MY0 MONITORING REPORT

SLIVER MOON II SITE

Craven County, North Carolina
Neuse River Basin
Cataloging Unit 03020202

DMS Project No. 100077
Full Delivery Contract No. 7606
DMS RFP No. 16-007401
USACE Action ID No. SAW-2018-01761
DWR Project No. 2018-1156

Data Collection: December 2021-January 2022
Submission: May 2023

Prepared for:

NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF MITIGATION SERVICES
1652 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1652

Mitigation Services
ENVIRONMENTAL QUALITY

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Response to DMS Comments
DMS Project No. 100077
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USACE Action ID No. SAW-2018-01761
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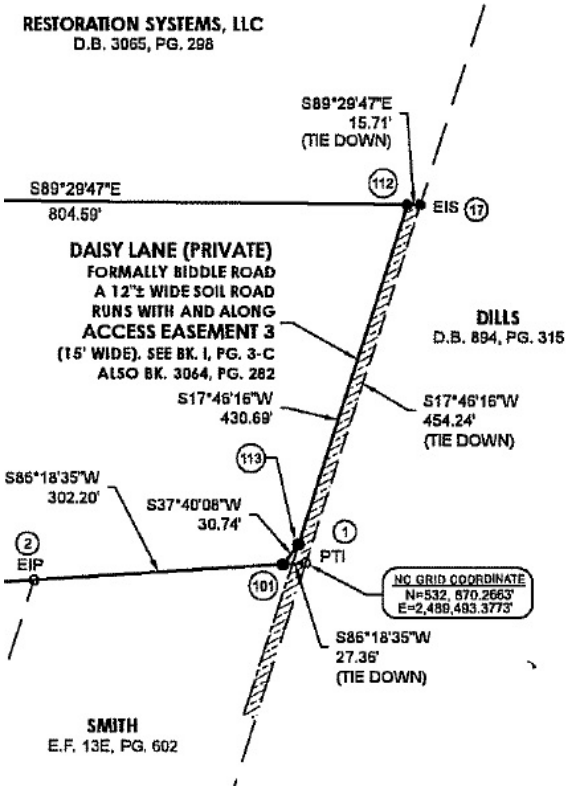
DMS Comments Received (Black Text) & Responses (Blue Text)

General Comments

1. The Mitigation plan calls for 25 gages and 26 vegetation plots. There may be a discrepancy because the As-built shows 26 gages and 25 vegetation plots. DMS suggests adding another random plot to meet established success criteria.
   Response: One random vegetation transect will be added during MY1-MY7.

2. Confirm that the Daisy Lane Road is outside of the conservation easement.
   Response: Yes, Daisy Lane is outside of the conservation easement – See the screenshot below of the Recorded Map of Record.



3. Update the report to describe the recently discovered in-field trespass/mowing by the adjacent (new) landowner and steps to remediate this in the future and in MY1 for IRT review and understanding.
   Response: Section 2.4 was added to the report, discussing the on-site trespass/mowing and corrective actions taken.

4. Ensure entire boundary is marked up to Stewardship SOP and provide pictures. There are several "tricky" angles in the southern portion of the project, please ensure proper marking steps are taken these and other places.
   Response: Photo documentation is included in Appendix A.

5. Check VP20F that is showing no planted stems (all volunteer) and updated as needed.
Response: Section 2.2 was added and includes the following narrative: "As indicated on the Recording Drawings, VP20F (within Forest Area B) was not planted. Pine removal occurred on the perimeter of Forest B. The inner portion of Forest B consists of an appropriate mixture of native mature and junior species appropriate for the Site's target wetland community. Species removal seemed inconsistent with the Site's goals and was not performed. VP20F was kept in its location, as shown in the approved Mitigation Plan. Monitoring of the existing species will continue throughout the monitoring period to determine any negative effect on these species from the increase of groundwater and site hydrology through the filling of adjacent ditches."

6. Table 9. Update MY0 date to 9/22.
Response: The MY0 date was updated to reflect its resubmission date of May 2023.

7. Describe method of thinning, area thinned, and density of planting in the forested areas. Describe if species planted were different than other areas.
Response: Section 2.2 was added and includes the following narrative: "Areas thinned included Forest A and the outer perimeter of Forest B. Work was focused on removing loblolly pine and other non-native or undesirable species (i.e., privet, red maple, and sweetgum) in areas where it could be accessed without causing significant damage to native mature or junior species consistent with the desired forest type of the Site. Thinned areas were planted at a density consistent with the non-forested portions of the Site, roughly 8x8 spacing or 680 stems per acre."

8. In the MP questions, there was discussion of any areas of grading >12". The responses from the MP indicated 0.265 acres were >12", but this may be less based on DMS observation. There was also wood installed in these minor depressional flow paths. Please describe these areas in the report (as-built condition (baseline) Section 2) for clarity and if the area >12" is known.
Response: Section 2.3 was added and includes the following narrative: "Shown on the Recording Drawings are the constructed depressional flow paths & habitat pools, including where woody debris was added. Areas with greater than 1 foot of cut account for 0.04 acres, well below the amount indicated in the approved Mitigation Plan of .265 acres."

<u>Plan Sheets</u>

1. RS will have to use a surveyor and provide a sealed record drawing (with red-line changes overlain on the construction plan), showing any deviations from design. Currently, there is a topo plan but it is unclear if there were any changes to the design. Suggest adding updated Figure 7 from the Mitigation Plan and red line anything that was not completed. Example-the northern boundary ditch that was partially filled and culvert elevations should also be included.
Response: An updated Record Drawing set is included with this resubmission.

2. Provide elevations of outfall stabilizations.
Response: An updated Record Drawing set is included with this resubmission.

3. Show the area of thinning on the planting plan.
Response: An updated Record Drawing set is included with this resubmission.

<u>Digital:</u>

1. Please provide digital grading files (AutoCad) used to generate the surveyed As-Built.
Response: Included with the Project digital deliverable file set.

2. In future submittals, please attribute the GIS file tables (attribute tables) with specific asset name/labeling for clarity.
Response: Understood

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APPENDICES

1. PROJECT SUMMARY

Restoration Systems, LLC (RS) has established the North Carolina Division of Mitigation Services (NCDMS) Sliver Moon II Site (Site).

1.1 Project Background, Components, and Structure

The Sliver Moon II Site (hereafter referred to as the "Site") encompasses 30.88 acres of primarily agricultural fields used for row crop production. The underlying tract is a single parcel totaling 31.85 acres. The Site is approximately 2.5 miles northwest of Cove City, 3.5 miles southeast of Dover, and slightly north of Old US-70 Highway (SR1005) in northwest Craven County.

Before construction, existing wetlands abutted the Site along its entire northern and much of its southern boundary, with direct ephemeral surface water inputs at several locations. Surface water inputs along the northern border were directed east and west offsite via ditches and a drain tile that cut across the Site. The eastern fifth of the Site's northern boundary abuts the Sliver Moon Mitigation Site, implemented in 2012, successful through five years of monitoring, and closed in 2018.

Just to the north of the Site is the rim of a Carolina Bay. The rim was mined for sand to construct the current NC Highway 70. The Site's eastern boundary, Daisy Lane, was built to access the sand and remains an unimproved road elevated 2-3 feet above Site grade. Soon after the Hwy 70 project, the area was cleared for row crop production, including the land east of Daisy Lane. Land abutting the Site to the south was in agricultural production before 1981. Currently, a vast majority of this land is unmanaged and has naturalized. Remnant spoil piles and historic ditches are still present. Agricultural production is still active along the Site's southwestern boundary, where a topographic crest in the landscape separates the properties hydrologically.

The Site was in agricultural production for roughly 35 years before construction. Typical crop rotation for the decade before construction was winter wheat and corn.

Proposed Site restoration activities generated 30.447 Non-riparian Wetland Mitigation Units (WMUs) – as described in Table 1. An access lane measuring 0.15 acres (15 feet wide) was surveyed and recorded as part of the conservation easement plat and deed. The lane allows for access from the south to north across the Site. The lane area is a part of the restoration plan and approach. No improvements to the lane were made during construction, and the land will not generate mitigation credit.

Additional activities that occurred at the Site included the following.

- Thinning existing wooded areas and replanting bare-root seedlings
- Planting 30.88 acres of the Site with 20,500 stems (planted species are included in Table 5A [Appendix B]).
- Mechanically removing small clusters of Chinese privet
- Applying a permanent seed mix across the Site. A species list is included in Table 5B (Appendix B).

The Project's design was completed on September 23, 2021. Construction started on September 27, 2021, and ended with a final walkthrough on October 27, 2021. The Site was planted on December 20, 2021. Completed project activities, reporting history, completion dates, and project contacts are summarized in Tables 8-9 (Appendix D).

Table 1. Sliver Moon II (ID-100077) Project Mitigation Quantities and Credits

	Original							
	Mitigation		Original	Original	Original			
	Plan	As-Built	Mitigation	Restoration	Mitigation			
Project Segment	**Ft/Ac**	**Ft/Ac**	**Category**	**Level**	**Ratio (X:1)**	**Credits**		**Comments**
Wetland								
WR 1	30.447	30.447	R	REE	1.00000	30.447		0.15 acres is within access lane and generates no credit
					Total:	**30.447**		

Project Credits

Restoration Level	Stream			Riparian	Non-Riparian	Coastal
	Warm	Cool	Cold	Wetland	Wetland	Marsh
Restoration						
Re-establishment					30.447	
Rehabilitation					0.000	
Enhancement					0.000	
Enhancement I						
Enhancement II						
Creation					0.000	
Preservation					0.000	
Totals					**30.447**	

Total Stream Credit **0.000**

Total Wetland Credit **30.447**

1.2 Project Goals and Objectives

The Site is located within **TLW 03020202080010** and sub-basin 03-04-08. The project is not located within a Local Watershed Planning area; however, project activities address priorities associated with the 2010 *Neuse River Basin Restoration Priorities* report as follows:

1. Protect, augment, and connect Natural Heritage areas and other conservation lands.
2. Reduce water quality impacts from agricultural practices – cessation of row crop production and elimination of fertilizer application/annual ditch maintenance, which may directly reduce nitrogen, phosphorus, and sediments entering downstream waters.
3. Reduce impacts from stormwater.

Site-specific mitigation goals and objectives were developed using the North Carolina Wetland Assessment Method (NC WAM) analyses of preconstruction and reference wetland systems at the Site (NC WFAT 2010) (see table below).

Table 2. Summary: Goals, Performance, and Results

Goals	Objectives	Success Criteria
(1) HYDROLOGY		
• Re-establish appropriate wetland hydrology on-site	• Fill and plug agriculture ditches to restore jurisdictional hydrology • Plant native woody vegetation • Cease row crop production within the easement • Shallow disking (~4") of soils to reduce compaction and increase surface roughness • Protect the Site with a perpetual conservation easement	• Row crop production ceased within the easement • Monitoring wells will be successful if the water table is within 12 inches of the soil surface for 12% (32 consecutive days) of the growing season • Vegetation plots will be successful if the plant density is 210 stems per acre with an average plant height of 10 feet at 7 years following planting
(1) WATER QUALITY		
• Remove direct nutrient and pollutant inputs from the Site	• Reduce agricultural land/inputs • Fill and plug the ditch network to restore ground and surface hydrology in the Site • Plant woody vegetation • Restore jurisdictional wetlands	• Row crop production ceased within the easement • Monitoring wells will be successful if the water table is within 12 inches of the soil surface for 12% (32 consecutive days) of the growing season • Vegetation plots will be successful if the plant density is 210 stems per acre with an average plant height of 10 feet at 7 years following planting
(1) HABITAT		
• Improve wetland wildlife habitat within and adjacent to the Site	• Plant woody vegetation to provide organic matter and shade • Fill and plug ditches to provide groundwater hydrology and plant native woody vegetation • Protect the Site with a perpetual conservation easement • Restore jurisdictional wetlands	• Monitoring wells will be successful if the water table is within 12 inches of the soil surface for 12% (32 consecutive days) of the growing season • Vegetation plots will be successful if the plant density is 210 stems per acre with an average plant height of 10 feet at 7 years following planting

1.3 Success Criteria

Monitoring and success criteria for wetland restoration should relate to project goals and objectives identified from NC WAM data collection. From a mitigation perspective, several goals and objectives are assumed functionally elevated by restoration activities without direct measurement. Other goals and

objectives will be considered successful upon achieving success criteria. The following summarizes Site success criteria.

Success Criteria Summary

Wetland Hydrology
• Saturation or inundation within the upper 12 inches of the soil surface for, at a minimum, 12 percent of the growing season during average climatic conditions based on the *Wilmington District Stream and Wetland Compensatory Mitigation Update* (USACE 2016, Table 1) for both the *Typic Paleaquult* (Rains) and the *Umbric Paleaquult* (Pantego) soil series as requested by the IRT during the pre-application site visit. Wetland hydrology is an annual success criterion and will be reported in each year's monitoring report. The 2016 USACE *Wilmington District Stream and Wetland Compensatory Mitigation Update* for monitoring states that the growing season, used to determine the number of days required to meet the wetland hydroperiod success criteria, shall not extend beyond March 1 and November 20 (265 days). Using this range as the maximum possible growing season, 12 percent (the wetland hydrology success criteria) would be 31.8 days (rounded to 32 days). Yearly reporting of on-site soil temperature and documented bud burst of two or more tree species (excluding red maple and elderberry) will occur - the growing season will remain fixed (March 1 and November 20).
Vegetation
• Within planted portions of the Site, a minimum of 320 stems per acre must be present at year 3; a minimum of 260 stems per acre must be present at year 5; and a minimum of 210 stems per acre must be present at year 7. • Trees must average 7 feet in height at year 5 and 10 feet in height at year 7 in each plot. • Planted and volunteer stems are counted, provided they are included in the approved planting list for the Site; natural recruits not on the planting list may be considered by the IRT on a case-by-case basis. • Any single species can only account for 50% of the required stems within any vegetation plot.

2. AS-BUILT CONDITION (BASELINE)

The Project's design was completed on September 23, 2021. Construction started on September 27, 2021, and ended with a final walkthrough on October 27, 2021. The Site was planted on December 20, 2021. Completed project activities, reporting history, completion dates, and project contacts are summarized in Tables 8-9 (Appendix D).

2.1 Northern Boundary

During construction, it was necessary to maintain some degree of the Site's northern boundary drainage ditch to ensure the project did not cause a hydrological trespass issue with the northern property, specifically along the access road, which runs along the Site's northern boundary. The subject boundary ditch was partially filled and sloped to direct hydrology into the Site's constructed surface water features. A detailed photo log of as-built conditions is provided in Appendix A.

2.2 Forested Areas

Areas thinned included Forest A and the outer perimeter of Forest B. Work was focused on removing loblolly pine and other non-native or undesirable species (i.e., privet, red maple, and sweetgum) in areas where it could be accessed without causing significant damage to native mature or junior species

consistent with the desired forest type of the Site. Thinned areas were planted at a density consistent with the non-forested portions of the Site, roughly 8x8 spacing or 680 stems per acre.

As indicated on the Recording Drawings, VP20F (within Forest Area B) was not planted. Pine removal occurred on the perimeter of Forest B. The inner portion of Forest B consists of an appropriate mixture of native mature and junior species appropriate for the Site's target wetland community. Species removal seemed inconsistent with the Site's goals and was not performed. VP20F was kept in its location, as shown in the approved Mitigation Plan. Monitoring of the existing species will continue throughout the monitoring period to determine any negative effect on these species from the increase of groundwater and site hydrology through the filling of adjacent ditches.

2.3 Depressional Flow Paths & Habitat Pools

Shown on the Recording Drawings are the constructed depressional flow paths & habitat pools, including where woody debris was added. Areas with greater than 1 foot of cut account for 0.04 acres, well below the amount indicated in the approved Mitigation Plan of .265 acres.

2.4 2022 Site Encroachment

In Fall 2022, encroachment and mowing occurred along the southern project boundary and into the Site, totaling 0.892 acres (Appendix A CCPV and Photo Log). RS contacted the Craven County Game Warden and alerted him of the situation. RS met with the boundary landowners and discovered the trespass issue was from others in the area and they too were actively trying to remedy the situation. In addition, RS added additional easement making every 100 feet along the southern boundary and attached conservation easement signage plus no trespass signs with yellow and purple paint (Appendix A photo log). This action stopped the trespassing issue; no additional problems have been observed.

On January 29, 2023, RS conducted a replant of the 0.892 acres with mitigation plan approved species, summarized in the following table.

2023 Planting Effort

Scientific name	Common Name	Number of Stems
Betula nigra	River birch	100
Nyssa sylvatica	Black gum	100
Taxodium distichum	Bald cypress	300
Quercus lyrate	Overcup oak	100
Quercus michauxii	Swamp chestnut oak	100
Quercus nigra	Water oak	100
Quercus phellos	Willow oak	100
Liriodendron tulipifera	Tulip poplar	100
	Total:	**1,000**

3. PROJECT MONITORING – METHODS

Axiom Environmental, Inc. will conduct monitoring, and annual monitoring reports of the data collected will be submitted to the NCDMS by Restoration Systems by December 1 of each monitoring year. The monitoring schedule is summarized in the following table.

Monitoring Schedule Summary

Resource	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Wetlands	X	X	X	X	X	X	X
Vegetation	X	X	X		X		X
Visual Assessment	X	X	X	X	X	X	X
Report Submittal	X	X	X	X	X	X	X

3.1 Monitoring

The monitoring parameters are summarized in the following table.

Monitoring Parameters Summary

Wetland Parameters				
Parameter	**Method**	**Schedule/Frequency**	**Number/Extent**	**Data Collected/Reported**
Wetland Restoration	Groundwater gauges	Years 1, 2, 3, 4, 5, 6, and 7 throughout the year with the growing season defined as March 1-November 14	25 gauges spread throughout restored wetlands	Document soil temperature at the beginning of each monitoring period to verify the start of the growing season, documented bud burst, and groundwater/rain data for each monitoring period*
Vegetation Parameters				
Parameter	**Method**	**Schedule/Frequency**	**Number/Extent**	**Data Collected/Reported**
Vegetation establishment and vigor	Permanent vegetation plots 0.0247 acre (100 square meters) in size; *CVS-EEP Protocol for Recording Vegetation, Version 4.2* (Lee et al. 2008)	As-built, Years 1, 2, 3, 5, and 7	26 plots spread across the Site	Documented bud burst, species, height, planted vs. volunteer, stems/acre
Visual Parameters				
Parameter	**Method**	**Schedule/Frequency**	**Number/Extent**	**Data Collected/Reported**
Encroachment & stabilized outfalls	Visual	Years 1, 2, 3, 4, 5, 6, and 7	8 fixed photo points & Site boundary walking	Documented conditions in yearly monitoring report narrative, current condition figures, and reporting tables

Monitoring Parameters Summary – Table Notes

*Soil temperature will be monitored using a continuous recording soil probe located at the rain gauge. The growing season will be initiated once bud burst has been documented on two or more species (excluding red maple and elderberry) and suitable soil temperatures have been documented with the soil probe. The earliest growing season initiation date will be March 1, assuming other growing season criteria has been met.

Table 3. Project Attribute Table

Project Attribute Table			
Project Name	Sliver Moon II Wetland Restoration Site		
County	Craven County, North Carolina		
Project Area (acres)	30.88		
Project Coordinates (latitude and longitude decimal degrees)	35.2036ºN, 77.3654ºW		
Project Watershed Summary Information			
Physiographic Province	Middle Atlantic Coastal Plain		
River Basin	Neuse		
USGS Hydrologic Unit 8-digit	3020202		
DWR Sub-basin	03-04-08		
Project Drainage Area (acres)	NA		
Project Drainage Area Percentage of Impervious Area	NA		
Land Use Classification	Cultivated		
Wetland Summary Information			
Parameters	**Wetlands (WR 1)**		
Pre-project (acres)	0		
Post-project (acres)	30.597		
Wetland Type (non-riparian, riparian)	Non-riparian		
Mapped Soil Series	Pantego, Rains		
Soil Hydric Status	Hydric, hydric		
Regulatory Considerations			
Parameters	**Applicable?**	**Resolved?**	**Supporting Docs?**
Water of the United States - Section 404	Yes	Yes	PJD
Water of the United States - Section 401	Yes	Yes	PJD
Endangered Species Act	Yes	Yes	CE Document
Historic Preservation Act	No	--	CE Document
Coastal Zone Management Act (CZMA or CAMA)	No	--	CE Document
Essential Fisheries Habitat	No	--	NA

4. REFERENCES

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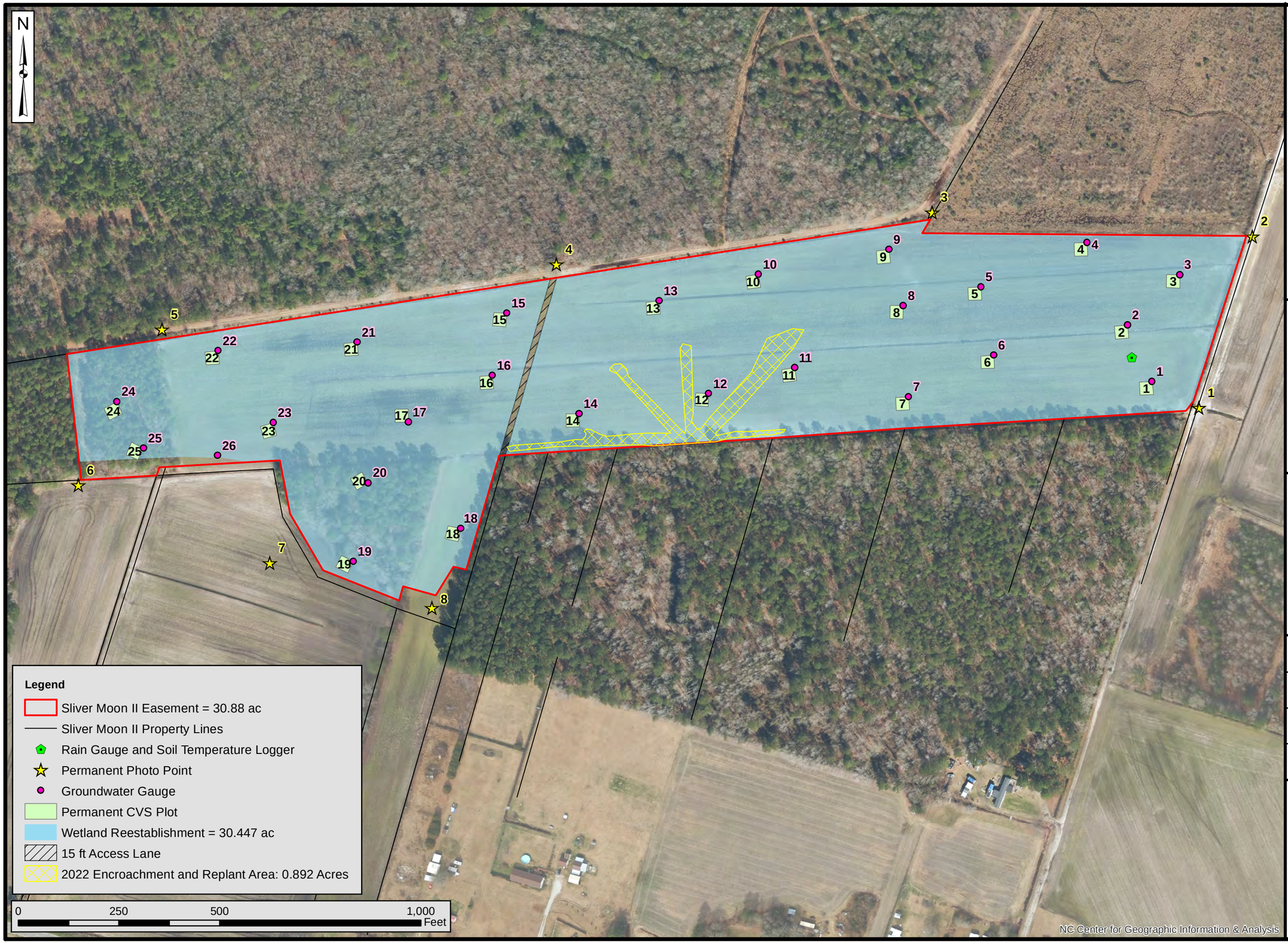
Appendix A: Visual Assessment Data

Figure 1. Current Conditions Plan View
Table 4. Visual Vegetation Assessment
Vegetation Plot Photographs
Permanent Photo Points
Photo Log



Axiom Environmental, Inc.

Prepared for:

RESTORATION SYSTEMS | LLC

Project:

SLIVER MOON II MITIGATION SITE

Craven County, NC

Title:

CURRENT CONDITIONS PLAN VIEW

Imagery: 2020 NC OneMap

Drawn by: KRJ

Date: FEB 2022

Scale: 1:2700

Project No.: 18-015

FIGURE

1

Table 4. Visual Vegetation Assessment

Planted acreage **30.88**

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Planted Acreage
Bare Areas	None	0.10 acres	0.00	0.0%
Low Stem Density Areas	None	0.10acres	0.00	0.0%
		Total	0.00	0.0%
Areas of Poor Growth Rates	None	0.10 acres	0.00	0.0%
		Cumulative Total	0.00	0.0%

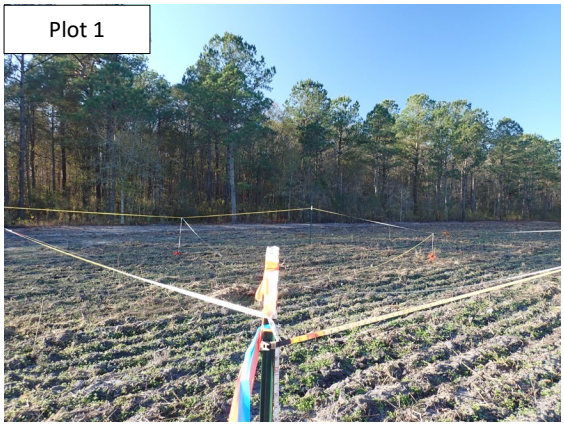
Easement Acreage **30.88**

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	None	0.10 acres	0.00	0.0%
Easement Encroachment Areas	Yellow Hatch: In Fall 2022, encroachment and mowing occurred along the southern project boundary and into the Site.	none	0.892 Acres	

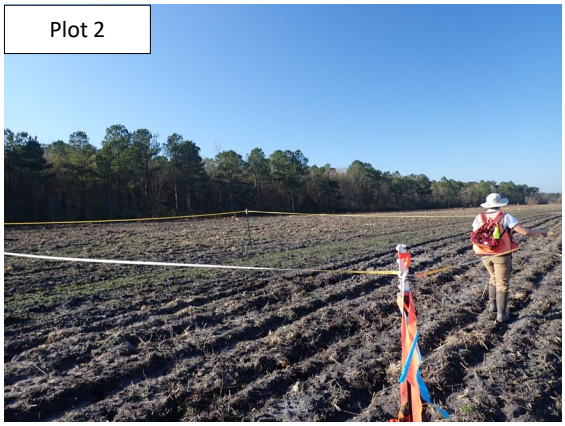
Sliver Moon II Site

MY0 (2022) Vegetation Monitoring Photographs (taken December 28, 2021 and January 3, 2022)

Plot 1

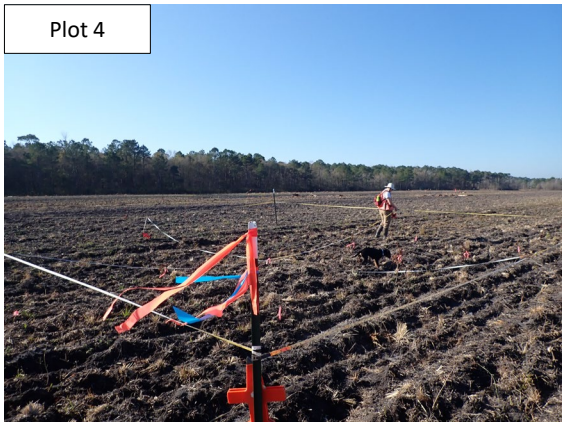


Plot 2

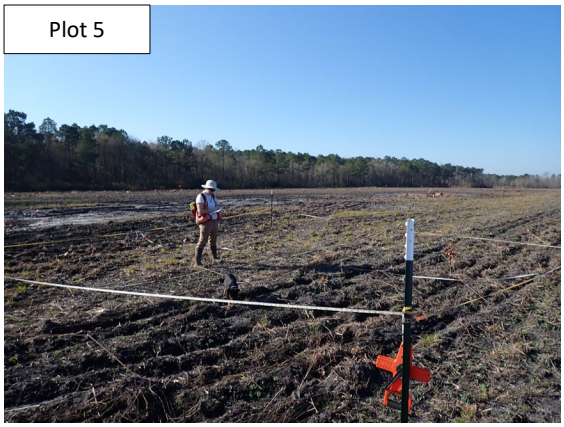


Plot 3

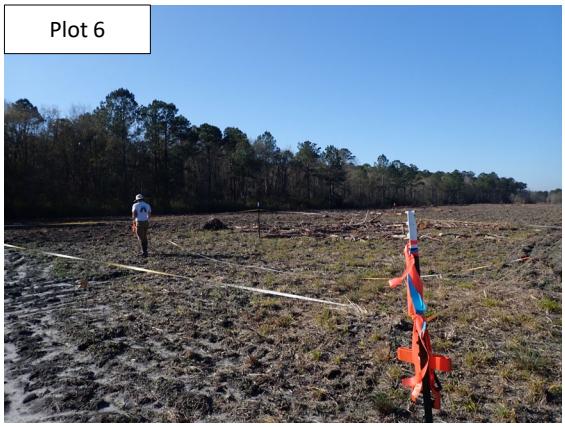
Plot 4



Plot 5

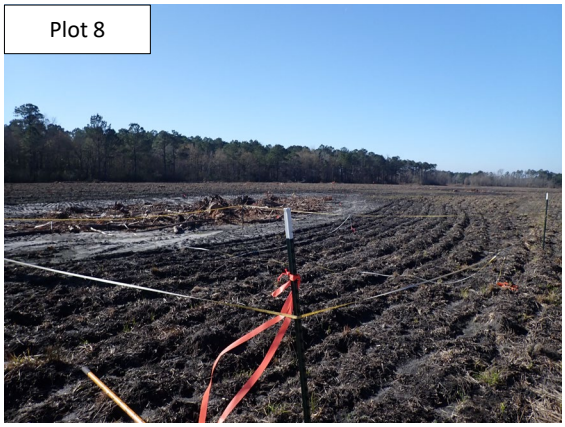


Plot 6



Plot 7

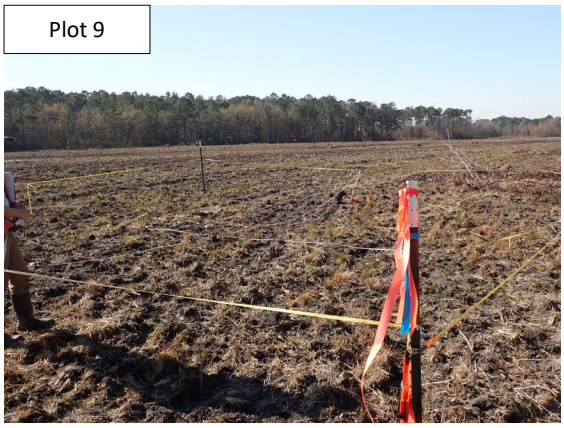
Plot 8



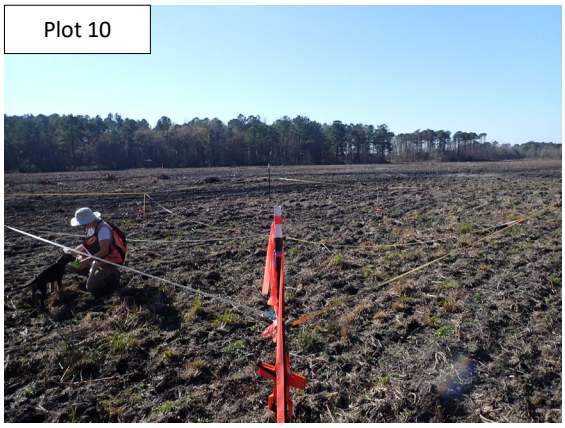
Sliver Moon II Site

MY0 (2022) Vegetation Monitoring Photographs (taken December 28, 2021 and January 3, 2022)

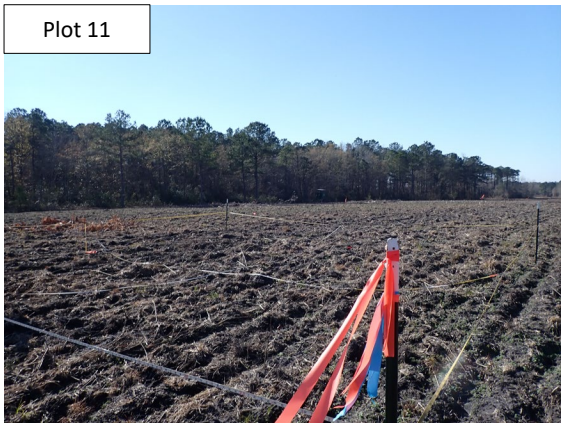
Plot 9



Plot 10

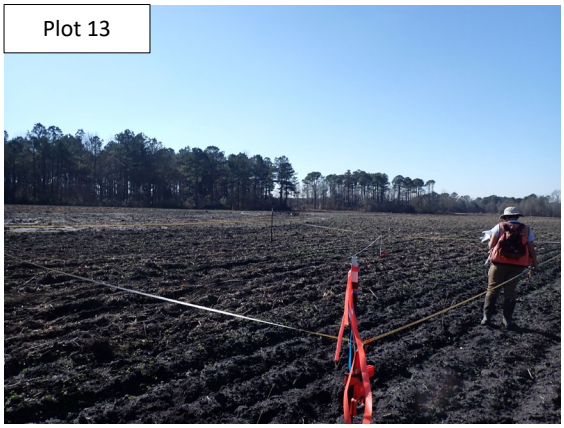


Plot 11



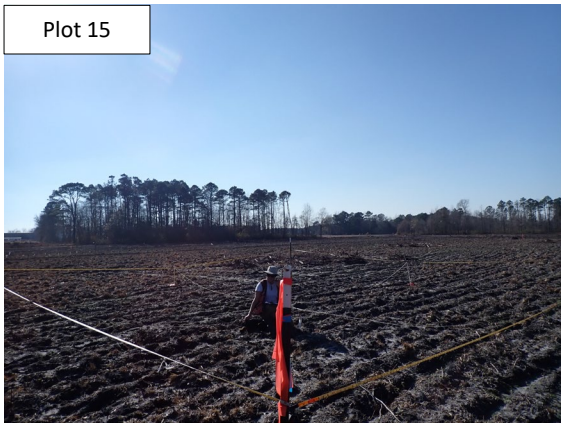
Plot 12

Plot 13

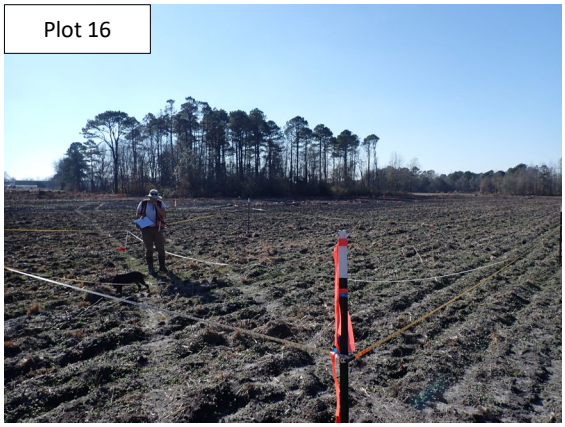


Plot 14

Plot 15



Plot 16



Sliver Moon II Site

MY0 (2022) Vegetation Monitoring Photographs (taken December 28, 2021 and January 3, 2022)

Plot 17

Plot 18

Plot 19

Plot 20

Plot 21

Plot 22

Plot 23

Plot 24

Sliver Moon II Site
MY0 (2022) Vegetation Monitoring Photographs (taken December 28, 2021 and January 3, 2022)

Plot 25

Sliver Moon II Site
MY0 (2022) Permanent Photo Points (taken January 3, 2022)

Photo 1 (Taken 2/25/22)

Photo 2

Photo 3

Photo 4

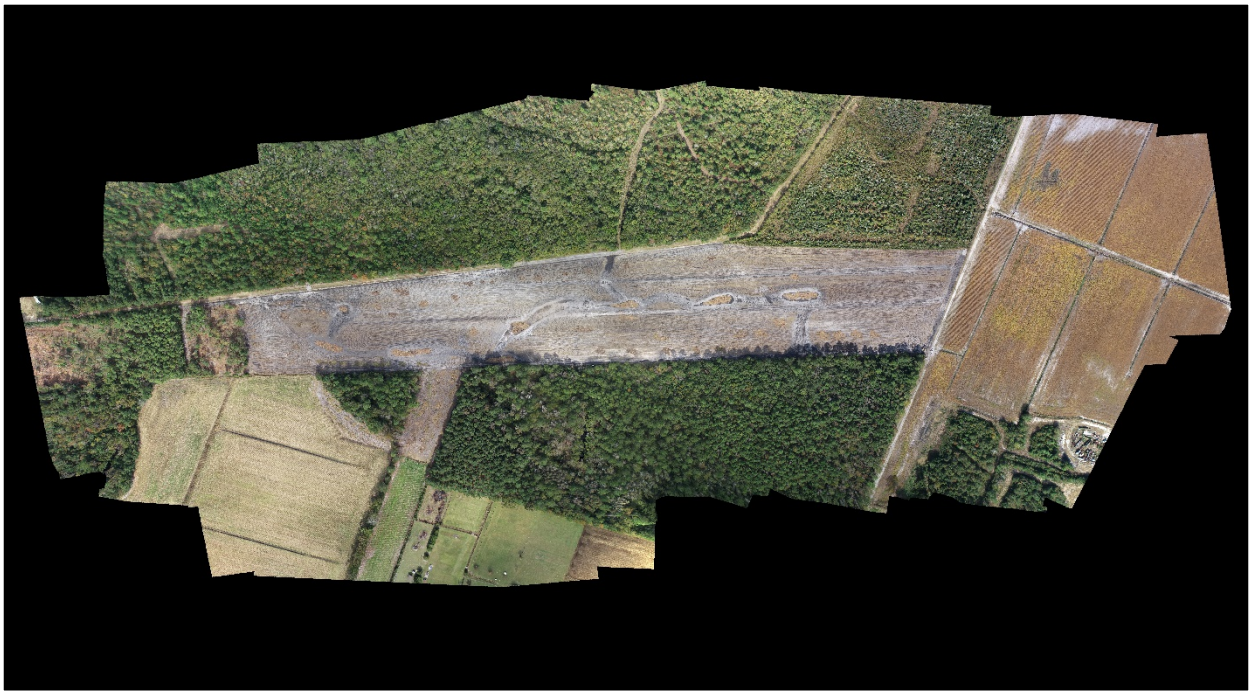
Photo 5

Photo 6

Photo 7

Photo 8

Sliver Moon 2: Task 4 – Construction Completion 10/29/21
DMS Contract #: 766; DMS Project ID: 100077; RFP # 16-007401



Outfall north east corner

Pools looking west

Fence at south east corner to block access to the site.

Sliver Moon 2 Mitigation Site: Task 5 – Planting & Monitoring Devices
DMS Contract #: 7606; DMS Project ID: 100077; RFP # 16-007401

Bare-root planting - 12/20/2020

Bare-root planting - 12/20/2020

Bare-root planting - 12/20/2020

Bare-root planting - 12/20/2020

GW Gauge 02, Veg Plot 02 - 12/30/2020

GW Gauge 05, Veg Plot 05 - 12/30/2020

GW Gauge 08, Veg Plot 08 - 12/30/2020

GW Gauge 13, Veg Plot 13 - 12/30/2020

GW Gauge 14, Veg Plot 14 - 12/30/2020

GW Gauge 19, Veg Plot 19 - 12/30/2020

GW Gauge 24, Veg Plot 24 - 12/30/2020

GW Gauge 25, Veg Plot 25 - 12/30/2020

Photo 01: Looking west (Daisy Ln. in foreground)

Photo 02: Looking northwest at Project's eastern outfall – boundary with Sliver Moon Site

Photo 04: Looking west

Photo 04: Looking west

Photo 05: Looking west

Photo 06: Looking west

Photo 07: Looking south

Photo 08: Looking west

Photo 09: Looking south

Photo 08: Looking east

Photo 10: Southern boundary encroachment and mowing
Photo Date: 10/06/2022

Photo 11: Southern boundary – additional easement signage and posted no-trespassing signs
Photo Date: 12/02/2022

Photo 12: Southern boundary – additional easement signage and posted no-trespassing signs
Photo Date: 12/02/2022

Photo 13: Southern boundary – additional easement signage and posted no-trespassing signs
Photo Date: 12/02/2022

Appendix B: Vegetation Data

Table 5. Planted Bare Root Woody Vegetation

Sliver Moon II Site

Vegetation Association	**Non-riverine Wet Hardwood Forest**			
Canopy Species (30.88 acres)	**Mit. Plan**	**AsBuilt # Planted**	**Indicator Status**	**AB % of total**
Tulip poplar (*Liriodendron tulipifera*)	2500	2500	FACU	11.11%
Black gum (*Nyssa sylvatica*)	2500	2500	FAC	11.11%
Swamp white oak (*Quercus bicolor*)	2000	2000	FACW	8.89%
~~Laurel oak (*Quercus laurifolia*)~~	~~2000~~	~~0~~*	~~FACW~~	~~0.00%~~
Overcup oak (*Quercus lyrata*)	2000	2500	OBL	11.11%
Swamp chestnut oak (*Quercus michauxii*)	2000	2500	FACW	11.11%
Water oak (*Quercus nigra*)	2000	2500	FAC	11.11%
Cherrybark oak (*Quercus pagoda*)	2000	2000	FACW	8.89%
Willow oak (*Quercus phellos*)	2000	2500	FACW	11.11%
Understory Species (30.88 acres)	**# planted**		**Indicator Status**	**AB % of total**
Hornbeam (*Carpinus caroliniana)*	800	800	FAC	3.56%
~~Sweetbay magnolia (*Magnolia virginiana*)~~	~~800~~	~~0~~*	~~FACW~~	~~0.00%~~
~~Swamp bay (*Persea palustris*)~~	~~700~~	~~0~~*	~~FACW~~	~~0.00%~~
Wet Foot Species (3.75 acres) – in addition to Site-wide planting	**# planted**		**Indicator Status**	**AB % of total**
River Birch (*Betula nigra*)	200	1000	FACW	4.44%
Water tupelo (*Nyssa aquatica*)	300	300	OBL	1.33%
Swamp tupelo (*Nyssa biflora*)	200	200	OBL	0.89%
Bald Cypress (*Taxodium distichum*)	500	1200	OBL	5.33%
TOTAL	**22500**	**22500**		**100.00%**

*Species were unavailable

Indicator Categories (USDA - https://plants.usda.gov/wetinfo.html)			
Code	**Indicator Status**	**Designation**	**Comment**
OBL	Obligate Wetland	Hydrophyte	Almost always occur in wetlands
FACW	Facultative Wetland	Hydrophyte	Usually occur in wetlands, but may occur in non-wetlands
FAC	Facultative	Hydrophyte	Occur in wetlands and non-wetlands
FACU	Facultative Upland	Nonhydrophyte	Usually occur in non-wetlands, but may occur in wetlands

Table 6. Permanent Seed Mix
Sliver Moon II Site

Common Name	Scientific Name	Lbs/Ac.	
		Mit. Plan	Actual
Common yarrow	*Achillea millefolium*	0.6	0.4
Redtop	*Agrostis alba*	9	6
Winter bentgrass	*Agrostis hyemalis*	3	2
Creeping bentgrass	*Agrostis stolonifera*	3	2
Clusterspike false indigo	*Amorpha herbacea*	0.6	0.4
~~Showy aster~~	~~*Aster spectabilis*~~	~~0.6~~	~~0~~
~~Spiked wild indigo~~	~~*Baptisia albescens*~~	~~0.6~~	~~0~~
Blue false indigo	*Baptisia australis*	1.2	0.8
Greenwhite sedge	*Carex albolutescens*	3.9	6
~~Lurid sedge~~	~~*Carex lurida*~~	~~1.5~~	~~0~~
Fox sedge	*Carex vulpinoidea*	0	2
Daisy	*Chrysanthemum leucanthemum*	3	2
Shasta daisy	*Chrysanthemum maximum*	1.8	1.2
Coreopsis lanceleaf	*Coreopsis lanceolata*	3	2
Coreopsis plains	*Coreopsis tinctoria*	3	2
Cosmos	*Cosmos bipinnatus*	0.6	0.8
Rocket larkspur	*Delphinium ajacis*	1.2	0.8
Showy ticktrefoil	*Desmodium canadense*	0.6	0.4
Coneflower	*Echinacea purpurea*	3.6	2.4
~~Riverbank wildrye~~	~~*Elymus riparius*~~	~~3.15~~	~~0~~
Virginia wildrye	*Elymus virginicus*	3	6
~~Mistflower~~	~~*Eupatorium coelestinum*~~	~~0.3~~	~~0~~
~~Joe Pye Weed~~	~~*Eupatorium fistulosum*~~	~~0.3~~	~~0~~
Perennial gailllardia	*Gallardia aristata*	1.2	0.8
~~Purplehead sneezeweed~~	~~*Helenium flexuosum*~~	~~0.3~~	~~0~~
Narrowleaf sunflower	*Helianthus angustifolius*	0.6	1.2
Oxeye sunflower	*Heliopsis helianthoides*	0.6	0.4
~~Crimsoneyed rosemallow~~	~~*Hibiscus moscheutos*~~	~~0.6~~	~~0~~
Soft rush	*Juncus effusus*	0.6	0.6
Path rush	*Juncus tenuis*	0.3	0.2
Narrowleaf primrose willow	*Ludwigia linearis*	0.39	0.2
~~Seaside primrose willow~~	~~*Ludwigia maritima*~~	~~0.39~~	~~0~~
Wild bergamot	*Monarda fistulosa*	0.3	0.2
~~Beaked panicgrass~~	~~*Panicum anceps*~~	~~7.77~~	~~0~~
~~Deertongue~~	~~*Panicum clandestinum*~~	~~3~~	~~0~~
Redtop panicgrass	*Panicum rigidulum*	9	6.2
Tall white beardtongue	*Penstemon digitalis*	0.6	0.4
Switchgrass	*Panicum virgatum*		2.4
~~Globe beaksedge~~	~~*Rhynchospora globularis*~~	~~1.2~~	~~0~~
Clasping coneflower	*Rudbeckia amplexicaulis*	0.6	0.4
Rudbeckia	*Rudbeckia hirta*	1.8	1.2
Woolgrass	*Scirpus cyperinus*	0.3	0.1
Purpletop	*Tridens flavus*	12	8
Blue vervain	*Verbena hastata*	0.6	0.4
New York ironweed	*Vernonia noveboracensis*	0.3	0.1

Table 7. Planted Vegetation Totals

Sliver Moon II Site

Plot #	Planted Stems/Acre	Success Criteria Met?
1	729	Yes
2	607	Yes
3	648	Yes
4	648	Yes
5	648	Yes
6	607	Yes
7	688	Yes
8	729	Yes
9	567	Yes
10	648	Yes
11	688	Yes
12	729	Yes
13	810	Yes
14	567	Yes
15	810	Yes
16	688	Yes
17	769	Yes
18	688	Yes
19	810	Yes
20	1781	Yes
21	607	Yes
22	648	Yes
23	688	Yes
24	729	Yes
25	688	Yes
Average Planted Stems/Acre	**729**	**Yes**

Table 8. Vegetation Plot Data Table from Vegetation Data Entry Tool

Planted Acreage	30.88
Date of Initial Plant	2021-12-20
Date(s) of Supplemental Plant(s)	
Date(s) Mowing	
Date of Current Survey	2021-12-27
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 4 F		Veg Plot 5 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW			4	4						
	Carpinus caroliniana	American hornbeam	Tree	FAC	1	1								
	Liriodendron tulipifera	tuliptree	Tree	FACU	1	1			1	1	6	6	4	4
	Magnolia virginiana	sweetbay	Tree	FACW										
	Nyssa sp.				2	2			5	5	1	1	1	1
	Nyssa sylvatica	blackgum	Tree	FAC					4	4				
	other													
	Pinus taeda	loblolly pine	Tree	FAC										
	Platanus occidentalis	American sycamore	Tree	FACW										
	Quercus bicolor	swamp white oak	Tree	FACW					1	1	1	1	5	5
	Quercus lyrata	overcup oak	Tree	OBL					2	2				
	Quercus michauxii	swamp chestnut oak	Tree	FACW							2	2		
	Quercus nigra	water oak	Tree	FAC	1	1	3	3						
	Quercus pagoda	cherrybark oak	Tree	FACW	2	2			1	1	3	3		
	Quercus phellos	willow oak	Tree	FACW	8	8	2	2	2	2			1	1
	Quercus sp.				3	3	2	2			3	3	5	5
	Taxodium distichum	bald cypress	Tree	OBL			4	4						
Sum	Performance Standard				18	18	15	15	16	16	16	16	16	16
Mitigation Plan Performance Standard	Current Year Stem Count					18		15		16		16		16
	Stems/Acre					729		607		648		648		648
	Species Count					7		5		7		6		5
	Dominant Species Composition (%)					44		27		31		38		31
	Average Plot Height (ft.)					1		2		2		1		1
	% Invasives					0		0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					18		15		16		16		16
	Stems/Acre					729		607		648		648		648
	Species Count					7		5		7		6		5
	Dominant Species Composition (%)					44		27		31		38		31
	Average Plot Height (ft.)					1		2		2		1		1
	% Invasives					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 8. Vegetation Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	30.88
Date of Initial Plant	2021-12-20
Date(s) of Supplemental Plant(s)	
Date(s) Mowing	
Date of Current Survey	2021-12-27
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 6 F		Veg Plot 7 F		Veg Plot 8 F		Veg Plot 9 F		Veg Plot 10 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	1	1								
	Carpinus caroliniana	American hornbeam	Tree	FAC					3	3				
	Liriodendron tulipifera	tuliptree	Tree	FACU					6	6	2	2	5	5
	Magnolia virginiana	sweetbay	Tree	FACW										
	Nyssa sp.				2	2			1	1	1	1	1	1
	Nyssa sylvatica	blackgum	Tree	FAC	1	1								
	other													
	Pinus taeda	loblolly pine	Tree	FAC										
	Platanus occidentalis	American sycamore	Tree	FACW										
	Quercus bicolor	swamp white oak	Tree	FACW							1	1	1	1
	Quercus lyrata	overcup oak	Tree	OBL	2	2	1	1						
	Quercus michauxii	swamp chestnut oak	Tree	FACW							1	1		
	Quercus nigra	water oak	Tree	FAC	1	1	2	2						
	Quercus pagoda	cherrybark oak	Tree	FACW	1	1	1	1	1	1	1	1		
	Quercus phellos	willow oak	Tree	FACW	2	2	1	1	1	1	4	4		
	Quercus sp.				4	4	10	10			1	1	9	9
	Taxodium distichum	bald cypress	Tree	OBL	1	1	2	2	6	6	3	3		
Sum	Performance Standard				15	15	17	17	18	18	14	14	16	16
Mitigation Plan Performance Standard	Current Year Stem Count					15		17		18		14		16
	Stems/Acre					607		688		729		567		648
	Species Count					9		6		6		8		4
	Dominant Species Composition (%)					27		59		33		29		56
	Average Plot Height (ft.)					2		1		2		1		1
	% Invasives					0		0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					15		17		18		14		16
	Stems/Acre					607		688		729		567		648
	Species Count					9		6		6		8		4
	Dominant Species Composition (%)					27		59		33		29		56
	Average Plot Height (ft.)					2		1		2		1		1
	% Invasives					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 8. Vegetation Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	30.88
Date of Initial Plant	2021-12-20
Date(s) of Supplemental Plant(s)	
Date(s) Mowing	
Date of Current Survey	2021-12-27
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 11 F		Veg Plot 12 F		Veg Plot 13 F		Veg Plot 14 F		Veg Plot 15 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	2	2								
	Carpinus caroliniana	American hornbeam	Tree	FAC					1	1				
	Liriodendron tulipifera	tuliptree	Tree	FACU					2	2			6	6
	Magnolia virginiana	sweetbay	Tree	FACW										
	Nyssa sp.						2	2	4	4			4	4
	Nyssa sylvatica	blackgum	Tree	FAC					1	1			1	1
	other													
	Pinus taeda	loblolly pine	Tree	FAC										
	Platanus occidentalis	American sycamore	Tree	FACW										
	Quercus bicolor	swamp white oak	Tree	FACW							1	1		
	Quercus lyrata	overcup oak	Tree	OBL	2	2	2	2						
	Quercus michauxii	swamp chestnut oak	Tree	FACW	1	1			2	2	2	2		
	Quercus nigra	water oak	Tree	FAC	1	1	1	1	3	3	1	1	1	1
	Quercus pagoda	cherrybark oak	Tree	FACW					1	1				
	Quercus phellos	willow oak	Tree	FACW	2	2	9	9	1	1	5	5		
	Quercus sp.				7	7	4	4	5	5	5	5	8	8
	Taxodium distichum	bald cypress	Tree	OBL	2	2								
Sum	Performance Standard				17	17	18	18	20	20	14	14	20	20
Mitigation Plan Performance Standard	Current Year Stem Count					17		18		20		14		20
	Stems/Acre					688		729		810		567		810
	Species Count					7		5		9		5		5
	Dominant Species Composition (%)					41		50		25		36		40
	Average Plot Height (ft.)					2		2		1		2		1
	% Invasives					0		0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					17		18		20		14		20
	Stems/Acre					688		729		810		567		810
	Species Count					7		5		9		5		5
	Dominant Species Composition (%)					41		50		25		36		40
	Average Plot Height (ft.)					2		2		1		2		1
	% Invasives					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 8. Vegetation Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	30.88
Date of Initial Plant	2021-12-20
Date(s) of Supplemental Plant(s)	
Date(s) Mowing	
Date of Current Survey	2021-12-27
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 16 F		Veg Plot 17 F		Veg Plot 18 F		Veg Plot 19 F		Veg Plot 20 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW							1	1		
	Carpinus caroliniana	American hornbeam	Tree	FAC			1	1			1	1		
	Liriodendron tulipifera	tuliptree	Tree	FACU										1
	Magnolia virginiana	sweetbay	Tree	FACW										25
	Nyssa sp.				6	6								2
	Nyssa sylvatica	blackgum	Tree	FAC	1	1								
	other													
	Pinus taeda	loblolly pine	Tree	FAC										3
	Platanus occidentalis	American sycamore	Tree	FACW										1
	Quercus bicolor	swamp white oak	Tree	FACW	1	1			1	1				
	Quercus lyrata	overcup oak	Tree	OBL										
	Quercus michauxii	swamp chestnut oak	Tree	FACW			2	2	5	5	2	2		
	Quercus nigra	water oak	Tree	FAC					2	2	2	2		1
	Quercus pagoda	cherrybark oak	Tree	FACW	1	1	1	1	1	1	1	1		
	Quercus phellos	willow oak	Tree	FACW	4	4	3	3	3	3	2	2		11
	Quercus sp.				4	4	5	5	4	4	4	4		
	Taxodium distichum	bald cypress	Tree	OBL			7	7	1	1	7	7		
Sum	Performance Standard				17	17	19	19	17	17	20	20	0	44
Mitigation Plan Performance Standard	Current Year Stem Count					17		19		17		20		44
	Stems/Acre					688		769		688		810		1781
	Species Count					6		6		7		8		7
	Dominant Species Composition (%)					35		37		29		35		57
	Average Plot Height (ft.)					2		2		2		2		12
	% Invasives					0		0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					17		19		17		20		44
	Stems/Acre					688		769		688		810		1781
	Species Count					6		6		7		8		7
	Dominant Species Composition (%)					35		37		29		35		57
	Average Plot Height (ft.)					2		2		2		2		12
	% Invasives					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 8. Vegetation Plot Data Table from Vegetation Data Entry Tool (continued)

Planted Acreage	30.88
Date of Initial Plant	2021-12-20
Date(s) of Supplemental Plant(s)	
Date(s) Mowing	
Date of Current Survey	2021-12-27
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 21 F		Veg Plot 22 F		Veg Plot 23 F		Veg Plot 24 F		Veg Plot 25 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW						2				
	Carpinus caroliniana	American hornbeam	Tree	FAC			2	2					1	1
	Liriodendron tulipifera	tuliptree	Tree	FACU	1	1	2	2		2			1	1
	Magnolia virginiana	sweetbay	Tree	FACW										
	Nyssa sp.				2	2							4	4
	Nyssa sylvatica	blackgum	Tree	FAC			1	1						
	other									2				
	Pinus taeda	loblolly pine	Tree	FAC										
	Platanus occidentalis	American sycamore	Tree	FACW										
	Quercus bicolor	swamp white oak	Tree	FACW										
	Quercus lyrata	overcup oak	Tree	OBL	1	1	3	3						
	Quercus michauxii	swamp chestnut oak	Tree	FACW	1	1							1	1
	Quercus nigra	water oak	Tree	FAC									2	2
	Quercus pagoda	cherrybark oak	Tree	FACW			1	1						
	Quercus phellos	willow oak	Tree	FACW	4	4	1	1		6	14	14	4	4
	Quercus sp.				6	6	6	6		4	4	4	4	4
	Taxodium distichum	bald cypress	Tree	OBL						1				
Sum	Performance Standard				15	15	16	16	0	17	18	18	17	17
Mitigation Plan Performance Standard	Current Year Stem Count					15		16		17		18		17
	Stems/Acre					607		648		688		729		688
	Species Count					6		7		6		2		7
	Dominant Species Composition (%)					40		38		35		78		24
	Average Plot Height (ft.)					2		1		2		2		2
	% Invasives					0		0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					15		16		17		18		17
	Stems/Acre					607		648		688		729		688
	Species Count					6		7		6		2		7
	Dominant Species Composition (%)					40		38		35		78		24
	Average Plot Height (ft.)					2		1		2		2		2
	% Invasives					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.

Appendix C: Hydrologic Data

Groundwater Gauge Soil Profiles

AXIOM ENVIRONMENTAL, INC
218 Snow Avenue
Raleigh, North Carolina 27603
919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/ Coordinates: GW1 35.203259, -77.361678

Investigator: Lewis

Notes:

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-8	10YR 3/1	98	10YR 4/6	2	Loam
8-14	10YR 5/1	85	10YR 4/6	15	Silty Loam
14+	10 YR 3/1	98	10YR 4/6	2	Loamy Sand

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

AXIOM ENVIRONMENTAL, INC
218 Snow Avenue
Raleigh, North Carolina 27603
919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW2 35.203641, -77.361853

Investigator: Lewis

Notes:

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-6	10YR 4/1	90	10YR 5/6	5	Fine Sandy Loam
			10YR 5/3	5	
6+	10YR 4/1	90	10YR 3/2	10	Sand

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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218 Snow Avenue
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919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW3 35.203979, -77.361428

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-6	10YR 2/1	100	-	-	Loamy Sand
6-8	10YR 3/1	100	-	-	Loamy Sand
8-16	10YR 4/2	50	10YR 5/2	50	Sandy Clay Loam
16+	10YR 4/1	100	-	-	Sandy Clay Loam

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919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW4 35.204224, -77.362184

Investigator: Lewis

Notes:

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-6	10YR 2/1	100	-	-	Loamy Sand
6-8	10YR 5/1	50	10YR 2/1	50	Loamy Sand
8-16	10YR 4/2	100	-	-	Sandy Loam
16+	10YR 4/1	100	-	-	Sandy Clay Loam

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Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW5 35.203930, -77.363079

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-11	10YR 2/1	100	-	-	Loamy Sand
11+	10YR 4/2	100	-	-	Silt Loam

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SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW-6 35.203452, -77.362975

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-3	10YR 3/1	100	-	-	Loamy Sand
3-6	10YR 4/1	100	-	-	Sand
6-15	10 YR 4/2	100	-	-	Sand
15-18	10YR 4/2	100	-	-	Sandy Loam
18+	10YR 4/1	50	10YR 4/2	50	Sandy Loam

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SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW7 35.203176, -77.363691

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-8	10YR 3/1	100	-	-	Sandy Loam
8-12	10YR 3/1	100	-	-	Loamy Sand
12-18	10YR 4/1	80	10YR 5/6	20	Loamy Sand
18+	10YR 4/2	95	10YR 5/6	5	Clay Loam

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW8 35.203800, -77.363724

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-8	10 YR 2/1	100	-	-	Sand
8-18	10YR 3/1	80	10YR 4/1	20	Sandy Clay Loam
18+	10YR 4/1	85	10YR 3/2	10	Sandy Clay Loam
			10YR 5/2	5	

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Name/Print: W. Grant Lewis

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919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW9 35.204195, -77.363834

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-7	10YR 2/1	100	-	-	Loamy Sand
7-12	10YR 4/1	100	-	-	Loamy Sand
12-17	10YR 5/2	90	10YR 5/6	10	Loamy Sand
17+	10YR 5/2	100	-	-	Clay

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Name/Print: W. Grant Lewis

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919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW10 35.204038, -77.364910

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-10	10YR 2/1	100	-	-	Loamy Sand
10-16	10YR 2/1	90	10YR 4/1	10	Loamy Sand
16-18	10YR 3/2	100	-	-	Clay Loam
18+	10YR 3/2	70	10YR 4/3	30	Clay Loam

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW-11 35.203387, -77.364635

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-6	10YR 2/1	100	-	-	Loamy Sand
6-18	10YR 2/1	100	-	-	Sandy Clay Loam

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Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW12 35.203224, -77.365345

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-9	10YR 2/1	-	-	100	Loamy Sand
9-12	10YR 4/1	90	10YR 2/1	10	Loamy Sand
12-16	10YR 4/1	100	-	-	Sand
16+	10YR 5/3	60	10YR 6/2	20	Sandy Loam
			10YR 5/6	20	Silt Loam

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW13 35.203860, -77.365742

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-18	10YR 2/1	100	-	-	Sandy Loam
18+	10YR 2/1	100	-	-	Sandy Clay Loam

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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Raleigh, North Carolina 27603
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Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW14 35.203100, -77.366428

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-2	10YR 2/1	100	-	-	Loamy Sand
2-9	10YR 3/1	100	-	-	Loamy Sand
9-18	10YR 4/1	100	-	-	Sandy Loam
18+	10YR 3/1	100	-	-	Sandy Clay Loam

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SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW15 35.203791, -77.367025

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-7	10YR 3/1	100	-	-	Sandy Loam
7-9	10YR 5/1	90	10YR 4/1	10	Sandy Loam
9-11	10YR 6/1	98	10YR 4/3	2	Sandy Clay Loam
11-18	10YR 6/3	98	10YR 5/6	2	Sandy Clay Loam
18+	10YR 4/1	90	10YR 3/2	10	Sandy Clay Loam

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Signature: W Grant Lewis

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SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW19 35.203374, -77.3672

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-6	10YR 3/1	100	-	-	Loamy Sand
6-8	10YR 4/1	100	-	-	Loamy Sand
8-12	10YR 4/1	95	10YR 5/1	5	Sand
12-18	10YR 2/1	100	-	-	Sandy Clay
18+	10YR 2/1	60	10YR 5/2	35	Sandy Clay
			10YR 5/6	5	

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW17 35.203061, -77.367846

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-6	10YR 2/1	100	-	-	Loamy Sand
6-12	10YR 3/1	100	-	-	Sandy Clay Loam
21+	10YR 4/1	80	10YR 2/1	15	Sandy Clay Loam
			10YR 5/1	5	

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW18 35.202330, -77.367433

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-8	10YR 2/3	100	-	-	Loamy Sand
8+	10yr 2/1	100	-	-	Sandy Clay Loam

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW19 35.202114, -77.368322

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-10	10YR 2/1	100	-	-	Loamy Sand
10-15	10YR 2/1	100	-	-	Sandy Clay Loam
15-18	10YR 4/1	10	10YR 2/1	30	Sandy Clay
18+	10YR 4/1	90	10YR 5/1	10	Sandy Clay

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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Raleigh, North Carolina 27603
919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW20 35.202658, -77.368192

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-10	10YR 2/1	100	-	-	Loamy Sand
10-18	10YR 2-1	90	10YR 4/1	5	Sandy Clay Loam
			10YR 5/1	5	
18+	10YR 2/1	80	10YR 4/1	20	Sandy Clay Loam

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Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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Raleigh, North Carolina 27603
919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW21 35.203616, -77.368265

Investigator: Perkinson

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-10	10YR 3/1	100	-	-	Sandy Loam
10-15	10YR 3/1	90	10YR 4/1	10	Sandy Loam
15-18+	10YR 4/1	100	-	-	Sandy Clay Loam

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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Raleigh, North Carolina 27603
919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW22 35.203570, -77.369431

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-8	10YR 4/1	100	-	-	Loamy Sand
8-12	10YR 4/1	80	10YR 5/1	20	Loamy Sand
12-19	10YR 4/1	95	10YR3/4	5	Sandy Clay Loam
19+	10YR 4/1	90	10YR3/4	5	Sandy Clay Loam
			10YR 5/1	5	

North Carolina Licensed Soil Scientist

Number: 1233

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Name/Print: W. Grant Lewis

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Raleigh, North Carolina 27603
919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW23 35.203072, -77.368976

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-10	10YR 2/1	100	-	-	Sandy Loam
10-18	10YR 4/1	95	10YR 5/1	5	Sandy Clay Loam
18+	10YR 5/1	90	10YR 4/1	8	Sandy Clay Loam
			10YR 5/6	2	

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Name/Print: W. Grant Lewis

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Raleigh, North Carolina 27603
919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW24 35.203237, -77.370269

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-2	Duff	100	-	-	-
2-12	10YR 2/1	70	10YR 4/1	30	Sandy Clay
12+	10YR 4/1	90	10YR 4/3	10	Sandy Clay

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Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

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Raleigh, North Carolina 27603
919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW25 35.202912, -77.370051

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-2	Duff	100	-	-	
2-8	10YR 2/1	100	-	-	Loamy Sand
8-16	10YR 3//1	100	-	-	Loamy Sand
16-18	10YR 4/1	100	-	-	Loamy Sand
18+	10YR 4/1	90	10YR 4/3	10	Sandy Loam

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919-215-1693

Axiom Environmental, Inc.

SOIL BORING LOG

Notes:

Project/Site: Sliver Moon II

County, State: Craven, North Carolina

Sampling Point/
Coordinates: GW26 35.202853, -77.369438

Investigator: Lewis

Depth (inches)	Matrix		Mottling		Texture
	Color	%	Color	%	
0-8	10YR 2/1	100	-	-	Silty Loam
8-14	10YR 5/6	100	-	-	Sandy Loam
14-20	10YR 5/3	90	10YR 4/1	10	Sandy Loam
20+	10YR 4/1	70	10YR 4/2	30	Sandy Clay Loam

North Carolina Licensed Soil Scientist

Number: 1233

Signature: W Grant Lewis

Name/Print: W. Grant Lewis

Appendix D: Project Timeline and Contact Info

Table 9. Project Timeline

Activity or Deliverable	Data Collection Complete	Task Completion or Deliverable Submission
Project Instituted	NA	15-Jun-18
Mitigation Plan Approved	NA	16-Oct-20
Construction (Grading) Completed	NA	27-Oct-21
Planting Completed	NA	20-Dec-21
MY-0 Baseline Report	3-Jan-22	Mar-22

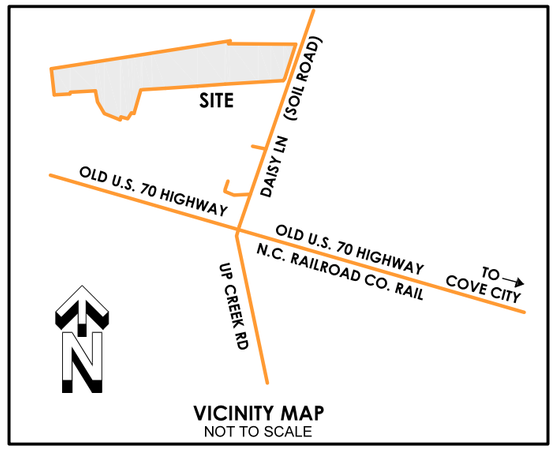
Table 10. Project Contacts

Sliver Moon II/100077	
Provider	Restoration Systems 1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604 Raymond Holz 919-755-9490
Designer	Axiom Environmental, Inc. 218 Snow Avenue Raleigh, NC 27603 Grant Lewis 919-215-1693
Surveyor & Land Quality Permit	k2 Design Group 5688 U.S. Hwy. 70 East Goldsboro, NC 27534 John Rudolph (L-4194) 919-394-2547
Planting Contractor	Restoration Systems 1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604 Josh Merritt 919-755-9490
Construction Contractor	Land Mechanic Design 126 Circle G Lane Willow Spring, NC 27592 Charles Hill (919) 639-6132
General Contractor	Restoration Systems 1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604 Worth Creech (GC #64807) 919-755-9490

Appendix E. Sealed As-built Drawings

NC DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF MITIGATION SERVICES
RECORD DRAWING AND AS-BUILT
SLIVERMOON SITE
CRAVEN COUNTY, NORTH CAROLINA

DMS PROJECT ID No. 100077
SPO FILE NUMBER 25-BX



VICINITY MAP
NOT TO SCALE

INDEX OF SHEETS

SITE DATA TABLE

RIVER BASIN: NEUSE
DMS Project No. 100077
Full Delivery Contract No. 7606
DMS RFP No. 16-007401
USACE Action ID No. SAW-2018-01761
DWR Project No. 2018-1156

Table 3. Project Attribute Table	
Project Name	Sliver Moon II Wetland Restoration Site
County	Craven County, North Carolina
Project Area (acres)	30.88
Project Coordinates (latitude and longitude decimal degrees)	35.2036°N, 77.3654°W
Project Watershed Summary Information	
Physiographic Province	Middle Atlantic Coastal Plain
River Basin	Neuse
USGS Hydrologic Unit 8-digit	3020202
DWR Sub-basin	03-04-08
Project Drainage Area (acres)	NA
Project Drainage Area Percentage of Impervious Area	NA
Land Use Classification	Cultivated
Wetland Summary Information	
Parameters	**Wetlands (WR 1)**
Pre-project (acres)	0
Post-project (acres)	30.597
Wetland Type (non-riparian, riparian)	Non-riparian
Mapped Soil Series	Pantego, Rains
Soil Hydric Status	Hydric, hydric

Sliver Moon II (ID-100077) Project Mitigation Quantities and Credits

Project	Original Mitigation Plan (Ac)	As-Built (Ac)	Original Mitigation Category	Original Restoratio Level	Original Mitigation Ratio	Credits	Comments
Wetland							
WR 1	30.447	30.447	R	REE	1.00000	30.447	0.15 acres is within access lane and generates no credit
					Total:	30.447	

Project Credits

Restoration Leve	Riparian Wetland	Non-Rip Wetland	Coastal Marsh
Restoration			
Re-establishment		30.447	
Rehabilitation		0.000	
Enhancement		0.000	
Enhancement I			
Enhancement II			
Creation		0.000	
Preservation		0.000	
Totals		30.447	

Credit 0.000
Credit 30.447

SURVEYORS CERTIFICATION(S)

Surveyor's disclaimer: No attempt was made to locate any cemeteries, wetlands, hazardous material sites, underground or aboveground utilities or any other features above, or below ground other than those shown.

I certify that the survey is of another category (as-built survey), such as the recombination of existing parcels, a court-ordered survey, or other exception to the definition of subdivision.

I certify that this plat does not meet G.S. 47-30 as amended.

I, John A. Rudolph, certify that this map was drawn under my direct supervision from an actual survey made under my supervision. That the ratio of precision is 1:10,000±, that this map was prepared in accordance with the standards of practice for land surveyors in North Carolina, witness my hand and seal, this 8th day of June, 2023.

NORTH CAROLINA PROFESSIONAL SEAL L-4194 LAND SURVEYOR JOHN ASHLEY RUDOLPH

L-4194
Professional Land Surveyor — License Number

DRAWN BY:	FGR
DATE:	6/08/23
SURVEYED BY:	J.A.R.
DWG. NO.	RSS431AB21
SHEET	1 OF 5

Axiom Environmental, Inc.
Axiom Environmental
218 Snow Avenue
Raleigh, NC 27603
919-215-1693

RESTORATION SYSTEMS, LLC
1101 HAYNES STREET
SUITE 211
RALEIGH, NC 27604

k2 design group
774 S Beston Road
La Grange, NC 28551
252.582.3097
www.k2designgroup.com
Firm license no.: C-2111

LEGEND

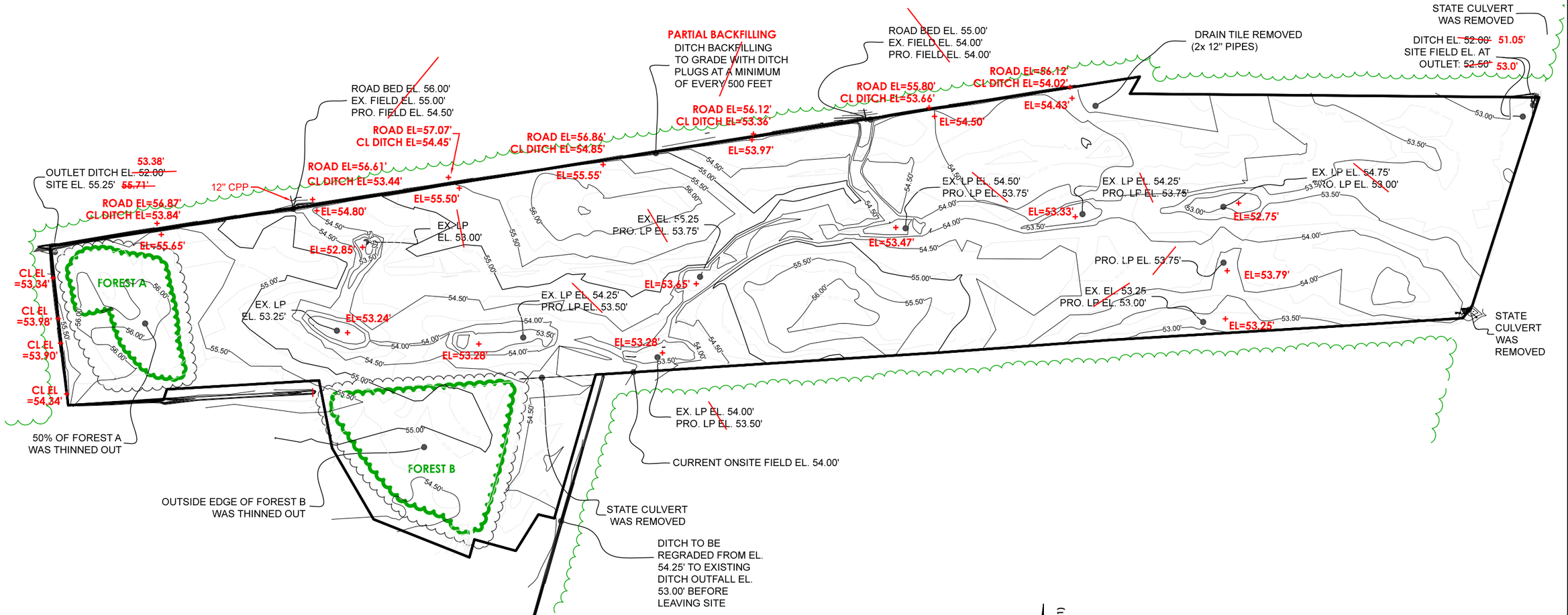
- PROPERTY LINE
- CONSERVATION EASEMENT
- EXISTING CONTOUR
- OLD CONTOUR
- EXISTING WOODLINE
- OLD WOODLINE

NORTH CAROLINA PROFESSIONAL SEAL L-4194 LAND SURVEYOR JOHN ASHLEY RUDOLPH

GENERAL NOTES:

ALL ELEVATIONS REFERENCED TO NAVD 1988

ELEVATION DETERMINED VIA OPUS WITH A MINIMUM OBSERVATION TIME OF 2.2 HOURS USING A TOPCON HIPER V RECEIVER



NORTH
NC GRID NAD83(2011)

SHEET 2

REDLINE GRADING PLAN

0 100 200 400

1" = 200'

LEGEND

- CONSERVATION EASEMENT
- PARCELS
- PERMANENT CVS PLOT
- GROUNDWATER GAUGE
- RAIN GAUGE
- + XX.XX' SPOT ELEVATION
- EL ELEVATION
- GW GROUNDWATER GAUGE
- + GROUND SHOT ELEVATION
- OUTFALL STABILIZATION
- WOOD DEBRIS PILE

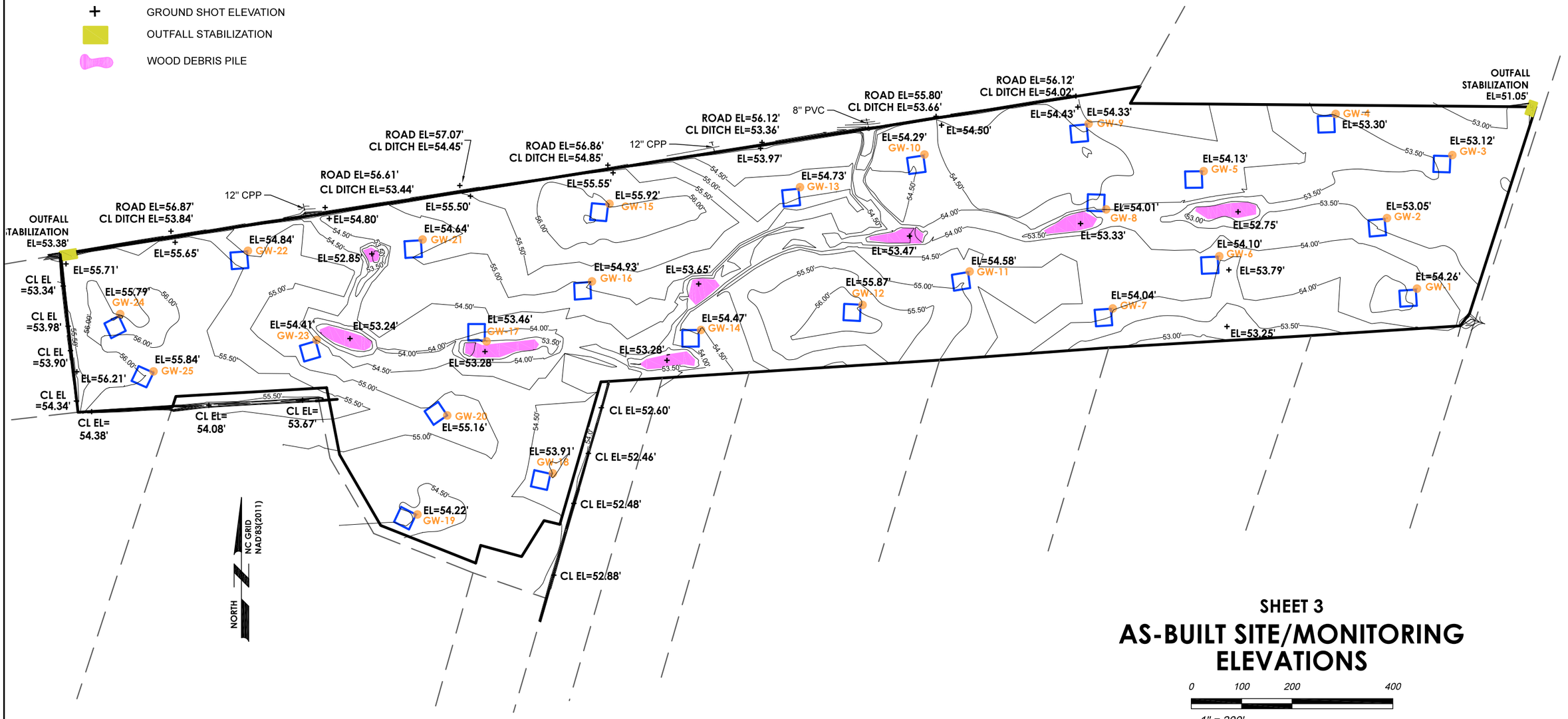
NORTH CAROLINA PROFESSIONAL SEAL L-4194 LAND SURVEYOR JOHN ASHLEY RUDOLPH

GENERAL NOTES:

ALL ELEVATIONS REFERENCED TO NAVD 1988

ELEVATION DETERMINED VIA OPUS WITH A MINIMUM OBSERVATION TIME OF 2.2 HOURS USING A TOPCON HIPER V RECEIVER

GROUNDWATER GAUGE ELEVATION IS ALSO THE PERMANENT CVS PLOT REFERENCE POINT AND ELEVATION.



SHEET 3

AS-BUILT SITE/MONITORING ELEVATIONS

0 100 200 400

1" = 200'

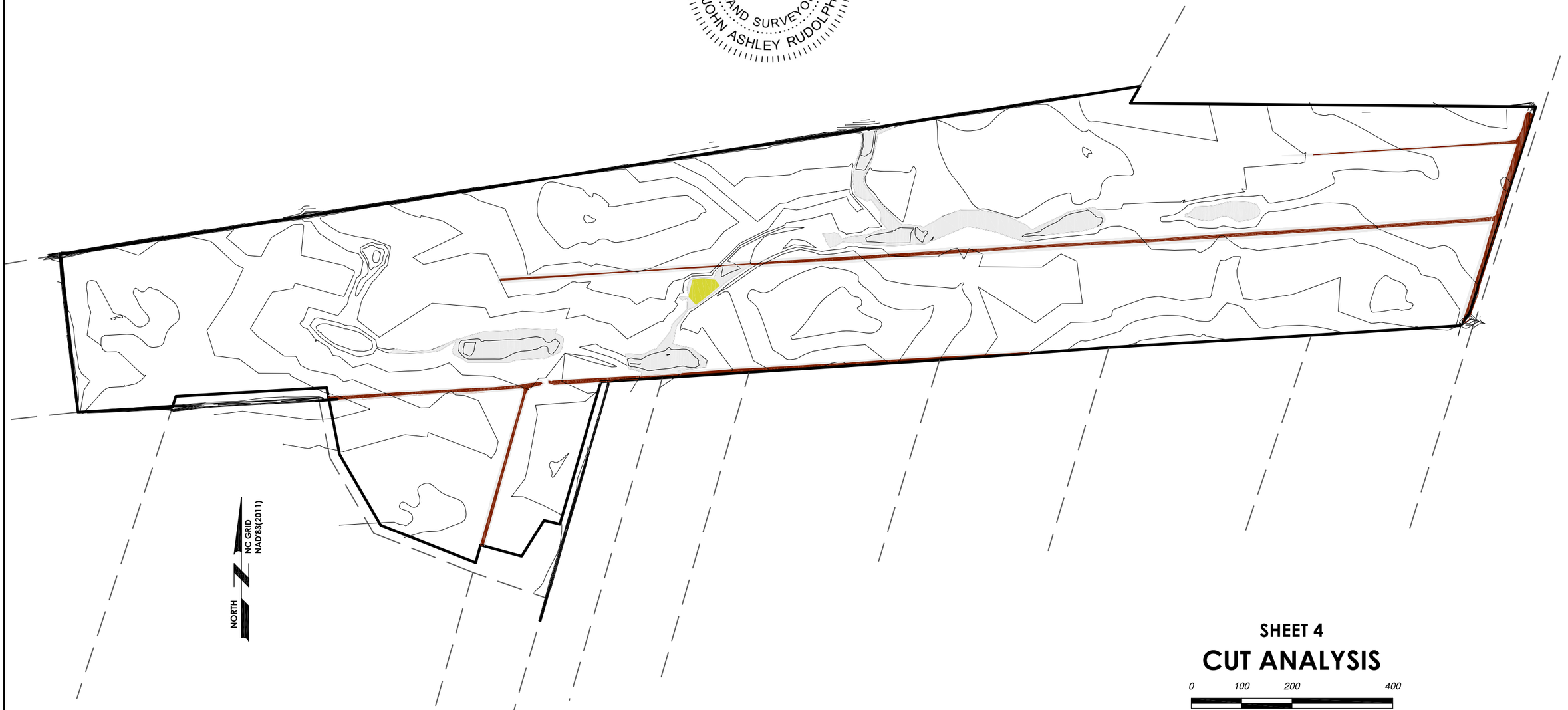
GRADING ZONES TABLE				
GRADING ZONE	ZONE COLOR	MIN. RELATIVE ELEVATION (FT)	MAX. RELATIVE ELEVATION (FT)	ZONE AREA (AC.)
1		-1.60	-1.00	0.04
2		-1.00	1.00	1.88
3		1.00	3.75	0.50

GENERAL NOTES:

ALL ELEVATIONS REFERENCED TO NAVD 1988

ELEVATION DETERMINED VIA OPUS WITH A MINIMUM OBSERVATION TIME OF 2.2 HOURS USING A TOPCON HIPER V RECEIVER

NORTH CAROLINA PROFESSIONAL SEAL L-4194 LAND SURVEYOR JOHN ASHLEY RUDOLPH



SHEET 4

CUT ANALYSIS

0 100 200 400

1" = 200'

SEED MIX

Table 5B. Permanent Seed Mix
Sliver Moon II Site

Common Name	Scientific Name	Lbs/Ac.	
		Mit. Plan	Actual
Common yarrow	*Achillea millefolium*	0.6	0.4
Redtop	*Agrostis alba*	9	6
Winter bentgrass	*Agrostis hyemalis*	3	2
Creeping bentgrass	*Agrostis stolonifera*	3	2
Clusterspike false indigo	*Amorpha herbacea*	0.6	0.4
~~Showy aster~~	~~*Aster spectabilis*~~	~~0.6~~	~~0~~
~~Spiked wild indigo~~	~~*Baptisia albescens*~~	~~0.6~~	~~0~~
Blue false indigo	*Baptisia australis*	1.2	0.8
Greenwhite sedge	*Carex albolutescens*	3.9	6
~~Lurid sedge~~	~~*Carex lurida*~~	~~1.5~~	~~0~~
Fox sedge	*Carex vulpinoidea*	0	2
Daisy	*Chrysanthemum leucanthemum*	3	2
Shasta daisy	*Chrysanthemum maximum*	1.8	1.2
Coreopsis lanceleaf	*Coreopsis lanceolata*	3	2
Coreopsis plains	*Coreopsis tinctoria*	3	2
Cosmos	*Cosmos bipinnatus*	0.6	0.8
Rocket larkspur	*Delphinium ajacis*	1.2	0.8
Showy ticktrefoil	*Desmodium canadense*	0.6	0.4
Coneflower	*Echinacea purpurea*	3.6	2.4
~~Riverbank wildrye~~	~~*Elymus riparius*~~	~~3.15~~	~~0~~
Virginia wildrye	*Elymus virginicus*	3	6
~~Mistflower~~	~~*Eupatorium coelestinum*~~	~~0.3~~	~~0~~
~~Joe Pye Weed~~	~~*Eupatorium fistulosum*~~	~~0.3~~	~~0~~
Perennial gaillardia	*Gallardia aristata*	1.2	0.8
~~Purplehead sneezeweed~~	~~*Helenium flewuosum*~~	~~0.3~~	~~0~~
Narrowleaf sunflower	*Helianthus angustifolius*	0.6	1.2
Oxeye sunflower	*Heliopsis helianthoides*	0.6	0.4
~~Crimsoneyed rosemallow~~	~~*Hibiscus moscheutos*~~	~~0.6~~	~~0~~
Soft rush	*Juncus effusus*	0.6	0.6
Path rush	*Juncus tenuis*	0.3	0.2
Narrowleaf primrose willow	*Ludwigia linearis*	0.39	0.2
~~Seaside primrose willow~~	~~*Ludwigia maritima*~~	~~0.39~~	~~0~~
Wild bergamot	*Monarda fistulosa*	0.3	0.2
~~Beaked panicgrass~~	~~*Panicum anceps*~~	~~7.77~~	~~0~~
~~Deertongue~~	~~*Panicum clandestinum*~~	~~3~~	~~0~~
Redtop panicgrass	*Panicum rigidulum*	9	6.2
Tall white beardtongue	*Penstemon digitalis*	0.6	0.4
Switchgrass	*Panicum virgatum*		2.4
~~Globe bealsedge~~	~~*Rhynchospora globularis*~~	~~1.2~~	~~0~~
Clasping coneflower	*Rudbeckia amplexicaulis*	0.6	0.4
Rudbeckia	*Rudbeckia hirta*	1.8	1.2
Woolgrass	*Scirpus cyperinus*	0.3	0.1
Purpletop	*Tridens flavus*	12	8
Blue vervain	*Verbena hastata*	0.6	0.4
New York ironweed	*Vernonia noveboracensis*	0.3	0.1

PLANTING SCHEDULE

PLANTED BY 9-31-22

Table 5A. Planted Bare Root Woody Vegetation
Sliver Moon II Site

Vegetation Association	**Non-riverine Wet Hardwood Forest**			
Canopy Species (30.88 acres)	**Mit. Plan**	**AsBuilt # Planted**	**Indicator Status**	**AB % of total**
Tulip poplar (*Liriodendron tulipifera*)	2500	2500	FACU	11.11%
Black gum (*Nyssa sylvatica*)	2500	2500	FAC	11.11%
Swamp white oak (*Quercus bicolor*)	2000	2000	FACW	8.89%
~~Laurel oak (*Quercus laurifolia*)~~	~~2000~~	~~0~~*	~~FACW~~	~~0.00%~~
Overcup oak (*Quercus lyrata*)	2000	2500	OBL	11.11%
Swamp chestnut oak (*Quercus michauxii*)	2000	2500	FACW	11.11%
Water oak (*Quercus nigra*)	2000	2500	FAC	11.11%
Cherrybark oak (*Quercus pagoda*)	2000	2000	FACW	8.89%
Willow oak (*Quercus phellos*)	2000	2500	FACW	11.11%
Understory Species (30.88 acres)	**# planted**		**Indicator Status**	**AB % of total**
Hornbeam (*Carpinus caroliniana)*	800	800	FAC	3.56%
~~Sweetbay magnolia (*Magnolia virginiana*)~~	~~800~~	~~0~~*	~~FACW~~	~~0.00%~~
~~Swamp bay (*Persea palustris*)~~	~~700~~	~~0~~*	~~FACW~~	~~0.00%~~
Wet Foot Species (3.75 acres) – in addition to Site-wide planting	**# planted**		**Indicator Status**	**AB % of total**
River Birch (*Betula nigra*)	200	1000	FACW	4.44%
Water tupelo (*Nyssa aquatica*)	300	300	OBL	1.33%
Swamp tupelo (*Nyssa biflora*)	200	200	OBL	0.89%
Bald Cypress (*Taxodium distichum*)	500	1200	OBL	5.33%
TOTAL	**22500**	**22500**		**100.00%**

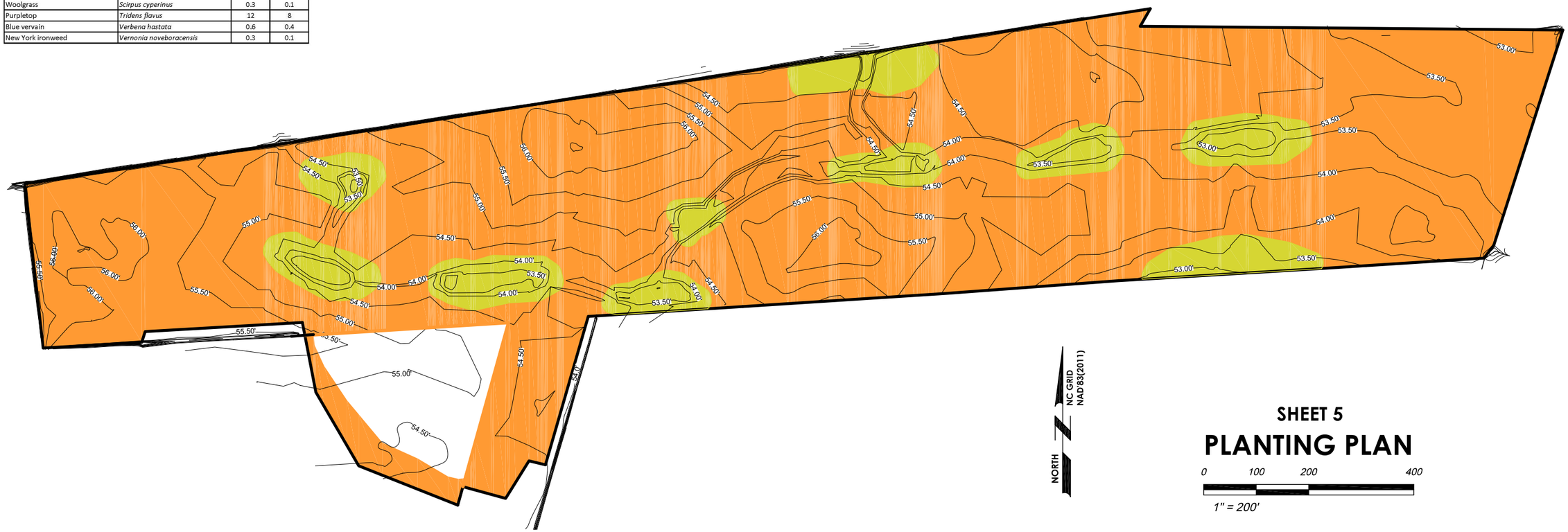
*Species were unavailable

Indicator Categories (USDA - https://plants.usda.gov/wetinfo.html)			
Code	**Indicator Status**	**Designation**	**Comment**
OBL	Obligate Wetland	Hydrophyte	Almost always occur in wetlands
FACW	Facultative Wetland	Hydrophyte	Usually occur in wetlands, but may occur in non-wetlands
FAC	Facultative	Hydrophyte	Occur in wetlands and non-wetlands
FACU	Facultative Upland	Nonhydrophyte	Usually occur in non-wetlands, but may occur in wetlands

LEGEND

- CONSERVATION EASEMENT
- NON-RIVERINE WET HARDWOOD FOREST - 29.37 ACRES±
- DEPRESSION WET AREA (HABITAT POOL) - 3.75 ACRES±

NORTH CAROLINA PROFESSIONAL SEAL L-4194 LAND SURVEYOR JOHN ASHLEY RUDOLPH



NORTH
NC GRID
NAD'83(2011)

SHEET 5

PLANTING PLAN

0 100 200 400

1" = 200'