MONITORING YEAR 0 ANNUAL REPORT

FINAL

September 2022

WYANT LANDS MITIGATION SITE
PHASE II – PROJECT EXPANSION

Lincoln County, NC
Catawba River Basin
HUC 03050102
(03050103 Expanded Service Area)

Wyant Lands DMS ID No. 100067
Phase II – Project Expansion DMS ID No. 100595
NCDEQ Contract No. 7244
DMS RFP No. 16-007133; Date of Issue: February 7, 2017
USACE Action ID No. SAW-2017-02609
Phase II – Project Expansion ID No. SAW-2021-02449
DWR Project No. 2018-0177 & v. 2
Data Collection Dates: April 2022 – May 2022

PREPARED FOR:

NC Department of Environmental Quality
Division of Mitigation Services
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Director

NORTH CAROLINA
Environmental Quality

August 23, 2022

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

Subject: DRAFT MY0/ As-Built Baseline Report & Record Drawing Review
Wyant Lands: Phase II – Project Expansion
Catawba River Basin: 03050102
(03050103 Expanded Service Area)
DMS Project ID No. 100595
DEQ Contract #7244

Dear Neuhaus,

The Division of Mitigation Services (DMS) received the Draft MY0/ As-Built Baseline Report & Record Drawings for the Wyant Lands: Phase II – Project Expansion from Wildlands Engineering, Inc. (Wildlands) on July 20, 2022. The Project Expansion is expected to provide 396 SMUs (Warm) and 4.513 WMUs (Riparian) for a project total of 7090.667 SMUs (warm) and 17.608 WMUs (Riparian). The following are the DMS review team's comments on the draft report:

- **General:** As previously discussed with the IRT, please continue to provide photos of the upstream and downstream project crossing areas to confirm crossing stability and aquatic organism passage in the 2022 monitoring report and future monitoring reports.

- **Section 2.1.4 Vegetation Planting List & Plan:** If supplemental planting is warranted during the monitoring term, please include species approved in the mitigation plan & mitigation plan addendum that were not available at during the initial project expansion planting effort.

- **Section 3: Monitoring Year 0 Data Assessment:** Recommend noting that DMS and Wildlands may request IRT closure of the entire site after completion of the Phase I MY7 monitoring efforts in 2027 if all aspects of the project are meeting the established success criteria. DMS recommends using the verbiage from Wildlands' mitigation plan addendum comment responses in the revised report; "*To facilitate project organization, after the as-built and baseline monitoring report is submitted and approved for the addendum area, monitoring reports for phase II will be included with phase I monitoring reports. It is proposed that if the addendum area has met monitoring performance standards three of the prior four monitoring years at closeout of the phase I portion of the project (monitoring year 6 of phase II), the addendum area also be closed as well. If monitoring performance criteria within the phase II addendum area has not met monitoring standards three out of the prior four years, an additional seventh year of monitoring will be performed for the addendum area and the*

closeout monitoring period will be seven years beyond completion of construction and/or until performance standards have been met."

- **Appendices:** Please include the January 14, 2022 "*Response to NCIRT Review Comments*" (Mitigation Plan Addendum) in the report appendices for project documentation. Please review and confirm that all IRT comments and Wildlands responses have been addressed and are consistent in the revised MY0 report.

Digital Deliverable Comments:

Tables:

1. The tables are inconsistent in how the site is presented, the Asset Table includes Phase I and Phase II but the digital data tables only include the expansion segments. No updates are required for MY0, but please provide the digital data uniformly in the 2022 monitoring submittal (Phase I and Phase II combined).

Spatial Data:

1. In the future, please label the project segments in the digital data file as they are labeled in the attribute table. This submission has Wetland Group 5 -Addendum labeled as 'creation' in the digital submission.

At your earliest convenience, please provide a written response letter addressing the DMS comments provided and one final hard copy of the revised/updated MY0/ As-Built Baseline Report & Record Drawings. The comment response letter should be included in the revised report after the report cover page. Please include a final full electronic copy with digital support files on a USB drive with the final submittal.

Sincerely,

Paul Wiesner

Paul Wiesner
Western Regional Supervisor
North Carolina Department of Environmental Quality
Division of Mitigation Services
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Asheville, N.C. 28801

WILDLANDS
ENGINEERING

September 7, 2022

ATTN: Paul Wiesner
Western Regional Supervisor
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NCDEQ – Asheville Regional Office
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RE: DRAFT MY0/ As-Built Baseline Report & Record Drawing Review
Wyant Lands: Phase II – Project Expansion
Catawba River Basin: 03050102
(03050103 Expanded Service Area)
DMS Project ID No. 100595
DEQ Contract #7244

Dear Mr. Paul Wiesner:

Wildlands Engineering, Inc. (Wildlands) has reviewed Division of Mitigation Services' (DMS) comments from the Draft Monitoring Year 0 (MY0) Annual Report for the Wyant Lands Mitigation Site Phase II – Project Expansion. The report has been updated to reflect those comments. Wildlands' responses to DMS' comments are noted below.

DMS Comments, Paul Wiesner:

General: *As previously discussed with the IRT, please continue to provide photos of the upstream and downstream project crossing areas to confirm crossing stability and aquatic organism passage in the 2022 monitoring report and future monitoring reports.*

> **Wildlands Response:** As requested, Wildlands will continue to conduct upstream and downstream photos of the crossing areas throughout the monitoring period.

Section 2.1.4 Vegetation Planting List & Plan: *If supplemental planting is warranted during the monitoring term, please include species approved in the mitigation plan & mitigation plan addendum that were not available during the initial project expansion planting effort.*

> **Wildlands Response:** Wildlands acknowledges the request for supplemental plantings to include the approved species that were unavailable at the time of the project expansion area's planting. Wildlands will do our best to accommodate this request; however, some of the species may be unattainable due to availability.

Section 3: Monitoring Year 0 Data Assessment: *Recommend noting that DMS and Wildlands may request IRT closure of the entire site after completion of the Phase I MY7 monitoring efforts in 2027 if all aspects of the project are meeting the established success criteria. DMS recommends using the verbiage from Wildlands' mitigation plan addendum comment responses in the revised report; "To facilitate project organization, after the as-built and baseline monitoring report is submitted and approved for the addendum area, monitoring reports for phase II will be included with phase I monitoring reports. It is proposed that if the addendum area has met monitoring performance standards three of the prior four*

monitoring years at closeout of the phase I portion of the project (monitoring year 6 of phase II), the addendum area also be closed as well. If monitoring performance criteria within the phase II addendum area has not met monitoring standards three out of the prior four years, an additional seventh year of monitoring will be performed for the addendum area and the closeout monitoring period will be seven years beyond completion of construction and/or until performance standards have been met."

Wildlands Response: As requested, text from Wildlands' mitigation plan addendum (Phase II) has been added to Section 3 of the as-built and baseline monitoring report.

Appendices: *Please include the January 14, 2022 "Response to NCIRT Review Comments" (Mitigation Plan Addendum) in the report appendices for project documentation. Please review and confirm that all IRT comments and Wildlands responses have been addressed and are consistent in the revised MY0 report.*

Wildlands Response: As requested the January 14, 2022 "Response to NCIRT Review Comments" (for the Mitigation Plan Addendum) has been added to the report's appendix and the IRT's comments have been addressed.

Digital Deliverable Comments:

Tables: *The tables are inconsistent in how the site is presented, the Asset Table includes Phase I and Phase II but the digital data tables only include the expansion segments. No updates are required for MY0, but please provide the digital data uniformly in the 2022 monitoring submittal (Phase I and Phase II combined).*

Wildlands Response: The Asset Table (Table 1) in the digital submittal has been updated to mimic Table 1 in the report. The remainder of the tables will be updated uniformly in the monitoring submittal for 2022 and subsequent monitoring years by combining Phase I and Phase II.

Spatial Data: *In the future, please label the project segments in the digital data file as they are labeled in the attribute table. This submission has Wetland Group 5 -Addendum labeled as 'creation' in the digital submission.*

Wildlands Response: The attribute table has been updated to include labeling of project segments as they appear in the Asset Table (Table 1) of the digital submittal.

As requested, Wildlands has included one hard copy of the revised/updated Baseline Monitoring Document and Record Drawings with a copy of the DMS comment letter and our response letter after the cover page. A full final electronic copy of the report and support files are also included. Please let me know if you have any questions.

Sincerely,

Kristi Suggs

Senior Environmental Scientist
ksuggs@wildlandseng.com

WYANT LANDS MITIGATION SITE PHASE II– PROJECT EXPANSION

Monitoring Year 0 Annual Report

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Section 1: PROJECT OVERVIEW

The Wyant Lands Mitigation Site Phase II – Project Expansion (Site) is located in Gaston County, approximately five miles northwest of Lincolnton and seven miles southwest of Maiden. The Site is located in the Piedmont Physiographic Province. The Site drains directly into Pott Creek, which is part of the Catawba River Basin. Currently, the Site is adjacent to an active cattle and row crop operation. Table 3 presents information related to the project attributes.

1.1 Project Quantities and Credits

The Wyant Lands Mitigation Site - Phase II (Phase II) is an expansion of the initial Wyant Lands Mitigation Site Final Mitigation Plan (WEI, 2020), which received North Carolina Interagency Review Team (NC IRT) approval on December 20, 2019 and will henceforth be referred to as "Wyant Phase I". The expansion of Wyant Phase I has allowed for the enhancement II stream work previously proposed on UT2 Reach 1 to be revised to priority one stream restoration. Additionally, Phase II will provide 5.7 acres of wetland re-establishment, rehabilitation, and creation within a 6.0-acre conservation easement that abuts the existing recorded conservation easement. Mitigation credit generated will provide an additional 396 SMUs and 4.513 WMUs to those generated in Wyant Phase I for a total of 7,090.667 SMUs and 17.608 WMUs within the Catawba River Basin.

Table 1 shows the post-construction lengths and mitigation units expected at closeout for both Wyant Phase I and Wyant Lands Mitigation Site - Phase II. See the Wyant Lands Mitigation Site Final Mitigation Plan for additional information on the Wyant Phase I portion of the project.

Table 1: Project Quantities and Credits – Phase II plus Phase I Details

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage[1]**	**As-Built Footage[1]**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
Stream							
UT1	604.000	604.000	Warm	R	1.0	604.000	See Phase I's As-Built Baseline Monitoring Report
UT2 Reach 1 - Addendum	396.000	396.000	Warm	R	1.0	396.000	Full Channel Restoration, Riparian Planting, Invasive Treatment/Removal, & Fencing Out Livestock
UT2 Reach 2	515.000	515.000	Warm	EII	2.5	206.000	See Phase I's As-Built Baseline Monitoring Report
UT2 Reach 3	1,042.000	1,042.000	Warm	R	1.0	1,042.000	See Phase I's As-Built Baseline Monitoring Report
UT3 Reach 1	374.000	376.000	Warm	EI	1.5	250.667	See Phase I's As-Built Baseline Monitoring Report
UT3 Reach 2	326.000	328.000	Warm	R	1.0	328.000	See Phase I's As-Built Baseline Monitoring Report
Wyant Creek Reach 1	1,482.000	1,475.000	Warm	R	1.0	1,475.000	See Phase I's As-Built Baseline Monitoring Report

Table 1: Project Quantities and Credits – Phase II plus Phase I Details

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage[1]**	**As-Built Footage[1]**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
Wyant Creek Reach 2	523.000	523.000	Warm	R	1.0	523.000	See Phase I's As-Built Baseline Monitoring Report
Wyant Creek Reach 3	295.000	295.000	Warm	R	1.0	295.000	See Phase I's As-Built Baseline Monitoring Report
Wyant Creek Reach 4	1,972.000	1,971.000	Warm	R	1.0	1,971.000	See Phase I's As-Built Baseline Monitoring Report
Wetland							
Project Segment	**Mitigation Plan Acreage**	**As-Built Acreage**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
Wetland Group 1	11.000	10.992	R	REE	1.0	10.992	See Phase I's As-Built Baseline Monitoring Report
Wetland Group 2	3.200	3.155	R	RH	1.5	2.103	See Phase I's As-Built Baseline Monitoring Report
Wetland Group 3 - Addendum	3.360	3.360	R	REE	1.0	3.360	Full Wetland Restoration, Wetland Planting, Invasive Treatment/Removal, & Fencing Out Livestock
Wetland Group 4 - Addendum	1.078	1.078	R	RH	1.5	0.719	Full Wetland Restoration, Wetland Planting, Invasive Treatment/Removal, & Fencing Out Livestock
Wetland Group 5 - Addendum	1.303	1.303	R	C	3.0	0.434	Full Wetland Restoration & Grading > 12-in In Depth, Wetland Planting, Invasive Treatment/Removal, & Fencing Out Livestock
					Total Stream Credits:	**7,090.667**	
					Total Wetland Credits:	**17.608**	

Notes: Table 1 includes Wyant Phase I project details.

1. Crossing lengths have been removed from the footage for all reaches, and no direct credit for BMPs.

Restoration Level	**Stream**			**Wetland Restoration Level**	**Wetland Warm - Riparian**
	Warm	**Cool**	**Cold**		
Restoration	6,634.000			Wetland Re-Establishment	14.352
Enhancement				Wetland Rehabilitation	2.822
Enhancement I	250.667			Wetland Creation	0.434
Enhancement II	206.000				
Preservation					
Totals	**7,090.667**			**Totals**	**17.608**
Total Stream Credit	**7,090.667**			**Total Wetland Credits**	**17.608**

1.2 Project Goals and Objectives

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

Table 2: Goals, Performance Criteria, and Functional Improvements

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Exclude livestock from wetland areas.	Install fencing around conservation easements or remove cattle from easements adjacent to cattle pastures.	Reduce and control sediment inputs; Reduce and manage nutrient inputs; Improve agricultural management activities.	Prevent easement encroachments.	Semi-annual visual inspections.	No evidence of livestock within conservation easements.
Improve the stability of stream channels.	Restore UT2 R1 to establish a stable pattern, dimension, and profile. Stabilize stream bed and banks using bank vegetation, bank revetments, and in-stream structures to protect the restored channel.	Reduce and control sediment inputs; Contribute to protection, or improvement, of a Water Supply and Nutrient-Sensitive Water.	ER ≥ 2.2 and BHR ≤ 1.2. Visual assessments showing progression towards stability.	Two (2) cross-sections were installed. Monitoring will be assessed during MY1, MY2, MY3, MY5, and MY7 and visual inspections will be assessed annually.	Cross-sections show streams are stable and functioning as designed. ERs are over 2.2 and BHRs are below 1.2.
Improve instream habitat.	Install habitat features such as constructed riffles, cover logs, and brush toes into UT2 R1. Add woody materials to channel bed. Construct pools of varying depth.	Improve aquatic communities in project streams.	There is no required performance standard for this metric.	N/A	N/A
Reconnect stream channel with riparian floodplains	Reconstruct stream channel with designed bankfull dimensions and depth based on the reference data.	Reduce shear stress on channel. Hydrate adjacent floodplain areas. Filter out pollutants with overbank flows.	Four bank full events in separate years within a 7-year monitoring period.	One automated pressure transducer was installed on the restoration reach and will record bankfull events.	Reported in MY1.

Table 2: Goals, Performance Criteria, and Functional Improvements

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Restore wetland hydrology, soils, and plant communities.	Restore and enhance riparian wetlands filling 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.	Free groundwater within 12 inches of soil surface for a minimum of 12% (27 consecutive days) of the growing season	Four (4) groundwater gages were installed in restoration areas and will be monitored annually.	Reported in MY1.
Restore and enhance native floodplain vegetation.	Plant native tree species in riparian zone were currently insufficient. Treat invasive species within the floodplain of UT2 Reach 1.	Reduce and control sediment inputs; Reduce and manage nutrient inputs; Provide a canopy to shade streams and reduce thermal loadings; Contribute to protection, or improvement, of a Water Supply and Nutrient-Sensitive Water.	Survival rate of 320 stems per acre at MY3, 260 planted stems per acre at MY5 and a height of 7 ft., and 210 stems per acre at MY7 with a height of 10 ft.	Five (5) one hundred square meter permanent vegetation plots are placed on 2% of the planted area of the Site and monitored during MY1, MY2, MY3, MY5, and MY7.	All 5 vegetation plots have a planted stem density greater than 320 stems per acre.
Reduce point source water quality stressors.	Stabilize the active headcut in the right floodplain of UT2 R1.	Reduce and control sediment inputs; Contribute to protection, or improvement, of a Water Supply and Nutrient-Sensitive Water.	There is no required performance standard for this metric.	Semi-annual visual inspections.	Headcut is stable.
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.	Prevent easement encroachment.	Semi-annual visual inspections.	No easement encroachments.

1.3 Project Attributes

The project expansion includes UT2 Reach 1 and a pasture area north of the original Phase I wetland restoration area. UT2 Reach 1 originates from an upstream farm pond. Both UT2 Reach 1 and the farm pond were previously in active cattle pasture but were fenced for cattle exclusion as part of the Phase I activities. A dense stand of Chinese privet (*Ligustrum sinense*) along UT2 Reach 1 was outcompeting native vegetation and reducing habitat quality. Runoff from an adjacent field was contributing fine sediment loads within the stream channel and was impacting bedform. The pasture area north of the original wetland restoration area consisted of ditches, crowned field material, and berms. Table 3 below and Table 9 in Appendix C present additional information on pre-restoration conditions.

Table 3: Project Attributes

PROJECT INFORMATION			
Project Name	Wyant Lands Mitigation Site Phase II- Project Expansion	County	Lincoln County
Project Area (acres)	41.5 (original); 6.0 (amendment); 47.5 (total)	Project Coordinates	35˚ 32’ 2.13” N; 81˚18’ 52.82” W
PROJECT WATERSHED SUMMARY INFORMATION			
Physiographic Province	Piedmont	River Basin	Catawba River
USGS HUC 8-digit	03050102	USGS HUC 14-digit	03050102040020
DWR Sub-basin	03-08-35	Land Use Classification	30% agriculture, 47% forested, 18% developed
Project Drainage Area (acres)	77	Percentage of Impervious Area	11.6%

RESTORATION TRIBUTARY SUMMARY INFORMATION	
Parameters	**UT2 Reach 1**
Pre-project length (feet)	411
Post-project (feet)	396
Valley confinement (Confined, moderately confined, unconfined)	Moderately Confined
Drainage area (acres)	77
Perennial, Intermittent, Ephemeral	Perennial
DWR Water Quality Classification	WS-IV
Dominant Stream Classification (existing)	C4b
Dominant Stream Classification (proposed)	C4b
Dominant Evolutionary class (Simon) if applicable	Stage II/III -—Downcutting

REGULATORY CONSIDERATIONS			
Parameters	**Applicable?**	**Resolved?**	**Supporting Documentation**
Water of the United States - Section 404	Yes	Yes	SAW 2021-02449
Water of the United States - Section 401	Yes	Yes	DWR # 18-0177 v. 2
Endangered Species Act	Yes	Yes	Categorical Exclusion in Mitigation Plan (Wildlands, 2020)
Historic Preservation Act	Yes	Yes	
FEMA Floodplain Compliance	Yes	Yes	No-Rise Certification
Essential Fisheries Habitat	No	N/A	N/A

Table 3: Project Attributes

Wetland Summary Information				
Parameters	**Wetland L**	**Wetland M**	**Wetland N**	**Wetland Q**
Pre-project area (acres)	<0.01	0.01	0.04	0.32
Wetland Type	Headwater Forest	Headwater Forest	Headwater Forest	Bottomland Hardwood Forest
Mapped Soil Series	Pacolet	Pacolet	Pacolet	Chewacla/Pacolet
Drainage Class	Well Drained	Well Drained	Well Drained	Somewhat poorly drained/Well Drained
Soil Hydric Status	No	No	No	No
Source of Hydrology	Groundwater Discharge	Groundwater Discharge	Groundwater Discharge	Groundwater Discharge
Restoration or enhancement method	Enhancement	Enhancement	Enhancement	Restoration
Parameters	**Wetland R**	**Wetland S**	**Wetland T**	**Open Water 2**
Pre-project area (acres)	0.36	0.21	0.16	0.31
Wetland Type	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	N/A (Canal)
Mapped Soil Series	Chewacla	Chewacla	Chewacla	Chewacla
Drainage Class	Somewhat poorly drained	Somewhat poorly drained	Somewhat poorly drained	Somewhat poorly drained
Soil Hydric Status	No	No	No	No
Source of Hydrology	Groundwater Discharge	Groundwater Discharge	Groundwater Discharge	Groundwater Discharge
Restoration or enhancement method	Restoration	Restoration	Restoration	Restoration

Section 2: As-Built Condition (Baseline)

Site construction was completed in May 2022. The survey included developing an as-built topographic surface; as well as, surveying the as-built channel centerlines, top of banks, structures, and cross-sections.

2.1 As-Built/Record Drawings

A sealed half-size set of record drawings are in Appendix E which includes the post-construction survey, alignments, structures, and monitoring features. No significant field adjustments were made during construction that differ from the design plans. Minimal adjustments were made during construction, where needed, based on field evaluations and are listed below.

2.1.1 UT2 Reach 1

- STA: 0+53 – Rock added to stabilize ditch and dam overflow.
- Left floodplain – Area left undisturbed during construction.
- STA: 1+96 – Brush toe installed for added bank stability.
- STA: 2+54 – Brush toe installed for added bank stability.
- STA: 3+85 – Brush toe installed for added bank protection.

2.1.2 Riffle Tributary

- STA: 20+31, STA:20+46, STA: 20+73, STA: 21+10, and STA: 21+22 – BMP redesigned as a step pool stormwater conveyance with a series of log sills prior to construction.

2.1.3 Wetland Grading

- Cross-section 1 – Area that intersects with wetland cross-section 1 from STA: 2+96 – STA: 4+22 was left undisturbed during construction.
- Cross-section 2 – Area that intersects with wetland cross-section 2 from STA: 1+90 – STA: 2+10 was added during construction to connect the existing farm road with the newly constructed farm road.

2.1.4 Vegetation Planting List & Plan

As-built changes in species planted and densities were minimal when compared to design. Species replacements and planting density adjustments were made due to availability of the species at the time of planting. The majority of species replacements or alternate species, except for three species, were approved within the Final Addendum Mitigation Plan (Wildlands, 2022) and/or the original Mitigation Plan planting list (Wildlands, 2021). Two of the unapproved species were planted in the Wetland Planting Zone and include boxelder (*Acer negundo*) and black gum (*Nyssa sylvatica*). The third unapproved species was an upland plant, Sourwood (*Oxydendrum arboretum*). It was planted in the Open Buffer Planting Zone.

<u>Open Buffer Planting Zone</u>

- Tag Alder *(Alnus serrulata*) and tulip poplar (*Liriodendron tulipifera*) were not planted.
- Red chokecherry (*Aronia arbutifolia*), witch hazel (*Hamamelis virginiana*), red mulberry (*Morus rubra*), spicebush (*Lindera benzoin*), and pawpaw (*Asimina triloba*) were each added at density of 2% and sourwood (*Oxydendrum arboretum*) at 5%.
- The planting densities of Sycamore (*Platanus occidentalis*), swamp chestnut oak, of water oak (*Quercus nigra*) were adjusted accordingly.

Wetland Planting Zone

- Willow oak (*Quercus phellos*) and swamp rose (*Rosa* palustris) were not planted.
- Black willow (*Salix nigra*), black gum, boxelder, and silky willow (*Salix sericea*) were added at a density of 15%, 10%, 15%, and 5%, respectively.
- The planting densities of sycamore, river birch (*Betula nigra*), swamp chestnut oak, elderberry (*Sambucus canadensis*), tag alder, and common buttonbush (*Cephalanthus occidentalis*) were adjusted accordingly.

Stream Bank Planting Zone

- Common buttonbush and ninebark (*Physocarpus opulifolius*) were not planted.
- Silky dogwood (*Cornus amomum*) and black willow were added at a density of 20% and 40%, respectively.
- The planting density of silky willow was adjusted accordingly.

2.1.5 Monitoring Components

Installed monitoring devices and plot locations closely mimic the locations of those proposed in the Site's Mitigation Plan. Minor 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.

Vegetation Monitoring Plots

- Permanent vegetation plot 13 (VP13) was shifted slightly from its original location that was established in Phase I of the Wyant Mitigation Plan due to construction disturbance during the construction of Phase II. Vegetation plot 13 is included in the Phase II MY0 report in order to accurately represent as-built conditions.

Photo Points

- Photo Point 15 (PP15) was shifted slightly from its original location that was established in Phase I of the Wyant Mitigation Plan to capture as-built conditions of UT2 R1 after restoration slightly adjusted the stream channel location. Photo Point 15 is included in the Phase II MY0 report.

Section 3: Monitoring Year 0 Data Assessment

Annual monitoring and site visits were conducted during MY0 to assess the condition of the project. The vegetation and stream success criteria for the Site follow the approved success criteria presented in the Mitigation Plan (Wildlands, 2021). Performance criteria for vegetation, stream, and hydrologic assessment are located in Section 1.2 Table 2: Goals, Performance Criteria, and Functional Improvements.

To facilitate project organization, after the as-built and baseline monitoring report is submitted and approved for the addendum area (Phase II), monitoring reports for Phase II will be included with Phase I monitoring reports and completed in the fall of 2022 at least 6 months after the Phase II's MY0 assessment. It is proposed that if the addendum area has met monitoring performance standards three of the prior four monitoring years at closeout of the Phase I portion of the project (monitoring year 6 of Phase II), the addendum area will be closed as well. If monitoring performance criteria within the Phase II addendum area has not met monitoring standards three out of the prior four years, an additional seventh year of monitoring will be performed for the addendum area and the closeout monitoring period will be seven years beyond completion of construction and/or until performance standards have been met.

3.1 Vegetative Assessment

The MY0 vegetative survey was completed in April 2022. Vegetation monitoring resulted in an approved species stem density range of 364 to 567 and an average stem density of 479 planted stems per acre. These results show that all 6 vegetation plots are on track to meet the interim requirement of 320 stems per acre required at MY3 and final success criteria required for MY7. Species dominance for all approved vegetation plots were within the 50% performance requirements.

As discussed in Section 2.1.4, three unapproved species, sourwood, boxelder, and black gum, were planted within the project area. Wildlands is requesting approval for the inclusion of these three species for vegetation monitoring. With the inclusion of the unapproved species, the vegetation plot densities increase to a range of 567 to 648 and an average density of 607 planted stems per acre.

Refer to Appendix A for Vegetation Plot Photographs and the Vegetation Condition Assessment Table and Appendix B for Vegetation Plot Data. Plot locations are depicted in Figures 1.0 – 1b.

3.2 Vegetation Areas of Concern

Vegetation management and herbicide applications were implemented prior and during construction to prevent the spread of invasive species that could compete with planted native species. A dense stand of Chinese privet (*Lingustrum sinese*) was mechanically removed along UT2 R1 during construction. Invasive species will continue to be monitored, mapped, and controlled as necessary through the monitoring period.

3.3 Stream Assessment

Morphological surveys for MY0 were conducted in May 2022. UT2 Reach 1 is stable and functioning as designed. Cross-sections show little to no change in bankfull area and width-to-depth ratio. All bank height ratios are less than 1.2. Refer to Appendix A for the Visual Stream Morphology Stability Assessment Table and Stream Photographs. Refer to Appendix C for Stream Geomorphology Data.

3.4 Stream Areas of Concern

Inspection of stream structures and banks did not identify any stream areas of concern, indicating that the stream is preforming as designed. The Site will continue to be monitored and any issues will be mapped and reported throughout the monitoring period.

3.5 Hydrology Assessment

One pressure transducer (CG3) was installed on UT2 R1 to monitor bankfull events. Hydrologic data will be collected and reported during MY1.

3.6 Wetland Assessment

Four groundwater gages were installed in wetland creation and re-establishment areas, as well as near the boundary of rehabilitation areas to determine wetland hydrology success across different restoration levels. Soil profile descriptions and photographs were taken during installation and are located in Appendix A. Groundwater gage data will be collected and reported during MY1.

3.7 Adaptive Management Plan

Site maintenance and adaptive measurement implementation will follow those outlined in the project's Final Mitigation Plan Addendum (Wildlands, 2022). No adaptive management plans are needed at this time.

3.8 Monitoring Year 0 Summary

Overall, the Site looks good, is performing as intended, and is on track to meet success criteria. All vegetation plots are on track to exceed the MY3 interim requirement of 320 planted stems per acre, and all streams within the Site are stable and meeting project goals. Invasive species were controlled across the Site prior to and during construction and will continued to be assessed throughout the monitoring years.

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

Section 4: METHODOLOGY

Annual monitoring will consist of collecting morphologic, vegetative, and hydrologic data to assess project success based on the goals outlined in the Site's Mitigation Plan (Wildlands, 2022). Monitoring requirements will follow guidelines outlined in the NC IRT Stream and Wetland Mitigation Guidance Update (2016). Installed monitoring devices and plot locations closely mimic the locations of those proposed in the Site's Mitigation Plan. Deviations from these locations were made when professional judgement deemed them necessary to better represent as-built field conditions or when installation of the device in the proposed location was not physically feasible.

Geomorphic data was collected following the standards outlined in The Stream Channel Reference Site: An Illustrated Guide to Field Techniques (Harrelson et al., 1994) and in Stream Restoration: A Natural Channel Design Handbook (Doll et al., 2003). All Integrated Current Condition Mapping was collected by either a professional licensed surveyor or an Arrow 100® Submeter GNSS Receiver and processed using ArcPro. A crest gage, using automated pressure transducers, was installed in a riffle to monitor stream hydrology throughout the year. Groundwater gages were installed using guidance from the USACE's *Technical Standard for Water-Table Monitoring of Potential Wetland Sites* (2005). Stream hydrology and vegetation monitoring protocols followed the Wilmington District Stream and Wetland Compensatory Mitigation Update (NCIRT, 2016). Vegetation installation data collection follow the Carolina Vegetation Survey-EEP Level 2 Protocol (Lee et al., 2008); however, vegetation data processing follows the NC DMS Vegetation Data Entry Tool and Vegetation Plot Data Table (NCDMS, 2020)

Section 5: REFERENCES

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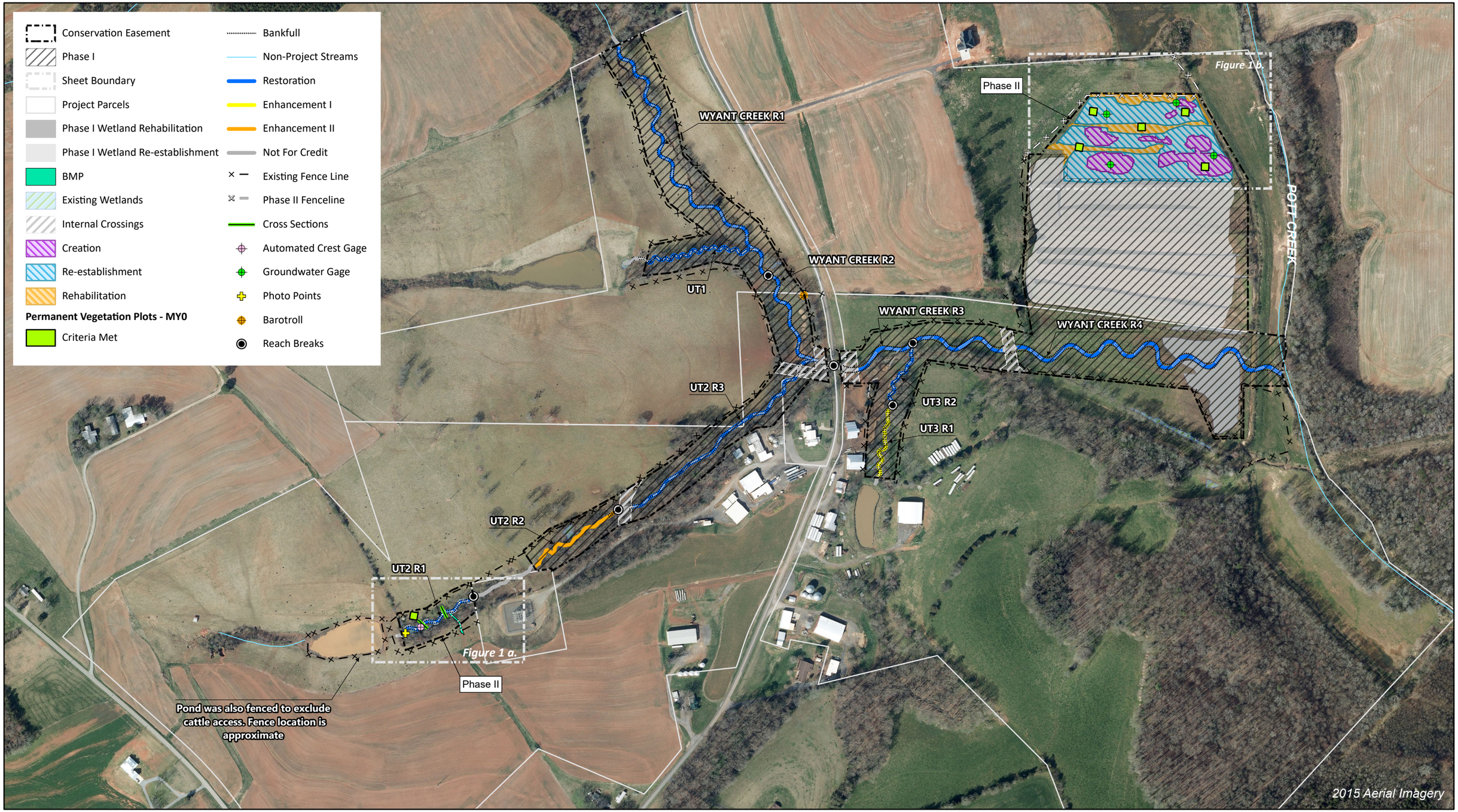


WILDLANDS ENGINEERING

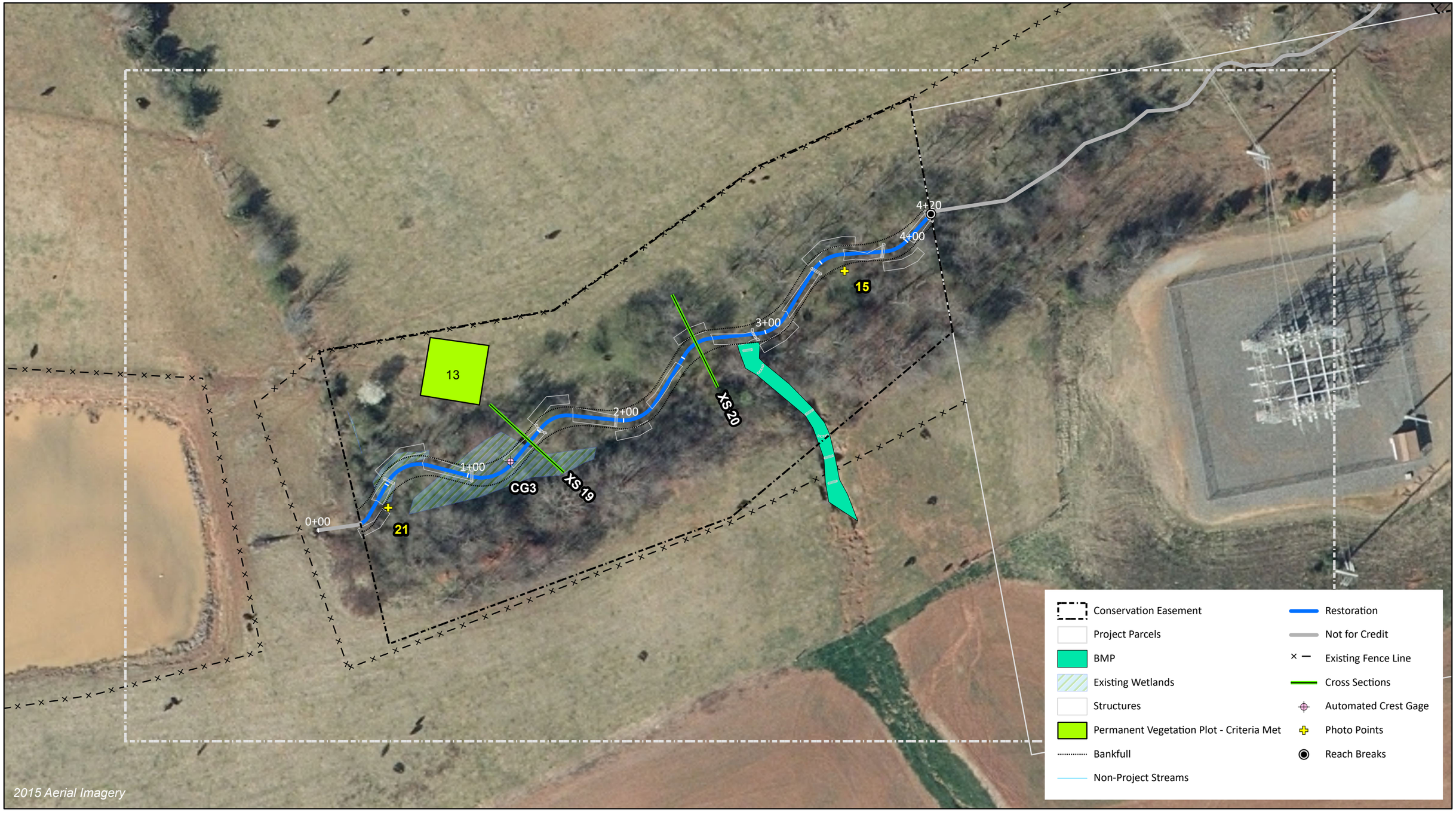
Environmental Quality

0 200 400 800 Feet

N

Figure 1. Current Condition Plan View Key
Wyant Lands Mitigation Site - Phase II Project Expansion
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2022

Lincoln County, NC

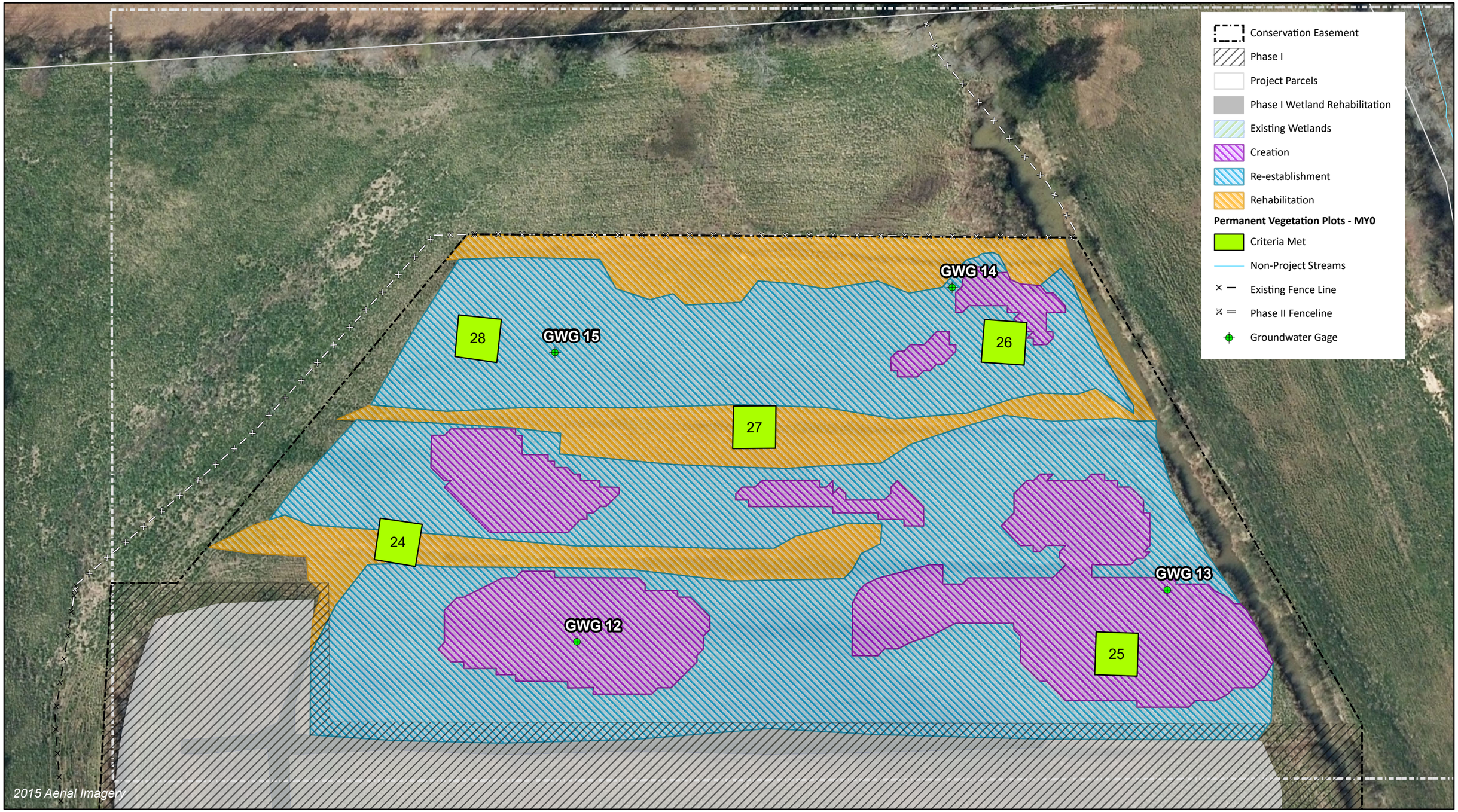


WILDLANDS ENGINEERING

NC Environmental Quality

0 25 50 100 Feet

Figure 1a. Current Condition Plan View
Wyant Lands Mitigation Site - Phase II Project Expansion
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2022
Lincoln County, NC



WILDLANDS ENGINEERING

NC Environmental Quality

0 35 70 140 Feet

N

Figure 1b. Current Condition Plan View
Wyant Lands Mitigation Site - Phase II Project Expansion
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2022
Lincoln County, NC

Appendix A

Visual Assessment Data

Table 4. Visual Stream Morphology Stability Assessment Table

Wyant Lands Mitigation Site Phase II - Project Expansion
DMS Project No. 100595
Monitoring Year 0 - 2022
Assessment Date: 6/9/2022

Stream UT2 Reach 1

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	396
					Assessed Bank Length	792
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
					Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	7	7		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	8	8		100%

Table 5. Vegetation Condition Assessment Table
Wyant Lands Mitigation Site Phase II - Project Expansion
DMS Project No. 100595
Monitoring Year 0 - 2022
Assessment Date: 6/9/2022

Planted Acreage **7.2**

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.10	0	0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on current MY stem count criteria.	0.10	0	0%
		Total	**0**	**0%**
Areas of Poor Growth Rates	Planted areas where average height is not meeting current MY Performance Standard.	0.10	0	0%
		Cumulative Total	**0.0**	**0%**

Easement Acreage **5.9**

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Invasives may occur outside of planted areas and within the easement and will therefore be calculated against the total easement acreage. Include species with the potential to directly outcompete native, young, woody stems in the short-term or community structure for existing communities. Invasive species included in summation above should be identified in report summary.	0.10	0	0%
Easement Encroachment Areas	Encroachment may be point, line, or polygon. Encroachment to be mapped consists of any violation of restrictions specified in the conservation easement. Common encroachments are mowing, cattle access, vehicular access. Encroachment has no threshold value as will need to be addressed regardless of impact area.	none	0	

Stream Photographs

UT2 R1 – Photo Point 21 looking upstream *(4/12/2022)*

UT2 R1 – Photo Point 21 looking downstream *(4/12/2022)*

UT2 R1 – Photo Point 21 looking northwest (*4/12/2022*)

UT2 R1 – Step-Pool Stormwater Conveyance looking southeast (*4/12/2022*)

	
UT2 R1 – Photo Point 15 looking upstream (*4/25/2022*)	**UT2 R1 –** Photo Point 15 looking downstream (*4/25/2022*)

Crossing Photographs

	
Wyant R2 Crossing – Looking downstream inlet *(3/8/2022)*	**Wyant R2 Crossing** – Looking upstream outlet *(3/8/2022)*
	
UT2 R3 – Looking downstream (3*/8/2022*)	**UT2 R3 –** Looking upstream (3*/8/2022*)

Groundwater Gage Photographs

Groundwater Gage 12 - *(04/12/2022)*

Groundwater Gage 13 - *(04/12/2022)*

Groundwater Gage 14 - *(04/12/2022)*

Groundwater Gage 15 - *(04/12/2022)*

MONITORING GAUGE INSTALLATION DATA SHEET

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

Gauge Description:

Gauge ID:	GWG 12
Serial Number:	
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	
Distance From Eye Bolt To Probe Sensor	
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

B to P
6.61

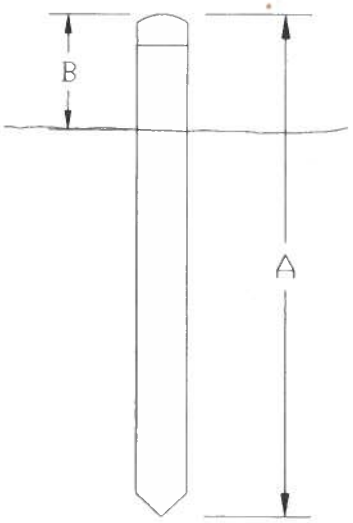
B to G
1.67

FW
.84

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.)	Color	Redox	Texture	Notes
0 - 1.7	10YR 5/6		Clay loam	Tilled top layer
1.7 - 2.1	10YR 6-1	50%	Heavy Clay	7.5YR 5/6
2.1 - 3.1	10YR 6-2	30%	Clay loam Silt	7.5YR 4/6
3.1 - 4.7	10YR 6-1	50%	Clay Sandy loam	7.5YR 5/8
4.7 - 5.7	10YR 4/6	-	Loam Sandy Gravel	old Stream



MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyatt Addendum
Project Location:	
Purpose of Gauge:	Water Table Monitoring

Gauge Description:

Gauge ID:	GWG13
Serial Number:	
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	
Distance From Eye Bolt To Probe Sensor	
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	1

B to P
7.00

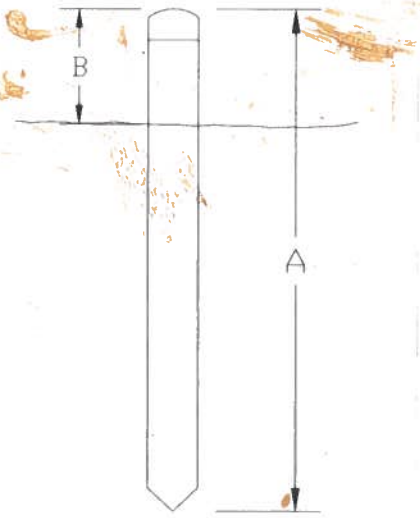
B to G
1.65

FW
1.95

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.)	Color	Redox	Texture	Notes
0-.6	5YR 4-4	—	Clay loam	Tilled top layer
.6-.8	10YR 4-2	15%	Sandy Clay loam	2.5Y 2 4-6
.8-3.2	10YR 5-2	50%	Clay Sandy loam	10YR 5-6
3.2-3.0	10YR 6-8		Sandy Clay loam	depletions 40% / Gley1 5-5GY
3.0-3.3	Gley2 4-10B		Sandy Clay Loam	



MONITORING GAUGE INSTALLATION DATA SHEET

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

Gauge Description:

Gauge ID:	GWG 14
Serial Number:	
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	
Distance From Eye Bolt To Probe Sensor	
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

B to P
6.95

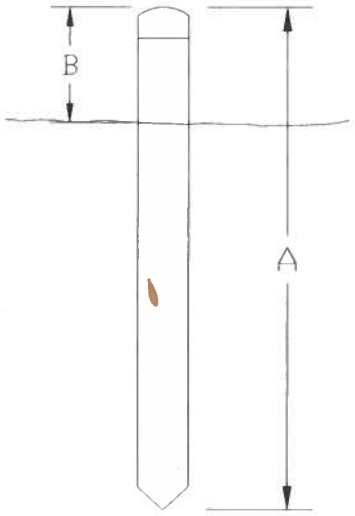
B to G
1.65

FW
2.80

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.)	Color	Redox	Texture	Notes
0 - 1.4	7.5YR 4/4		Sandy loam	Tilled top layer
1.4 - 3.7	10YR 6/6		Sandy clay loam	30% depletions / 10YR 5/1
3.7 - 5.2	Gley1 4/N	50%	Sandy loam Cla	10YR 6/6



MONITORING GAUGE INSTALLATION DATA SHEET

Project Name:	Wyatt Addendum
Project Location:	
Purpose of Gauge:	Water Table Monitoring

Gauge Description:

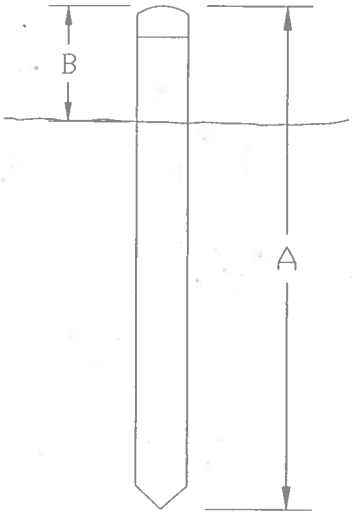
Gauge ID:	GWG 15
Serial Number:	
Total Well Casing Length (A):	
Well Casing Height Above Ground (B):	
Distance From Eye Bolt To Probe Sensor	
Material:	2" PVC Well Screen
Type of Measurement:	Pressure, Temperature, & Depth
Type of Logger:	In-Situ Level Troll 100
Gauge Location:	

B to P
6.82
B to G
1.45
FW
0.6

Notes:

Soil Profile Description at Location of Well:

Depth Range (in.)	Color	Redox	Texture	Notes
0-1.5	7.5 YR 3/3	-	Clay loam	Tilled top layer
.3-1.4	10 YR 5/3	3%	loam/clay	5YR 5/8
1.4-2.3	10 YR 5/1	50%	clay loam	5YR 4/4
2.3-4.4	Gley 2 6/10G	40%	loamy clay	10 YR 6/8
4.4-5.7	Gley 2 6/10G	4%	loamy Sand Clay	5 YR 4/6



Vegetation Plot Photographs

PERMANENT VEGETATION PLOT 13 *(04/25/2022)*

PERMANENT VEGETATION PLOT 24 *(04/25/2022)*

PERMANENT VEGETATION PLOT 25 *(04/25/2022)*

PERMANENT VEGETATION PLOT 26 *(04/25/2022)*

PERMANENT VEGETATION PLOT 27 ***(04/25/2022)***

PERMANENT VEGETATION PLOT 28 ***(04/25/2022)***

Appendix B

Vegetation Plot Data

Table 6. Vegetation Plot Data

Wyant Lands Mitigation Site Phase II - Project Expansion
DMS Project No. 100595
Monitoring Year 0 - 2022

Planted Acreage	7.2
Date of Initial Plant	2022-04-19
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	NA
Date of Current Survey	2022-04-25
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 13 F		Veg Plot 24 F		Veg Plot 25 F		Veg Plot 26 F		Veg Plot 27 F		Veg Plot 28 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Alnus serrulata	hazel alder	Tree	OBL			1	1	2	2						
	Aronia arbutifolia	red chokeberry	Shrub	FACW	2	2										
	Asimina triloba	pawpaw	Tree	FAC	1	1										
	Betula nigra	river birch	Tree	FACW	4	4	1	1	2	2	3	3	2	2	3	3
	Carpinus caroliniana	American hornbeam	Tree	FAC	1	1										
	Cephalanthus occidentalis	common buttonbush	Shrub	OBL							2	2			1	1
	Hamamelis virginiana	American witchhazel	Tree	FACU	1	1										
	Morus rubra	red mulberry	Tree	FACU	1	1										
	Platanus occidentalis	American sycamore	Tree	FACW	2	2	4	4	4	4	3	3	1	1	2	2
	Populus deltoides	eastern cottonwood	Tree	FAC	1	1										
	Quercus michauxii	swamp chestnut oak	Tree	FACW					1	1	1	1	3	3	2	2
	Quercus nigra	water oak	Tree	FAC	1	1										
	Salix nigra	black willow	Tree	OBL			6	6	3	3	1	1	3	3	1	1
	Salix sericea	silky willow	Shrub	OBL											2	2
	Sambucus canadensis	American black elderberry	Tree								2	2			1	1
Sum	Performance Standard				14	14	12	12	12	12	12	12	9	9	12	12
Post Mitigation Plan Species	**Acer negundo**	**boxelder**	**Tree**	**FAC**			**2**	**2**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**
	Nyssa sylvatica	**blackgum**	**Tree**	**FAC**			**2**	**2**			**1**	**1**	**3**	**3**		
	Oxydendrum arboreum	**sourwood**	**Shrub**	**UPL**	**2**	**2**										
Sum	Proposed Standard				16	16	16	16	15	15	15	15	14	14	14	14
Mitigation Plan Performance Standard	Current Year Stem Count					14		12		12		12		9		12
	Stems/Acre					567		486		486		486		364		486
	Species Count					9		4		5		6		4		7
	Dominant Species Composition (%)					29		50		33		25		33		25
	Average Plot Height (ft.)					3		2		2		3		2		2
	% Invasives					0		0		0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					16		16		15		15		14		14
	Stems/Acre					648		648		607		607		567		567
	Species Count					10		6		6		8		6		8
	Dominant Species Composition (%)					29		50		33		25		33		25
	Average Plot Height (ft.)					3		2		3		3		2		3
	% Invasives					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 7. Vegetation Plot Data

Wyant Lands Mitigation Site Phase II - Project Expansion

DMS Project No. 100595

Monitoring Year 0 - 2022

Vegetation Performance Standards Summary Table												
	Veg Plot 13 F				Veg Plot 24 F				Veg Plot 25 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	567	3	9	0	486	2	4	0	486	2	5	0
	Veg Plot 26 F				Veg Plot 27 F				Veg Plot 28 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	3	6	0	364	2	4	0	486	2	7	0

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

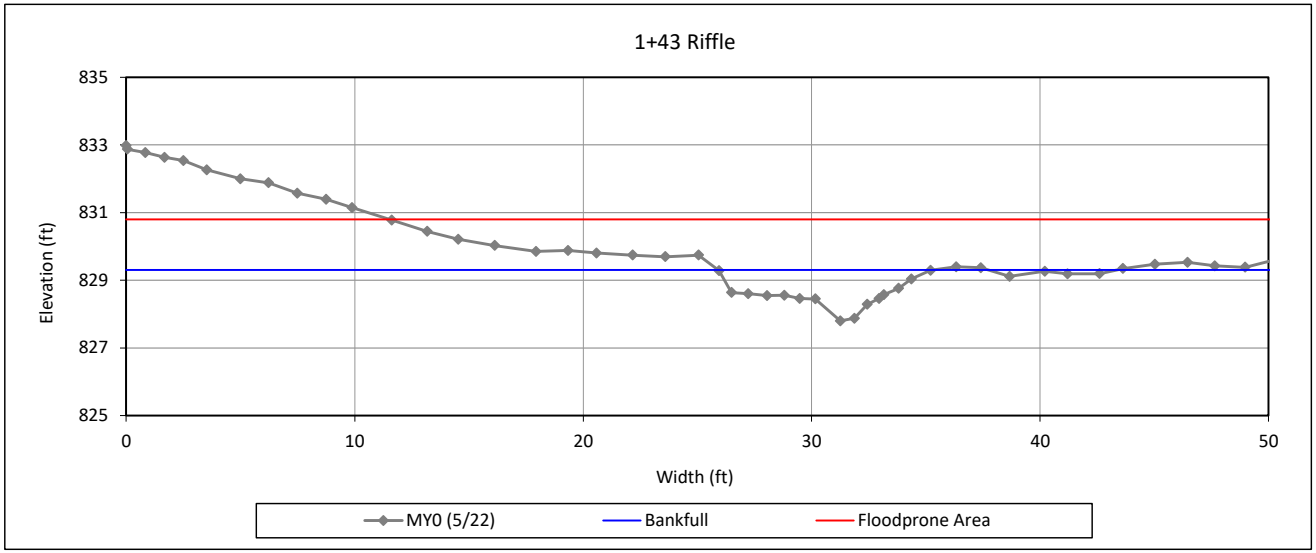
Appendix C

Stream Geomorphology Data

Cross-Section Plots

Wyant Lands Mitigation Site Phase-II Project Expansion
DMS Project No. 100595
Monitoring Year 0 - 2022

Cross-Section 19 - UT2 R1



Bankfull Dimensions

7.2	x-section area (ft.sq.)
9.3	width (ft)
0.8	mean depth (ft)
1.5	max depth (ft)
10.1	wetted perimeter (ft)
0.7	hydraulic radius (ft)
12.0	width-depth ratio
43.9	W flood prone area (ft)
4.7	entrenchment ratio
1.0	low bank height ratio

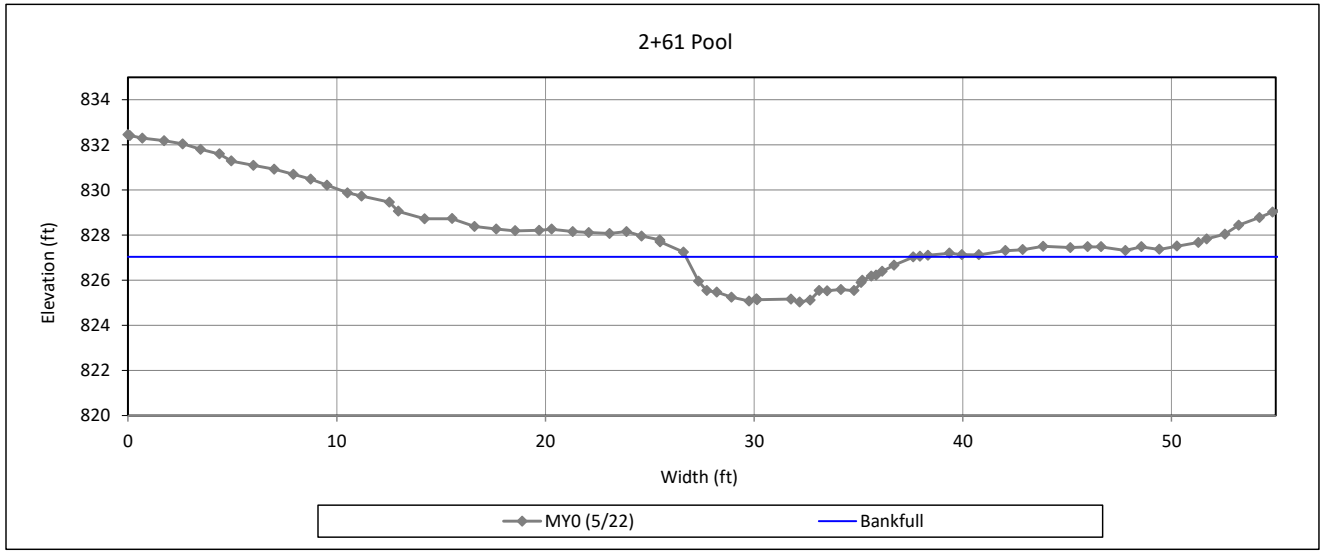
Survey Date: 5/22
Field Crew: Kee Surveying

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site Phase-II Project Expansion
DMS Project No. 100595
Monitoring Year 0 - 2022

Cross-Section 20-UT2 R1



Bankfull Dimensions	
14.8	x-section area (ft.sq.)
10.9	width (ft)
1.4	mean depth (ft)
2.0	max depth (ft)
12.4	wetted perimeter (ft)
1.2	hydraulic radius (ft)
8.0	width-depth ratio

Survey Date: 5/22
Field Crew: Kee Surveying

View Downstream

Longitudinal Profile Plots

Wyant Lands Mitigation Site Phase II - Project Expansion

USACE Action ID No. SAW-2021-02449

Monitoring Year 0 - 2022

UT2 Reach 1 (STA 0+24 to 4+20)

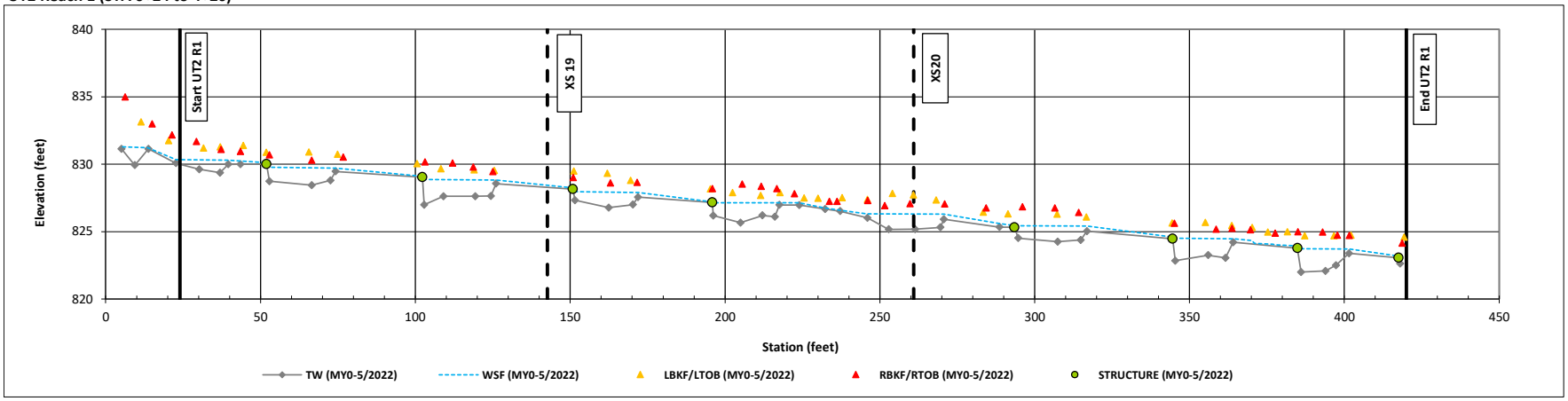


Table 8. Baseline Stream Data Summary

Wyant Lands Mitigation Site Phase II - Project Expansion
DMS Project No. 100595
Monitoring Year 0 - 2022

	PRE-EXISTING CONDITIONS			DESIGN		MONITORING BASELINE (MY0)		
Parameter	**UT2 R1**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	8.3		1	9.3		9.3		1
Floodprone Width (ft)	19.6		1	----		43.9		1
Bankfull Mean Depth	0.6		1	0.7		0.8		1
Bankfull Max Depth	0.9		1	1.0		1.5		1
Bankfull Cross Sectional Area (ft^2)	5.0		1	6.8		7.2		1
Width/Depth Ratio	13.8		1	13.0		12.0		1
Entrenchment Ratio	2.4		1	>1.4	5.0	4.7		1
Bank Height Ratio	2.0		1	1.0	1.1	1.0		1
Max part size (mm) mobilized at bankfull	----			----		----		
Rosgen Classification	C4b			Bc		Bc		
Bankfull Discharge (cfs)	16.8			26.0		25.1		
Sinuosity	1.24			1.10		1.10		
Water Surface Slope (ft/ft)[2]	0.017			0.019		0.018		
Other								

Table 9. Cross-Section Morphology Monitoring Summary

Wyant Lands Mitigation Site Phase II - Project Expansion
DMS Project No. 100595
Monitoring Year 0 - 2022

	UT2 Reach 1											
	Cross-Section 19 (Riffle)						Cross-Section 20 (Pool)					
	MY0	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	829.30						827.03					
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0						1.0					
Thalweg Elevation	827.80						825.08					
LTOB[2] Elevation	829.30						827.03					
LTOB[2] Max Depth (ft)	1.5						2.0					
LTOB[2] Cross Sectional Area (ft^2)	7.2						14.8					

[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

Appendix D

Project Timeline and Contact Information

Table 10. Project Activity and Reporting History

Wyant Lands Mitigation Site Phase II - Project Expansion
DMS Project No. 100595
Monitoring Year 0 - 2022

Activity or Deliverable		Data Collection Complete	Task Completion or Deliverable Submission
Project Instituted		N/A	N/A
Mitigation Plan Approved		January 2022	January 2022
Construction (Grading) Completed		April 2022	April 2022
Planting Completed		April 2022	April 2022
As-Built Survey Completed		April - May 2022	May 2022
Baseline Monitoring Document (Year 0)	Stream Survey	May 2022	July 2022
	Vegetation Survey	April 2022	
Year 1 Monitoring	Stream Survey		
	Vegetation Survey		
Year 2 Monitoring	Stream Survey		
	Vegetation Survey		
Year 3 Monitoring	Stream Survey		
	Vegetation Survey		
Year 4 Monitoring			
Year 5 Monitoring	Stream Survey		
	Vegetation Survey		
Year 6 Monitoring			
Year 7 Monitoring	Stream Survey		
	Vegetation Survey		

Table 11. Project Contact Table

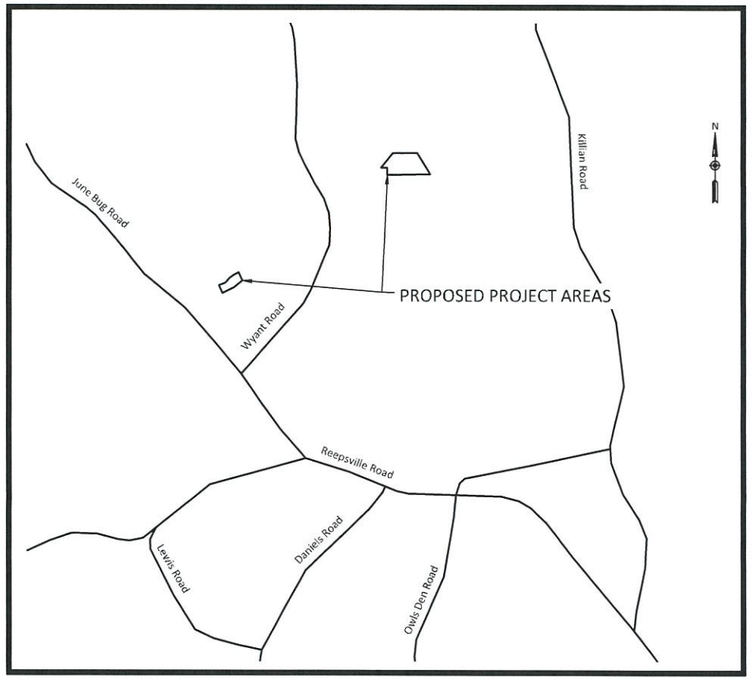
Wyant Lands Mitigation Site Phase II - Project Expansion
DMS Project No. 100595
Monitoring Year 0 - 2022

Designer Eric Nehaus, PE	**Wildlands Engineering, Inc.** 167-B Haywood Rd Asheville, NC 28806 828.207.8835
Construction Contractor	**Wildlands Construction, Inc.** 1430 S. Mint St; Ste. 104 Charlotte, NC 28203
Planting Contractor	**Brunton Natural Systems, Inc.** PO Box 1197 Freemont, NC 27830
Monitoring Performers Monitoring, POC	**Wildlands Engineering, Inc.** Kristi Suggs 704.332.7754 x.110

Appendix E

Record Drawings and Sealed As-Built Survey

Wyant Lands Mitigation Site
Phase II - Project Expansion Record Drawing
Lincoln County, North Carolina
for
NCDEQ
Division of Mitigation Services



Vicinity Map
Not to Scale

RECORD DRAWINGS
ISSUED July 15, 2022

Sheet Index

Title Sheet	0.1
Project Overview	0.2
General Notes and Symbols	0.3
UT2 Reach 1 Stream Plan and Profile	1.0
Wetland Grading	2.0 - 2.2
Planting Plan	3.0 - 3.2

Project Directory

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

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

Surveying:
Kee Mapping and Surveying, PA
111 Central Avenue
Asheville, NC 28801
Brad Kee, PLS
828-575-9021

DMS ID No. 100595
NCDEQ Contract No. 7244
USACE Action ID No. SAW-2021-02449
NCDWR No. 20180177

WILDLANDS ENGINEERING
167-B Haywood Road
Asheville, NC 28806
Tel: 865.207.3835
Fax: 704.332.3306
Firm License No. F-0831

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042660 ERIC PAUL NEUHAUS
7/15/22

Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing
Lincoln County, North Carolina
Title Sheet

Revisions:

Date: 7/15/22
Job Number: 005-02171
Project Engineer: EPN
Drawn By: SRK
Checked By: EPN

Sheet 0.1

JERRY THOMAS WYANT
PIN: 3605-98-8648
DB: 755 PG: 535

MATTHEW W. RAZAI
PIN: 3605-97-0726
DB: 2500 PG: 80

DAVID J. WYANT & WIFE
BRANDI F. WYANT
PIN: 3615-07-7619
DB: 2586 PG: 738
PB: 16 PG: 350

WYANT LANDS, LLC
PIN: 3615-17-3928
DB: 2436 PG: 938

LUCAS F. RICHARD
PIN: 3615-38-1627
DB: 2291 PG: 60 &
DB: 2292 PG: 584

SHEET 2.0

PHASE II - PROJECT EXPANSION
WETLAND MITIGATION AREA

WYANT ROAD

ROBERT THOMAS WYANT
PIN: 3605-87-3054
DB: 1933 PG: 169

WYANT LANDS, LLC
PIN: 3615-07-4254
DB: 2436 PG: 926

PHASE I - PROJECT AREA

CATAWBA LANDS CONSERVANCY
PIN: 3615-25-6566
DB: 1721 PG: 343
PB: 13 PG: 271

UT1

ROBERT THOMAS WYANT
PIN: 3605-96-4840
DB: 2000 PG: 406

WYANT LANDS, LLC
PIN: 3605-76-0937
DB: 2436 PG: 929

WYANT CREEK

UT3

WYANT LANDS, LLC
PIN: 3605-65-7869
DB: 2702 PG: 691

WYANT LANDS, LLC
PIN: 3605-95-9148
DB: 2339 PG: 182
(TRACT 1)

UT2

WYANT LANDS, LLC
PIN: 3605-95-9148
DB: 2339 PG: 182
(TRACT 1)

JERRY THOMAS WYANT
& WIFE LINDA WYANT
PIN: 3605-95-9968
DB: 585 PG: 191

SHEET 1.0

RUTHERFORD ELECTRIC
MEMBERSHIP COOPERATION
PIN: 3605-85-7130
DB: 711 PG: 666
PB: F PG: 268 & 269

PHASE II - PROJECT
EXPANSION STREAM
RESTORATION AREA

STA: 0+24
START UT2 REACH 1 -
RESTORATION

STA: 4+20
END UT2 REACH
1 - RESTORATION

Stream Origins		
Stream Name	Northing	Easting
UT 2 Reach 1	654985.5686	1308137.7915

N

0' 200' 400' 800'
(HORIZONTAL)

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NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER ERIC P. METHENY

7/15/22

Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing
Lincoln County, North Carolina

Project Overview

Revisions:

Date:	7/15/22
Job Number	1605.02171
Project Engineer:	EP/N
Drawn By:	SRK
Checked By:	JDW

Sheet 0.2

July 15, 2022

X:\Shared Projects\1605.02171 Wyant Lands Mitigation Site\Monitoring\Baseline Monitoring - Wyant Addendum - 2022\Plans\02171 As-Project Overview.dwg

Pre-Construction Features

- Pre-Construction Major Contour
- Pre-Construction Minor Contour
- Pre-Construction Property Line
- Recorded Conservation Easement (CE)
- Pre-Construction Overhead Utility Easement (OHE)
- Pre-Construction Overhead Electric (OW)
- Pre-Construction Power Pole
- Pre-Construction Farm Road
- Pre-Construction Jurisdictionally Delineated Wetlands
- Pre-Construction Asphalt Road
- Pre-Construction Riprap
- Pre-Construction Farm Pond

Design Features

- Design Thalweg Alignment (10+00)
- Design Bankfull
- Design Conservation Easement (CE)
- Design Internal Crossing (CE-IX)
- Design Major Contour (100)
- Design Minor Contour

Design Structures

- Design Constructed Riffles Per Plans
- Design Brush Toe
- Design SPSC
- Design Wetland Ditch Plug
- Design Log Sill
- Design Rock Sill
- Design Wetland Rehabilitation
- Design Wetland Reestablishment
- Design Wetland Creation

As-Built Features

- As-Built Thalweg Alignment (10+00)
- As-Built Bankfull
- Recorded Conservation Easement (CE)
- As-Built Major Contour (100)
- As-Built Minor Contour
- As-Built Fencing (x)
- As-Built Limits of Disturbance (LOD)

Monitoring Features

- Photo Point (PP #)
- Permanent Vegetation Plot (VP #)
- Groundwater Gage (GWG #)
- Crest Gage (CG #)
- Monitoring Cross Section (XS #)

As-Built Structures

- As-Built Constructed Riffles Per Plans
- As-Built Brush Toe
- As-Built Log Sill
- As-Built Rock Sill
- As-Built Wetland Rehabilitation
- As-Built Wetland Reestablishment
- As-Built Wetland Creation
- As-Built Soil Road
- As-Built Rip Rap

PROJECT NOTES:
1. Topographic data provided by North Carolina Spatial Data Download. QL1 Lidar data from September 2016.
2. Lidar data supplemented by topographic survey provided by Kee Mapping and Surveying dated March 2019 and August 2021.
3. Survey data provided by Kee Mapping and Surveying dated May 2022.

NOTE:
1. DEVIATIONS FROM THE DESIGN WILL BE SHOWN IN RED.

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7/15/22

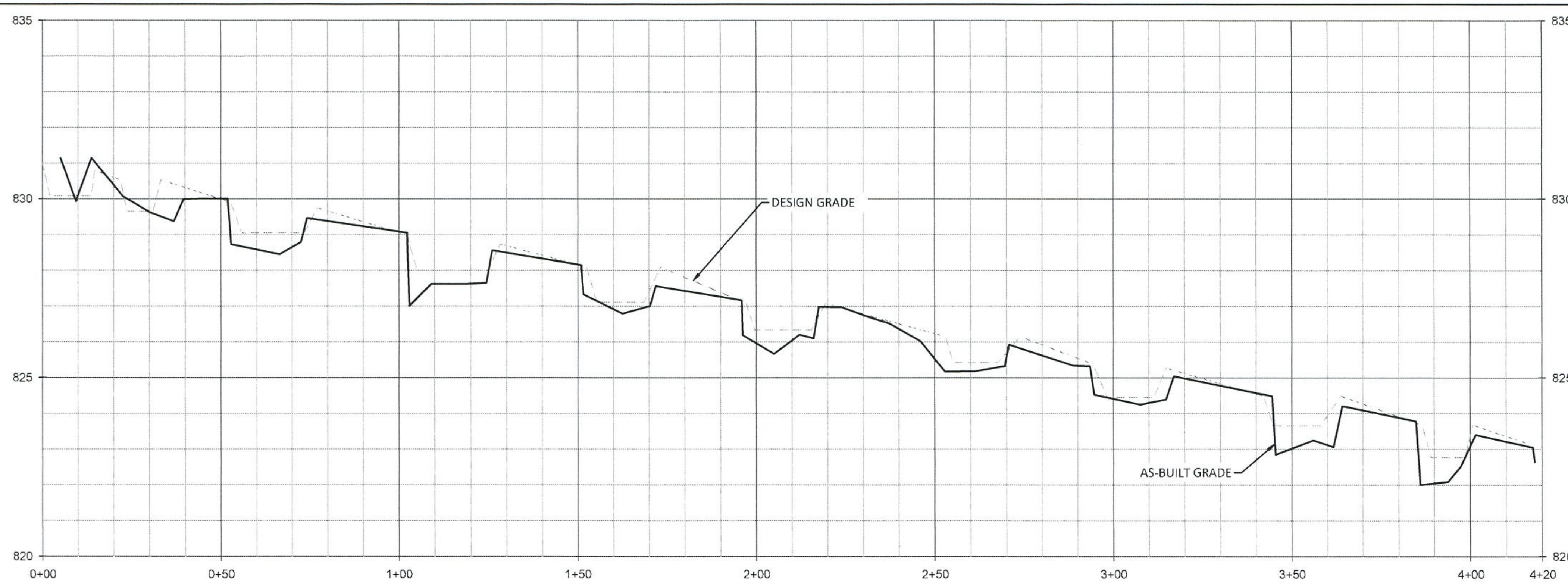
Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing
Lincoln County, North Carolina

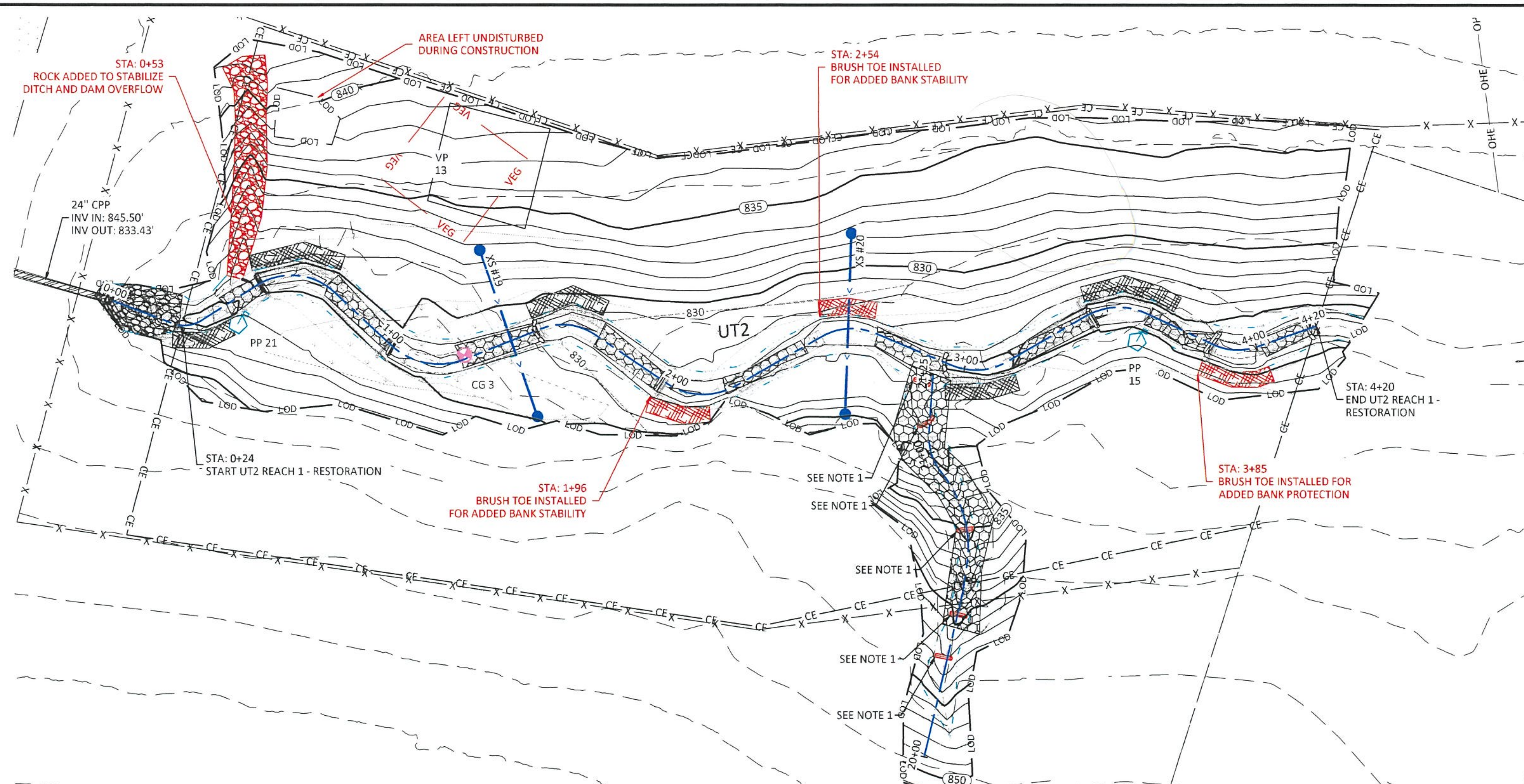
General Notes and Symbols

Revisions:

Date: 7/15/22
Job Number: 005-02171
Project Engineer: EFN
Drawn By: SRK
Checked By: EFN

Sheet 0.3





NOTES:

1. SURVEYED SILLS ARE PART OF THE STEP-POOL STORMWATER CONVEYANCE DESIGNED PRIOR TO CONSTRUCTION AT STA: 20+31, STA: 20+46, STA: 20+73, STA: 21+10, AND STA: 21+22

0' 2' 4' 6' (VERTICAL)

0' 20' 40' 60'

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042660 ERIC NEUHAUS 7/15/22

Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing
Lincoln County, North Carolina

UT2 Reach 1
Stream Plan and Profile

Revisions:

Date: 7/15/22
Job Number: 005-02171
Project Engineer: EPN
Drawn By: SRK
Checked By: EPN

Sheet 1.0

Date:	7/15/22
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	SRK
Checked By:	EPN

Revisions:

2.0

Sheet

Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing

Lincoln County, North Carolina

Wetland Grading Overview

NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER ERIC P. NEWKIRK

7/15/22

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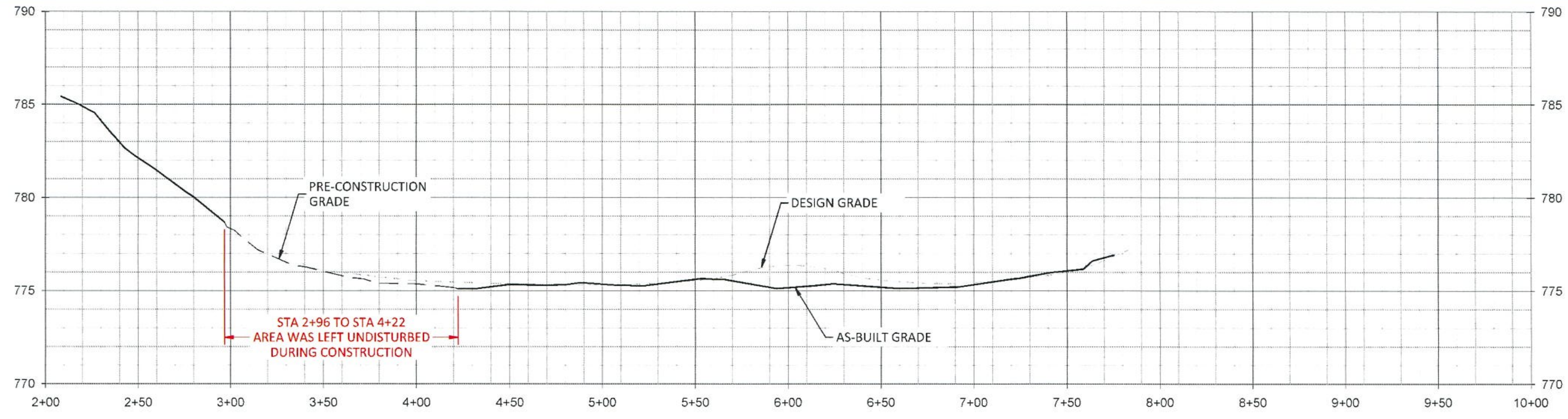
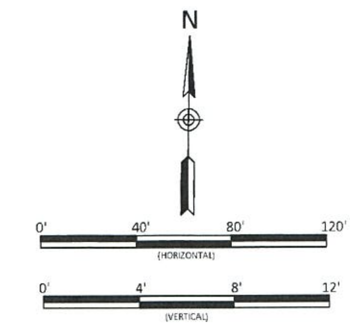
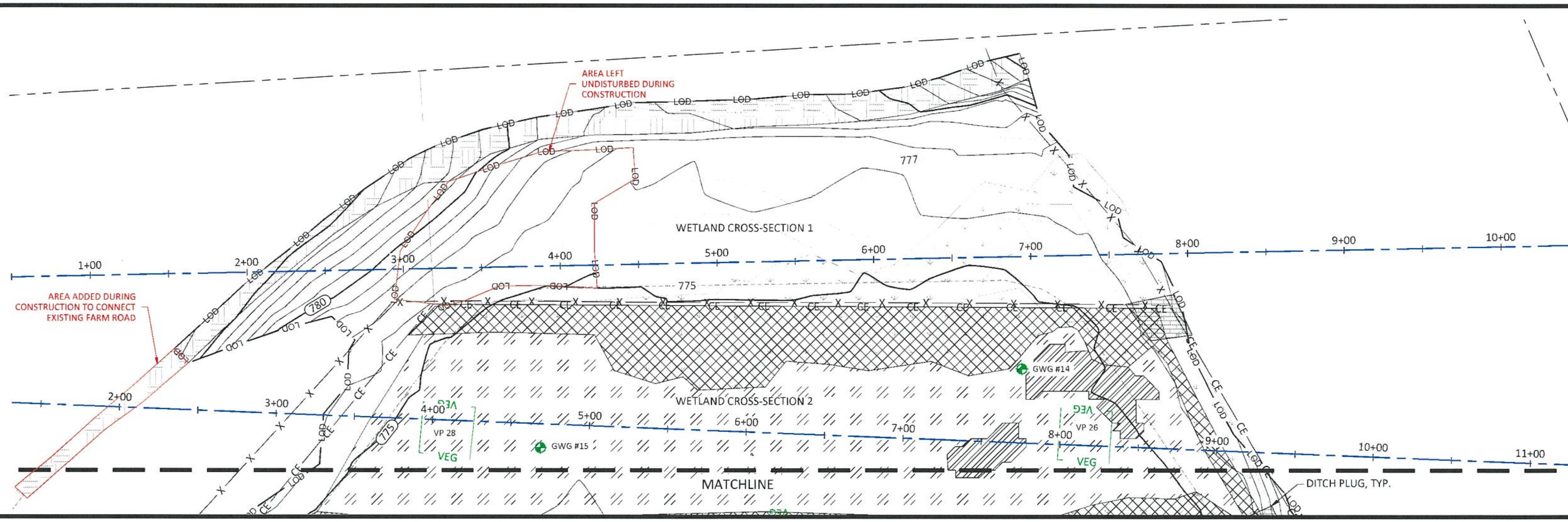
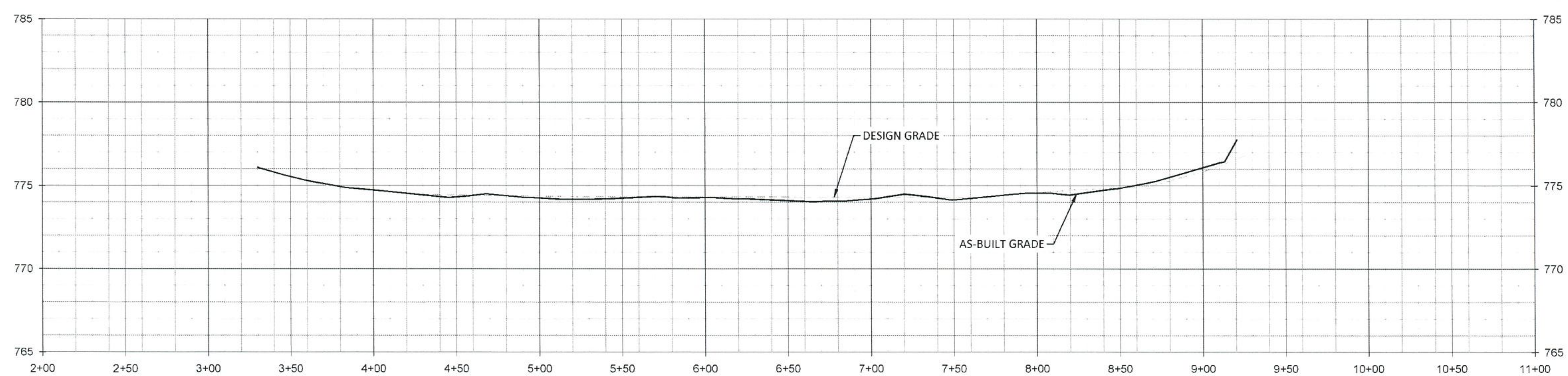


WETLAND CROSS-SECTION 1







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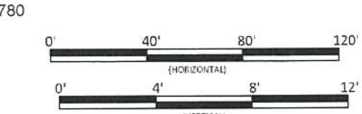

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042660

7/15/22

Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing

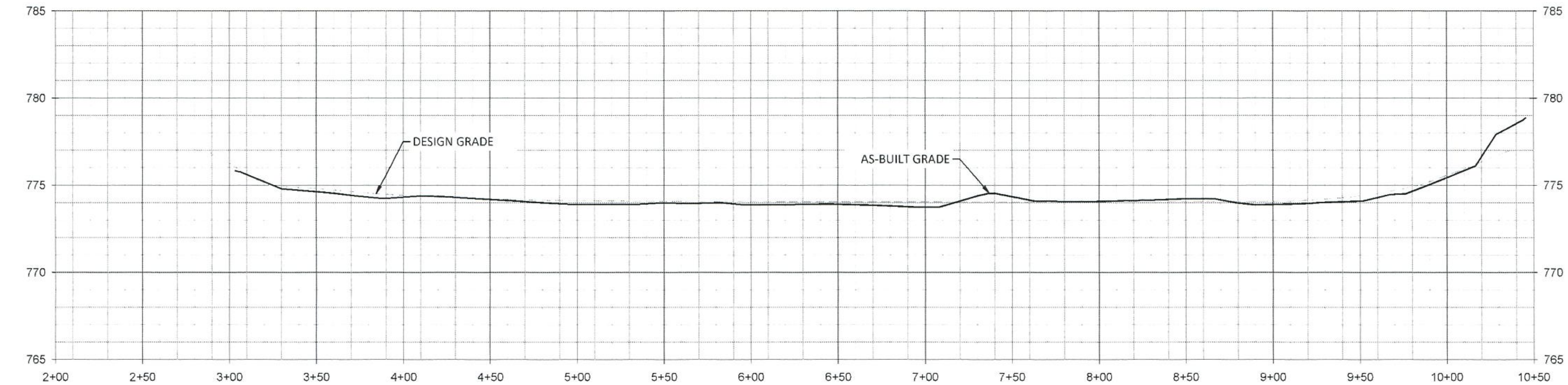
Lincoln County, North Carolina

Wetland Grading

Revisions:

Date:	7/15/22
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	SRK
Checked By:	EPN

Sheet 2.1



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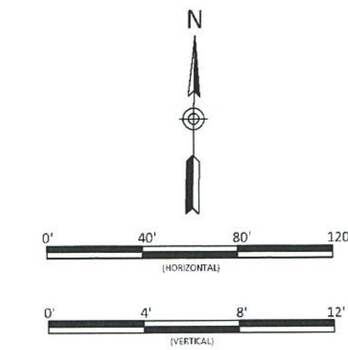

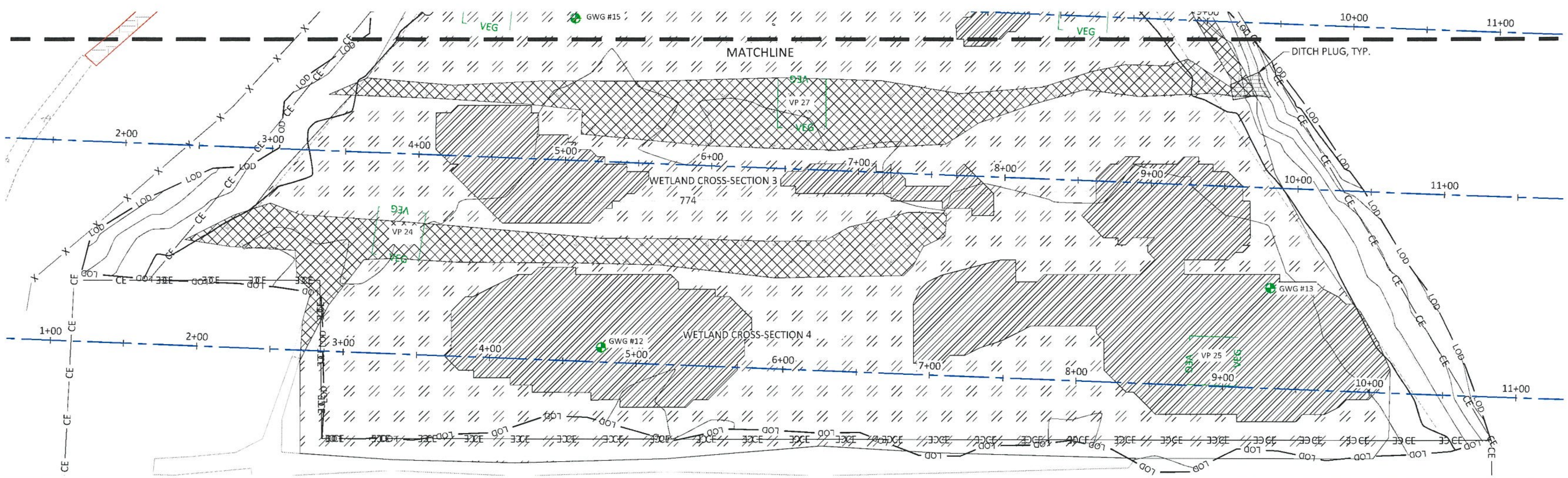

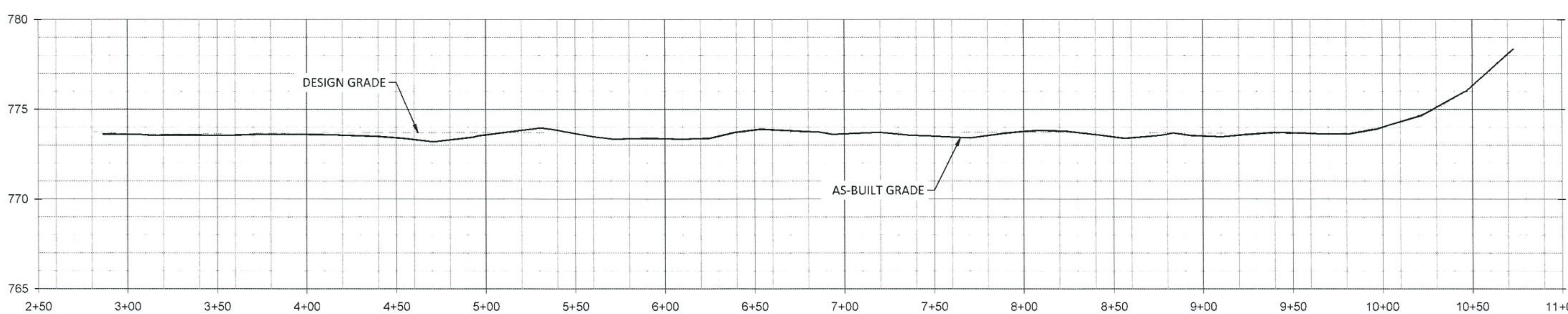

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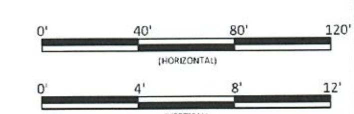

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042660
7/15/22

Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing

Lincoln County, North Carolina

Wetland Grading

Revisions:

Date:	7/15/22
Job Number:	005-02171
Project Engineer:	EJTN
Drawn By:	SRK
Checked By:	EJTN

Sheet 2.2

July 15, 2022

RIPARIAN ZONE					
Species	Common Name	Spacing	Min. Caliper	Percentage	Wetland Indicator Status
~~*Alnus serrulata*~~	~~Tag Alder~~	~~12ft x 6ft~~	~~0.25"~~	~~5%~~	~~OBL~~
Carpinus caroliniana	American Hornbeam	12ft x 6ft	0.25"	10%	FAC
~~*Liriodendron tulipifera*~~	~~Tulip Poplar~~	~~12ft x 6ft~~	~~0.25"~~	~~5%~~	~~FACU~~
Platanus occidentalis	Sycamore	12ft x 6ft	0.25"	~~20%~~ 15%	FACW
Betula nigra	River Birch	12ft x 6ft	0.25"	15%	FACW
Populus deltoides	Eastern Cottonwood	12ft x 6ft	0.25"	10%	FAC
Diospyros virginiana	Persimmon	12ft x 6ft	0.25"	10%	FAC
Quercus nigra	Water Oak	12ft x 6ft	0.25"	~~5%~~ 10%	FAC
Quercus phellos	Willow Oak	12ft x 6ft	0.25"	10%	FAC
Quercus michauxii	Swamp Chestnut Oak	12ft x 6ft	0.25"	~~10%~~ 5%	FACW
Aronia arbutifolia	Red Chokeberry	12ft x 16ft	0.25"	2%	FACW
Hamamelis virginiana	Witch Hazel	12ft x 16ft	0.25"	2%	FACU
Morus rubra	Red Mulberry	12ft x 16ft	0.25"	2%	FACU
Lindera benzoin	Spicebush	12ft x 16ft	0.25"	2%	FAC
Oxydendrum arboreum	Sourwood	12ft x 16ft	0.25"	5%	UPL
Asimina triloba	Paw Paw	12ft x 16ft	0.25"	2%	FAC

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.

STREAM BANK PLANTING ZONE - Live Stakes					
Species	Common Name	Indiv. Spacing	Min. Caliper	Percentage	Wetland Indicator Status
Cephalanthus occidentalis	Common Buttonbush	3-5 ft	0.5"	20%	OBL
Salix sericea	Silky Willow	3-5 ft	0.5"	~~40%~~ 20%	OBL
~~*Physocarpus opulifolius*~~	~~Ninebark~~	~~3-5 ft~~	~~0.5"~~	~~20%~~	~~FACW~~
Sambucus canadensis	Elderberry	3-5 ft	0.5"	20%	FAC
Cornus amomum	Silky Dogwood	3-5 ft	0.5"	20%	FACW
Salix nigra	Black Willow	3-5ft	0.5"	40%	OBL

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

WETLAND PLANTING ZONE					
Species	Common Name	Spacing	Min. Caliper	Percentage	Wetland Indicator Status
Platanus occidentalis	Sycamore	12ft x 12ft	0.25"	~~11%~~ 15%	FACW
~~*Quercus phellos*~~	~~Willow Oak~~	~~12ft x 12ft~~	~~0.25"~~	~~17%~~	~~FAC~~
Betula nigra	River Birch	12ft x 12ft	0.25"	~~11%~~ 15%	FACW
Quercus michauxii	Swamp Chestnut Oak	12ft x 12ft	0.25"	~~17%~~ 10%	FACW
Sambucus canadensis	Elderberry	12ft x 12ft	0.25"	~~10%~~ 5%	FAC
Alnus serrulata	Tag Alder	12ft x 12ft	0.25"	~~10%~~ 5%	OBL
Cephalanthus occidentalis	Common Buttonbush	12ft x 12ft	0.25"	~~12%~~ 5%	OBL
~~*Rosa palustris*~~	~~Swamp rose~~	~~12ft x 12ft~~	~~0.25"~~	~~12%~~	~~OBL~~
Salix nigra	Black Willow	12ft x 12ft	0.25"	15%	OBL
Nyssa sylvatica	Black Gum	12ft x 12ft	0.25"	10%	FAC
Acer negundo	Box Elder	12ft x 12ft	0.25"	15%	FAC
Salix sericea	Silky Willow	12ft x 12ft	0.25"	5%	OBL

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

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: 828.337.3305
Fax: 704.332.3306
Firm License No. F-0831

NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER ERIC P. ALEXANDER

Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing
Lincoln County, North Carolina

Planting List
Planting Plan

Revisions:

Date: 7/15/22
Job Number: (M5) 02171
Project Engineer: EPA
Drawn By: SRK
Checked By: EPA

Sheet 3.0

Date: 7/15/22
Job Number: 005-02171
Project Engineer: EPN
Drawn By: SRK
Checked By: EPN

3.1
Sheet

Revisions:

Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing
Lincoln County, North Carolina

Wetland Planting
Planting Plan

NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER ERIC P. HERVEY

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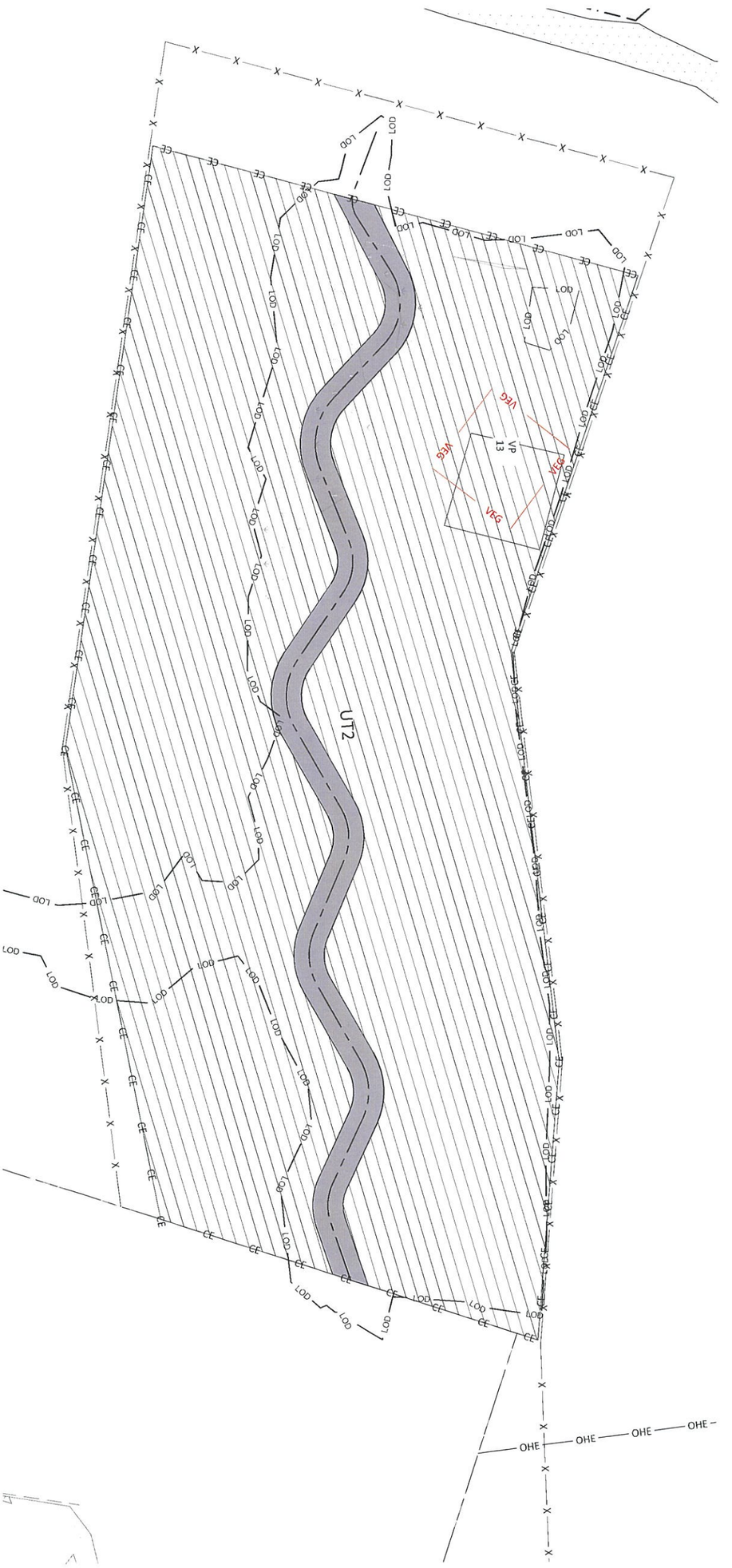
Firm License No. F-0831



Date:	7/15/22
Job Number:	005-02171
Project Engineer:	EPN
Drawn By:	SRK
Checked By:	EPN

Sheet 3.2

Revisions:

Wyant Lands Mitigation Site Phase II - Project Expansion Record Drawing

Lincoln County, North Carolina

UT2 Reach 1 Planting

Planting Plan

NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER

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

AN AS-BUILT SURVEY FOR:

WILDLANDS ENGINEERING, INC

"WYANT LANDS MITIGATION SITE PHASE II-PROJECT EXPANSION"

LINCOLN COUNTY, NORTH CAROLINA

SPO FILE NOS. 55-Y, 55-Z, 55-AA, 55AE
DMS SITE ID NO. 100067 & 100595

CERTIFICATE OF SURVEY AND ACCURACY

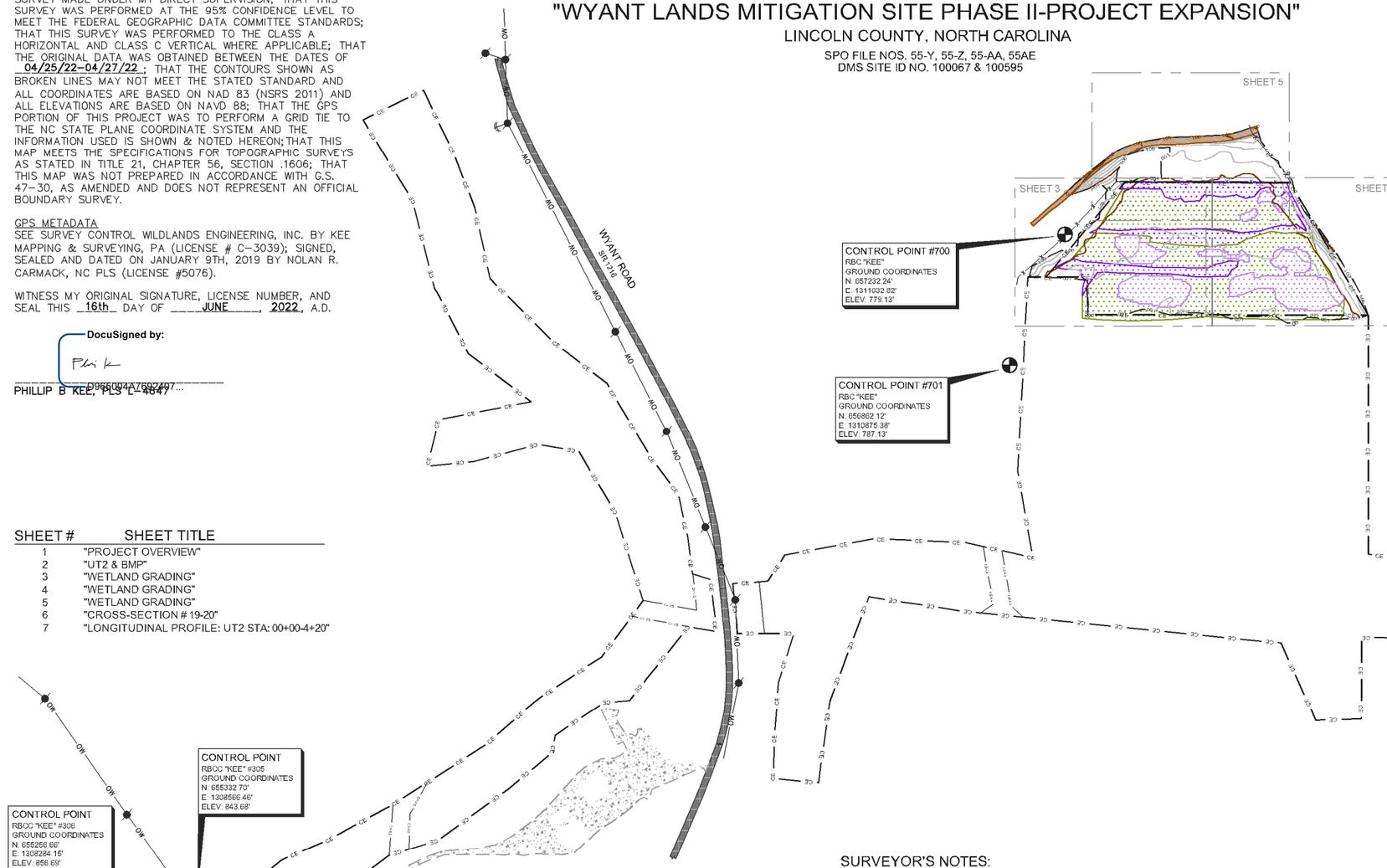
I, PHILLIP B. KEE, CERTIFY THAT THE GROUND TOPOGRAPHIC SURVEY PORTION OF THIS PROJECT WAS COMPLETED UNDER MY DIRECT SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY DIRECT SUPERVISION; THAT THIS SURVEY WAS PERFORMED AT THE 95% CONFIDENCE LEVEL TO MEET THE FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS; THAT THIS SURVEY WAS PERFORMED TO THE CLASS A HORIZONTAL AND CLASS C VERTICAL WHERE APPLICABLE; THAT THE ORIGINAL DATA WAS OBTAINED BETWEEN THE DATES OF 04/25/22-04/27/22; THAT THE CONTOURS SHOWN AS BROKEN LINES MAY NOT MEET THE STATED STANDARD AND ALL COORDINATES ARE BASED ON NAD 83 (NSRS 2011) AND ALL ELEVATIONS ARE BASED ON NAVD 88; THAT THE GPS PORTION OF THIS PROJECT WAS TO PERFORM A GRID TIE TO THE NC STATE PLANE COORDINATE SYSTEM AND THE INFORMATION USED IS SHOWN & NOTED HEREON; THAT THIS MAP MEETS THE SPECIFICATIONS FOR TOPOGRAPHIC SURVEYS AS STATED IN TITLE 21, CHAPTER 56, SECTION .1606; THAT THIS MAP WAS NOT PREPARED IN ACCORDANCE WITH G.S. 47-30, AS AMENDED AND DOES NOT REPRESENT AN OFFICIAL BOUNDARY SURVEY.

GPS METADATA
SEE SURVEY CONTROL WILDLANDS ENGINEERING, INC. BY KEE MAPPING & SURVEYING, PA (LICENSE # C-3039); SIGNED, SEALED AND DATED ON JANUARY 9TH, 2019 BY NOLAN R. CARMACK, NC PLS (LICENSE #5076).

WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER, AND SEAL THIS 16th DAY OF JUNE, 2022, A.D.

DocuSigned by:
Phil K
D9650047692407...
PHILLIP B KEE, PLS L-4647

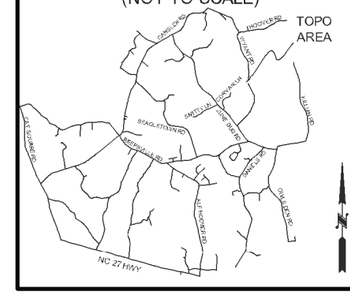
SHEET #	SHEET TITLE
1	"PROJECT OVERVIEW"
2	"UT2 & BMP"
3	"WETLAND GRADING"
4	"WETLAND GRADING"
5	"WETLAND GRADING"
6	"CROSS-SECTION # 19-20"
7	"LONGITUDINAL PROFILE: UT2 STA: 00+00-4+20"



SURVEYOR'S NOTES:

1. ALL DISTANCES AND COORDINATES ARE GROUND MEASUREMENTS IN US SURVEY FEET UNLESS OTHERWISE NOTED.
2. PROPERTY SUBJECT TO ALL EASEMENTS, RIGHT OF WAYS AND RESTRICTIONS THAT ARE RECORDED, UNRECORDED, WRITTEN AND UNWRITTEN.
3. CONSERVATION EASEMENT BOUNDARIES SHOWN HEREON WERE TAKEN FROM PLATS OF SURVEY ENTITLED: "A CONSERVATION EASEMENT SURVEY FOR THE STATE OF NORTH CAROLINA, DIVISION OF MITIGATION SERVICES "WYANT LANDS MITIGATION SITE" AND RECORDED ON 05/01/2020, IN PLAT BOOK 18, PAGES 108-112 IN THE LINCOLN COUNTY REGISTRY AND "A CONSERVATION EASEMENT SURVEY FOR THE STATE OF NORTH CAROLINA, DIVISION OF MITIGATION SERVICES "WYANT LANDS: PHASE II-PROJECT EXPANSION DMS SITE ID 100595" AND RECORDED ON 12/30/2021, IN PLAT BOOK 21, PAGE 60 IN THE LINCOLN COUNTY REGISTRY.
4. **LINCOLN** COUNTY GIS WEBSITE USED TO IDENTIFY ADJOINING PROPERTY OWNERS
5. BY GRAPHIC DETERMINATION, A PORTION OF THE SUBJECT PROPERTY APPEARS TO LIE WITHIN A SPECIAL FLOOD HAZARD AREA (SFHA) AS DETERMINED BY THE FIRM MAP# **3710360400J** DATED **8/16/2007**.
6. STATE PLANE COORDINATES AND ELEVATIONS WERE DERIVED FROM THE CONTROL SURVEY PREPARED BY **KEE MAPPING & SURVEYING**. THE HORIZONTAL DATUM IS **NAD 83 (2011)** AND THE VERTICAL DATUM IS **NAVD(88)**. ALL COORDINATES SHOWN HEREON ARE GROUND MEASUREMENTS IN US SURVEY FEET.
7. UTILITIES WERE LOCATED BASED ON VISIBLE ABOVE GROUND STRUCTURES, THEREFORE THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE OR MAY BE PRESENT AND NOT SHOWN HEREON. CALL 1-800-632-4949 BEFORE DIGGING.
8. STATIONING AND STREAM LABELS FOR PLAN AND PROFILES ARE BASED OFF OF FINAL PLANS AND DESIGN CENTERLINES PROVIDED BY WILDLANDS ENGINEERING, INC.
9. CONTOUR INTERVAL: **1 FOOT**
   VERTICAL DATUM: **NAVD 88**
10. AREA OF LIMITS OF DISTURBANCE: **8.32 ACRES**
11. WETLANDS SHOWN PROVIDED BY WILDLANDS ENGINEERING, INC.
12. FENCING SHOWN AS CONSTRUCTED AT THE TIME OF THIS SURVEY.

VICINITY MAP
(NOT TO SCALE)



N
GRID NORTH
NAD 83 (2011)

LEGEND

#	STRUCTURE NUMBER
●	1/2" RBC (CROSS-SECTION REBAR)
⊕	CONTROL POINT (AS NOTED)
⊕	GAUGE (AS NOTED)
●	UTILITY POLE
↓	GUY ANCHOR
	DECIDUOUS TREE
	PHOTO POINT
	LOG SILL
	ROCK SILL
	BRUSH TOE
	RIFFLE
	RIP RAP
	SOIL ROAD
	ASPHALT
	GRAVEL
	WETLAND - RE-ESTABLISHMENT
	WETLAND - REHABILITATION
	WETLAND - CREATION
CE-XS	CONSERVATION EASEMENT INTERNAL CROSSING
CE	CONSERVATION EASEMENT
	MINOR CONTOUR
780	MAJOR CONTOUR
LOD	LIMITS OF DISTURBANCE
	THALWEG
TB	TOP OF BANK
	DESIGN CENTERLINE
x x	FENCE
OW	OVERHEAD WIRE
RBCC	REBAR W/ CAP SET IN CONCRETE
RBC	REBAR W/ CAP
INV	INVERT
ELEV	ELEVATION
NAVD	NORTH AMERICAN VERTICAL DATUM
NAD	NORTH AMERICAN DATUM
SPC	STATE PLANE COORDINATES
CPP	CORRUGATED PLASTIC PIPE
VP	VEGETATED PLOT
NSRS	NATIONAL SPATIAL REFERENCE SYSTEM
STA	STATION

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL L-4647 LAND SURVEYOR PHILLIP B. KEE
DocuSigned by: D9650047692407...

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES, LEGEND & STATEMENT OF CERTIFICATION

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

THIS IS A TOPOGRAPHIC SURVEY FOR INFORMATIONAL AND DESIGN PURPOSES ONLY. IT SHOULD NOT BE USED FOR CONVEYANCE OR LEGAL PURPOSES.

AN AS-BUILT SURVEY FOR:
WILDLANDS ENGINEERING, INC

SPO FILE NOS. 55-Y, 55-Z, 55-AA, 55-AE

DMS SITE ID NO. 100067 & 100595

PROJECT:
WYANT LANDS MITIGATION SITE PHASE II-PROJECT EXPANSION

SHEET TITLE:
PROJECT OVERVIEW

TOWNSHIP: HOWARDS CREEK	COUNTY: LINCOLN	STATE: NORTH CAROLINA
DRAWN BY: NH	CHECKED BY: PBK	SURVEY BY: PD, RR, HW, KP, AC
SCALE: AS SHOWN	SURVEY DATE: 06/16/22	
JOB: #2204045-AB	SHEET SIZE: 11" X 17" (HALF SIZE)	

#	DATE	REVISIONS

SHEET: 1 OF 7

Kee MAPPING & SURVEYING
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Asheville, NC 28802
(828) 575-9021
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N
GRID NORTH
NAD 83 (2011)

CONTROL POINT
RBCC "KEE" #306
GROUND COORDINATES
N: 655256.66'
E: 1308284.15'
ELEV: 856.69'

STRUCTURE TABLE-UT2		
#	DESCRIPTION	ELEVATION
1	LOG SILL	830.01
2	LOG SILL	829.05
3	ROCK SILL	828.15
4	LOG SILL	827.16
5	ROCK SILL	825.32
6	LOG SILL	824.48
7	LOG SILL	823.78
8	ROCK SILL	823.05

L-PIN: 1/2" RBC
N: 655115.52'
E: 1308331.92'
Z: 832.46'

END UT2
STA: 4+20

UT2 FLOW

CROSS-SECTION #20

L-PIN: 1/2" RBC
N: 655054.87'
E: 1308231.19'
Z: 832.98'

VP13

CROSS-SECTION #19

R-PIN: 1/2" RBC
N: 655064.458'
E: 1308357.156'
Z: 829.59'

BEGIN UT2
STA: 0+24

STREAM GAUGE
BOLT ELEV: 831.81'

R-PIN: 1/2" RBC
N: 655017.39'
E: 1308272.06'
Z: 830.24'

24" CPP
INV IN: 845.50'
INV OUT: 833.43'

BEGIN BMP
STA: 20+00

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

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL L-4847 LAND SURVEYOR PHILLIP B. KEE
DocuSigned by: D965004A1092407...

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES, LEGEND & STATEMENT OF CERTIFICATION

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

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AN AS-BUILT SURVEY FOR:
WILDLANDS ENGINEERING, INC

SPO FILE NOS. 55-Y, 55-Z, 55-AA, 55-AE
DMS SITE ID NO. 100067 & 100595

PROJECT:
WYANT LANDS MITIGATION SITE PHASE II-PROJECT EXPANSION

SHEET TITLE:
UT2 & BMP

TOWNSHIP: HOWARDS CREEK	COUNTY: LINCOLN	STATE: NORTH CAROLINA
DRAWN BY: NH	CHECKED BY: PBK	SURVEY BY: PD, RR, HW, KP, AC
SCALE: AS SHOWN	SURVEY DATE: 06/16/22	
JOB: #2204045-AB	SHEET SIZE: 11" X 17" (HALF SIZE)	

#	DATE	REVISIONS

SHEET:
2 OF 7

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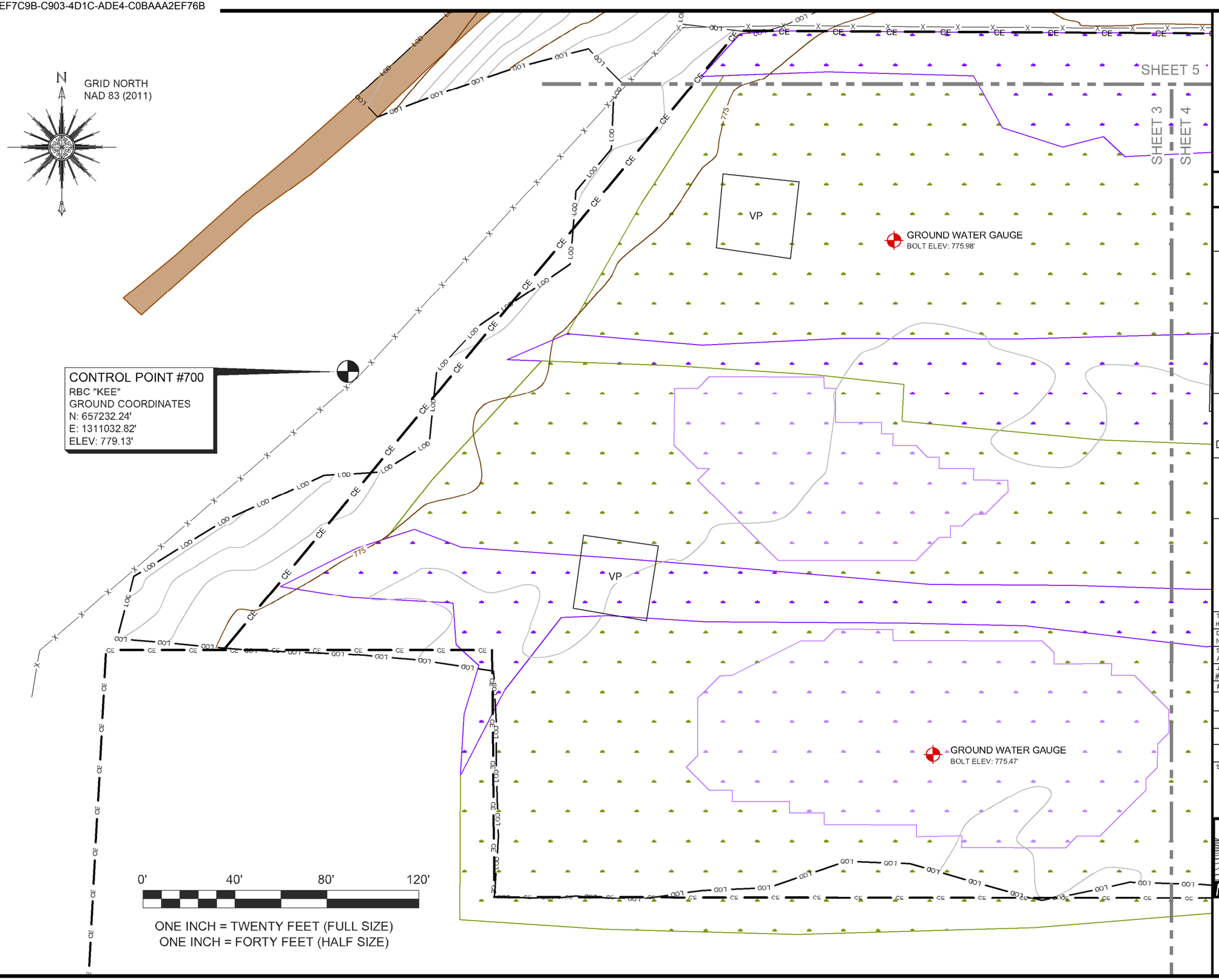

SEAL:

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DocuSigned by: D965004A7902407...

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CONTOUR INTERVAL: 1 FOOT

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AN AS-BUILT SURVEY FOR:

WILDLANDS ENGINEERING, INC

SPO FILE NOS. 55-Y, 55-Z, 55-AA, 55-AE

DMS SITE ID NO. 100067 & 100595

PROJECT:
WYANT LANDS MITIGATION SITE PHASE II-PROJECT EXPANSION

SHEET TITLE:
WETLAND GRADING

TOWNSHIP: HOWARDS CREEK	COUNTY: LINCOLN	STATE: NORTH CAROLINA
DRAWN BY: NH	CHECKED BY: PBK	SURVEY BY: PD, RR, HW, KP, AC
SCALE: AS SHOWN	SURVEY DATE: 06/16/22	
JOB: #2204045-AB	SHEET SIZE: 11" X 17" (HALF SIZE)	

#	DATE	REVISIONS

SHEET:
3 OF 7

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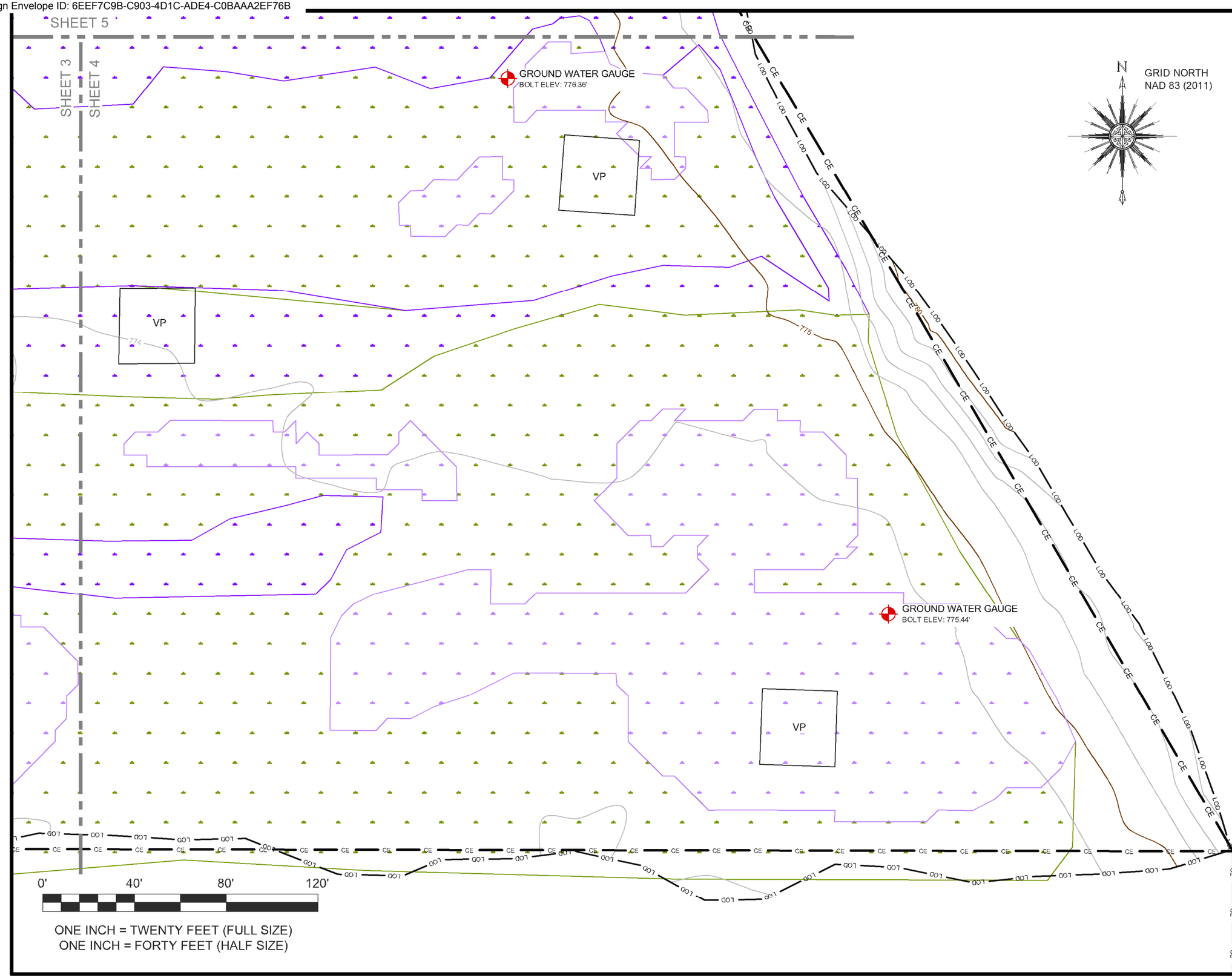

N
GRID NORTH
NAD 83 (2011)

SEAL:

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

DocuSigned by:
D965004A1092407...

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES, LEGEND & STATEMENT OF CERTIFICATION

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

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AN AS-BUILT SURVEY FOR:

WILDLANDS ENGINEERING, INC

SPO FILE NOS. 55-Y, 55-Z, 55-AA, 55-AE

DMS SITE ID NO. 100067 & 100595

PROJECT:
WYANT LANDS MITIGATION SITE PHASE II-PROJECT EXPANSION

SHEET TITLE:
WETLAND GRADING

TOWNSHIP: HOWARDS CREEK	COUNTY: LINCOLN	STATE: NORTH CAROLINA
DRAWN BY: NH	CHECKED BY: PBK	SURVEY BY: PD, RR, HW, KP, AC
SCALE: AS SHOWN	SURVEY DATE: 06/16/22	
JOB: #2204045-AB	SHEET SIZE: 11" X 17" (HALF SIZE)	

#	DATE	REVISIONS

SHEET:
4 OF 7

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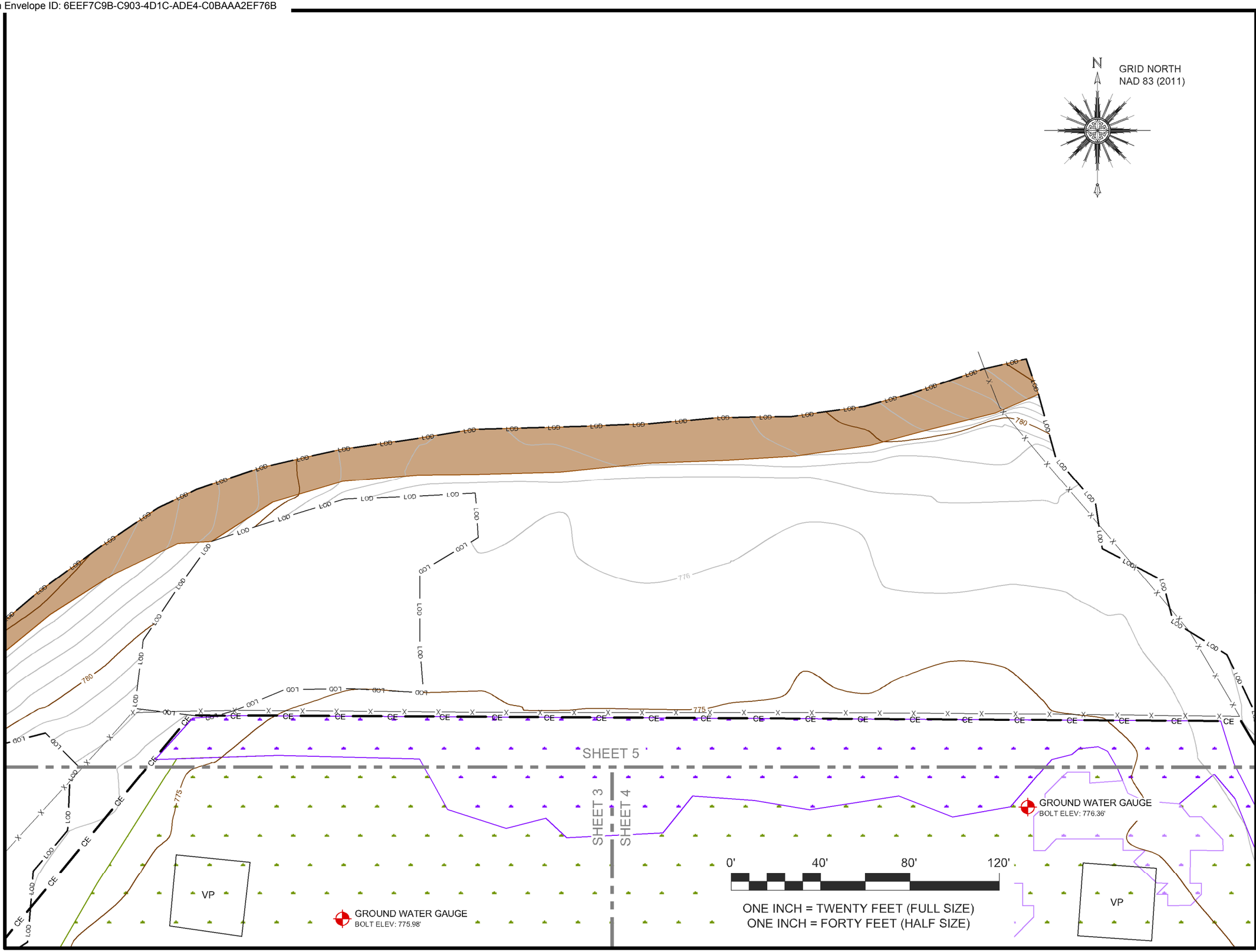

SEAL:

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR
DocuSigned by:
SEAL
L-4647
D965004A7C92407...
PHILLIP B. KEE

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES, LEGEND & STATEMENT OF CERTIFICATION

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

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AN AS-BUILT SURVEY FOR:

WILDLANDS ENGINEERING, INC

SPO FILE NOS. 55-Y, 55-Z, 55-AA, 55-AE

DMS SITE ID NO. 100067 & 100595

PROJECT:
WYANT LANDS MITIGATION SITE PHASE II-PROJECT EXPANSION

SHEET TITLE:
WETLAND GRADING

TOWNSHIP: HOWARDS CREEK	COUNTY: LINCOLN	STATE: NORTH CAROLINA
DRAWN BY: NH	CHECKED BY: PBK	SURVEY BY: PD, RR, HW, KP, AC
SCALE: AS SHOWN	SURVEY DATE: 06/16/22	
JOB: #2204045-AB	SHEET SIZE: 11" X 17" (HALF SIZE)	

#	DATE	REVISIONS

SHEET:

5 OF 7

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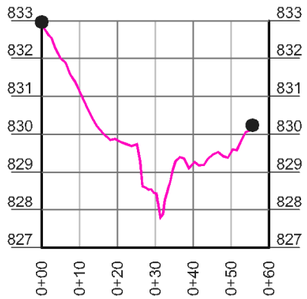
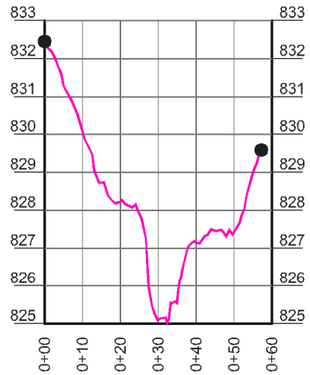


CROSS-SECTION #19-UT2
HORIZONTAL SCALE: 1" = 20' FULL SIZE, 1" = 40' HALF SIZE
VERTICAL SCALE: 1" = 2' FULL SIZE, 1" = 4' HALF SIZE



CROSS-SECTION #20-UT2
HORIZONTAL SCALE: 1" = 20' FULL SIZE, 1" = 40' HALF SIZE
VERTICAL SCALE: 1" = 2' FULL SIZE, 1" = 4' HALF SIZE

LEGEND

● CROSS-SECTION REBAR

SEAL:

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

DocuSigned by: D9650044F892407...

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES, LEGEND & STATEMENT OF CERTIFICATION

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

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AN AS-BUILT SURVEY FOR:
WILDLANDS ENGINEERING, INC

SPO FILE NOS. 55-Y, 55-Z, 55-AA, 55-AE

DMS SITE ID NO. 100067 & 100595

PROJECT:
WYANT LANDS MITIGATION SITE PHASE II-PROJECT EXPANSION

SHEET TITLE:
CROSS-SECTION # 19-20

TOWNSHIP: HOWARDS CREEK	COUNTY: LINCOLN	STATE: NORTH CAROLINA
DRAWN BY: NH	CHECKED BY: PBK	SURVEY BY: PD, RR, HW, KP, AC
SCALE: AS SHOWN	SURVEY DATE: 06/16/22	
JOB: #2204045-AB	SHEET SIZE: 11" X 17" (HALF SIZE)	

#	DATE	REVISIONS

SHEET:
6 OF 7

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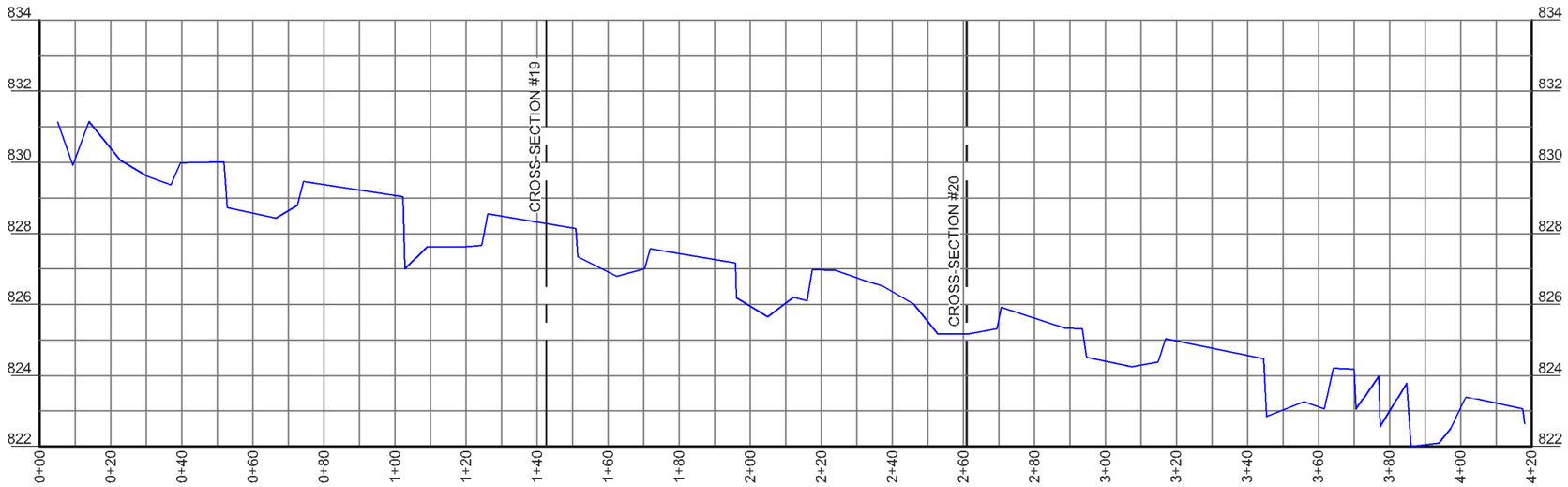

LONGITUDINAL PROFILE- UT2

HORIZONTAL SCALE: 1" = 20' FULL SIZE, 1" = 40' HALF SIZE
VERTICAL SCALE: 1" = 2' FULL SIZE, 1" = 4' HALF SIZE

LEGEND

THALWEG

SEAL:

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

DocuSigned by: D965004A7892407...

NOTE: SEE SHEET 1 FOR SURVEYOR'S NOTES, LEGEND & STATEMENT OF CERTIFICATION

ELEVATION DATUM: NAVD 88
CONTOUR INTERVAL: 1 FOOT

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AN AS-BUILT SURVEY FOR:

WILDLANDS ENGINEERING, INC

SPO FILE NOS. 55-Y, 55-Z, 55-AA, 55-AE

DMS SITE ID NO. 100067 & 100595

PROJECT:
WYANT LANDS MITIGATION SITE PHASE II-PROJECT EXPANSION

SHEET TITLE:
LONGITUDINAL PROFILE: UT2
STA: 0+00-4+20

TOWNSHIP: HOWARDS CREEK	COUNTY: LINCOLN	STATE: NORTH CAROLINA
DRAWN BY: NH	CHECKED BY: PBK	SURVEY BY: PD, RR, HW, KP, AC
SCALE: AS SHOWN	SURVEY DATE: 06/16/22	
JOB: #2204045-AB	SHEET SIZE: 11" X 17" (HALF SIZE)	

#	DATE	REVISIONS

SHEET:
7 OF 7

Kee MAPPING & SURVEYING
P.O. Box 2566
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(828) 575-9021
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License # C-3039

Appendix F

Correspondence

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 Phase II Project Expansion
Lincoln County, NC
Response to NCIRT Review Comments
USACE Action ID No: SAW-2021-02449
NCDMS Project No: 100595

Dear Ms. Browning:

Wildlands Engineering, Inc. (Wildlands) has reviewed USACE's and NCDWR's comments from the Wyant Lands Phase II Project Expansion in Lincoln County, NC. The following Wildlands responses to *USACE's and NCDWR's comments* are noted below.

USACE Addendum Comments, Kim Browning:

1. *The categorical exclusion documents provided pertain to the 404 permit that was issued in July 2020. This will cover UT2 Reach 1, but was the new parcel where the wetlands be added assessed for ESA and SHPO resources in 2018? I understand that the area is currently in agriculture and likely doesn't contain any resources; however, the entire area of disturbance should be evaluated and documented for the new 404 permit.*

   Wildlands Response: Wildland's personnel assessed the addendum area for ESA and SHPO resources in the field. The proposed mitigation plan addendum area is within the parent tract of the original approved categorical exclusion document submitted in 2018. Based on site observations, aerials, and landowner correspondence, the area has been managed in agriculture since at least 1950 and no additional clearing area is proposed outside of the originally approved project disturbance area. No additional correspondence was provided as part of the project addendum.

2. *Section 5.5 should address whether the existing wooded buffer on UT2 R1 will be cleared and replanted, or selective clearing and supplemental planting will be done. At the site visit, we discussed removal of black walnut and potentially transplanting mockernut hickory, which was not discussed in the existing conditions section.*

   Wildlands Response: Wildlands plans to selectively clear where possible during construction of UT2 Reach 1. Wildlands will make every effort to transplant the existing mockernut hickory and will remove identified black walnut within the conservation easement. Existing privet and other identified invasive species will also be removed during construction.

3. *Table 10 and 11: You may want to consider removing the Pebble Count performance standard.*

Wildlands Response: Pebble counts are now removed from the performance standards and the monitoring components tables.

4. *Section 7.0: If you intend on proposing the addendum expansion project for close-out at MY6 to coincide with close-out of the initial Wyant Lands project, pending the project is on a trajectory for success, that should be discussed in this section.*

   Wildlands Response: The following text was added to Section 7.0 proposing phase II close-out at MY6. "To facilitate project organization, after the as-built and baseline monitoring report is submitted and approved for the addendum area, monitoring reports for phase II will be included with phase I monitoring reports. It is proposed that if the addendum area has met monitoring performance standards three of the prior four monitoring years at closeout of the phase I portion of the project (monitoring year 6 of phase II), the addendum area also be closed as well. If monitoring performance criteria within the phase II addendum area has not met monitoring standards three out of the prior four years, an additional seventh year of monitoring will be performed for the addendum area and the closeout monitoring period will be seven years beyond completion of construction and/or until performance standards have been met."

5. *Figure 2A: It appears that not all of the existing wetland T will be captured in the addendum area (to the north). Will this pose a problem for the landowner if the field adjacent to the conservation easement becomes too wet?*

   Wildlands Response: The area of existing Wetland T that is outside the proposed addendum area will be raised in elevation (1 foot max) but is anticipated to remain wet after the project. This area of property is currently wet and the landowner understands it will remain wet post construction. Grades increase quickly as you move north of wetland T towards the property line and spoil material removed from the proposed wetland area will be used to increase elevations in the 100-foot gap between the addendum easement and the property line to ensure an adequate travel path for the landowner. Impacts to Wetland T are listed as temporary within the 401/404 permit submittal for the project.

6. *Figure 10.2A: Please show the location of the BMP.*

   Wildlands Response: Figure 10.2A is updated to show the location of the proposed BMP.

DWR addendum comments, Erin Davis:

1. *Page 7, Section 3.2 – What is the risk of hydrologic trespass along the Addendum wetland area? Is there any concern with current or future land use that may result in ditching near the easement (and wetland credit) boundary?*

   Wildlands Response: Hydrologic trespass risk along the addendum wetland area is minimal. Grades increase quickly north and west of the proposed addendum conservation easement. To the east a natural levy and relic berm, along with the drainage of Pott Creek, decrease the risk for potential hydrologic trespass. Spoil material removed from the proposed wetland area will be used to increase elevations north of the proposed wetland in the 100-foot gap between the addendum easement and the property line to ensure an adequate travel path for the

landowner. The primary use for the land most near the addendum conservation easement, is farm traffic/travel and it is not anticipated that ditching near the easement would be required for current of future land use.

2. *Page 13 – The Table 10 footnote #3 appears inconsistent with the Section 7 monitoring plan schedule/duration. Please clarify the proposed Addendum area's monitoring schedule, as well as, how (if at all) it will be associated with the original project mitigation plan's schedule.*

   Wildlands Response: See Wildlands response to comment #4 from Kim Browning above. Text was added to Section 7.0 to clarify the proposed monitoring period for the addendum portion of the project.

3. *Figures: Is it possible to show the existing CE red dashed line over the proposed CE purple line where they share a boundary? It was initially very confusing to see the constructed project area extend into the proposed CE area.*

   Wildlands Response: All the maps are now updated with the red dashed line over the purple line to show where the phase I Conservation Easement ends and the phase II conservation easement starts.

4. *Figure 6.1A – Based on the aerial basemap there appears to be ditches onsite (Wetland Q to the area below Open Water 2). Please confirm and add callouts if present. It is also helpful to have any existing ditches located near the proposed project boundaries identified, particularly if they could influence site conditions.*

   Wildlands Response: Existing site ditches and ditches to be filled were added to Figures 2A and 6.1A, respectively. All ditches in or near the proposed project boundary are going to filled and plugged. No ditches that will influence site conditions exist adjacent to the addendum conservation easement.

5. *Figure 11A – Please show proposed wetland credit types on this figure. It's difficult to tell if any of the veg plots and gauges are located within proposed wetland rehabilitation or creation areas. If not, please shit at least one gauge to a representative creation area and have at least one veg plot in each credit type area. Also, none of the gauges are located near the proposed easement boundary, which can be a zone we're concerned with the hydroperiod meeting the performance standard threshold. Please shift at least one gauge closer to the CE boundary. If it would be helpful, DWR can mark-up a figure with recommended gauge shifts once the credit types have been added.*

   Wildlands Response: The proposed wetland credit types are now included on Figure 11A. Vegetation plots and wetland gages were shifted to have representation in each wetland crediting type. One wetland gage was shifted towards the boundary of the conservation easement, and another shifted towards the edge of the wetland boundary.

6. *Sheet 2.0 – With the grading proposed outside the easement, is it expected to result in a loss of any open water and/or wetland areas? It appears the Open Water 2 area will be graded up to elev. 777. Also, what is the minimum ditch plug length being proposed.*

Wildlands Response: Open Water 2 will be permanently impacted and filled. Within the conservation easement, this area will be restored to bottomland forested wetland. See response to comment #5 from Kim Browning above regarding Wetland T. The 401/404 permit submitted for project includes these areas of impact. Minimum ditch plug length is 8 feet, but it should be noted that all ditches are proposed to be filled for their entirety in addition to proposed ditch plugs.

7. *Sheet 4.0 – DWR would encourage reducing sycamore and river birch percentages within the wetland planting zone in order to enhance habitat diversity.*

   Wildlands Response: Wildlands has reduced the sycamore and river birch percentages within the wetland planting zones. Willow oak, swamp chestnut oak, common button bush, and swamp rose percentages were all increased.

USACE addendum comments, Casey Haywood:

1. *Please include the October 18, 2021 site visit notes as an appendix.*

   Wildlands Response: Meeting Minutes from the October 18, 2021 site visit with the IRT were included in Appendix 13A.

Please contact me at 865-207-8835 if you have any questions.

Sincerely,

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