45	4		4	4	58
	Very Coarse	45	64	15		15	15	73
COBBLE	Small	64	90	13		13	13	86
	Small	90	128	8		8	8	94
	Large	128	180	5		5	5	99
	Large	180	256	1		1	1	100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	50	50	100	100	100

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.2
D_{50} =	1.0
D_{84} =	85.4
D_{95} =	137.0
D_{100} =	256.0





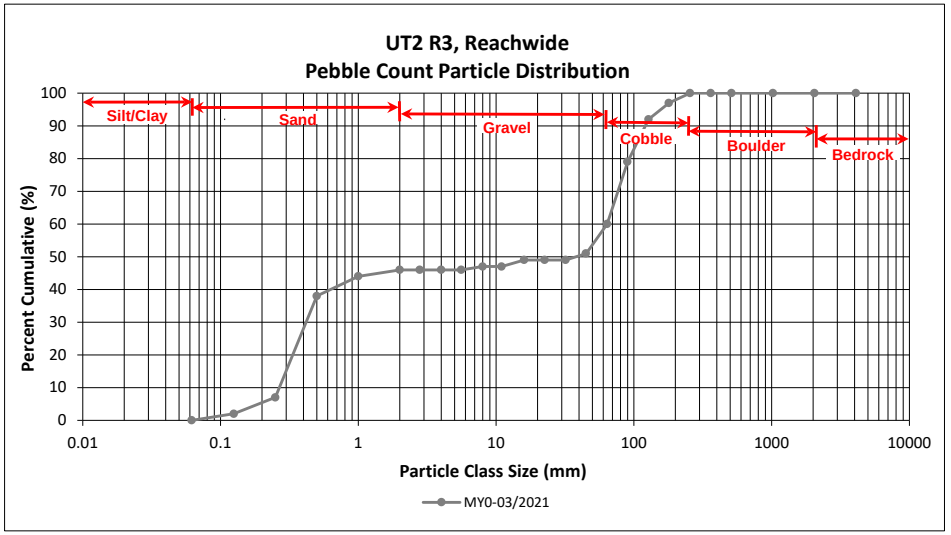
Reachwide and Cross-Section Pebble Count Plots

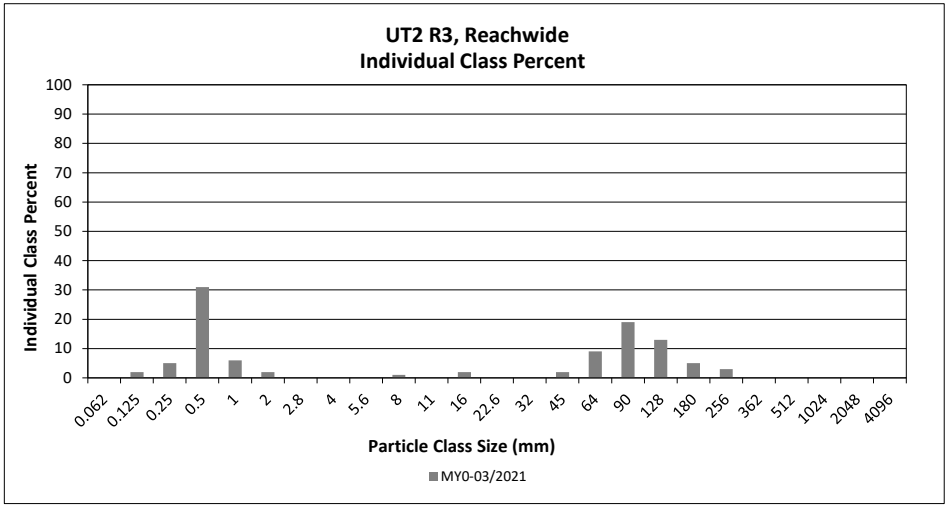
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT2 R3, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062					0
SAND	Very fine	0.062	0.125		2	2	2	2
	Fine	0.125	0.250		5	5	5	7
	Medium	0.25	0.50		31	31	31	38
	Coarse	0.5	1.0		6	6	6	44
	Very Coarse	1.0	2.0		2	2	2	46
GRAVEL	Very Fine	2.0	2.8					46
	Very Fine	2.8	4.0					46
	Fine	4.0	5.6					46
	Fine	5.6	8.0		1	1	1	47
	Medium	8.0	11.0					47
	Medium	11.0	16.0		2	2	2	49
	Coarse	16.0	22.6					49
	Coarse	22.6	32					49
	Very Coarse	32	45	2		2	2	51
	Very Coarse	45	64	9		9	9	60
COBBLE	Small	64	90	19		19	19	79
	Small	90	128	12	1	13	13	92
	Large	128	180	5		5	5	97
	Large	180	256	3		3	3	100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.3
D_{35} =	0.5
D_{50} =	37.9
D_{84} =	103.1
D_{95} =	157.1
D_{100} =	256.0





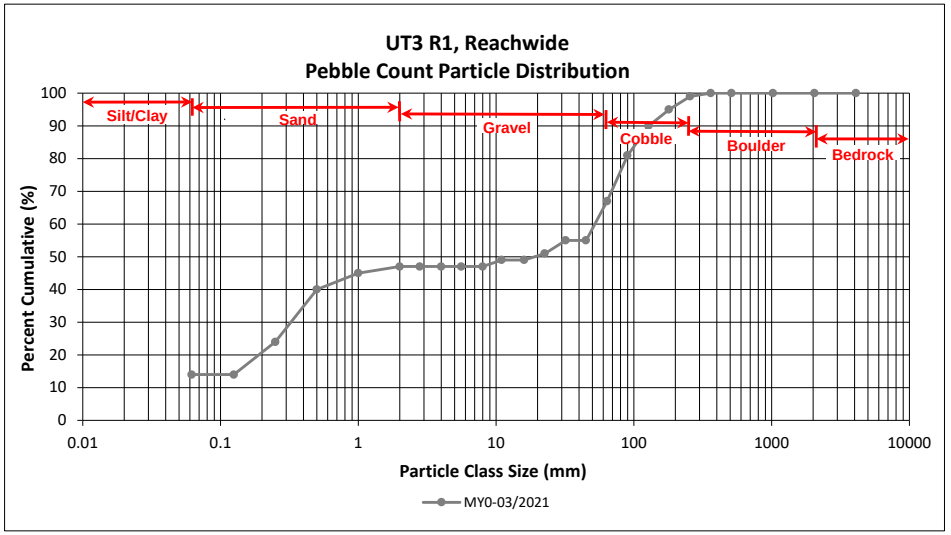
Reachwide and Cross-Section Pebble Count Plots

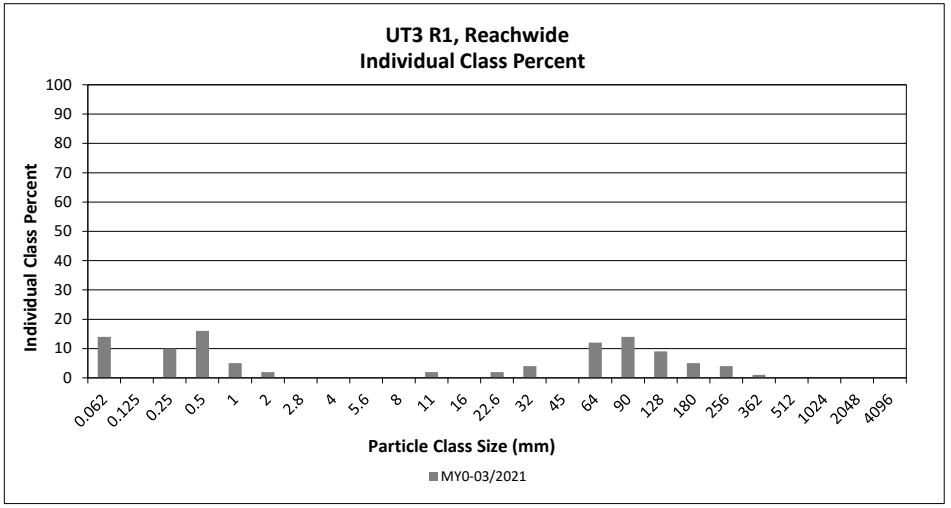
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT3 R1, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	13	14	14	14
SAND	Very fine	0.062	0.125					14
	Fine	0.125	0.250		10	10	10	24
	Medium	0.25	0.50	1	15	16	16	40
	Coarse	0.5	1.0	1	4	5	5	45
	Very Coarse	1.0	2.0	1	1	2	2	47
GRAVEL	Very Fine	2.0	2.8					47
	Very Fine	2.8	4.0					47
	Fine	4.0	5.6					47
	Fine	5.6	8.0					47
	Medium	8.0	11.0	1	1	2	2	49
	Medium	11.0	16.0					49
	Coarse	16.0	22.6		2	2	2	51
	Coarse	22.6	32	1	3	4	4	55
	Very Coarse	32	45					55
	Very Coarse	45	64	11	1	12	12	67
COBBLE	Small	64	90	14		14	14	81
	Small	90	128	9		9	9	90
	Large	128	180	5		5	5	95
	Large	180	256	4		4	4	99
BOULDER	Small	256	362	1		1	1	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	50	50	100	100	100

Reachwide	
Channel materials (mm)	
D_{16} =	0.1
D_{35} =	0.4
D_{50} =	19.0
D_{84} =	101.2
D_{95} =	180.0
D_{100} =	362.0





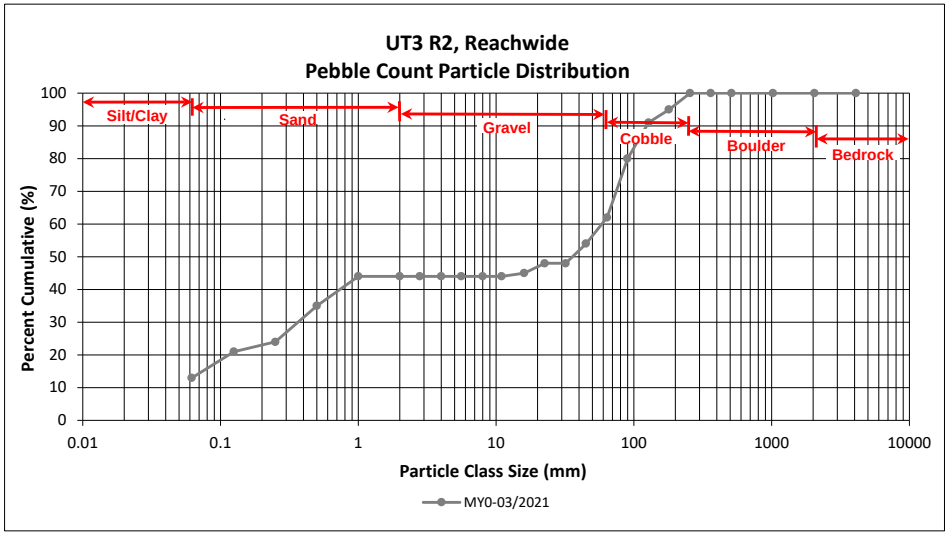
Reachwide and Cross-Section Pebble Count Plots

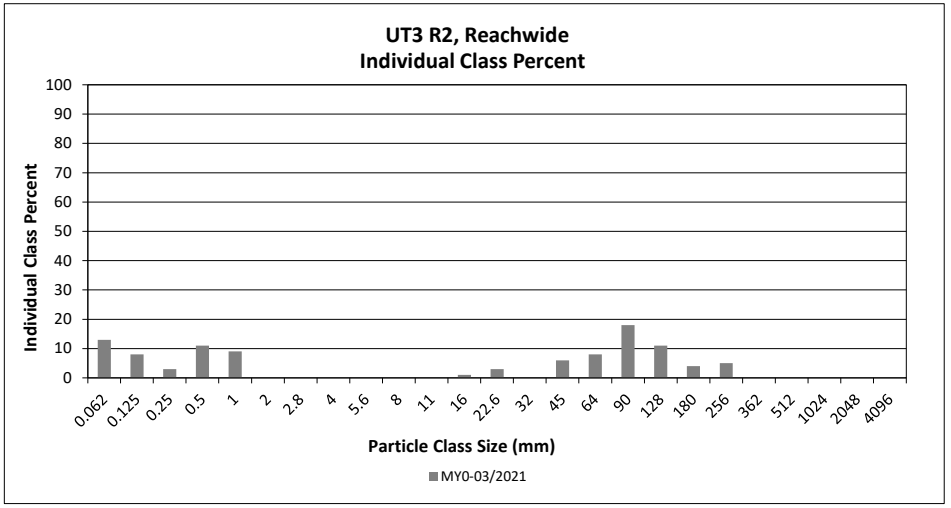
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT3 R2, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	11	13	13	13
SAND	Very fine	0.062	0.125		8	8	8	21
	Fine	0.125	0.250		3	3	3	24
	Medium	0.25	0.50		11	11	11	35
	Coarse	0.5	1.0		9	9	9	44
	Very Coarse	1.0	2.0					44
GRAVEL	Very Fine	2.0	2.8					44
	Very Fine	2.8	4.0					44
	Fine	4.0	5.6					44
	Fine	5.6	8.0					44
	Medium	8.0	11.0					44
	Medium	11.0	16.0		1	1	1	45
	Coarse	16.0	22.6		3	3	3	48
	Coarse	22.6	32					48
	Very Coarse	32	45	4	2	6	6	54
	Very Coarse	45	64	7	1	8	8	62
COBBLE	Small	64	90	17	1	18	18	80
	Small	90	128	11		11	11	91
	Large	128	180	4		4	4	95
	Large	180	256	5		5	5	100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.1
D_{35} =	0.5
D_{50} =	35.9
D_{84} =	102.3
D_{95} =	180.0
D_{100} =	256.0





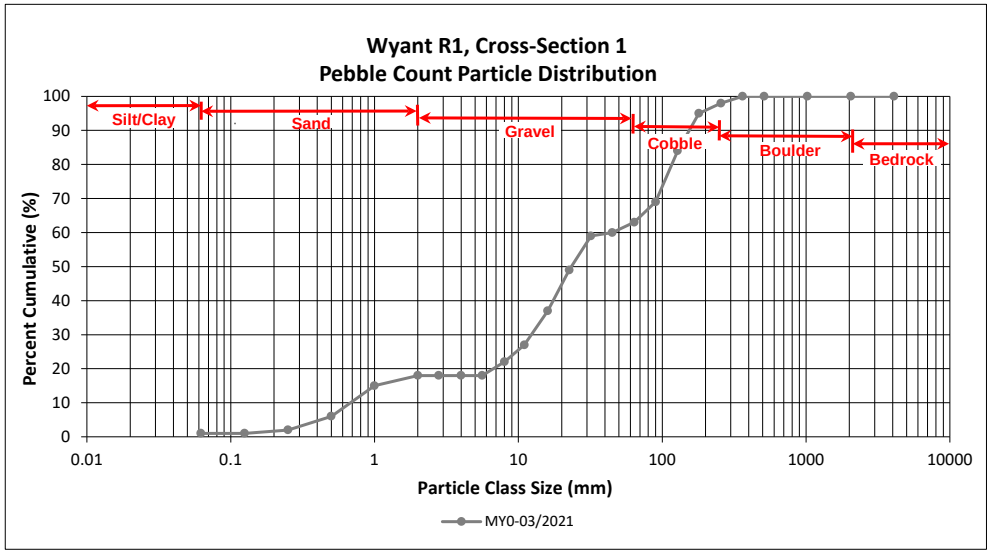
Reachwide and Cross-Section Pebble Count Plots

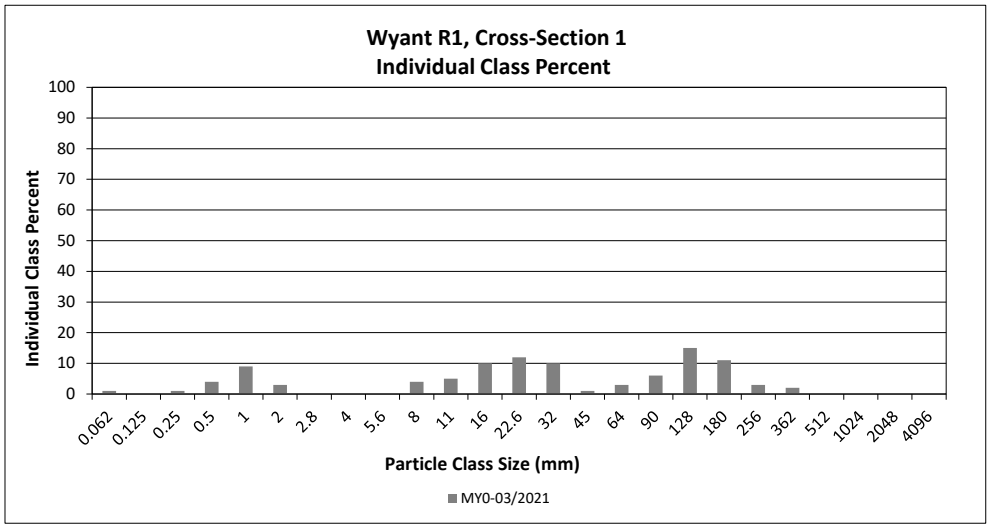
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R1, Cross-Section 1

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	1	1
SAND	Very fine	0.062	0.125			1
	Fine	0.125	0.250	1	1	2
	Medium	0.25	0.50	4	4	6
	Coarse	0.5	1.0	9	9	15
	Very Coarse	1.0	2.0	3	3	18
GRAVEL	Very Fine	2.0	2.8			18
	Very Fine	2.8	4.0			18
	Fine	4.0	5.6			18
	Fine	5.6	8.0	4	4	22
	Medium	8.0	11.0	5	5	27
	Medium	11.0	16.0	10	10	37
	Coarse	16.0	22.6	12	12	49
	Coarse	22.6	32	10	10	59
	Very Coarse	32	45	1	1	60
	Very Coarse	45	64	3	3	63
COBBLE	Small	64	90	6	6	69
	Small	90	128	15	15	84
	Large	128	180	11	11	95
	Large	180	256	3	3	98
BOULDER	Small	256	362	2	2	100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	100	100	100

Cross-Section 1	
Channel materials (mm)	
D_{16} =	1.3
D_{35} =	14.8
D_{50} =	23.4
D_{84} =	128.0
D_{95} =	180.0
D_{100} =	362.0





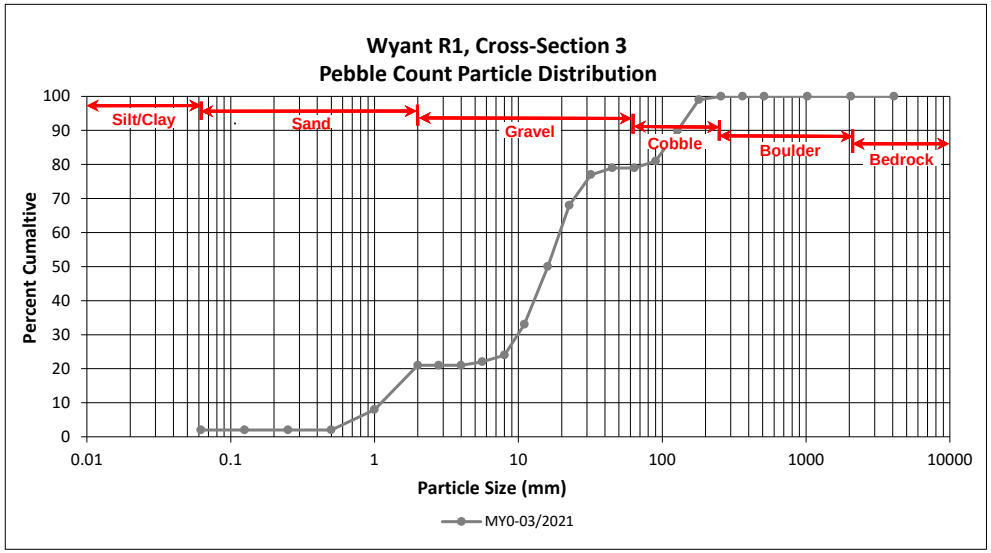
Reachwide and Cross-Section Pebble Count Plots

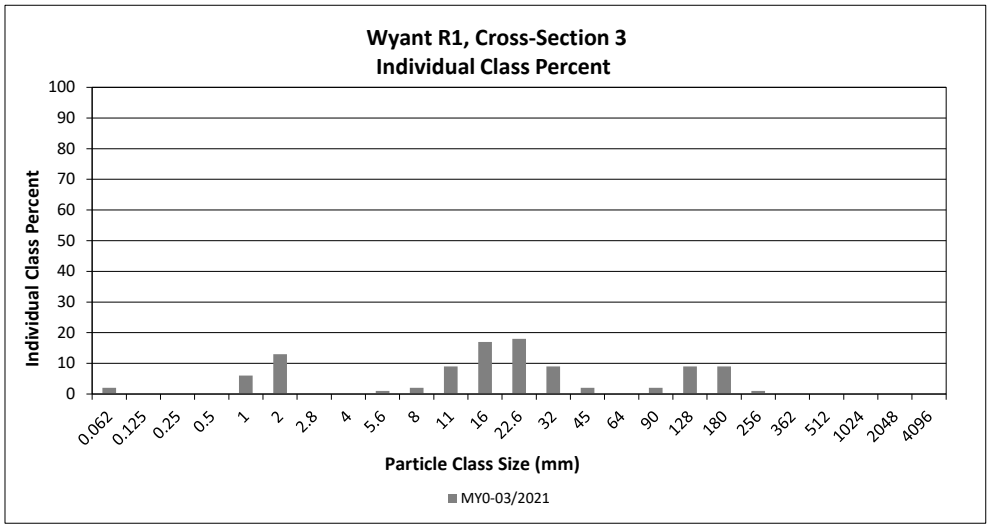
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R1, Cross-Section 3

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	Very fine	0.062	0.125			2
	Fine	0.125	0.250			2
	Medium	0.25	0.50			2
	Coarse	0.5	1.0	6	6	8
	Very Coarse	1.0	2.0	13	13	21
GRAVEL	Very Fine	2.0	2.8			21
	Very Fine	2.8	4.0			21
	Fine	4.0	5.6	1	1	22
	Fine	5.6	8.0	2	2	24
	Medium	8.0	11.0	9	9	33
	Medium	11.0	16.0	17	17	50
	Coarse	16.0	22.6	18	18	68
	Coarse	22.6	32	9	9	77
	Very Coarse	32	45	2	2	79
	Very Coarse	45	64			79
COBBLE	Small	64	90	2	2	81
	Small	90	128	9	9	90
	Large	128	180	9	9	99
	Large	180	256	1	1	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 3	
Channel materials (mm)	
D_{16} =	1.5
D_{35} =	11.5
D_{50} =	16.0
D_{84} =	101.2
D_{95} =	154.7
D_{100} =	256.0





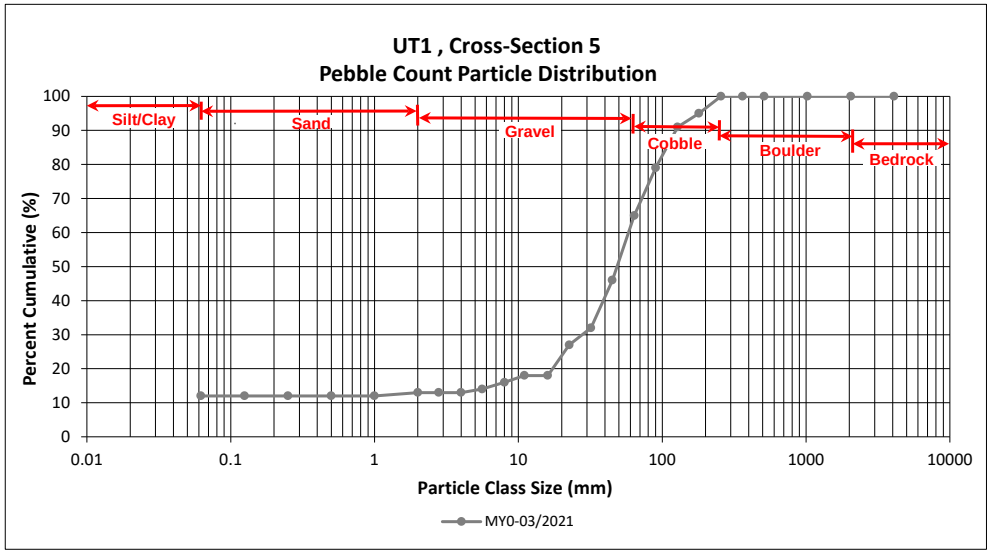
Reachwide and Cross-Section Pebble Count Plots

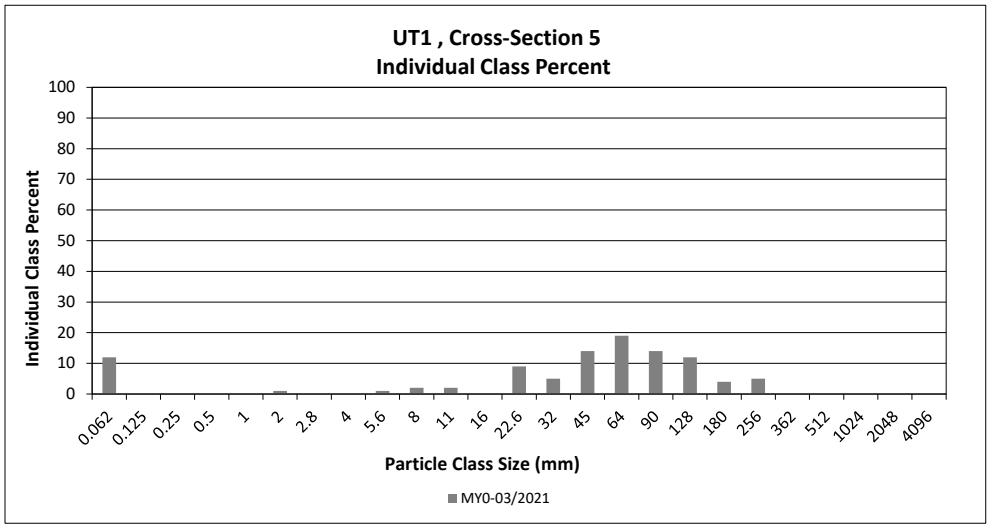
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT1 , Cross-Section 5

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	12	12	12
SAND	Very fine	0.062	0.125			12
	Fine	0.125	0.250			12
	Medium	0.25	0.50			12
	Coarse	0.5	1.0			12
	Very Coarse	1.0	2.0	1	1	13
GRAVEL	Very Fine	2.0	2.8			13
	Very Fine	2.8	4.0			13
	Fine	4.0	5.6	1	1	14
	Fine	5.6	8.0	2	2	16
	Medium	8.0	11.0	2	2	18
	Medium	11.0	16.0			18
	Coarse	16.0	22.6	9	9	27
	Coarse	22.6	32	5	5	32
	Very Coarse	32	45	14	14	46
	Very Coarse	45	64	19	19	65
COBBLE	Small	64	90	14	14	79
	Small	90	128	12	12	91
	Large	128	180	4	4	95
	Large	180	256	5	5	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 5	
Channel materials (mm)	
D_{16} =	8.0
D_{35} =	34.4
D_{50} =	48.5
D_{84} =	104.2
D_{95} =	180.0
D_{100} =	256.0





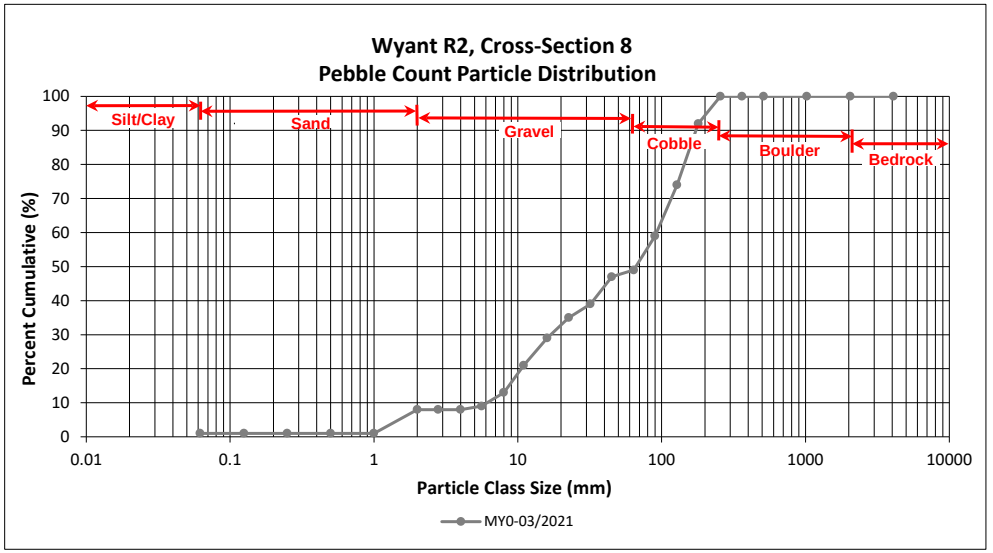
Reachwide and Cross-Section Pebble Count Plots

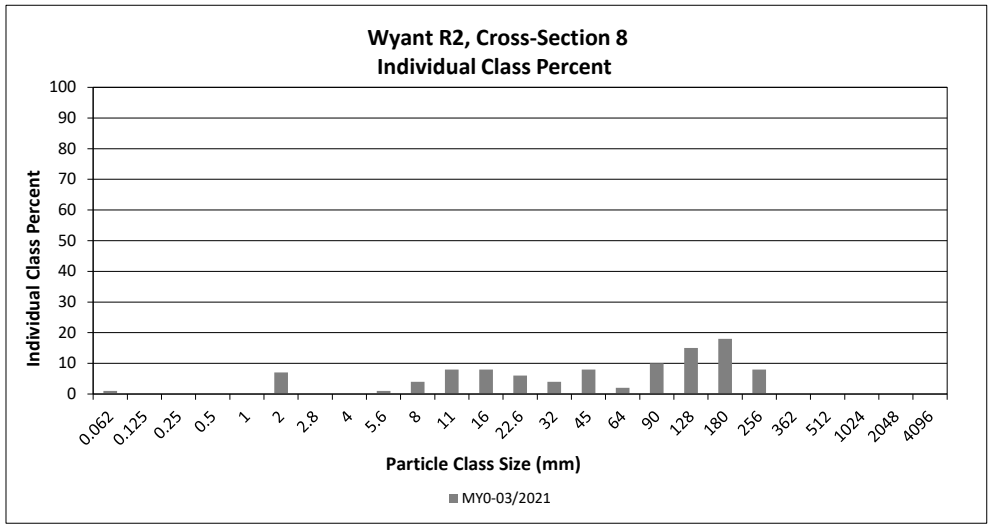
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R2, Cross-Section 8

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	1	1
SAND	Very fine	0.062	0.125			1
	Fine	0.125	0.250			1
	Medium	0.25	0.50			1
	Coarse	0.5	1.0			1
	Very Coarse	1.0	2.0	7	7	8
GRAVEL	Very Fine	2.0	2.8			8
	Very Fine	2.8	4.0			8
	Fine	4.0	5.6	1	1	9
	Fine	5.6	8.0	4	4	13
	Medium	8.0	11.0	8	8	21
	Medium	11.0	16.0	8	8	29
	Coarse	16.0	22.6	6	6	35
	Coarse	22.6	32	4	4	39
	Very Coarse	32	45	8	8	47
	Very Coarse	45	64	2	2	49
COBBLE	Small	64	90	10	10	59
	Small	90	128	15	15	74
	Large	128	180	18	18	92
	Large	180	256	8	8	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 8	
Channel materials (mm)	
D_{16} =	9.0
D_{35} =	22.6
D_{50} =	66.2
D_{84} =	154.7
D_{95} =	205.4
D_{100} =	256.0





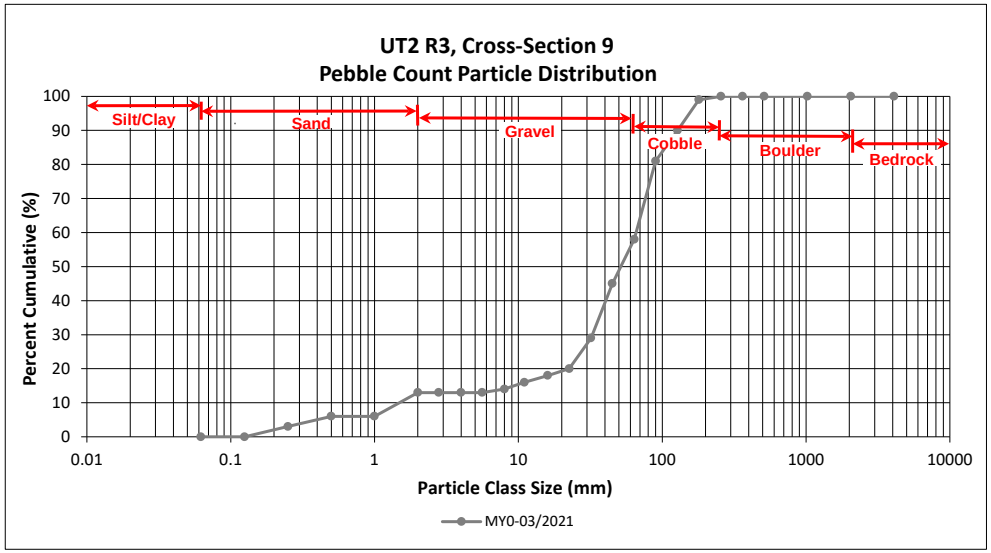
Reachwide and Cross-Section Pebble Count Plots

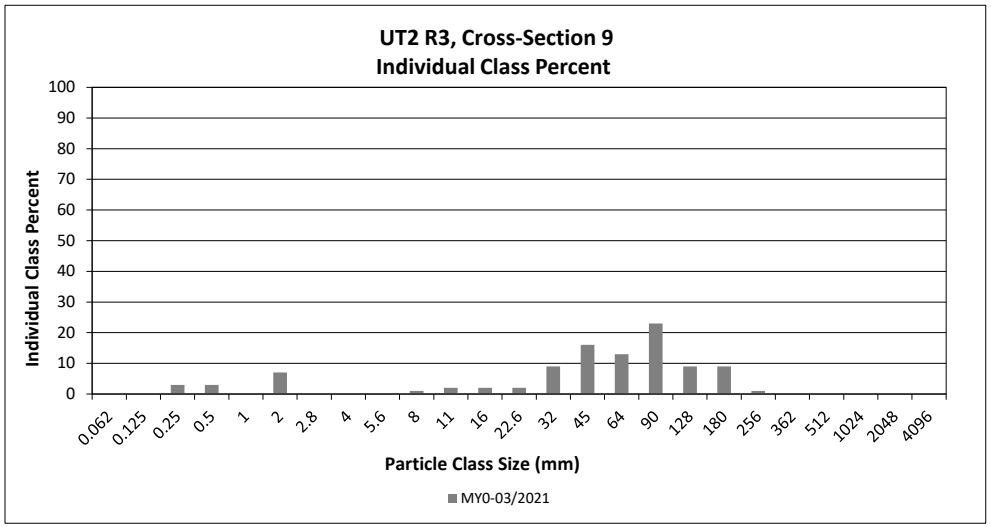
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT2 R3, Cross-Section 9

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	Very fine	0.062	0.125			0
	Fine	0.125	0.250	3	3	3
	Medium	0.25	0.50	3	3	6
	Coarse	0.5	1.0			6
	Very Coarse	1.0	2.0	7	7	13
GRAVEL	Very Fine	2.0	2.8			13
	Very Fine	2.8	4.0			13
	Fine	4.0	5.6			13
	Fine	5.6	8.0	1	1	14
	Medium	8.0	11.0	2	2	16
	Medium	11.0	16.0	2	2	18
	Coarse	16.0	22.6	2	2	20
	Coarse	22.6	32	9	9	29
	Very Coarse	32	45	16	16	45
	Very Coarse	45	64	13	13	58
COBBLE	Small	64	90	23	23	81
	Small	90	128	9	9	90
	Large	128	180	9	9	99
	Large	180	256	1	1	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 9	
Channel materials (mm)	
D_{16} =	11.0
D_{35} =	36.4
D_{50} =	51.5
D_{84} =	101.2
D_{95} =	154.7
D_{100} =	256.0





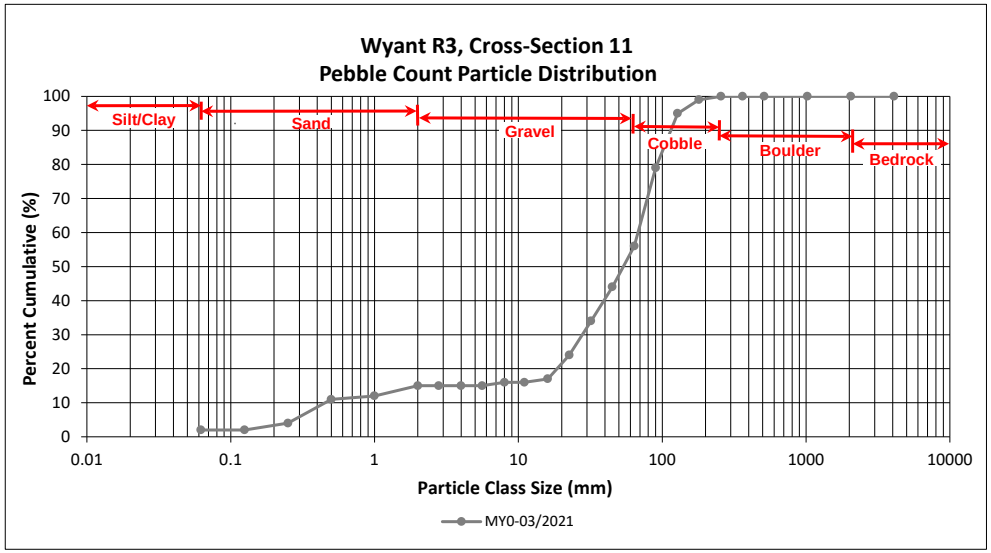
Reachwide and Cross-Section Pebble Count Plots

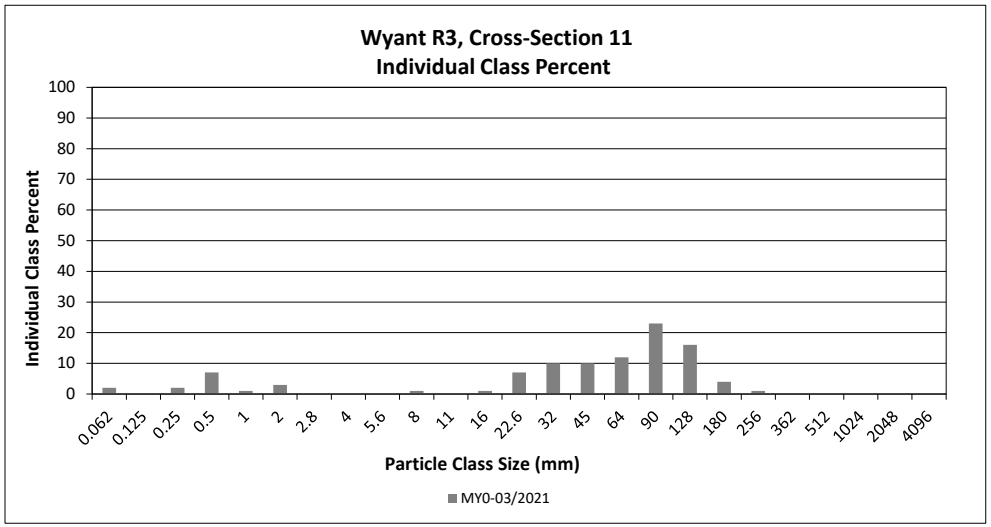
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R3, Cross-Section 11

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	Very fine	0.062	0.125			2
	Fine	0.125	0.250	2	2	4
	Medium	0.25	0.50	7	7	11
	Coarse	0.5	1.0	1	1	12
	Very Coarse	1.0	2.0	3	3	15
GRAVEL	Very Fine	2.0	2.8			15
	Very Fine	2.8	4.0			15
	Fine	4.0	5.6			15
	Fine	5.6	8.0	1	1	16
	Medium	8.0	11.0			16
	Medium	11.0	16.0	1	1	17
	Coarse	16.0	22.6	7	7	24
	Coarse	22.6	32	10	10	34
	Very Coarse	32	45	10	10	44
	Very Coarse	45	64	12	12	56
COBBLE	Small	64	90	23	23	79
	Small	90	128	16	16	95
	Large	128	180	4	4	99
	Large	180	256	1	1	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 11	
Channel materials (mm)	
D_{16} =	8.0
D_{35} =	33.1
D_{50} =	53.7
D_{84} =	100.5
D_{95} =	128.0
D_{100} =	256.0





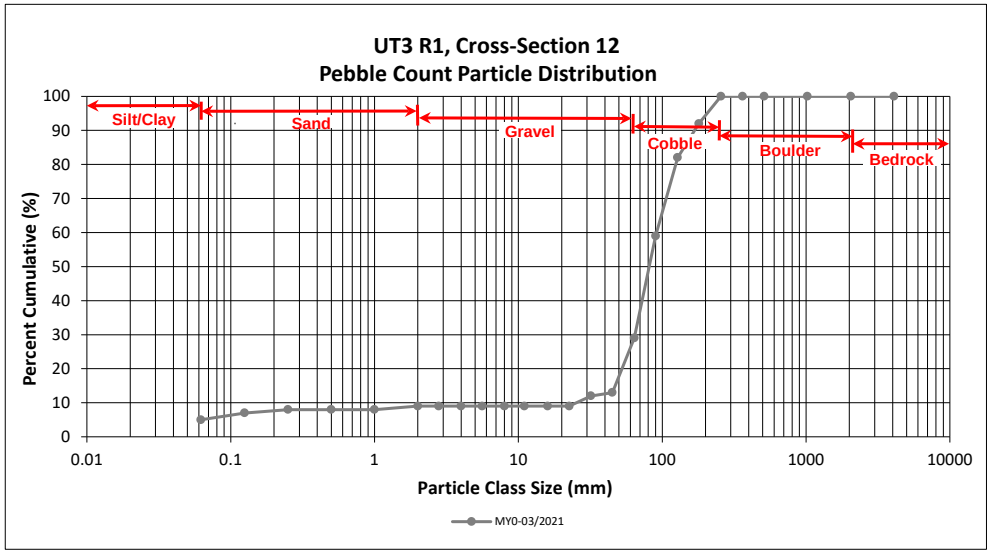
Reachwide and Cross-Section Pebble Count Plots

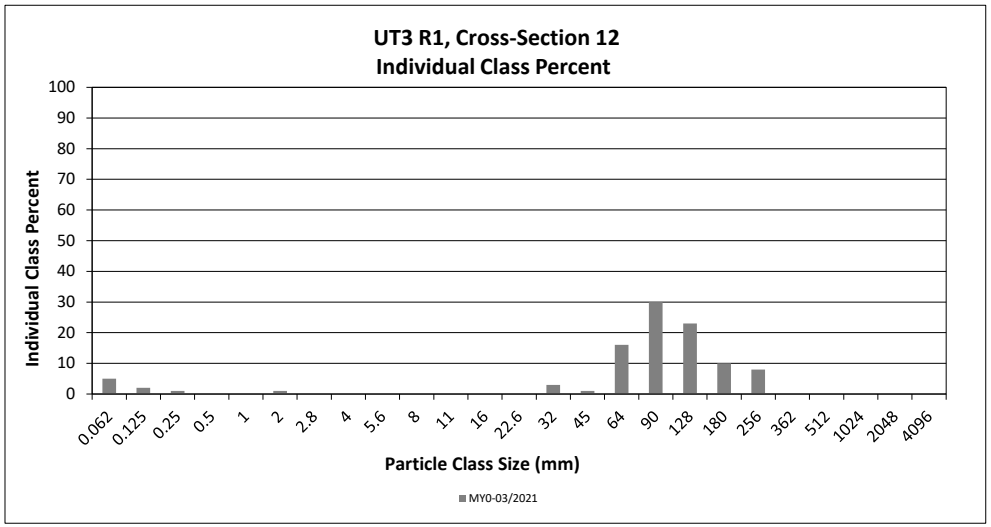
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT3 R1, Cross-Section 12

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	5	5	5
SAND	Very fine	0.062	0.125	2	2	7
	Fine	0.125	0.250	1	1	8
	Medium	0.25	0.50			8
	Coarse	0.5	1.0			8
	Very Coarse	1.0	2.0	1	1	9
GRAVEL	Very Fine	2.0	2.8			9
	Very Fine	2.8	4.0			9
	Fine	4.0	5.6			9
	Fine	5.6	8.0			9
	Medium	8.0	11.0			9
	Medium	11.0	16.0			9
	Coarse	16.0	22.6			9
	Coarse	22.6	32	3	3	12
	Very Coarse	32	45	1	1	13
	Very Coarse	45	64	16	16	29
COBBLE	Small	64	90	30	30	59
	Small	90	128	23	23	82
	Large	128	180	10	10	92
	Large	180	256	8	8	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 12	
Channel materials (mm)	
D_{16} =	48.1
D_{35} =	68.5
D_{50} =	81.3
D_{84} =	137.0
D_{95} =	205.4
D_{100} =	256.0





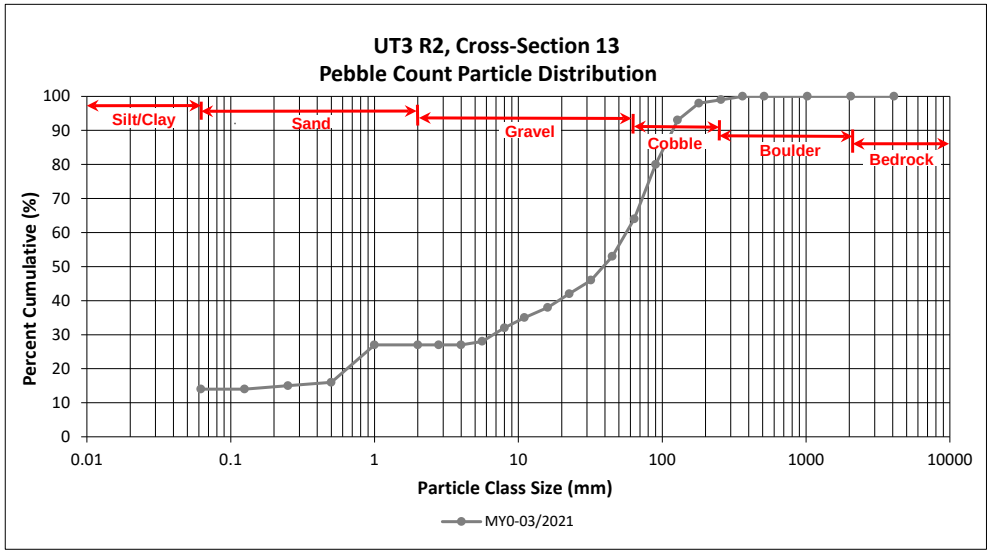
Reachwide and Cross-Section Pebble Count Plots

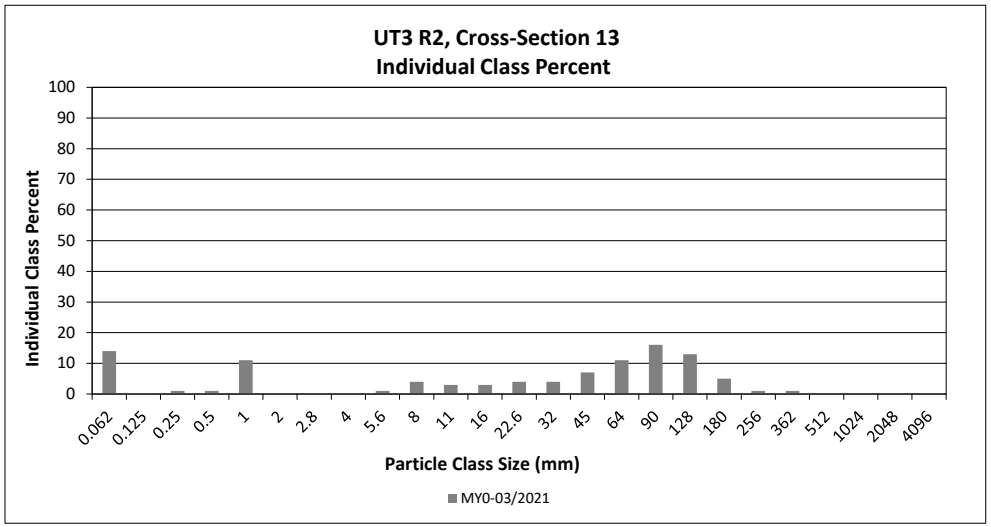
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

UT3 R2, Cross-Section 13

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	14	14	14
SAND	Very fine	0.062	0.125			14
	Fine	0.125	0.250	1	1	15
	Medium	0.25	0.50	1	1	16
	Coarse	0.5	1.0	11	11	27
	Very Coarse	1.0	2.0			27
GRAVEL	Very Fine	2.0	2.8			27
	Very Fine	2.8	4.0			27
	Fine	4.0	5.6	1	1	28
	Fine	5.6	8.0	4	4	32
	Medium	8.0	11.0	3	3	35
	Medium	11.0	16.0	3	3	38
	Coarse	16.0	22.6	4	4	42
	Coarse	22.6	32	4	4	46
	Very Coarse	32	45	7	7	53
	Very Coarse	45	64	11	11	64
COBBLE	Small	64	90	16	16	80
	Small	90	128	13	13	93
	Large	128	180	5	5	98
	Large	180	256	1	1	99
BOULDER	Small	256	362	1	1	100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 13	
Channel materials (mm)	
D_{16} =	0.5
D_{35} =	11.0
D_{50} =	38.9
D_{84} =	100.3
D_{95} =	146.7
D_{100} =	362.0





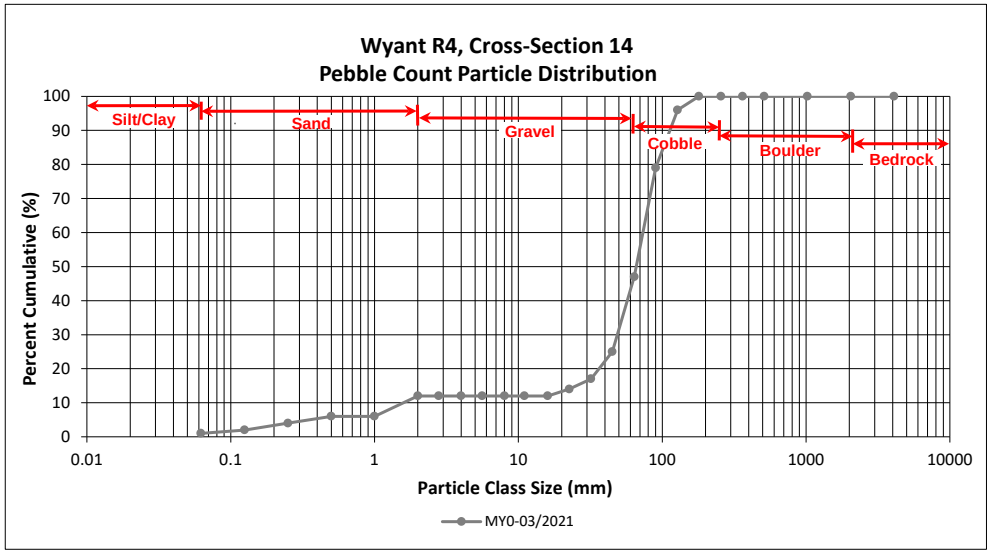
Reachwide and Cross-Section Pebble Count Plots

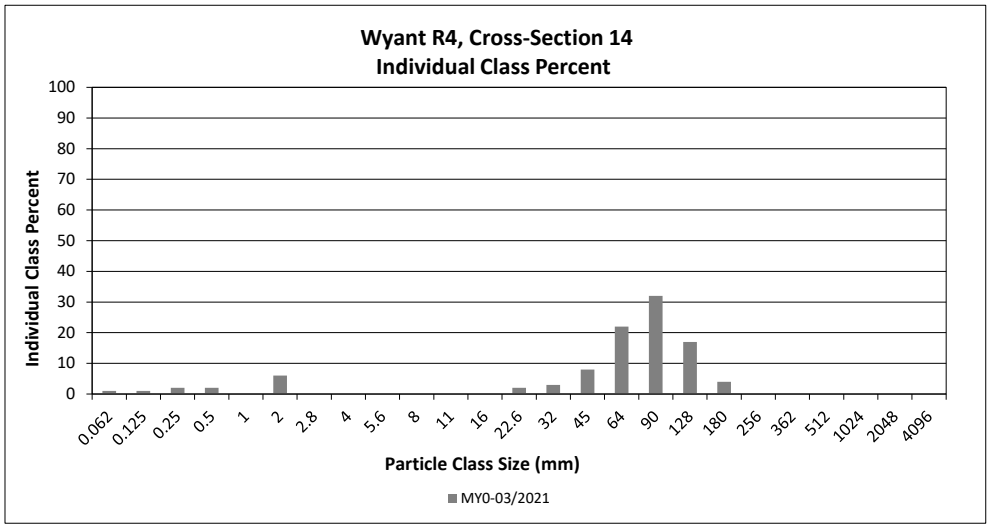
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R4, Cross-Section 14

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	1	1
SAND	Very fine	0.062	0.125	1	1	2
	Fine	0.125	0.250	2	2	4
	Medium	0.25	0.50	2	2	6
	Coarse	0.5	1.0			6
	Very Coarse	1.0	2.0	6	6	12
GRAVEL	Very Fine	2.0	2.8			12
	Very Fine	2.8	4.0			12
	Fine	4.0	5.6			12
	Fine	5.6	8.0			12
	Medium	8.0	11.0			12
	Medium	11.0	16.0			12
	Coarse	16.0	22.6	2	2	14
	Coarse	22.6	32	3	3	17
	Very Coarse	32	45	8	8	25
	Very Coarse	45	64	22	22	47
COBBLE	Small	64	90	32	32	79
	Small	90	128	17	17	96
	Large	128	180	4	4	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 14	
Channel materials (mm)	
D_{16} =	28.5
D_{35} =	52.8
D_{50} =	66.1
D_{84} =	99.8
D_{95} =	125.4
D_{100} =	180.0





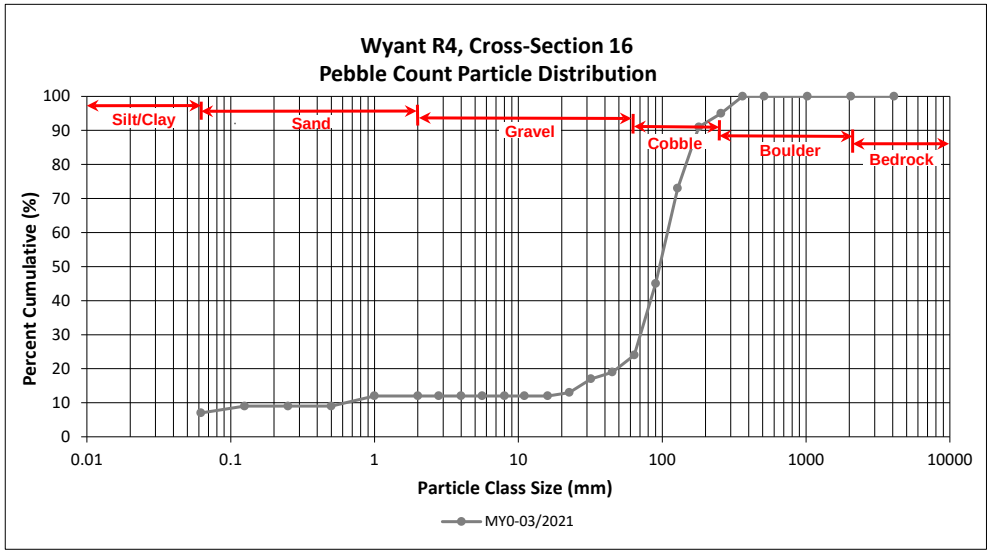
Reachwide and Cross-Section Pebble Count Plots

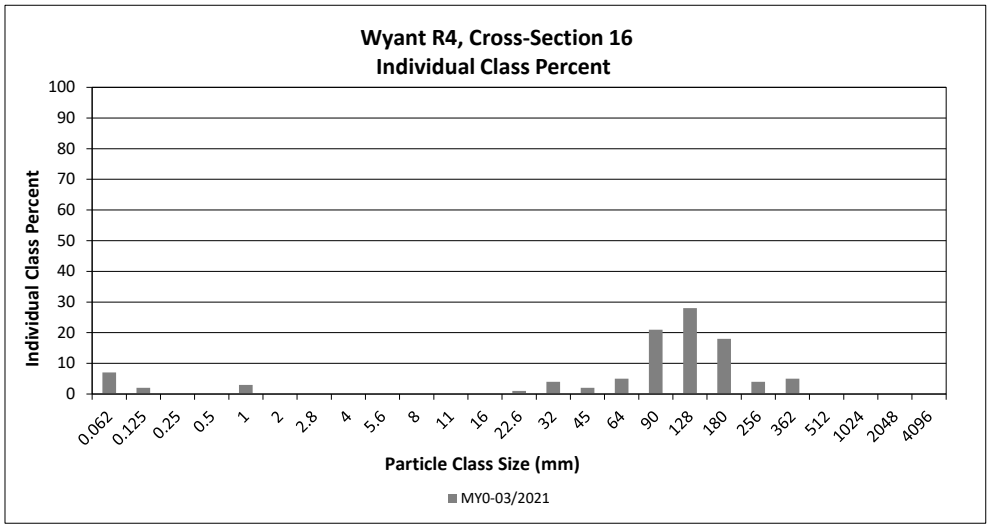
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R4, Cross-Section 16

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	7	7	7
SAND	Very fine	0.062	0.125	2	2	9
	Fine	0.125	0.250			9
	Medium	0.25	0.50			9
	Coarse	0.5	1.0	3	3	12
	Very Coarse	1.0	2.0			12
GRAVEL	Very Fine	2.0	2.8			12
	Very Fine	2.8	4.0			12
	Fine	4.0	5.6			12
	Fine	5.6	8.0			12
	Medium	8.0	11.0			12
	Medium	11.0	16.0			12
	Coarse	16.0	22.6	1	1	13
	Coarse	22.6	32	4	4	17
	Very Coarse	32	45	2	2	19
	Very Coarse	45	64	5	5	24
COBBLE	Small	64	90	21	21	45
	Small	90	128	28	28	73
	Large	128	180	18	18	91
	Large	180	256	4	4	95
BOULDER	Small	256	362	5	5	100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 16	
Channel materials (mm)	
D_{16} =	29.3
D_{35} =	76.5
D_{50} =	95.8
D_{84} =	157.6
D_{95} =	256.0
D_{100} =	362.0





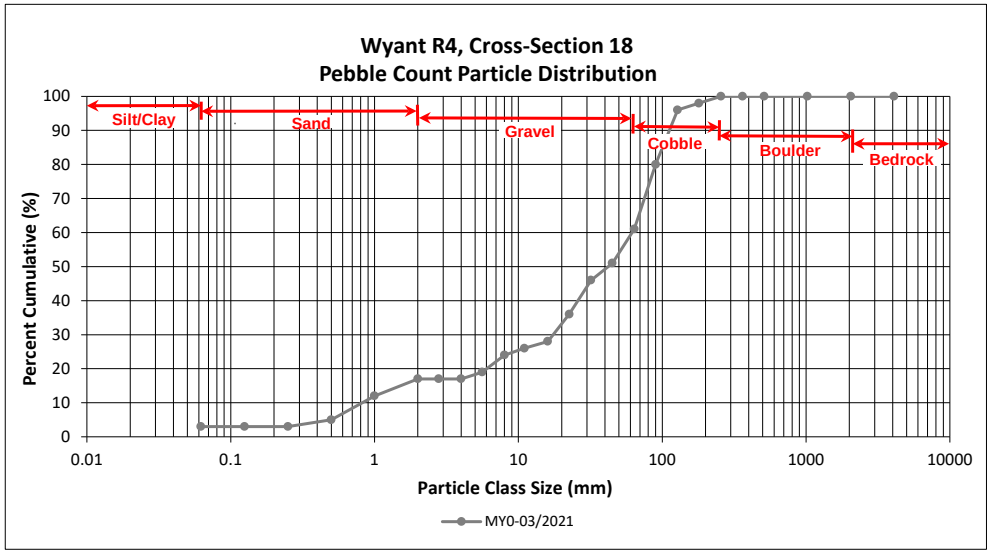
Reachwide and Cross-Section Pebble Count Plots

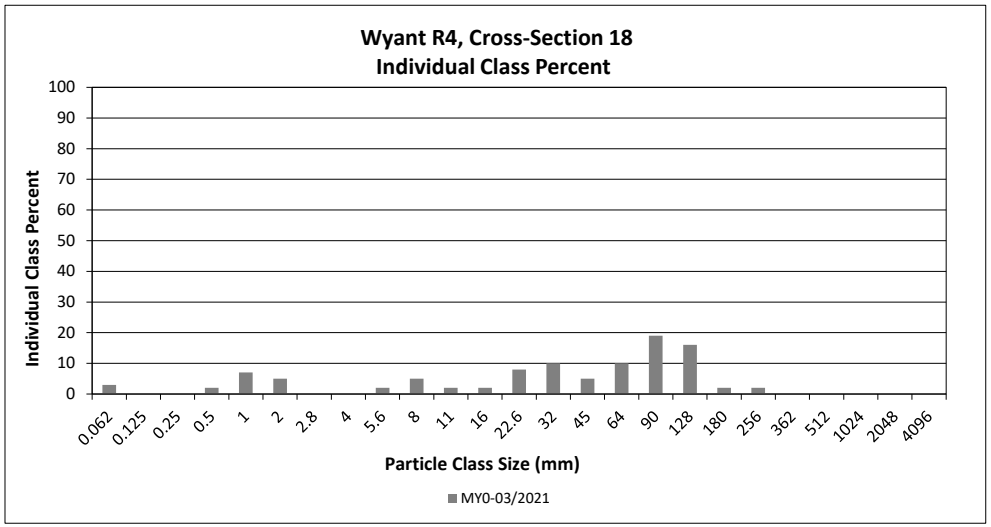
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Wyant R4, Cross-Section 18

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	3	3	3
SAND	Very fine	0.062	0.125			3
	Fine	0.125	0.250			3
	Medium	0.25	0.50	2	2	5
	Coarse	0.5	1.0	7	7	12
	Very Coarse	1.0	2.0	5	5	17
GRAVEL	Very Fine	2.0	2.8			17
	Very Fine	2.8	4.0			17
	Fine	4.0	5.6	2	2	19
	Fine	5.6	8.0	5	5	24
	Medium	8.0	11.0	2	2	26
	Medium	11.0	16.0	2	2	28
	Coarse	16.0	22.6	8	8	36
	Coarse	22.6	32	10	10	46
	Very Coarse	32	45	5	5	51
	Very Coarse	45	64	10	10	61
COBBLE	Small	64	90	19	19	80
	Small	90	128	16	16	96
	Large	128	180	2	2	98
	Large	180	256	2	2	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 18	
Channel materials (mm)	
D_{16} =	1.7
D_{35} =	21.6
D_{50} =	42.0
D_{84} =	98.3
D_{95} =	125.2
D_{100} =	256.0





Stream Photographs

	
Wyant R1 – Photo Point 1 looking upstream *(04/14/2021)*	**Wyant R1** – Photo Point 1 looking downstream *(04/14/2021)*
	
Wyant R1 – Photo Point 2 looking upstream *(04/14/2021)*	**Wyant R1** – Photo Point 2 looking downstream *(04/14/2021)*
	
Wyant R1 – Photo Point 3 looking upstream *(04/14/2021)*	**Wyant R1** – Photo Point 3 looking downstream *(04/14/2021)*

Wyant R1 – Photo Point 4 looking upstream *(04/14/2021)*

Wyant R1 – Photo Point 4 looking downstream *(04/14/2021)*

Wyant R2 – Photo Point 5 looking upstream *(04/14/2021)*

Wyant R2 – Photo Point 5 looking downstream *(04/14/2021)*

Wyant R2 – Photo Point 6 looking upstream *(04/14/2021)*

Wyant R2 – Photo Point 6 looking downstream *(04/14/2021)*

	
Wyant R3 – Photo Point 7 looking upstream *(04/14/2021)*	**Wyant R3** – Photo Point 7 looking downstream *(04/14/2021)*
	
Wyant R4 – Photo Point 8 looking upstream *(04/14/2021)*	**Wyant R4** – Photo Point 8 looking downstream *(04/14/2021)*
	
Wyant R4 – Photo Point 9 looking upstream *(07/09/2021)*	**Wyant R4** – Photo Point 9 looking downstream *(07/09/2021)*

	
Wyant R4 – Photo Point 10 looking upstream *(04/14/2021)*	**Wyant R4** – Photo Point 10 looking downstream *(04/14/2021)*
	
Wyant R4 – Photo Point 11 looking upstream *(04/14/2021)*	**Wyant R4** – Photo Point 11 looking downstream *(04/14/2021)*
	
Wyant R4 – Photo Point 12 looking upstream *(04/14/2021)*	**Wyant R4** – Photo Point 12 looking downstream *(04/14/2021)*

UT1 – Photo Point 13 looking upstream *(04/14/2021)*

UT1 – Photo Point 13 looking downstream *(04/14/2021)*

UT1 – Photo Point 14 looking upstream *(04/14/2021)*

UT1 – Photo Point 14 looking downstream *(04/14/2021)*

UT2 R1 – Photo Point 15 looking upstream *(04/14/2021)*

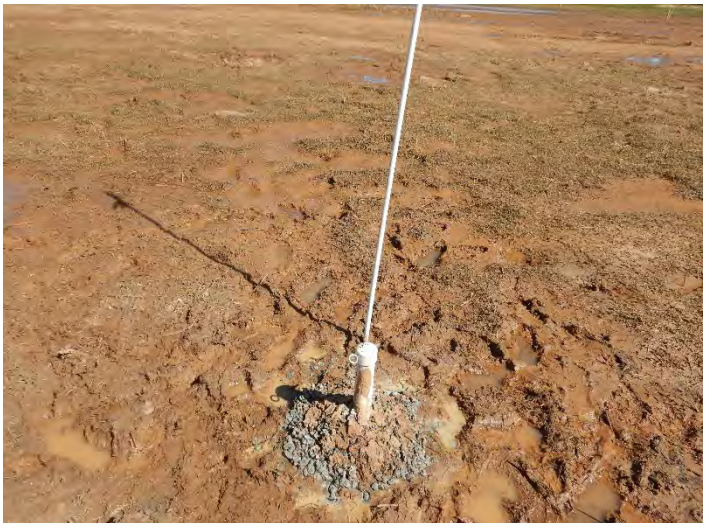
UT2 R1 – Photo Point 15 looking downstream *(04/14/2021)*

	
UT2 R2 – Photo Point 16 looking upstream *(04/14/2021)*	**UT2 R2** – Photo Point 16 looking downstream *(04/14/2021)*
	
UT2 R3 – Photo Point 17 looking upstream *(04/14/2021)*	**UT2 R3** – Photo Point 17 looking downstream *(04/14/2021)*
	
UT2 R3 – Photo Point 18 looking upstream *(04/14/2021)*	**UT2 R3** – Photo Point 18 looking downstream *(04/14/2021)*

	
UT3 R1 – Photo Point 19 looking upstream *(04/14/2021)*	**UT3 R1** – Photo Point 19 looking downstream *(04/14/2021)*
	
UT3 R2 – Photo Point 20 looking upstream *(07/09/2021)*	**UT3 R2** – Photo Point 20 looking downstream *(07/09/2021)*

Groundwater Gage Photographs

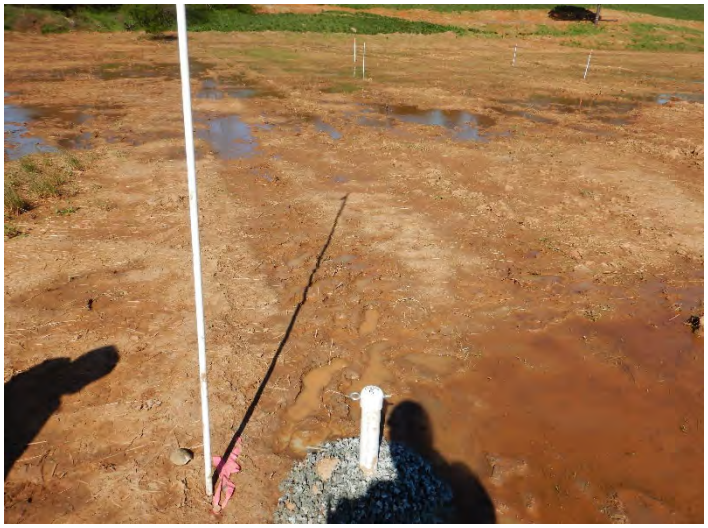
Groundwater Gage 1 - *(04/14/2021)*



Groundwater Gage 2 - *(04/14/2021)*

Groundwater Gage 3 - *(04/14/2021)*

Groundwater Gage 4 - *(04/14/2021)*



Groundwater Gage 5 - *(04/14/2021)*

Groundwater Gage 6 - *(04/14/2021)*

Groundwater Gage 7 - *(04/14/2021)*

Groundwater Gage 8 - *(04/14/2021)*

Groundwater Gage 9 - *(04/14/2021)*

Groundwater Gage 10 - *(04/14/2021)*

Groundwater Gage 11 - *(04/14/2021)*

Groundwater Gage Soil Profiles

MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

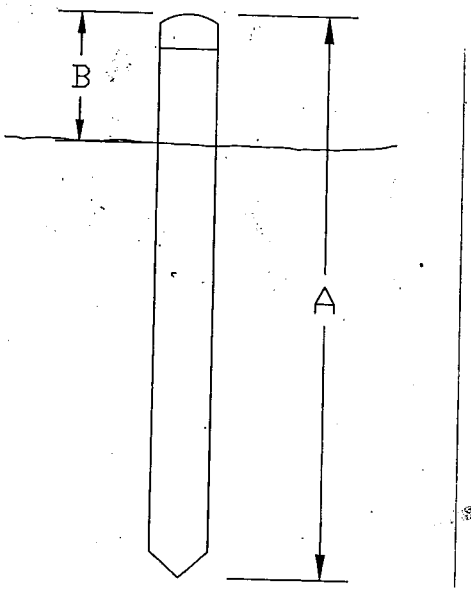
Gauge Description:

Gauge ID:	GWG-1
Serial Number:	795306
Total Well Casing Length (A):	6.5 Ft
Well Casing Height Above Ground (B):	1.13 ft.
Distance From Eye Bolt To Probe Sensor	6.21 Ft
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in. ft)	Color	Texture	Notes
0-1.3'	7.5Y 4/4	Sandy loam	7.5YR 6/8 (20% redox)
1.3'-3.5'	7.5 YR 3/2	Clay	10Y-5GY 4/1 (5% redox)
3.5-4.5'	Grey 1 3/5GY	Clay	10YR 3/6 (5% redox)



GWG #2

MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

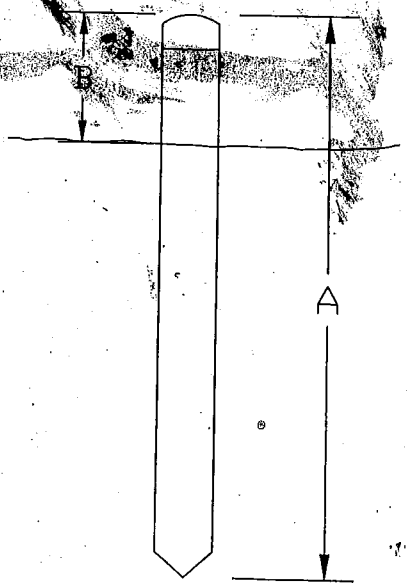
Gauge Description:

Gauge ID:	GWG2
Serial Number:	581351
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	1.09
Distance From Eye Bolt To Probe Sensor	6.91
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.)	Color	Texture	Notes
0-.9	7.5YR 3/2	Clay loam	Redox 7.5YR 3/4 ~(10%)
.9-1.9	10YR 3/6	Clay loam	
1.9-3.1	Gley1 5/N 4/1	Clay	Redox 10YR 3/6 (10%)
3.1-5	Gley1 5/10GY	Clay	Redox 7.5YR 5/8 (30%)



GWG 3

MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

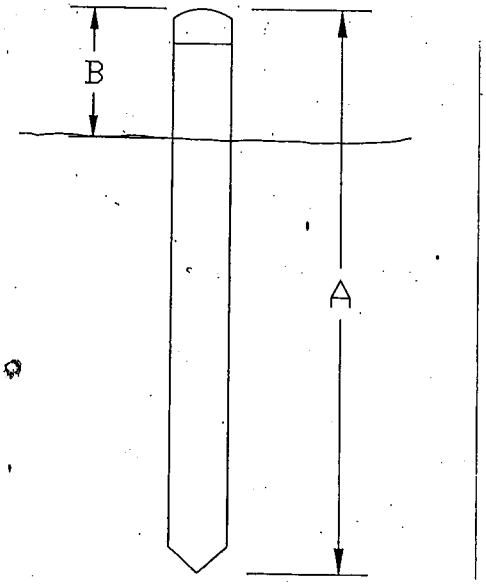
Gauge Description:

Gauge ID:	GWG 3
Serial Number:	581369
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	1.23
Distance From Eye Bolt To Probe Sensor	6.2
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.)	Color	Texture	Notes
0 - 1.2	5YR 4/6	Clay loam	
1.2 - 1.9	10YR 4/1	Clay	Red-x 10YR 5/8 (15%)
1.9 - 2.9	Gley 1 6/10 GY	Clay	Redox 10YR 5/8 (55%)
2.9 - 5	Gley 2 5/5B	Clay	Red-x 10YR 5/8 (95%)



MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

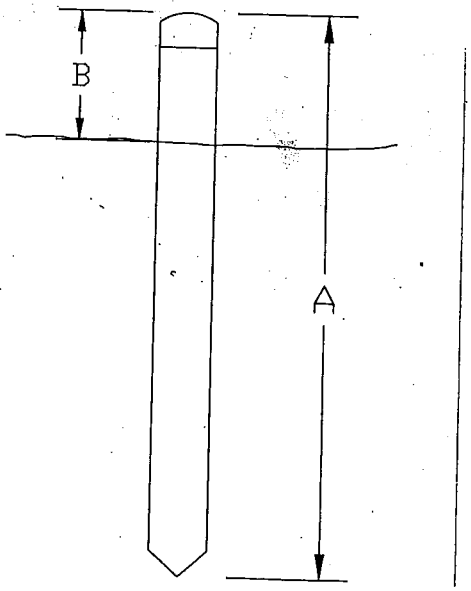
Gauge Description:

Gauge ID:	GWG 4
Serial Number:	581374
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	1.31
Distance From Eye Bolt To Probe Sensor	6.28
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.) 10ths of ft.	Color	Texture	Notes Redox	
0 - 1.1	5 YR 4/6	clay loam		
1.1 - 2.8	5 YR 2.5/1	clay loam	5 YR 4/6	~5%
2.8 - 3.7	Gley 1 5/5GY	clay	10 YR 4/6	~35%
3.7 - 5.3	Gley 2 2.5/5B	clay	2.5 Y 4/4	~5%



MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

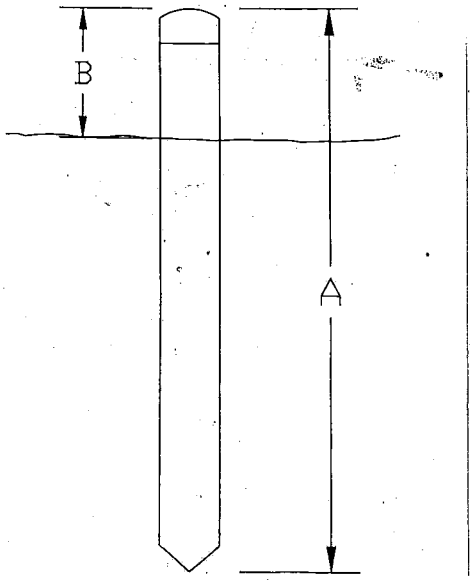
Gauge Description:

Gauge ID:	GW015
Serial Number:	179535
Total Well Casing Length (A):	6.5'
Well Casing Height Above Ground (B):	1.35'
Distance From Eye Bolt To Probe Sensor	6.41'
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.) ft	Color	Texture	Notes
0 — 1.5'	7.5YR 6/2	clay loam	2.5YR 4/3 (10% mottles)
1.5' — 2'	Gley 2 3/5PB	clay	2.5YR 3/4 (15% mottles)
2' — 5.2'	Gley 2 3/5PB	clay	



GWG#6

MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

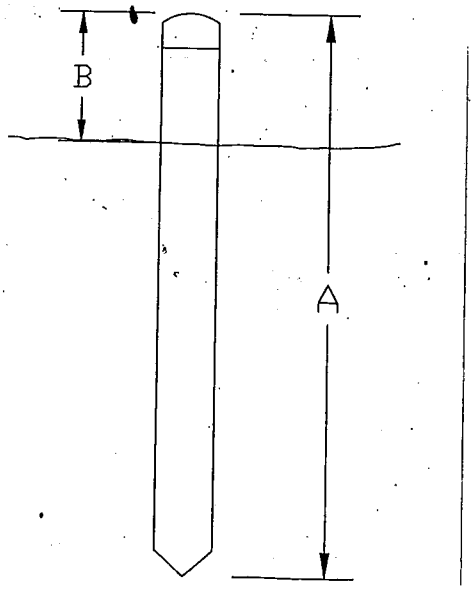
Gauge Description:

Gauge ID:	GWG#6
Serial Number:	581363
Total Well Casing Length (A):	6.5'
Well Casing Height Above Ground (B):	1.38'
Distance From Eye Bolt To Probe Sensor	6.05'
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in. ft)	Color	Texture	Notes
0-1.5'	10YR 4/1	Clay loam	5YR 3/4 (15% redox)
1.5-2.5'	Glay 2.5/5 PB	Clay	5YR 3/4 (10% redox)
2.5-5.2'	Glay 2.5/5 PB	Clay	



MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

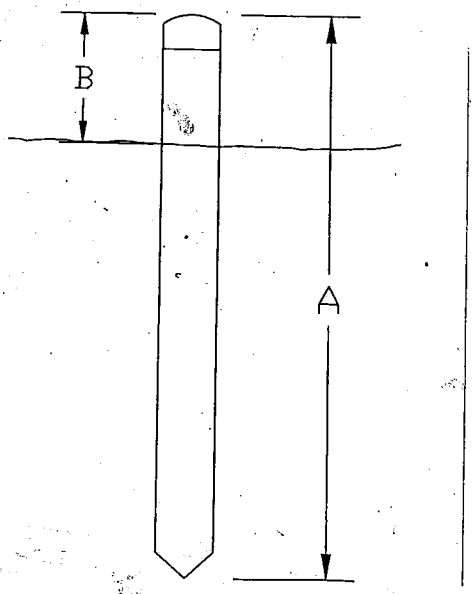
Gauge Description:

Gauge ID:	GWG 7
Serial Number:	581413
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	1.38 ft
Distance From Eye Bolt To Probe Sensor	6.12
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.) 10ths of ft.	Color	Texture	Notes	Redox
0 - 1.5	7.5 YR 3/4	clay loam	10 YR 4/3	10 %
1.5 - 2.2	10 YR 2/1	clay loam	10 YR 3/6	10 %
2.2 - 3.9	Gley 2 5/5B	clay	7.5 YR 5/8	30 %
3.9 - 5.1	Gley 2 4/5B	clay		



MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

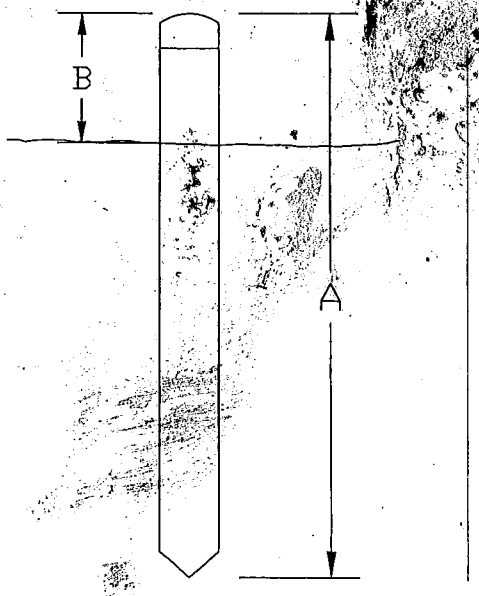
Gauge Description:

Gauge ID:	GWG-8
Serial Number:	581414
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	1.27 (10ths of feet)
Distance From Eye Bolt To Probe Sensor	6.33Ft
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.)	Color	Texture	Notes
0-12"	7.5YR4/4	clay loam	no redox
12"-21"	7.5YR3/1	clay	7.5YR3/4 (10% redox)
21"-38"	Gley1 4/1GY	clay	2.5Y5/6 (10% redox)
38"-60"	Gley2 6/10B	clay	10YR4/6 (50% redox)



GW# 9

MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Plant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

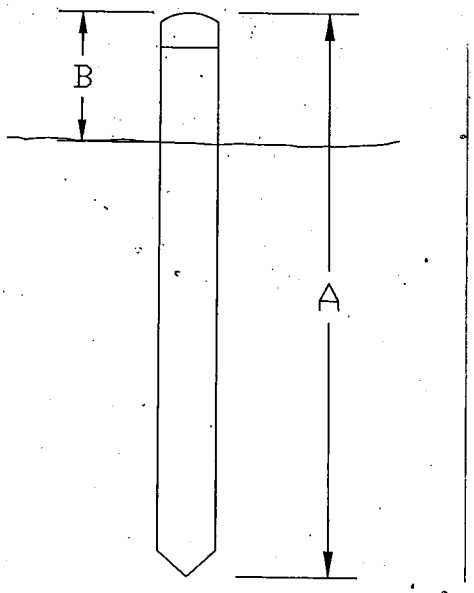
Gauge Description:

Gauge ID:	GW# 9
Serial Number:	581568
Total Well Casing Length (A):	6.6 FT
Well Casing Height Above Ground (B):	1.6 FT
Distance From Eye Bolt To Probe Sensor	6.44 FT
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.)	Color	Texture	Notes
0 – .4	10YR 3/3	Clay	
.4 – 1.8	7.5YR 5/6	loam	Redox 7.5YR 6/2 (30%)
1.8 – 5.0	7.5YR 6/1	sandy loam	Redox 7.5YR 6/6 (25%)



MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

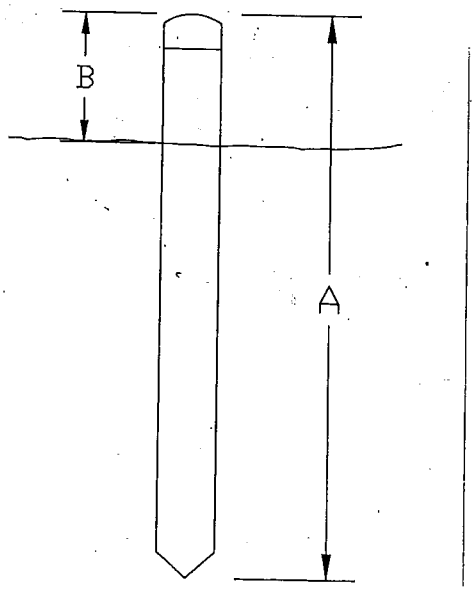
Gauge Description:

Gauge ID:	GWG 10
Serial Number:	581347
Total Well Casing Length (A):	6.5 feet
Well Casing Height Above Ground (B):	1.47 feet
Distance From Eye Bolt To Probe Sensor	6.29 feet
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.) ft	Color	Texture	Notes
0 - 0.6'	7.5YR 4/6	Loam	
0.6 - 1.8'	2.5Y 6/3	Clay Loam	10YR 5/8 (20% redox)
1.8 - 3.5'	10YR 6/1	Sandy Loam	10YR 5/8 (30% redox)
3.5 - 5.2'	10YR 6/1	Sandy clay	10YR 5/8, (15% redox)



MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyant
Project Location:	
Purpose of Gauge:	Water Table Monitoring

Gauge Description:

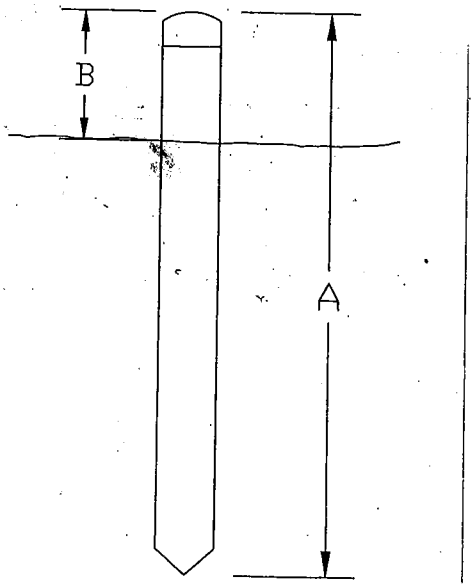
Gauge ID:	Gage 11
Serial Number:	581367
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	1.37
Distance From Eye Bolt To Probe Sensor	6.3
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

Notes:

Free Water at 0.4'

Soil Profile Description at Location of Well:

Depth Range (in.)	Color	Texture	Notes
0 - 1.2	Cover 4/6	Clay loam	2.5 y 4/1 20%
1.2 - 1.7	2.5y 3/1	Clay loam	10 yr 4/6 20%
1.7 - 3.0	10 yr 5/3	Clay	10 yr 4/1 15%
3.0 - 4.0	Gray 1 4/n	Silty clay	
4.0 - 5.2	Colors 1 4/n	Sand	Small gravel, [illegible]
5.2 - 5.6	10 yr 5/8	Sand	Small gravel



APPENDIX 3. Vegetation Plot Data

Table 8. Vegetation Plot Data

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	#N/A
Date(s) Mowing	#N/A
Date of Current Survey	2021-04-13
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/ Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F	
					Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	1	1	4	4	2	2
	Carpinus caroliniana	American hornbeam	Tree	FAC	2	2			2	2
	Celtis occidentalis	common hackberry	Tree	FACU						
	Cephalanthus occidentalis	common buttonbush	Shrub	OBL						
	Diospyros virginiana	common persimmon	Tree	FAC	2	2	1	1		
	Fraxinus pennsylvanica	green ash	Tree	FACW	1	1	1	1		
	Liriodendron tulipifera	tuliptree	Tree	FACU	2	2	1	1	2	2
	Platanus occidentalis	American sycamore	Tree	FACW	2	2	2	2	3	3
	Populus deltoides	eastern cottonwood	Tree	FAC	1	1	1	1	1	1
	Quercus michauxii	swamp chestnut oak	Tree	FACW	2	2	1	1		
	Quercus nigra	water oak	Tree	FAC	1	1	1	1	1	1
	Quercus phellos	willow oak	Tree	FAC	1	1	1	1	2	2
	Sambucus canadensis	American black elderberry	Tree	OBL						
Sum	Performance Standard				15	15	13	13	13	13
Mitigation Plan Performance Standard	Current Year Stem Count					15		13		13
	Stems/Acre					607		526		526
	Species Count					10		9		7
	Dominant Species Composition (%)					13		31		23
	Average Plot Height					239		254		287
	% Invasives					0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					15		13		13
	Stems/Acre					607		526		526
	Species Count					10		9		7
	Dominant Species Composition (%)					13		31		23
	Average Plot Height					239		254		287
	% Invasives					0		0		0

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

Table 8. Vegetation Plot Data

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	#N/A
Date(s) Mowing	#N/A
Date of Current Survey	2021-04-13
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 4 F		Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch			1	1	2	2		
	Carpinus caroliniana	American hornbeam	2	2	1	1	2	2	1	1
	Celtis occidentalis	common hackberry								
	Cephalanthus occidentalis	common buttonbush								
	Diospyros virginiana	common persimmon	2	2	2	2	1	1	2	2
	Fraxinus pennsylvanica	green ash					2	2		
	Liriodendron tulipifera	tuliptree	1	1	1	1	1	1	1	1
	Platanus occidentalis	American sycamore	3	3	3	3	2	2	3	3
	Populus deltoides	eastern cottonwood	1	1	2	2	1	1	1	1
	Quercus michauxii	swamp chestnut oak	1	1			1	1	2	2
	Quercus nigra	water oak	1	1	1	1	1	1	1	1
	Quercus phellos	willow oak	1	1	2	2	1	1	2	2
	Sambucus canadensis	American black elderberry								
Sum	Performance Standard		12	12	13	13	14	14	13	13
Mitigation Plan Performance Standard	Current Year Stem Count			12		13		14		13
	Stems/Acre			486		526		567		526
	Species Count			8		8		10		8
	Dominant Species Composition (%)			25		23		14		23
	Average Plot Height			247		243		251		217
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			12		13		14		13
	Stems/Acre			486		526		567		526
	Species Count			8		8		10		8
	Dominant Species Composition (%)			25		23		14		23
	Average Plot Height			247		243		251		217
	% Invasives			0		0		0		0

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

Table 8. Vegetation Plot Data

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	#N/A
Date(s) Mowing	#N/A
Date of Current Survey	2021-04-13
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 8 F		Veg Plot 9 F		Veg Plot 10 F		Veg Plot 11 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	2	2	1	1	1	1	3	3
	Carpinus caroliniana	American hornbeam			2	2				
	Celtis occidentalis	common hackberry								
	Cephalanthus occidentalis	common buttonbush	3	3			1	1	2	2
	Diospyros virginiana	common persimmon			1	1				
	Fraxinus pennsylvanica	green ash								
	Liriodendron tulipifera	tuliptree	1	1	2	2				
	Platanus occidentalis	American sycamore	3	3	3	3	2	2	2	2
	Populus deltoides	eastern cottonwood			1	1				
	Quercus michauxii	swamp chestnut oak			1	1	6	6	4	4
	Quercus nigra	water oak			2	2				
	Quercus phellos	willow oak	1	1	1	1			2	2
	Sambucus canadensis	American black elderberry	3	3			3	3	2	2
Sum	Performance Standard		13	13	14	14	13	13	15	15
Mitigation Plan Performance Standard	Current Year Stem Count			13		14		13		15
	Stems/Acre			526		567		526		607
	Species Count			6		9		5		6
	Dominant Species Composition (%)			23		21		46		27
	Average Plot Height			213		226		165		221
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			13		14		13		15
	Stems/Acre			526		567		526		607
	Species Count			6		9		5		6
	Dominant Species Composition (%)			23		21		46		27
	Average Plot Height			213		226		165		221
	% Invasives			0		0		0		0

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

Table 8. Vegetation Plot Data

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	#N/A
Date(s) Mowing	#N/A
Date of Current Survey	2021-04-13
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 12 F		Veg Plot 13 F		Veg Plot 14 F		Veg Plot 15 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	2	2	2	2	2	2	2	2
	Carpinus caroliniana	American hornbeam			1	1	1	1	1	1
	Celtis occidentalis	common hackberry								
	Cephalanthus occidentalis	common buttonbush	2	2						
	Diospyros virginiana	common persimmon			1	1	1	1	2	2
	Fraxinus pennsylvanica	green ash					2	2	2	2
	Liriodendron tulipifera	tuliptree					1	1	1	1
	Platanus occidentalis	American sycamore	3	3	5	5	2	2	2	2
	Populus deltoides	eastern cottonwood			2	2	1	1	1	1
	Quercus michauxii	swamp chestnut oak	2	2	2	2	3	3	1	1
	Quercus nigra	water oak					1	1		
	Quercus phellos	willow oak	3	3			1	1		
	Sambucus canadensis	American black elderberry	3	3						
Sum	Performance Standard		15	15	13	13	15	15	12	12
Mitigation Plan Performance Standard	Current Year Stem Count			15		13		15		12
	Stems/Acre			607		526		607		486
	Species Count			6		6		10		8
	Dominant Species Composition (%)			20		38		20		17
	Average Plot Height			221		236		250		243
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			15		13		15		12
	Stems/Acre			607		526		607		486
	Species Count			6		6		10		8
	Dominant Species Composition (%)			20		38		20		17
	Average Plot Height			221		236		250		243
	% Invasives			0		0		0		0

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

Table 8. Vegetation Plot Data

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	#N/A
Date(s) Mowing	#N/A
Date of Current Survey	2021-04-13
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 16 F		Veg Plot 17 F		Veg Plot 18 F		Veg Plot 19 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	2	2	3	3	1	1	3	3
	Carpinus caroliniana	American hornbeam								
	Celtis occidentalis	common hackberry								
	Cephalanthus occidentalis	common buttonbush	2	2	2	2	2	2	1	1
	Diospyros virginiana	common persimmon								
	Fraxinus pennsylvanica	green ash								
	Liriodendron tulipifera	tuliptree								
	Platanus occidentalis	American sycamore	3	3	2	2	1	1	1	1
	Populus deltoides	eastern cottonwood								
	Quercus michauxii	swamp chestnut oak	2	2	1	1	2	2	2	2
	Quercus nigra	water oak								
	Quercus phellos	willow oak	2	2	2	2	3	3	2	2
	Sambucus canadensis	American black elderberry	2	2	2	2	4	4	3	3
Sum	Performance Standard		13	13	12	12	13	13	12	12
Mitigation Plan Performance Standard	Current Year Stem Count			13		12		13		12
	Stems/Acre			526		486		526		486
	Species Count			6		6		6		6
	Dominant Species Composition (%)			23		25		31		25
	Average Plot Height			226		238		228		207
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			13		12		13		12
	Stems/Acre			526		486		526		486
	Species Count			6		6		6		6
	Dominant Species Composition (%)			23		25		31		25
	Average Plot Height			226		238		228		207
	% Invasives			0		0		0		0

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

Table 8. Vegetation Plot Data

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	#N/A
Date(s) Mowing	#N/A
Date of Current Survey	2021-04-13
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 20 F		Veg Plot 21 F		Veg Plot 22 F		Veg Plot 23 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	1	1	2	2	3	3	2	2
	Carpinus caroliniana	American hornbeam								
	Celtis occidentalis	common hackberry								
	Cephalanthus occidentalis	common buttonbush	1	1	3	3	1	1	3	3
	Diospyros virginiana	common persimmon								
	Fraxinus pennsylvanica	green ash								
	Liriodendron tulipifera	tuliptree								
	Platanus occidentalis	American sycamore	4	4	2	2	1	1	3	3
	Populus deltoides	eastern cottonwood								
	Quercus michauxii	swamp chestnut oak	2	2	3	3	1	1	1	1
	Quercus nigra	water oak								
	Quercus phellos	willow oak	1	1	2	2	4	4	3	3
	Sambucus canadensis	American black elderberry	2	2	1	1	2	2	1	1
Sum	Performance Standard		11	11	13	13	12	12	13	13
Mitigation Plan Performance Standard	Current Year Stem Count			11		13		12		13
	Stems/Acre			445		526		486		526
	Species Count			6		6		6		6
	Dominant Species Composition (%)			36		23		33		23
	Average Plot Height			223		223		222		15
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			11		13		12		13
	Stems/Acre			445		526		486		526
	Species Count			6		6		6		6
	Dominant Species Composition (%)			36		23		33		23
	Average Plot Height			223		223		222		15
	% Invasives			0		0		0		0

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

Table 8. Vegetation Plot Data

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	#N/A
Date(s) Mowing	#N/A
Date of Current Survey	2021-04-13
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 1 R Total	Veg Plot 2 R Total	Veg Plot 3 R Total	Veg Plot 4 R Total	Veg Plot 5 R Total	Veg Plot 6 R Total	Veg Plot 7 R Total	Veg Plot 8 R Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	1	2	2	2	2	3		2
	Carpinus caroliniana	American hornbeam		1	1			2		
	Celtis occidentalis	common hackberry								
	Cephalanthus occidentalis	common buttonbush				2	1			2
	Diospyros virginiana	common persimmon								
	Fraxinus pennsylvanica	green ash		1	2			1		
	Liriodendron tulipifera	tuliptree	2	2	1					
	Platanus occidentalis	American sycamore	2	4	3	3	2	2	3	2
	Populus deltoides	eastern cottonwood	3	1	3			1		
	Quercus michauxii	swamp chestnut oak	1		1	2	4	1	6	4
	Quercus nigra	water oak		1	1					
	Quercus phellos	willow oak	3	1	1	4	1	1	2	1
	Sambucus canadensis	American black elderberry				1	3		1	2
Sum	Performance Standard		12	13	15	14	13	11	12	13
Mitigation Plan Performance Standard	Current Year Stem Count		12	13	15	14	13	11	12	13
	Stems/Acre		486	526	607	567	526	445	486	526
	Species Count		6	8	9	6	6	7	4	6
	Dominant Species Composition (%)		25	31	20	29	31	27	50	31
	Average Plot Height		151	204	178	151	164	255	170	205
	% Invasives		0	0	0	0	0	0	0	0
Post Mitigation Plan Performance Standard	Current Year Stem Count		12	13	15	14	13	11	12	13
	Stems/Acre		486	526	607	567	526	445	486	526
	Species Count		6	8	9	6	6	7	4	6
	Dominant Species Composition (%)		25	31	20	29	31	27	50	31
	Average Plot Height		151	204	178	151	164	255	170	205
	% Invasives		0	0	0	0	0	0	0	0

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

Table 9. Vegetation Performance Standards Summary Table
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 0 - 2021

Vegetation Performance Standards Summary Table												
	Veg Plot 1 F				Veg Plot 2 F				Veg Plot 3 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	607		10	0	526		9	0	526		7	0
	Veg Plot 4 F				Veg Plot 5 F				Veg Plot 6 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	486		8	0	526		8	0	567		10	0
	Veg Plot 7 F				Veg Plot 8 F				Veg Plot 9 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	526		8	0	526		6	0	567		9	0
	Veg Plot 10 F				Veg Plot 11 F				Veg Plot 12 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	526		5	0	607		6	0	607		6	0

Table 9. Vegetation Performance Standards Summary Table

Wyant Lands Mitigation Site

DMS Project No. 100067

Monitoring Year 0 - 2021

Vegetation Performance Standards Summary Table												
	Veg Plot 13 F				Veg Plot 14 F				Veg Plot 15 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	526		6	0	607		10	0	486		8	0
	Veg Plot 16 F				Veg Plot 17 F				Veg Plot 18 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	526		6	0	486		6	0	526		6	0
	Veg Plot 19 F				Veg Plot 20 F				Veg Plot 21 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	486		6	0	445		6	0	526		6	0
	Veg Plot 22 F				Veg Plot 23 F				Veg Plot Group 1 R			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	486		6	0	526		6	0	486		6	0

Table 9. Vegetation Performance Standards Summary Table

Wyant Lands Mitigation Site

DMS Project No. 100067

Monitoring Year 0 - 2021

Vegetation Performance Standards Summary Table												
	Veg Plot Group 2 R				Veg Plot Group 3 R				Veg Plot Group 4 R			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	526		8	0	607		9	0	567		6	0
	Veg Plot Group 5 R				Veg Plot Group 6 R				Veg Plot Group 7 R			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	526		6	0	445		7	0	486		4	0
	Veg Plot Group 8 R											
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives								
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	526		6	0								

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

PERMANENT VEGETATION PLOT PHOTOGRAPHS

PERMANENT VEGETATION PLOT 1 *(04/13/2021)*

PERMANENT VEGETATION PLOT 2 *(04/13/2021)*

PERMANENT VEGETATION PLOT 3 *(04/13/2021)*

PERMANENT VEGETATION PLOT 4 *(04/13/2021)*

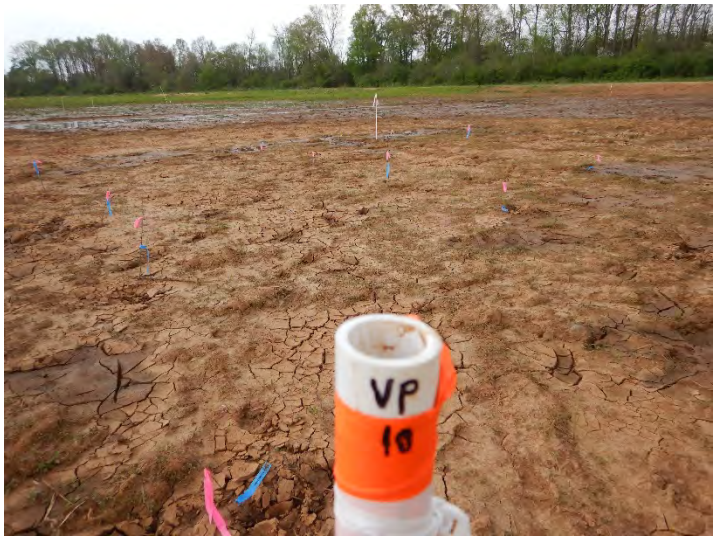
PERMANENT VEGETATION PLOT 5 *(04/13/2021)*

PERMANET VEGETATION PLOT 6 *(04/13/2021)*

PERMANENT VEGETATION PLOT 7 *(04/13/2021)*

PERMANENT VEGETATION PLOT 8 *(04/13/2021)*

PERMANENT VEGETATION PLOT 9 *(04/13/2021)*



PERMANENT VEGETATION PLOT 10 *(04/13/2021)*

PERMANENT VEGETATION PLOT 11 *(04/13/2021)*

PERMANENT VEGETATION PLOT 12 *(04/13/2021)*

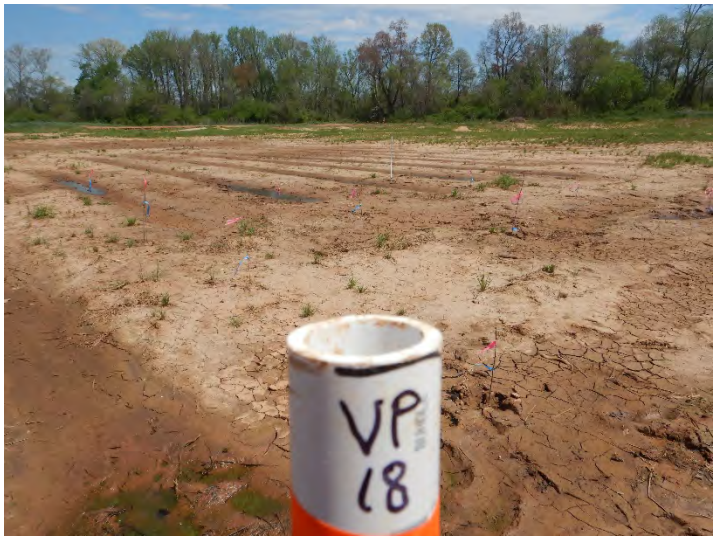
PERMANENT VEGETATION PLOT 13 *(04/13/2021)*

PERMANET VEGETATION PLOT 14 *(04/13/2021)*

PERMANENT VEGETATION PLOT 15 *(04/13/2021)*

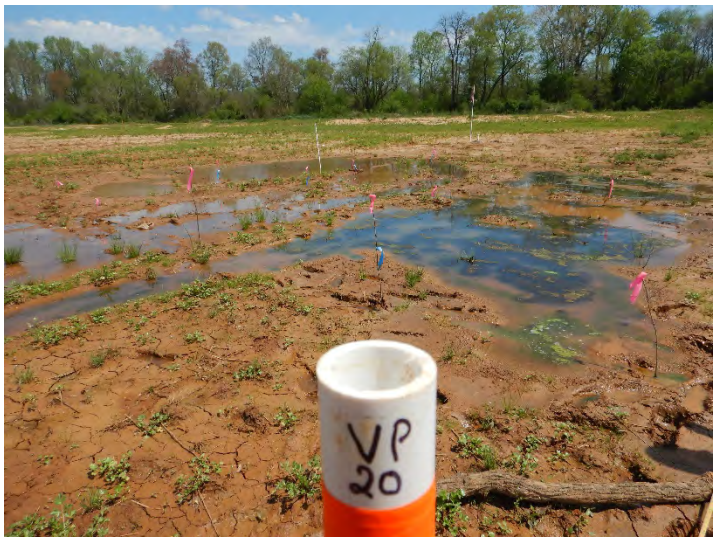
PERMANENT VEGETATION PLOT 16 *(04/13/2021)*

PERMANENT VEGETATION PLOT 17 *(04/13/2021)*



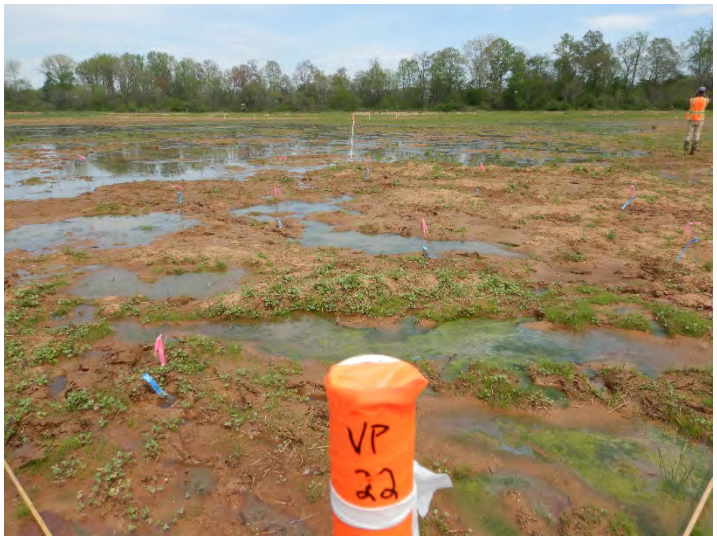
PERMANENT VEGETATION PLOT 18 *(04/13/2021)*

PERMANENT VEGETATION PLOT 19 *(04/13/2021)*



PERMANENT VEGETATION PLOT 20 *(04/13/2021)*

PERMANENT VEGETATION PLOT 21 *(04/13/2021)*



PERMANET VEGETATION PLOT 22 *(04/13/2021)*

PERMANENT VEGETATION PLOT 23 *(04/13/2021)*

MOBILE VEGETATION PLOT PHOTOGRAPHS

MOBILE VEGETATION PLOT 1 *(04/14/2021)*

MOBILE VEGETATION PLOT 2 *(04/14/2021)*

MOBILE VEGETATION PLOT 3 *(04/14/2021)*

MOBILE VEGETATION PLOT 4 *(04/14/2021)*

MOBILE VEGETATION PLOT 5 *(04/14/2021)*

MOBILE VEGETATION PLOT 6 *(04/14/2021)*

	
MOBILE VEGETATION PLOT 7 *(04/14/2021)*	**MOBILE VEGETATION PLOT 8** *(04/14/2021)*

APPENDIX 4. Record Drawings

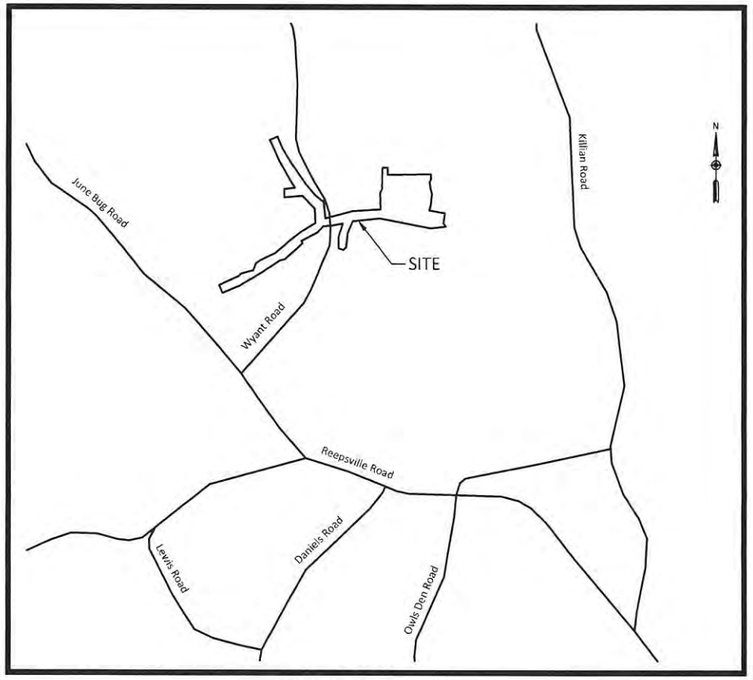
Wyant Lands Mitigation Site Record Drawings

Lincoln County, North Carolina

Catawba River Basin 03050102 (03050103 Expanded Service Area)

for

NCDEQ Division of Mitigation Services



Vicinity Map
Not to Scale

CERTIFICATE OF SURVEY AND ACCURACY

I, PHILLIP B. KEE, 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 THE RECORD DRAWINGS WERE PREPARED BY WILDLANDS ENGINEERING, INC. FROM DIGITAL FILES PROVIDED BY KEE MAPPING AND SURVEYING, PA AS SHOWN AND CERTIFIED ON AN AS-BUILT SURVEY FOR "WYANT LANDS MITIGATION SITE", JOB # 2103026-AB, DATED 07/09/21; THAT THIS SURVEY WAS PERFORMED AT THE 95% CONFIDENCE LEVEL TO MEET THE FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS AND TO MEET THE REQUIREMENTS OF A TOPOGRAPHIC SURVEY TO THE ACCURACY OF CLASS A HORIZONTAL AND CLASS C VERTICAL WHERE APPLICABLE; THAT THE ORIGINAL DATA WAS OBTAINED BETWEEN THE DATES OF 04/20/21 - 06/02/21; 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 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.

WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER, AND SEAL THIS 12TH DAY OF OCTOBER, 2021, A.D.

DocuSigned by:
Phillip B. Kee
D965004A7692407...

PHILLIP B. KEE, PLS L-4647

NORTH CAROLINA PROFESSIONAL SEAL L-4647 LAND SURVEYOR PHILLIP B. KEE

RECORD DRAWINGS
ISSUED OCTOBER 5, 2021

Sheet Index

Project Directory

Engineering:
Wildlands Engineering, Inc
License No. F-0831
167-B Haywood Road
Asheville, NC 28806
Eric Neuhaus, PE
865-207-8835

Surveying:
Kee Mapping and Surveying, PA
88 Central Avenue
Asheville, NC 28801
Phillip B. Kee, PLS
828-575-9021

Owner:
NCDEQ
Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699
Paul Wiesner
828-273-1673

USACE Action ID No. SAW-2017-02609
NCDWR No. 20180177

WILDLANDS ENGINEERING
167-B Haywood Road
Asheville, NC 28806
Tel: 828.277.8555
Fax: 704.332.3306
Firm License No. F-0831

NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER

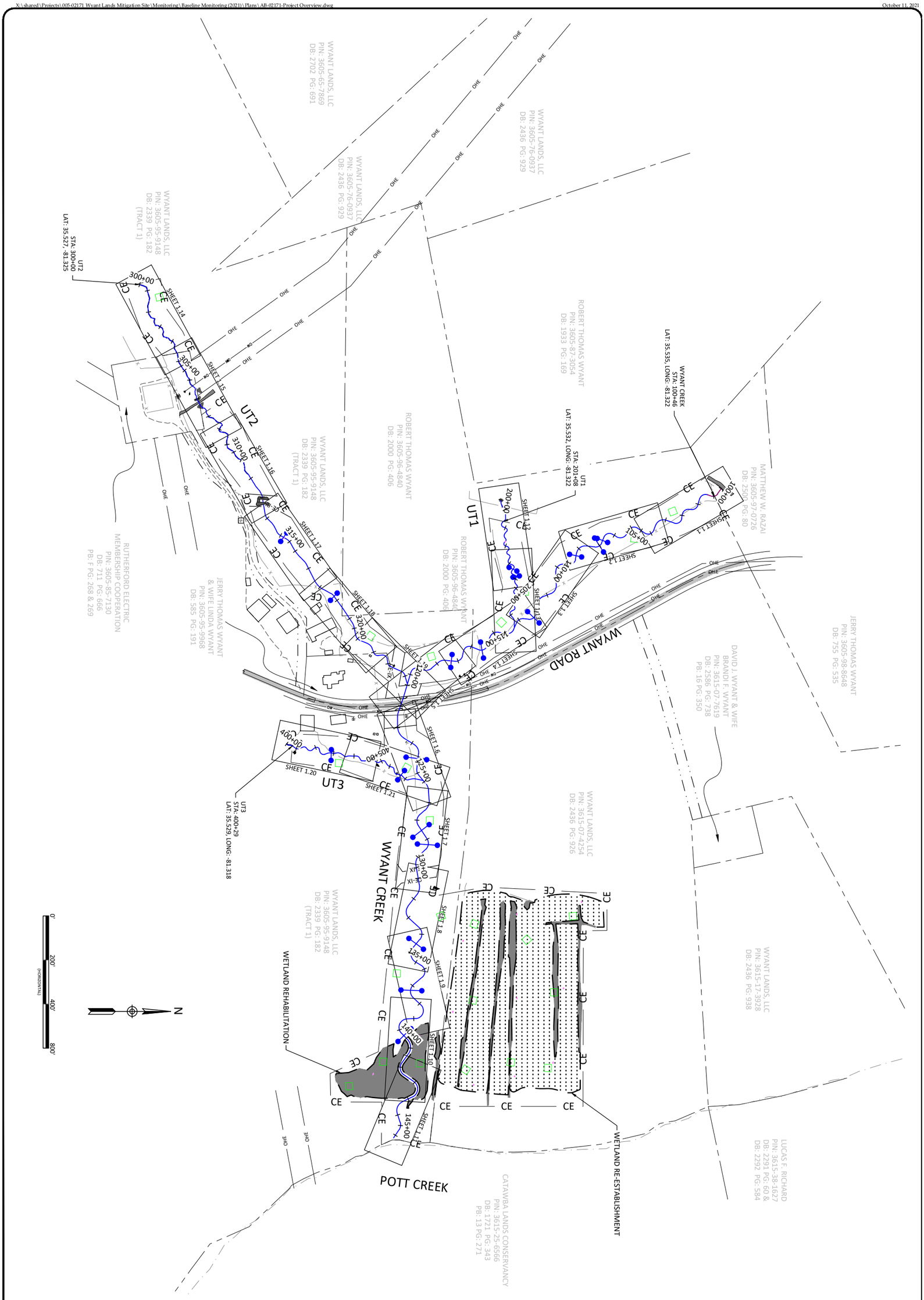
Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Title Sheet

Revisions:

Date: October 5, 2021
Job Number: 065-02771
Project Engineer: EFN
Drawn By: JP
Checked By: JCK

Sheet 0.1



Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	JP
Checked By:	JCK

Revisions:

0.2
Sheet

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Project Overview

NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER
10/5/21

WILDLANDS ENGINEERING
167-B Haywood Road
Asheville, NC 28806
Tel: 865.207.8835
Fax: 704.332.3306
Firm License No. F-0831

October 11, 2021

Pre-construction Features

- Pre-construction Thalweg
- Pre-construction Adjoiner Line
- Pre-construction Property Line
- Pre-construction top of bank (TB)
- Pre-construction Overhead Utility Easement (OHE)
- Pre-construction Overhead Electric (OW)
- Pre-construction Power Pole
- Pre-construction Fence (X)
- Pre-construction Storm Pipe
- Pre-construction Farm Road
- Pre-construction Wetland
- Pre-construction Spring Head
- Pre-construction Bedrock
- Pre-construction Asphalt Road
- Pre-construction Farm Road

Design Features

- Proposed Thalweg Alignment
- Recorded Conservation Easement (CE)
- Proposed Internal Crossing (CE-IX)
- Proposed Major Contour (100)
- Proposed Minor Contour
- Proposed Limits of Disturbance (LOD)
- Proposed Permanent Culvert Crossing
- Proposed Permanent Ford Crossing Without Cattle Slat
- Proposed Permanent Ford Crossing With Cattle Slat
- Proposed Constructed Riffles Per Plans
- Proposed Brush Toe
- Proposed SPSC
- Proposed Bioretention BMP
- Proposed Channel Stabilization
- Proposed Wetland Ditch Plug
- Proposed Log Sill
- Proposed Cover Log
- Proposed Log J-Hook
- Proposed Boulder J-Hook
- Proposed Rock Sill
- Wetland Rehabilitation
- Wetland Reestablishment

As- Built Features

- As-Built Thalweg Alignment (10+00)
- As-Built Bankfull
- Recorded Conservation Easement (CE)
- As-Built Internal Crossing (CE-IX)
- As-Built Fence (X)
- As-Built Major Contour (100)
- As-Built Minor Contour
- As-Built Limits of Disturbance (LOD)
- As-Built Permanent Culvert Crossing
- As-Built Permanent Ford Crossing Without Cattle Slat
- As-Built Permanent Ford Crossing With Cattle Slat
- As-Built Constructed Riffles
- As-Built Brush Toe
- As-Built SPSC
- As-Built Bioretention BMP
- As-Built Channel Stabilization
- As-Built Wetland Ditch Plug
- As-Built Log Sill
- As-Built Cover Log
- As-Built Log J-Hook
- As-Built Boulder J-Hook
- As-Built Rock Sill
- Wetland Rehabilitation
- Wetland Reestablishment
- As-Built Outlet Protection

Monitoring Features

- Photo Point (PP #)
- Permanent Vegetation Plot (VP #)
- Barotroll
- Stream Gage (SG #)
- Ground Water Gage (GWG #)
- Crest Gage (CG #)
- Monitoring Cross Section (XS #)

Notes:

1. Deviations from the design will be shown in red.

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NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER ERIC C. KNOPF 10/5/21

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

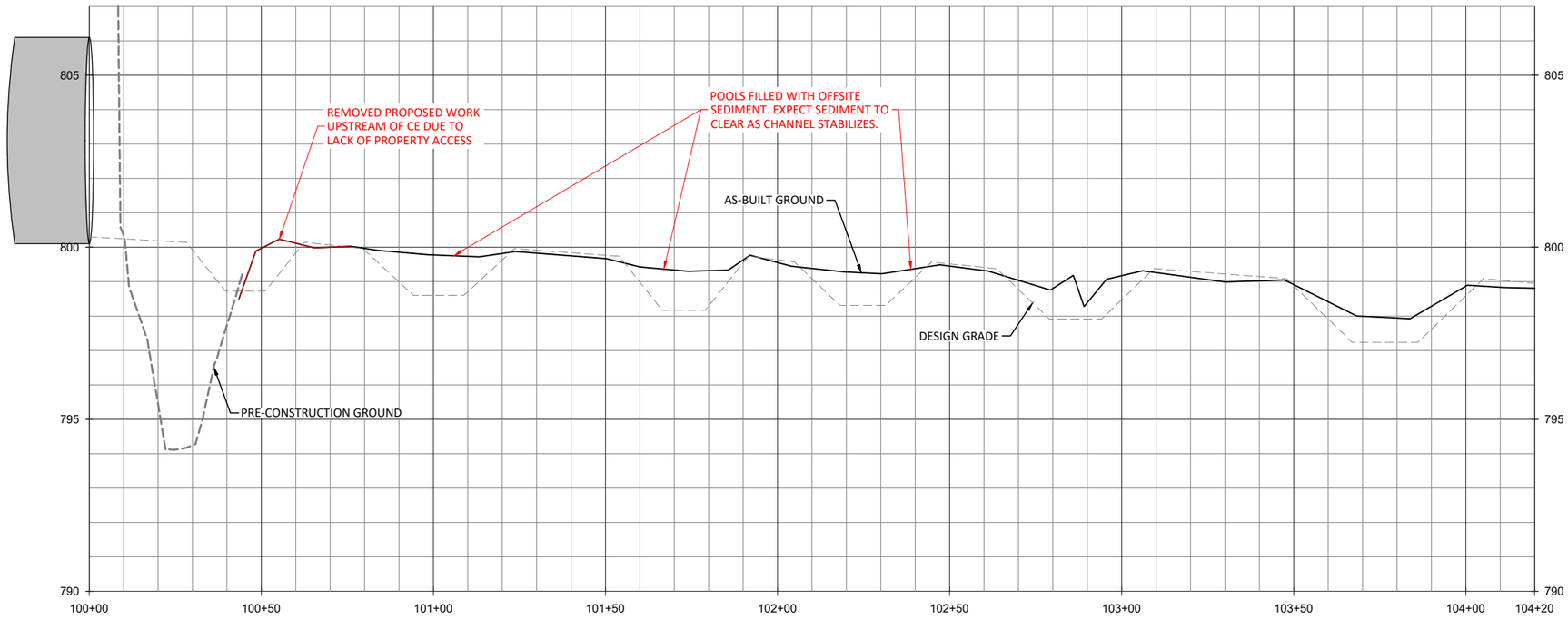
General Notes and Symbols

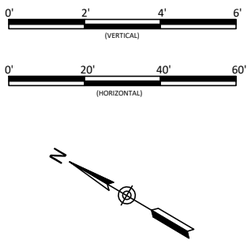
Revisions:

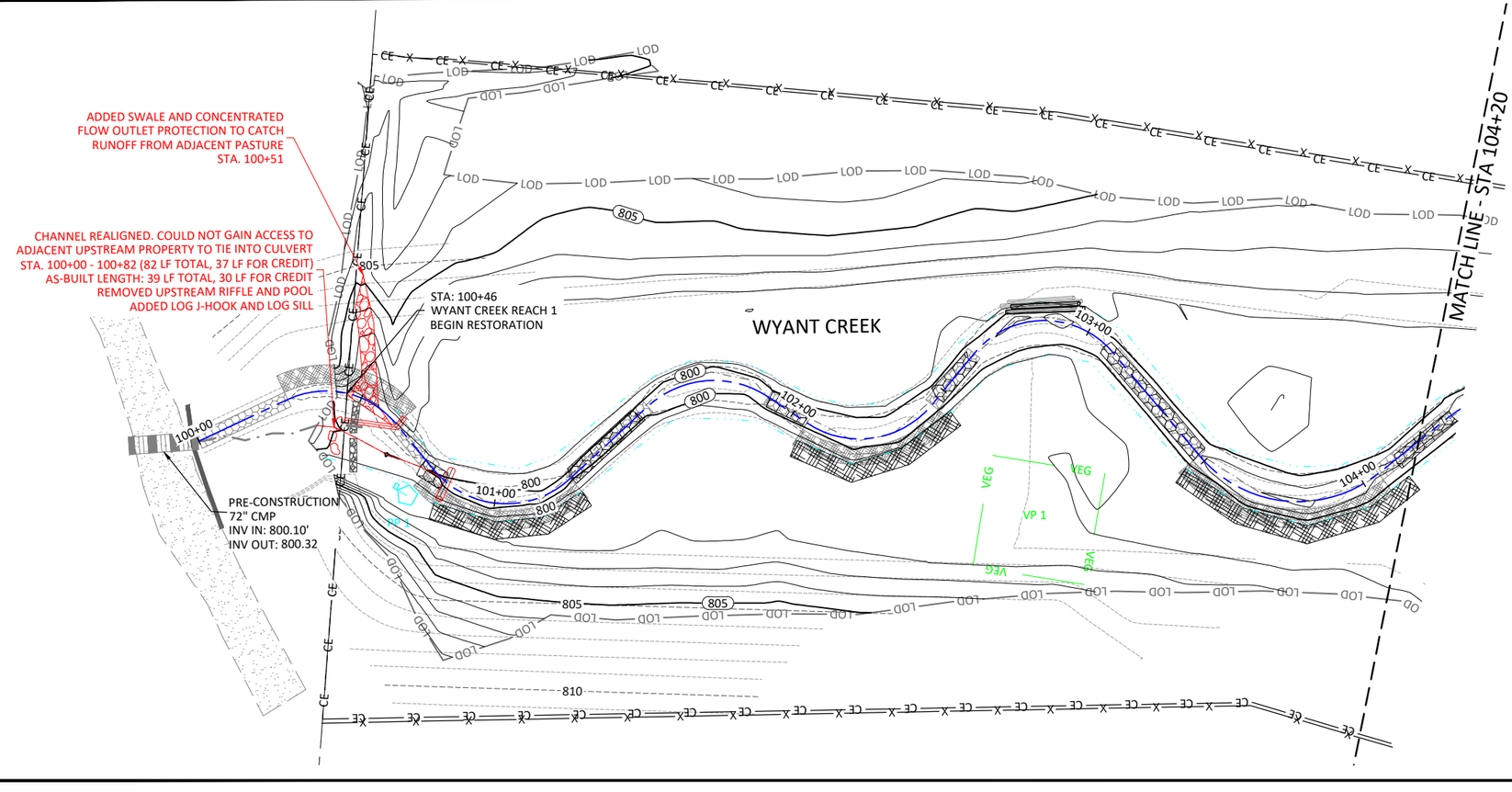
Date: October 5, 2021
Job Number: 005-02171
Project Engineer: EJ^N
Drawn By: JP
Checked By: JCK

Sheet 0.3

October 11, 2021







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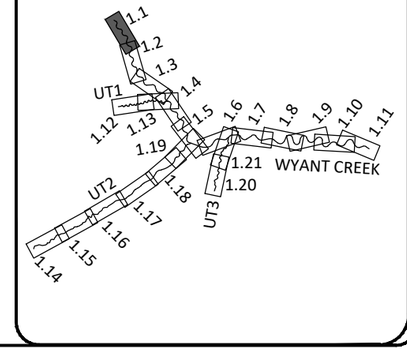

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10/5/21

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Wyant Creek
Stream Plan and Profile

Revisions:

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EITN
Drawn By:	JP
Checked By:	JCK

Sheet 1.1

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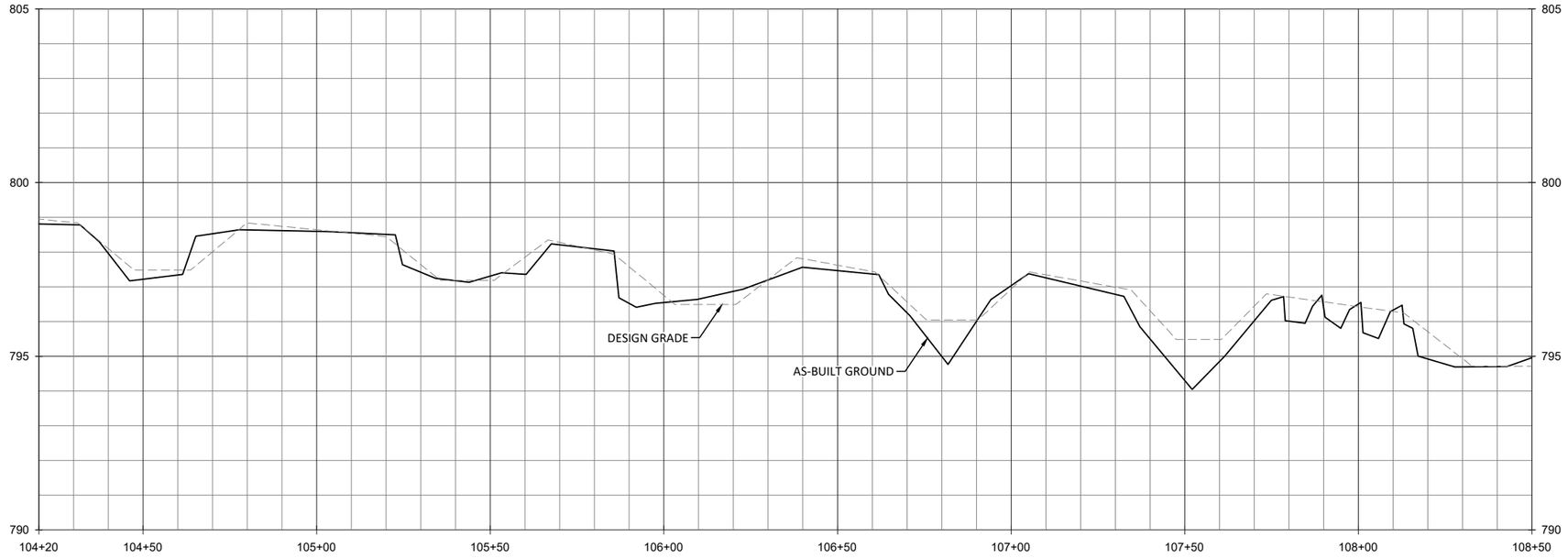
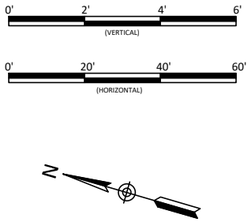
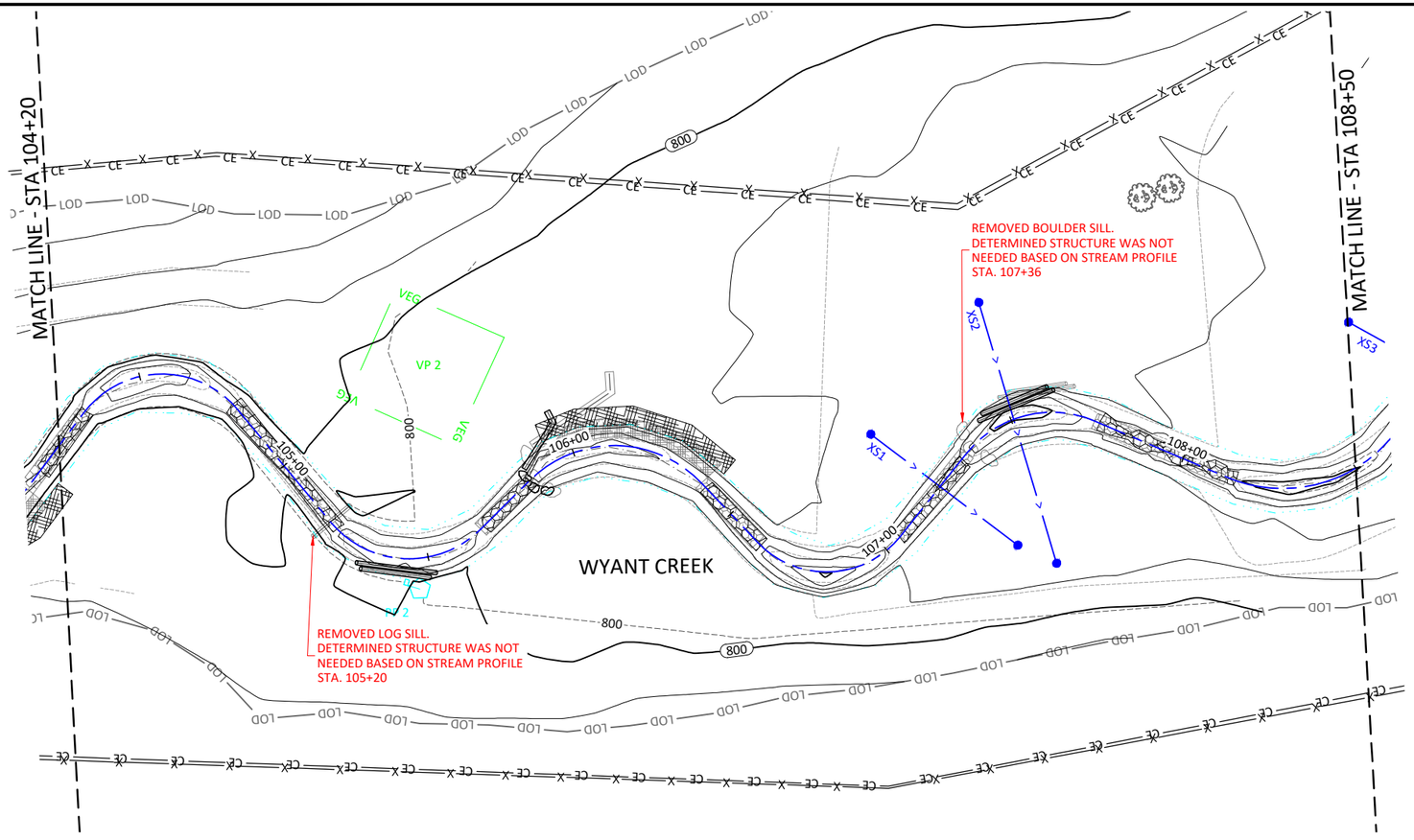
October 11, 2021







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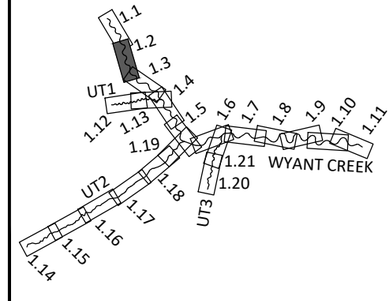

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10/5/21

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina
Wyant Creek
Stream Plan and Profile

Revisions:

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	JP
Checked By:	JCK

Sheet 1.2

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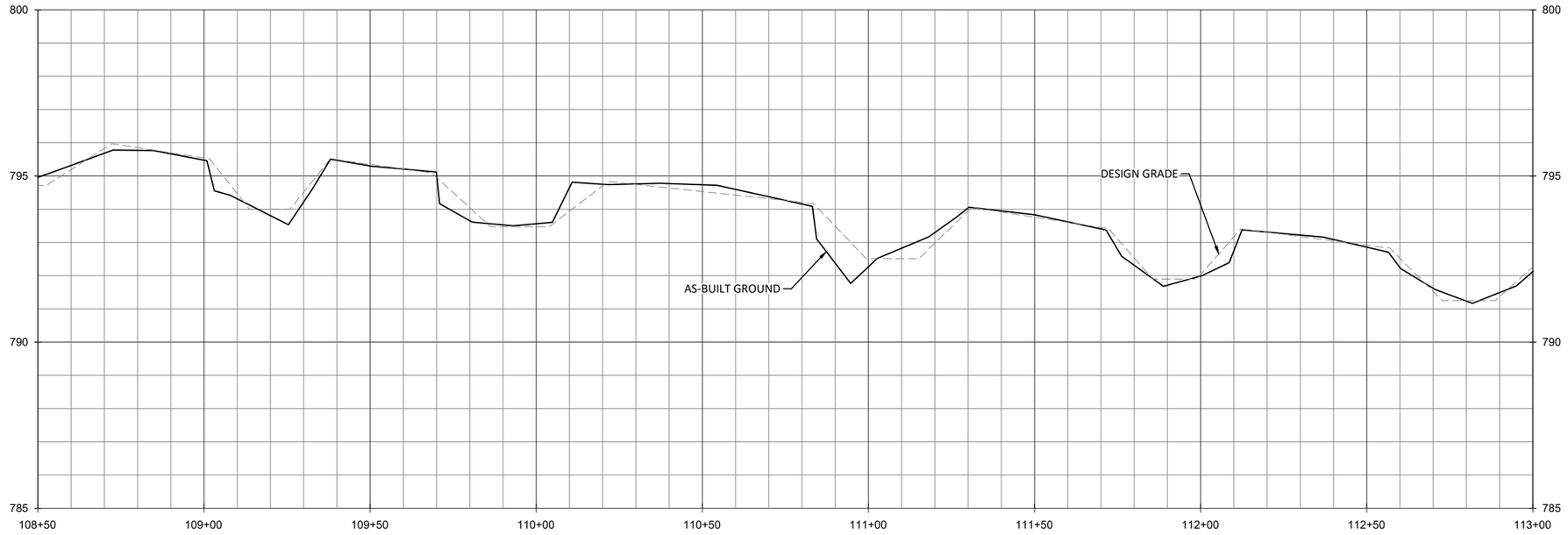
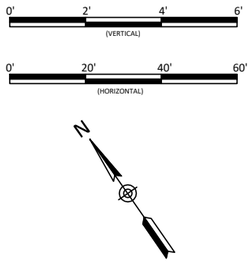
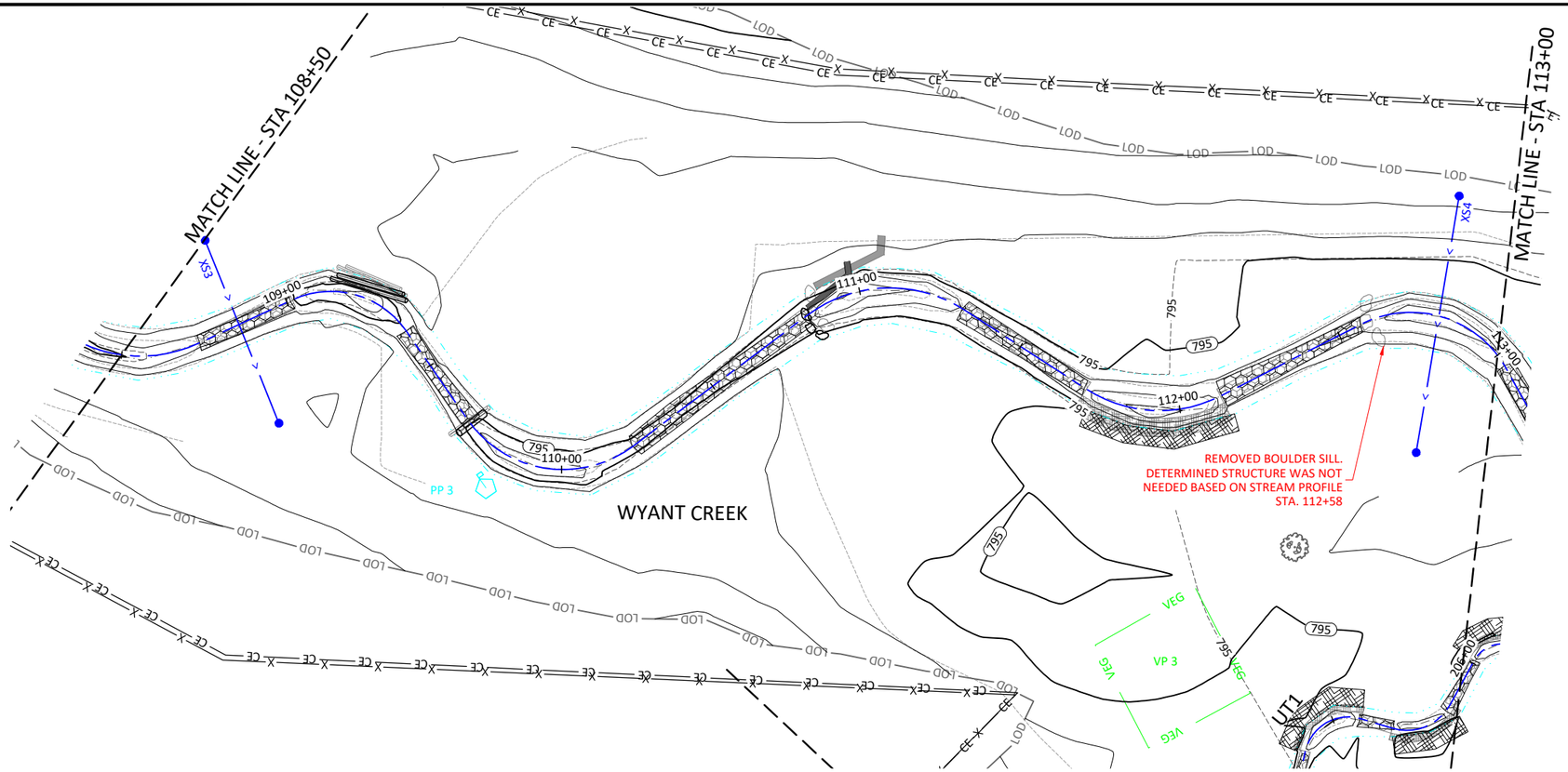
October 11, 2021







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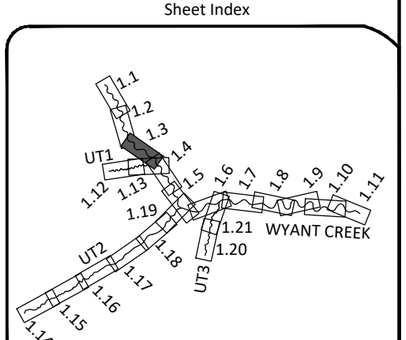

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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina
Wyant Creek
Stream Plan and Profile

Revisions:

Date: October 5, 2021
Job Number: 005-02171
Project Engineer: ETN
Drawn By: JP
Checked By: JCK

Sheet 1.3

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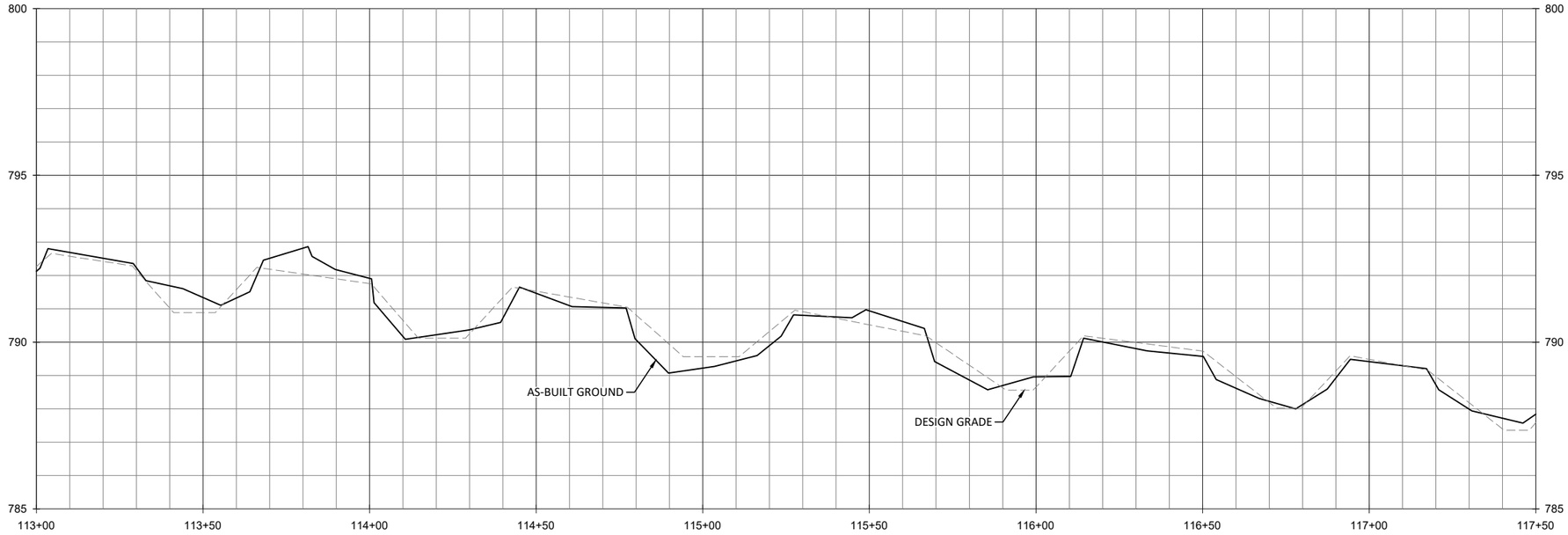
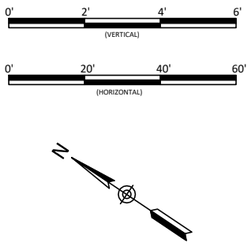
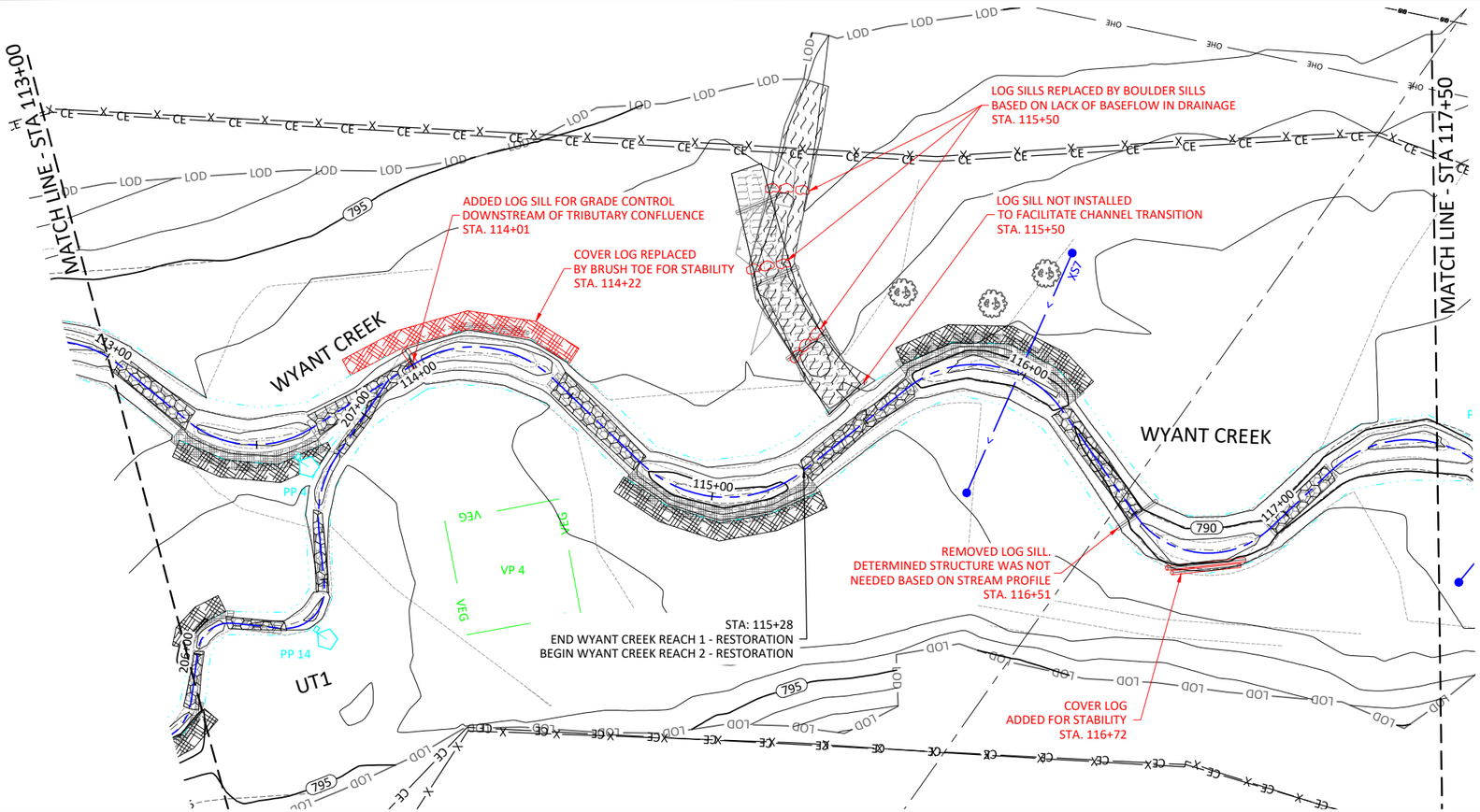
October 11, 2021







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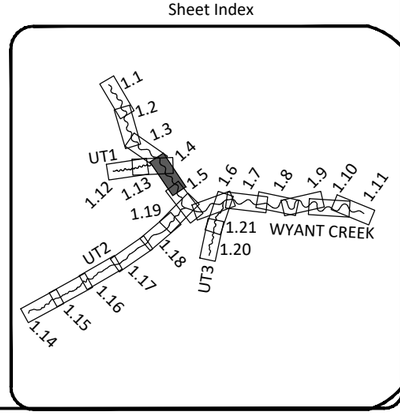

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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Wyant Creek
Stream Plan and Profile

Revisions:

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EHN
Drawn By:	JP
Checked By:	JCK

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NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER

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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Wyant Creek
Stream Plan and Profile

Revisions:

Date: October 5, 2021
Job Number: 005-02171
Project Engineer: ETN
Drawn By: JP
Checked By: JCK

Sheet 1.5

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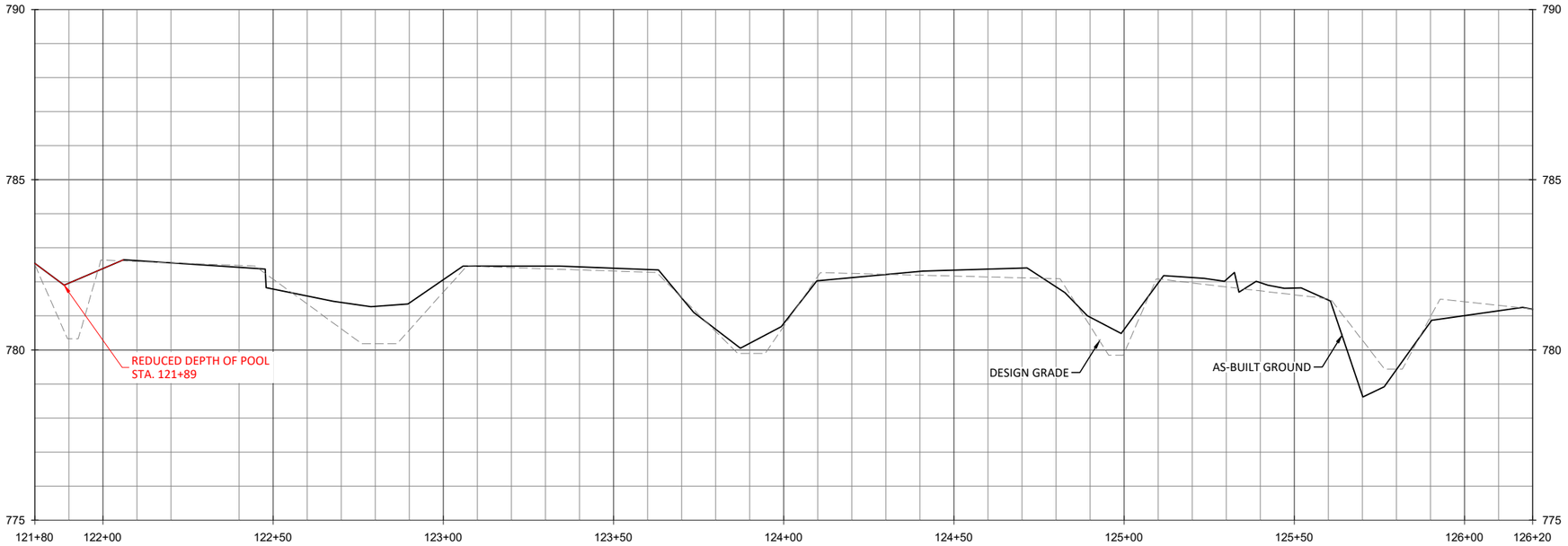
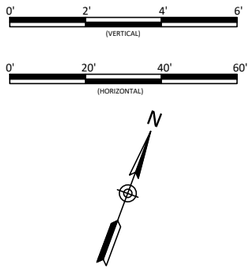
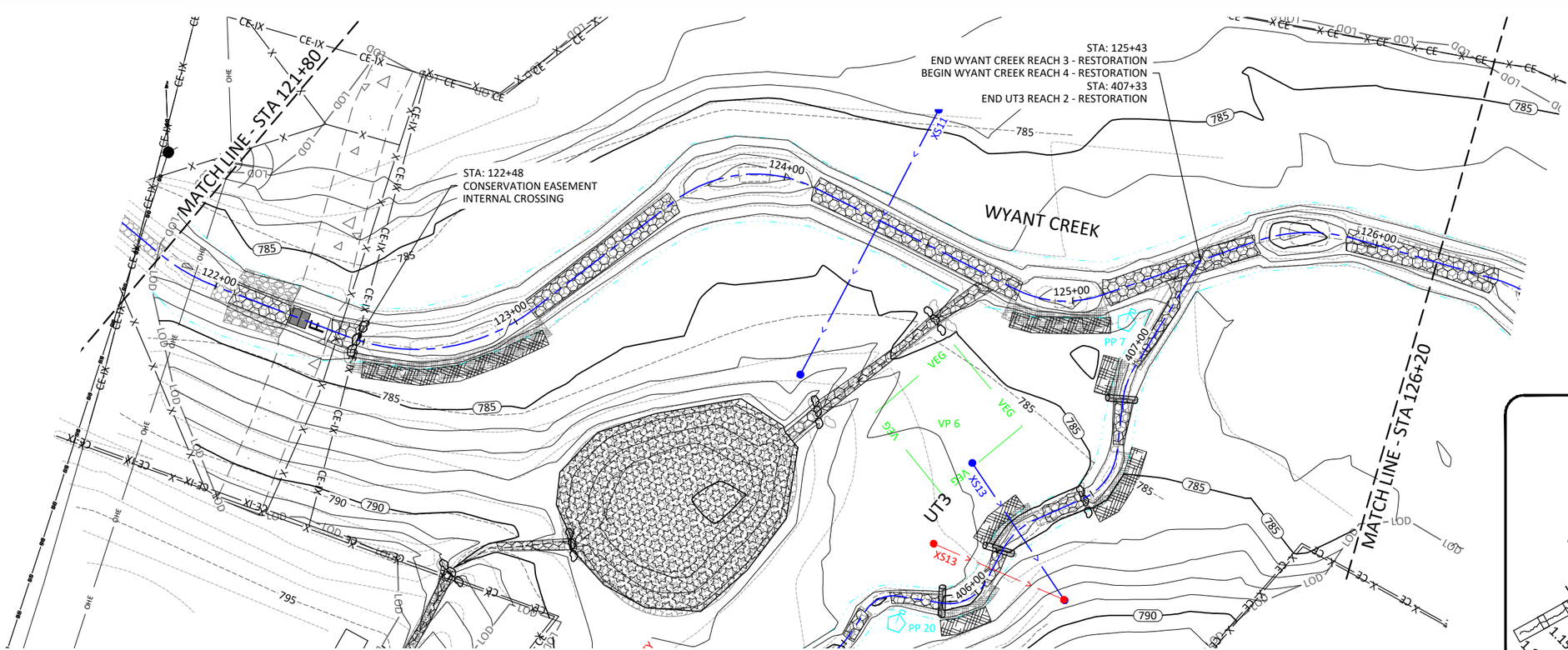
October 11, 2021







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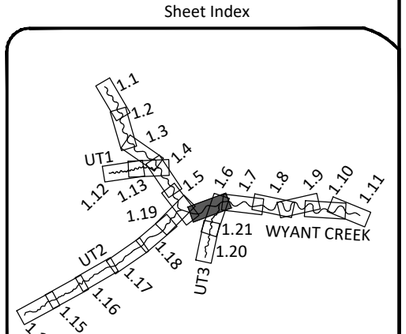

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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Wyant Creek
Stream Plan and Profile

Revisions:

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	ETN
Drawn By:	JP
Checked By:	JCK

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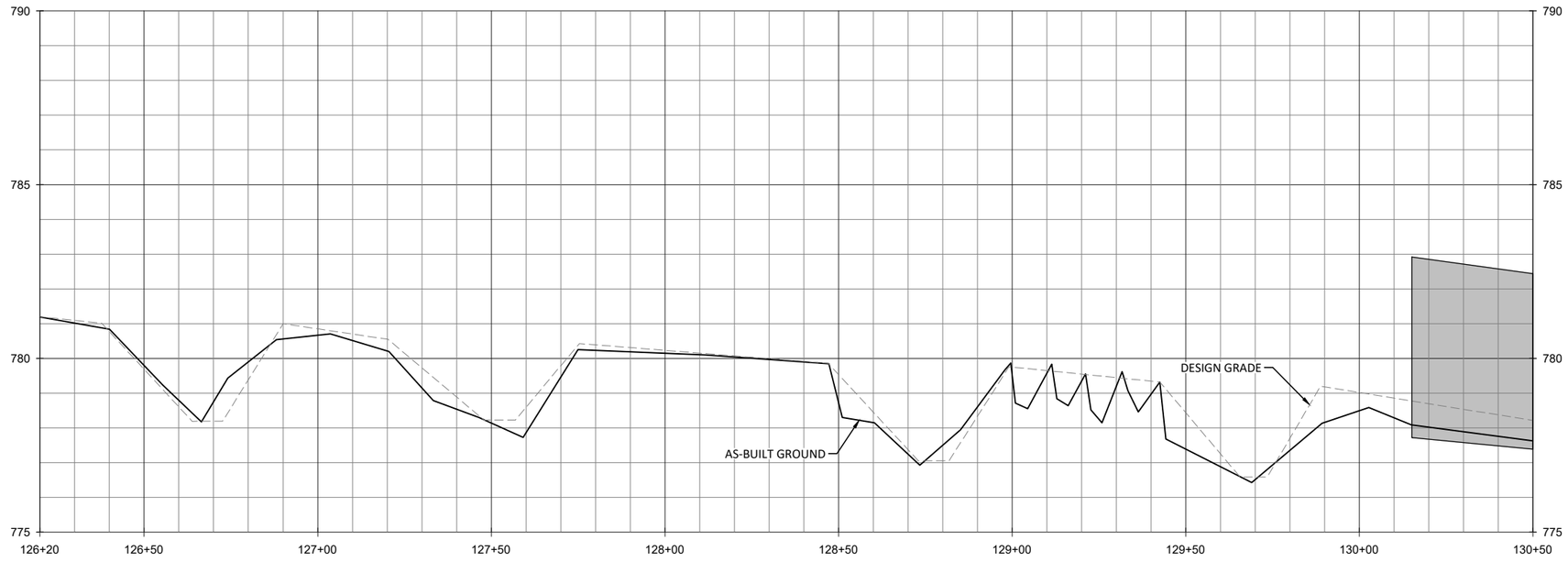
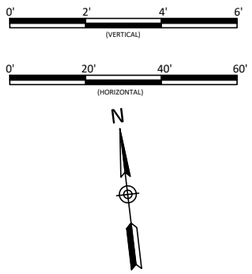
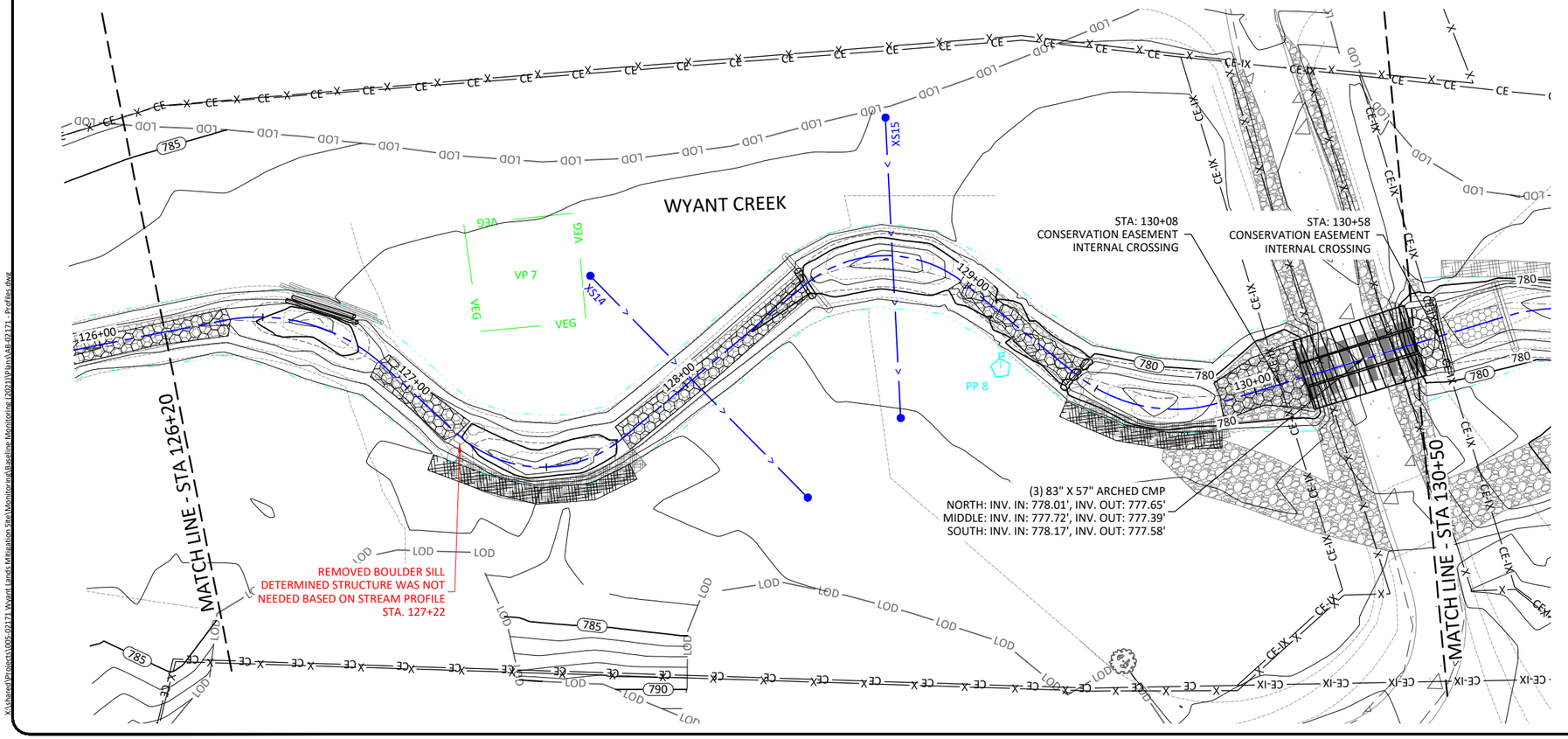
October 11, 2021







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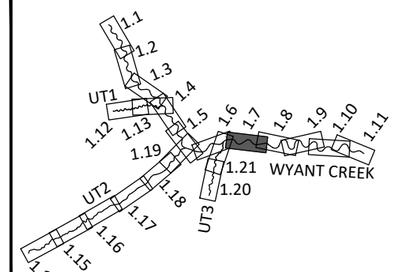

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NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Wyant Creek
Stream Plan and Profile

Revisions:

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	JP
Checked By:	JCK

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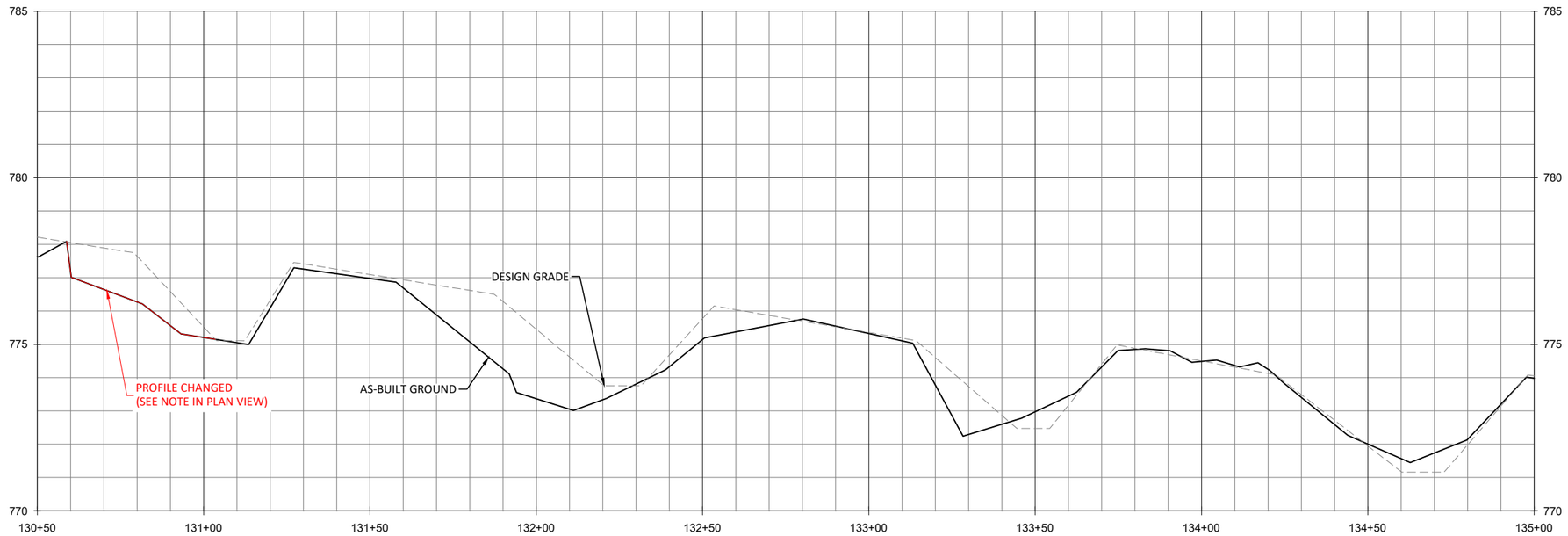
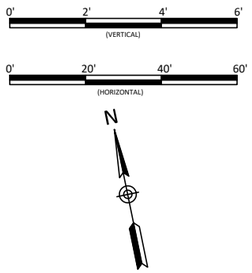
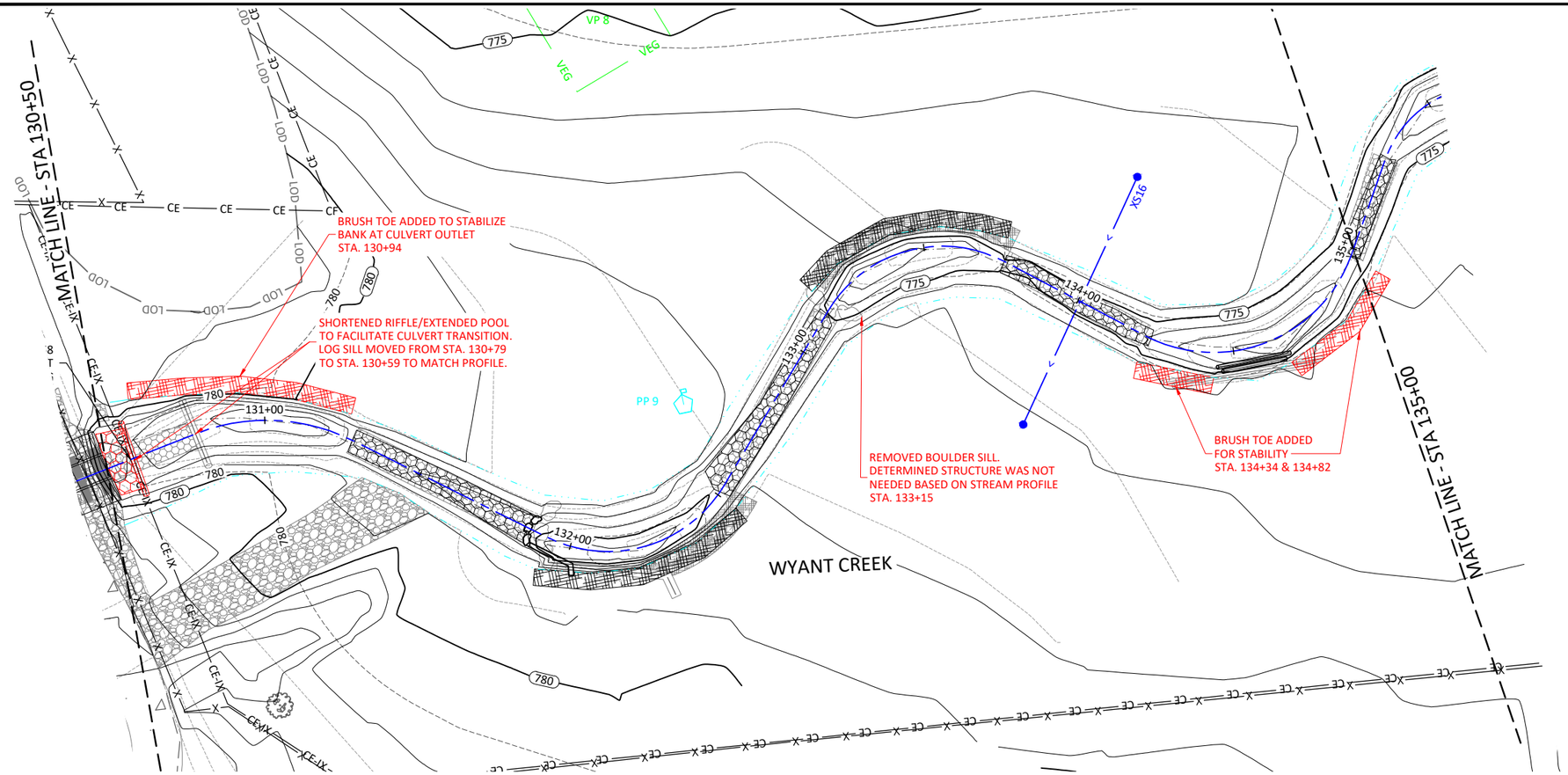
October 11, 2021







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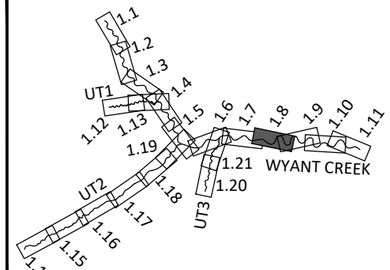

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NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

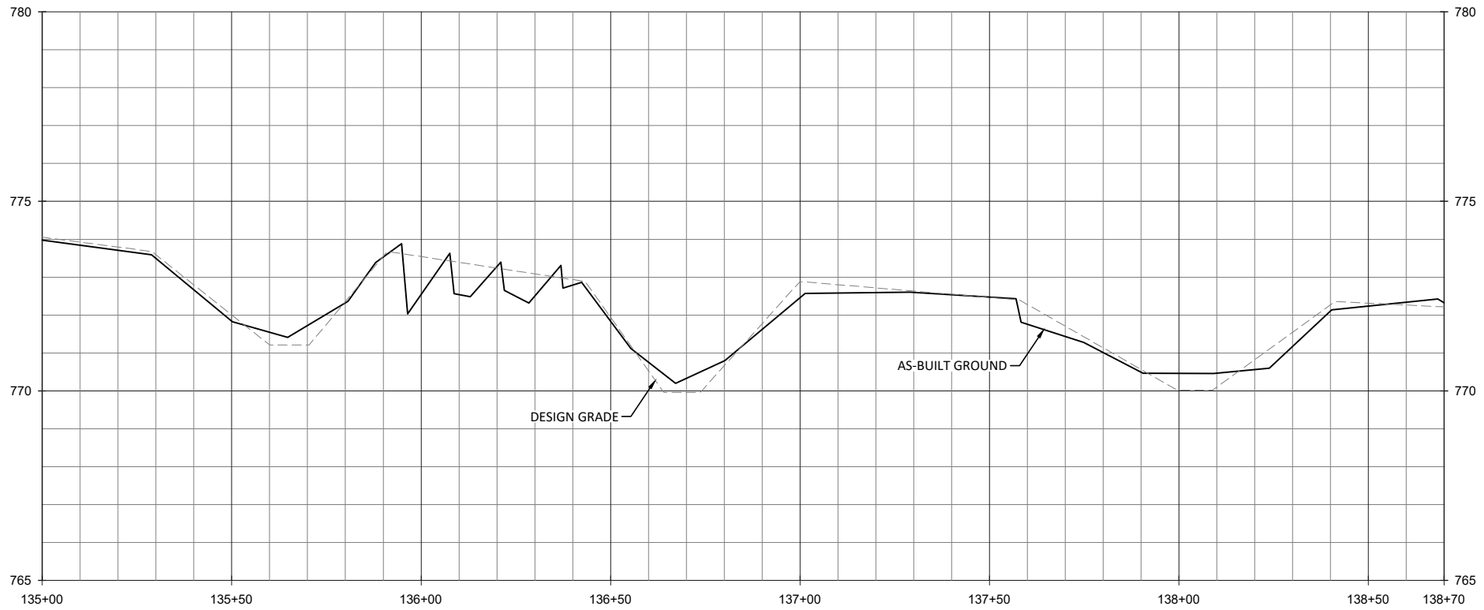
Wyant Creek
Stream Plan and Profile

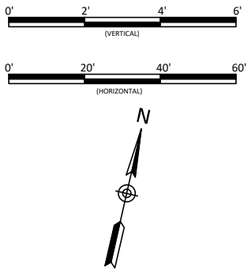
Revisions:

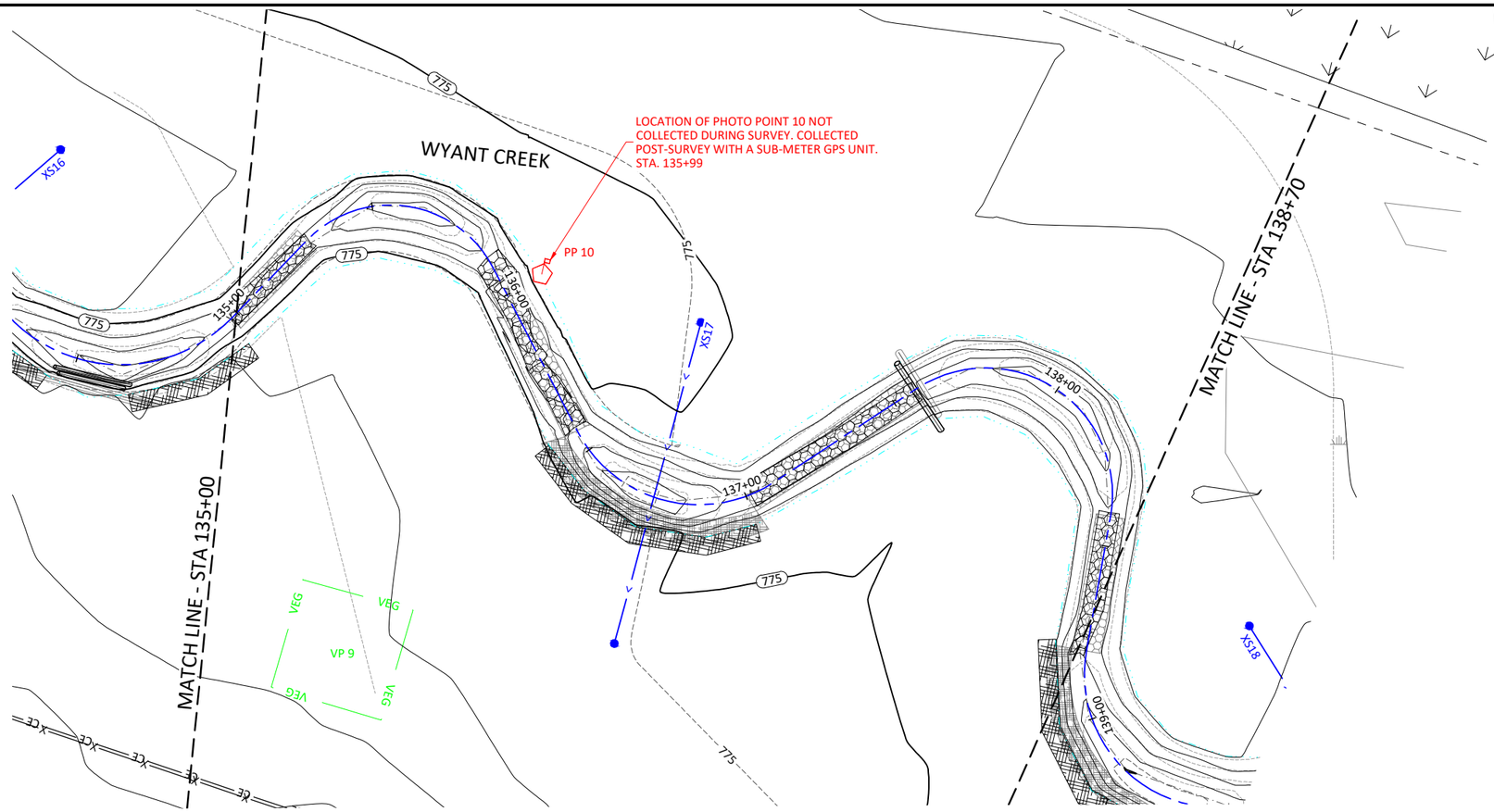
Date: October 5, 2021
Job Number: 005-02171
Project Engineer: EPN
Drawn By: JP
Checked By: JCK

Sheet 1.8

October 11, 2021







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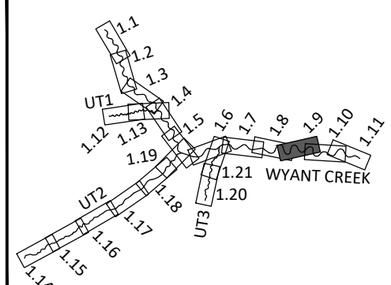

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NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER
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10/5/21

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

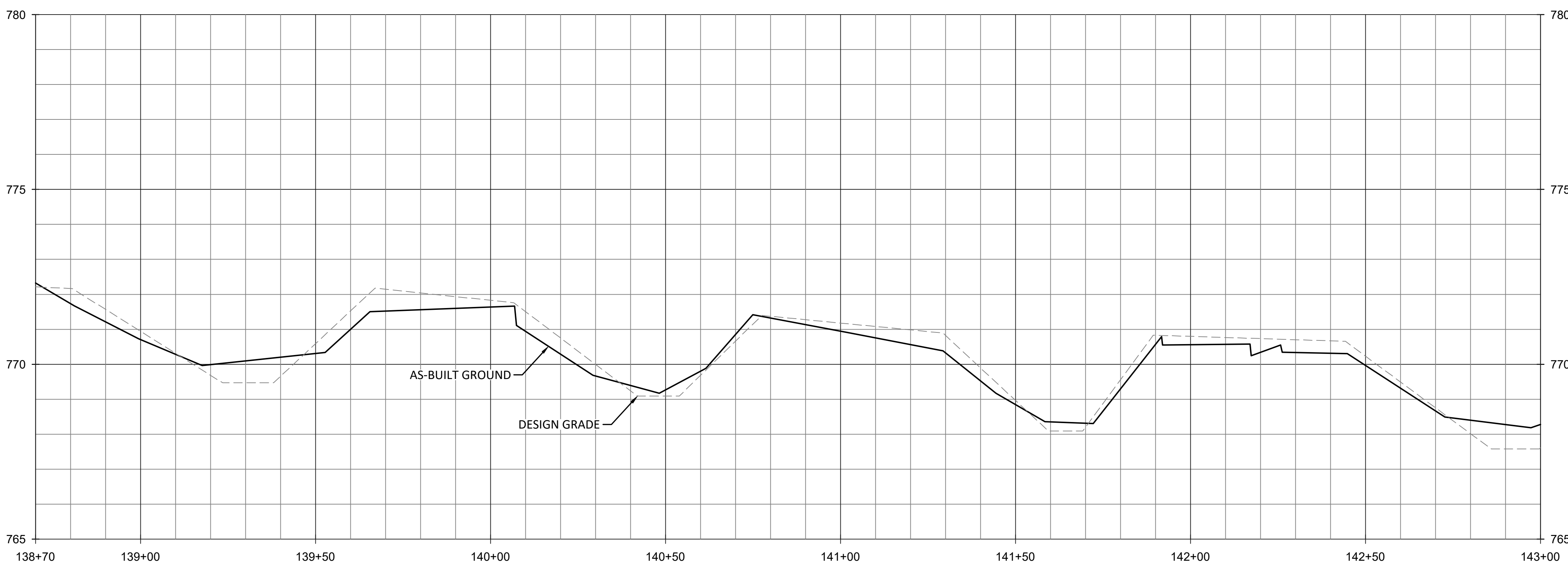
Wyant Creek
Stream Plan and Profile

Revisions:

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	ETN
Drawn By:	JP
Checked By:	JCK

Sheet 1.9

October 11, 2021



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(VERTICAL)
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(HORIZONTAL)
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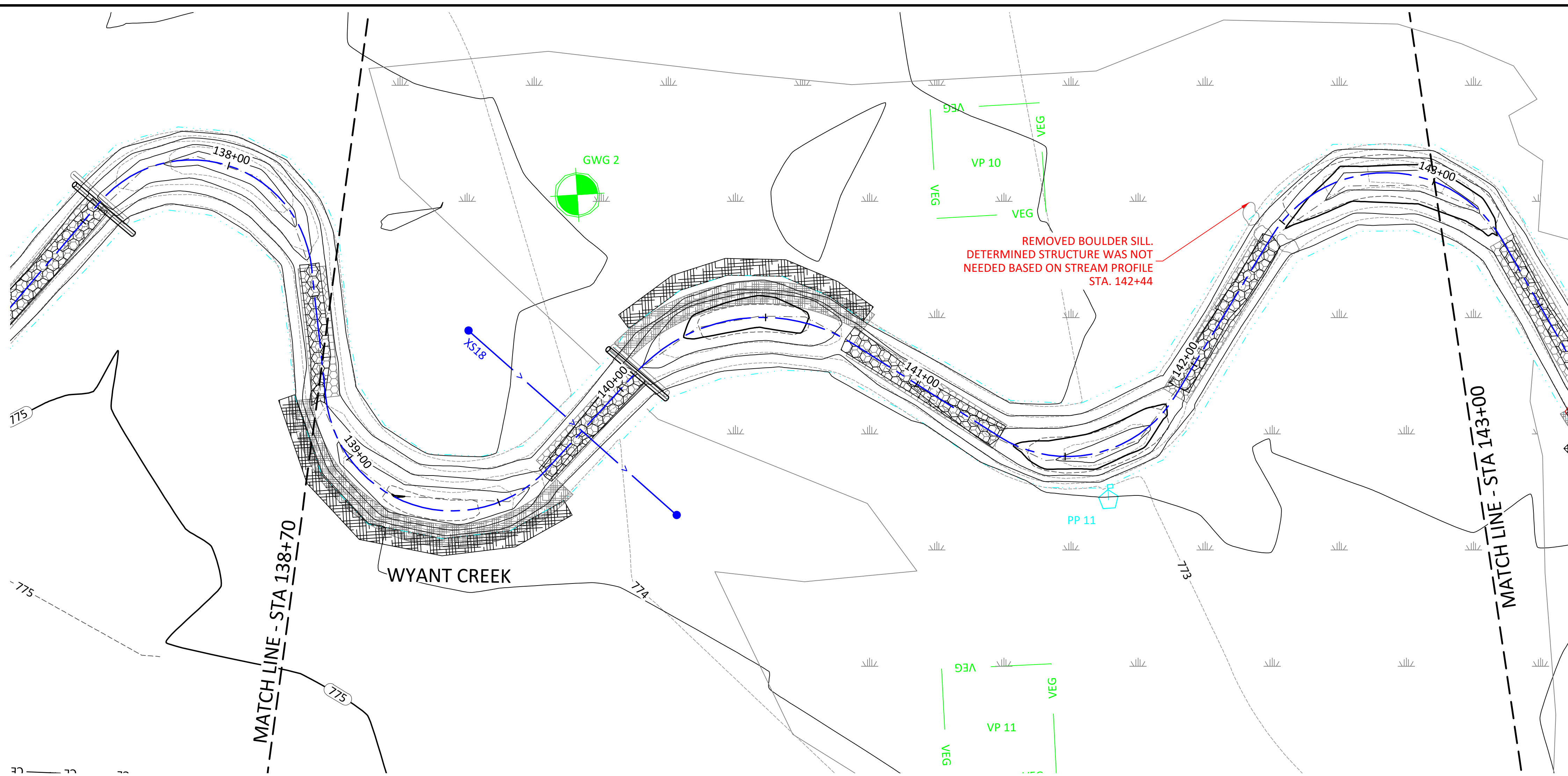

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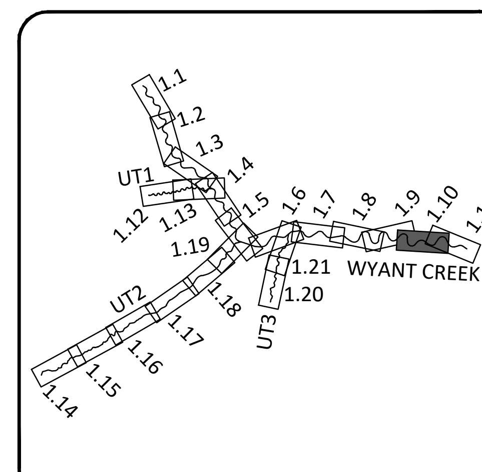

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042660 ERIC

10/5/21

Wyant Lands Mitigation Site Record Drawings

Lincoln County, North Carolina

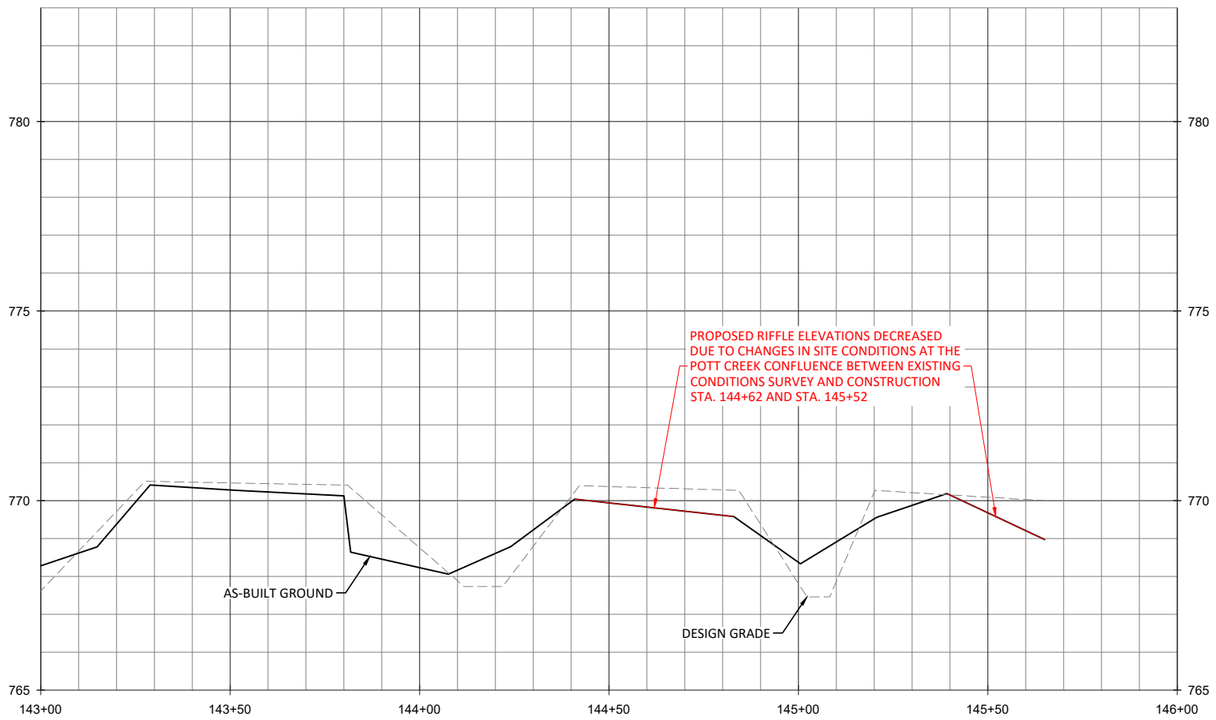
Wyant Creek
Stream Plan and Profile

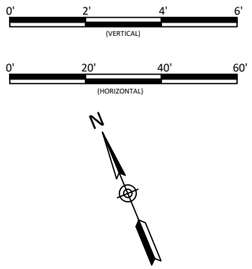
Revisions:

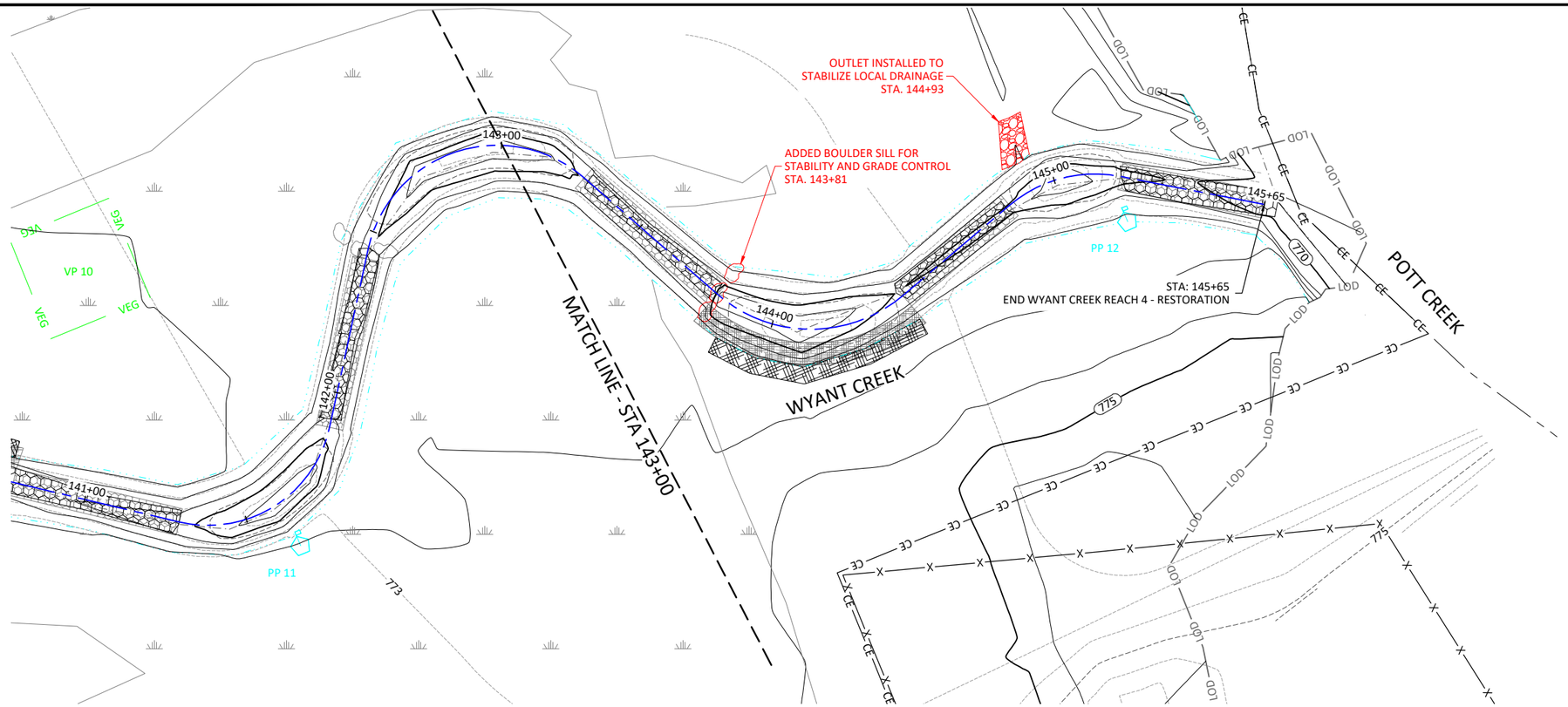
Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EFN
Drawn By:	JP
Checked By:	JCK

Sheet 1.10

October 11, 2021







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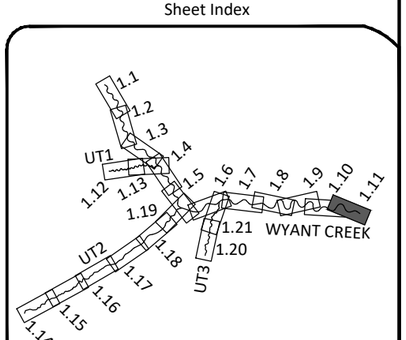

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10/5/21

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina
Wyant Creek
Stream Plan and Profile

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	JP
Checked By:	JCK

Revisions:
GRADING CORRECTED
BASED ON SURFACE ERROR

Sheet 1.11

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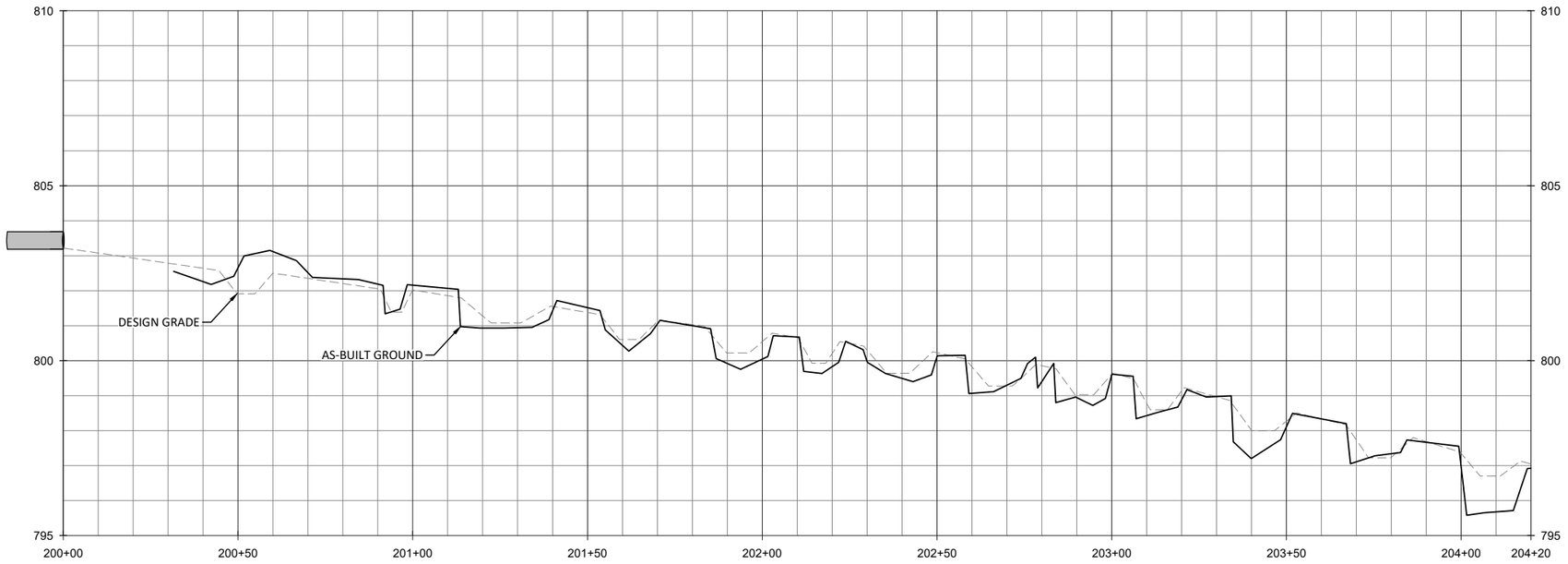
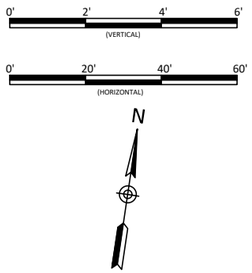
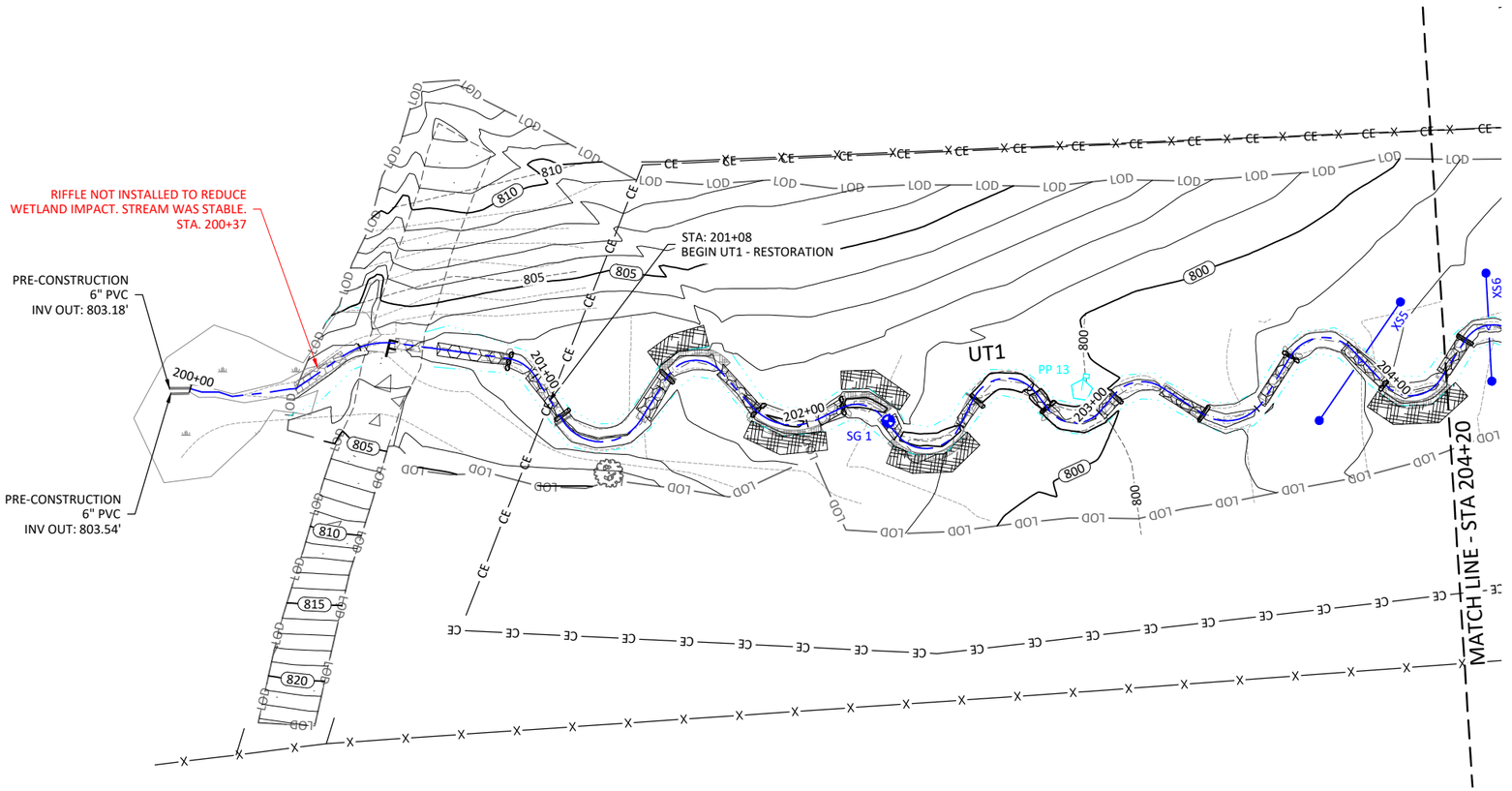
October 11, 2021







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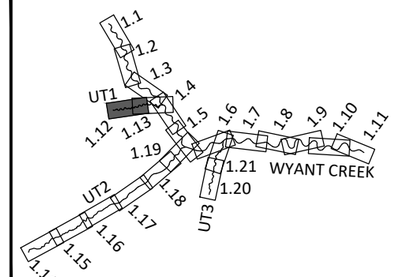

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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

UT1
Stream Plan and Profile

Revisions:

Date: October 5, 2021
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Drawn By: JP
Checked By: JCK

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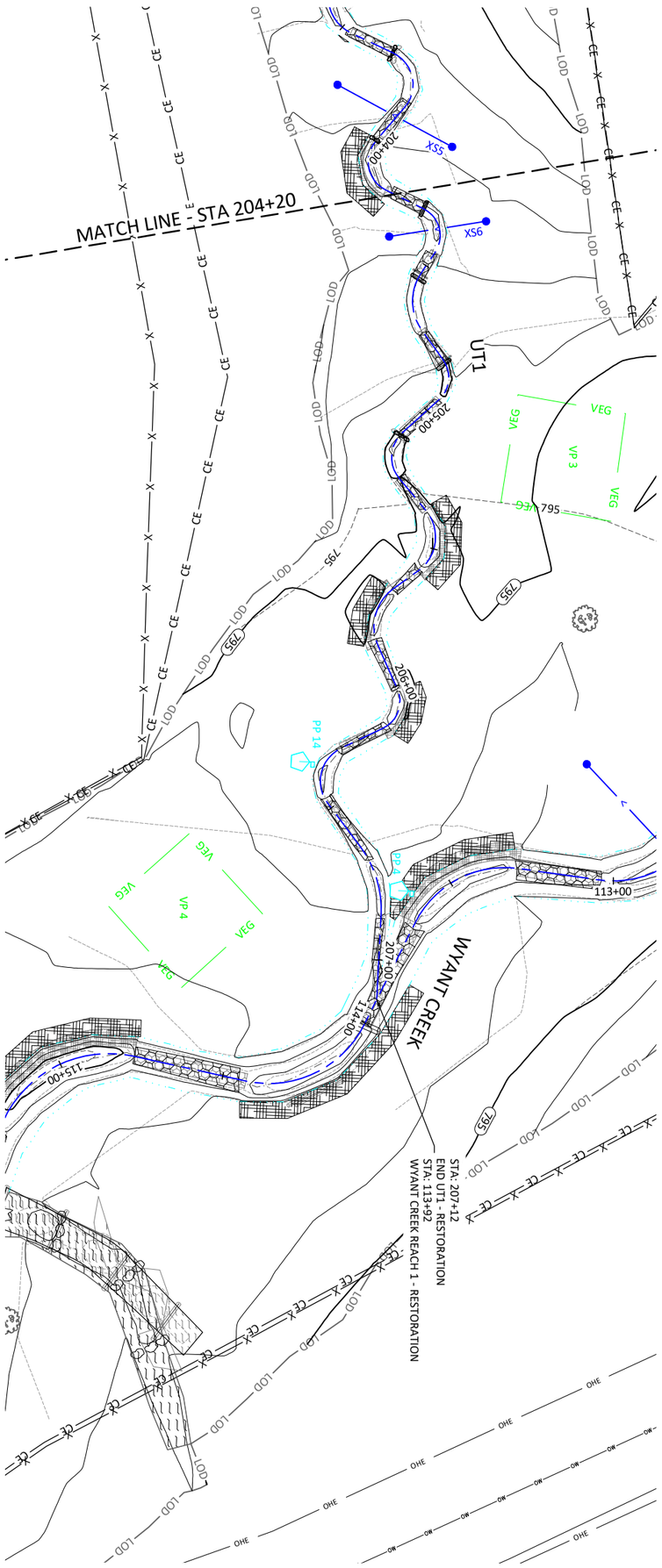

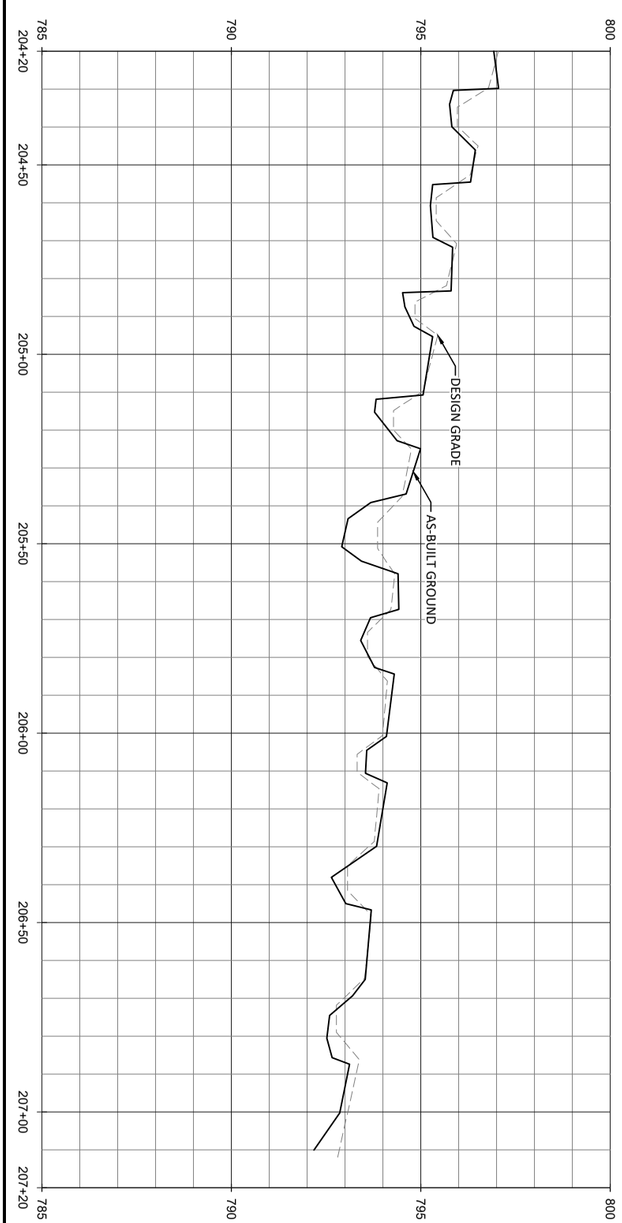

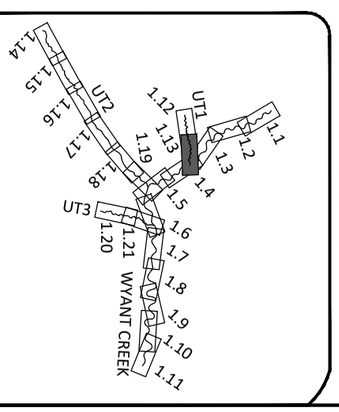

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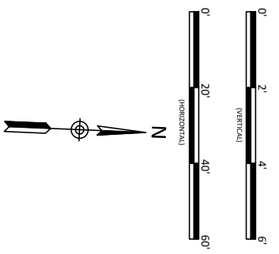

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Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	JP
Checked By:	JCK

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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

UT1
Stream Plan and Profile

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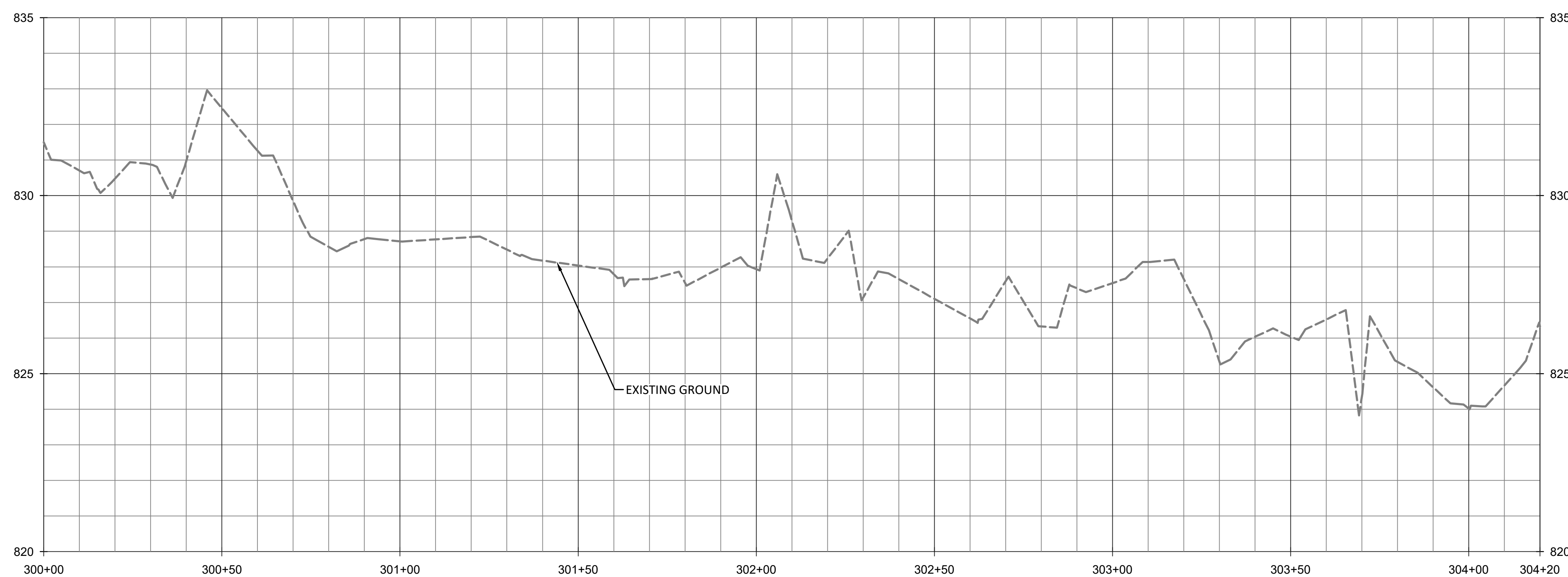

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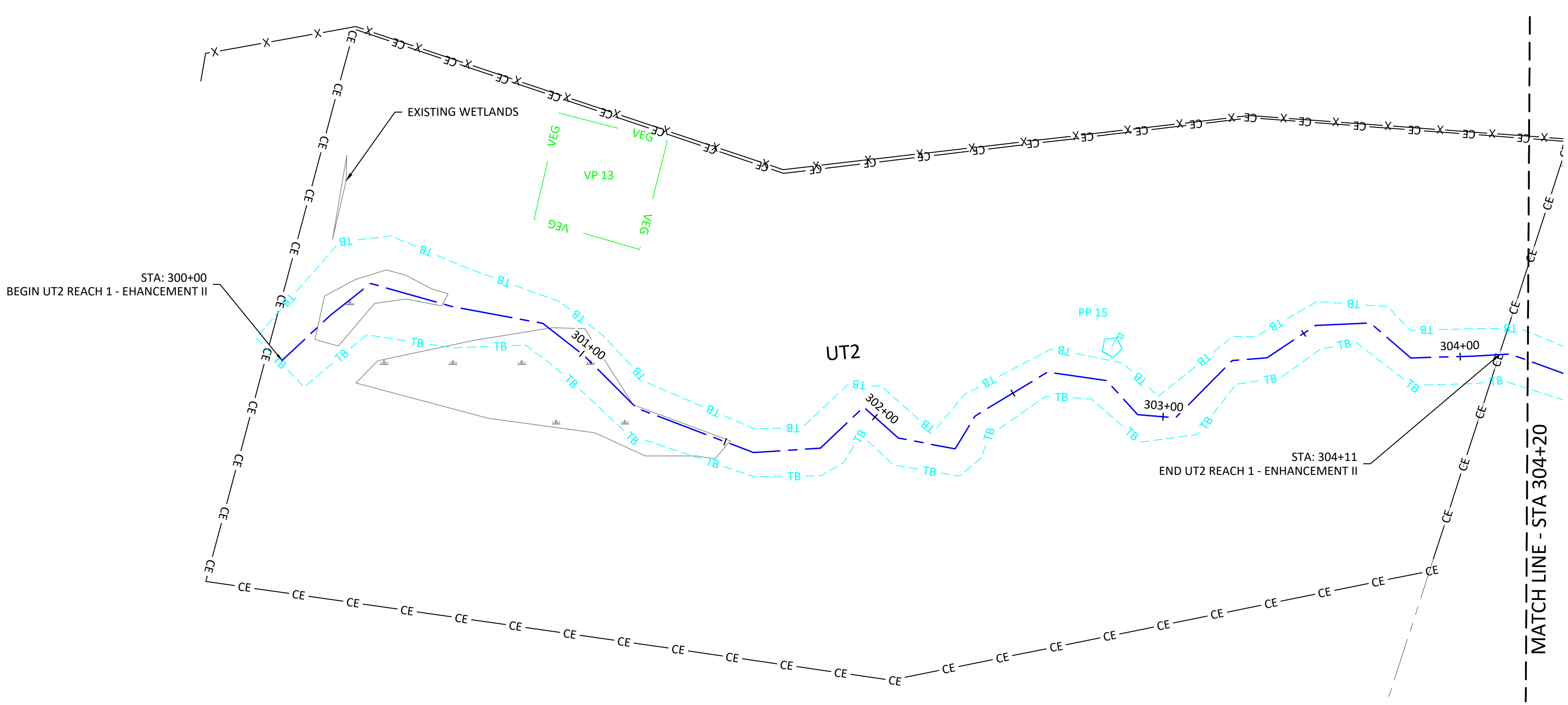
1. EXCLUDE CATTLE
2. TREAT INVASIVE VEGETATION
3. UNDERSTORY PLANTING - SEE PLANTING PLANS



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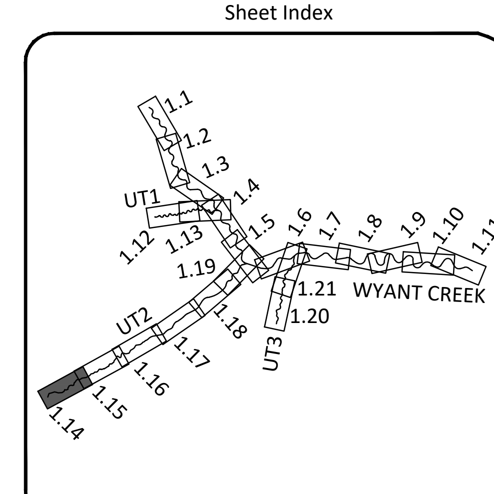

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Wyant Lands Mitigation Site Record Drawings

Lincoln County, North Carolina

UT2

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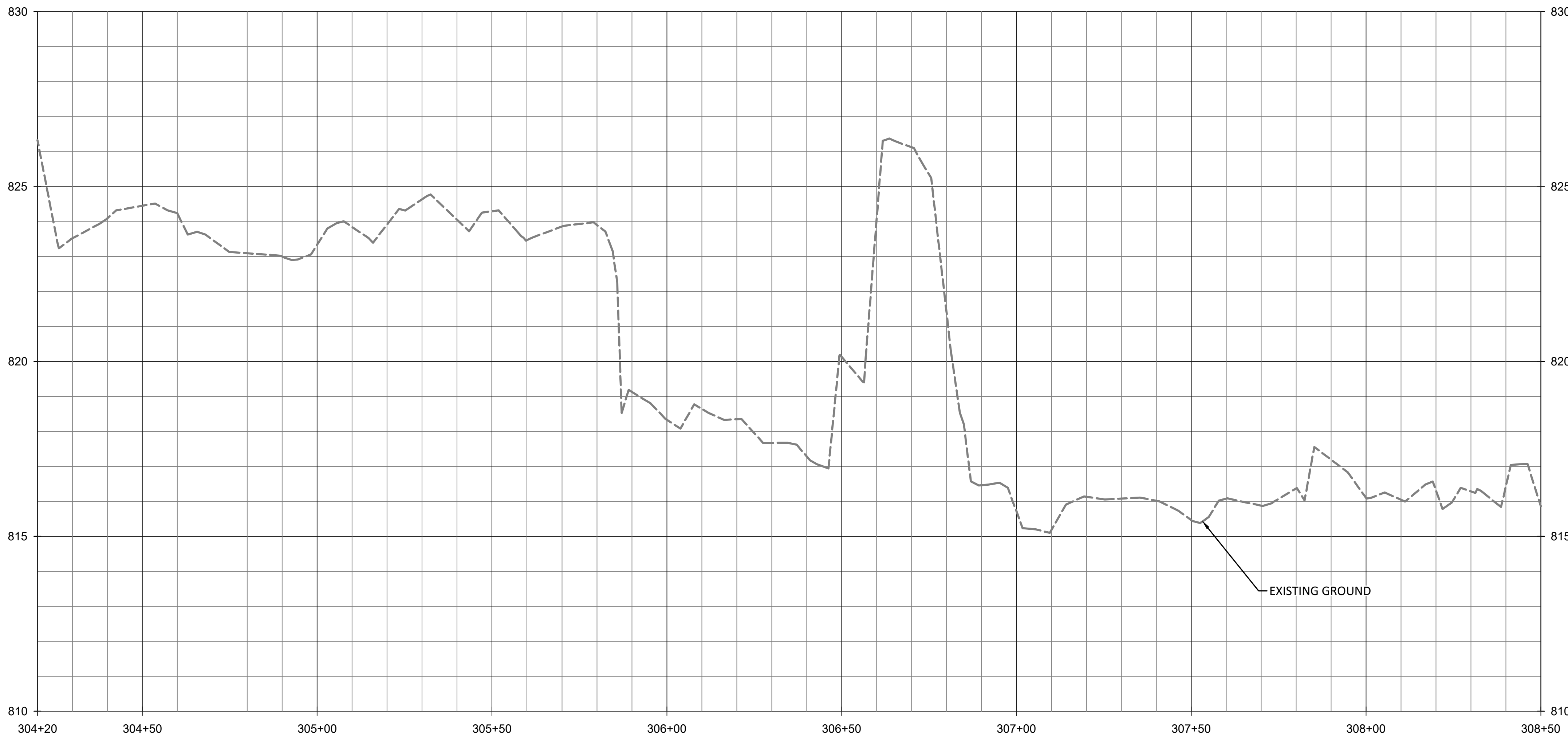
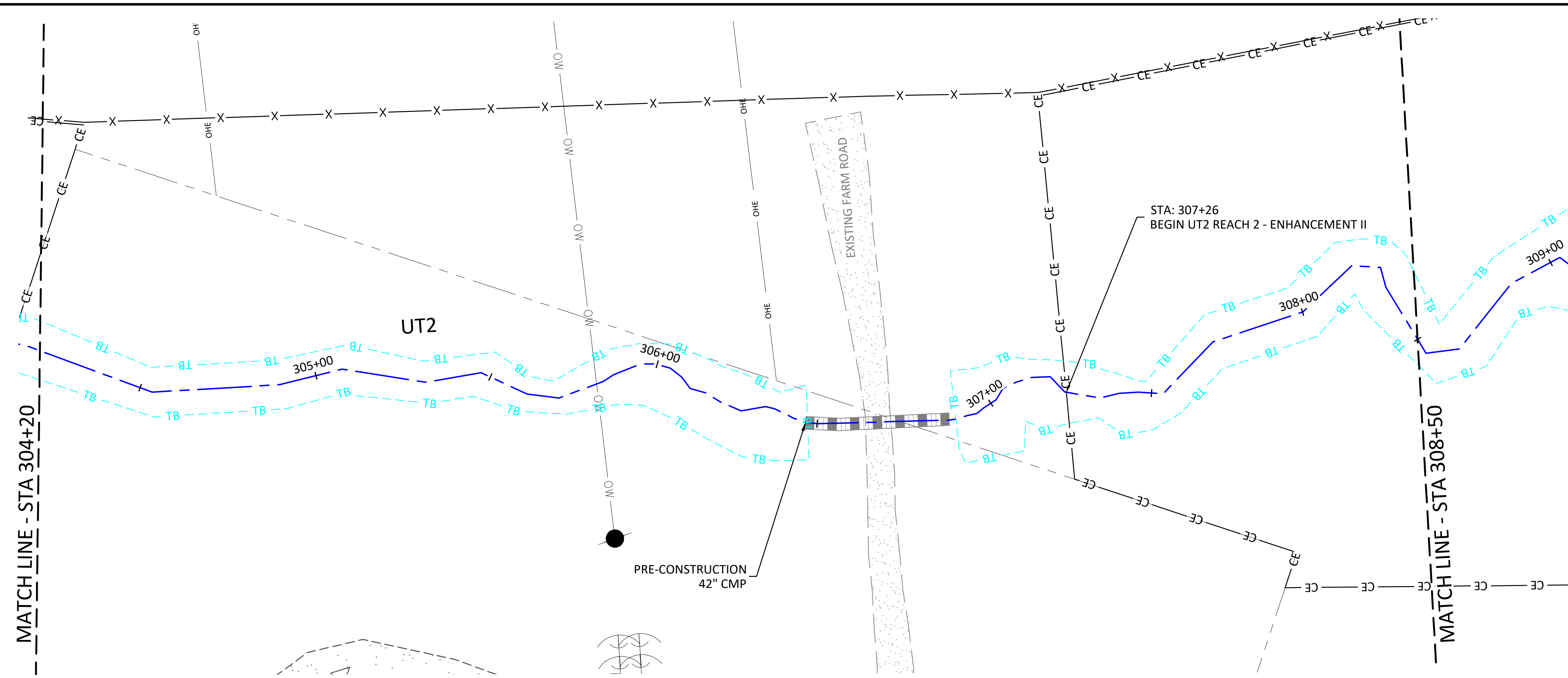


NOTE:
1. NO DESIGN WORK STA: 304+09 - 307+26

ENHANCEMENT II REACH TREATMENTS:
1. EXCLUDE CATTLE
2. TREAT INVASIVE VEGETATION
3. UNDERSTORY PLANTING - SEE PLANTING PLANS



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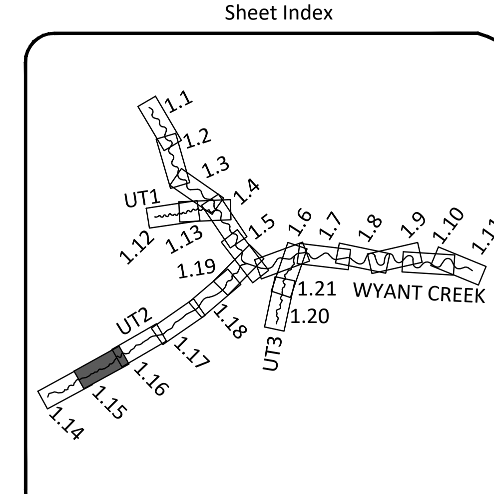

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UT2
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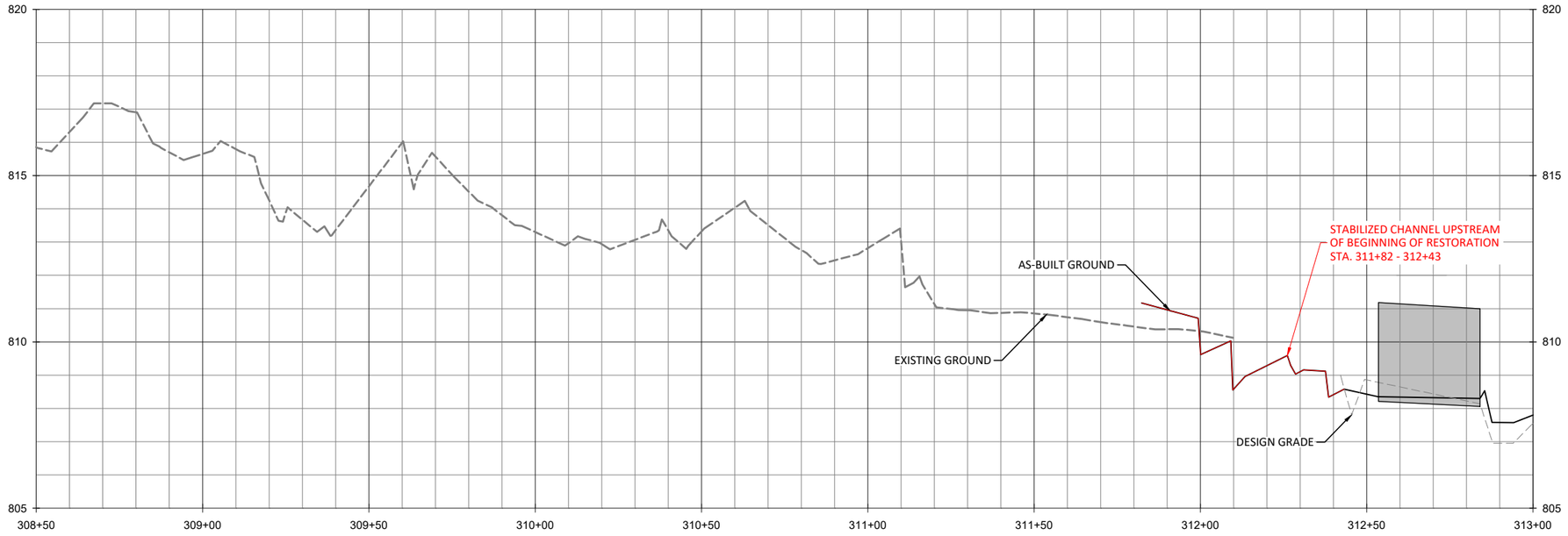

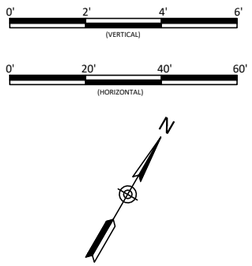

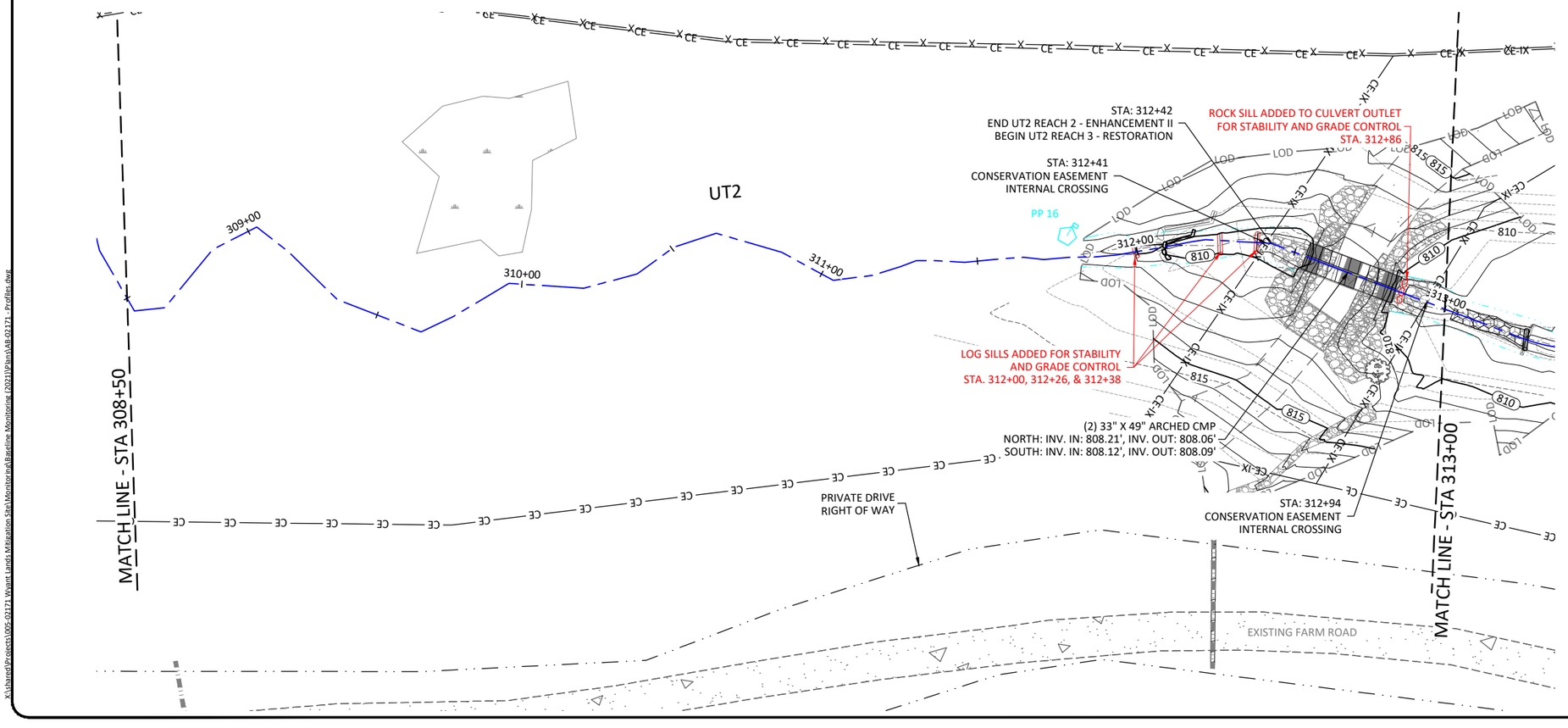

ENHANCEMENT II REACH TREATMENTS:
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2. TREAT INVASIVE VEGETATION
3. SUPPLEMENTAL PLANTING - SEE PLANTING PLANS

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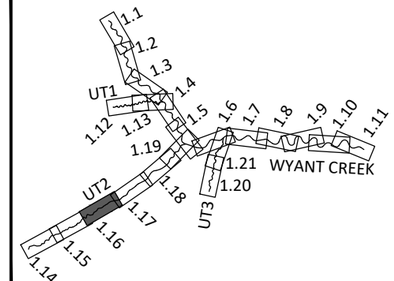

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UT2
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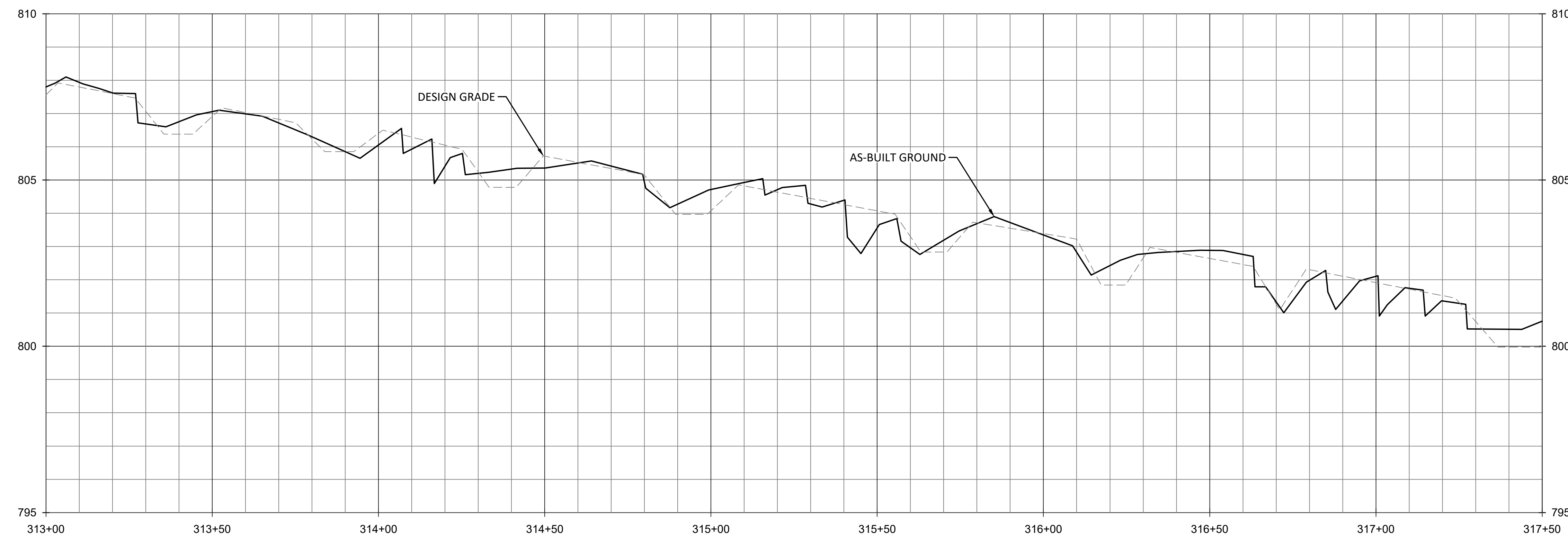

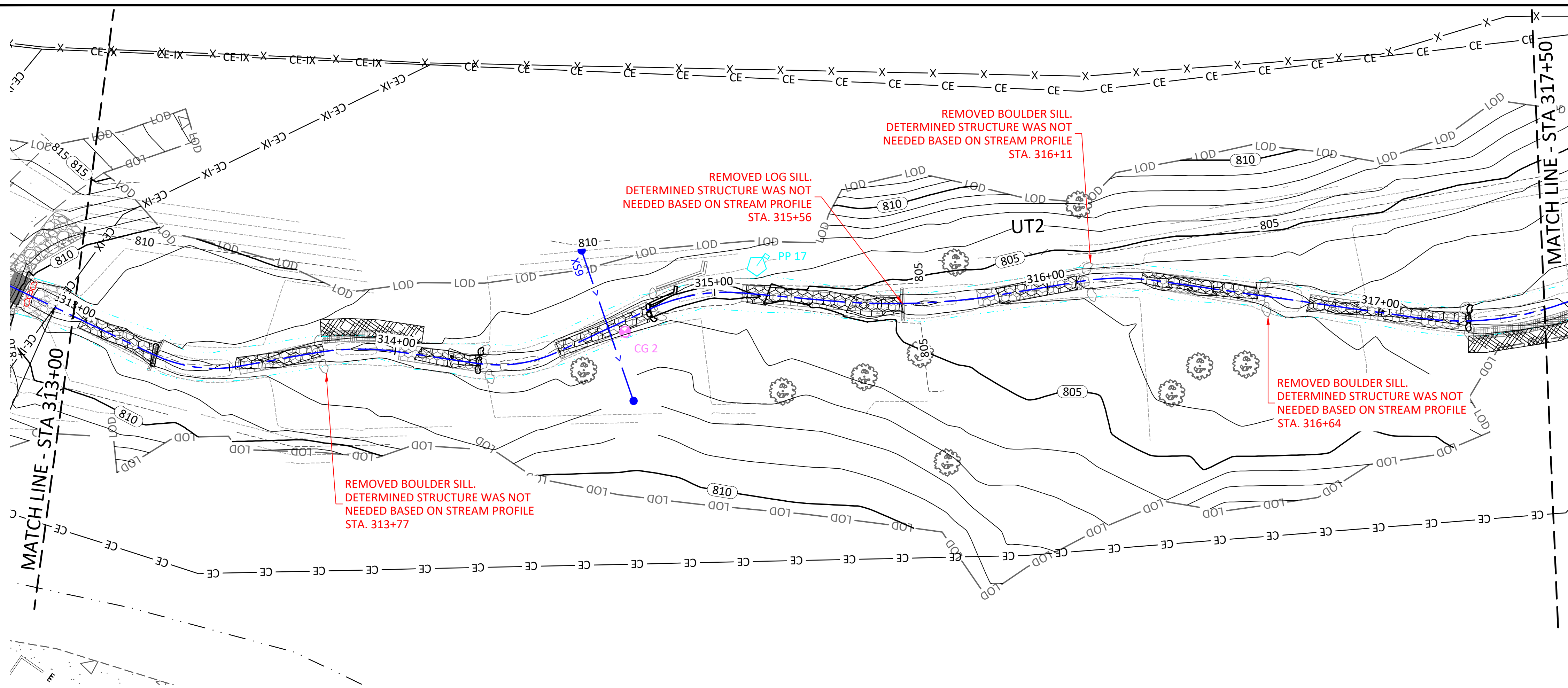

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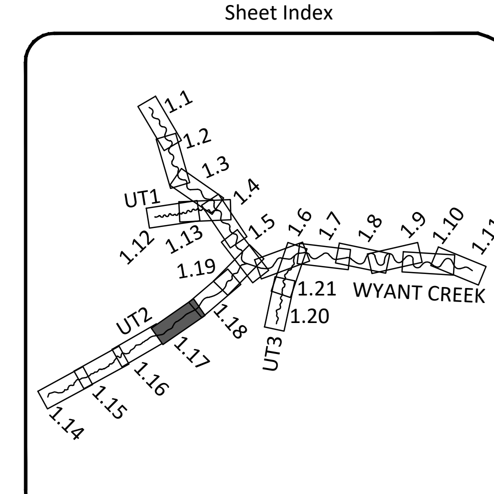

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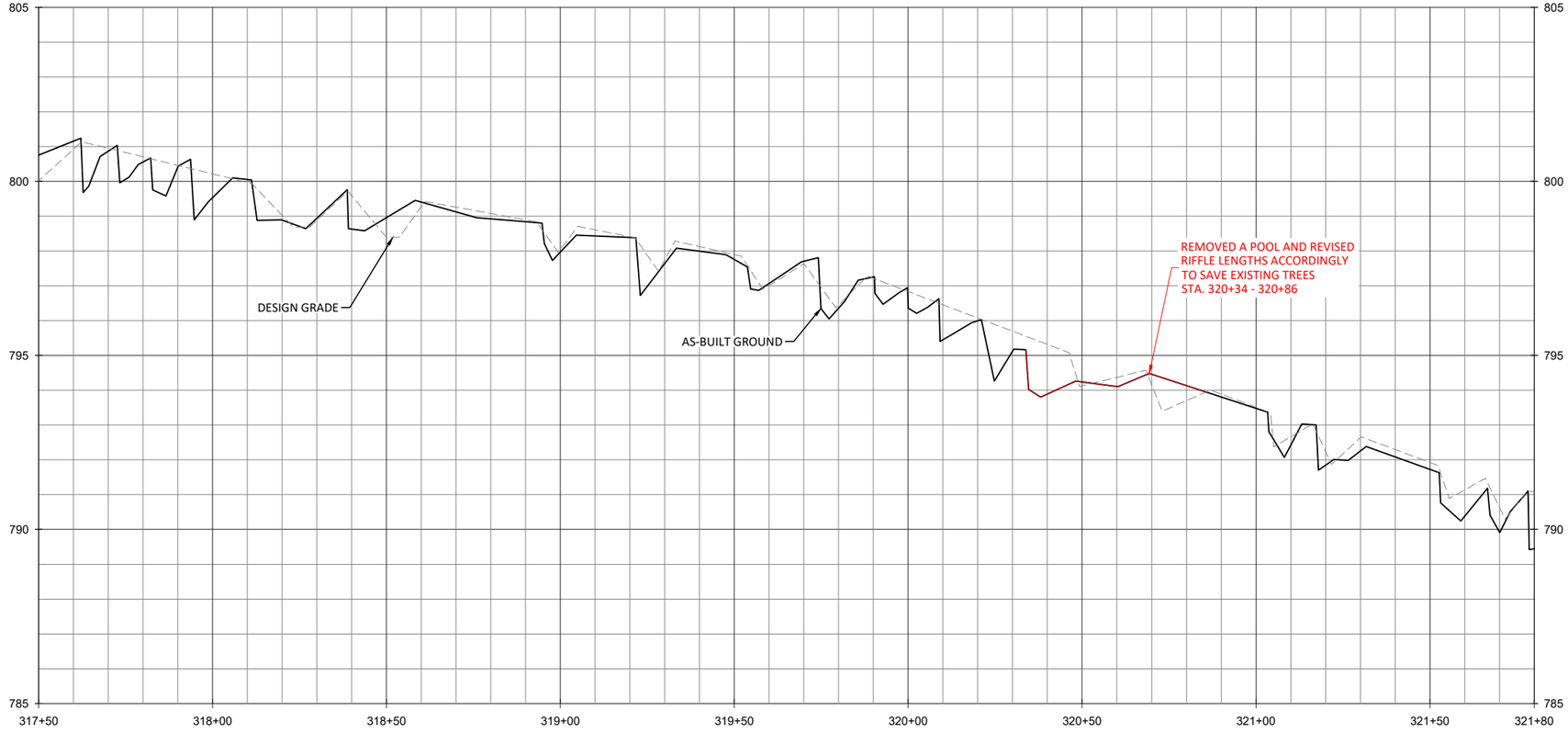

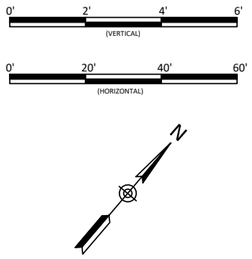

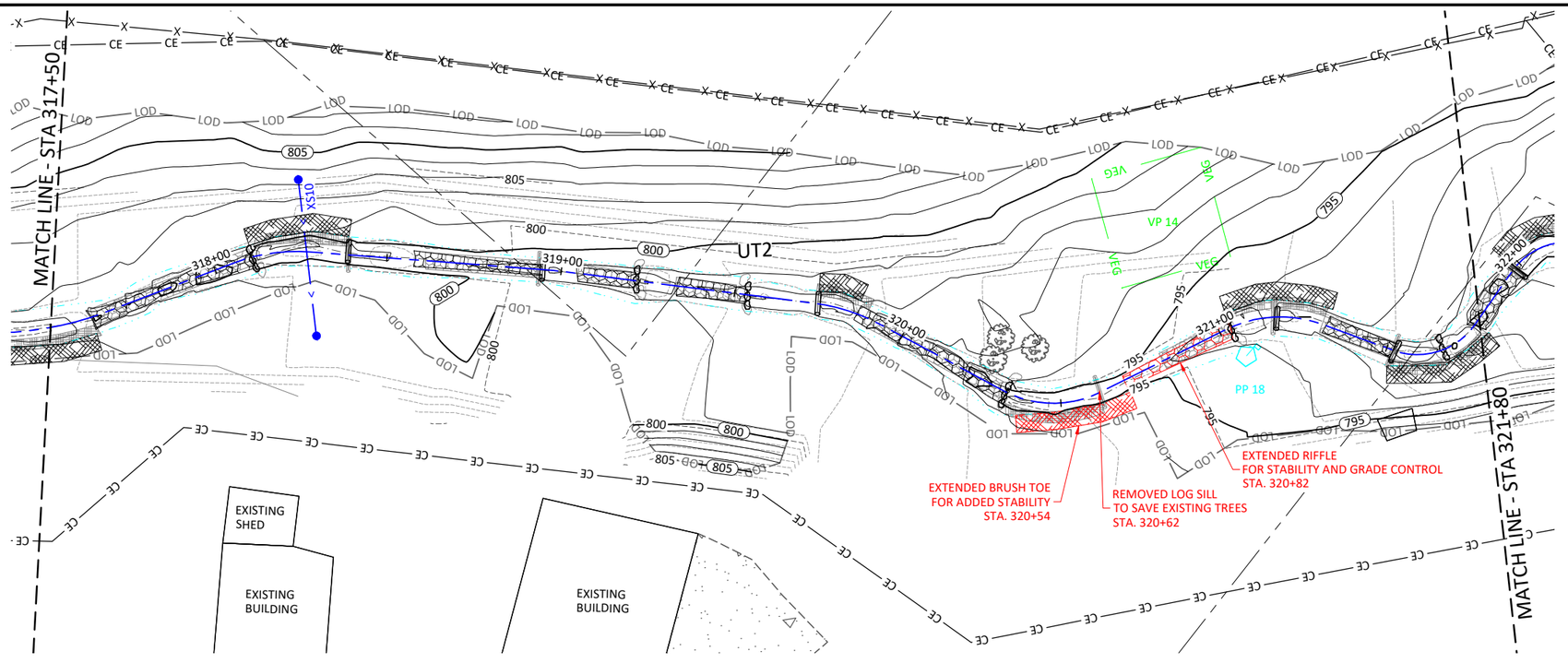

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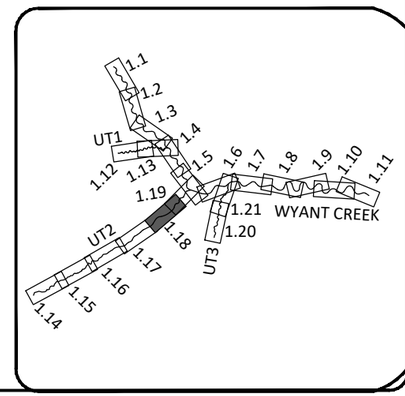

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Lincoln County, North Carolina

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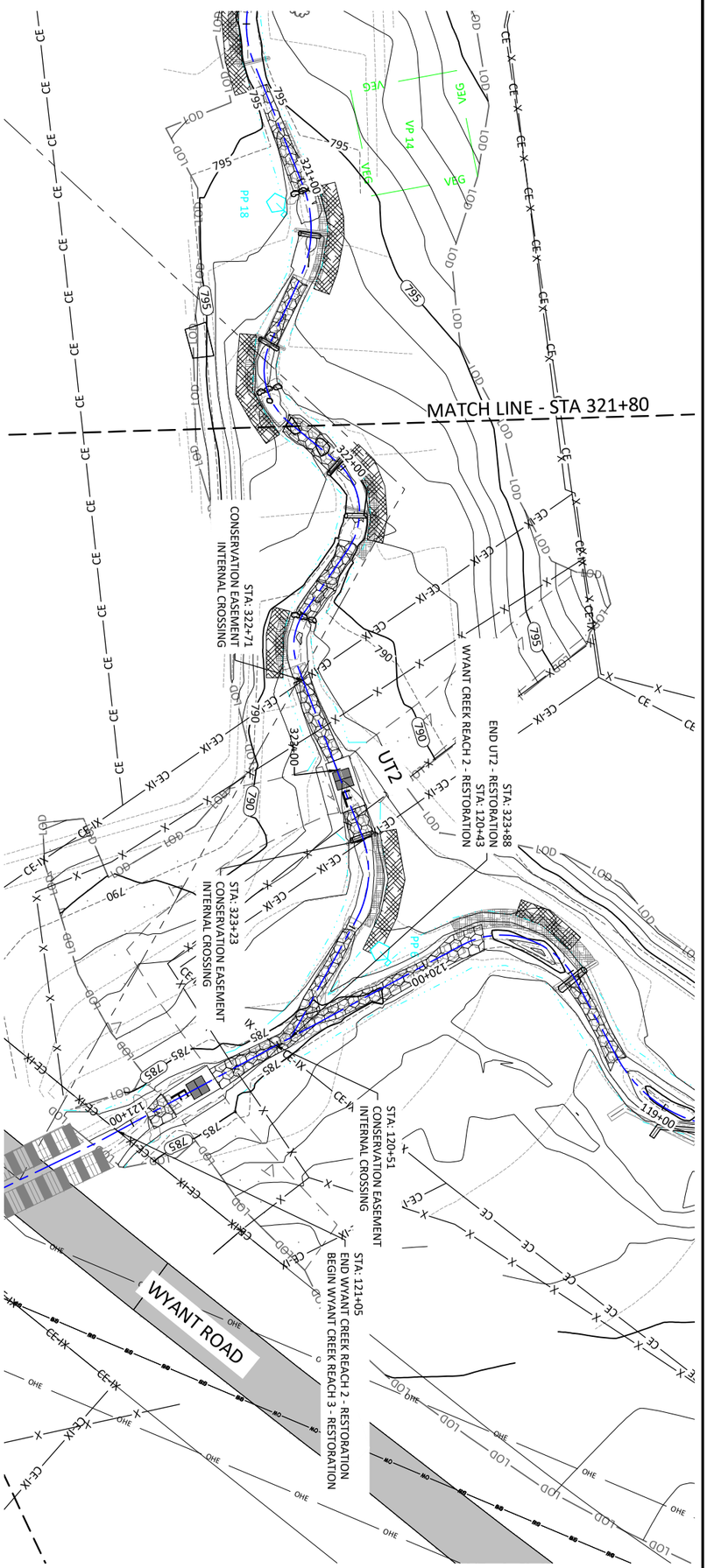

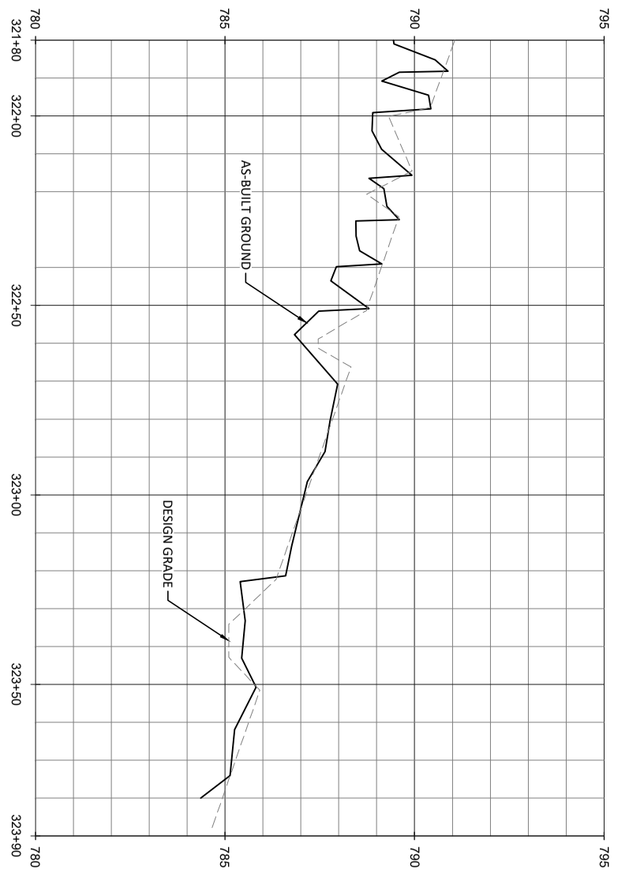

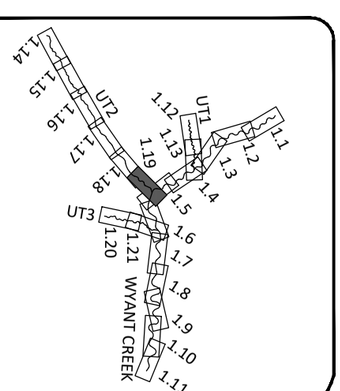

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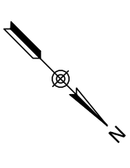

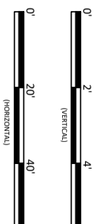

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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

UT2
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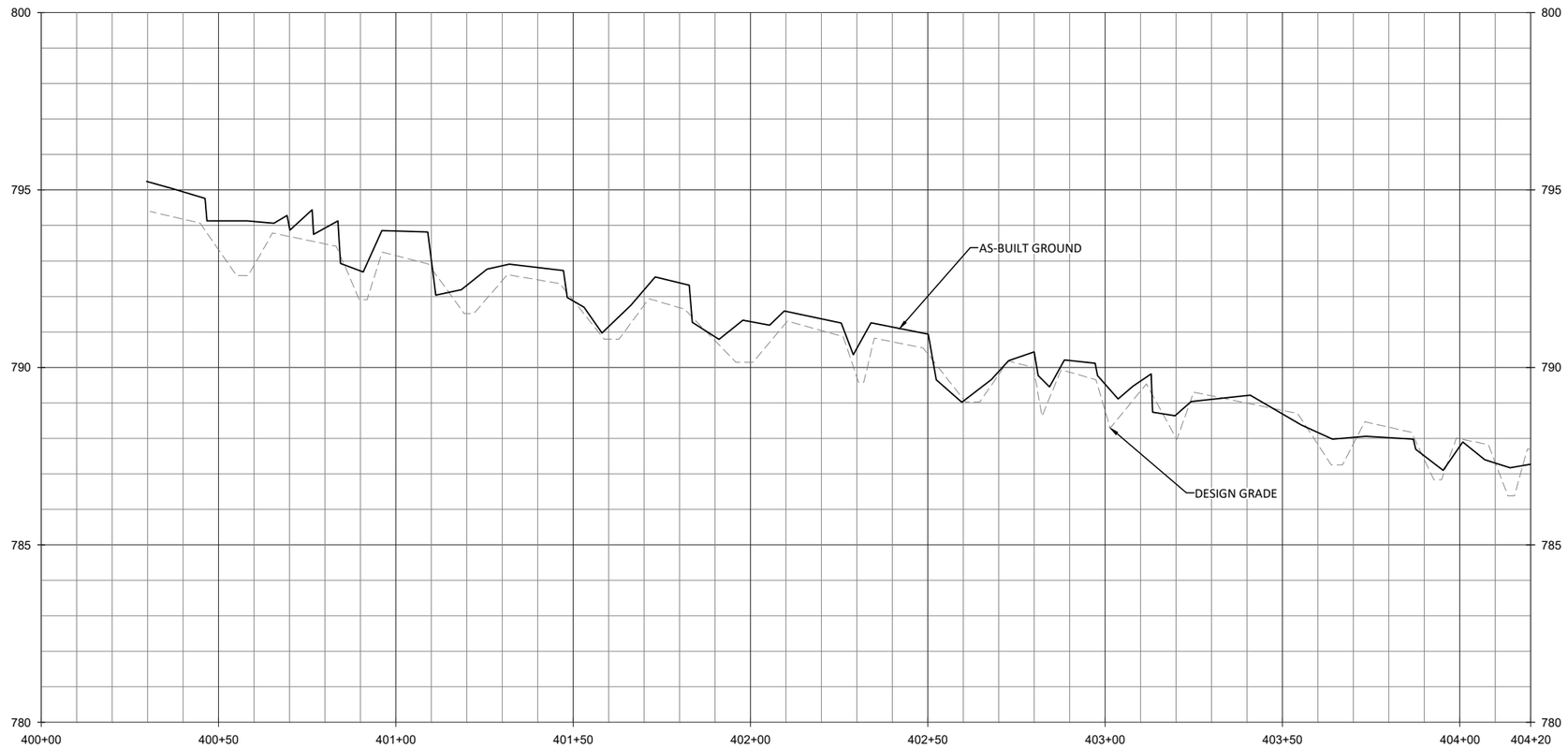

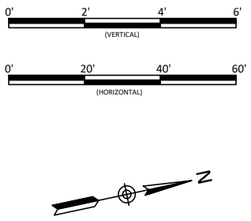

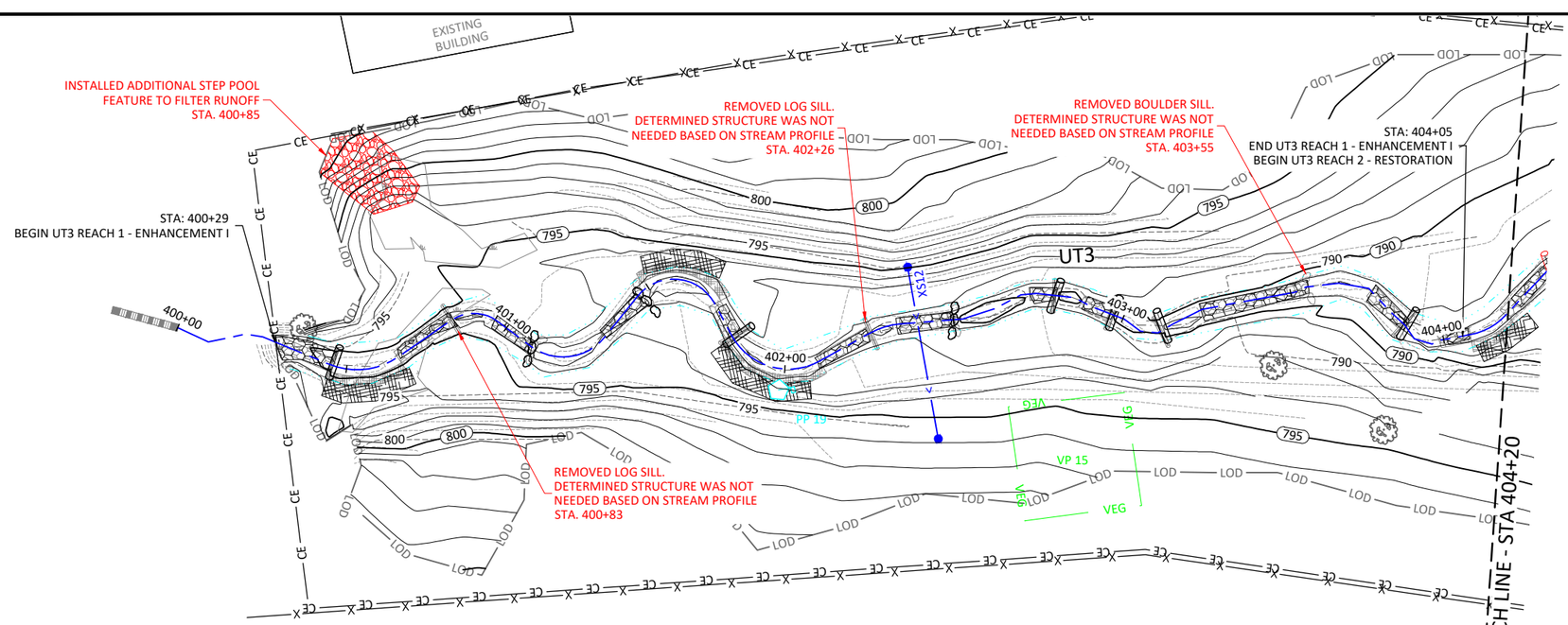

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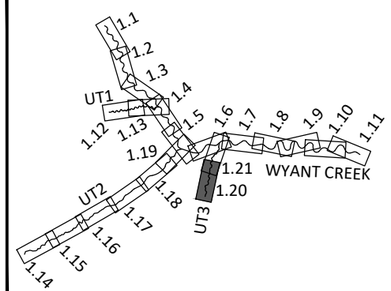

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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

UT3
Stream Plan and Profile

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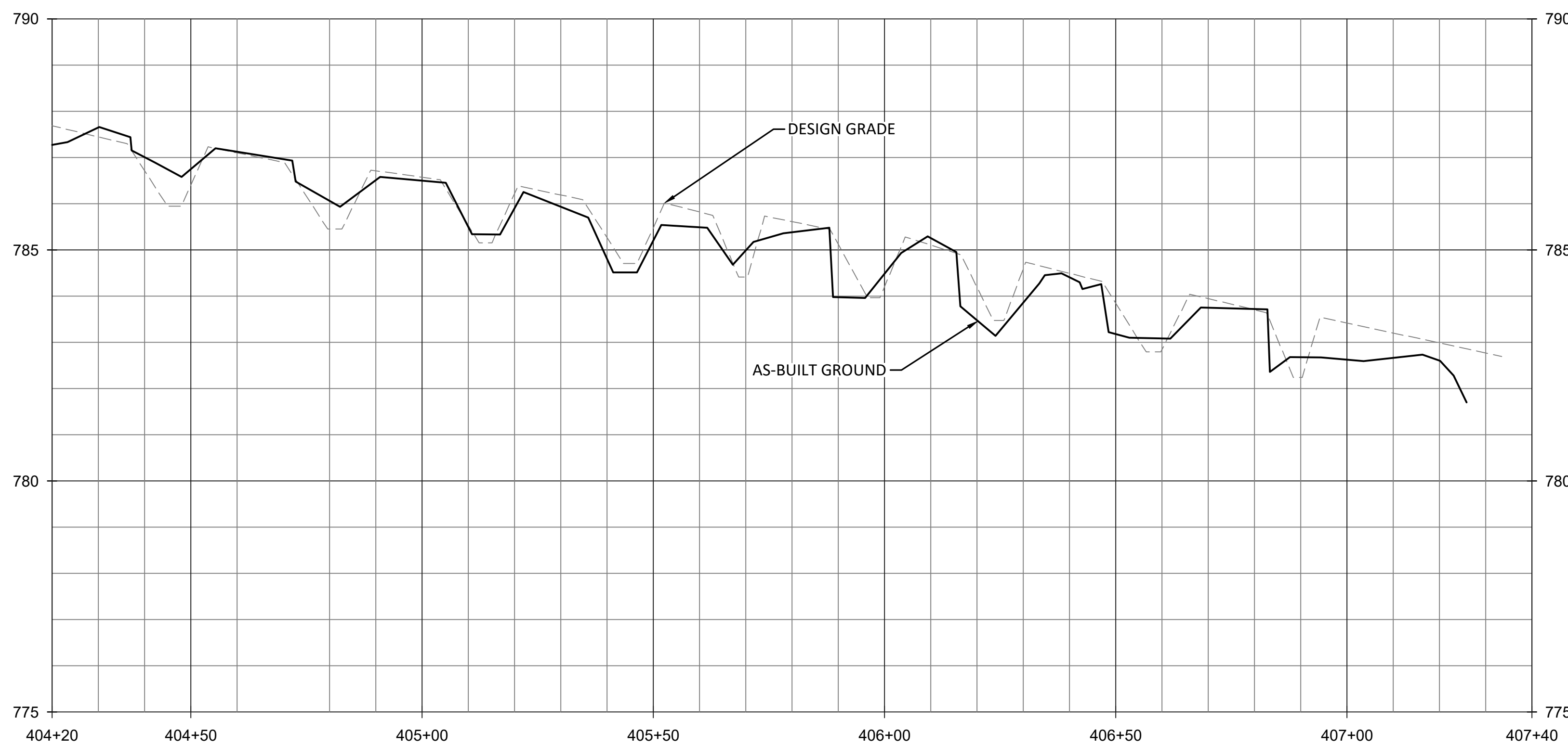

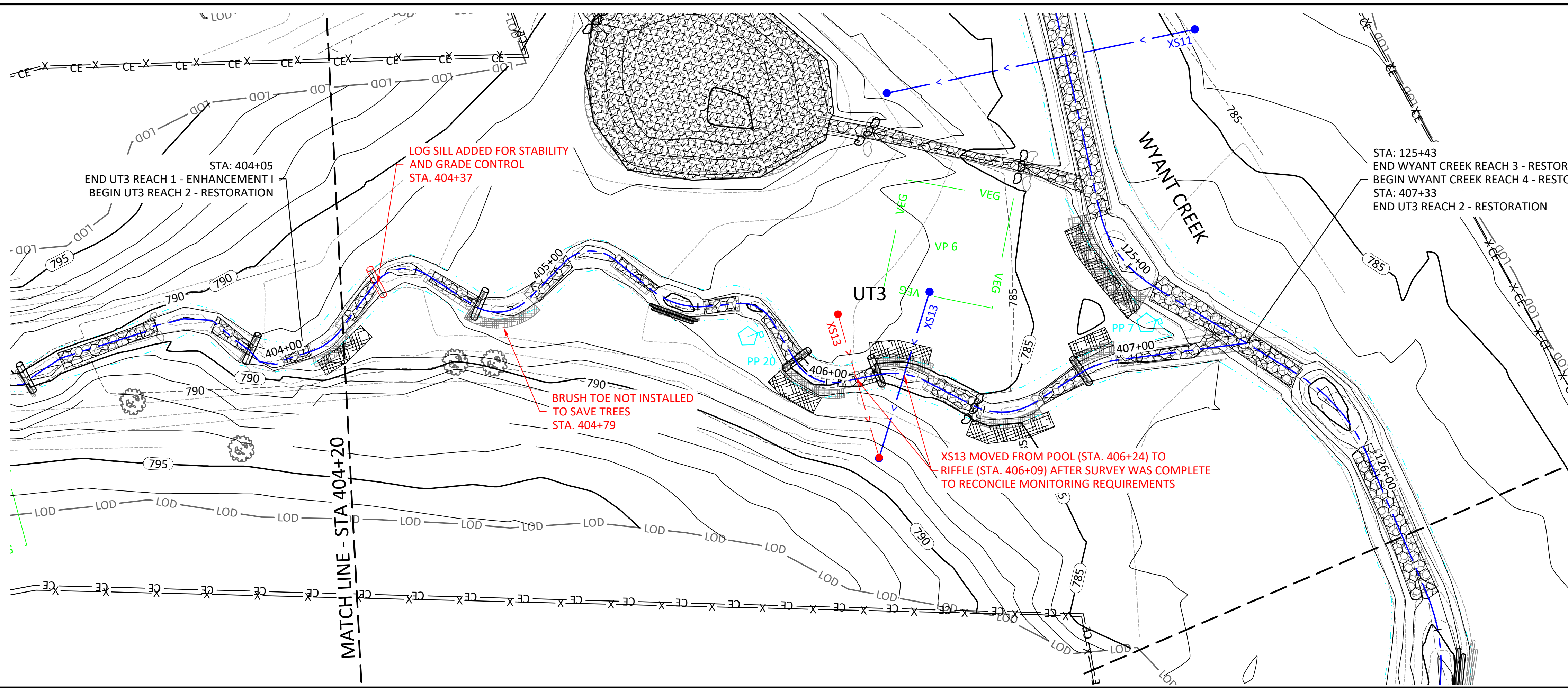

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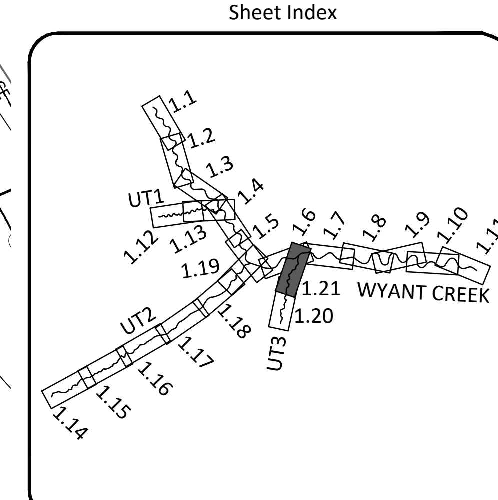

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Lincoln County, North Carolina

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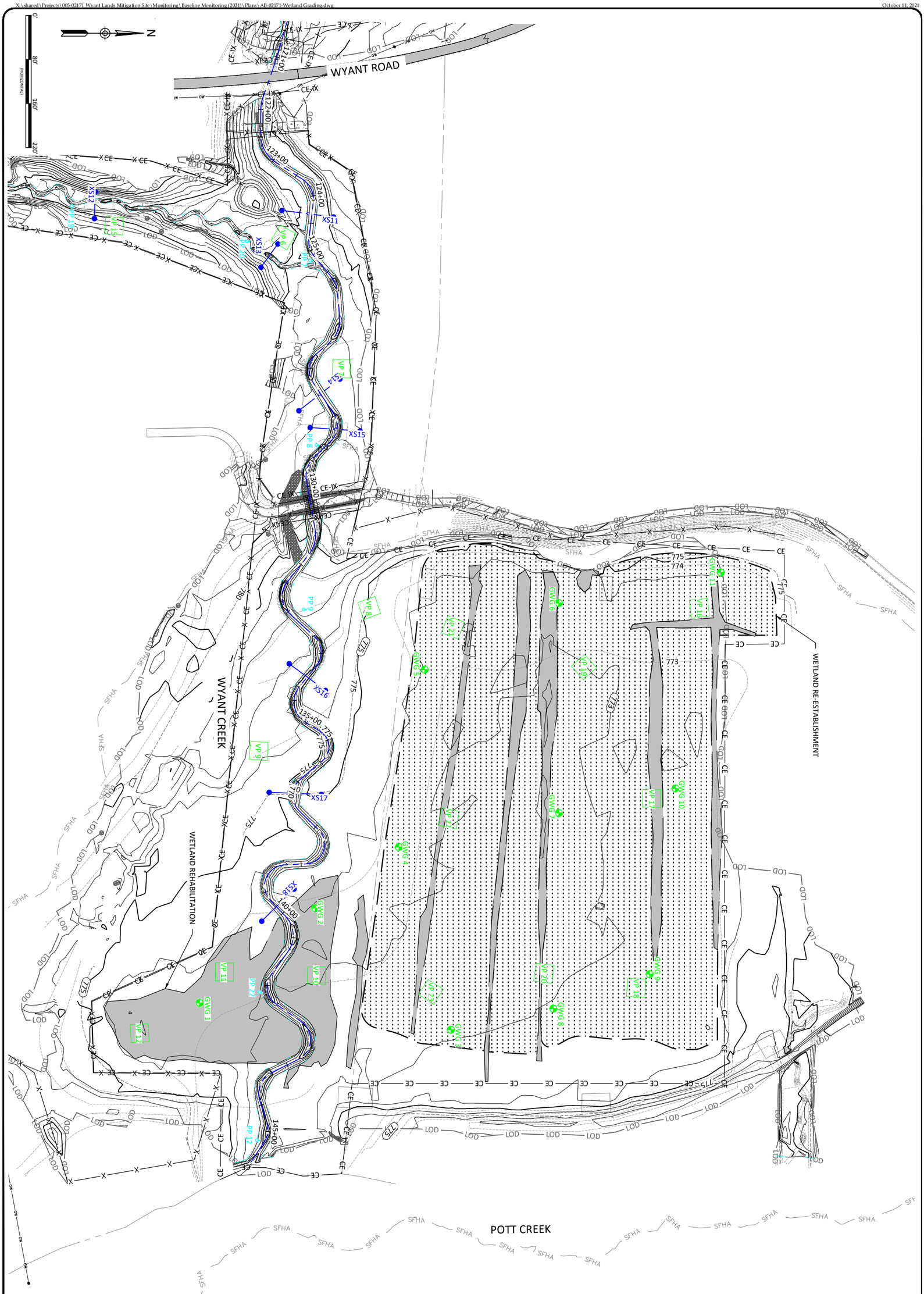

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Drawn By:	JP
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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Wetland Grading Overview

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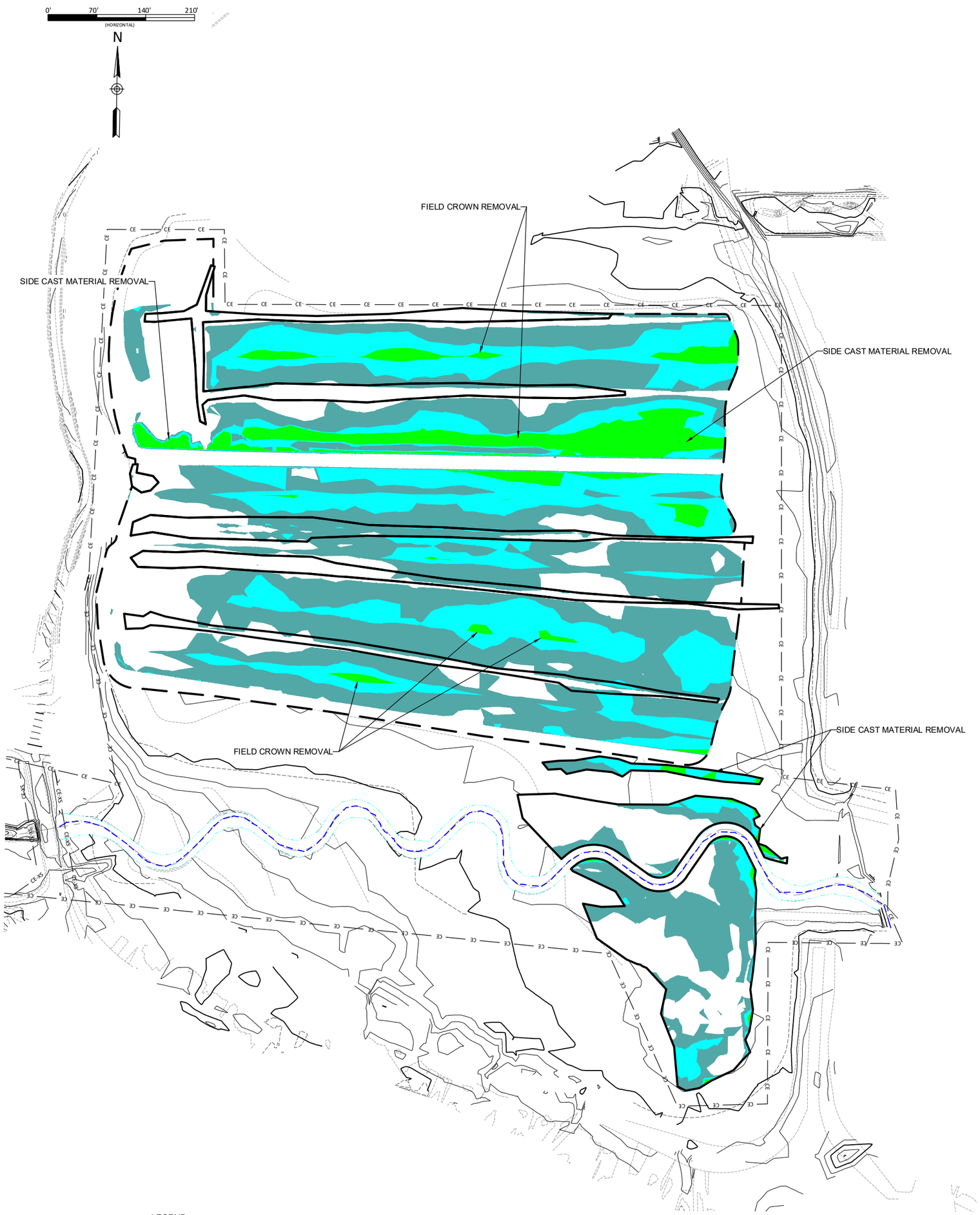

LEGEND

- PROPOSED STREAM CENTERLINE
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- AS-BUILT MAJOR CONTOURS
- AS-BUILT MINOR CONTOURS
- AS-BUILT ALIGNMENT
- AS-BUILT CONSERVATION EASEMENT
- AS-BUILT BANKFULL
- WETLAND REHABILITATION
- WETLAND RE-ESTABLISHMENT

As-Built Cut Depths					
Number	Minimum Elevation (ft)	Maximum Elevation (ft)	Color	Acres of Proposed Wetland Restoration (Includes Rehabilitation and Re-establishment[1])	Percent of Proposed Wetland Restoration (Includes Rehabilitation and Re-establishment[1])
1	Greater than 1.0'			~~1.97~~ 0.84	~~14%~~ 6%
2	-1.0	-0.5		~~4.20~~ 3.13	~~29%~~ 22%
3	-0.5	0.0		~~4.07~~ 5.43	~~28%~~ 38%

1) Total proposed wetland restoration acreage including rehabilitation and re-establishment is 14.2 Acres per the mitigation plan. Areas that were not graded and/or were filled are not included within the table above.

As-Built Cut Exceeding 12"		
Cut Type	Acres of Wetland Restoration (Includes Rehabilitation and Re-establishment)	Percent of Wetland Restoration (Includes Rehabilitation and Re-establishment)
Field Crown Removal	0.38	2.7%
Side Cast Removal	0.41	2.9%
Other	0.04	0.3%

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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Wetland Grading Exhibit
Wetland Grading

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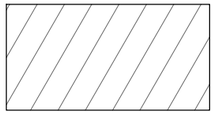
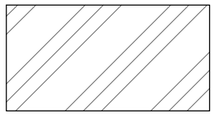


NOTE:
1. SPECIES COMPOSITION AND PERCENTAGES REVISED ACCORDING TO AVAILABILITY.

RIPARIAN ZONE				
Species	**Common Name**	**Spacing**	**Min. Caliper**	**Percentage**
~~*Alnus serrulata*~~	~~Tag Alder~~	~~12ft x 6ft~~	~~0.25"~~	~~5%~~
Carpinus caroliniana	American Hornbeam	12ft x 6ft	0.25"	~~5%~~ 10%
Liriodendron tulipifera	Tulip Poplar	12ft x 6ft	0.25"	~~5%~~ 9%
Platanus occidentalis	Sycamore	12ft x 6ft	0.25"	20%
Betula nigra	River Birch	12ft x 6ft	0.25"	15%
Fraxinus pennsylvanica	Green Ash	12ft x 6ft	0.25"	5%
Populus deltoides	Eastern Cottonwood	12ft x 6ft	0.25"	~~10%~~ 9%
Diospyros virginiana	Persimmon	12ft x 6ft	0.25"	~~10%~~ 9%
Quercus nigra	Water Oak	12ft x 6ft	0.25"	5%
Quercus phellos	Willow Oak	12ft x 6ft	0.25"	~~10%~~ 9%
Quercus michauxii	Swamp Chestnut Oak	12ft x 6ft	0.25"	~~10%~~ 9%



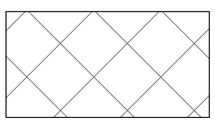
Stabilization Seeding		
Scientific Name	**Common Name**	**lb/acre**
Festuca arundinacea	Tall Fescue	80

NOTE:
1. "STABLIZATION SEEDING" IS FOR AREAS OF DISTURBANCE OUTSIDE CONSERVATION EASEMENT.

WYANT CREEK STREAM BANK PLANTING ZONE - Livestakes				
Species	**Common Name**	**Indiv. Spacing**	**Min. Caliper**	**Percentage**
Salix nigra	Black Willow	3-5 ft	0.5"	10%
Cornus amomum	Silky Dogwood	3-5 ft	0.5"	20%
Cephalanthus occidentalis L.	Common Buttonbush	3-5 ft	0.5"	15%
Salix sericea	Silky Willow	3-5 ft	0.5"	25%
Physocarpus opulifolius	Ninebark	3-5 ft	0.5"	15%
Sambucus canadensis	Elderberry	3-5 ft	0.5"	15%

TRIBUTARY STREAM BANK PLANTING ZONE - Live Stakes				
Species	**Common Name**	**Indiv. Spacing**	**Min. Caliper**	**Percentage**
Cephalanthus occidentalis L.	Common Buttonbush	3-5 ft	0.5"	20%
Salix sericea	Silky Willow	3-5 ft	0.5"	40%
Physocarpus opulifolius	Ninebark	3-5 ft	0.5"	20%
Sambucus canadensis	Elderberry	3-5 ft	0.5"	20%

STREAM BANK ZONE - Herbaceous Plugs			
Species	**Common Name**	**Indiv. Spacing**	**Percentage**
Juncus effusus	Common Rush	4 ft	40%
Carex alata	Broadwing Sedge	4 ft	20%
Carex lurida	Lurid Sedge	4 ft	15%
Scirpus cyperinus	Woolgrass	4 ft	15%
Carex crinita	Fringed Sedge	4 ft	10%



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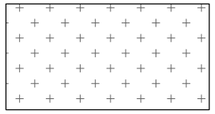

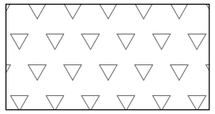

WETLAND PLANTING ZONE				
Species	**Common Name**	**Spacing**	**Min. Caliper**	**Percentage**
Platanus occidentalis	Sycamore	12ft x ~~12ft~~	0.25"	~~15%~~ 17%
Quercus phellos	Willow Oak	12ft x ~~12ft~~	0.25"	~~15%~~ 17%
Betula nigra	River Birch	12ft x ~~12ft~~	0.25"	~~15%~~ 17%
Quercus michauxii	Swamp Chestnut Oak	12ft x ~~12ft~~	0.25"	~~15%~~ 17%
Sambucus nigra	Elderberry	12ft x ~~12ft~~	0.25"	~~10%~~ 17%
~~*Alnus serrulata*~~	~~Tag Alder~~	~~12ft x 12ft~~	~~0.25"~~	~~10%~~
Cephalanthus occidentalis L.	Common Buttonbush	12ft x ~~12ft~~	0.25"	~~10%~~ 15%
~~*Rosa palustris*~~	~~Swamp Rose~~	~~12ft x 12ft~~	~~0.25"~~	~~10%~~

NOTES:
1. WETLAND ZONE SPACING CHANGED TO 12' X 6' TO ENCOURAGE HABITAT ESTABLISHMENT.
2. SPECIES COMPOSITION AND PERCENTAGES REVISED ACCORDING TO AVAILABILITY.

UNDERSTORY ZONE				
Species	**Common Name**	**Spacing**	**Min. Caliper**	**Percentage**
Carpinus caroliniana	American Hornbeam	12ft x 12ft	0.25"	~~15%~~ 18%
Aronia arbutifolia	Red Chokeberry	12ft x 12ft	0.25"	~~15%~~ 18%
~~*Ilex verticillata*~~	~~Winter Berry~~	~~12ft x 12ft~~	~~0.25"~~	~~15%~~
Lindera benzoin	Spicebush	12ft x 12ft	0.25"	~~15%~~ 18%
Fagus grandifolia	American Beech	12ft x 12ft	0.25"	~~10%~~ 13%
~~*Magnolia acuminata*~~	~~Cucumbertree~~	~~12ft x 12ft~~	~~0.25"~~	~~10%~~
Hammamelis virginiana	Witch Hazel	12ft x 12ft	0.25"	~~10%~~ 13%
~~*Corylus americana*~~	~~American Hazelnut~~	~~12ft x 12ft~~	~~0.25"~~	~~5%~~
Asima triloba	Pawpaw	12ft x 12ft	0.25"	~~5%~~ 8%
Morus rubra	Red Mulberry	12ft x 12ft	0.25"	12%

NOTES:
1. SPECIES COMPOSITION AND PERCENTAGES REVISED ACCORDING TO AVAILABILITY.

Permanent Riparian Seeding				
Pure Live Seed (22 lbs/acre mix)				
Approved Date	**Species Name**	**Common Name**	**Stratum**	**Density (lbs/acre)**
All Year	*Schizachyrium scoparium*	Little Bluestem	Herb	4.0
All Year	*Rudbeckia hirta*	Blackeyed Susan	Herb	1.0
All Year	*Carex vulpinoidea*	Fox Sedge	Herb	1.0
All Year	*Panicum clandestinum*	Deertongue	Herb	3.0
All Year	*Elymus virginicus*	Virginia Wild Rye	Herb	3.0
All Year	*Sorghastrum nutans*	Indiangrass	Herb	3.0
All Year	*Coreopsis lanceolata*	Lanceleaf Coreopsis	Herb	1.0
All Year	*Bidens aristosa*	Bur-Marigold	Herb	1.0
All Year	*Panicum rigidulum*	Redtop Panicgrass	Herb	1.0
All Year	*Helianthus angustifolia*	Narrowleaf Sunflower	Herb	1.0
All Year	*Coreopsis tinctoria*	Plains Coreopsis	Herb	1.0
All Year	*Panicum virgatum*	Switchgrass	Herb	2.0

NOTE:
1. PERMANENT RIPARIAN SEEDING IN ALL DISTURBED AREAS WITHIN CONSERVATION EASEMENT

TEMPORARY SEEDING		
APPROVED DATE	**TYPE**	**PLANTING RATE (lbs/acre)**
Jan 1 – May 1	Rye Grain (*Secale cereale*)	120
	Ground Agricultural Limestone	2,000
	10-10-10 Fertilizer	750
	Straw Mulch	4,000
May 1 – Aug 15	German Millet (*Setaria italica*)	40
	Ground Agricultural Limestone	2,000
	10-10-10 Fertilizer	750
	Straw Mulch	4,000
Aug 15 – Dec 31	Rye Grain (*Secale cereale*)	120
	Ground Agricultural Limestone	2,000
	10-10-10 Fertilizer	1,000
	Straw Mulch	4,000

WILDLANDS ENGINEERING
167-B Haywood Road
Asheville, NC 28806
Tel: 865.207.8835
Fax: 704.332.3305
Firm License No. F-0831

NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Plant List
Planting

Revisions:
7/21/20 per Erosion and Sediment Control Comments

Date: October 5, 2021
Job Number: 005-02171
Project Engineer: ETN
Drawn by: JT
Checked By: JDW

Sheet 3.0

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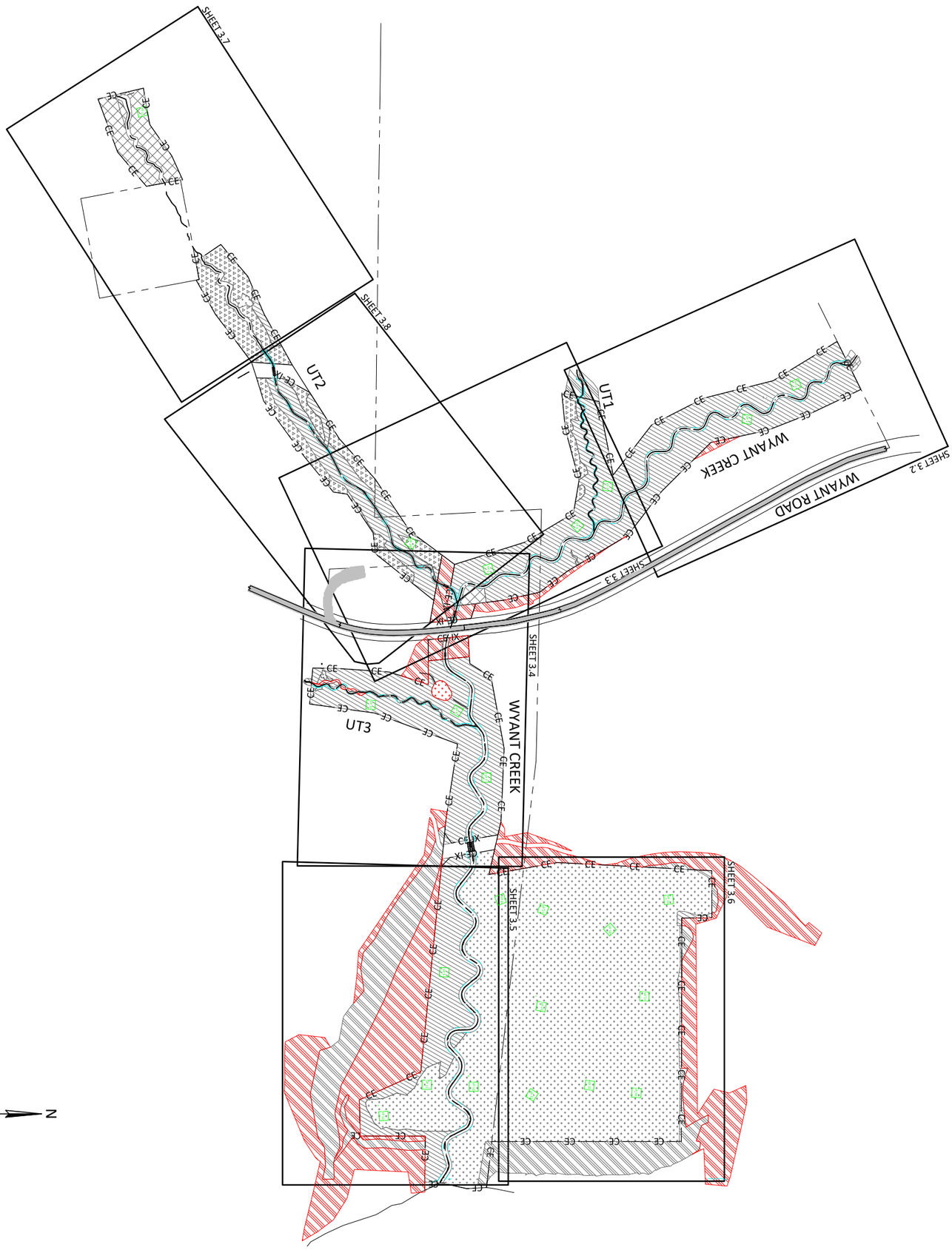

Date: October 5, 2021
Job Number: 005-02171
Project Engineer: EPN
Drawn By: JP
Checked By: JDW

3.1
Sheet

Revisions:

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Planting Overview
Planting

NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER
10/5/21

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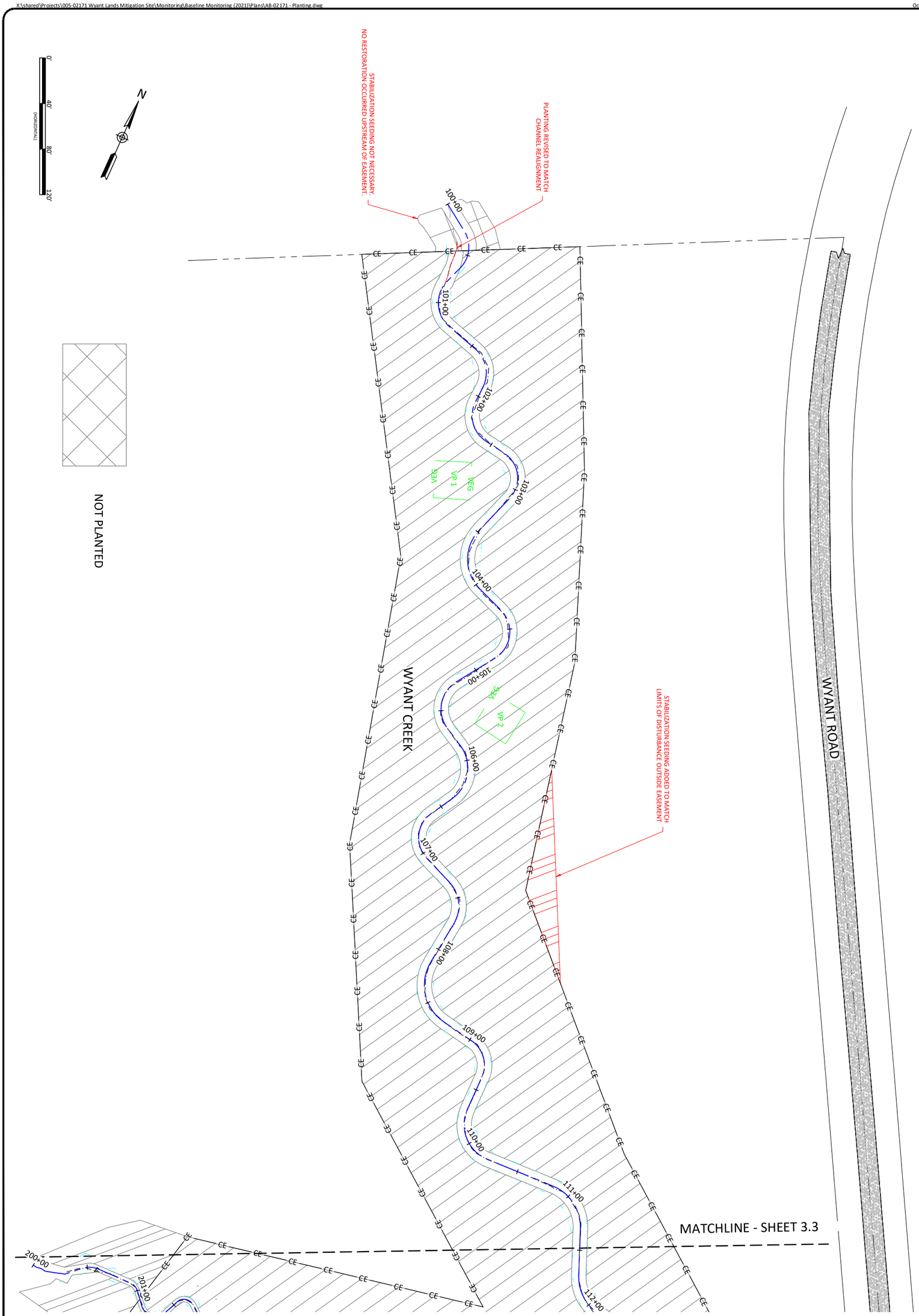

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	JP
Checked By:	JDW

Revisions:

3.2
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Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Planting Plan
Planting

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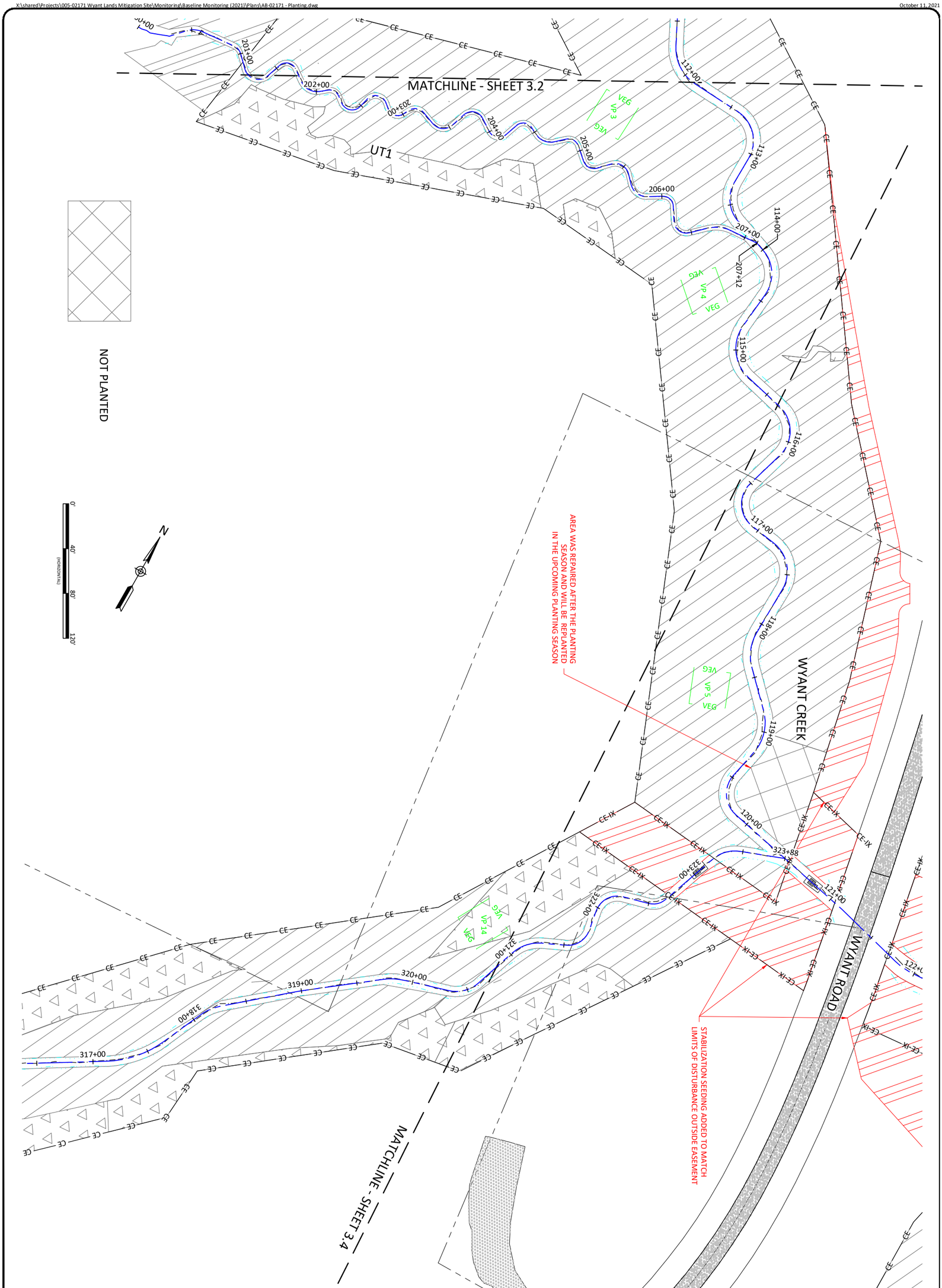

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	JP
Checked By:	JDW

3.3
Sheet

Revisions:

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Planting Plan
Planting

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10/5/21

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Firm License No. F-0831

October 11, 2021

AREA WAS REPAIRED AFTER THE PLANTING SEASON AND WILL BE REPLANTED IN THE UPCOMING PLANTING SEASON

STABILIZATION SEEDING ADDED TO MATCH LIMITS OF DISTURBANCE OUTSIDE EASEMENT

STABILIZATION SEEDING ADDED TO MATCH LIMITS OF DISTURBANCE OUTSIDE EASEMENT

CHANGED FROM RIPARIAN TO WETLAND PLANTING ZONE TO MATCH CONSTRUCTED WETLAND BMP FOOTPRINT

STABILIZATION SEEDING ADDED TO MATCH LIMITS OF DISTURBANCE OUTSIDE EASEMENT

PLANTING REVISED TO MATCH CHANNEL ALIGNMENT

WYANT CREEK

WYANT ROAD

UT2

UT3

VP 5

VP 6

VP 7

VP 15

VEG

MATCHLINE - SHEET 3.3

MATCHLINE - SHEET 3.5

NOT PLANTED

N

0' 40' 80' 120'
(HORIZONTAL)

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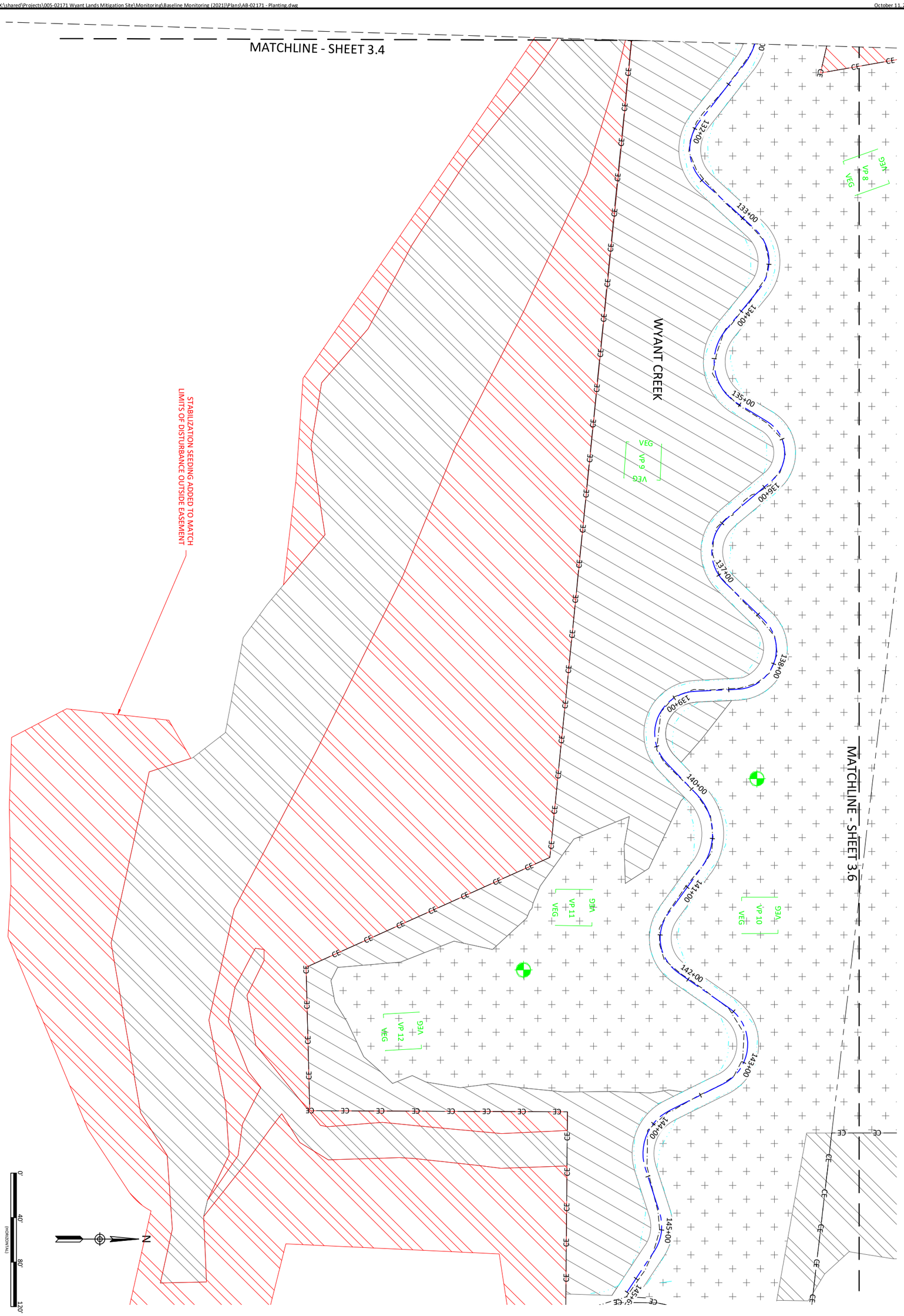
Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Planting Plan
Planting

Revisions:

Date: October 5, 2021
Job Number: 005-02171
Project Engineer: EHN
Drawn By: JP
Checked By: JDW

Sheet 3.4



Date: October 5, 2021
Job Number: 005-02171
Project Engineer: EPN
Drawn By: JP
Checked By: JDW

3.5
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Revisions:

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Planting Plan
Planting

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10/5/21

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October 11, 2021

N

0' 40' 80' 120'
(HORIZONTAL)

STABILIZATION SEEDING ADDED TO MATCH
LIMITS OF DISTURBANCE OUTSIDE EASEMENT

CE

VEG VP 16 VEG

VEG VP 17 VEG

VEG VP 18 VEG

VEG VP 19 VEG

VEG VP 20 VEG

VEG VP 21 VEG

VEG VP 22 VEG

VEG VP 23 VEG

VEG VP 8 VEG

MATCHLINE - SHEET 3.5

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10/5/21

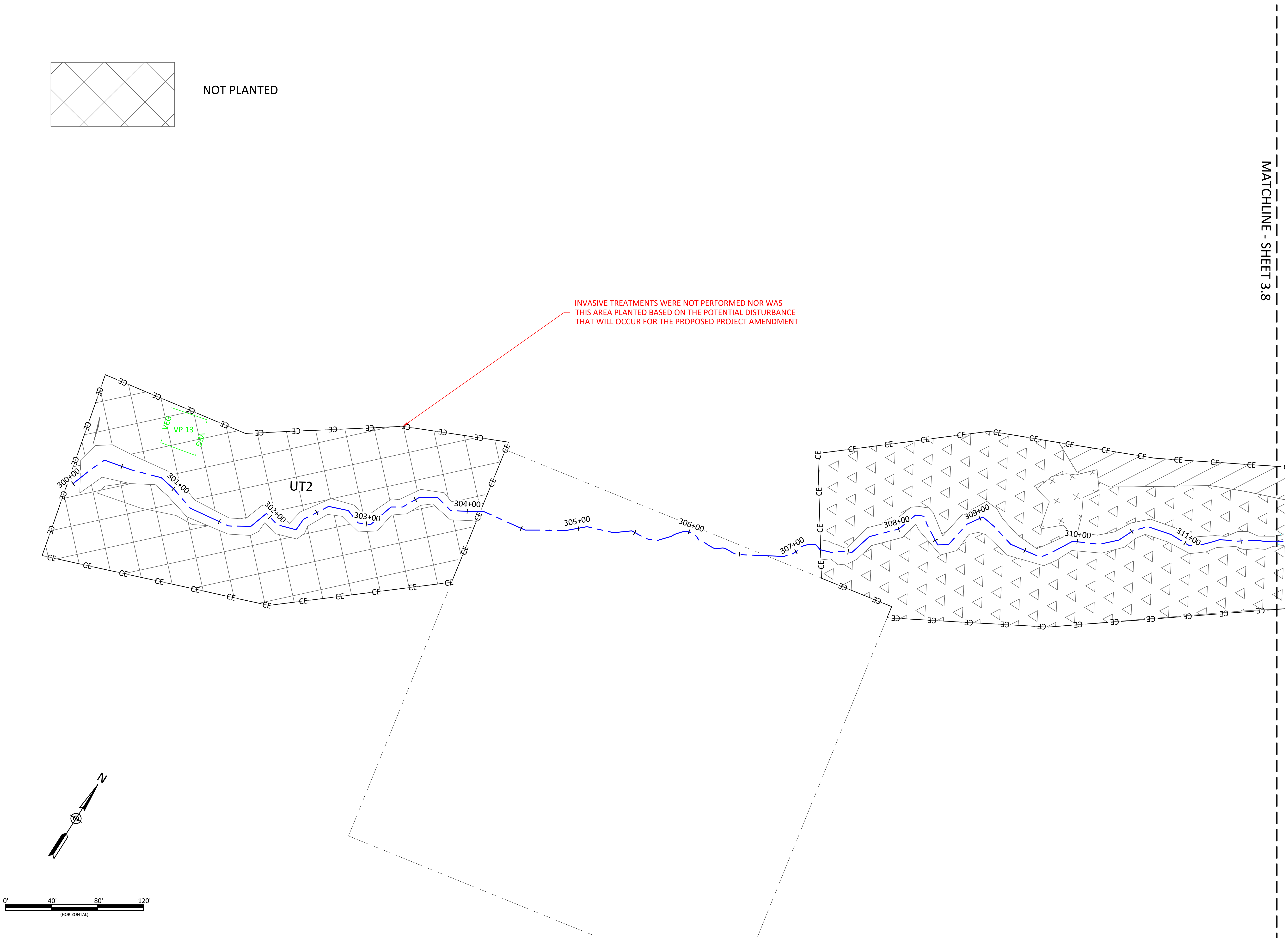
Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Planting Plan
Planting

Revisions:

Date: October 5, 2021
Job Number: 005-02171
Project Engineer: EDN
Drawn By: October 5, 2021
Checked By: JDW

Sheet 3.6



October 11, 2021

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042660 ERIC

10/5/21

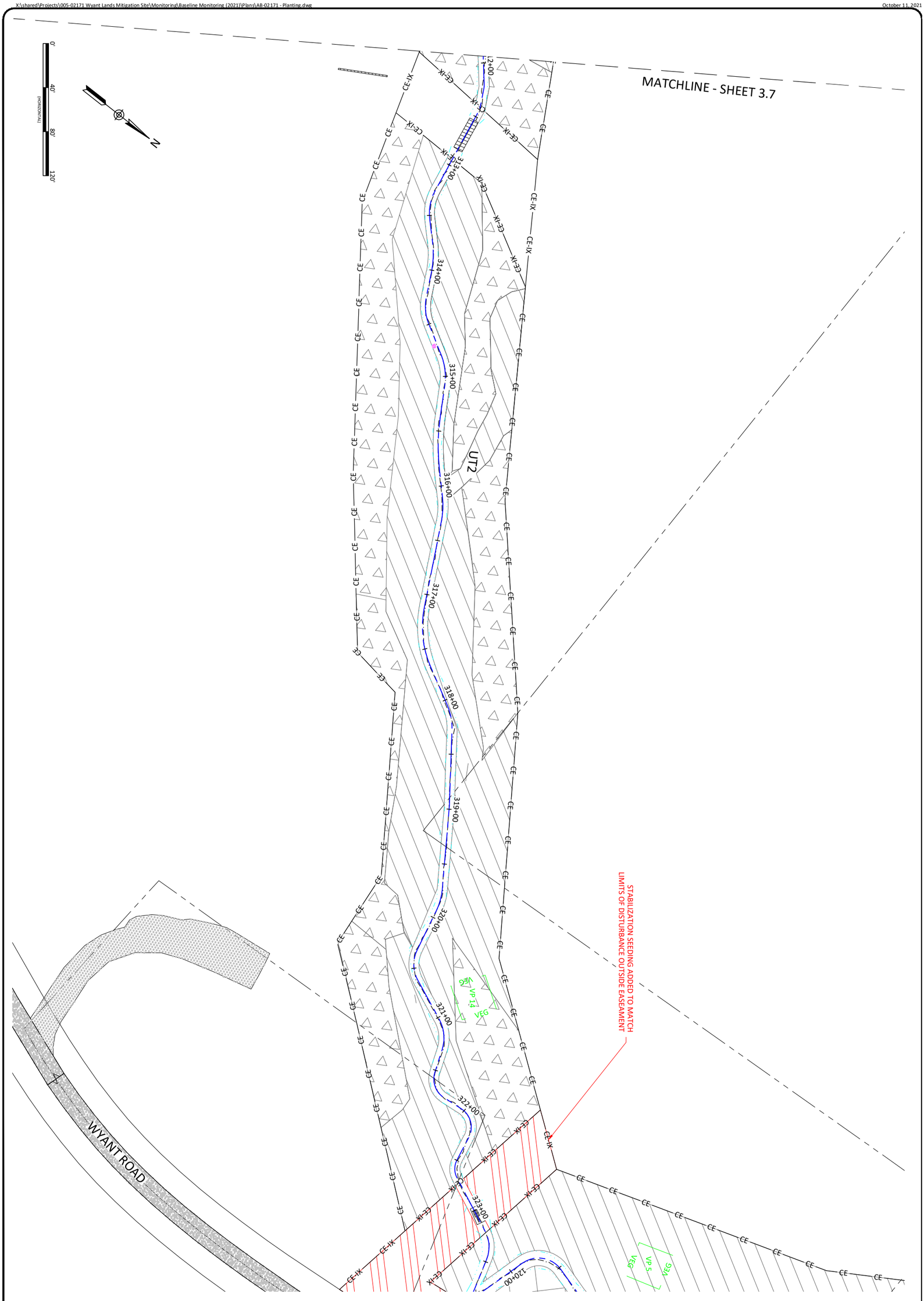
Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Planting Plan
Planting

Revisions:

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	JP
Checked By:	JDW

Sheet
3.7



Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	JP
Checked By:	JDW

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Revisions:

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Planting Plan
Planting

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10/5/21

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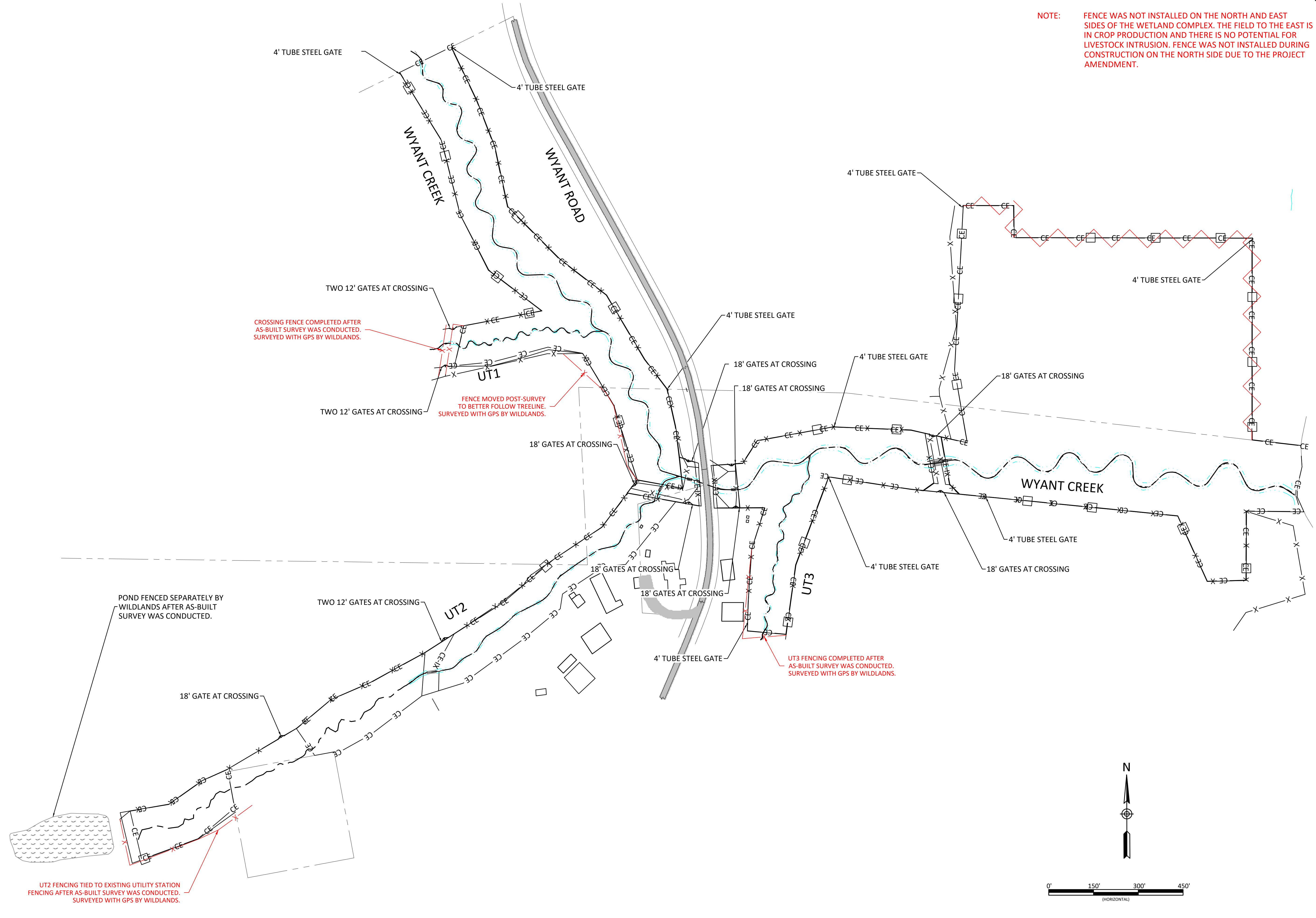

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042660 ERIC ... 10/5/21

Wyant Lands Mitigation Site Record Drawings
Lincoln County, North Carolina

Fencing Overview
Fencing

Revisions:
8/14/2020 - FENCE REVISED PER FIELD CONDITIONS

Date:	October 5, 2021
Job Number:	005-02171
Project Engineer:	EFN
Drawn By:	JP
Checked By:	JDW

Sheet 4.0

October 11, 2021

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APPENDIX 5. NMP27 (SAW-2017-02609)
Approval with Special Conditions

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. **SAW-2017-02609** County: **Lincoln** U.S.G.S. Quad: **Reepsville**

GENERAL PERMIT (REGIONAL AND NATIONWIDE) VERIFICATION

Permittee: **NC Division of Mitigation** Service
Attn: Mr. Tim Baumgartner
Address: **217 West Jones Street, Suite 3000A**
Raleigh, North Carolina 27603
Telephone: **919-707-8319**

Permittee: **Wildlands Engineering Inc**
Attn: Eric Neuhaus
Address: **167-B Haywood Road**
Asheville, NC 28806
Telephone: **865-207-8835**

Size (acres) **41.5 acres**
Nearest Waterway **Pott Creek**
USGS HUC **03050102** Coordinates

Nearest Town **Lincolnton**
River Basin **Catawba**
Latitude: **35.530783 °N** Longitude: **-81.318875 °W**

Location description: **The NCDMS 41.5-acre Wyant Lands Mitigation is located in Lincoln County, NC approximately 5.3 miles northwest of the City of Lincolnton and approximately 2 miles south of the Catawba County/Lincoln County border. The project includes tributaries to Pott Creek. PIN: 1.) 3615074254 2.) 3605959148 3.) 3605959968 4.) 3605964840**

Description of projects area and activity: **The co-applicants, NCDMS and Wildlands Engineering, Inc. have requested a Department of the Army permit authorization to discharge dredged and/or fill material into waters of the United States associated with the NCDMS Wyant Lands Mitigation Site. Implementation of the proposed restoration and enhancement activities will result in the discharge of fill material into 7823 linear feet of stream channel, and 3.56 acres of wetlands associated with mechanized land clearing, excavation, placement of fill material, and stream relocation activities for the mitigation site. Compensatory mitigation is NOT required in conjunction with the aforementioned activities. Refer to the enclosed Table 1 for a detailed summary of impacts**

Applicable Law: ☒ Section 404 (Clean Water Act, 33 USC 1344)
☐ Section 10 (Rivers and Harbors Act, 33 USC 403)

Authorization: Regional General Permit Number and/or Nationwide Permit Number: **NWP 27 – Aquatic Habitat Restoration, Enhancement, and Establishment Activities**
SEE ATTACHED RGP or NWP GENERAL, REGIONAL AND SPECIAL CONDITIONS

Your work is authorized by the above referenced permit provided it is accomplished in strict accordance with the attached conditions and your submitted application and attached information dated May 22, 2020. Any violation of the attached conditions or deviation from your submitted plans may subject the permittee to a stop work order, a restoration order, a Class I administrative penalty, and/or appropriate legal action.

This verification will remain valid until the expiration date identified below unless the nationwide and/or regional general permit authorization is modified, suspended or revoked. If, prior to the expiration date identified below, the nationwide and/or regional general permit authorization is reissued and/or modified, this verification will remain valid until the expiration date identified below, provided it complies with all requirements of the modified nationwide permit. If the nationwide and/or regional general permit authorization expires or is suspended, revoked, or is modified, such that the activity would no longer comply with the terms and conditions of the nationwide permit, activities which have commenced (i.e.,

are under construction) or are under contract to commence in reliance upon the nationwide and/or regional general permit, will remain authorized provided the activity is completed within twelve months of the date of the nationwide and/or regional general permit's expiration, modification or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend or revoke the authorization.

Activities subject to Section 404 (as indicated above) may also require an individual Section 401 Water Quality Certification. You should contact the NC Division of Water Resources (telephone 919-807-6300) to determine Section 401 requirements.

For activities occurring within the twenty coastal counties subject to regulation under the Coastal Area Management Act (CAMA), prior to beginning work you must contact the N.C. Division of Coastal Management in Morehead City, NC, at (252) 808-2808.

This Department of the Army verification does not relieve the permittee of the responsibility to obtain any other required Federal, State or local approvals/permits.

If there are any questions regarding this verification, any of the conditions of the Permit, or the Corps of Engineers regulatory program, please contact **Kimberly Browning, 919.554.4884 x60.**

BROWNING.KIMBERLY.DANIELLE.1527683510

Digitally signed by BROWNING.KIMBERLY.DANIELLE.1527683510
Date: 2020.07.09 13:46:52 -04'00'

Corps Regulatory Official: _____ Date: **July 9, 2020**

Expiration Date of Verification: **March 18, 2022**

Table 1. Authorized discharge of fill material into waters of the United States in association with the NCDMS Wyant Lands Mitigation Site (SAW-2017-02609).

1. **Total Impacts:** Stream – 7823 LF, Wetland -- 3.56 ac

2. Wetland Impacts If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.					
2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
W1 – Wetland A ☐ P ☒ T	Wetland rehabilitation grading	Bottomland Hardwood Forest	☐ Yes ☒ No	☒ Corps ☒ DWQ	1.70
W2 – Wetland A ☒ P ☐ T	Construction of relocated stream restoration channel	Bottomland Hardwood Forest	☐ Yes ☒ No	☒ Corps ☒ DWQ	0.16
W3 – Wetland B ☐ P ☒ T	Wetland rehabilitation grading	Bottomland Hardwood Forest	☐ Yes ☒ No	☒ Corps ☒ DWQ	0.22
W4 – Wetland C ☐ P ☒ T	Wetland rehabilitation grading	Bottomland Hardwood Forest	☐ Yes ☒ No	☒ Corps ☒ DWQ	0.29
W5 – Wetland D ☐ P ☒ T	Wetland rehabilitation grading	Bottomland Hardwood Forest	☐ Yes ☒ No	☒ Corps ☒ DWQ	0.35
W6 – Wetland E ☐ P ☒ T	Wetland rehabilitation grading	Bottomland Hardwood Forest	☐ Yes ☒ No	☒ Corps ☒ DWQ	0.02
W7 – Wetland F ☐ P ☒ T	Wetland rehabilitation grading	Bottomland Hardwood Forest	☐ Yes ☒ No	☒ Corps ☒ DWQ	0.49
W8 – Wetland G ☒ P ☐ T	Fill	Bottomland Hardwood Forest	☒ Yes ☐ No	☒ Corps ☒ DWQ	0.11
W9 – Wetland H ☐ P ☒ T	Stream rehabilitation grading	Headwater Forest	☒ Yes ☐ No	☒ Corps ☒ DWQ	0.01
W10 – Wetland I ☒ P ☐ T	Construction of relocation stream restoration channel	Headwater Forest	☒ Yes ☐ No	☒ Corps ☒ DWQ	0.01
W11 – Wetland J ☒ P ☐ T	Fill	Headwater Forest	☒ Yes ☐ No	☒ Corps ☒ DWQ	0.01
W12 – Wetland K ☒ P ☐ T	Stream bank grading	Headwater Forest	☒ Yes ☐ No	☒ Corps ☒ DWQ	0.03
W13 – Wetland O ☐ P ☒ T	Stream bank grading	Headwater Forest	☒ Yes ☐ No	☒ Corps ☒ DWQ	0.04
W14 – Wetland P ☒ P ☐ T	Fill	Headwater Forest	☒ Yes ☐ No	☒ Corps ☒ DWQ	0.03
W15 – Wetland AA	Wetland	Bottomland	☐ Yes	☒ Corps	0.09

☐ P ☒ T	rehabilitation	Hardwood Forest	☒ No	☒ DWQ	
				2g. Total wetland impacts	3.56

2h. Comments: Impacts to wetland are needed to conduct mitigation activities and will result in an increase in resource function.

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

3a. Stream impact number -Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
S1 ☒ P ☐ T	Relocation/Fill, stabilization (Bank Grading & Structures)	Wyant Creek	☒ PER ☐ INT	☒ Corps ☒ DWQ	-	4,464
S2 ☒ P ☐ T	Relocation/Fill, stabilization (Bank Grading & Structures)	UT1	☒ PER ☐ INT	☒ Corps ☒ DWQ	-	582
S3 ☒ P ☐ T	Relocation/Fill, stabilization (Bank Grading & Structures)	UT2	☒ PER ☐ INT	☒ Corps ☒ DWQ	-	2,132
S4 ☒ P ☐ T	Relocation/Fill, stabilization (Bank Grading & Structures)	UT3	☒ PER ☐ INT	☒ Corps ☒ DWQ	-	645
					3h. Total stream and tributary impacts	7,823

*Impacts are associated with aquatic resource restoration and enhancement activities and are expected to result in a net gain in Waters of the US.

SPECIAL CONDITIONS

1. **The permittee understands and agrees that the document entitled "Wyant Lands Mitigation Site" dated April 2020 is incorporated and made part of this permit. Execution of the work and terms given in the approved mitigation plan are a condition of this permit.**

2. **This Nationwide Permit verification does not imply suitability of this property for compensatory mitigation for any particular project. The use of any portion of this site as compensatory mitigation for a particular project will be determined during the permit review process for that project.**

3. **As-built grade lines shall be provided and red-lined if different from the design sheets. Provide the total acres graded for wetland assets for each of the three cut depth categories. Additionally, provide a table of wetland grading that exceeds 12 inches, differentiating grading to remove field crowns, areas of ditch side-cast piles, and other areas. Site grading to a depth greater than 12 inches within proposed wetland asset areas will be considered wetland establishment and will be subject to a 3:1 ratio, with the exception of field crown and ditch side-cast removal. Additionally, any proposed wetland areas graded for field crown or ditch side-cast removal to a depth of great than 12" that exceeds 5% of the total grading within wetland asset area will be considered wetland establishment and will be subject to a 3:1 ratio.**

SAW-2017-02609

COMPLIANCE CERTIFICATION

Action ID Number: SAW-2017-02609 **County:** Lincoln

Permittee: NC Division of Mitigation Services
Attn: Mr. Tim Baumgartner

Wildlands Engineering, Inc
Attn: Eric Neuhaus

Project Name: NCDMS Wyant Lands Mitigation Site

Date Verification Issued: July 9, 2020

Project Manager: Kim Browning

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT
Regulatory Division Mitigation Office
Attn: Kim Browning
3331 Heritage Trade Drive, Suite 105
Raleigh, NC 27587

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers representative. Failure to comply with any terms or conditions of this authorization may result in the Corps suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and condition of the said permit, and required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

7/16/2020
Date

SAW-2017-02609