Baseline Monitoring Report

Final

PICKLE CREEK MITIGATION PROJECT

NCDMS Project #100184 (Contract #0402-08)
RFP #16-20200402
DWR Project #2021-0348 V2

Wayne County, North Carolina
Neuse River Basin
HUC 03020201

Provided by:

Resource Environmental Solutions, LLC
for Environmental Banc & Exchange, LLC (EBX)

Provided for:
NC Department of Environmental Quality
Division of Mitigation Services

Original September 2023 (Updated March 2024)

Table of Contents

1 Mitigation Project Summary

1.1 Project Location and Description

Environmental Banc & Exchange, LLC (EBX), a wholly-owned subsidiary of Resource Environmental Solutions (RES), is pleased to provide the Pickle Creek Mitigation Project (Project), a full-delivery buffer mitigation project for the Division of Mitigation Services (DMS) (DMS Project #100184). The Pickle Creek Project is within the Neuse River Basin within the 8-digit HUC 03020201, excluding Falls Lake Watershed, 14-digit HUC 03020201170030 and DWR Sub-basin Number 03-04-12. The Project easement is located in Wayne County in Mount Olive, NC, and can be accessed by Thunder Swamp Road, approximately two miles north of its intersection with Highway 55. (**Figure 1**). The coordinates are 35.23175° and -78.10784°.

This buffer project provides riparian buffer mitigation credits for unavoidable impacts due to development within the Neuse River Basin, United States Geological Survey (USGS) 8-digit Cataloguing Unit 03020201 (Neuse 01), excluding Falls Lake Watershed (**Figure 1**). This Buffer Mitigation Plan is in accordance with the Consolidated Buffer Mitigation Rule 15A NCAC 02B .0295 and Nutrient Offset Credit Trading Rule 15A NCAC 02B .0703. The Pickle Creek Project consists of a contiguous conservation easement that totals approximately 18.08 acres and includes one unnamed stream tributary, two ephemeral channels, and one ditch that drain into Thunder Swamp. Thunder Swamp is a USGS-named stream that eventually drains to the Neuse River. Pre-existing land use within the Project was crop production which was irrigated with permitted land application of animal waste, and riparian forest. Water quality stressors previously affecting the Project included heavily manipulated/relocated and maintained stream channels, nutrient loadings from active crop production and use of land application as fertilizer and irrigation, and lack of forested riparian buffers.

The Pickle Creek Project is comprised of one intermittent/perennial stream, J1, two ephemeral channels, D3 and D4, and one ditch feature, D1. Additionally, one ditch feature, which is included in the bank project D2, enters the project and drains to J1. All streams have been straightened and are incised. Furthermore, only the fifty-foot riparian buffer of J1 was determined to be subject to the Neuse buffer protection rule ("Subject"), whereas D3 and D4 were determined to be ephemeral streams and therefore not subject to the Neuse buffer protection rules ("Non-subject"). D1 was determined to be a ditch. This Project was also codeveloped with a nutrient offset bank that extends riparian buffer areas associated with this Project's streams as well as incorporate additional stream features on the property.

The goal of the Project is to restore and preserve ecological function to the existing streams and their associated riparian areas by establishing appropriate plant communities while minimizing temporal and land disturbing impacts. This is being accomplished through the planting, establishment, and protection of a hardwood forest community. The result will be a riparian area that functions to mitigate nutrient and sediment inputs from the surrounding uplands. Buffer and surrounding riparian area improvements will filter runoff from agricultural fields, thereby reducing nutrient and sediment loads to Project channels and provide water quality benefit to the overall watershed. The Project will provide significant functional uplift to the watershed and will assist DMS with achieving its mitigation goals in the Neuse 01 watershed, excluding the Falls Lake Watershed.

2 Regulatory Considerations

2.1 Determination of Credits

This Project has the potential to generate up to 666,613.033ft^2 riparian buffer mitigation credits within a 18.08-acre conservation easement. These will be derived from buffer restoration. The riparian buffer mitigation credits generated will service the Neuse 01 watershed, excluding the Falls Lake Watershed. The total potential buffer mitigation credits that the Pickle Creek Mitigation Project will generate are detailed

in **Table 1, Appendix A.** Where viable, buffer mitigation credits can be converted to nutrient offset credit in accordance with the Nutrient Offset Credit Trading Rule, 15A NCAC 02B .0703.

2.2 Asset Map

See **Figure 2, Appendix A**.

3 Baseline

3.1 Planting

The initial planting of bare root trees occurred on May 16th, 2023. Due to the presence of *Miscanthus giganteus* 2.9 acres of the easement were not included in the May planting. These areas were planted during a secondary planting on December 14th, 2023 after the *Miscanthus* had been controlled via mowing and treatment with herbicide during the summer of 2023. All riparian restoration areas are planted from top of bank back at least 50 feet from streams with bare root tree seedlings on a nine by six-foot spacing to achieve an initial density of approximately 800 trees per acre. In addition, these areas were seeded with an herbaceous seed mix to provide rapid herbaceous cover and promote immediate buffer effectiveness as well as habitat for pollinators and other wildlife. The seed blend contains both temporary and permanent seed and includes taproot species. The seed was broadcasted after the site was disced during site prep. The areas for riparian buffer restoration meet the performance standards outlined in the Rule 15A NCAC 02B .0295. This includes treating invasive species and planting of eleven species of native hardwood bare root trees. Mixed-Mesic Hardwood Forest (Coastal Plain subtype) (Schafale 2012) is the target community type for all areas within the Project. This community composition is highly diverse and is suitable given the Project's soil and landscape characteristics and will provide water quality and ecological benefits. The list of planted bare root tree species and their percentage of total species composition can be found in **Appendix B**. Wherever possible, mature vegetation has been preserved and incorporated into the buffer.

3.2 Other Activities

Other activities involved with the buffer mitigation component of the Project include protecting the riparian buffer and riparian areas through a permanent conservation easement, removal of the most upstream culvert crossing on J1 and livestaking of those banks, updating the Waste Utilization Plan to ensure any area in conservation easement will not have any land application of waste, and removing two hydrants and deadheading and capping the associated pipes that are used for land application for irrigation and fertilization. In addition, soil was amended with lime according to a soil fertility test. This Project was co-developed with a buffer mitigation and nutrient offset bank that extends the riparian buffer and riparian areas associated with this Project's streams as well as incorporated an additional ditch feature on the property. Therefore, riparian planting and site preparation activities extended beyond the limits of this Project's boundaries. Construction activities are called out on **Figure 3**.

4 Annual Monitoring

4.1 Methods

Annual vegetation monitoring and visual assessments will be conducted. Monitoring plots were installed a minimum of 100 meters squared in size and cover at least two percent of the planted mitigation area. These plots were randomly placed throughout the planted riparian buffer mitigation area (15.65 acres) and are

representative of the riparian restoration conditions. The following data is recorded for all trees in the plots: species, height, planting date (or volunteer), and grid location. All stems in plots are flagged with flagging tape. Data is processed using the "Vegetation Table Shiny Tool" made available by DMS in December 2021 and is reported in accordance with the most recent DMS requirements and templates. In the field, the four corners of each plot were permanently marked with PVC at the origin and metal conduit at the other corners. There are 14 fixed vegetation monitoring plots (**Figure 3**). All plots for both the Pickle Creek DMS project and the Pickle Creek Phase II Bank except for plots 4, 12, 15, and 17, were installed and monitored in May 2023. The remaining plots for both sites were planted in December 2023, and installed and monitored in January 2024.

Photos are to be taken at all vegetation plot origins each monitoring year and be provided in the annual reports. Visual inspections and photos will be taken to ensure that areas are being maintained and compliant. The measures of vegetative success for the Project are the survival of at least four native hardwood tree species, where no one species is greater than 50 percent of stems, at a density of at least 260 stems per acre at the end of Year 5. Native volunteer species may be included to meet the performance standards as determined by NC Division of Water Resources (DWR).

A visual assessment of the conservation easement is also performed each year to confirm:

- Easement boundary markers/signage are in good condition throughout the site;
- No encroachment has occurred;
- No invasive species in areas where invasive species were treated;
- Diffuse flow is being maintained in the conservation easement areas; and
- There has not been any cutting, clearing, filling, grading, or similar activities that would negatively affect the functioning of the buffer.

Component/ Feature	Monitoring	Maintenance through project close-out
Vegetation	Annual vegetation monitoring	Vegetation shall be maintained to ensure the health and vigor of the targeted plant community. Routine vegetation maintenance and repair activities may include supplemental planting, pruning, mulching, and fertilizing. Exotic invasive plant species shall be treated by mechanical and/or chemical methods. Any vegetation requiring herbicide application will be performed in accordance with NC Department of Agriculture (NCDA) rules and regulations. Vegetation maintenance activities will be documented and reported in annual monitoring reports. Vegetation maintenance will continue through the monitoring period.
Invasive and Nuisance Vegetation	Visual Assessment	Invasive and noxious species will be monitored and treated so that none become dominant or alter the desired community structure of the Project. Locations of invasive and nuisance vegetation will be mapped.
Project Boundary	Visual Assessment	Project boundaries shall be identified in the field to ensure clear distinction between the mitigation project and adjacent properties. Boundaries are marked with signs identifying the property as a mitigation project and will include the name of the long-term steward and a contact number. Boundaries may be identified by fence, marker, bollard, post, tree-blazing, or other means as allowed by Project conditions and/or conservation easement. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as-needed basis. Easement monitoring and staking/ signage maintenance will continue in perpetuity as a stewardship activity.

4.2 Vegetation Assessment Tables

See **Appendix B**.

4.3 Results and Discussion

Establishment and monitoring of fixed vegetation plots 1-3, 5-11, and 13-14 was completed on May 24th, 2023. Establishment of fixed vegetation plots 4 and 12 was completed on January 10th, 2024. Vegetation tables are in **Appendix B** and associated photos are in **Appendix C**. MY0 monitoring data indicates that all plots are exceeding the success criteria of 260 stems per acre. Planted stem densities ranged from 526 to 1012 planted stems per acre with a mean of 789 planted stems per acre across all plots. A total of 11 species were documented within the plots. Volunteer species were not noted at baseline monitoring but are expected to establish in upcoming years. The average tree height observed was 1.37 feet.

Visual assessment of vegetation outside of the monitoring plots indicates that the herbaceous vegetation is becoming well established throughout the project. Some invasive species were noted and treated before planting. Easement boundary markers and signs are clearly visible and in good condition. There was some encroachment on the western side of the project before the secondary planting occurred. Tractors were driven through the easement during harvest of *Miscanthus* outside of the small easement parcels. Additional t-posts and signage will be installed this year to prevent similar encroachment during the next harvest. Two small areas with low stem density were noted during the as-built site visit. These areas are shown on **Figure 3** and will be planted before Year 1 monitoring. There were no signs of undocumented concentrated flow in the easement area.

4.4 Maintenance and Management

Chinese privet (*Ligustrum sinense*) was observed and treated prior to planting. *Miscanthus giganteus* was treated over the summer with both chemical and mechanical means. Areas of new or returning *Miscanthus* or privet will be treated in the future as needed.

5 References

NC Environmental Management Commission. 2014. Rule 15A NCAC 02B.0295 - Mitigation Program Requirements for the Protection and Maintenance of Riparian Buffers.

NC Environmental Management Commission. 2020. Rule 15A NCAC 02B.0714 – Neuse River Basin: Nutrient Sensitive Waters Management Strategy: Protection and Maintenance of Existing Riparian Buffers.

NC Department of Environmental Quality, Division of Mitigation Services. 2021. Vegetation Table Shiny Tool. https://ncdms.shinyapps.io/Veg_Table_Tool/.

Resource Environmental Solutions, LLC (2022). Pickle Creek Mitigation Project. Final Buffer Mitigation Plan.

Schafale, M.P. 2012. Classification of the Natural Communities of North Carolina, Fourth Approximation. North Carolina Natural Heritage Program, Division of Parks and Recreation, NCDENR, Raleigh, NC.

Appendix A

Background Tables & Site Maps

Table 1. Pickle Creek, 100184, Project Credits

Neuse 03020201 - Outside Falls Lake	Project Area
19.16394	N Credit Conversion Ratio (ft^2/pound)
N/A	P Credit Conversion Ratio (ft^2/pound)

Credit Type	Location	Subject? (enter NO if ephemeral or ditch [1])	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (ft^2)	Total (Creditable) Area of Buffer Mitigation (ft^2)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Convertible to Riparian Buffer?	Riparian Buffer Credits	Convertible to Nutrient Offset?	Delivered Nutrient Offset: N (lbs)	Delivered Nutrient Offset: P (lbs)
Buffer	Rural	Yes	I / P	Restoration	0-100	J1	468,086	468,086	1	100%	1.00000	Yes	468,086.000	Yes	24,425.353	—
Buffer	Rural	Yes	I / P	Restoration	101-200	J1	5,571	5,571	1	33%	3.03030	Yes	1,838.432	Yes	290.702	—
Buffer	Rural	No	Ephemeral	Restoration	0-100	D3/D4	132,788	132,788	1	100%	1.00000	Yes	132,788.000	Yes	6,929.055	—
Buffer	Rural	No	Ephemeral	Restoration	101-200	D3/D4	2,320	2,320	1	33%	3.03030	Yes	765.601	Yes	121.061	—
Buffer	Rural	No	Ditch	Restoration	0-50	D1	63,135	63,135	1	100%	1.00000	Yes	63,135.000	Yes	3,294.469	—
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						Totals (ft2):	671,900	671,900					666,613.033		35,060.640	0.000
						Total Buffer (ft2):	671,900	671,900								
						Total Nutrient Offset (ft2):	0	N/A								

Total Ephemeral Area (ft^2) for Credit:	135,108	135,108	
Total Eligible Ephemeral Area (ft^2):	167,975	20.1%	Ephemeral Reaches as % TABM
Total Eligible for Preservation (ft^2):	223,967	0.0%	Preservation as % TABM

Enter Preservation Credits Below

Credit Type	Location	Subject?	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area for Buffer Mitigation (ft^2)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits
												—
												—
												—
												—
												—
						Preservation Area Subtotals (ft^2):	0	0				

TOTAL AREA OF BUFFER MITIGATION (TABM)			
Mitigation Totals		Square Feet	Credits
Restoration:		671,900	666,613.033
Enhancement:		0	0.000
Preservation:		0	0.000
Total Riparian Buffer:		671,900	666,613.033
TOTAL NUTRIENT OFFSET MITIGATION			
Mitigation Totals		Square Feet	Credits
Nutrient Offset:	Nitrogen:	0	0.000
	Phosphorus:		0.000

1. The Randleman Lake buffer rules allow some ditches to be classified as subject according to 15A NCAC 02B .0250 (5)(a).

last updated 08/03/2020

Table 2: Summary: Goals, Performance and Results

Goal	Objective/Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Restore and preserve native vegetation.	Established and increased forested riparian buffers to 50 feet and greater along both sides of the channel along the project reaches with a hardwood riparian plant community;	Reduction in floodplain sediment inputs from runoff, increased bank stability, increased LWD, and increased organic material in streams	Survival of at least four native hardwood tree species, where no one species is greater than 50 percent of stems, at a density of at least 260 stems per acre at the end of MY5	14 fixed vegetation plots	All plots passed with 11 species found across the site and mean of 789 planted stems per acre across all plots.

Table 3. Project Attribute Table			
Project Name	Pickle Creek Mitigation Project		
County	Wayne		
Project Area (acres)	18.08		
Planted Area (acres)	15.65		
Project Coordinates (latitude and longitude decimal degrees)	35.23175, -78.10784		
Project Watershed Summary Information			
Physiographic Province	Rolling Coastal Plain		
River Basin	Neuse		
USGS Hydrologic Unit 8-digit	03020201		
DWR Sub-basin	03-04-12		
Regulatory Considerations			
Parameters	**Applicable?**	**Resolved?**	**Supporting Docs?**
Water of the United States - Section 404	No	N/A	N/A
Water of the United States - Section 401	No	N/A	N/A
Buffer Authorization - Neuse Riparian Buffer Protection Rules	Yes	Yes	N/A
Endangered Species Act	Yes	Yes	Categorical Exclusion
Historic Preservation Act	Yes	Yes	Categorical Exclusion
Coastal Zone Management Act (CZMA or CAMA)	No	N/A	N/A
Essential Fisheries Habitat	No	N/A	N/A

Table 4. Project Timeline and Contacts

Activity or Deliverable	Data Collection Complete	Task Completion or Deliverable Submission
Project Instituted	N/A	Dec-20
Mitigation Plan Approved	N/A	Dec-22
Construction (Grading) Completed	N/A	May-23
Planting Completed	N/A	May-23, Dec-23
As-built Survey Completed	Mar-23	Jun-23
MY-0 Baseline Report	May-23 Jan-24	July-23 (Updated Mar-24)
Miscanthus treatment (mowing and/or herbicide application)	N/A	May through Aug-23
MY1+ Monitoring Reports		
Remediation Items (e.g. beaver removal, supplements, repairs etc.)		
Encroachment		

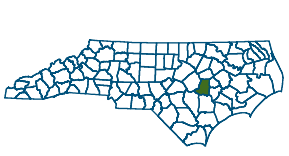
Pickle Creek #100184	
Provider Mitigation Provider POC	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612 Jamey Mceachran (919) 623-9889
Designer Primary project design POC	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612 Benton Carroll, PE
Construction Contractor Construction contractor POC	RES / 3600 Glenwood Ave., Suite 100, Raleigh, NC 27612 Vic Vanover

Bowden Rd
Thunder Swamp Rd
159 ft
Bowden Rd
Thunder Swamp Rd
151 ft
Doug Jerrigan Farms Lake
Baker Chapel Church Rd
160 ft
Shady Grove Rd

Esri Commu
Garmin, SafeG

Legend

- Recorded Easement
- Neuse River Basin - 03020201 (Excluding Falls Lake Watershed)
- 14-Digit HUC (03020201170030)



N
W E
S

0 500 1,000
Feet

Figure 1 - Site Location

Pickle Creek Mitigation Project

Wayne County, North Carolina

Date: 6/23/2023
Drawn by: KTO
Checked by: JRM
1 inch = 1,000 feet

res
Restoring a resilient earth for a modern world

Document Path: R:\Projects\Projects\102870_Pickle_Creek\PROJ\Monitoring\Maintenance\MY0\PickleCreek_AsBuilt.aprx

I, ELISABETH G. TURNER, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, CERTIFY THAT THIS BUFFER MAP WAS DRAWN UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, THAT THE EASEMENT BOUNDARY IS BASED ON PLAT BOOK SEE , PG NOTES RECORDED IN WAYNE COUNTY REGISTER OF DEEDS OFFICE, AND THAT THE BUFFER AREAS SHOWN ARE CALCULATED FROM AS-BUILT CONDITIONS EXCEPT WHERE OTHERWISE NOTED HEREON. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 17th DAY OF JULY, 2023.

ELISABETH G. TURNER, P.L.S. #L-4440

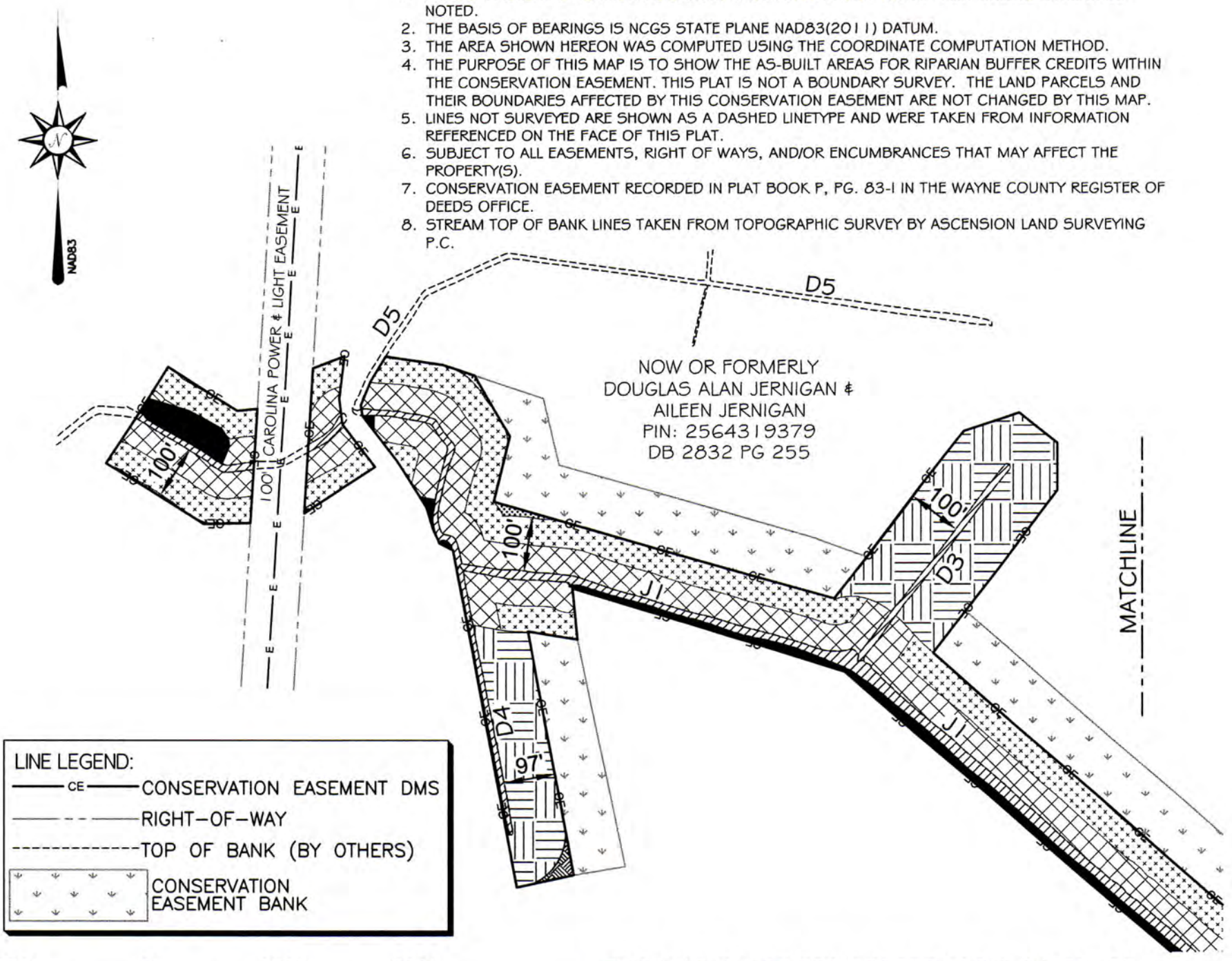
NORTH CAROLINA PROFESSIONAL SEAL L-4440 LAND SURVEYOR ELISABETH G. TURNER

PICKLE CREEK MITIGATION SITE

Riparian Buffer Credit:	SQ. FT.	Acres
Streams & Ditches	73,618	1.69
Riparian Restoration 0'-50' (Min. 30')	247,202	5.675
Riparian Restoration 51'-100'	220,884	5.071
Riparian Restoration 101'-200'	5,571	0.128
Riparian Restoration Ephemeral 0'-100'	132,788	3.048
Riparian Restoration Ephemeral 101'-200'	2,320	0.053
Riparian Restoration Ditch 0'-50'	63,135	1.449
Riparian Restoration Ditch 51'-100'	1,195	0.027
No Credit	40,860	0.938
Total CE Area	**787,574**	**18.08**

GENERAL NOTES:

1. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
2. THE BASIS OF BEARINGS IS NCGS STATE PLANE NAD83(2011) DATUM.
3. THE AREA SHOWN HEREON WAS COMPUTED USING THE COORDINATE COMPUTATION METHOD.
4. THE PURPOSE OF THIS MAP IS TO SHOW THE AS-BUILT AREAS FOR RIPARIAN BUFFER CREDITS WITHIN THE CONSERVATION EASEMENT. THIS PLAT IS NOT A BOUNDARY SURVEY. THE LAND PARCELS AND THEIR BOUNDARIES AFFECTED BY THIS CONSERVATION EASEMENT ARE NOT CHANGED BY THIS MAP.
5. LINES NOT SURVEYED ARE SHOWN AS A DASHED LINETYPE AND WERE TAKEN FROM INFORMATION REFERENCED ON THE FACE OF THIS PLAT.
6. SUBJECT TO ALL EASEMENTS, RIGHT OF WAYS, AND/OR ENCUMBRANCES THAT MAY AFFECT THE PROPERTY(S).
7. CONSERVATION EASEMENT RECORDED IN PLAT BOOK P, PG. 83-1 IN THE WAYNE COUNTY REGISTER OF DEEDS OFFICE.
8. STREAM TOP OF BANK LINES TAKEN FROM TOPOGRAPHIC SURVEY BY ASCENSION LAND SURVEYING P.C.



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

SHEET 1 of 2

SCALE: 1" = 250'
FILE: PICKLE CREEK_DMS_BUFFER_AB_rev3
RES PROJECT: 102870
REVIEWED BY: EGT
DRAWN BY: EGT
SURVEYED BY: SEE NOTE #8
DATE: 7/17/2023

AS-BUILT SURVEY OF BUFFER AREAS FOR

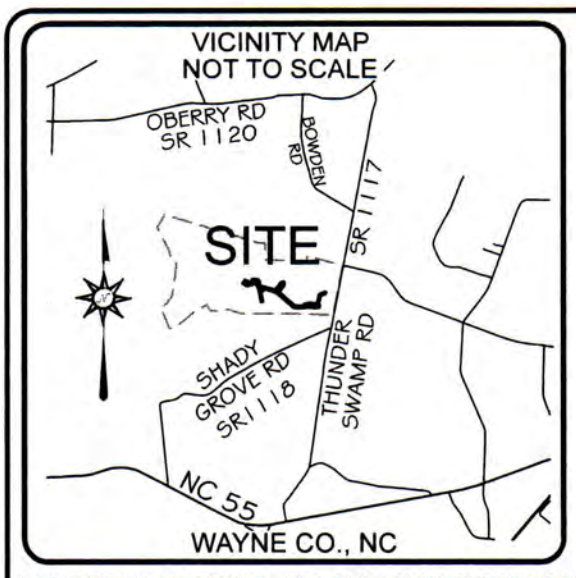
PICKLE CREEK MITIGATION SITE

NC DMS PROJ. # 100184 NEUSE RIVER BASIN

BROGDEN TOWNSHIP WAYNE COUNTY NORTH CAROLINA

REVISIONS, DATE AND INITIAL:

res
P.O. BOX 148
SWANNANOA, NC 28778
(919) 829-9909
www.res.us
F-1428



I, ELISABETH G. TURNER, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, CERTIFY THAT THIS BUFFER MAP WAS DRAWN UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, THAT THE EASEMENT BOUNDARY IS BASED ON PLAT BOOK SEE , PG NOTES RECORDED IN WAYNE COUNTY REGISTER OF DEEDS OFFICE, AND THAT THE BUFFER AREAS SHOWN ARE CALCULATED FROM AS-BUILT CONDITIONS EXCEPT WHERE OTHERWISE NOTED HEREON. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 17th DAY OF JULY, 2023.

Elisabeth G. Turner
ELISABETH G. TURNER, P.L.S. #L-4440

NORTH CAROLINA PROFESSIONAL SEAL L-4440 LAND SURVEYOR ELISABETH G. TURNER

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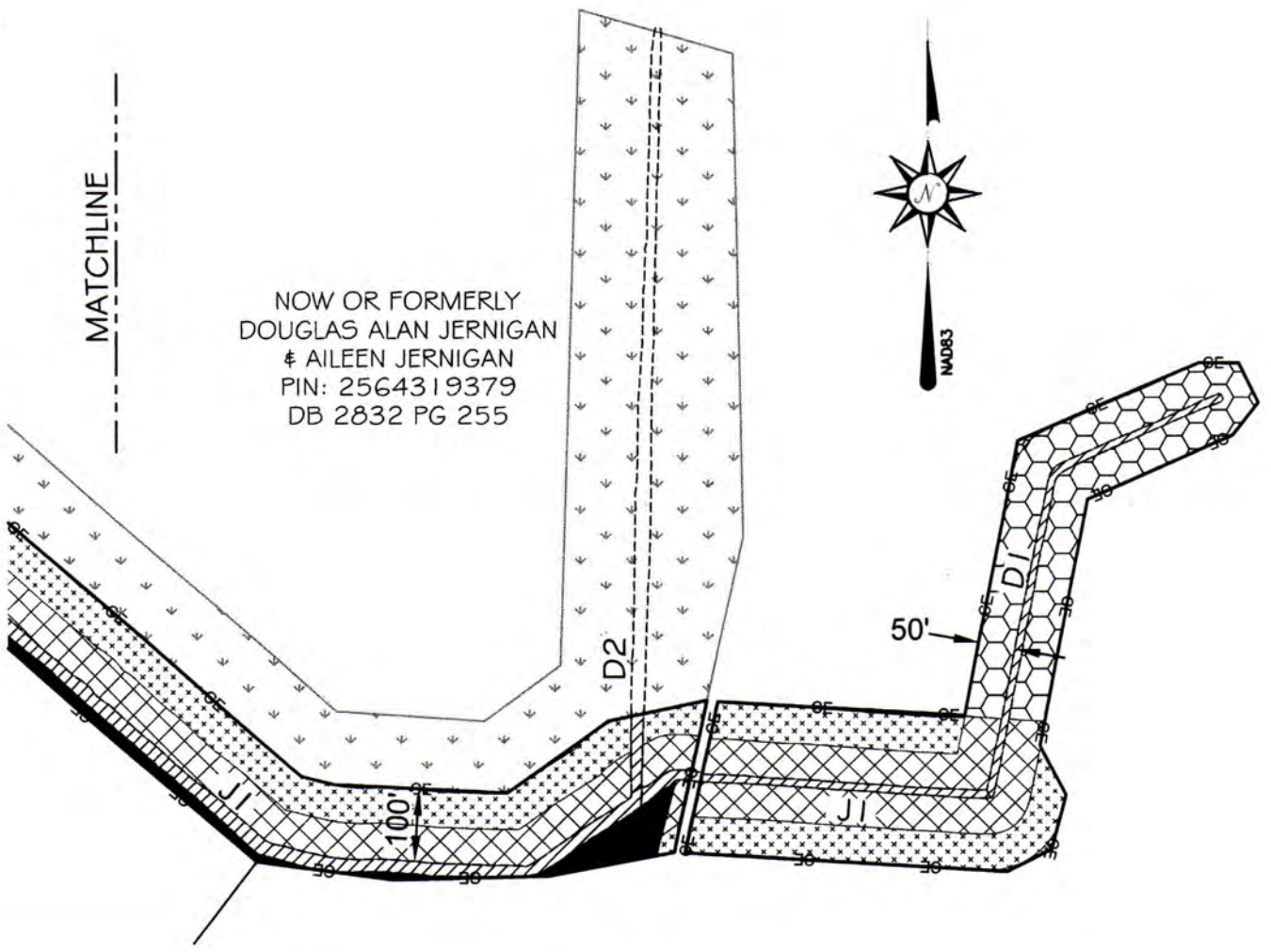


LINE LEGEND:
- CE — CONSERVATION EASEMENT DMS
- RIGHT-OF-WAY
- TOP OF BANK (BY OTHERS)
- CONSERVATION EASEMENT BANK

250' 0' 250' 500'

SCALE: 1 inch = 250 feet (11x17)

NOTE:
SEE SHEET 1 FOR GENERAL NOTES.

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

SHEET 2 of 2
SCALE: 1" = 250'
FILE: PICKLE CREEK_DMS_BUFFER_AB_rev3
RES PROJECT: 102870
REVIEWED BY: EGT
DRAWN BY: EGT
SURVEYED BY: SEE NOTE #8
DATE: 7/17/2023

AS-BUILT SURVEY OF BUFFER AREAS FOR

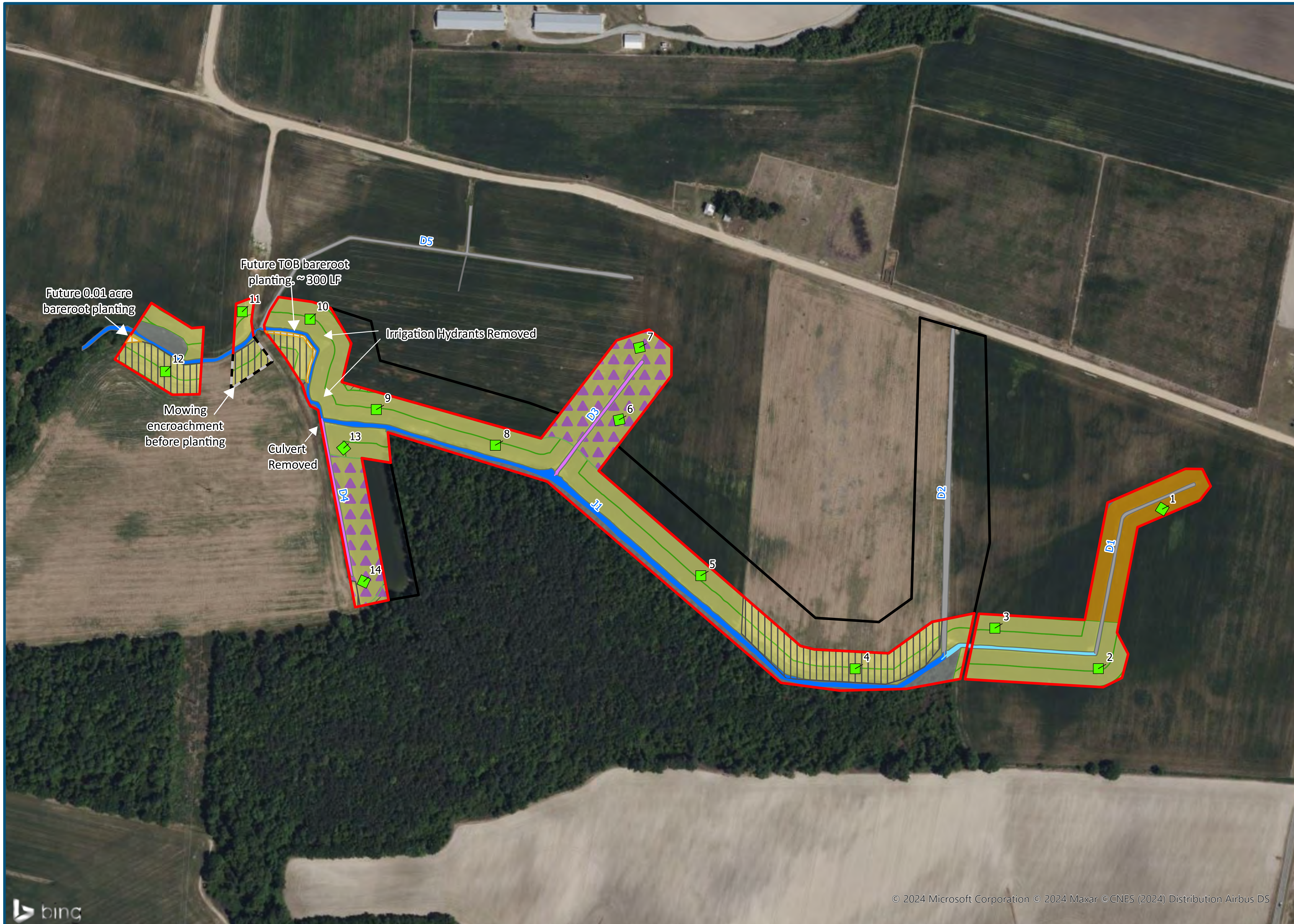
PICKLE CREEK MITIGATION SITE

NC DMS PROJ. # 100184 NEUSE RIVER BASIN

BROGDEN TOWNSHIP WAYNE COUNTY NORTH CAROLINA

REVISIONS, DATE AND INITIAL:

res
P.O. BOX 148
SWANNANOA, NC 28778
(919) 829-9909
www.res.us
F-1428



Restoring a resilient earth for a modern world

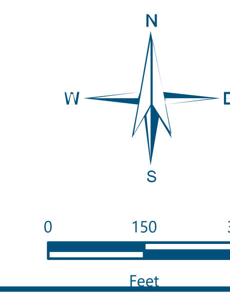


Figure 3: CCPV - MY0 2024

Pickle Creek Mitigation Project

Wayne County, North Carolina

Date: 3/1/2024	Drawn by: KTO
1 inch = 300 feet	Checked by: JRM

Legend

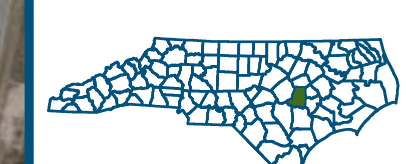
- Easement 18.08 ac (DMS)
- Eaement 10.59 ac (Bank)
- Treated Miscanthus 2.9 ac
- >260 Stems/Acre

Stream Type

- Ditch
- Ephemeral
- Intermittent
- Perennial

Buffer Treatment

- Riparian Restoration Ditch (0-50')
- Riparian Restoration (0-100')
- Riparian Restoration Ephemeral (0-100')
- Riparian Restoration (101-200')
- Riparian Restoration Ephemeral (101-200')
- No Credit
- Mowing Encroachment
- Supplemental Planting Areas



Appendix B

Vegetation Assessment Data

Table 5a. Planted Species Summary

Common Name	Scientific Name	Mit Plan %	As-Built %	Total Stems Planted
American sycamore	*Platanus occidentalis*	10%	10%	1,020
River birch	*Betula nigra*	10%	10%	1,020
Willow Oak	*Quercus phellos*	10%	10%	1,020
Swamp chestnut oak	*Quercus michauxii*	10%	10%	1,020
Water oak	*Quercus nigra*	10%	10%	1,020
Northern red oak	*Quercus rubra*	10%	10%	1,020
Shumard's oak	*Quercus shumardii*	10%	10%	1,020
Overcup oak	*Quercus lyrata*	10%	10%	1,020
Persimmon	*Diospyros virginiana*	10%	10%	1,020
Green Ash	*Fraxinus pennsylvanica*	5%	5%	510
Buttonbush	*Cephalanthus occidentalis*	5%	5%	510
			Total	10,200
			Planted Area[1]	12.75
			As-Built Stems/Acre	800

1: Originally 15.65 acres were to be planted within the 18.08 acre conservation easement, but this area was reduced during the initial planting to 12.75 acres due to the presence of *Miscanthus giganteus* on 2.9 acres within the easement. The remaining area will be planted in the Fall after the *Miscanthus* has been controlled.

Table 5b. Planted Species Summary

Common Name	Scientific Name	Mit Plan %	As-Built %	Total Stems Planted
American sycamore	*Platanus occidentalis*	10%	10%	232
River birch	*Betula nigra*	10%	10%	232
Willow Oak	*Quercus phellos*	10%	10%	232
Swamp chestnut oak	*Quercus michauxii*	10%	10%	232
Water oak	*Quercus nigra*	10%	10%	232
Northern red oak	*Quercus rubra*	10%	10%	232
Shumard's oak	*Quercus shumardii*	10%	10%	232
Overcup oak	*Quercus lyrata*	10%	10%	232
Persimmon	*Diospyros virginiana*	10%	10%	232
Green Ash	*Fraxinus pennsylvanica*	5%	5%	116
Buttonbush	*Cephalanthus occidentalis*	5%	5%	116
			Total	2,320
			Planted Area[1]	2.9
			As-Built Stems/Acre	800

1: This is the remaining 2.9 acres of the original 15.65 acres that was planted in a secondary planting due to dense*Miscanthus giganteus* at the inital planting. As of December 14th, 2024 all 15.65 acres have been planted within the 18.08 acre conservation easement.

Planted Acreage	15.65
Date of Initial Plant	2023-04-10
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	9/5/2023
Date of Current Survey	2024-01
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/S hrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 4 F		Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F		Veg Plot 8 F		Veg Plot 9 F		Veg Plot 10 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW			1	1					1	1	10	10			1	1				
	Cephalanthus occidentalis	common buttonbush	Shrub	OBL	1	1	1	1																
	Diospyros virginiana	common persimmon	Tree	FAC			4	4	4	4	7	7			2	2	2	2	1	1				
	Fraxinus pennsylvanica	green ash	Tree	FACW	1	1					1	1	2	2	1	1			1	1	4	4		
	Platanus occidentalis	American sycamore	Tree	FACW	8	8	1	1			8	8	3	3	1	1	1	1			1	1		
	Quercus lyrata	overcup oak	Tree	OBL	1	1			2	2	2	2	1	1	2	2	2	2	1	1	1	1	3	3
	Quercus michauxii	swamp chestnut oak	Tree	FACW	2	2			2	2	1	1	1	1	1	1	6	6	5	5	3	3	2	2
	Quercus nigra	water oak	Tree	FAC	2	2	2	2	3	3	2	2	2	2	1	1	5	5	3	3	3	3	2	2
	Quercus phellos	willow oak	Tree	FACW	2	2			1	1	1	1	1	1	3	3	3	3	2	2	1	1		
	Quercus rubra	northern red oak	Tree	FACU	2	2	3	3	4	4	1	1	2	2			4	4	1	1	3	3	4	4
	Quercus shumardii	Shumard's oak	Tree	FAC	1	1	1	1	2	2	1	1	6	6			1	1	4	4	6	6	9	9
Sum	Performance Standard				20	20	13	13	18	18	24	24	19	19	21	21	24	24	19	19	22	22	20	20
Mitigation Plan Performance Standard	Current Year Stem Count					20		13		18		24		19		21		24		19		22		20
	Stems/Acre					810		526		729		972		769		850		972		769		891		810
	Species Count					9		7		7		9		9		8		8		9		8		5
	Dominant Species Composition (%)					40		31		22		33		32		48		25		26		27		45
	Average Plot Height (ft.)					1		1		2		1		1		1		1		1		1		2
	% Invasives					0		0		0		0		0		0		0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					20		13		18		24		19		21		24		19		22		20
	Stems/Acre					810		526		729		972		769		850		972		769		891		810
	Species Count					9		7		7		9		9		8		8		9		8		5
	Dominant Species Composition (%)					40		31		22		33		32		48		25		26		27		45
	Average Plot Height (ft.)					1		1		2		1		1		1		1		1		1		2
	% Invasives					0		0		0		0		0		0		0		0		0		0

	Scientific Name	Common Name	Tree/S hrub	Indicator Status	Veg Plot 11 F		Veg Plot 12 F		Veg Plot 13 F		Veg Plot 14 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	4	4			1	1		
	Cephalanthus occidentalis	common buttonbush	Shrub	OBL	1	1						
	Diospyros virginiana	common persimmon	Tree	FAC			4	4	3	3	9	9
	Fraxinus pennsylvanica	green ash	Tree	FACW	1	1					1	1
	Platanus occidentalis	American sycamore	Tree	FACW			2	2	1	1	2	2
	Quercus lyrata	overcup oak	Tree	OBL					2	2	1	1
	Quercus michauxii	swamp chestnut oak	Tree	FACW	1	1	2	2			1	1
	Quercus nigra	water oak	Tree	FAC	1	1	4	4	3	3	3	3
	Quercus phellos	willow oak	Tree	FACW	6	6			2	2	3	3
	Quercus rubra	northern red oak	Tree	FACU	3	3	2	2	2	2	4	4
	Quercus shumardii	Shumard's oak	Tree	FAC	1	1	1	1	1	1	1	1
Sum	Performance Standard				18	18	15	15	15	15	25	25
Mitigation Plan Performance Standard	Current Year Stem Count					18		15		15		25
	Stems/Acre					729		607		607		1012
	Species Count					8		6		8		9
	Dominant Species Composition (%)					33		27		20		36
	Average Plot Height (ft.)					2		1		1		2
	% Invasives					0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					18		15		15		25
	Stems/Acre					729		607		607		1012
	Species Count					8		6		8		9
	Dominant Species Composition (%)					33		27		20		36
	Average Plot Height (ft.)					2		1		1		2
	% Invasives					0		0		0		0

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.

2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).

3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
1	*Quercus rubra*	Approved Mit Plan	Planted	0.3	0.4	0.5					
1	*Quercus shumardii*	Approved Mit Plan	Planted	1.8	2.3	0.4					
1	*Quercus lyrata*	Approved Mit Plan	Planted	0.7	4.6	0.4					
1	*Platanus occidentalis*	Approved Mit Plan	Planted	0.7	8.3	0.6					
1	*Quercus nigra*	Approved Mit Plan	Planted	2	5.8	0.3					
1	*Quercus phellos*	Approved Mit Plan	Planted	3.2	3.3	0.45					
1	*Cephalanthus occidentalis*	Approved Mit Plan	Planted	4.2	1	0.2					
1	*Platanus occidentalis*	Approved Mit Plan	Planted	6.2	1.4	0.6					
1	*Quercus nigra*	Approved Mit Plan	Planted	5.2	3.6	0.25					
1	*Platanus occidentalis*	Approved Mit Plan	Planted	4.2	5.7	0.5					
1	*Quercus phellos*	Approved Mit Plan	Planted	2.2	9.9	0.5					
1	*Quercus michauxii*	Approved Mit Plan	Planted	5.2	8.4	0.3					
1	*Quercus rubra*	Approved Mit Plan	Planted	6.5	5.8	0.45					
1	*Quercus michauxii*	Approved Mit Plan	Planted	7.4	3.3	0.3					
1	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	8.7	0.2	0.3					
1	*Platanus occidentalis*	Approved Mit Plan	Planted	9.6	3.4	0.3					
1	*Platanus occidentalis*	Approved Mit Plan	Planted	8.7	5.6	0.4					
1	*Platanus occidentalis*	Approved Mit Plan	Planted	7.8	8.1	0.45					
1	*Platanus occidentalis*	Approved Mit Plan	Planted	9.2	9.3	0.3					
1	*Platanus occidentalis*	Approved Mit Plan	Planted	9.8	6.8	0.4					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
2	*Diospyros virginiana*	Approved Mit Plan	Planted	0.6	6.5	0.5					
2	*Diospyros virginiana*	Approved Mit Plan	Planted	1.5	9.1	0.45					
2	*Quercus rubra*	Approved Mit Plan	Planted	2.9	7.6	0.2					
2	*Quercus nigra*	Approved Mit Plan	Planted	2	5	0.15					
2	*Quercus nigra*	Approved Mit Plan	Planted	1.3	3	0.05					
2	*Quercus shumardii*	Approved Mit Plan	Planted	0.4	0.4	0.4					
2	*Platanus occidentalis*	Approved Mit Plan	Planted	6.1	1.3	0.1					
2	*Betula nigra*	Approved Mit Plan	Planted	7.1	3.6	0.45					
2	*Cephalanthus occidentalis*	Approved Mit Plan	Planted	7.7	6.3	0.3					
2	*Diospyros virginiana*	Approved Mit Plan	Planted	8.1	8.2	0.3					
2	*Diospyros virginiana*	Approved Mit Plan	Planted	9.9	9.1	0.45					
2	*Quercus rubra*	Approved Mit Plan	Planted	9.5	2.8	0.5					
2	*Quercus rubra*	Approved Mit Plan	Planted	8.2	0.1	0.5					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
3	*Diospyros virginiana*	Approved Mit Plan	Planted	0.4	0.3	0.35					
3	*Diospyros virginiana*	Approved Mit Plan	Planted	0.6	2.7	0.6					
3	*Quercus phellos*	Approved Mit Plan	Planted	0.8	4.9	0.45					
3	*Quercus shumardii*	Approved Mit Plan	Planted	1	7.1	0.5					
3	*Diospyros virginiana*	Approved Mit Plan	Planted	1.3	9.9	0.55					
3	*Quercus rubra*	Approved Mit Plan	Planted	3.1	8.2	0.5					
3	*Quercus shumardii*	Approved Mit Plan	Planted	2.8	6.1	0.55					
3	*Quercus nigra*	Approved Mit Plan	Planted	2.6	4.1	0.4					
3	*Quercus lyrata*	Approved Mit Plan	Planted	2.3	1.7	0.5					
3	*Quercus michauxii*	Approved Mit Plan	Planted	4.6	2.5	0.4					
3	*Quercus michauxii*	Approved Mit Plan	Planted	4.9	5.3	0.6					
3	*Quercus lyrata*	Approved Mit Plan	Planted	5.3	8.2	0.55					
3	*Quercus rubra*	Approved Mit Plan	Planted	6.8	6.6	0.3					
3	Quercus nigra	Approved Mit Plan	Planted	6.4	3.7	0.5					
3	*Quercus nigra*	Approved Mit Plan	Planted	6	0.8	0.2					
3	*Diospyros virginiana*	Approved Mit Plan	Planted	8.4	1.8	0.4					
3	*Quercus rubra*	Approved Mit Plan	Planted	8.7	4.4	0.6					
3	*Quercus rubra*	Approved Mit Plan	Planted	9.4	9.8	0.4					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
4	*Platanus occidentalis*	Approved Mit Plan	Planted	0.1	0.1	0.41					
4	*Platanus occidentalis*	Approved Mit Plan	Planted	2.2	0.1	0.42					
4	*Platanus occidentalis*	Approved Mit Plan	Planted	4.2	0.3	0.55					
4	*Platanus occidentalis*	Approved Mit Plan	Planted	5.6	0.4	0.35					
4	*Platanus occidentalis*	Approved Mit Plan	Planted	7.5	0.5	0.41					
4	*Quercus shumardii*	Approved Mit Plan	Planted	9.3	0.5	0.55					
4	*Diospyros virginiana*	Approved Mit Plan	Planted	9.7	2.3	0.47					
4	*Diospyros virginiana*	Approved Mit Plan	Planted	8.5	2.3	0.35					
4	*Diospyros virginiana*	Approved Mit Plan	Planted	6.8	2.3	0.35					
4	*Diospyros virginiana*	Approved Mit Plan	Planted	5.1	2.2	0.50					
4	*Diospyros virginiana*	Approved Mit Plan	Planted	3.5	2.2	0.50					
4	*Diospyros virginiana*	Approved Mit Plan	Planted	1.7	2.2	0.47					
4	*Diospyros virginiana*	Approved Mit Plan	Planted	0.1	2.2	0.52					
4	Quercus rubra	Approved Mit Plan	Planted	0.9	4.6	0.53					
4	*Quercus lyrata*	Approved Mit Plan	Planted	2.9	4.6	0.31					
4	*Quercus lyrata*	Approved Mit Plan	Planted	5.0	4.7	0.27					
4	*Platanus occidentalis*	Approved Mit Plan	Planted	7.1	4.7	0.47					
4	*Platanus occidentalis*	Approved Mit Plan	Planted	9.0	4.7	0.50					
4	*Platanus occidentalis*	Approved Mit Plan	Planted	9.3	6.8	0.47					
4	*Quercus michauxii*	Approved Mit Plan	Planted	7.7	6.9	0.23					
4	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	5.6	7.0	0.20					
4	*Quercus nigra*	Approved Mit Plan	Planted	3.5	7.1	0.52					
4	*Quercus nigra*	Approved Mit Plan	Planted	1.8	7.1	0.44					
4	*Quercus phellos*	Approved Mit Plan	Planted	0.5	7.0	0.30					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
5	*Quercus shumardii*	Approved Mit Plan	Planted	0.6	0.3	0.55					
5	*Quercus shumardii*	Approved Mit Plan	Planted	3.3	0.2	0.45					
5	*Quercus rubra*	Approved Mit Plan	Planted	9.5	1.5	0.5					
5	*Quercus nigra*	Approved Mit Plan	Planted	7.6	1.7	0.5					
5	*Quercus phellos*	Approved Mit Plan	Planted	4.3	1.8	0.4					
5	*Betula nigra*	Approved Mit Plan	Planted	2.1	1.9	0.3					
5	*Quercus shumardii*	Approved Mit Plan	Planted	0.7	3.9	0.6					
5	*Quercus nigra*	Approved Mit Plan	Planted	3.5	3.8	0.3					
5	*Quercus lyrata*	Approved Mit Plan	Planted	6	3.7	0.65					
5	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	8.5	3.8	0.45					
5	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	7	5.7	0.45					
5	*Quercus shumardii*	Approved Mit Plan	Planted	4.8	5.7	0.5					
5	*Quercus michauxii*	Approved Mit Plan	Planted	0.9	7.7	0.5					
5	*Quercus shumardii*	Approved Mit Plan	Planted	3.3	7.8	0.55					
5	*Quercus rubra*	Approved Mit Plan	Planted	5.9	7.7	0.45					
5	*Platanus occidentalis*	Approved Mit Plan	Planted	9.3	9.4	0.2					
5	*Platanus occidentalis*	Approved Mit Plan	Planted	6	9.4	0.3					
5	*Quercus shumardii*	Approved Mit Plan	Planted	3.3	9.6	0.5					
5	*Platanus occidentalis*	Approved Mit Plan	Planted	0.3	9.7	0.15					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
6	*Diospyros virginiana*	Approved Mit Plan	Planted	0.3	9.2	0.25					
6	*Platanus occidentalis*	Approved Mit Plan	Planted	0.4	0.3	0.4					
6	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	0.9	3.3	0.4					
6	*Quercus phellos*	Approved Mit Plan	Planted	1.4	6.3	0.3					
6	*Quercus lyrata*	Approved Mit Plan	Planted	2.1	9.2	0.45					
6	*Diospyros virginiana*	Approved Mit Plan	Planted	4	9	0.25					
6	*Betula nigra*	Approved Mit Plan	Planted	3.4	6.3	0.35					
6	*Betula nigra*	Approved Mit Plan	Planted	2.9	3.8	0.35					
6	*Betula nigra*	Approved Mit Plan	Planted	2.4	1	0.4					
6	*Betula nigra*	Approved Mit Plan	Planted	4.4	1.6	0.15					
6	*Betula nigra*	Approved Mit Plan	Planted	5	4.3	0.3					
6	*Betula nigra*	Approved Mit Plan	Planted	5.6	7	0.35					
6	*Betula nigra*	Approved Mit Plan	Planted	6.3	9.6	0.35					
6	*Quercus nigra*	Approved Mit Plan	Planted	8	8.1	0.25					
6	*Quercus phellos*	Approved Mit Plan	Planted	7.3	5	0.45					
6	*Quercus michauxii*	Approved Mit Plan	Planted	6.3	2.1	0.25					
6	*Betula nigra*	Approved Mit Plan	Planted	7.7	0.2	0.4					
6	*Quercus phellos*	Approved Mit Plan	Planted	8.2	2.5	0.35					
6	*Betula nigra*	Approved Mit Plan	Planted	8.9	5.2	0.4					
6	*Betula nigra*	Approved Mit Plan	Planted	9.4	8	0.45					
6	*Quercus lyrata*	Approved Mit Plan	Planted	9.9	0.9	0.45					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
7	*Quercus phellos*	Approved Mit Plan	Planted	0.3	0.3	0.45					
7	*Diospyros virginiana*	Approved Mit Plan	Planted	0.8	4.5	0.4					
7	*Quercus phellos*	Approved Mit Plan	Planted	1.2	6.9	0.5					
7	*Diospyros virginiana*	Approved Mit Plan	Planted	1.5	9	0.4					
7	*Quercus lyrata*	Approved Mit Plan	Planted	3.2	9.5	0.45					
7	*Quercus rubra*	Approved Mit Plan	Planted	2.7	7	0.6					
7	*Quercus michauxii*	Approved Mit Plan	Planted	2.5	4.2	0.5					
7	*Quercus phellos*	Approved Mit Plan	Planted	2	1.7	0.5					
7	*Quercus rubra*	Approved Mit Plan	Planted	3.7	1.3	0.55					
7	*Quercus nigra*	Approved Mit Plan	Planted	4	4.3	0.5					
7	*Quercus nigra*	Approved Mit Plan	Planted	4.5	7.1	0.3					
7	*Quercus lyrata*	Approved Mit Plan	Planted	4.8	9.9	0.45					
7	*Quercus nigra*	Approved Mit Plan	Planted	6.6	9.4	0.5					
7	*Quercus michauxii*	Approved Mit Plan	Planted	6.3	7	0.3					
7	*Quercus nigra*	Approved Mit Plan	Planted	5.9	4.1	0.5					
7	*Quercus nigra*	Approved Mit Plan	Planted	5.5	1.2	0.3					
7	*Quercus shumardii*	Approved Mit Plan	Planted	7.1	1.5	0.2					
7	*Quercus rubra*	Approved Mit Plan	Planted	7.4	3.3	0.4					
7	*Quercus rubra*	Approved Mit Plan	Planted	8.2	7.6	0.5					
7	*Quercus michauxii*	Approved Mit Plan	Planted	8.5	9.7	0.45					
7	*Quercus michauxii*	Approved Mit Plan	Planted	9.8	7.9	0.4					
7	*Quercus michauxii*	Approved Mit Plan	Planted	9.6	5.6	0.4					
7	*Quercus michauxii*	Approved Mit Plan	Planted	9.3	2.9	0.45					
7	*Platanus occidentalis*	Approved Mit Plan	Planted	8.9	0.7	0.5					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
8	*Betula nigra*	Approved Mit Plan	Planted	0.4	0.4	0.5					
8	*Quercus shumardii*	Approved Mit Plan	Planted	0.9	4.4	0.5					
8	*Quercus shumardii*	Approved Mit Plan	Planted	1.3	7.1	0.5					
8	*Quercus shumardii*	Approved Mit Plan	Planted	1.5	9.9	0.6					
8	*Diospyros virginiana*	Approved Mit Plan	Planted	3.5	8.6	0.5					
8	*Quercus michauxii*	Approved Mit Plan	Planted	3.3	5.7	0.4					
8	*Quercus nigra*	Approved Mit Plan	Planted	3.1	2.7	0.05					
8	*Quercus nigra*	Approved Mit Plan	Planted	5	1	0.5					
8	*Quercus phellos*	Approved Mit Plan	Planted	5.4	3.9	0.3					
8	*Quercus nigra*	Approved Mit Plan	Planted	5.7	7	0.45					
8	*Quercus michauxii*	Approved Mit Plan	Planted	6	9.9	0.45					
8	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	8.5	9.1	0.2					
8	*Quercus lyrata*	Approved Mit Plan	Planted	8	6.5	0.3					
8	*Quercus rubra*	Approved Mit Plan	Planted	7.7	4.9	0.4					
8	*Quercus michauxii*	Approved Mit Plan	Planted	7.3	2.1	0.4					
8	*Quercus michauxii*	Approved Mit Plan	Planted	9.2	1.3	0.2					
8	*Quercus phellos*	Approved Mit Plan	Planted	9.5	3.6	0.45					
8	*Quercus michauxii*	Approved Mit Plan	Planted	9.7	6.3	0.4					
8	*Quercus shumardii*	Approved Mit Plan	Planted	9.9	8.4	0.5					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
9	*Quercus nigra*	Approved Mit Plan	Planted	0.6	0.4	0.4					
9	*Quercus shumardii*	Approved Mit Plan	Planted	1.9	1.7	0.55					
9	*Quercus shumardii*	Approved Mit Plan	Planted	4.4	0.9	0.5					
9	*Quercus rubra*	Approved Mit Plan	Planted	6.8	0.1	0.15					
9	*Quercus shumardii*	Approved Mit Plan	Planted	8.9	1.2	0.4					
9	*Quercus nigra*	Approved Mit Plan	Planted	6.5	1.9	0.25					
9	*Quercus michauxii*	Approved Mit Plan	Planted	4.1	2.7	0.25					
9	*Quercus lyrata*	Approved Mit Plan	Planted	1.6	3.6	0.25					
9	*Quercus nigra*	Approved Mit Plan	Planted	1	5.6	0.2					
9	*Platanus occidentalis*	Approved Mit Plan	Planted	3.7	4.9	0.1					
9	*Quercus shumardii*	Approved Mit Plan	Planted	5.9	4.2	0.15					
9	*Quercus shumardii*	Approved Mit Plan	Planted	8.3	3.4	0.1					
9	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	9.8	4.4	0.3					
9	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	7	5.3	0.3					
9	*Quercus rubra*	Approved Mit Plan	Planted	4	6.3	0.45					
9	*Quercus michauxii*	Approved Mit Plan	Planted	0.9	7.6	0.2					
9	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	1.1	9.3	0.4					
9	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	3.2	8.6	0.4					
9	*Quercus rubra*	Approved Mit Plan	Planted	5.5	8.2	0.5					
9	Quercus shumardii	Approved Mit Plan	Planted	9.7	7	0.15					
9	*Quercus michauxii*	Approved Mit Plan	Planted	9.7	8.3	0.45					
9	*Quercus phellos*	Approved Mit Plan	Planted	6.8	9.3	0.45					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
10	*Quercus shumardii*	Approved Mit Plan	Planted	0.5	0.5	0.5					
10	*Quercus lyrata*	Approved Mit Plan	Planted	3.4	1.2	0.4					
10	*Quercus michauxii*	Approved Mit Plan	Planted	6.1	1.8	0.55					
10	*Quercus rubra*	Approved Mit Plan	Planted	9.1	2.2	0.45					
10	*Quercus michauxii*	Approved Mit Plan	Planted	10	4	0.4					
10	*Quercus shumardii*	Approved Mit Plan	Planted	7.3	3.5	0.45					
10	*Quercus nigra*	Approved Mit Plan	Planted	4	2.9	0.4					
10	*Quercus shumardii*	Approved Mit Plan	Planted	0.8	2.2	0.5					
10	*Quercus lyrata*	Approved Mit Plan	Planted	0.3	4.1	0.5					
10	*Quercus rubra*	Approved Mit Plan	Planted	2.3	4.5	0.6					
10	*Quercus rubra*	Approved Mit Plan	Planted	4.9	5	0.6					
10	*Quercus shumardii*	Approved Mit Plan	Planted	7.7	5.6	0.6					
10	*Quercus rubra*	Approved Mit Plan	Planted	9.5	5.7	0.6					
10	*Quercus lyrata*	Approved Mit Plan	Planted	8.3	7.3	0.6					
10	*Quercus nigra*	Approved Mit Plan	Planted	5	6.9	0.25					
10	*Quercus shumardii*	Approved Mit Plan	Planted	2.2	6.4	0.6					
10	*Quercus shumardii*	Approved Mit Plan	Planted	2.7	8.1	0.55					
10	*Quercus shumardii*	Approved Mit Plan	Planted	6	8.7	0.5					
10	*Quercus shumardii*	Approved Mit Plan	Planted	9.6	9.2	0.55					
10	Quercus shumardii	Approved Mit Plan	Planted	1.5	9.7	0.6					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
11	*Betula nigra*	Approved Mit Plan	Planted	0.5	0.2	0.45					
11	*Betula nigra*	Approved Mit Plan	Planted	4.9	0.4	0.55					
11	*Quercus shumardii*	Approved Mit Plan	Planted	7.4	0.5	0.6					
11	*Quercus nigra*	Approved Mit Plan	Planted	9.8	1.4	0.1					
11	*Quercus rubra*	Approved Mit Plan	Planted	8	2.1	0.45					
11	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	4.7	3	0.3					
11	*Quercus phellos*	Approved Mit Plan	Planted	2.7	1.2	0.6					
11	*Quercus phellos*	Approved Mit Plan	Planted	0.3	2.1	0.5					
11	*Cephalanthus occidentalis*	Approved Mit Plan	Planted	1.9	3.7	0.35					
11	*Quercus phellos*	Approved Mit Plan	Planted	7.8	4.9	0.6					
11	*Quercus michauxii*	Approved Mit Plan	Planted	8.1	5.8	0.3					
11	*Quercus phellos*	Approved Mit Plan	Planted	5.5	5.7	0.6					
11	*Quercus rubra*	Approved Mit Plan	Planted	3	6.1	0.5					
11	*Quercus rubra*	Approved Mit Plan	Planted	0.4	6.3	0.5					
11	*Betula nigra*	Approved Mit Plan	Planted	2.2	7.4	0.4					
11	*Betula nigra*	Approved Mit Plan	Planted	4.6	6.9	0.45					
11	*Quercus phellos*	Approved Mit Plan	Planted	7.7	7.8	0.6					
11	*Quercus phellos*	Approved Mit Plan	Planted	4.9	8.4	0.6					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
12	*Quercus nigra*	Approved Mit Plan	Planted	0.2	0.1	0.57					
12	*Diospyros virginiana*	Approved Mit Plan	Planted	3.6	0.4	0.3					
12	*Quercus michauxii*	Approved Mit Plan	Planted	7.2	0.4	0.5					
12	*Quercus michauxii*	Approved Mit Plan	Planted	9	3.3	0.64					
12	*Quercus shumardii*	Approved Mit Plan	Planted	7	3.6	0.47					
12	*Quercus nigra*	Approved Mit Plan	Planted	4.8	3.8	0.2					
12	*Quercus nigra*	Approved Mit Plan	Planted	2.2	3.8	0.57					
12	*Quercus rubra*	Approved Mit Plan	Planted	0.5	3.9	0.49					
12	*Quercus rubra*	Approved Mit Plan	Planted	0.7	7	0.55					
12	*Diospyros virginiana*	Approved Mit Plan	Planted	2.8	7	0.57					
12	*Diospyros virginiana*	Approved Mit Plan	Planted	5.6	6.9	0.59					
12	*Diospyros virginiana*	Approved Mit Plan	Planted	8	6.9	0.51					
12	*Quercus nigra*	Approved Mit Plan	Planted	7.6	9.7	0.17					
12	*Platanus occidentalis*	Approved Mit Plan	Planted	4.3	9.6	0.22					
12	*Platanus occidentalis*	Approved Mit Plan	Planted	1.5	9.7	0.13					

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height	Map_ID
13	*Quercus nigra*	Approved Mit Plan	Planted	0.4	0.4	0.4						A
13	*Diospyros virginiana*	Approved Mit Plan	Planted	4.6	0.3	0.5						B
13	*Platanus occidentalis*	Approved Mit Plan	Planted	6.8	0.3	0.5						C
13	*Quercus phellos*	Approved Mit Plan	Planted	9.2	0.1	0.6						D
13	*Quercus shumardii*	Approved Mit Plan	Planted	9.1	1.9	0.6						E
13	*Quercus nigra*	Approved Mit Plan	Planted	6.8	1.9	0.55						F
13	*Diospyros virginiana*	Approved Mit Plan	Planted	0.5	6.4	0.4						G
13	*Diospyros virginiana*	Approved Mit Plan	Planted	2.7	6.4	0.15						H
13	*Quercus phellos*	Approved Mit Plan	Planted	4.9	6.4	0.5						I
13	*Quercus rubra*	Approved Mit Plan	Planted	7.9	6.4	0.35						J
13	*Quercus lyrata*	Approved Mit Plan	Planted	9.8	6.4	0.5						K
13	*Betula nigra*	Approved Mit Plan	Planted	9.5	8.4	0.4						L
13	*Quercus nigra*	Approved Mit Plan	Planted	6.3	8.7	0.2						M
13	*Quercus lyrata*	Approved Mit Plan	Planted	3.4	8.6	0.25						N
13	*Quercus rubra*	Approved Mit Plan	Planted	0.8	8.5	0.4						O

Plot ID	Scientific Name	Performance Standard Approval	Planted or Volunteer?	X Coordinate (m)	Y Coordinate (m)	MY0 Height (m)	MY1 Height	MY2 Height	MY3 Height	MY5 Height	MY7 Height
14	*Diospyros virginiana*	Approved Mit Plan	Planted	0.4	0.3	0.55					
14	*Quercus shumardii*	Approved Mit Plan	Planted	6.2	1.2	0.5					
14	*Platanus occidentalis*	Approved Mit Plan	Planted	4.7	2.1	0.2					
14	*Quercus nigra*	Approved Mit Plan	Planted	2.9	3.4	0.4					
14	*Quercus michauxii*	Approved Mit Plan	Planted	0.9	4.9	0.5					
14	*Platanus occidentalis*	Approved Mit Plan	Planted	1.8	6.5	0.35					
14	*Quercus lyrata*	Approved Mit Plan	Planted	3.8	5.3	0.6					
14	*Diospyros virginiana*	Approved Mit Plan	Planted	4.9	4.5	0.5					
14	*Quercus phellos*	Approved Mit Plan	Planted	5.7	3.9	0.5					
14	*Quercus nigra*	Approved Mit Plan	Planted	6.7	3	0.55					
14	*Quercus phellos*	Approved Mit Plan	Planted	7.7	2.6	0.45					
14	*Diospyros virginiana*	Approved Mit Plan	Planted	8.6	2	0.55					
14	*Quercus rubra*	Approved Mit Plan	Planted	9.4	3.8	0.4					
14	*Quercus rubra*	Approved Mit Plan	Planted	7.5	5.5	0.4					
14	*Quercus rubra*	Approved Mit Plan	Planted	5.2	6.5	0.25					
14	*Quercus nigra*	Approved Mit Plan	Planted	3	8.1	0.5					
14	*Quercus rubra*	Approved Mit Plan	Planted	0.7	9.7	0.5					
14	*Diospyros virginiana*	Approved Mit Plan	Planted	4.5	8.2	0.6					
14	*Fraxinus pennsylvanica*	Approved Mit Plan	Planted	6.1	8.5	0.4					
14	*Diospyros virginiana*	Approved Mit Plan	Planted	6.4	8.4	0.5					
14	*Diospyros virginiana*	Approved Mit Plan	Planted	7.8	7.4	0.55					
14	*Diospyros virginiana*	Approved Mit Plan	Planted	8.4	7.1	0.45					
14	*Diospyros virginiana*	Approved Mit Plan	Planted	9.8	6	0.45					
14	*Quercus phellos*	Approved Mit Plan	Planted	9.8	8.4	0.4					
14	*Diospyros virginiana*	Approved Mit Plan	Planted	8.8	9.4	0.6					

Vegetation Performance Standards Summary Table												
	Veg Plot 1 F				Veg Plot 2 F				Veg Plot 3 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	810	1.3	9	0	526	1.1	7	0	729	1.5	7	0
	Veg Plot 4 F				Veg Plot 5 F				Veg Plot 6 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	972	1.4	9	0	769	1.4	9	0	850	1.1	8	0
	Veg Plot 7 F				Veg Plot 8 F				Veg Plot 9 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	972	1.4	8	0	769	1.3	9	0	891	1.0	8	0
	Veg Plot 10 F				Veg Plot 11 F				Veg Plot 12 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	810	1.7	5	0	729	1.5	8	0	607	1.4	6	0
	Veg Plot 13 F				Veg Plot 14 F							
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives				
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	607	1.4	8	0	1012	1.5	9	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.

Visual Vegetation Assessment

Planted acerage **15.65**

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material	0.10 acres	0.00	0.0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on current MY stem count criteria.	0.10 acres	0.00	0.0%
		Total	0.00	0.0%
Areas of Poor Growth Rates	Planted areas where average height is not meeting current MY Performance Standard.	0.10 acres	0.00	0.0%
		Cumulative Total	0.00	0.0%

Easement Acreage **18.08**

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Invasives may occur outside of planted areas and within the easement and will therefore be calculated against the tital easement acreage. Include species with the potential to directly outcompete native, young, woody stems in the short-term or community structure for existing communities. Species included in summation above should be identified in report summary.	0.10 acres	0.00	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	1 Encroachment noted	

Appendix C

As-built Photos

Pickle Creek Vegetation Monitoring Plot Photos

Vegetation Plot 1 (05/24/2023)

Vegetation Plot 2 (05/24/2023)

Vegetation Plot 3 (05/24/2023)

Vegetation Plot 4 (01/10/2024)

Vegetation Plot 5 (05/24/2023)

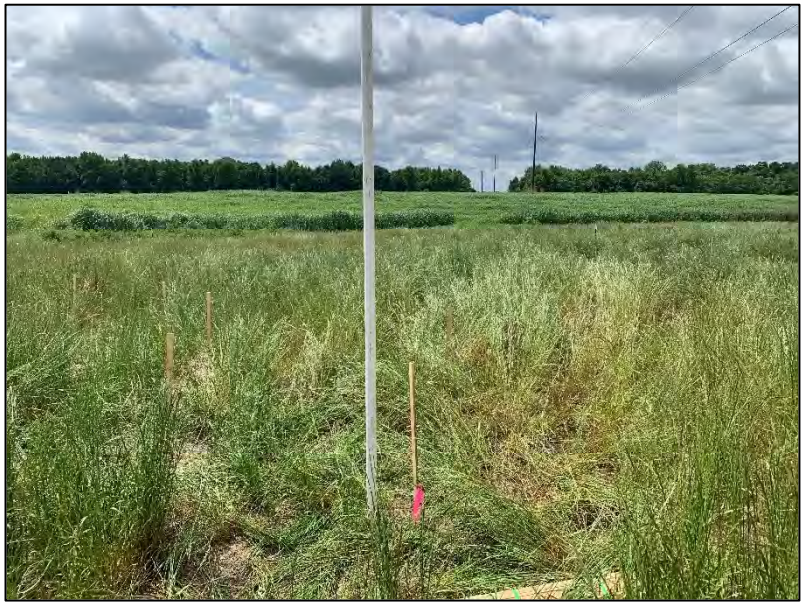
Vegetation Plot 6 (05/24/2023)

Vegetation Plot 7 (05/24/2023)

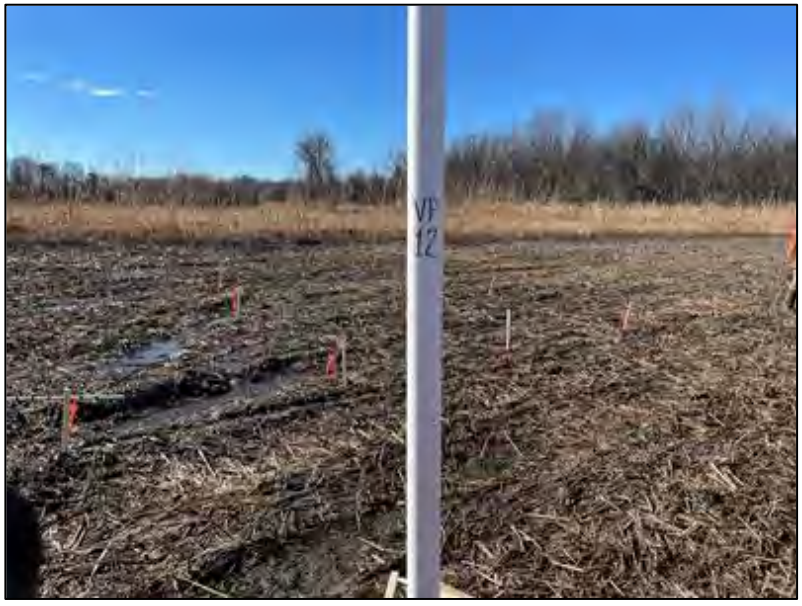
Vegetation Plot 8 (05/24/2023)

Vegetation Plot 9 (05/24/2023)

Vegetation Plot 10 (05/24/2023)

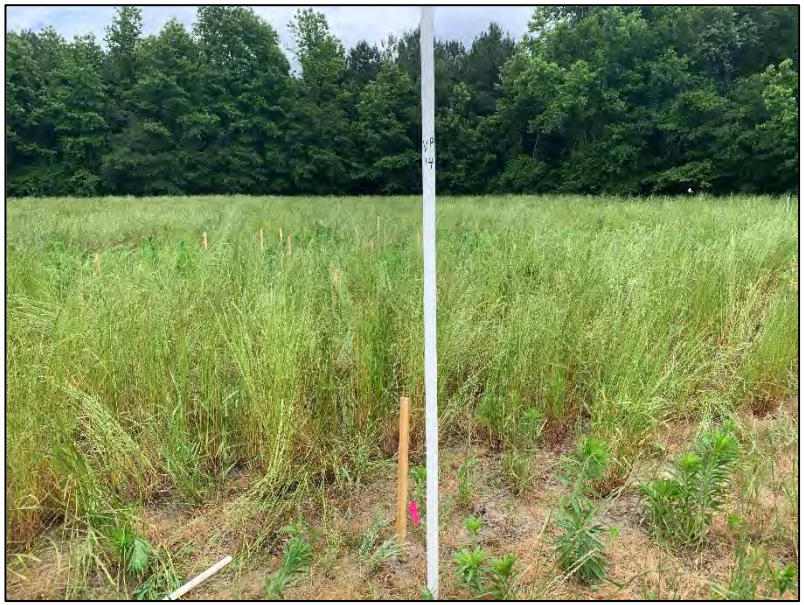


Vegetation Plot 11(05/24/2023)



Vegetation Plot 12 (01/10/2024)

Vegetation Plot 13



Vegetation Plot 14

Pickle Creek General Site Photos

First Hydrant Removed on J1

Second Hydrant Removed on J1

Easement Marker

Area of Removed Culvert

Appendix D

Waste Management Plan

Nutrient Management Plan For Animal Waste Utilization

09-27-2021

This plan has been prepared for:

Jernigan Farms
Doug Jernigan
781 Thunderswamp Road
Mount Olive, NC 28365
919-658-8729

This plan has been developed by:

Ronnie G. Kennedy Jr.
Agriment Services, Inc.
PO Box 1096
Beulaville, NC 28518
252-568-2648

Developer Signature

Type of Plan: Nitrogen Only with Manure Only

Owner/Manager/Producer Agreement

I (we) understand and agree to the specifications and the operation and maintenance procedures established in this nutrient management plan which includes an animal waste utilization plan for the farm named above. I have read and understand the Required Specifications concerning animal waste management that are included with this plan.

Signature (owner) — Date: 9/27/21

Signature (manager or producer) — Date

This plan meets the minimum standards and specifications of the U.S. Department of Agriculture - Natural Resources Conservation Service or the standard of practices adopted by the Soil and Water Conservation Commission.

Plan Approved By: Technical Specialist Signature — Date: 9/27/21

Nutrients applied in accordance with this plan will be supplied from the following source(s):

Commercial Fertilizer is not included in this plan.

S5	Swine Nursery Lagoon Liquid waste generated 764,000 gals/year by a 4,000 animal Swine Nursery Lagoon Liquid operation. This production facility has waste storage capacities of approximately 180 days.				
Estimated Pounds of Plant Available Nitrogen Generated per Year					
Broadcast	1377				
Incorporated	1653				
Injected	1653				
Irrigated	1377				
	Max. Avail. PAN (lbs)*	Actual PAN Applied (lbs)	PAN Surplus/ Deficit (lbs)	Actual Volume Applied (Gallons)	Volume Surplus/ Deficit (Gallons)
Year 1	1,377	10036	-8,659	5,567,624	-4,803,624
Year 2	1,377	10539	-9,162	5,846,545	-5,082,545

S7	Swine Feeder-Finish Lagoon Liquid waste generated 19,379,860 gals/year by a 20,906 animal Swine Finishing Lagoon Liquid operation. This production facility has waste storage capacities of approximately 180 days.				
Estimated Pounds of Plant Available Nitrogen Generated per Year					
Broadcast	34933				
Incorporated	41919				
Injected	41919				
Irrigated	34933				
	Max. Avail. PAN (lbs)*	Actual PAN Applied (lbs)	PAN Surplus/ Deficit (lbs)	Actual Volume Applied (Gallons)	Volume Surplus/ Deficit (Gallons)
Year 1	34,933	43519	-8,586	24,207,399	-4,827,539
Year 2	34,933	46355	-11,422	25,742,704	-6,362,844

Note: In source ID, S means standard source, U means user defined source.

* Max. Available PAN is calculated on the basis of the actual application method(s) identified in the plan for this source.

Narrative

9/27/2021
This plan is to update wettable acres to reflect the recalculation of pulls due to the addition of easements for the Pickle Creek Mitigation Project.

1/22/2013
This combination swine plan is based on historical yields established by Max Safley in 1997, Ronnie Kennedy in 2008, and Glenn Clifton plan done 1/30/2006. This plan should act as an emergency back-up conventional type plan in case of failure from the innovative waste system currently operating at the Jernigan Farm. This plan should act as basis and back up for combining 96-158 and 96-127. Due to the deficit noted in year two of this plan it is permissible for Mr. Jernigan too have cotton replace corn in that year on 1/4 of the total cropland in this plan. When used cotton will have an agronomic rate of 70 pounds/nitrogen/per/acre and the application windows will be March 15th - August 1. Oats may replace the wheat crop at the owner's discretion and keep the same agronomic rate however the application window will be reduced by 15 days and end at April 15th. Pulls 1 and 2 on Tract 1240 have been eliminated due to innovative waste system. Field ALT has been added as a backup field the agronomic rate shalll be 108 pounds per/acre and may be an energy grass crop or other summer annual as needed if waste management system returns to conventional agronomic and hydraulic rates.

The table shown below provides a summary of the crops or rotations included in this plan for each field. Realistic Yield estimates are also provided for each crop in the plan. In addition, the Leaching Index for each field is shown, where available.

Planned Crops Summary

Tract	Field	Total Acres	Useable Acres	Leaching Index (LI)	Soil Series	Crop Sequence	RYE
1240	1	3.55	3.55	N/A	Norfolk	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	6.5 Tons
1240	10	4.57	4.57	N/A	Kenansville	Corn, Grain	80 bu.
						Wheat, Grain	35 bu.
						Soybeans, Manured, Double Crop	25 bu.
1240	11-24	40.02	40.02	N/A	Kenansville	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	5.5 Tons
1240	25	4.95	4.95	N/A	Kenansville	Corn, Grain	80 bu.
						Wheat, Grain	35 bu.
						Soybeans, Manured, Double Crop	25 bu.
1240	26	4.96	4.96	N/A	Kenansville	Corn, Grain	80 bu.
						Wheat, Grain	35 bu.
						Soybeans, Manured, Double Crop	25 bu.
1240	27	4.48	4.48	N/A	Rains	Corn, Grain	125 bu.
						Wheat, Grain	55 bu.
						Soybeans, Manured, Double Crop	37 bu.
1240	28	2.26	2.26	N/A	Kenansville	Corn, Grain	80 bu.
						Wheat, Grain	35 bu.
						Soybeans, Manured, Double Crop	25 bu.
1240	29-33	15.74	15.74	N/A	Kenansville	Corn, Grain	80 bu.
						Wheat, Grain	35 bu.
						Soybeans, Manured, Double Crop	25 bu.
1240	34-35	6.36	6.36	N/A	Rains	Corn, Grain	125 bu.
						Wheat, Grain	55 bu.
						Soybeans, Manured, Double Crop	37 bu.
1240	36	2.63	2.63	N/A	Rains	Corn, Grain	125 bu.
						Wheat, Grain	55 bu.
						Soybeans, Manured, Double Crop	37 bu.
1240	37	1.85	1.85	N/A	Norfolk	Corn, Grain	115 bu.
						Wheat, Grain	60 bu.
						Soybeans, Manured, Double Crop	35 bu.

NOTE: Symbol * means user entered data.

Planned Crops Summary

Tract	Field	Total Acres	Useable Acres	Leaching Index (LI)	Soil Series	Crop Sequence	RYE
1240	38-39	6.51	6.51	N/A	Lynchburg	Corn, Grain	125 bu.
						Wheat, Grain	55 bu.
						Soybeans, Manured, Double Crop	39 bu.
1240	4	4.97	4.97	N/A	Wagram	Corn, Grain	75 bu.
						Wheat, Grain	40 bu.
						Soybeans, Manured, Double Crop	23 bu.
1240	42-45	15.28	15.28	N/A	Wagram	Corn, Grain	75 bu.
						Wheat, Grain	40 bu.
						Soybeans, Manured, Double Crop	23 bu.
1240	46-51	25.77	25.77	N/A	Goldsboro	Corn, Grain	130 bu.
						Wheat, Grain	65 bu.
						Soybeans, Manured, Double Crop	38 bu.
1240	5	4.71	4.71	N/A	Wagram	Corn, Grain	75 bu.
						Wheat, Grain	40 bu.
						Soybeans, Manured, Double Crop	23 bu.
1240	52-57	18.64	18.64	N/A	Wagram	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	5.5 Tons
1240	6	4.70	4.70	N/A	Norfolk	Corn, Grain	115 bu.
						Wheat, Grain	60 bu.
						Soybeans, Manured, Double Crop	35 bu.
1240	7	4.67	4.67	N/A	Norfolk	Corn, Grain	115 bu.
						Wheat, Grain	60 bu.
						Soybeans, Manured, Double Crop	35 bu.
1240	8	3.23	3.23	N/A	Norfolk	Corn, Grain	115 bu.
						Wheat, Grain	60 bu.
						Soybeans, Manured, Double Crop	35 bu.
1240	9	4.30	4.30	N/A	Kenansville	Corn, Grain	80 bu.
						Wheat, Grain	35 bu.
						Soybeans, Manured, Double Crop	25 bu.
1829	1	1.26	1.26	N/A	Kenansville	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	5.5 Tons
1829	2	17.10	17.10	N/A	Kenansville	Corn, Grain	80 bu.
						Wheat, Grain	35 bu.
						Soybeans, Manured, Double Crop	25 bu.
1829	3	4.52	4.52	N/A	Rains	Corn, Grain	125 bu.

NOTE: Symbol * means user entered data.

Planned Crops Summary

Tract	Field	Total Acres	Useable Acres	Leaching Index (LI)	Soil Series	Crop Sequence	RYE
						Wheat, Grain	55 bu.
						Soybeans, Manured, Double Crop	37 bu.
1829	4	12.71	12.71	N/A	Kenansville	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	5.5 Tons
1835	1A	5.97	5.97	N/A	Kenansville	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	5.5 Tons
1835	1B	3.32	3.32	N/A	Kenansville	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	5.5 Tons
1835	2A	4.52	4.52	N/A	Kenansville	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	5.5 Tons
1835	2B	2.83	2.83	N/A	Kenansville	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	5.5 Tons
1835	3	4.13	4.13	N/A	Kenansville	Small Grain Overseed	1.0 Tons
						Hybrid Bermudagrass Pasture	5.5 Tons
SA	Alternate	45.00	45.00	N/A	Kenansville	Sorghum-Sudan Hay	4.4 Tons

PLAN TOTALS: 285.51 285.51

LI	*Potential Leaching*	*Technical Guidance*
< 2	Low potential to contribute to soluble nutrient leaching below the root zone.	None
>= 2 & <= 10	Moderate potential to contribute to soluble nutrient leaching below the root zone.	Nutrient Management (590) should be planned.
> 10	High potential to contribute to soluble nutrient leaching below the root zone.	Nutrient Management (590) should be planned. Other conservation practices that improve the soils available water holding capacity and improve nutrient use efficiency should be considered. Examples are Cover Crops (340) to scavenge nutrients, Sod-Based Rotations (328), Long-Term No-Till (778), and edge-of-field practices such as Filter Strips (393) and Riparian Forest Buffers (391).

NOTE: Symbol * means user entered data.

The Waste Utilization table shown below summarizes the waste utilization plan for this operation. This plan provides an estimate of the number of acres of cropland needed to use the nutrients being produced. The plan requires consideration of the realistic yields of the crops to be grown, their nutrient requirements, and proper timing of applications to maximize nutrient uptake.

This table provides an estimate of the amount of nitrogen required by the crop being grown and an estimate of the nitrogen amount being supplied by manure or other by-products, commercial fertilizer and residual from previous crops. An estimate of the quantity of solid and liquid waste that will be applied on each field in order to supply the indicated quantity of nitrogen from each source is also included. A balance of the total manure produced and the total manure applied is included in the table to ensure that the plan adequately provides for the utilization of the manure generated by the operation.

Waste Utilization Table **Year 1**

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	RYE	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A) N	Comm. Fert. Nutrient Applied (lbs/A) N	Res. (lbs/A) N	Applic. Method	Manure PA NutrientApplied (lbs/A) N	Liquid ManureApplied (acre) 1000 gal/A	Solid Manure Applied (acre) Tons	Liquid Manure Applied (Field) 1000 gals	Solid Manur Applied (Field) tons
1240	1	S7	Norfolk	3.55	3.55	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	98.47	0.00
1240	1	S7	Norfolk	3.55	3.55	Hybrid Bermudagrass Pasture	6.5 Tons	3/1-9/30	222	0	0	Irrig.	222	123.16	0.00	437.22	0.00
1240	10	S7	Kenansville	4.57	4.57	Corn, Grain	80 bu.	2/15-6/30	98	0	20	Irrig.	78	43.27	0.00	197.76	0.00
1240	10	S7	Kenansville	4.57	4.57	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	102.68	0.00
1240	11-24	S7	Kenansville	40.02	40.02	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	1,110.11	0.00
1240	11-24	S7	Kenansville	40.02	40.02	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	4,484.86	0.00
1240	25	S7	Kenansville	4.95	4.95	Corn, Grain	80 bu.	2/15-6/30	98	0	20	Irrig.	78	43.27	0.00	214.20	0.00
1240	25	S7	Kenansville	4.95	4.95	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	111.22	0.00
1240	26	S7	Kenansville	4.96	4.96	Corn, Grain	80 bu.	2/15-6/30	98	0	20	Irrig.	78	43.27	0.00	214.63	0.00
1240	26	S7	Kenansville	4.96	4.96	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	111.44	0.00
1240	27	S7	Rains	4.48	4.48	Corn, Grain	125 bu.	2/15-6/30	135	0	20	Irrig.	115	63.80	0.00	285.82	0.00
1240	27	S7	Rains	4.48	4.48	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	131.73	0.00
1240	28	S7	Kenansville	2.26	2.26	Corn, Grain	80 bu.	2/15-6/30	98	0	20	Irrig.	78	43.27	0.00	97.80	0.00
1240	28	S7	Kenansville	2.26	2.26	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	50.78	0.00
1240	29-33	S7	Kenansville	15.74	15.74	Corn, Grain	80 bu.	2/15-6/30	98	0	20	Irrig.	78	43.27	0.00	681.11	0.00
1240	29-33	S7	Kenansville	15.74	15.74	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	353.66	0.00

Waste Utilization Table **Year 1**

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	RYE	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A) N	Comm. Fert. Nutrient Applied (lbs/A) N	Res. (lbs/A) N	Applic. Method	Manure PA NutrientApplied (lbs/A) N	Liquid ManureApplied (acre) 1000 gal/A	Solid Manure Applied (acre) Tons	Liquid Manure Applied (Field) 1000 gals	Solid Manur Applied (Field) tons
1240	34-35	S7	Rains	6.36	6.36	Corn, Grain	125 bu.	2/15-6/30	135	0	20	Irrig.	115	63.80	0.00	405.77	0.00
1240	34-35	S7	Rains	6.36	6.36	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	187.01	0.00
1240	36	S7	Rains	2.63	2.63	Corn, Grain	125 bu.	2/15-6/30	135	0	20	Irrig.	115	63.80	0.00	167.79	0.00
1240	36	S7	Rains	2.63	2.63	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	77.33	0.00
1240	37	S7	Norfolk	1.85	1.85	Corn, Grain	115 bu.	2/15-6/30	131	0	20	Irrig.	111	61.58	0.00	113.92	0.00
1240	37	S7	Norfolk	1.85	1.85	Wheat, Grain	60 bu.	9/1-4/30	125	0	0	Irrig.	63	34.67	0.00	64.15	0.00
1240	38-39	S7	Lynchburg	6.51	6.51	Corn, Grain	125 bu.	2/15-6/30	135	0	20	Irrig.	115	63.80	0.00	415.34	0.00
1240	38-39	S7	Lynchburg	6.51	6.51	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	191.42	0.00
1240	4	S7	Wagram	4.97	4.97	Corn, Grain	75 bu.	2/15-6/30	92	0	20	Irrig.	72	39.94	0.00	198.52	0.00
1240	4	S7	Wagram	4.97	4.97	Wheat, Grain	40 bu.	9/1-4/30	93	0	0	Irrig.	47	38.70	0.00	192.32	0.00
1240	42-45	S7	Wagram	15.28	15.28	Corn, Grain	75 bu.	2/15-6/30	92	0	20	Irrig.	72	39.94	0.00	610.35	0.00
1240	42-45	S7	Wagram	15.28	15.28	Wheat, Grain	40 bu.	9/1-4/30	93	0	0	Irrig.	47	25.80	0.00	394.18	0.00
1240	46-51	S7	Goldsboro	25.77	25.77	Corn, Grain	130 bu.	2/15-6/30	148	0	20	Irrig.	128	71.01	0.00	1,829.97	0.00
1240	46-51	S7	Goldsboro	25.77	25.77	Wheat, Grain	65 bu.	9/1-4/30	136	0	0	Irrig.	68	37.73	0.00	972.17	0.00
1240	5	S7	Wagram	4.71	4.71	Corn, Grain	75 bu.	2/15-6/30	92	0	20	Irrig.	72	39.94	0.00	188.14	0.00
1240	5	S7	Wagram	4.71	4.71	Wheat, Grain	40 bu.	9/1-4/30	93	0	0	Irrig.	47	25.80	0.00	121.51	0.00
1240	52-57	S7	Wagram	18.64	18.64	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	517.05	0.00
1240	52-57	S7	Wagram	18.64	18.64	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	2,088.90	0.00
1240	6	S7	Norfolk	4.70	4.70	Corn, Grain	115 bu.	2/15-6/30	131	0	20	Irrig.	111	61.58	0.00	289.43	0.00
1240	6	S7	Norfolk	4.70	4.70	Wheat, Grain	60 bu.	9/1-4/30	125	0	0	Irrig.	63	34.67	0.00	162.97	0.00
1240	7	S7	Norfolk	4.67	4.67	Corn, Grain	115 bu.	2/15-6/30	131	0	20	Irrig.	111	61.58	0.00	287.58	0.00
1240	7	S7	Norfolk	4.67	4.67	Wheat, Grain	60 bu.	9/1-4/30	125	0	0	Irrig.	63	34.67	0.00	161.93	0.00

Waste Utilization Table **Year 1**

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	RYE	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A) N	Comm. Fert. Nutrient Applied (lbs/A) N	Res. (lbs/A) N	Applic. Method	Manure PA NutrientApplied (lbs/A) N	Liquid ManureApplied (acre) 1000 gal/A	Solid Manure Applied (acre) Tons	Liquid Manure Applied (Field) 1000 gals	Solid Manur Applied (Field) tons
1240	8	S7	Norfolk	3.23	3.23	Corn, Grain	115 bu.	2/15-6/30	131	0	20	Irrig.	111	61.58	0.00	198.91	0.00
1240	8	S7	Norfolk	3.23	3.23	Wheat, Grain	60 bu.	9/1-4/30	125	0	0	Irrig.	63	34.67	0.00	112.00	0.00
1240	9	S7	Kenansville	4.30	4.30	Corn, Grain	80 bu.	2/15-6/30	98	0	20	Irrig.	78	43.27	0.00	186.07	0.00
1240	9	S7	Kenansville	4.30	4.30	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	96.62	0.00
1829	1	S5	Kenansville	1.26	1.26	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	34.95	0.00
1829	1	S5	Kenansville	1.26	1.26	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	141.20	0.00
1829	2	S5	Kenansville	17.10	17.10	Corn, Grain	80 bu.	2/15-6/30	98	0	20	Irrig.	78	43.27	0.00	739.96	0.00
1829	2	S5	Kenansville	17.10	17.10	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	384.21	0.00
1829	3	S5	Rains	4.52	4.52	Corn, Grain	125 bu.	2/15-6/30	135	0	20	Irrig.	115	63.80	0.00	288.37	0.00
1829	3	S5	Rains	4.52	4.52	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	132.90	0.00
1829	4	S5	Kenansville	12.71	12.71	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	352.56	0.00
1829	4	S5	Kenansville	12.71	12.71	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	1,424.35	0.00
1835	1A	S5	Kenansville	5.97	5.97	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	0	0.00	0.00	0.00	0.00
1835	1A	S5	Kenansville	5.97	5.97	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	0	0.00	0.00	0.00	0.00
1835	1B	S5	Kenansville	3.32	3.32	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	92.09	0.00
1835	1B	S5	Kenansville	3.32	3.32	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	372.06	0.00
1835	2A	S5	Kenansville	4.52	4.52	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	125.38	0.00
1835	2A	S5	Kenansville	4.52	4.52	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	506.54	0.00
1835	2B	S5	Kenansville	2.83	2.83	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	78.50	0.00
1835	2B	S5	Kenansville	2.83	2.83	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	317.15	0.00
1835	3	S5	Kenansville	4.13	4.13	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	114.56	0.00
1835	3	S5	Kenansville	4.13	4.13	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	462.83	0.00

Waste Utilization Table **Year 1**

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	RYE	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A) N	Comm. Fert. Nutrient Applied (lbs/A) N	Res. (lbs/A) N	Applic. Method	Manure PA NutrientApplied (lbs/A) N	Liquid ManureApplied (acre) 1000 gal/A	Solid Manure Applied (acre) Tons	Liquid Manure Applied (Field) 1000 gals	Solid Manur Applied (Field) tons
SA	Alternate	S7	Kenansville	45.00	45.00	Sorghum-Sudan Hay	4.4 Tons	3/15-8/31	237	0	25	Irrig.	212	117.61	0.00	5,292.59	0.00
															Total Applied, 1000 gallons	29,775.02	
															Total Produced, 1000 gallons	20,143.86	
															Balance, 1000 gallons	-9,631.16	
															Total Applied, tons		0.00
															Total Produced, tons		0.00
															Balance, tons		0.00

Notes: 1. In the tract column, ~ symbol means leased, otherwise, owned. 2. Symbol * means user entered data.

Waste Utilization Table **Year 2**

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	RYE	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A) N	Comm. Fert. Nutrient Applied (lbs/A) N	Res. (lbs/A) N	Applic. Method	Manure PA NutrientApplied (lbs/A) N	Liquid ManureApplied (acre) 1000 gal/A	Solid Manure Applied (acre) Tons	Liquid Manure Applied (Field) 1000 gals	Solid Manur Applied (Field) tons
1240	1	S7	Norfolk	3.55	3.55	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	98.47	0.00
1240	1	S7	Norfolk	3.55	3.55	Hybrid Bermudagrass Pasture	6.5 Tons	3/1-9/30	222	0	0	Irrig.	222	123.16	0.00	437.22	0.00
1240	10	S7	Kenansville	4.57	4.57	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	102.68	0.00
1240	10	S7	Kenansville	4.57	4.57	Soybeans, Manured, Double Crop	25 bu.	4/1-9/15	100	0	0	Irrig.	100	55.48	0.00	253.53	0.00
1240	11-24	S7	Kenansville	40.02	40.02	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	1,110.11	0.00
1240	11-24	S7	Kenansville	40.02	40.02	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	4,484.86	0.00
1240	25	S7	Kenansville	4.95	4.95	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	111.22	0.00
1240	25	S7	Kenansville	4.95	4.95	Soybeans, Manured, Double Crop	25 bu.	4/1-9/15	100	0	0	Irrig.	100	55.48	0.00	274.62	0.00
1240	26	S7	Kenansville	4.96	4.96	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	111.44	0.00
1240	26	S7	Kenansville	4.96	4.96	Soybeans, Manured, Double Crop	25 bu.	4/1-9/15	100	0	0	Irrig.	100	55.48	0.00	275.17	0.00
1240	27	S7	Rains	4.48	4.48	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	131.73	0.00
1240	27	S7	Rains	4.48	4.48	Soybeans, Manured, Double Crop	37 bu.	4/1-9/15	143	0	0	Irrig.	143	79.33	0.00	355.41	0.00
1240	28	S7	Kenansville	2.26	2.26	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	50.78	0.00
1240	28	S7	Kenansville	2.26	2.26	Soybeans, Manured, Double Crop	25 bu.	4/1-9/15	100	0	0	Irrig.	100	55.48	0.00	125.38	0.00
1240	29-33	S7	Kenansville	15.74	15.74	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	353.66	0.00
1240	29-33	S7	Kenansville	15.74	15.74	Soybeans, Manured, Double Crop	25 bu.	4/1-9/15	100	0	0	Irrig.	100	55.48	0.00	873.22	0.00
1240	34-35	S7	Rains	6.36	6.36	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	187.01	0.00
1240	34-35	S7	Rains	6.36	6.36	Soybeans, Manured, Double Crop	37 bu.	4/1-9/15	143	0	0	Irrig.	143	79.33	0.00	504.56	0.00
1240	36	S7	Rains	2.63	2.63	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	77.33	0.00
1240	36	S7	Rains	2.63	2.63	Soybeans, Manured, Double Crop	37 bu.	4/1-9/15	143	0	0	Irrig.	143	79.33	0.00	208.65	0.00
1240	37	S7	Norfolk	1.85	1.85	Wheat, Grain	60 bu.	9/1-4/30	125	0	0	Irrig.	63	34.67	0.00	64.15	0.00
1240	37	S7	Norfolk	1.85	1.85	Soybeans, Manured, Double Crop	35 bu.	4/1-9/15	137	0	0	Irrig.	137	76.01	0.00	140.61	0.00

Waste Utilization Table **Year 2**

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	RYE	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A) N	Comm. Fert. Nutrient Applied (lbs/A) N	Res. (lbs/A) N	Applic. Method	Manure PA NutrientApplied (lbs/A) N	Liquid ManureApplied (acre) 1000 gal/A	Solid Manure Applied (acre) Tons	Liquid Manure Applied (Field) 1000 gals	Solid Manur Applied (Field) tons
1240	38-39	S7	Lynchburg	6.51	6.51	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	191.42	0.00
1240	38-39	S7	Lynchburg	6.51	6.51	Soybeans, Manured, Double Crop	39 bu.	4/1-9/15	151	0	0	Irrig.	151	83.77	0.00	545.35	0.00
1240	4	S7	Wagram	4.97	4.97	Wheat, Grain	40 bu.	9/1-4/30	93	0	0	Irrig.	47	30.96	0.00	153.85	0.00
1240	4	S7	Wagram	4.97	4.97	Soybeans, Manured, Double Crop	23 bu.	4/1-9/15	92	0	0	Irrig.	92	51.04	0.00	253.67	0.00
1240	42-45	S7	Wagram	15.28	15.28	Wheat, Grain	40 bu.	9/1-4/30	93	0	0	Irrig.	47	25.80	0.00	394.18	0.00
1240	42-45	S7	Wagram	15.28	15.28	Soybeans, Manured, Double Crop	23 bu.	4/1-9/15	92	0	0	Irrig.	92	51.04	0.00	779.89	0.00
1240	46-51	S7	Goldsboro	25.77	25.77	Wheat, Grain	65 bu.	9/1-4/30	136	0	0	Irrig.	68	37.73	0.00	972.17	0.00
1240	46-51	S7	Goldsboro	25.77	25.77	Soybeans, Manured, Double Crop	38 bu.	4/1-9/15	149	0	0	Irrig.	149	82.66	0.00	2,130.20	0.00
1240	5	S7	Wagram	4.71	4.71	Wheat, Grain	40 bu.	9/1-4/30	93	0	0	Irrig.	47	25.80	0.00	121.51	0.00
1240	5	S7	Wagram	4.71	4.71	Soybeans, Manured, Double Crop	23 bu.	4/1-9/15	92	0	0	Irrig.	92	51.04	0.00	240.40	0.00
1240	52-57	S7	Wagram	18.64	18.64	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	517.05	0.00
1240	52-57	S7	Wagram	18.64	18.64	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	2,088.90	0.00
1240	6	S7	Norfolk	4.70	4.70	Wheat, Grain	60 bu.	9/1-4/30	125	0	0	Irrig.	63	34.67	0.00	162.97	0.00
1240	6	S7	Norfolk	4.70	4.70	Soybeans, Manured, Double Crop	35 bu.	4/1-9/15	137	0	0	Irrig.	137	76.01	0.00	357.22	0.00
1240	7	S7	Norfolk	4.67	4.67	Wheat, Grain	60 bu.	9/1-4/30	125	0	0	Irrig.	63	34.67	0.00	161.93	0.00
1240	7	S7	Norfolk	4.67	4.67	Soybeans, Manured, Double Crop	35 bu.	4/1-9/15	137	0	0	Irrig.	137	76.01	0.00	354.94	0.00
1240	8	S7	Norfolk	3.23	3.23	Wheat, Grain	60 bu.	9/1-4/30	125	0	0	Irrig.	63	34.67	0.00	112.00	0.00
1240	8	S7	Norfolk	3.23	3.23	Soybeans, Manured, Double Crop	35 bu.	4/1-9/15	137	0	0	Irrig.	137	76.01	0.00	245.50	0.00
1240	9	S7	Kenansville	4.30	4.30	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	96.62	0.00
1240	9	S7	Kenansville	4.30	4.30	Soybeans, Manured, Double Crop	25 bu.	4/1-9/15	100	0	0	Irrig.	100	55.48	0.00	238.56	0.00
1829	1	S5	Kenansville	1.26	1.26	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	34.95	0.00
1829	1	S5	Kenansville	1.26	1.26	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	141.20	0.00

Waste Utilization Table **Year 2**

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	RYE	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A) N	Comm. Fert. Nutrient Applied (lbs/A) N	Res. (lbs/A) N	Applic. Method	Manure PA NutrientApplied (lbs/A) N	Liquid ManureApplied (acre) 1000 gal/A	Solid Manure Applied (acre) Tons	Liquid Manure Applied (Field) 1000 gals	Solid Manur Applied (Field) tons
1829	2	S5	Kenansville	17.10	17.10	Wheat, Grain	35 bu.	9/1-4/30	81	0	0	Irrig.	41	22.47	0.00	384.21	0.00
1829	2	S5	Kenansville	17.10	17.10	Soybeans, Manured, Double Crop	25 bu.	4/1-9/15	100	0	0	Irrig.	100	55.48	0.00	948.67	0.00
1829	3	S5	Rains	4.52	4.52	Wheat, Grain	55 bu.	9/1-4/30	106	0	0	Irrig.	53	29.40	0.00	132.90	0.00
1829	3	S5	Rains	4.52	4.52	Soybeans, Manured, Double Crop	37 bu.	4/1-9/15	143	0	0	Irrig.	143	79.33	0.00	358.59	0.00
1829	4	S5	Kenansville	12.71	12.71	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	352.56	0.00
1829	4	S5	Kenansville	12.71	12.71	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	1,424.35	0.00
1835	1A	S5	Kenansville	5.97	5.97	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	0	0.00	0.00	0.00	0.00
1835	1A	S5	Kenansville	5.97	5.97	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	0	0.00	0.00	0.00	0.00
1835	1B	S5	Kenansville	3.32	3.32	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	92.09	0.00
1835	1B	S5	Kenansville	3.32	3.32	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	372.06	0.00
1835	2A	S5	Kenansville	4.52	4.52	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	125.38	0.00
1835	2A	S5	Kenansville	4.52	4.52	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	506.54	0.00
1835	2B	S5	Kenansville	2.83	2.83	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	78.50	0.00
1835	2B	S5	Kenansville	2.83	2.83	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	317.15	0.00
1835	3	S5	Kenansville	4.13	4.13	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	Irrig.	50	27.74	0.00	114.56	0.00
1835	3	S5	Kenansville	4.13	4.13	Hybrid Bermudagrass Pasture	5.5 Tons	3/1-9/30	202	0	0	Irrig.	202	112.07	0.00	462.83	0.00
SA	Alternate	S7	Kenansville	45.00	45.00	Sorghum-Sudan Hay	4.4 Tons	3/15-8/31	237	0	25	Irrig.	212	117.61	0.00	5,292.59	0.00
															Total Applied, 1000 gallons	31,589.25	
															Total Produced, 1000 gallons	20,143.86	
															Balance, 1000 gallons	-11,445.39	
															Total Applied, tons		0.00
															Total Produced, tons		0.00
															Balance, tons		0.00

Notes: 1. In the tract column, ~ symbol means leased, otherwise, owned. 2. Symbol * means user entered data.

The Irrigation Application Factors for each field in this plan are shown in the following table. Infiltration rate varies with soils. If applying waste nutrients through an irrigation system, you must apply at a rate that will not result in runoff. This table provides the maximum application rate per hour that may be applied to each field selected to receive wastewater. It also lists the maximum application amount that each field may receive in any one application event.

Irrigation Application Factors

Tract	Field	Soil Series	Application Rate (inches/hour)	Application Amount (inches)
1240	1	Norfolk	0.50	1.0
1240	10	Kenansville	0.60	1.0
1240	11-24	Kenansville	0.60	1.0
1240	25	Kenansville	0.60	1.0
1240	26	Kenansville	0.60	1.0
1240	27	Rains	0.40	1.0
1240	28	Kenansville	0.60	1.0
1240	29-33	Kenansville	0.60	1.0
1240	34-35	Rains	0.40	1.0
1240	36	Rains	0.40	1.0
1240	37	Norfolk	0.50	1.0
1240	38-39	Lynchburg	0.50	1.0
1240	4	Wagram	0.60	1.0
1240	42-45	Wagram	0.60	1.0
1240	46-51	Goldsboro	0.50	1.0
1240	5	Wagram	0.60	1.0
1240	52-57	Wagram	0.60	1.0
1240	6	Norfolk	0.50	1.0
1240	7	Norfolk	0.50	1.0
1240	8	Norfolk	0.50	1.0
1240	9	Kenansville	0.60	1.0
1829	1	Kenansville	0.60	1.0
1829	2	Kenansville	0.60	1.0
1829	3	Rains	0.40	1.0
1829	4	Kenansville	0.60	1.0
1835	1A	Kenansville	0.60	1.0
1835	1B	Kenansville	0.60	1.0
1835	2A	Kenansville	0.60	1.0
1835	2B	Kenansville	0.60	1.0
1835	3	Kenansville	0.60	1.0
SA	Alternate	Kenansville	0.60	1.0

NOTE: Symbol * means user entered data.

The following Lagoon Sludge Nitrogen Utilization table provides an estimate of the number of acres needed for sludge utilization for the indicated accumulation period. These estimates are based on average nitrogen concentrations for each source, the number of animals in the facility and the plant available nitrogen application rates shown in the second column.

Lagoon sludge contains nutrients and organic matter remaining after treatment and application of the effluent. At clean out, this material must be utilized for crop production and applied at agronomic rates. In most cases, the priority nutrient is nitrogen but other nutrients including phosphorous, copper and zinc can also be limiting. Since nutrient levels are generally very high, application of sludge must be carefully applied.

Sites must first be evaluated for their suitability for sludge application. Ideally, effluent spray fields should not be used for sludge application. If this is not possible, care should be taken not to load effluent application fields with high amounts of copper and zinc so that additional effluent cannot be applied. On sites vulnerable to surface water moving to streams and lakes, phosphorous is a concern. Soils containing very high phosphorous levels may also be a concern.

Lagoon Sludge Nitrogen Utilization Table

Crop	Maximum PA-N Rate lb/ac	Maximum Sludge Application Rate 1000 gal/ac	Minimum Acres 5 Years Accumulation	Minimum Acres 10 Years Accumulation	Minimum Acres 15 Years Accumulation
Swine Nursery Lagoon Sludge - Standard					
Corn 120 bu	150	14.69	9.12	18.25	27.37
Hay 6 ton R.Y.E.	300	29.38	4.56	9.12	13.68
Soybean 40 bu	160	15.67	8.55	17.11	25.66
Swine Feeder-Finish Lagoon Sludge - Standard					
Corn 120 bu	150	14.69	234.84	469.68	704.53
Hay 6 ton R.Y.E.	300	29.38	117.42	234.84	352.26
Soybean 40 bu	160	15.67	220.16	440.33	660.49

The Available Waste Storage Capacity table provides an estimate of the number of days of storage capacity available at the end of each month of the plan. Available storage capacity is calculated as the design storage capacity in days minus the number of days of net storage volume accumulated. The start date is a value entered by the user and is defined as the date prior to applying nutrients to the first crop in the plan at which storage volume in the lagoon or holding pond is equal to zero.

Available storage capacity should be greater than or equal to zero and less than or equal to the design storage capacity of the facility. If the available storage capacity is greater than the design storage capacity, this indicates that the plan calls for the application of nutrients that have not yet accumulated. If available storage capacity is negative, the estimated volume of accumulated waste exceeds the design storage volume of the structure. Either of these situations indicates that the planned application interval in the waste utilization plan is inconsistent with the structure's temporary storage capacity.

Available Waste Storage Capacity

Source Name	Swine Feeder-Finish Lagoon Liquid	**Design Storage Capacity (Days)**
Start Date	9/1	180
Plan Year	Month	Available Storage Capacity (Days) *
1	1	51
1	2	54
1	3	80
1	4	110
1	5	144
1	6	180
1	7	180
1	8	180
1	9	177
1	10	169
1	11	159
1	12	154
2	1	143
2	2	141
2	3	155
2	4	180
2	5	180
2	6	180
2	7	180
2	8	180
2	9	179
2	10	151
2	11	128
2	12	104

* Available Storage Capacity is calculated as of the end of each month.

Available Waste Storage Capacity

Source Name	Swine Nursery Lagoon Liquid	Design Storage Capacity (Days)
Start Date	9/1	180
Plan Year	Month	Available Storage Capacity (Days) *
1	1	180
1	2	180
1	3	180
1	4	180
1	5	180
1	6	180
1	7	180
1	8	180
1	9	180
1	10	180
1	11	180
1	12	180
2	1	180
2	2	180
2	3	180
2	4	180
2	5	180
2	6	180
2	7	180
2	8	180
2	9	180
2	10	180
2	11	180
2	12	180

* Available Storage Capacity is calculated as of the end of each month.

Required Specifications For Animal Waste Management

1. **Animal waste shall not reach surface waters of the state by runoff, drift, manmade conveyances, direct application, or direct discharge during operation or land application. Any discharge of waste that reaches surface water is prohibited.**

2. **There must be documentation in the design folder that the producer either owns or has an agreement for use of adequate land on which to properly apply the waste. If the producer does not own adequate land to properly dispose of the waste, he/she shall provide evidence of an agreement with a landowner, who is within a reasonable proximity, allowing him/her the use of the land for waste application. It is the responsibility of the owner of the waste production facility to secure an update of the Nutrient Management Plan when there is a change in the operation, increase in the number of animals, method of application, receiving crop type, or available land.**

3. **Animal waste shall be applied to meet, but not exceed, the nitrogen needs for realistic crop yields based upon soil type, available moisture, historical data, climatic conditions, and level of management, unless there are regulations that restrict the rate of applications for other nutrients.**

4. **Animal waste shall be applied to land eroding less than 5 tons per acre per year. Waste may be applied to land eroding at more than 5 tons per acre per year but less than 10 tons per acre per year provided grass filter strips are installed where runoff leaves the field (see USDA, NRCS Field Office Technical Guide Standard 393 - Filter Strips).**

5. **Odors can be reduced by injecting the waste or by disking after waste application. Waste should not be applied when there is danger of drift from the land application field.**

6. **When animal waste is to be applied on acres subject to flooding, waste will be soil incorporated on conventionally tilled cropland. When waste is applied to conservation tilled crops or grassland, the waste may be broadcast provided the application does not occur during a season prone to flooding (see "Weather and Climate in North Carolina" for guidance).**

7. **Liquid waste shall be applied at rates not to exceed the soil infiltration rate such that runoff does not occur offsite or to surface waters and in a method which does not cause drift from the site during application. No ponding should occur in order to control odor and flies.**

8. **Animal waste shall not be applied to saturated soils, during rainfall events, or when the soil surface is frozen.**

9. **Animal waste shall be applied on actively growing crops in such a manner that the crop is not covered with waste to a depth that would inhibit growth. The potential for salt damage from animal waste should also be considered.**

10. **Nutrients from waste shall not be applied in fall or winter for spring planted crops on soils with a high potential for leaching. Waste/nutrient loading rates on these soils should be held to a minimum and a suitable winter cover crop planted to take up released nutrients. Waste shall not be applied more than 30 days prior to planting of the crop or forages breaking dormancy.**

11. **Any new swine facility sited on or after October 1, 1995 shall comply with the following: The outer perimeter of the land area onto which waste is applied from a lagoon that is a component of a swine farm shall be at least 50 feet from any residential property boundary and canal. Animal waste, other than swine waste from facilities sited on or after October 1, 1995, shall not be applied closer that 25 feet to perennial waters.**

12. **Animal waste shall not be applied closer than 100 feet to wells.**

13. **Animal waste shall not be applied closer than 200 feet of dwellings other than those owned by the landowner.**

14. **Waste shall be applied in a manner not to reach other property and public right-of-ways.**

15. **Animal waste shall not be discharged into surface waters, drainageways, or wetlands by a discharge or by over-spraying. Animal waste may be applied to prior converted cropland provided the fields have been approved as a land application site by a "technical specialist". Animal waste shall not be applied on grassed waterways that discharge directly into water courses, and on other grassed waterways, waste shall be applied at agronomic rates in a manner that causes no runoff or drift from the site.**

16. **Domestic and industrial waste from washdown facilities, showers, toilets, sinks, etc., shall not be discharged into the animal waste management system.**

17. **A protective cover of appropriate vegetation will be established on all disturbed areas (lagoon embankments, berms, pipe runs, etc.). Areas shall be fenced, as necessary, to protect the vegetation. Vegetation such as trees, shrubs, and other woody species, etc., are limited to areas where considered appropriate. Lagoon areas should be kept mowed and accessible. Berms and structures should be inspected regularly for evidence of erosion, leakage, or discharge.**

18. **If animal production at the facility is to be suspended or terminated, the owner is responsible for obtaining and implementing a "closure plan" which will eliminate the possibility of an illegal discharge, pollution, and erosion.**

19. **Waste handling structures, piping, pumps, reels, etc., should be inspected on a regular basis to prevent breakdowns, leaks, and spills. A regular maintenance checklist should be kept on site.**

20. **Animal waste can be used in a rotation that includes vegetables and other crops for direct human consumption. However, if animal waste is used on crops for direct human consumption, it should only be applied pre-plant with no further applications of animal waste during the crop season.**

21. **Highly visible markers shall be installed to mark the top and bottom elevations of the temporary storage (pumping volume) of all waste treatment lagoons. Pumping shall be managed to maintain the liquid level between the markers. A marker will be required to mark the maximum storage volume for waste storage ponds.**

22. **Waste shall be tested within 60 days of utilization and soil shall be tested at least annually at crop sites where waste products are applied. Nitrogen shall be the rate-determining nutrient, unless other restrictions require waste to be applied based on other nutrients, resulting in a lower application rate than a nitrogen based rate. Zinc and copper levels in the soils shall be monitored and alternative crop sites shall be used when these metals approach excessive levels. pH shall be adjusted and maintained for optimum crop production. Soil and waste analysis records shall be kept for a minimum of five years. Poultry dry waste application records shall be maintained for a minimum of three years. Waste application records for all other waste shall be maintained for five (5) years.**

23. **Dead animals will be disposed of in a manner that meets North Carolina regulations.**

Crop Notes

The following crop note applies to field(s): 27, 3, 34-35, 36

Corn 1: CP, Mineral Soil, low-leachable
In the Coastal Plain, corn is normally planted when soil temperatures reach 52 to 55 degrees fahrenheit. Review the Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 1-2" deep. Plant populations should be determined by the hybrid being planted. Increase the seeding rate by 10% when planting no-till. Phosphorus and potassium recommended by a soil test can be broadcast or banded at planting. When planting early in cool, wet soil, banded phosphorus will be more available to the young plants. An accepted practice is to apply 20-30 lbs/acre N and 20-30 lbs/acre phosphorus banded as a starter and one-half the remaining N behind the planter. The rest of the N should be applied about 30-40 days after emergence. The total amount of N is dependent on soil type. When including a starter in the fertilizer program, the recommended potassium and any additional phosphorus is normally broadcast at planting. Plant samples can be analyzed during the growing season to monitor the overall nutrient status of the corn. Timely management of weeds and insects are essential for corn production.

The following crop note applies to field(s): 38-39

Corn 1: CP, Mineral Soil, low-leachable
In the Coastal Plain, corn is normally planted when soil temperatures reach 52 to 55 degrees fahrenheit. Review the Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 1-2" deep. Plant populations should be determined by the hybrid being planted. Increase the seeding rate by 10% when planting no-till. Phosphorus and potassium recommended by a soil test can be broadcast or banded at planting. When planting early in cool, wet soil, banded phosphorus will be more available to the young plants. An accepted practice is to apply 20-30 lbs/acre N and 20-30 lbs/acre phosphorus banded as a starter and one-half the remaining N behind the planter. The rest of the N should be applied about 30-40 days after emergence. The total amount of N is dependent on soil type. When including a starter in the fertilizer program, the recommended potassium and any additional phosphorus is normally broadcast at planting. Plant samples can be analyzed during the growing season to monitor the overall nutrient status of the corn. Timely management of weeds and insects are essential for corn production.

The following crop note applies to field(s): 46-51

Corn 1: CP, Mineral Soil, low-leachable
In the Coastal Plain, corn is normally planted when soil temperatures reach 52 to 55 degrees fahrenheit. Review the Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 1-2" deep. Plant populations should be determined by the hybrid being planted. Increase the seeding rate by 10% when planting no-till. Phosphorus and potassium recommended by a soil test can be broadcast or banded at planting. When planting early in cool, wet soil, banded phosphorus will be more available to the young plants. An accepted practice is to apply 20-30 lbs/acre N and 20-30 lbs/acre phosphorus banded as a starter and one-half the remaining N behind the planter. The rest of the N should be applied about 30-40 days after emergence. The total amount of N is dependent on soil type. When including a starter in the fertilizer program, the recommended potassium and any additional phosphorus is normally broadcast at planting. Plant samples can be analyzed during the growing season to monitor the overall nutrient status of the corn. Timely management of weeds and insects are essential for corn production.

The following crop note applies to field(s): 37, 6, 7, 8

Corn: CP, Mineral Soil, medium leaching
In the Coastal Plain, corn is normally planted when soil temperatures reach 52 to 55 degrees fahrenheit. Review the Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 1-2" deep. Plant populations should be determined by the hybrid being planted. Increase the seeding rate by 10% when planting no-till. Phosphorus and potassium recommended by a soil test can be broadcast or banded at planting. When planting early in cool, wet soil, banded phosphorus will be more available to the young plants. An accepted practice is to apply 20-30 lbs/acre N and 20-30 lbs/acre phosphorus banded as a starter and one-half the remaining N behind the planter. The rest of the N should be applied about 30-40 days after emergence. The total amount of N is dependent on soil type. When including a starter in the fertilizer program, the recommended potassium and any additional phosphorus is normally broadcast at planting. Plant samples can be analyzed during the growing season to monitor the overall nutrient status of the corn. Timely management of weeds and insects are essential for corn production.

The following crop note applies to field(s): 10, 2, 25, 26, 28, 29-33, 4, 42-45, 5, 9

Corn: CP, Mineral Soil, medium leaching
In the Coastal Plain, corn is normally planted when soil temperatures reach 52 to 55 degrees fahrenheit. Review the Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 1-2" deep. Plant populations should be determined by the hybrid being planted. Increase the seeding rate by 10% when planting no-till. Phosphorus and potassium recommended by a soil test can be broadcast or banded at planting. When planting early in cool, wet soil, banded phosphorus will be more available to the young plants. An accepted practice is to apply 20-30 lbs/acre N and 20-30 lbs/acre phosphorus banded as a starter and one-half the remaining N behind the planter. The rest of the N should be applied about 30-40 days after emergence. The total amount of N is dependent on soil type. When including a starter in the fertilizer program, the recommended potassium and any additional phosphorus is normally broadcast at planting. Plant samples can be analyzed during the growing season to monitor the overall nutrient status of the corn. Timely management of weeds and insects are essential for corn production.

The following crop note applies to field(s): 1

Small Grain: CP, Mineral Soil, medium leachable

In the Coastal Plain, oats and barley should be planted from October 15-October 30; and rye from October 15-November 20. For barley, plant 22 seed/drill row foot and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Oats should be planted at 2 bushels/acre and rye at 1-1 1/2 bushels/acre. Plant all these small grains at 1-1 1/2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test can also be applied at this time. The remaining N should be applied during the months of February-March.

The following crop note applies to field(s): 1, 11-24, 1A, 1B, 2A, 2B, 3, 4, 52-57

Small Grain: CP, Mineral Soil, medium leachable

In the Coastal Plain, oats and barley should be planted from October 15-October 30; and rye from October 15-November 20. For barley, plant 22 seed/drill row foot and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Oats should be planted at 2 bushels/acre and rye at 1-1 1/2 bushels/acre. Plant all these small grains at 1-1 1/2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test can also be applied at this time. The remaining N should be applied during the months of February-March.

The following crop note applies to field(s): 1

Bermudagrass: CP, Mineral Soil, Moderately Well Drained.

Adaptation: Well-adapted.

In the Coastal Plain, hybrid bermudagrass sprigs can be planted Mar. 1 to Mar. 31. Cover sprigs 1" to 3" deep (1.5" optimal). Sprigs should be planted quickly after digging and not allowed to dry in sun and wind. For Coastal and Tifton 78 plant at least 10 bu/ac in 3' rows, spaced 2' to 3' in the row. Generally a rate of 30 bu/ac is satisfactory to produce full groundcover in one or two years under good growing conditions. Tifton 44 spreads slowly, so use at least 40 bu/ac in 1.5' to 2' rows spaced 1' to 1.5' in row. For broadcast/disked-in sprigs use about 60 bu/ac. Soil test for the amounts of lime, phosphorus, potassium and micronutrients to apply preplant and for annual maintenance. Apply 60 to 100 lb/ac N in the establishment year in split applications in April and July. For established stands apply 180 to 240 lb/ac N annually in split applications, usually in April and following the first and second hay cuts. Reduce N rates by 25% for grazing. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for more information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): 1, 11-24, 1A, 1B, 2A, 2B, 3, 4, 52-57

Bermudagrass: CP, Mineral Soil, Moderately Well Drained.

Adaptation: Well-adapted.

In the Coastal Plain, hybrid bermudagrass sprigs can be planted Mar. 1 to Mar. 31. Cover sprigs 1" to 3" deep (1.5" optimal). Sprigs should be planted quickly after digging and not allowed to dry in sun and wind. For Coastal and Tifton 78 plant at least 10 bu/ac in 3' rows, spaced 2' to 3' in the row. Generally a rate of 30 bu/ac is satisfactory to produce full groundcover in one or two years under good growing conditions. Tifton 44 spreads slowly, so use at least 40 bu/ac in 1.5' to 2' rows spaced 1' to 1.5' in row. For broadcast/disked-in sprigs use about 60 bu/ac. Soil test for the amounts of lime, phosphorus, potassium and micronutrients to apply preplant and for annual maintenance. Apply 60 to 100 lb/ac N in the establishment year in split applications in April and July. For established stands apply 180 to 240 lb/ac N annually in split applications, usually in April and following the first and second hay cuts. Reduce N rates by 25% for grazing. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for more information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): 27, 3, 34-35, 36

Wheat: Coastal Plain, Mineral Soil, low-leachable

In the Coastal Plain, wheat should be planted from October 20-November 25. Plant 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the wheat is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test can also be applied at this time. The remaining N should be applied during the months of February-March. The total N is dependent on the soil type. Plant samples can be analyzed during the growing season to monitor the nutrient status of the wheat. Timely management of diseases, insects and weeds are essential for profitable wheat production.

The following crop note applies to field(s): 38-39

Wheat: Coastal Plain, Mineral Soil, low-leachable

In the Coastal Plain, wheat should be planted from October 20-November 25. Plant 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the wheat is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test can also be applied at this time. The remaining N should be applied during the months of February-March. The total N is dependent on the soil type. Plant samples can be analyzed during the growing season to monitor the nutrient status of the wheat. Timely management of diseases, insects and weeds are essential for profitable wheat production.

The following crop note applies to field(s): 46-51

Wheat: Coastal Plain, Mineral Soil, low-leachable

In the Coastal Plain, wheat should be planted from October 20-November 25. Plant 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the wheat is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test can also be applied at this time. The remaining N should be applied during the months of February-March. The total N is dependent on the soil type. Plant samples can be analyzed during the growing season to monitor the nutrient status of the wheat. Timely management of diseases, insects and weeds are essential for profitable wheat production.

The following crop note applies to field(s): 37, 6, 7, 8

Wheat: Coastal Plain, Mineral Soil, medium leachable

In the Coastal Plain, wheat should be planted from October 20-November 25. Plant 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the wheat is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test report can also be applied at this time. The remaining N should be applied during the months of February-March. The total N is dependent on the soil type. Plant samples can be analyzed during the growing season to monitor the nutrient status of the wheat. Timely management of diseases, insects and weeds are essential for profitable wheat production.

The following crop note applies to field(s): 10, 2, 25, 26, 28, 29-33, 4, 42-45, 5, 9

Wheat: Coastal Plain, Mineral Soil, medium leachable

In the Coastal Plain, wheat should be planted from October 20-November 25. Plant 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the wheat is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test report can also be applied at this time. The remaining N should be applied during the months of February-March. The total N is dependent on the soil type. Plant samples can be analyzed during the growing season to monitor the nutrient status of the wheat. Timely management of diseases, insects and weeds are essential for profitable wheat production.

The following crop note applies to field(s): 27, 3, 34-35, 36

Double-Crop Soybeans, Coastal Plain: Mineral Soil, low-leachable

Double-crop soybeans should be planted as early in June as possible with planting completed by July 4th. When no-tilling soybeans in small grain straw, it is essential to manage the straw to achieve adequate plant populations. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 2-4 seed/row foot for 7-8" drills; 4-6 seed/row foot for 15" rows; 6-8 seed/row foot for 30" rows and 8-10 seed/row foot for 36" rows. Increase the seeding rate by at least 10% for no-till planting. Seeding depth should be 1-1 1/2" and adequate depth control is essential. Phosphorus and potash recommended for the soybeans can be applied to the wheat in the Fall. Soybeans produce their own nitrogen and are normally grown without additions of nitrogen. However, applications of 20-30 lbs/acre N are sometimes made at planting to promote early growth and vigor. Tissue samples can be analyzed during the growing season to monitor the overall nutrient status of the soybeans. Timely management of weeds and insects is essential for profitable double crop soybean production.

The following crop note applies to field(s): 38-39

Double-Crop Soybeans, Coastal Plain: Mineral Soil, low-leachable

Double-crop soybeans should be planted as early in June as possible with planting completed by July 4th. When no-tilling soybeans in small grain straw, it is essential to manage the straw to achieve adequate plant populations. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 2-4 seed/row foot for 7-8" drills; 4-6 seed/row foot for 15" rows; 6-8 seed/row foot for 30" rows and 8-10 seed/row foot for 36" rows. Increase the seeding rate by at least 10% for no-till planting. Seeding depth should be 1-1 1/2" and adequate depth control is essential. Phosphorus and potash recommended for the soybeans can be applied to the wheat in the Fall. Soybeans produce their own nitrogen and are normally grown without additions of nitrogen. However, applications of 20-30 lbs/acre N are sometimes made at planting to promote early growth and vigor. Tissue samples can be analyzed during the growing season to monitor the overall nutrient status of the soybeans. Timely management of weeds and insects is essential for profitable double crop soybean production.

The following crop note applies to field(s): 46-51

Double-Crop Soybeans, Coastal Plain: Mineral Soil, low-leachable

Double-crop soybeans should be planted as early in June as possible with planting completed by July 4th. When no-tilling soybeans in small grain straw, it is essential to manage the straw to achieve adequate plant populations. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 2-4 seed/row foot for 7-8" drills; 4-6 seed/row foot for 15" rows; 6-8 seed/row foot for 30" rows and 8-10 seed/row foot for 36" rows. Increase the seeding rate by at least 10% for no-till planting. Seeding depth should be 1-1 1/2" and adequate depth control is essential. Phosphorus and potash recommended for the soybeans can be applied to the wheat in the Fall. Soybeans produce their own nitrogen and are normally grown without additions of nitrogen. However, applications of 20-30 lbs/acre N are sometimes made at planting to promote early growth and vigor. Tissue samples can be analyzed during the growing season to monitor the overall nutrient status of the soybeans. Timely management of weeds and insects is essential for profitable double crop soybean production.

The following crop note applies to field(s): 37, 6, 7, 8

Double-Crop Soybeans, Coastal Plain: Mineral soil, medium leachable

Double-crop soybeans should be planted as early in June as possible with planting completed by July 4th. When no-tilling soybeans in small grain straw, it is essential to manage the straw to achieve adequate plant populations. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 2-4 seed/row foot for 7-8" drills; 4-6 seed/row foot for 15" rows; 6-8 seed/row foot for 30" rows and 8-10 seed/row foot for 36" rows. Increase the seeding rate by at least 10% for no-till planting. Seeding depth should be 1-1 1/2" and adequate depth control is essential. Phosphorus and potash recommended for the soybeans can be applied to the wheat in the Fall. Soybeans produce their own nitrogen and are normally grown without additions of nitrogen. However, applications of 20-30 lbs/acre N are sometimes made at planting to promote early growth and vigor. Tissue samples can be analyzed during the growing season to monitor the overall nutrient status of the soybeans. Timely management of weeds and insects is essential for profitable double crop soybean production.

The following crop note applies to field(s): 10, 2, 25, 26, 28, 29-33, 4, 42-45, 5, 9

Double-Crop Soybeans, Coastal Plain: Mineral soil, medium leachable

Double-crop soybeans should be planted as early in June as possible with planting completed by July 4th. When no-tilling soybeans in small grain straw, it is essential to manage the straw to achieve adequate plant populations. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 2-4 seed/row foot for 7-8" drills; 4-6 seed/row foot for 15" rows; 6-8 seed/row foot for 30" rows and 8-10 seed/row foot for 36" rows. Increase the seeding rate by at least 10% for no-till planting. Seeding depth should be 1-1 1/2" and adequate depth control is essential. Phosphorus and potash recommended for the soybeans can be applied to the wheat in the Fall. Soybeans produce their own nitrogen and are normally grown without additions of nitrogen. However, applications of 20-30 lbs/acre N are sometimes made at planting to promote early growth and vigor. Tissue samples can be analyzed during the growing season to monitor the overall nutrient status of the soybeans. Timely management of weeds and insects is essential for profitable double crop soybean production.

The following crop note applies to field(s): Alternate

Sorghum-Sudan: No Comment

IRRIGATION SYSTEM DESIGN PARAMETERS

Landowner/Operator Name: Doug Jernigan - Doug Jernigan Farms; AWS960127 County: Wayne
Address: Thunder Swamp Road
Mt. Olive, NC 28365 Date: 5/1/2003
Telephone: (919) 738-0632 Revised: 9/25/2003
Wetted Acres Revision-Pickle Creek Mitigation Project 9/22/2021

Table 1 - Field Specifications

Field Number	Approximate Maximum Useable Size of Field (acres)	Soil Type	Slope %	Crop(s)	Maximum Application Rate (In/hr)	Maximum Application per Irrigation Cycle (inches)	Comments
Pulls 1-57	184.15	Ke	<5	Bermuda, Cotton, Sm Grain	0.5	1	
		(Predominantly)					

TABLE 2 - Travelling Irrigation Gun Settings

Make, Model and Type of Equipment: Cadman 3250 traveler w/ 3.25"x975' hose w/Nelson 150

Field No. and Hydrant No.	Travel Speed (ft/min)	Application Rate (in/hr.)	TRAVEL LANE Effective Width(ft.)	Effective Length(ft)	Wetted Diameter (feet)	Nozzle Diameter (Inches)	Operating Pressure at Gun(psi)	Operating Pressure at reel(psi)	Arc Pattern	Comments - Acres per pull
1	4.41	0.75	271	420	301.5	1.26	60	95	220	3.55
4	3.68/4.41	.55/.75	271/227	331/285	301.5	1.26	60	95	300/220	4.97
5	3.68	0.55	240	612	301.5	1.26	60	95	300	4.71
6	3.68	0.55	240	610	301.5	1.26	60	95	300	4.70
7	3.68	0.55	240	604	301.5	1.26	60	95	300	4.67
8	4.41	0.75	219	461	301.5	1.26	60	95	220	3.23
9	4.41	0.75	230	642	301.5	1.26	60	95	220	4.30
10	3.68	0.55	230	654	301.5	1.26	60	95	300	4.57
11	8.03/4.01	.92/.55	110/220	229/10	301.5	1.26	60	95	180/300	1.52
12	4.01	0.55	220	49	301.5	1.26	60	95	300	1.14
13	4.01	0.55	220	94	301.5	1.26	60	95	300	1.36
14	4.01	0.55	220	115	301.5	1.26	60	95	300	1.47
15	4.01	0.55	220	175	301.5	1.26	60	95	300	1.77
16	4.01	0.55	220	250	301.5	1.26	60	95	300	1.95
17	4.01	0.55	220	193	301.5	1.26	60	95	300	1.86
18	4.01	0.55	220	439	301.5	1.26	60	95	300	2.91
19	4.01	0.55	220	542	301.5	1.26	60	95	300	3.63
20	4.01	0.55	220	674	301.5	1.26	60	95	300	4.29
21	4.01	0.55	220	692	301.5	1.26	60	95	300	4.38
22	4.01	0.55	220	710	301.5	1.26	60	95	300	4.48
23	4.01	0.55	220	729	301.5	1.26	60	95	300	4.57
24	4.01	0.55	220	752	301.5	1.26	60	95	300	4.69
25	4.01	0.55	228	774	301.5	1.26	60	95	300	4.95
26	4.01	0.55	228	775	301.5	1.26	60	95	300	4.96
27	4.01/4.82	.55/.75	228/140	562/262	301.5	1.26	60	95	300/220	4.48
28	4.82	0.75	197	362	301.5	1.26	60	95	220	2.26
29	8.03	0.92	228	95	301.5	1.26	60	95	180	0.99
30	4.82/4.01	.75/.55	211/220	364/133	301.5	1.26	60	95	220/300	3.32

31	8.03/8.03	.92/.92	143/228	633/75	301.5	1.26	60	95	180/180	2.96
32	4.01/4.82	.55/.75	228/195	190/542	301.5	1.26	60	95	300/220	4.12
33	4.01	0.55	220	686	301.5	1.26	60	95	300	4.35
34	4.01	0.55	220	525	301.5	1.26	60	95	300	3.54
35	8.03/4.01	.92/.55	156/228	407/89	301.5	1.26	60	95	180/300	2.82
36	4.82	0.75	187	476	301.5	1.26	60	95	220	2.63
37	4.82	0.75	235	211	301.5	1.26	60	95	220	1.85
38	3.68	0.55	271	87	301.5	1.26	60	95	300	1.96
39	4.01/4.82	.55/.75	235/215	536/176	301.5	1.26	60	95	300/220	4.55
42	8.83	0.92	117	497	301.5	1.26	60	95	180	1.79
43	4.41	0.55	200	662	301.5	1.26	60	95	300	3.87
44	4.41	0.55	200	825	301.5	1.26	60	95	300	4.62
45	4.41	0.55	218	825	301.5	1.26	60	95	300	5.00
46	3.68	0.55	240	323	301.5	1.26	60	95	300	3.12
47	3.68	0.55	240	4.11	301.5	1.26	60	95	300	3.60
48	3.68	0.55	240	535	301.5	1.26	60	95	300	4.29
49	3.68	0.55	240	578	301.5	1.26	60	95	300	4.52
50	3.68	0.55	240	593	301.5	1.26	60	95	300	4.61
51	3.68	0.55	271	677	301.5	1.26	60	95	300	5.63
52	4.41/5.30	.55/.75	251/174	70/650	301.5	1.26	60	95	300/220	4.03
53	4.41	0.55	251	975	301.5	1.26	60	95	300	6.95
54	8.83/4.41	.92/.55	100/251	227/60	301.5	1.26	60	95	180	1.74
55	4.41	0.55	200	266	301.5	1.26	60	95	300	2.05
56	8.83	0.92	162	208	301.5	1.26	60	95	300	1.25
57	8.83	0.92	136	680	301.5	1.26	60	95	180	2.62
								TOTAL		184.15

TABLE 3 - Solid Set Irrigation Gun Settings

Make, Model and Type of Equipment N/A

Field No and Line No.	Number of Hydrants	Wetted Diameter (feet)	Hydrant Spacing(ft) Along Pipelines	Hydrant Spacing(ft) Between Pipelines	Application Rate (in/hr)	Nozzle Diameter (inches)	Operating Parameters: Operating Pressure at Gun(psi)	Operating Parameters: Operating Time at Hydrant(hr.)	Comments-Acres per zone
								TOTAL	**0.00**

TABLE 4 - Irrigation System Specifications

	Traveling Irrigation Gun	Solid Set Irrigation
Flow Rate of Sprinkler (gpm)	275	0
Operating Pressure at Pump (psi)	123.7	6.9
Design Precipitation Rate (in/hr)	0.46	0.00
Hose Length (feet)	975	XXXXXXXX
Type of Speed Compensation	Engine	XXXXXXXX
Pump Type (PTO, Engine, Electric)	Engine	Engine
Pump Power Requirement (hp)	44.1	0.0

TABLE 5 - Thrust Block Specifications			
	6"	4"	2"
	THRUST BLOCK	THRUST BLOCK	THRUST BLOCK
LOCATION	AREA (sq. ft.)	AREA (sq. ft.)	AREA (sq. ft.)
90 degree bend	8.8	4.3	1.1
Dead End	6.2	3.0	0.8
Tee	4.4	2.1	0.5
Gate Valve	6.2	3.0	0.8
45 degree bend	4.7	2.3	0.6

IRRIGATION SYSTEM DESIGNER

Name: Micah Kevin Weston, CID
Company: Private
Address: 237 A.I. Taylor Road, Richlands, NC 28574
Phone: (910) 324-3044

Required Documentation

The following details of design and materials must accompany all irrigation designs:

1. A scale drawing of the proposed irrigation system which includes hydrant locations, pipelines, thrust block locations and buffer areas where applicable.
2. Assumptions and computations for determining total dynamic head and horsepower requirements.
3. Computations used to determine all mainline and lateral pipe sizes.
4. Sources and/or calculations used for determining application rates.
5. Computations used to determine the size of thrust blocks and illustrations of all thrust block configurations required in the system
6. Manufacturer's specifications for the irrigation pump, traveler and sprinkler(s).
7. Manufacturer's specifications for the irrigation pipe and/or USDA-NRCS standard for IRRIGATION WATER CONVEYANCE.
8. The information required by this form are the minimum requirements. It is the responsibility of the designer to consider all relevant factors at a particular site and address them as appropriate.
9. Irrigation pipes should not be installed in lagoon or storage pond embankments without the approval of the designer.

NOTE: A buffer strip of 25' or wider must be maintained between the limits of the irrigation system and all perennial streams and surface waters per NC Statutes.

Narrative of Irrigation System Operation

This design is for an addition to an existing facility. The acres were calculated based on the equipment specified and the charts created by NCSU for calculating Area Allowances for Hard Hose Traveler Systems.

This irrigation system is designed with six inch, Class 200 PVC and schedule 80 fitttings. The system is designed to accommodate the flow velocities, flow rates and pressure requirements associated with a Cadman 3250 traveler. Air vents and thrust blocks are to be installed as indicated on the drawings. The thrust block areas have been calculated and are listed in Table 4 of this design. The design of the traveler system requires the use of a 1.26" ring nozzle in the gun. Each pull has a specific arc setting and travel speed which must be used to achieve the desired application. This information is given in Table 2 of this design. A detail of the hydrant layout is also included. All pipe shall be installed with a minimum of 30" of cover and shall be backfilled in no less than three passes, leaving enough soil material above original grade to allow for settling. The suction assembly for the pump to be used should be a minimum of 6" aluminum. A pressure gauge should be installed on the discharge side of the pump where it can be seen during start up of the system.

Refer to owner's manual and irrigation dealer for information on maintenance, winterization, and operation of system.

This revision done 9/22/2021 to reflect the recalculation of pulls due to the addition of easements for the Pickle Creek Mitigation Project.

CALCULATIONS

Sprinkler Specifications

Sprinkler Type:	Nelson 150		
Nozzle Size:	1.26	inches	
Sprinkler Pressure:	60	psi	
Flowrate(GPM):	275	gpm	
Wetted Diameter:	301.5	feet	* Reflects a 10% reduction from chart

Lane Spacings

Desired Spacing (%):	70	%
Design Spacing(feet):	211.05	*PVC irrigation pipe normally comes in 20' pieces, so round to the nearest multiple of 20.
Actual Spacing (feet):	240	feet
Actual Spacing (%):	80	%

Application Rate

Application Rate = (96.3xFlowrate)/(3.1415x(.9xradius)squared)

Design App. Rate =	0.46	in/hr
300 degree arc =	0.55	in/hr
220 degree arc =	0.75	in/hr
180 degree arc =	0.92	in/hr

Traveller Speed

Travel speed = 1.605 x Flowrate / Desired application amount x Lane Spacing

Desired app. (in.) =	0.5	inches
300 degree arc =	3.68	ft/min
220 degree arc =	4.41	ft/min
180 degree arc =	7.36	ft/min

Mainline Velocity

Velocity = .408 x Flowrate / pipe diameter squared feet/sec.**
**For buried pipelines, velocity should be below 5 feet per second

Pipe size:	6	inches
Velocity=	3.12	ft/sec.

Maximum Mainline Friction Loss

Most distant hydrant:	28
Total distance:	7185 feet

Friction Loss is figured using Hazen/William's Equation

Friction Loss=	0.52 feet/100 feet		
Max. Mainline Loss =	37.5 feet or	16.2 psi	

Total Dynamic Head

Sprinkler Pressure:	60 psi		
Loss through traveller:	35 psi		
Elevation head:	4.3 psi		
Mainline loss:	16.2 psi		
Suction head and lift:	2.3 psi		
5% fitting loss:	5.9 psi		
TOTAL(TDH) =	123.7 psi	or	285.8 feet

Horsepower Required

Horsepower = Flowrate x TDH(feet) / 3960 / Pump effeciency

Pump Description:	Cornell 3HA-EM16-3
Pump Efficiency:	45 %
Horsepower Required:	44.1 Hp

Thrust Blocking

Thrust Block Area = Thrust / Soil Bearing Strength

Thrust:	7460 feet
Soil Bearing Strength:	1200 feet
End Cap:	6.2 ft2
90 degree elbow:	8.8 ft2
Tee:	4.4 ft2
45 degree elbow:	4.7 ft2

Pipe Pressure Rating Check

Pressure Rating of Pipe to be Used:	200 psi
Max. Pressure on system when running:	123.7 psi
70% of Pressure Rating:	140 psi

If Max. Pressure on system is less than 70% of Pressure Rating, OK

Net Positive Suction Head Check

NPSHA: 19.1

NPSHR: 6 *from pump curve

If NPSHA>NPSHR OK

CALCULATIONS

Sprinkler Specifications

Sprinkler Type:	Nelson 150	
Nozzle Size:	1.26 inches	
Sprinkler Pressure:	60 psi	
Flowrate(GPM):	275 gpm	
Wetted Diameter:	301.5 feet	* Reflects a 10% reduction from chart

Lane Spacings

Desired Spacing (%):	70 %	
Design Spacing(feet):	211.05	*PVC irrigation pipe normally comes in 20' pieces, so round to the nearest multiple of 20.
Actual Spacing (feet):	220 feet	
Actual Spacing (%):	73 %	

Application Rate

Application Rate = (96.3xFlowrate)/(3.1415x(.9xradius)squared)

Design App. Rate =	0.46 in/hr	
300 degree arc =	0.55 in/hr	
220 degree arc =	0.75 in/hr	
180 degree arc =	0.92 in/hr	

Traveller Speed

Travel speed = 1.605 x Flowrate / Desired application amount x Lane Spacing

Desired app. (in.) =	0.5 inches	
300 degree arc =	4.01 ft/min	
220 degree arc =	4.82 ft/min	
180 degree arc =	8.03 ft/min	

Mainline Velocity

Velocity = .408 x Flowrate / pipe diameter squared feet/sec.**
**For buried pipelines, velocity should be below 5 feet per second

Pipe size:	6 inches	
Velocity=	3.12 ft/sec.	

CALCULATIONS

Sprinkler Specifications

Sprinkler Type:	Nelson 150		
Nozzle Size:	1.26	inches	
Sprinkler Pressure:	60	psi	
Flowrate(GPM):	275	gpm	
Wetted Diameter:	301.5	feet	* Reflects a 10% reduction from chart

Lane Spacings

Desired Spacing (%):	70	%
Design Spacing(feet):	211.05	*PVC irrigation pipe normally comes in 20' pieces, so round to the nearest multiple of 20.
Actual Spacing (feet):	200	feet
Actual Spacing (%):	66	%

Application Rate

Application Rate = (96.3xFlowrate)/(3.1415x(.9xradius)squared)

Design App. Rate =	0.46	in/hr
300 degree arc =	0.55	in/hr
220 degree arc =	0.75	in/hr
180 degree arc =	0.92	in/hr

Traveller Speed

Travel speed = 1.605 x Flowrate / Desired application amount x Lane Spacing

Desired app. (in.) =	0.5	inches
300 degree arc =	4.41	ft/min
220 degree arc =	5.30	ft/min
180 degree arc =	8.83	ft/min

Mainline Velocity

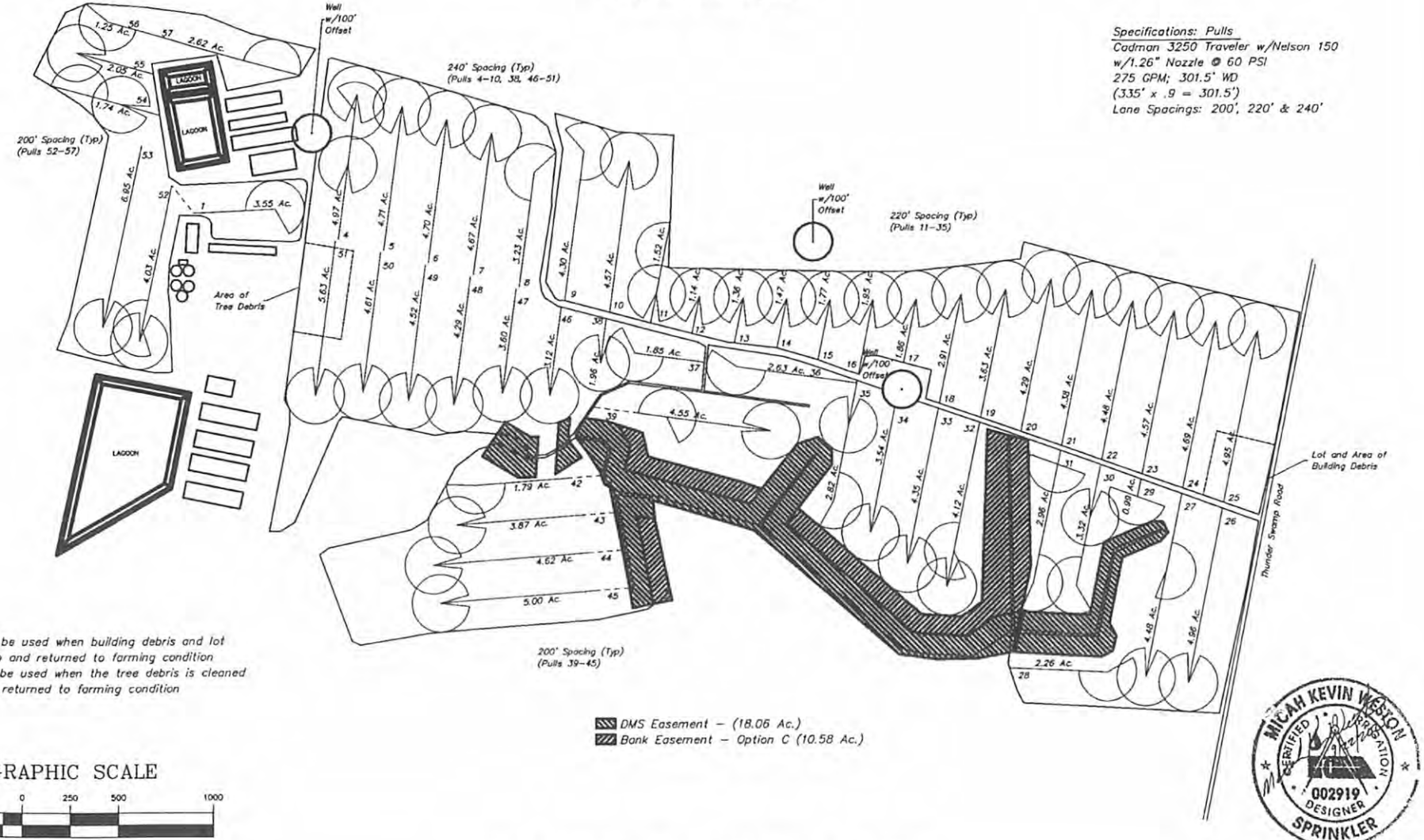
Velocity = .408 x Flowrate / pipe diameter squared feet/sec.**
**For buried pipelines, velocity should be below 5 feet per second

Pipe size:	6	inches
Velocity=	3.12	ft/sec.

			Doug Jernigan Farms; AWS960127					
			Acreage Calculations					
			9/22/2021 - Recalculated due to Pickle Creek Mitigation Project					
	Width	Length	Acres	Total Acres	Start End	Stop End		Total
Pull #	(ft.)	(ft.)	(midsection)	(midsection)	(ac.)	(ac.)		Pull Acres
1	271	420	2.61	2.61	0.660	0.275		3.55
4	271	331	2.06	3.55	0.780	0.640		4.97
	227	285	1.49	0.00	0.78	0.64		0.00
5	240	612	3.37	3.37	0.74	0.6		4.71
6	240	610	3.36	3.36	0.74	0.6		4.70
7	240	604	3.33	3.33	0.74	0.6		4.67
8	219	461	2.32	2.32	0.590	0.320		3.23
9	230	642	3.39	3.39	0.590	0.320		4.30
10	230	654	3.45	3.45	0.620	0.500		4.57
11	110	229	0.58	0.63	0.490	0.400		1.52
	220	10	0.05	0.00	0.490	0.400		0.00
12	220	49	0.25	0.25	0.490	0.400		1.14
13	220	94	0.47	0.47	0.490	0.400		1.36
14	220	115	0.58	0.58	0.490	0.400		1.47
15	220	175	0.88	0.88	0.490	0.400		1.77
16	220	250	1.26	1.26	0.490	0.200		1.95
17	220	193	0.97	0.97	0.490	0.400		1.86
18	220	439	2.22	2.22	0.490	0.200		2.91
19	220	542	2.74	2.74	0.490	0.400		3.63
20	220	674	3.40	3.40	0.490	0.400		4.29
21	220	692	3.49	3.49	0.490	0.400		4.38
22	220	710	3.59	3.59	0.490	0.400		4.48
23	220	729	3.68	3.68	0.490	0.400		4.57
24	220	752	3.80	3.80	0.490	0.400		4.69
25	228	774	4.05	4.05	0.490	0.410		4.95
26	228	775	4.06	4.06	0.490	0.410		4.96
27	228	562	2.94	3.78	0.490	0.210		4.48
	140	262	0.84	0.00	0.000	0.000		0.00
28	197	362	1.64	1.64	0.419	0.205		2.26
29	228	95	0.50	0.50	0.490	0.000		0.99
30	211	364	1.76	2.43	0.490	0.400		3.32
	220	133	0.67	0.00	0.000	0.000		0.00
31	143	633	2.08	2.47	0.490	0.000		2.96
	228	75	0.39	0.00	0.490	0.410		0.00
32	228	190	0.99	3.42	0.490	0.210		4.12
	195	542	2.43	0.00	0.000	0.000		0.00
33	220	686	3.46	3.46	0.490	0.400		4.35
34	220	525	2.65	2.65	0.490	0.400		3.54
35	156	407	1.46	1.92	0.490	0.410		2.82
	228	89	0.47	0.00	0.000	0.000		0.00
36	187	476	2.04	2.04	0.380	0.210		2.63
37	235	211	1.14	1.14	0.500	0.210		1.85
38	271	87	0.54	0.54	0.780	0.640		1.96
39	235	536	2.89	3.84	0.500	0.210		4.55
	235	176	0.95	0.00	0.000	0.000		0.00
42	117	497	1.33	1.33	0.258	0.195		1.79
43	200	662	3.04	3.04	0.460	0.370		3.87

44	200	825	3.79	3.79	0.460	0.370		4.62
45	218	825	4.13	4.13	0.480	0.390		5.00
46	240	323	1.78	1.78	0.740	0.600		3.12
47	240	411	2.26	2.26	0.740	0.600		3.60
48	240	535	2.95	2.95	0.740	0.600		4.29
49	240	578	3.18	3.18	0.740	0.600		4.52
50	240	593	3.27	3.27	0.740	0.600		4.61
51	271	677	4.21	4.21	0.780	0.640		5.63
52	251	70	0.40	3.00	0.730	0.300		4.03
	174	650	2.60	0.00	0.730	0.600		0.00
53	251	975	5.62	5.62	0.730	0.600		6.95
54	100	227	0.52	0.87	0.480	0.390		1.74
	251	60	0.35	0.00	0.480	0.390		0.00
55	200	266	1.22	1.22	0.460	0.370		2.05
56	162	208	0.77	0.77	0.240	0.240		1.25
57	136	680	2.12	2.12	0.250	0.250		2.62
						Total Acres		**184.15**

DOUG JERNIGAN FARMS
AWS960127
Wetted Acreage



Specifications: Pulls
Cadman 3250 Traveler w/Nelson 150 w/1.26" Nozzle @ 60 PSI
275 GPM; 301.5' WD
(335' x .9 = 301.5')
Lane Spacings: 200', 220' & 240'

NOTE:
Pull 25 may be used when building debris and lot is cleaned up and returned to farming condition
Pull 51 may be used when the tree debris is cleaned up and area returned to farming condition

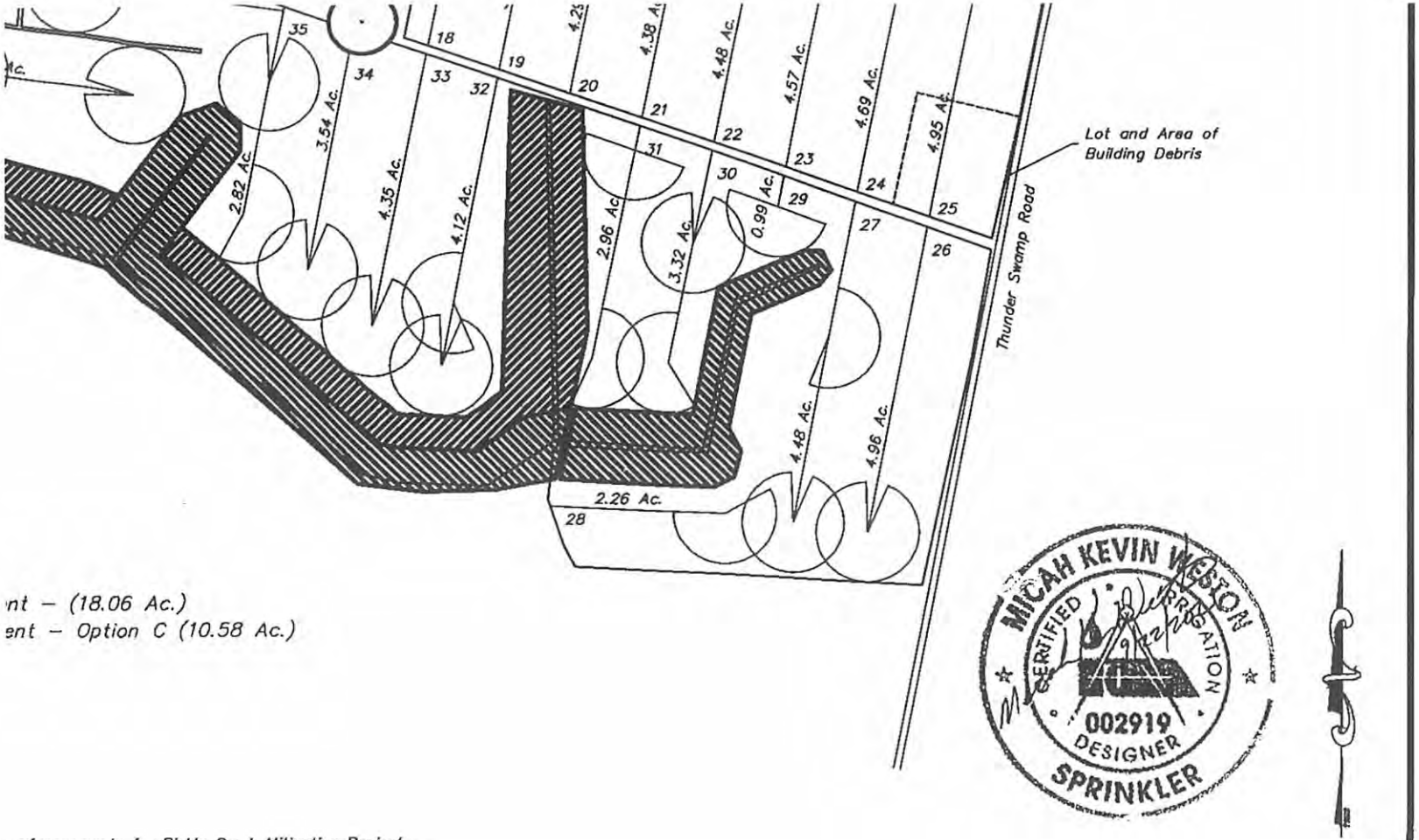
GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)
1 inch = 500 ft.

9/2021-Pulls recalculated to reflect addition of easements for Pickle Creek Mitigation Project

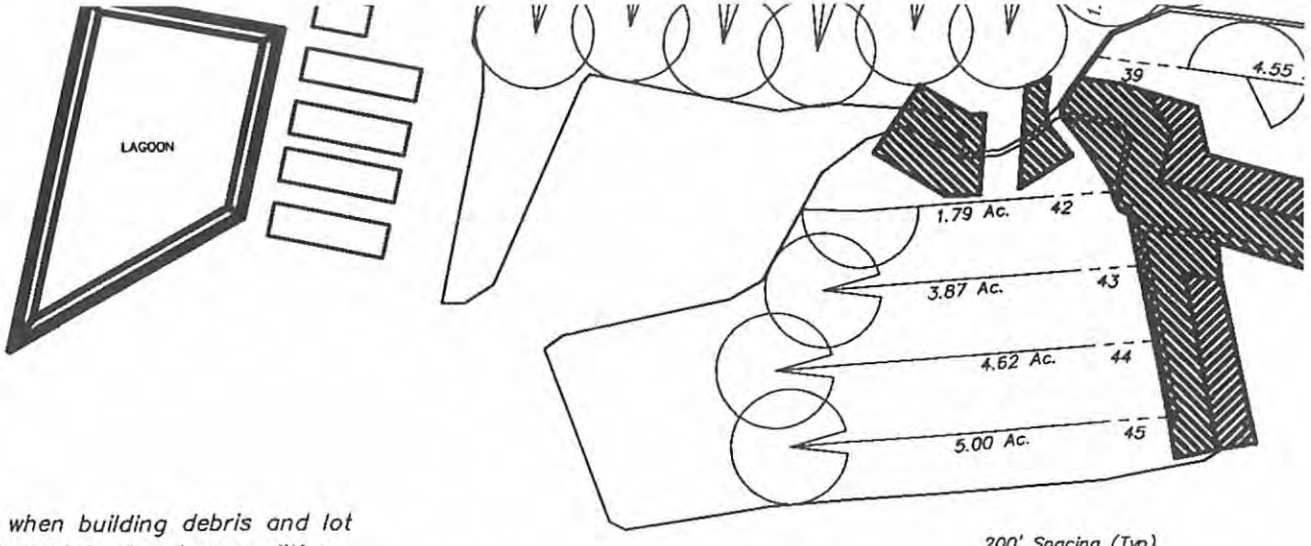
MICAH KEVIN WESTON
CERTIFIED IRRIGATION
002919
DESIGNER
SPRINKLER



nt – (18.06 Ac.)
ent – Option C (10.58 Ac.)

MICAH KEVIN WESTON
CERTIFIED IRRIGATION
002919
DESIGNER
SPRINKLER

of easements for Pickle Creek Mitigation Project



200' Spacing (Typ)
(Pulls 39–45)

NOTE:
Pull 25 may be used when building debris and lot is cleaned up and returned to farming condition
Pull 51 may be used when the tree debris is cleaned up and area returned to farming condition

DMS Easeme
Bank Easem

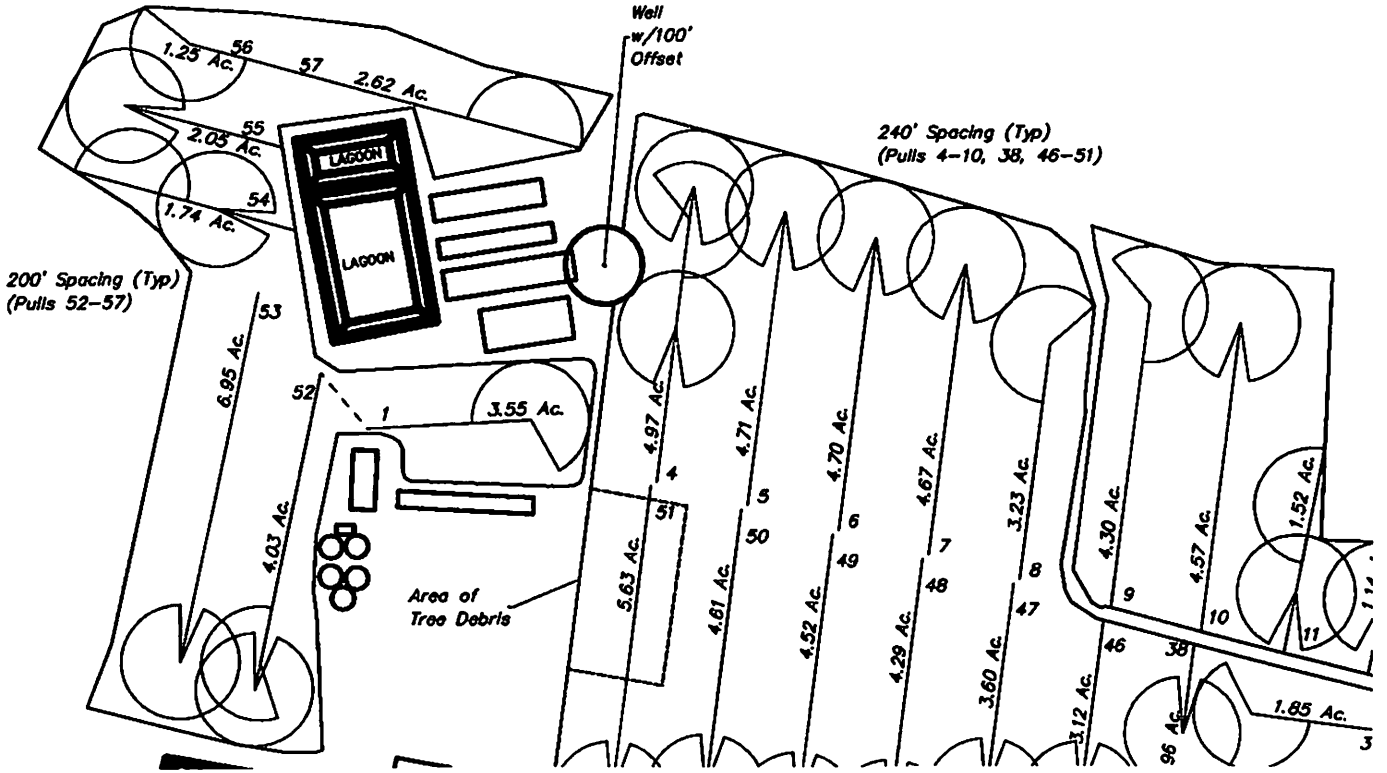
GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)
1 inch = 500 ft.

9/2021–Pulls recalculated to reflect addition

DOUG
AWS96C
Wetted



JERNIGAN FARMS
)127
Acreage

Specifications: Pulls
Cadman 3250 Traveler w/Nelson 150
w/1.26" Nozzle @ 60 PSI
275 GPM; 301.5' WD
(335' x .9 = 301.5')
Lane Spacings: 200', 220' & 240'

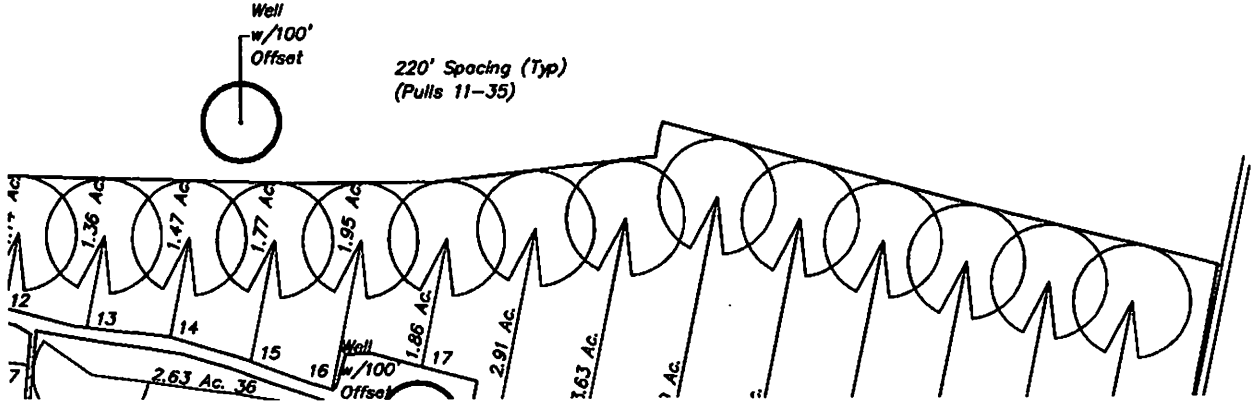


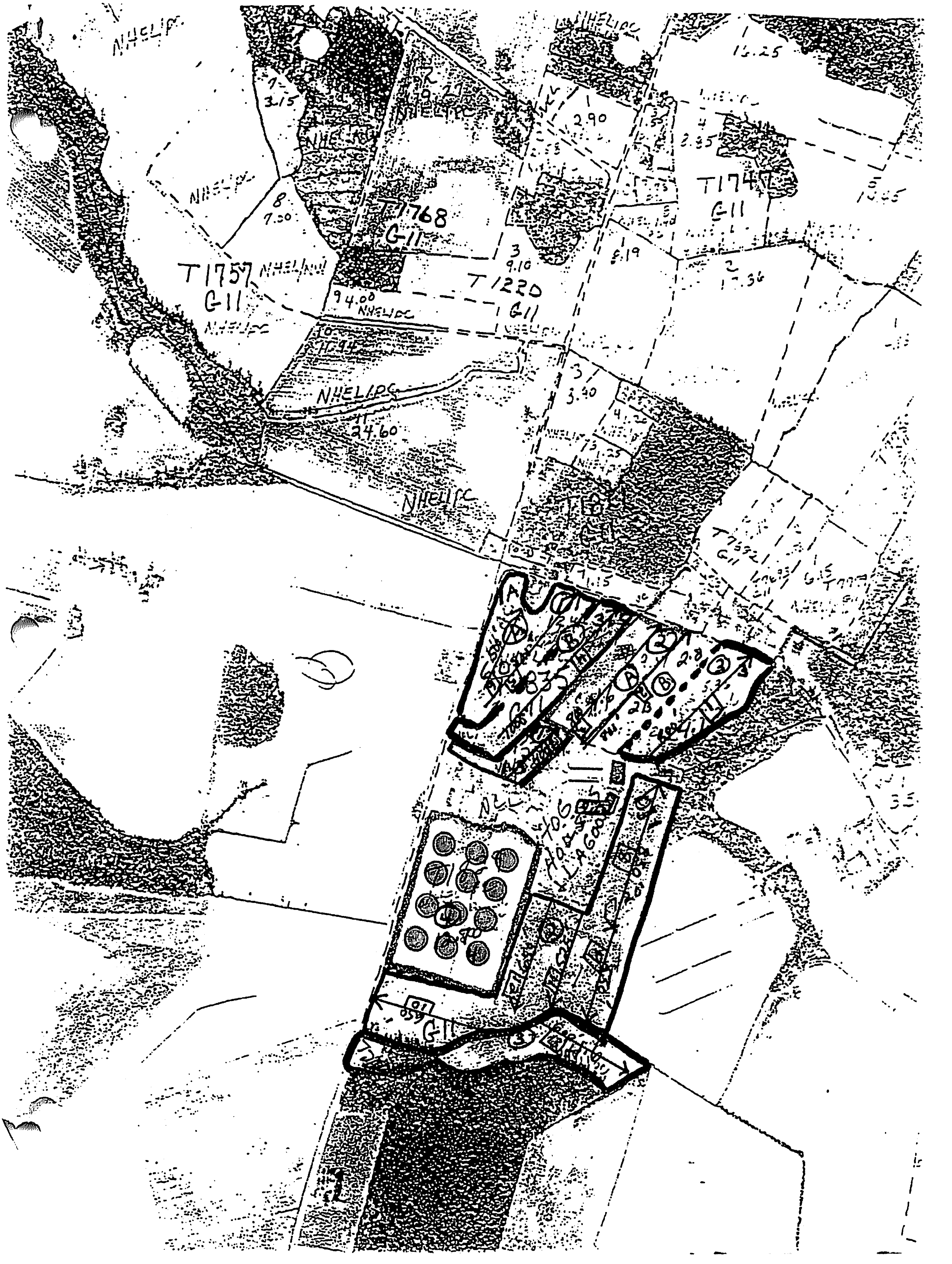
Exhibit C

Pickle Creek Mitigation Project

Wayne County, North Carolina

Date	9/8/2021
Drawn by	GDS
Checked by	JRM
1 inch = 500 feet	

res


T1768
G11
T1757
G11
T1220
G11
T1747
G11
94.00
24.60
NHELIPC

Doug Jernigan Old Farm

270 Dia 175 Spacing Typ

1" = 500'

N
W E
S

Printed:Jan 22, 2013

N
W E
S

Printed:Jan 22, 2013

From:	Lawson, Christine
To:	Geno Kennedy; Jamey Mceachran
Cc:	Jernigan Doug; Jonathan Miller; Merritt, Katie; Salyer, Marlene
Subject:	RE: [EXTERNAL] Re: Doug Jernigan Farm Waste Plan Update
Date:	Friday, October 8, 2021 5:14:31 PM

Geno and Mr. Jernigan –

Thank you for submitting the updates to the Nutrient Management Plan and to the Wettable Acres Determination for Jernigan Farms, AWS960127 and AWI960127, to reflect the Pickle Creek Mitigation Project. Everything appears to be in order. I thank you for providing such clear documentation and maps to show the mitigation areas as they relate to the remaining land application areas.

I emailed Geno a little earlier this afternoon with the information regarding renewal of the AWI permit. Please let me know if you have any questions regarding that renewal.

Christine B. Lawson
Engineer
Animal Feeding Operations Program
Department of Environmental Quality

919 707 3664 office
984 232 1223 mobile
Christine.Lawson@ncdenr.gov

From: Geno Kennedy <agrimentservices@yahoo.com>
Sent: Tuesday, October 5, 2021 2:39 PM
To: Jamey Mceachran <jmceachran@res.us>
Cc: Lawson, Christine <Christine.Lawson@ncdenr.gov>; Jernigan Doug <douglasajernigan@gmail.com>; Jonathan Miller <agrimentservices_jmiller@yahoo.com>
Subject: Re: [EXTERNAL] Re: Doug Jernigan Farm Waste Plan Update

Jamey,

all work on our end is complete. This is the irrigation design and waste utilization plan for the project. We have copied the regulatory agency so they also have a copy as required along with the owner so they will have a copy for their records. Thank You!

With Kind Regards,
Ronnie "Geno" Kennedy Jr.
President of Operations
Agriment Services, Inc.
PO Box 1096 Beulaville, NC 28518

Office (252)568-2648 Fax (252)568-2750 Mobile (910)289-0395
www.agrimentservices.com