MY04 Monitoring Report

Longhorn Riparian Buffer Mitigation Site

Randolph County, NC

DMS Project No. 100114

DMS Contract Number: 7866

DWR Project Number: 2019-0681

Randleman Lake Watershed

Cape Fear River Basin

HUC 03030003

RFP #16-007703

Prepared For:

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

February 15, 2024

Mr. Jeremiah Dow
NCDEQ Division of Mitigation Services
217 W. Jones Street, Suite 3000
Raleigh, NC 27603

Re: Longhorn - Response to DMS Comments on the MY4 Report
DMS Project No. 100114/ DMS Contract No. 7866

Dear Mr. Dow,

Please find below the response to comments on the Longhorn Buffer Mitigation Plan provided by DMS dated January 29, 2024:

1. Section 1.2 – please correct statements such as "0.89 acres was added to the project…and will be reflected in an amendment…" Presumably the amendment has already been completed. Same with last paragraph of the section where it says, " fencing will be installed." Please correct the tense of actions that have occurred on the project throughout the document.
   Re: Grammatical tenses have been corrected and should be uniform throughout the report.

2. Section 4.2 – refers to MY3 veg plot photos in Appendix B. This should be MY4 photos.

   Re: Reference to MY3 in Section 4.2 has been modified to correctly reference MY4

3. Section 4.3 – the first paragraph when describing plots 2 and 2A discusses prior monitoring years but no discussion of observations in MY4 are included. Was this omitted or was some of the discussion about MY4 mistakenly labeled MY3? In general, this paragraph discusses prior monitoring years through MY3 with nothing about MY4. Please clarify or correct.

   Re: Plot 2 and 2A performance has been clarified for MY4 in the last portion of the first paragraph in Section 4.3.

4. Figure 7 – please include the date of the aerial photograph in the title block.

   Re: Figure 7 now states the aerial photograph was sourced from 2016.

5. CCPV – the narrative says (Section 4.3) invasive treatment was done pre-construction and in MY1 – 3. Was invasive treatment done in MY4? If not, then the invasive treatment polygons should be removed from the CCPV, or the narrative should be corrected. Please update the Visual Veg. Assessment Table, if necessary, based on response to this comment.

Re: Invasive treatment was not conducted in MY4 and has been removed from the CCPV to alleviate confusion. As a result, the Visual Veg. Assessment Table has been updated to reflect these actions.

6. Table 4 is extremely difficult to read. Please split the Table into 2 pages if necessary.

   Re: Table 4 has been divided into three pages to improve clarity.

7. Photo Log – Photos 6 and 7 are photos of the same locations facing the same direction, but one is labeled as "looking west…" and the other "looking south…" Please clarify.

   Re: Photos 6 and 7 were modified to reflect the correct year and orientation.

8. Please include individual stem location, height, and vigor in an Appendix per recent request from DWR. This can be tables or scanned field sheets.

   Re: Scanned field vegetation monitoring sheets have been added to Appendix C.

9. Last year DWR commented on the MY3 report with an understanding that a response would be included in the subsequent MY4 report. The comment was "Should plot 2 be planted with more FACW stems so it stays planted and not develop low stem count? Having low stem count within buffer enhancement does not seem ideal." Please provide a response to DWR's comment.

   Re: The area is affected by the modification of flow due to prior site construction. This modification of the area has inundated the area and prevented ample vegetative growth. The area has since stabilized and will be planted with additional FACW tree in early 2024. A more detailed response is included in Section 4.4 Maintenance and Management.

Please do not hesitate to contact me with questions at 919-624-6901.

Sincerely,

Kevin Yates

Clearwater Mitigation Solutions
604 Macon Place, Raleigh, NC 27609
919-624-6901
clearwatermitigation@gmail.com

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Randolph County, NC

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PREPARED FOR:

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PREPARED BY:

Clearwater Mitigation Solutions

CLEARWATER MITIGATION SOLUTIONS

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Raleigh, North Carolina
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Kim Williams, *Davey Resource Group*

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1.0 Mitigation Project Summary

The Longhorn Riparian Buffer Restoration Project ("the Site") is a buffer restoration project located in Randolph County, approximately 1.5 miles northwest of the Town of Sophia, North Carolina and approximately 9 miles south of High Point (NC). The property is situated just east of NC Highway 311 and is bounded to the south by Marlboro Church Road (refer to Figure 1). The Longhorn Buffer Mitigation Site is located within the Muddy Creek 12-digit HUC (030300030106) of the Randleman Lake watershed (Figure 2). The buffer restoration and enhancement areas are located along an unnamed tributary (UT) of Bob Branch and drainages that flow directly into Randleman Lake Reservoir approximately 2 river miles downstream (refer to Figure 3 and Figure 4). Prior to project completion, the Site was surrounded by areas managed for cattle production and lacked existing forested buffer along a majority of the streams and pond dissecting the site. The Site is expected to generate 376,644.994 riparian buffer credits (BMU).

The Site is located within Hydologic Unit Code (HUC) 03030003010060 and North Carolina Department of Water Resources (NC DWR) Sub-Basin 03-04-07. The buffer mitigation site consists of one stream reach (A1) and an in-line pond (P1) as illustrated in Figure 8. Reach A1 is a perennial stream that flows from the in-line pond (P1) to the north and into Bob Branch approximately 1,300 lf downstream. Bob Branch has a NC DEQ surface water classification as a WS-IV* waterbody.

1.1 Project Goals

The main goals of the project are to provide high quality compensatory mitigation for authorized riparian buffer impacts credited through the NC DMS in-lieu-fee program and occurring within the Randleman Lake Watershed by creating a riparian corridor and restoring the historic riparian buffer. The project addresses the watershed goals identified in the Cape Fear River Basin Restoration Plan (RBRP) (NC EEP, 2010). These goals include:

- Removal of non-point source pollution (including nitrogen, phosphorous, and fecal bacteria) resulting from current land-use practices (principally cattle pasture);
- Reduction of sediment run-off/sediment loading to creek waters resulting from cattle hoof shear, bank instability, and lack of riparian buffer woody vegetation;
- Increased floodwater attenuation;
- Enhancement and protection of stream ecology and aquatic/semi-aquatic habitats; and
- Enhancement and protection of terrestrial habitats along stream terraces and hillside slopes.

These goals are being achieved via the restoration and protection of riparian buffers and adjacent riparian areas along an unnamed tributary of Bob Branch (which flows east into Randleman Lake Reservoir). Specific objectives of the project to achieve the desired goals include:

- Conversion of existing cattle pasture into wooded riparian buffer and wooded riparian areas along the existing stream channel and pond via planting of characteristic hardwood species and installation of cattle-exclusion fencing;
- Reduction of stream bank instability via woody stem plantings (i.e. increased woody root material) and cattle exclusion fencing;

● Ensuring diffuse flow and increased surface roughness throughout the buffer mitigation area;
● Establishment of a conservation easement to protect the riparian buffer restoration site in perpetuity; and
● Invasive species management (as needed) during monitoring period.

Ancillary benefits of the riparian buffer and adjacent riparian area restoration effort include:

- Increase of organic material as food for invertebrate, fish and wildlife;
- Supply of woody debris that provides increased niche habitat for fish, invertebrates and amphibians;
- Reduction of sunlight reaching the stream and modulation of surface water temperatures; and
- Floodwater attenuation via temporary storage, interception and slow releases from heavy rains.

1.2 Pre-construction Site Conditions

The project includes 20.81 acres of mostly open cattle pasture with one stream reach (A1) and an in-line pond (P1) which drains to Bob Branch. An additional 0.89-acres was added to the project area to include the pond dam within the conservation easement and was reflected in an amendment to the Conservation Easement Plat. The Site has historically been managed for agricultural and cattle production. Site drainage and hydrology have been historically altered via the impoundment of waters. Based upon a review of available aerial photography, the tributary was impounded in the early 1970s (between 1970 and 1973). A portion of the site was in cropland as early as 1948. The remaining land was cleared and converted to agricultural production in the 1950s.

The buffer mitigation site consists of one stream reach (A1) and an in-line pond (P1) as illustrated in Figure 8. Reach A1 is a perennial stream that flows from the in-line pond (P1) to the north and into Bob Branch. There is approximately 625 lf of stream associated with Reach A1 within the proposed buffer easement area. Pond (P1) is an in-line pond that is approximately 5.3-acres and lies entirely within the proposed conservation easement area.

The stream reach (A1) and an in-line pond (P1) have been restored as a forested riparian buffer to 200-ft (approximately 12.73 acres) while approximately 0.40 acres of partially forested areas have been considered suitable for buffer enhancement. An additional 0.21 acres of existing, wooded riparian area was enhanced as cattle exclusion fencing was installed around the conservation easement boundary. As indicated above, an amendment to the Conservation Easement Plat to include the pond dam was provided to NCDMS and NCDWR following recordation. The project attributes are listed in Table 1, located in Appendix A.

2.0 Determination of Credits

On June 19th, 2019, Ms. Katie Merritt of the Division of Water Resources (DWR) performed an evaluation of surface water features and adjacent riparian areas within the proposed mitigation site for the determination of riparian buffer mitigation pursuant to 15A NCAC 02B .0295 (effective November 1, 2015). Based upon this evaluation, DWR determined that areas within 200 ft of Reach A-1 and Pond P-1

are eligible for buffer credit. Inclusive of this area are approximately 12.73 acres of non-forested restoration site per 15A NCAC 02B 0.0295 (n). In addition, 0.40 acres of partially forested areas are considered suitable for buffer enhancement per 15A NCAC 02B 0.0295 (n) (i.e. areas classified such that the establishment of woody stems (i.e., tree or shrub species) will maximize nutrient removal and other buffer functions).

In addition to buffer restoration and enhancement on subject streams, per the Consolidated Buffer Mitigation Rules (15 A NCAC 02B 0.0295 (o)), alternative mitigation is proposed on the site in the form of: 1) enhancement of grazing areas adjacent to streams. The project is in compliance with these rules as it meets the following criteria:

Enhancement of Grazing Areas Adjacent to Streams (15A NCAC 02B 0.0295 (o)(6)):

Buffer credit at a 2:1 ratio shall be available for an applicant or mitigation provider who proposes permanent exclusion of grazing livestock that otherwise degrade the stream and riparian zone through trampling, grazing, or waste deposition by fencing the livestock out of the stream and its adjacent buffer.

An additional 0.21 acres of existing, wooded riparian area were enhanced as cattle exclusion fencing was installed around the conservation easement boundary.

There are no known site constraints that would impede or adversely affect the restoration, enhancement, and preservation of riparian buffer within the recorded easement area. Diffuse flow of runoff was maintained within the riparian buffer.

Mitigation credits are presented in Table 2 and Figure 8 in Appendix A and are based upon the conservation easement survey.

3.0 Baseline Summary

The project team restored high quality riparian buffers along all unnamed tributaries and an in-line pond within the Site. The project design ensured that no adverse impacts to wetlands of existing riparian buffers occurred during implementation. Refer to Figure 8 for the conceptual design of the project. Details of the restoration activity that occurred follows in the sections below.

3.1 Planting Preparation

Based upon pre-project assessment of compaction within the proposed planting areas, all areas targeted for vegetative plantings within the buffer restoration project were ripped to reduce compaction and to enhance microtopography. Spot spraying of herbicide was initiated for control of invasive species within the restoration, enhancement and preservation areas (i.e. Chinese privet (*Ligustrum sinense)*, Multiflora rose (*Rosa multiflora*, Japanese honeysuckle (*Lonicera japonica*), and Chinese tree-of-heaven (Ailanthus altissima). Treatment areas are depicted on Figure 9. The existing 84-ft pond spillway was stabilized prior to planting. The spillway was widened to approximately 10-feet and tapered down to 6-feet. The side slopes were lined with coir fiber matting, and the bottom of the spillway lined with rip-rap. Appropriate

erosion control measures were implemented before, during, and after the spillway maintenance to prevent sediment loss into downstream waters. No other site preparation occurred. No observed drain tiles were observed prior to, or during, construction and planting and no other land disturbance was needed to maintain diffuse flow as required.

3.2 Riparian Area Restoration and Enhancement Activities

The conservation easement boundary was marked using 6-inch diameter treated post buried 2 feet, standing 5 feet above the ground surface, within the pasture. Woven wire fencing with a top strand of barbed wire was installed along the entire easement boundary. One pedestrian access gate was installed for future monitoring and access. Three 12-ft wide gates were installed in appropriate locations to allow cattle to exit in case they were to breach the fence and enter the conservation easement. The easement boundary was marked with standard yellow Conservation Area signs, per the 01/23/14 NCDMS Boundary Marking Standards.

The planting plan consisted of planting at least four hardwood species on a density of approximately 538 stems per acre. Species selection and distribution were matched closely to micro-site hydrologic and edaphic conditions and include species characteristic of riparian assemblages in the watershed. In other words, species more tolerant of poorly drained soils (i.e. river birch, green ash, and willow oak) were planted within lower landscape positions generally consisting of the Chewacla and Wedhakee soil series while species characteristically occurring in better drained soils (Wynott-Enon complex) were planted in higher landscape positions (i.e. hillside slopes). The selected native trees are well-suited to the site-specific conditions of the property to promote high survivorship rates. No one tree species planted was greater than 50% of the established stems. Site planting was conducted on April 1st, 2020 by Carolina Silvics, Inc. and supervised by project managers from both Clearwater Mitigation Solutions and Land Management Group.

Table 3 summarizes the planting plan for the Longhorn mitigation site.

Table 3. Planting Plan[1]

Common Name	Scientific Name	% Composition	Acreage	Quantity
American Sycamore	*Plantanus occidentalis*	30	3.94	2,119
Yellow Poplar	*Liriodendron tulipifera*	25	3.28	1,766
River Birch	*Betula nigra*	25	3.28	1,766
Willow Oak	*Quercus phellos*	15	1.97	1,060
Green Ash	*Fraxinus pennsylvanica*	5	0.66	353
Total	**N/A**	**100**	**13.13**	**7,064**

[1]Note the planted area includes approximate 0.74 acres of conservation area. While no credit is proposed for this area, it was planted per the same specifications (species density and composition) as those contained within final, approved mitigation plan.

4.0 Annual Monitoring

Annual Monitoring is being conducted during the growing season for a period of five years. The report includes all information required by DMS monitoring guidelines including photographs, plot locations, and documentation of existing species density and composition. Monitoring is being performed in accordance with the Consolidated Mitigation Buffer Rule (15A NCAC 02B .0295) and current DMS standards. The performance criteria for the Site follows approved performance criteria presented in the guidance documents outlined in the Consolidated Buffer Rule (15A NCAC 02B .0295). Performance criteria are being evaluated throughout the five-year post-construction monitoring.

4.1 Methods

The final vegetative success criteria are the survival of 260 planted stems per acre in the riparian buffer at the end of the required monitoring period (MY05). Native hardwood and native shrub volunteer species may be included to meet the final performance standard of 260 stems per acre. In addition, the Site must contain at least four native hardwood species. Vegetative monitoring includes the establishment of eleven (11) permanent plots consistent with the Carolina Vegetation Survey (CVS) protocol Level 2 (version 4.2) (refer to Figure 9 for plot locations). Reference photos of the vegetation plots and Site are taken at each predetermined photo point location. Any vegetative problem areas in the site are noted and reported in each monitoring report. Vegetative problem areas may include areas that either lack vegetation or include populations of exotic vegetation. Monitoring reports identify any contingency measures that may need to be employed to remedy site deficiencies.

Permanent photo stations were established across the project area in order to document site stability for five years post construction. Markers were established and located with GPS equipment so that the same locations and perspectives on the Site are photographed each year. Photo reference stations are shown on Figure 9 and photos are included in Appendix B.

Visual assessments are performed annually during the five-year monitoring period. Problem areas of vegetative health are noted and areas of concern are mapped, photographed, and documented in each annual monitoring report. Problem areas that were found are re-evaluated in each subsequent monitoring event.

4.2 Tables

(MY4) vegetation plot photographs and the planted and total stem counts (Table 4) are included in Appendix B.

4.3 Results and Discussion

Annual monitoring (MY04) was conducted on September 27, 2023 by DRG staff. An average stem density of 492 planted stems per acre was tallied across the site (approximately 73% of the recorded baseline (MY0) density (673 stems per acre)). Stem densities within individual monitoring plots range from 121 to

1,255 planted stems per acre. Stem counts within individual plots range from 3 to 31 stems with an average of 12 planted stems per plot. Six different hardwood species were observed across the site, exceeding the minimum diversity criteria. All but one vegetation plot (Plot 2) are on track to meet the final stem density success criterion of 260 stems/acre for MY05. Plot 2 experienced high seedling mortality during MY01. Plot 2 seedling mortality was likely caused by inundation and flooding of the plot. Based upon review of the area during MY01, it appeared that an increase in surface water had filled the western and side channel following construction of the new pond outlet due to a shift and rehabilitation of the dam outlet structure. Many dead trees were observed buried in alluvial deposits during MY01. During MY02, additional seedling mortality was observed due to inundation in the same location. During MY02, a supplemental plot was established just to the south of Plot 2 (Plot 2A). Ten (10) planted stems were enumerated within Plot 2A during MY02 and MY03 and all exhibited excellent vigor in MY04. In addition, the remainder of the enhancement area was walked, and numerous planted stems were observed. Based on the enumerated stems in Plot 2A during MY04 and observed stems within the remainder of the enhancement zone, it is anticipated that Plot 2 is the only area within the enhancement zone experiencing high mortality due to inundation and alluvial deposition. Additional individual stem location, height, and vigor can be referenced in Appendix C.

Plot 5 mortality during MY01 was likely a result of dry conditions and the presence of dense grasses post-planting. These conditions persisted throughout MY02 and exhibited higher mortality. Supplement planting occurred within this area in the Winter of 2022 (January – February). Approximately 0.75-acres were supplemented. Additional planted stems were observed with excellent vigor during MY03. Numerous planted stems were observed throughout the area surrounding Plot 5. No additional mortalities were observed for Plot 5 during MY04.

During MY01, relatively higher stem mortality and lower vigor was observed for Plots 7, 9, and 10. Excessive mortality within these plots are likely attributed to dry conditions and competitive fescue post planting. Suggested supplemental planting proposed for these areas in the Winter of 2021 (January – February) did not take place as a selective, broad spectrum, postemergence herbicide (Poast) was implemented. Distribution of Poast successfully controlled fescue grass and ceased additional planted stem mortalities. All planted stems were accounted for and exhibited excellent vigor during MY04 within these plots.

Most of the stem mortality occurred between MY0 and MY01. During MY04 these areas are on track to meet the final stem density success criteria. Refer to Figure 9 (Current Condition Plan View) and Table 4 in Appendix B for additional information.

Invasive species occupied a cumulative 1.6 acres throughout the site and were treated in MY03. Chinese Privet (*Ligustrum sinense*) and Multiflora Rose (*Rosa multiflora*) have been observed within the proposed buffer enhancement, preservation areas, and along the eastern bank of Stream A1. A small cluster of Japanese Honeysuckle (Lonicera japonica) was also observed within the easement. Treatment was applied prior to planting, MY01, MY02, and MY03. Invasive densities have steadily declined across the site as an effect of the treatment. Although complete eradication did not take place, the survivability of planted stems nor the success of the project were affected by current populations during MY04. Invasive species

populations will continue to be monitored and spot herbicide treatments will be conducted as needed during the appropriate time of year. Please refer to Appendix B for visual assessment data and for vegetation plot data and vegetation plot photographs.

4.4 Maintenance and Management

Overall, the site appears to be progressing well towards the target success criteria. Supplemental planting during the Winter of 2022 appears to have successfully brought Plot 5 back into compliance with the MY05 success criteria of 260/planted stems per acre. The inhibition of planted stems within Plot 2 was a result of previous construction. The spillway outlet for the onsite pond was redirected prior to baseline. This modification redirected flow towards the western side of the enhancement area. The newly channelized flow inundated the area and prevented vegetative growth. Since then, the area has stabilized and will be supplemented with additional 3-gallon facultative wetland (FACW) tree species such as *Betula nigra* and *Quercus michauxii* in early 2024. In addition, invasive treatment areas will continue to be monitored and managed if additional exotic species appear within the site. If it is determined that the site's ability to achieve the performance standards are jeopardized, staff members of NCDMS/NCDWR will be notified, and an adaptive management plan will be developed to address these issues.

5.0 References

Lee, Michael T. Peet, Robert K., Steven D. Wentworth, Thomas R. 2008. CVS-EEP Protocol for Recording Vegetation Version 4.2. http://cvs.bio.unc.edu/protocol/cvs-eep-protocol-v4.2-lev1-2.pdf

Natural Resources Conservation Service (NRCS). Web Soil Survey of Randolph County. http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

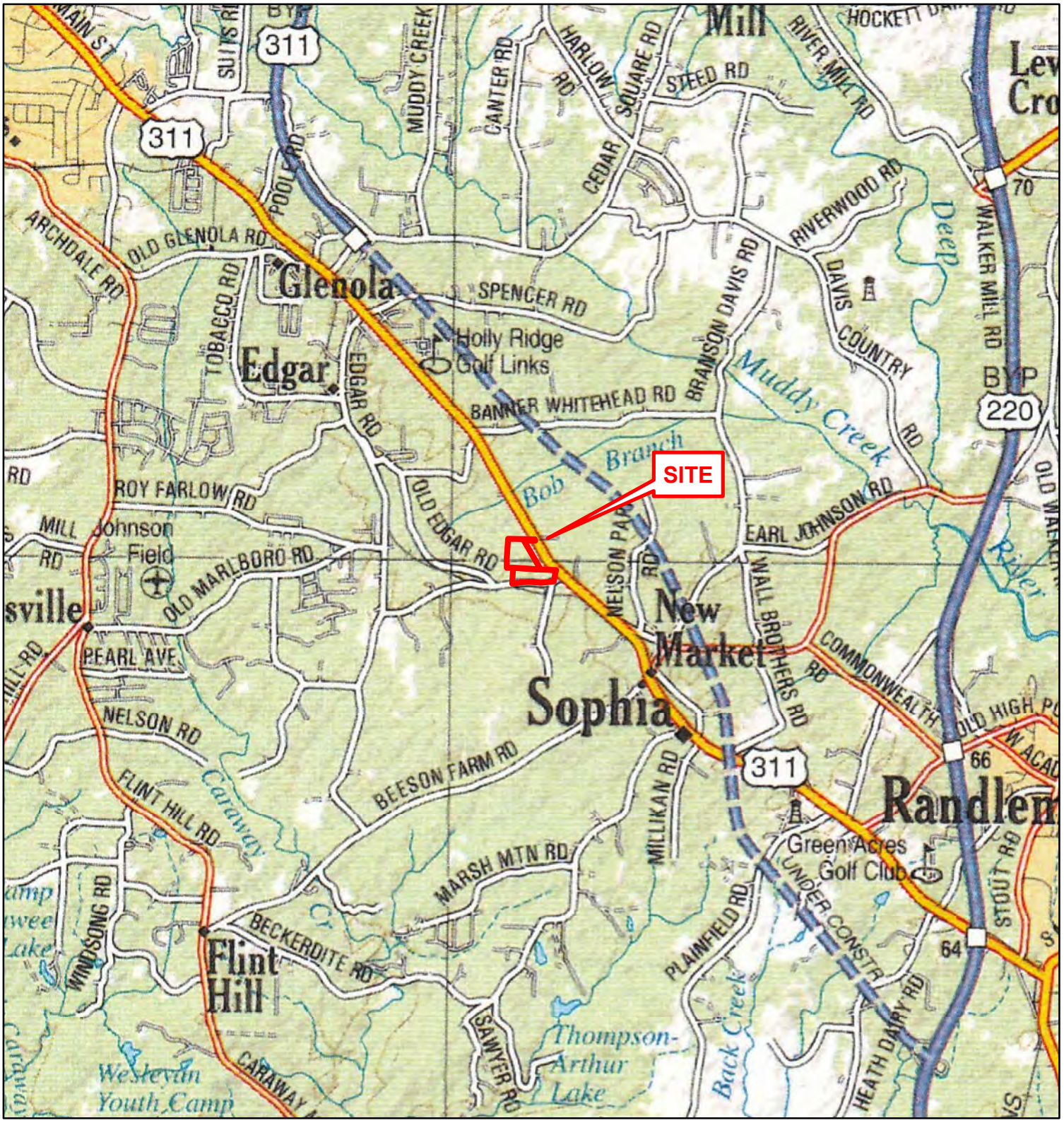
North Carolina Ecosystem Enhancement Program. 2009. Cape Fear River Basin Restoration Priorities 2009. http://www.nceep.net/services/lwps/cape_fear/RBRP%20Cape%20Fear%202008.pdf

North Carolina Division of Mitigation Services (DMS). 2017. Riparian Buffer and Nutrient Offset Buffer Baseline & Annual monitoring Report Template (Version 2.0, 05-2017). Raleigh, North Carolina. https://ncdenr.s3.amazonaws.com/s3fspublic/Mitigation%20Services/Document%20Management%20Library/Guidance%20and%20Templa te%20Documents/RB_NO_Base_Mon_Template_2.0_2017_5.pdf

North Carolina Division of Water Quality (NCDWQ), 2011. Surface Water Classifications. http://deq.nc.gov/about/divisions/water-resources/planning/classification-standards/classifications

APPENDIX A:

Figures/Tables



Boundaries are approximate and not meant to be absolute.

Map Source: DeLorme 2012 Atlas & Gazeteer

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0 0.5 1 2 Miles

Longhorn Riparian
Buffer Mitigation Site
Cataloging Unit 03030003
Randolph County, NC
Map Date: 01-07-19
LMG # 40-18-457

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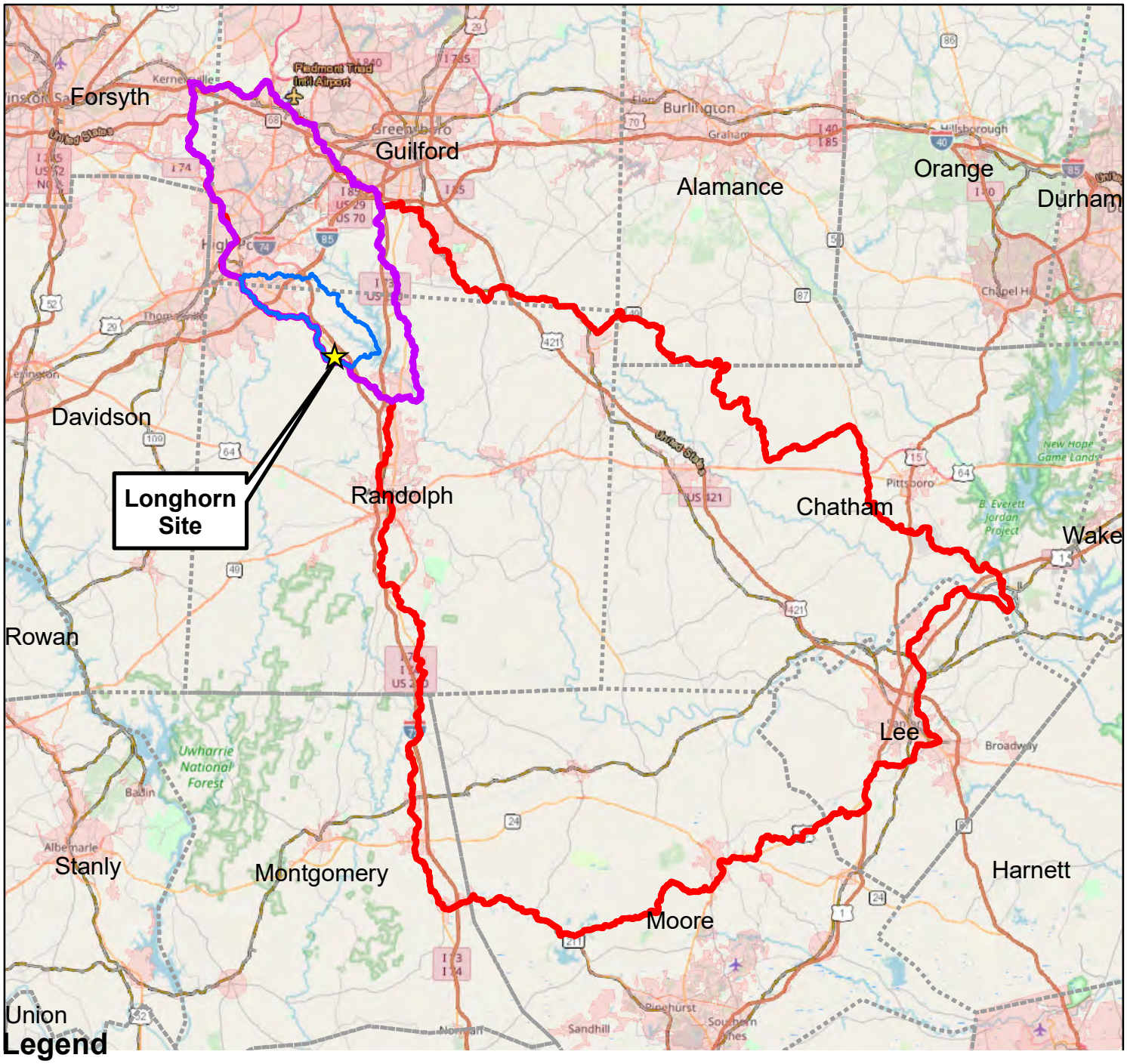
Figure 1
Vicinity Map



Legend

- Longhorn Project Boundary
- Muddy Creek Watershed (030300030106)
- Randleman Lake Watershed
- 8-Digit Hydrologic Unit (03030003)

N

0 2.5 5 10 15 20 Miles

Boundaries are approximate and not meant to be absolute.
Map Source: ArcGIS Open Street Map
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Longhorn Riparian
Buffer Mitigation Site
Cataloging Unit 03030003
Randolph County, NC
Map Date: 02-24-20
LMG # 19.249

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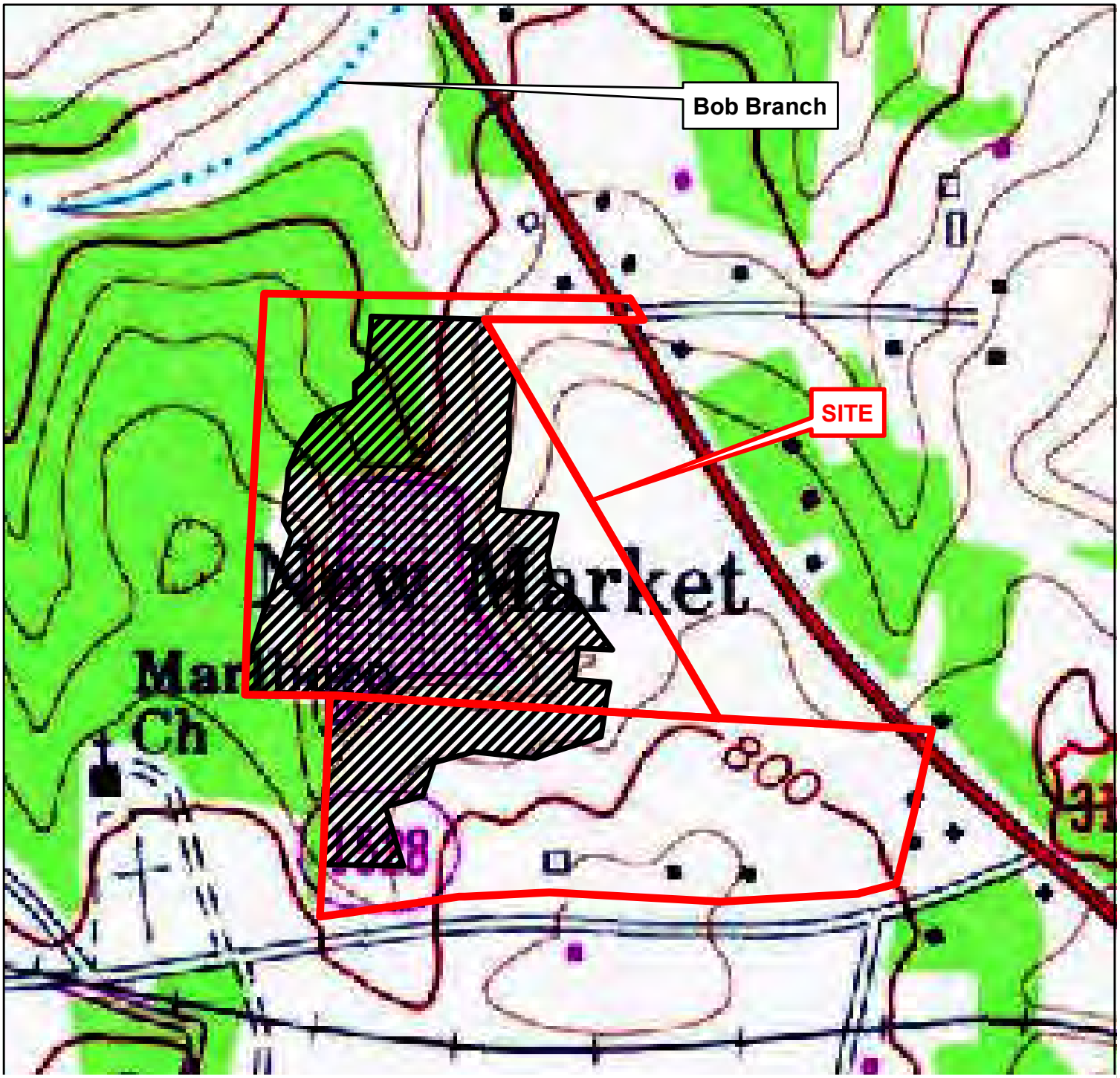
Figure 2
Watershed Map



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Parcel Boundary: ~45.18 Acres

Longhorn Conservation Easement: ~20.81 Acres

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Boundaries are approximate and not meant to be absolute.

Map Source: USGS Glenola Quadrangle 7.5 Minute

N

0 200 400 800 Feet

Longhorn Riparian
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LMG # 19.249

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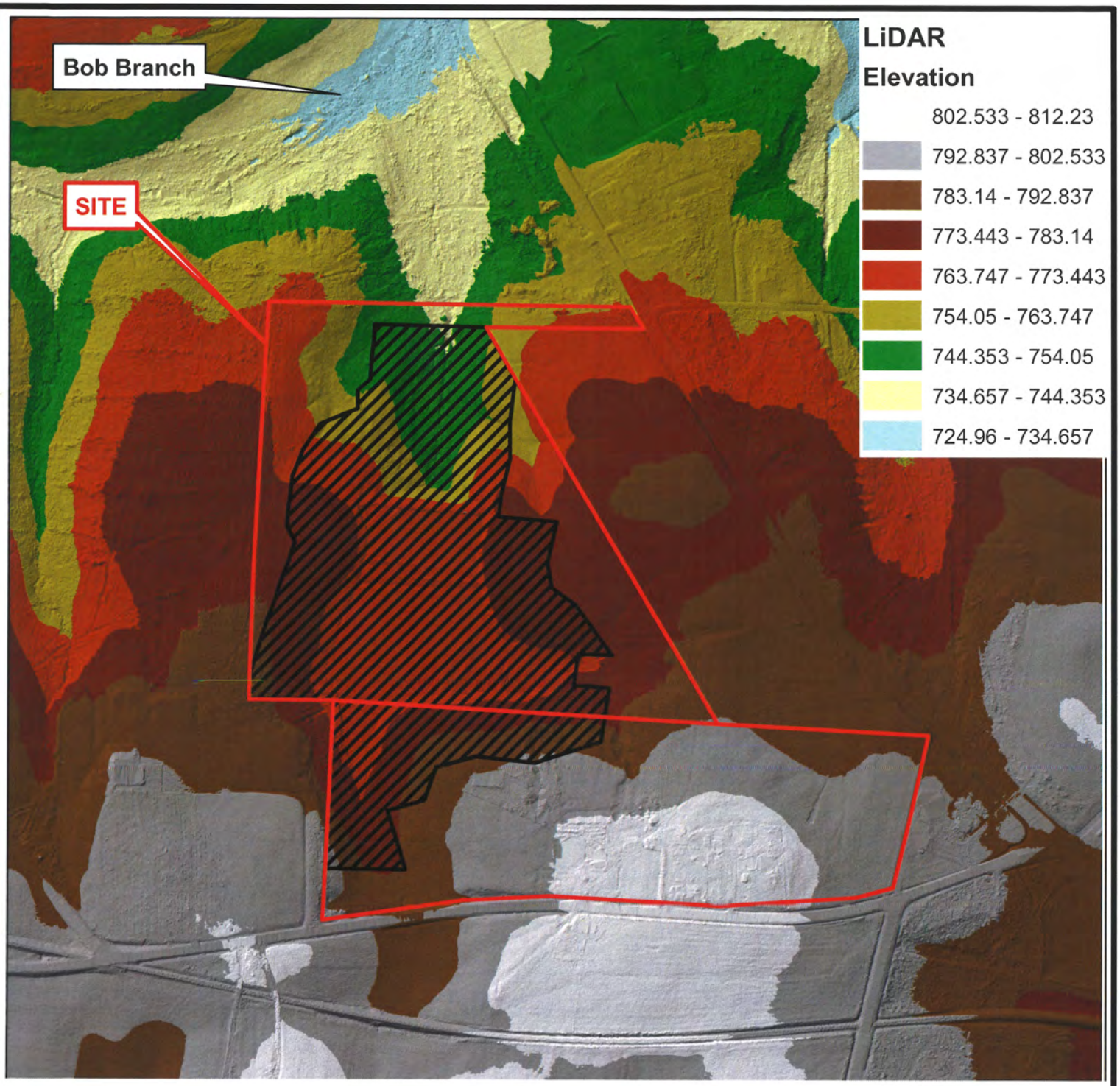
Figure 3
Topographic Map



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Longhorn Conservation Easement: ~20.81 Acres

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Boundaries are approximate and not meant to be absolute.

Map Source: NC Floodplain Mapping Program 2014 QL2 LiDAR Data

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0 200 400 800 Feet

Longhorn Riparian
Buffer Mitigation Site
Cataloging Unit 03030003
Randolph County, NC
Map Date: 02-24-20
LMG # 19.249

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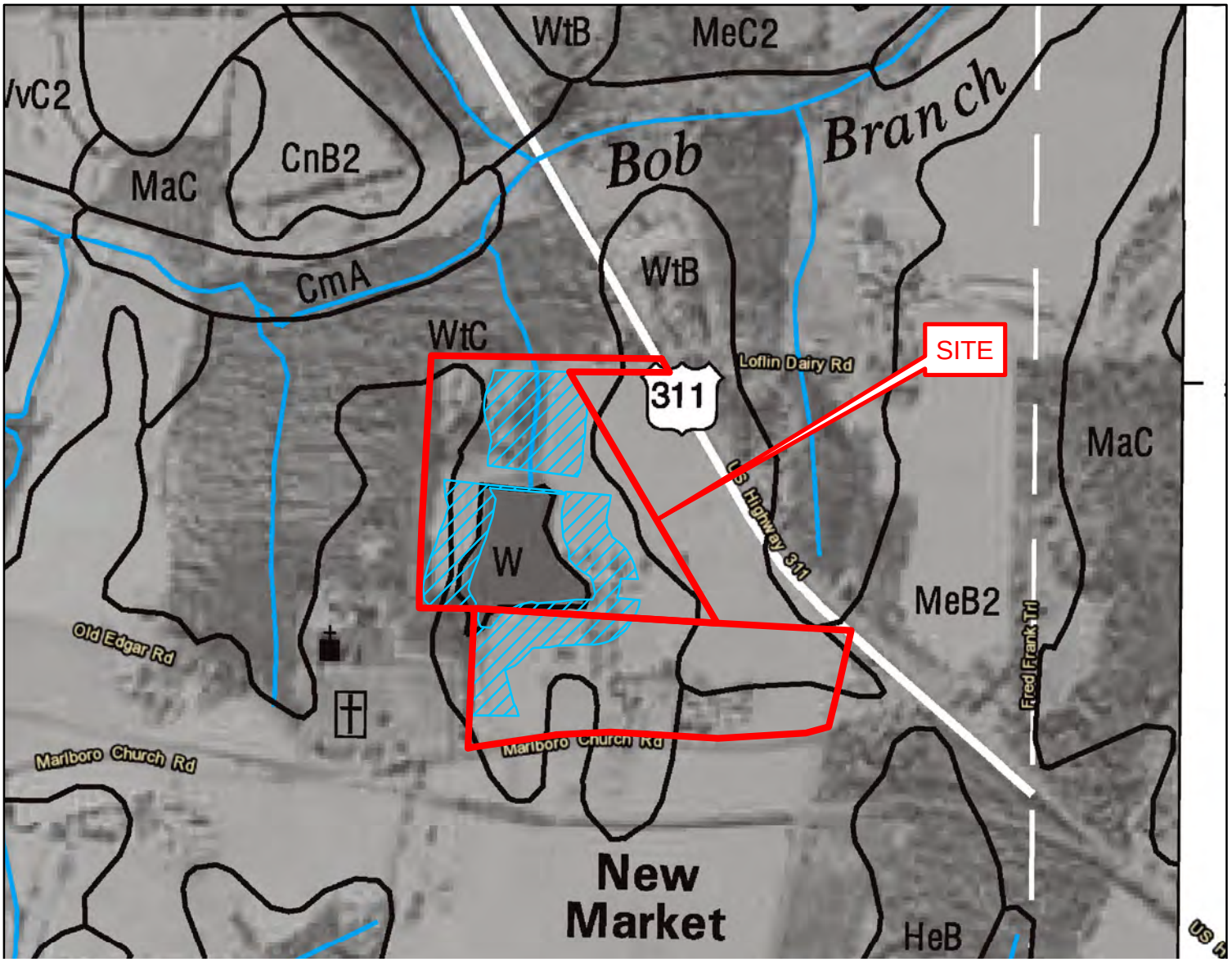
Figure 4
LiDAR Map



Legend

CmA: Chewacla and Wehadkee soils, 0-2% slopes, frequently flooded
CnB2: Coronaca clay loam, 2-8% slopes, moderately eroded
CnC2: Coronaca clay loam, 8-15% slopes, moderately eroded
HeB: Helena sandy loam, 2-6% slopes
HeC: Helena sandy loam, 6-10% slopes
MaC: Mecklenburg loam, 8-15% slopes
MeB2: Mecklenburg clay loam, 2-8% slopes, moderately eroded
MeC2: Mecklenburg clay loam, 8-15% slopes, moderately eroded
WtB: Wynott-Enon complex, 2-8% slopes
WtC: Wynott-Enon complex, 8-15% slopes
WvB2: Wynott-Enon complex, 2-8% slopes, moderately eroded
WvC2: Wynott-Enon complex, 8-15% slopes, moderately eroded
WzB: Wynott-Wilkes-Poindexter complex, 2-8% slopes

Longhorn Conservation Easement

Boundaries are approximate and not meant to be absolute.
Map Source: NRCS Randolph County Soil Survey, 2006

N
0 350 700 1,400 Feet

Longhorn Riparian
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Randolph County, NC
Map Date: 02-24-20
LMG # 19.249

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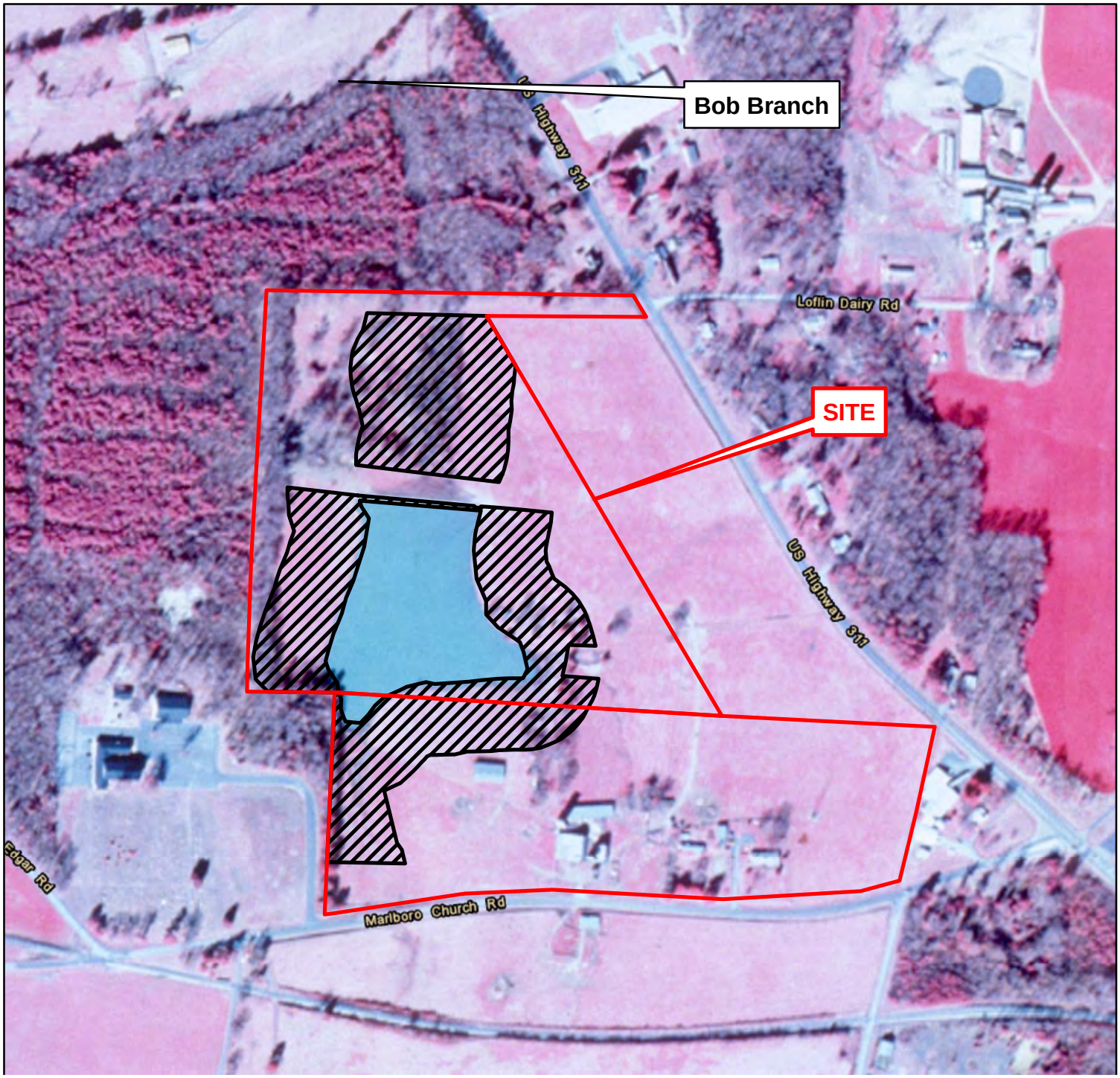
Figure 5
Soils Map



Legend

Parcel Boundary: ~45.18 Acres

Longhorn Conservation Easement: ~20.81 Acres

Boundaries are approximate and not meant to be absolute.

Map Source: 1998 NAPP Aerial Photography

N

0 200 400 800 Feet

Longhorn Riparian
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Randolph County, NC
Map Date: 02-24-20
LMG # 19.249

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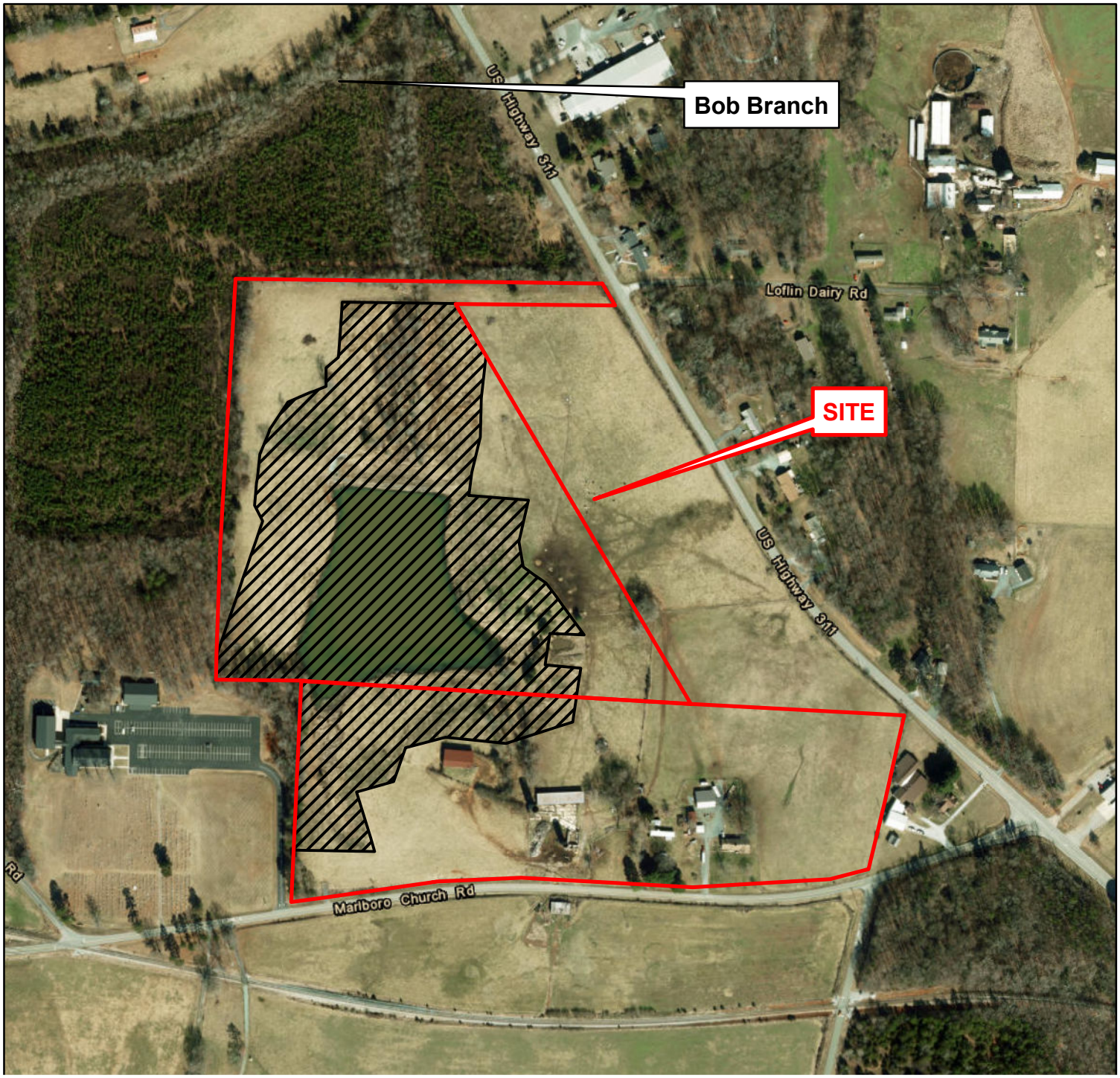
Figure 6
1998 Aerial Photograph



Legend

Parcel Boundary: ~45.18 Acres

Longhorn Conservation Easement: ~20.81 Acres

L:\WETLANDS\2019 WETLANDS FILES\LMG19.249 --- Longhorn Buffer Project, Kevin Yates\Mitigation Plan\Draft Mit Plan\Figures

Boundaries are approximate and not meant to be absolute.

Map Source: 2016 ESRI World Imagery

N

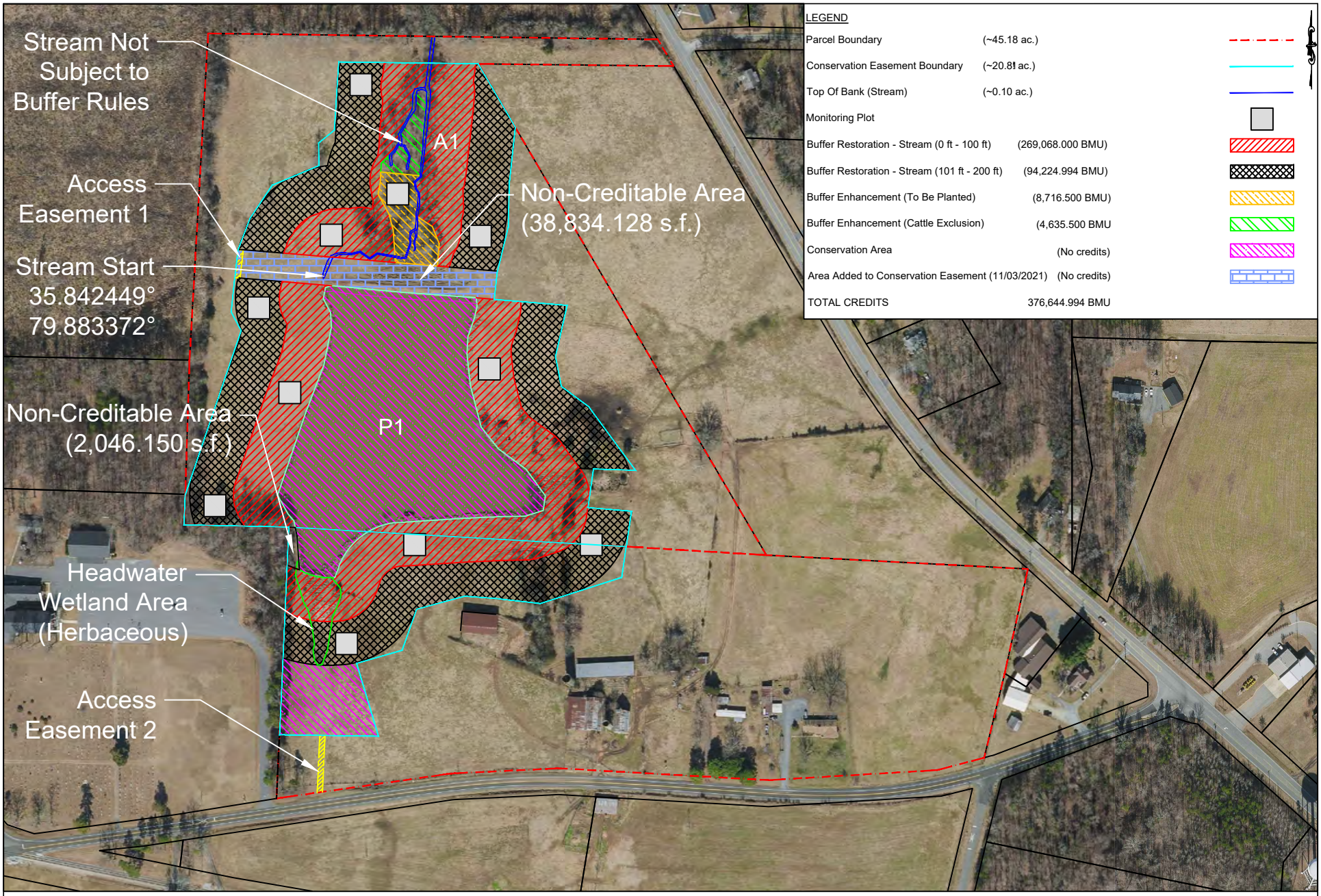
0 200 400 800 Feet

Longhorn Riparian
Buffer Mitigation Site
Cataloging Unit 03030003
Randolph County, NC
Map Date: 02-24-20
LMG # 19.249

CLEARWATER MITIGATION SOLUTIONS

LMG
LAND MANAGEMENT GROUP
a DAVEY company

Figure 7
2016 Aerial Photograph



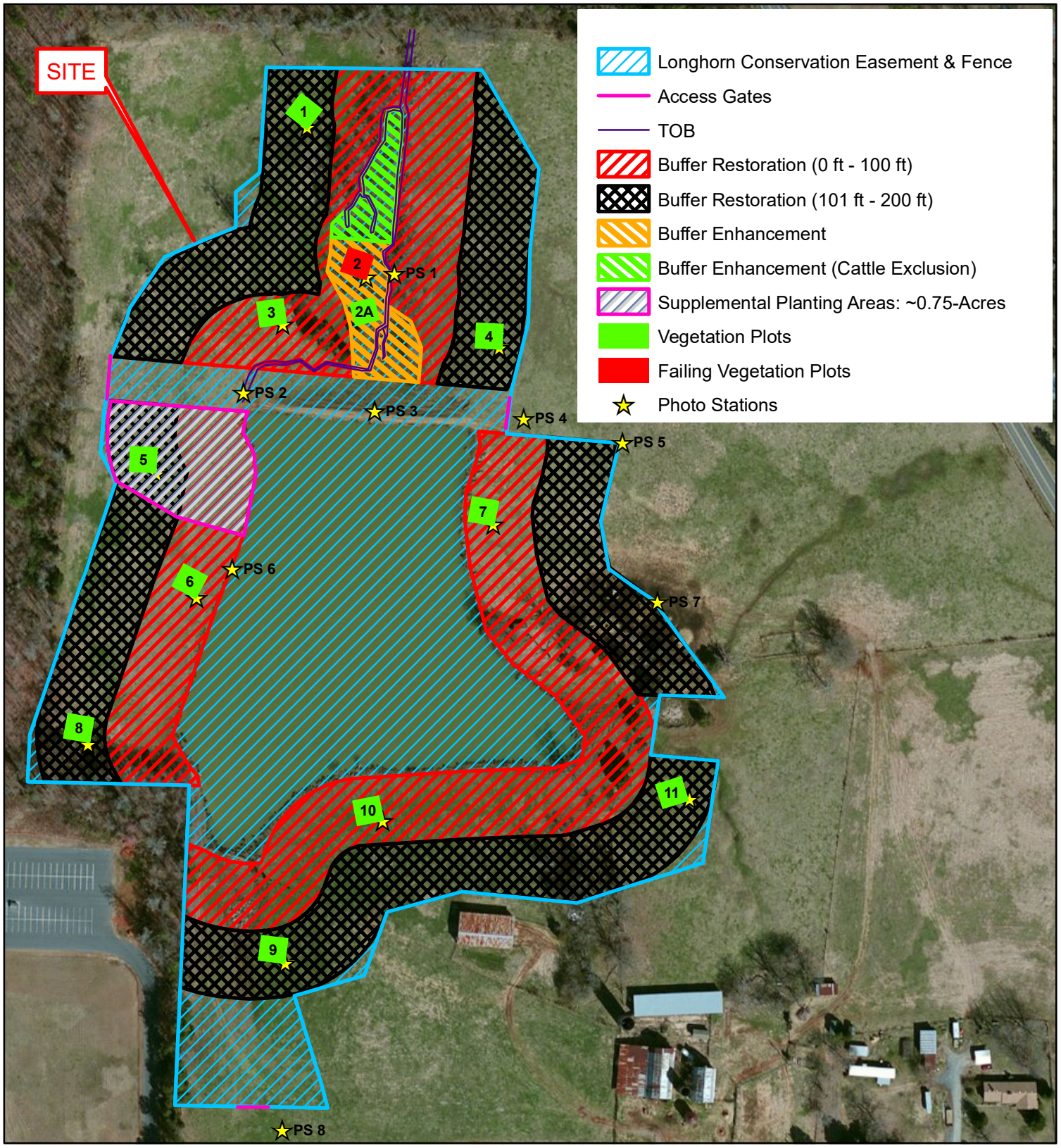
NOTES:
1. TAX PARCEL BOUNDARIES AND 2018 AERIAL FROM NCONEMAP.
2. BOUNDARIES ARE APPROXIMATE AND NOT MEANT TO BE ABSOLUTE.

0 150 300 600

LMG LAND MANAGEMENT GROUP a DAVEY company
CLEARWATER MITIGATION SOLUTIONS

Project: Longhorn Riparian Buffer Mitigation Site Catalog Unit 03030003		Date: November 2019	Revision Date: 2/26/2020
		Scale: 1"=300'	Job Number: LMG19.249
Title: Mitigation Plan		Drawn By: GSF	Figure: 8

L:\WETLANDS\2019 WETLANDS FILES\LMG19.249 --- Longhorn Buffer Project, Kevin Yates\CAD\Longhorn.dwg



L:\WETLANDS\2019 WETLANDS FILES\LMG19.249 --- Longhorn Buffer Project, Kevin Yates\Annual Monitoring\Baseline Monitoring\Figures

Boundaries are approximate and not meant to be absolute.

Map Source: 2016 ESRI World Imagery

N

0 100 200 400 Feet

Longhorn Riparian
Buffer Mitigation Site
Cataloging Unit 03030003
Randolph County, NC
Map Date: 11-22-22
LMG #19.249

CLEARWATER MITIGATION SOLUTIONS

DAVEY Resource Group

Figure 9
Current Condition Plan View
MY04

Table 1. Buffer Project Attributes
Longhorn Riparian Buffer Mitigation Site
Monitoring Year 4 - 2023

Project Name	Longhorn Riparian Buffer Restoration Project
Hydrologic Unit Code	03030003010060 (14 digit)
River Basin	Cape Fear
Geographic Location (Lat, Long)	35.841600, -79.882810
Site Protection Instrument (DB, PG)	DB 163 Page 99
Total Credits (BMU)	376,644.994
Types of Credits	Riparian Buffer
Mitigation Plan Date	February 2020
Initial Planting Date	April 1st, 2020
Baseline Monitoring Date	April 6th, 2020
Baseline Report Date	June, 2020
MY1 Report Date	December 1st, 2020
MY2 Report Date	November 1st, 2021
MY3 Report Date	November 22nd, 2022
MY4 Report Date	November 17th , 2023
MY5 Report Date	

Table 2. Longhorn, 100114, Project Mitigation Credits

Cape Fear - Randleman	Service Area
N/A	N Credit Ratio (sf/credit)
N/A	P Credit Ratio (sf/credit)

Credit Type	Location	Subject? (enter NO if ephemeral or ditch [1])	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area of Buffer Mitigation (sf)	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	A1	82,245	82,245	1	100%	1.00000	Yes	82,245.000	No	—	—
Buffer	Rural	Yes	I / P	Restoration	101-200	A1	96,615	96,615	1	33%	3.03030	Yes	31,882.982	No	—	—
Buffer	Rural	Yes	I / P	Enhancement	0-100	A1	17,433	17,433	2	100%	2.00000	Yes	8,716.500	No	—	—
Buffer	Rural	Yes	I / P	Enhancement via Cattle Exclusion	0-100	A1	9,271	9,271	2	100%	2.00000	Yes	4,635.500	No	—	—
Buffer	Rural	Yes	In-Line Pond	Restoration	0-100	P1	186,823	186,823	1	100%	1.00000	Yes	186,823.000	No	—	—
Buffer	Rural	Yes	In-Line Pond	Restoration	101-200	P1	188,915	188,915	1	33%	3.03030	Yes	62,342.012	No	—	—
						Totals:	581,302	581,302								

Enter Preservation Credits Below — **Eligible for Preservation (sf):** 193,767

Credit Type	Location	Subject?	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area for Buffer Mitigation (sf)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits
												—
						Preservation Area Subtotal (sf):		0				
						Preservation as % Total Area of Buffer Mitigation:		0.0%				
						Ephemeral Reaches as % Total Area of Buffer Mitigation:		0.0%				

TOTAL AREA OF BUFFER MITIGATION (TABM)		
Mitigation Totals	**Square Feet**	**Credits**
Restoration:	554,598	363,292.994
Enhancement:	26,704	13,352.000
Preservation:	0	0.000
Total Riparian Buffer:	581,302	376,644.994

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).

APPENDIX B:

Veg Data/Visual Assessment Table
Veg Plot Photos/Photo Stations

Table 4. Planted and Total Stems
Longhorn Riparian Buffer Mitigation Site
DMS Project No. 100114
Monitoring Year 4 - 2023

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

PnoLS: Number of planted stems excluding live stakes
P-All: Number of planted stems including live stakes
T: Total stems

CVS Project Code LRBMS. Project Name: Longhorn Riparian Buffer Mitigation Site

			Current Plot Data (MY4 2023)														
Scientific Name	**Common Name**	**Species Type**	**LRBMS-01-0001**			**LRBMS-01-0002A**			**LRBMS-01-0002**			**LRBMS-01-0003**			**LRBMS-01-0004**		
			PnoLS	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Boxelder Maple	Tree															
Acer rubrum	Red Maple	Tree															4
Baccharis halimifolia	Silverling, High-tide Bush, Mullet Bush, Groundsel Tree	Shrub Tree												3			
Betula nigra	River Birch, Red Birch	Tree				2	2	2				6	6	6	6	6	15
Carya glabra	Pignut Hickory	Tree															
Fraxinus pennsylvanica	Green Ash, Red Ash	Tree	7	7	7	6	6	6	3	3	3				2	2	2
Juniperus virginiana	Eastern Red Cedar	Tree															
Liquidambar styraciflua	Sweet Gum, Red Gum	Tree			62									14			23
Liriodendron tulipifera	Tulip Poplar	Tree										2	2	2	1	1	1
Pinus echinata	Shortleaf Pine, Rosemary Pine, Yellow Pine	Tree															
Platanus occidentalis	Sycamore, Plane-tree	Tree	19	19	19	1	1	1							7	7	7
Quercus pagoda	Cherrybark Oak, Swamp Spanish Oak	Tree	1	1	1	1	1	1				1	1	1			
Quercus phellos	Willow Oak	Tree	4	4	4							4	4	4	2	2	2
Ulmus alata	Winged Elm	Tree															12
Ulmus americana	American Elm	Tree															
		Stem count	31	31	93	10	10	10	3	3	3	13	13	30	18	18	66
		size (ares)	1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02		
		Species count	4	4	5	4	4	4	1	1	1	4	4	6	5	5	8
		Stems per ACRE	1255	1255	3764	405	405	405	121	121	121	526	526	1214	728	728	2671

Table 4. Planted and Total Stems
Longhorn Riparian Buffer Mitigation Site
DMS Project No. 100114
Monitoring Year 4 - 2023

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

PnoLS: Number of planted stems excluding live stakes
P-All: Number of planted stems including live stakes
T: Total stems

CVS Project Code LRBMS. Project Name: Longhorn Riparian Buffer Mitigation Site

			Current Plot Data (MY4 2023)														
Scientific Name	**Common Name**	**Species Type**	**LRBMS-01-0005**			**LRBMS-01-0006**			**LRBMS-01-0007**			**LRBMS-01-0008**			**LRBMS-01-0009**		
			PnoLS	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Boxelder Maple	Tree															
Acer rubrum	Red Maple	Tree															
Baccharis halimifolia	Silverling, High-tide Bush, Mullet Bush, Groundsel Tree	Shrub Tree												1			
Betula nigra	River Birch, Red Birch	Tree				1	1	1				1	1	1	1	1	1
Carya glabra	Pignut Hickory	Tree															
Fraxinus pennsylvanica	Green Ash, Red Ash	Tree													3	3	3
Juniperus virginiana	Eastern Red Cedar	Tree															
Liquidambar styraciflua	Sweet Gum, Red Gum	Tree			3			10			4			1			19
Liriodendron tulipifera	Tulip Poplar	Tree	3	3	3	4	4	4	5	5	5				2	2	2
Pinus echinata	Shortleaf Pine, Rosemary Pine, Yellow Pine	Tree															
Platanus occidentalis	Sycamore, Plane-tree	Tree	4	4	4	1	1	1	4	4	4	6	6	6	6	6	6
Quercus pagoda	Cherrybark Oak, Swamp Spanish Oak	Tree				2	2	2									
Quercus phellos	Willow Oak	Tree				3	3	3	1	1	1	5	5	5			
Ulmus alata	Winged Elm	Tree			1												
Ulmus americana	American Elm	Tree															
		Stem count	7	7	11	11	11	21	10	10	14	12	12	14	12	12	31
		size (ares)	1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02		
		Species count	2	2	4	5	5	6	3	3	4	3	3	5	4	4	5
		Stems per ACRE	283	283	445	445	445	850	405	405	567	486	486	567	486	486	1255

Table 4. Planted and Total Stems
Longhorn Riparian Buffer Mitigation Site
DMS Project No. 100114
Monitoring Year 4 - 2023

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

PnoLS: Number of planted stems excluding live stakes
P-All: Number of planted stems including live stakes
T: Total stems

CVS Project Code LRBMS. Project Name: Longhorn Riparian Buffer Mitigation Site

			Current Plot Data (MY4 2023)						Annual Means													
Scientific Name	**Common Name**	**Species Type**	**LRBMS-01-0010**			**LRBMS-01-0011**			**MY4 (2023)**			**MY3 (2022)**			**MY2 (2021)**			**MY1 (2020)**			**MY0 (2020)**		
			PnoLS	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Boxelder Maple	Tree			1						1												
Acer rubrum	Red Maple	Tree									4			4			13			1			
Baccharis halimifolia	Silverling, High-tide Bush, Mullet Bush, Groundsel Tree	Shrub Tree									4			2			1						
Betula nigra	River Birch, Red Birch	Tree	1	1	1	3	3	3	19	19	28	9	9	21	18	18	18	14	14	14	28	28	28
Carya glabra	Pignut Hickory	Tree												1			1						
Fraxinus pennsylvanica	Green Ash, Red Ash	Tree	3	3	3				24	24	24	15	15	15	21	21	21	17	17	17	25	25	25
Juniperus virginiana	Eastern Red Cedar	Tree			1			2			3			1									
Liquidambar styraciflua	Sweet Gum, Red Gum	Tree			7			6			131			183			105						
Liriodendron tulipifera	Tulip Poplar	Tree	2	2	2	7	7	7	17	17	17	23	23	23	26	26	26	29	29	29	46	46	46
Pinus echinata	Shortleaf Pine, Rosemary Pine, Yellow Pine	Tree			1						1												
Platanus occidentalis	Sycamore, Plane-tree	Tree	5	5	5	3	3	3	41	41	41	34	34	34	37	37	37	39	39	39	57	57	57
Quercus pagoda	Cherrybark Oak, Swamp Spanish Oak	Tree							5	5	5	4	4	4	5	5	5	2	2	2			
Quercus phellos	Willow Oak	Tree				3	3	3	13	13	13	21	21	21	22	22	22	22	22	22	27	27	27
Ulmus alata	Winged Elm	Tree						3			16												
Ulmus americana	American Elm	Tree				2	2	2	1	1	1			11									
		Stem count	11	11	21	18	18	29	120	120	289	106	106	320	129	129	249	123	123	124	183	183	183
		size (ares)	1			1			12			12			12			11			11		
		size (ACRES)	0.02			0.02			0.30			0.30			0.30			0.27			0.27		
		Species count	4	4	8	5	5	8	7	7	14	6	6	12	6	6	10	6	6	7	5	5	5
		Stems per ACRE	445	445	850	728	728	1174	405	405	975	357	357	1079	435	435	840	453	453	456	673	673	673

Visual Vegetation Assessment

Planted acreage	13.13

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.	0.10acres	0.10	0.8%
	Total		0.10	0.8%
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		0.10	0.8%

Easement Acreage	20.81

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 total easement acreage. Include species with the potential to directly outcompete native, young, woody stems in the short-term or community structure for existing communities. Species included in summation above should be identified in report summary.	0.10 acres	0.00	0.0%
Easement Encroachment Areas	Encroachment may be point, line, or polygon. Encroachment to be mapped consists of any violation of restrictions specified in the conservation easement. Common encroachments are mowing, cattle access, vehicular access. Encroachment has no threshold value as will need to be addressed regardless of impact area.	none	# Encroachments noted	

(1) Plot 1

(2) Plot 2

(3) Plot 3

(4) Plot 4

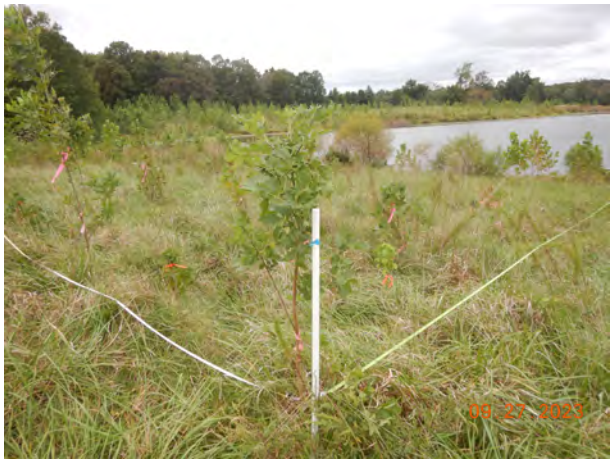
(5) Plot 5

(6) Plot 6

(7) Plot 7

(8) Plot 8

(9) Plot 9



(10) Plot 10

(11) Plot 11

(12) Plot 2A

(1) PS1 (looking south)

(2) PS2 (looking north towards restoration area)

(3) PS2 (looking east)

(5) PS3 (looking north into enhancement area)

(6) PS4 (looking west towards dam)

(7) PS4 (looking north into easement)

(8) PS5 (looking west along conservation easement)

(9) PS6 (looking north along pond edge)

(10) PS7 (looking southwest into restoration area)

(11) PS8 (looking north into restoration area)

APPENDIX C:

Vegetation Monitoring
Field Sheets

Plot (continued): LRBMS-01-0001

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data ddh (mm)	Oct 2022 Data Height (cm)	Oct 2022 Data DBH (cm)	Notes*	THIS YEAR'S DATA ddh (mm)	THIS YEAR'S DATA Height (cm)	THIS YEAR'S DATA DBH (cm)	THIS YEAR'S DATA Re-sprout	THIS YEAR'S DATA Vigor*	THIS YEAR'S DATA Damage*	THIS YEAR'S DATA Notes

Vegetation Monitoring Data (VMD) Datasheet — **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0001

VMD Year (1-5): 4 Date: 9/27/23 - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.843617 Datum:

Longitude or UTM-E: -79.883083 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 30

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
1	Fraxinus pennsylvanica	(f)	R	2.1	8.5	60.0		☑	80		☐	4		
2	Fraxinus pennsylvanica	(o)	R	4.7	8.6	58.0		☑	72		☐	4		
3	Fraxinus pennsylvanica	(e)	R	0.8	0.1	101.0	DBH?	☑	120		☐	4		
5	Fraxinus pennsylvanica	(l)	R	3.4	0.2	79.0		☑	83		☐	4		
7	Fraxinus pennsylvanica	(t)	R	6.4	0.2	94.0		☐	140	0.5	☐	4		
8	Quercus phellos	(v)	R	7.5	5.9	60.0		☑	60		☐	4		
9	Fraxinus pennsylvanica	(x)	R	9.1	0.2	72.0		☐	73		☐	4		
10	Platanus occidentalis	(n)	R	4.5	5.5	114.0	DBH?	☐	140	1.0	☐	4		
11	Fraxinus pennsylvanica	(i)	R	2.4	5.4	69.0		☑	69		☐	4		
12	Quercus pagoda	(a)	R	0.1	2.8	75.0		☐	94		☐	4		
13	Platanus occidentalis	(c)	R	0.3	5.8	110.0	DBH?	☑	140	0.5	☐	4		
14	Quercus phellos	(j)	R	3.1	2.8	100.0		☑	120		☐	4		
15	Quercus phellos	(s)	R	6.1	2.8	97.0		☑	154	0.5	☐			
16	Quercus phellos	(y)	R	9.0	2.8	69.0		☑	105		☐	4		
17	Platanus occidentalis	(A)	R	9.8	5.7	100.0		☑	155	0.5	☐			
665	Platanus occidentalis	(g)	R	2.2	9.0	105.0	DBH?	☐	120		☐	4		
666	Platanus occidentalis	(d)	R	0.5	1.0	68.0		☐	82		☐	4		
667	Platanus occidentalis	(p)	R	4.8	9.2	73.0		☐	90		☐	4		
668	Platanus occidentalis	(h)	R	2.5	2.0	50.0		☐	73		☐	4		
669	Platanus occidentalis	(w)	R	7.5	9.5	91.0		☐	85		☐	4		
670	Platanus occidentalis	(z)	R	9.5	9.5	88.0		☐	168	0.5	☐	4		
671	Platanus occidentalis	(q)	R	5.0	5.1	43.0		☐	72		☐	4		
672	Platanus occidentalis	(b)	R	0.2	5.5	96.0		☐	147	0.5	☐	4		
673	Platanus occidentalis	(k)	R	3.0	6.5	102.0	DBH?	☐	147	0.5	☐	4		
674	Platanus occidentalis	(r)	R	5.5	6.5	61.0		☐	90		☐	4		
675	Platanus occidentalis	(u)	R	7.0	1.5	115.0	DBH?	☐	140	0.5	☐	4		
676	Platanus occidentalis	(m)	R	4.5	0.3	110.0	DBH?	☐	125		☐	4		

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

X DIAG 4

Plot (continued): LRBMS-01-0001

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data: ddh (mm)	Height (cm)	DBH (cm)	Notes*	THIS YEAR'S DATA: ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

 # stems: 27

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes
Sycamore		6.5	2.2	120		4		
11		7.0	0.5	128		4		
11		0.3	9.5	97		4		
11		0.4	7.2	91		4		

***Notes by ID:**

1-No leaves
2-No leaves
3-No leaves
5-No leaves
8-broken stem
11-No leaves
13-No leaves
14-yr0: No leaves | yr1: shade
15-yr0: No leaves | yr1: broken stem
16-No leaves
17-No leaves
1-No leaves
2-No leaves
3-No leaves
5-No leaves
8-broken stem
11-No leaves
13-No leaves
14-yr0: No leaves | yr1: shade
15-yr0: No leaves | yr1: broken stem
16-No leaves
17-No leaves

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	Seedlings — Height Classes: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Saplings — DBH: Sub-Sapl	0-1 cm	1-2.5	Trees — DBH: 2.5-	5-	=10 (write DBH)
SW Gum		___	15/	25/11/3/5	2	___	9				
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					

****Required** if cut-off >10cm or subsample ? 100%.

●1 ●2 ●3 ●●4 ●●5 ●●6 ●●7 ●●8 ●●9 ●●10

Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0002

VMD Year (1-5): 4 Date: 9/27/23 - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.843 Datum:

Longitude or UTM-E: -79.882808 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 20

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
18	Fraxinus pennsylvanica	a	R	0.6	8.5	47.0		☑	66		☐	4		
21	Fraxinus pennsylvanica	b	R	1.0	3.7	125.0	0.6	☑	274	1.0	☐	4		
29	Fraxinus pennsylvanica	c	R	3.8	8.0	214.0	1.0	☑	365	3.0	☐	4		

 # stems: 3 New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

***Notes by ID:**
18-No leaves
21-No leaves
29-No leaves

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH Sub-Sapl	0-1 cm	1-2.5	TREES — DBH 2.5-	5-	=10 (write DBH)

**Required if cut-off >10cm or subsample ? 100%. ●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10 Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

X DIAG Y

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0002A

VMD Year (1-5): 4 Date: / / - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.842718 Datum:

Longitude or UTM-E: -79.882829 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 355

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Last Year's Data Height 1cm*	Last Year's Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
506	Fraxinus pennsylvanica	c	R	3.0	0.4	186.0	0.8	☐	304	2.0	☐	4		
507	Fraxinus pennsylvanica	b	R	2.8	3.2	196.0	1.0	☐	335	2.5	☐	4		
508	Fraxinus pennsylvanica	d	R	4.0	5.0	304.0	1.8	☐	411	3.0	☐	4		
509	Fraxinus pennsylvanica	h	R	9.5	1.0	275.0	1.5	☐	426	2.5	☐	4		
510	Platanus occidentalis	j	R	9.8	0.2	365.0	4.0	☐	487	6.0	☐	4		
511	Fraxinus pennsylvanica	f	R	7.0	4.6	135.0	*DBH?*	☐	195	1.0	☐	4		
512	Quercus pagoda	i	R	9.6	9.6	66.0		☐	78		☐	4		
513	Fraxinus pennsylvanica	e	R	5.0	7.8	136.0	0.5	☐	213	1.5	☐	4		
514	Betula nigra	g	R	8.0	4.5	137.0	0.2	☐	30		☐	4	Broken	mainstem
515	Betula nigra	a	R	0.0	10.0	141.0	0.3	☐	186	0.5	☐	4	Broken	2nd stem

 # stems: 10

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

X DIA 6 4

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0003

VMD Year (1-5): 4 Date: 9/27/23 - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.842796 Datum:

Longitude or UTM-E: -79.883235 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 0

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party:	Role:
WF	
RW	
JD	

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
35	Quercus phellos	(i)	R	5.6	10.0	63.0		☑	94		☐	4		
37	Quercus phellos	(e)	R	3.0	9.9	79.0		☑	98		☐	3		deer
38	Quercus phellos	(a)	R	0.5	9.8	43.0		☑	73		☐	4		
39	Betula nigra	(d)	R	2.4	1.9	94.0		☑	101		☐	4		deer
42	Quercus phellos	(c)	R	2.1	7.2	52.0		☑	82		☐	4		
43	Betula nigra	(h)	R	4.9	2.1	125.0	DBH?	☑	155	0.5	☐	4		
44	Betula nigra	(g)	R	4.5	7.2	94.0		☑	121		☐	4		
46	Betula nigra	(k)	R	6.7	7.3	120.0	DBH?	☑	151	1.0	☐	4		
49	Liriodendron tulipifera	(l)	R	9.1	4.8	69.0		☑	84		☐	4		
50	Quercus pagoda	(b)	R	0.9	4.8	87.0		☐	96		☐	4		
52	Liriodendron tulipifera	(f)	R	3.6	4.8	138.0	0.3	☐	225	1.5	☐			
53	Betula nigra	(j)	R	6.4	4.8	116.0	DBH?	☑	122	0.5	☐			
516	Betula nigra	(m)	R	9.2	4.8	223.0	0.7	☐	335	1.0	☐			

 # stems: 13

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes
Tulip Poplar		3.6	4.8	100				

***Notes by ID:**

35-No leaves
37-No leaves
38-yr0: No leaves | yr3: shade
39-No leaves
42-No leaves
43-No leaves
44-No leaves
46-No leaves
49-No leaves
53-No leaves

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

4 DIA 6 4

Plot (continued): LRBMS-01-0003

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data: ddh (mm)	Height (cm)	DBH (cm)	Notes*	THIS YEAR'S DATA: ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
SW Gum		___	●●	●●	●	___		●	●		
Baccharis		___	●			___		●●			
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					

**Required if cut-off >10cm or subsample ? 100%.

●1 ●2 ●3 ●●4 ●●5 ●●6 ●●7 ●●8 ●●9 ●●10

Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0004

VMD Year (1-5): 4 Date: 9 / 27 / 23 - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.842709 Datum:

Longitude or UTM-E: -79.882146 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 10

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: WF, MW, JP Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
55	Platanus occidentalis	c	R	2.3	9.7	135.0	DBH?	☐	195	1.5	☐	4		
58	Platanus occidentalis	f	R	3.4	7.9	198.0	1.5	☑	304	3	☐	4		
59	Quercus phellos	d	R	2.5	2.0	75.0		☐	93		☐	4		
62	Platanus occidentalis	m	R	7.4	9.5	214.0	1.0	☐	274	2.0	☐	4		
63	Platanus occidentalis	i	R	4.7	9.5	214.0	1.3	☐	274	2.0	☐	4		
64	Platanus occidentalis	g	R	9.1	4.9	86.0		☐	103		☐	4		
65	Betula nigra	l	R	6.3	4.9	214.0	1.2	☑	274	2.5	☐	4		
66	Platanus occidentalis	g	R	3.8	4.9	183.0	0.9	☐	274	3	☐	4		
69	Liriodendron tulipifera	h	R	4.2	3.2	89.0		☐	130		☐	4		
70	Fraxinus pennsylvanica	o	R	8.3	1.5	109.0	DBH?	☐	195	0.5	☐	4		
71	Fraxinus pennsylvanica	k	R	5.4	2.0	66.0		☑	90		☐	4		
519	Betula nigra	n	R	8.1	1.0	42.0		☑	45		☐	4		
520	Betula nigra	p	R	8.4	1.4	39.0		☑	39		☐	4		
521	Betula nigra	a	R	1.5	2.0	66.0		☑	66		☐	4		
522	Platanus occidentalis	b	R	1.5	8.0	93.0		☑	118		☐	4		
523	Betula nigra	e	R	3.0	4.5	20.0		☑	37		☐	4		
524	Betula nigra	j	R	5.1	6.8	47.0		☑	53		☐	4		

 # stems: 17

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes
[redacted]		0.0	2.5	205	1.0	4		
Quercus phellos								

***Notes by ID:**

58-No leaves
65-No leaves
71-yr0: No leaves | yr1: shade
519- resprout
520- resprout
521- resprout
522- resprout
523- resprout
524- resprout

Fescue 90%
Dayflower 2%
Andropogon 5%

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

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X DIAG Y

Plot (continued): LRBMS-01-0004

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data: ddh (mm)	Height (cm)	DBH (cm)	Notes*	THIS YEAR'S DATA: ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
winged Elm		___	6, 1, 1, 1, 3			___					
Betula nigra		___	3, 6			___					
Sour Gum		___	5	15,	5, 5	___		6,			
Red maple		___	::			___					
[redacted]		___				___					
		___				___					
		___				___					

**Required if cut-off >10cm or subsample ? 100%.

●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10

Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0005

VMD Year (1-5): 4 Date: / / - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.842197 Datum:

Longitude or UTM-E: -79.883868 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 0

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
74	Platanus occidentalis	e	R	5.4	9.8	170.0	0.3	☐	259	2.5	☐	4		
75	Liriodendron tulipifera	g	R	9.0	9.9	76.0		☑	115		☐	3	Gnawed	
81	Platanus occidentalis	a	R	0.0	7.4	304.0	2.4	☐	365	4.0	☐	4		
82	Platanus occidentalis	f	R	6.1	4.4	182.0	1.0	☐	274	2.5	☐	4		
527	Liriodendron tulipifera	b	R	1.0	2.7	101.0	*DBH?*	☑	120		☐	4		
683	Platanus occidentalis	c	R	2.3	9.5	44.0		☐	70		☐	4	resprout	
684	~~Platanus occidentalis~~ Liriodendron tulipifera	d	R	4.0	4.0	60.0		☐	60		☐	4	broken main trunk	

 # stems: 7

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

***Notes by ID:** 75-No leaves
527- resprout

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	Seedlings — Height Classes: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Saplings — DBH: Sub-Sapl	0-1 cm	1-2.5	Trees — DBH: 2.5-	5-	=10 (write DBH)
Sw Gum				•	•			•			
Sumac				•							

**Required if cut-off >10cm or subsample ? 100%. ●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10 Form WS2. ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

X DIA 6 4

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0006

VMD Year (1-5): 4 Date: / / - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.841705 Datum:

Longitude or UTM-E: -79.883631 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 20

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
88	Betula nigra	a	R	0.1	0.1	260.0	1.7 ☑		426	6.0	☐	4		
90	Liriodendron tulipifera	g	R	4.8	8.5	139.0	0.5 ☑		180	1.0	☐	4		
94	Quercus phellos	h	R	5.0	0.2	198.0	1.0 ☐	~	238	2.0	☐	4		
95	Liriodendron tulipifera	i	R	5.2	5.8	96.0	☑		155	1.0	☐	4		
96	Quercus pagoda	j	R	7.4	0.2	127.0	DBH? ☐		175	1.5	☐	4		
97	Liriodendron tulipifera	e	R	2.8	5.2	142.0	0.6 ☑		195	1.0	☐	4		
98	Quercus phellos	d	R	10.0	0.1	215.0	1.5 ☐		335	3.0	☐	4		
99	Liriodendron tulipifera	b	R	0.3	5.8	213.0	1.4 ☑		304	3.0	☐	4		
100	Quercus pagoda	k	R	8.9	2.8	57.0	☐		102		☐	4		
101	Platanus occidentalis	c	R	1.7	3.0	243.0	1.5 ☐		350	3.0	☐	4		
102	Quercus phellos	f	R	4.0	2.8	135.0	DBH? ☑		176	1.0	☐	4		

 # stems: 11

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

***Notes by ID:**

88-No leaves
90-No leaves
95-No leaves
97-No leaves
99-No leaves
102-No leaves

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

X DIAG 4

Plot (continued): LRBMS-01-0006

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data ddh (mm)	Oct 2022 Data Height (cm)	Oct 2022 Data DBH (cm)	Notes*	THIS YEAR'S DATA ddh (mm)	THIS YEAR'S DATA Height (cm)	THIS YEAR'S DATA DBH (cm)	THIS YEAR'S DATA Re-sprout	THIS YEAR'S DATA Vigor*	THIS YEAR'S DATA Damage*	THIS YEAR'S DATA Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
SW Gum		___	::	:	::	___		:			
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					

**Required if cut-off >10cm or subsample ? 100%. ●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10 Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0007

Party: Role:

Date last planted:

VMD Year (1-5): 4 Date: / / - / /

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.842 Datum:

Longitude or UTM-E: -79.882172 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 10

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
107	Platanus occidentalis	(i)	R	8.3	8.5	335.0	2.5 ☐		365	5.0	☐			
108	Liriodendron tulipifera	(e)	R	3.8	0.1	304.0	4.0 ☐		457	5.5	☐			
109	Platanus occidentalis	(g)	R	7.5	5.6	365.0	3.4 ☐		396	7.0	☐			
111	Platanus occidentalis	(f)	R	4.6	5.6	274.0	2.5 ☑		335	3-5	☐			
112	Liriodendron tulipifera	(j)	R	9.6	0.3	243.0	2.5 ☑		457	4.0	☐			
113	Liriodendron tulipifera	(c)	R	1.4	5.6	213.0	1.7 ☐	3	320	2.5	☐			
114	Quercus phellos	(b)	R	0.4	2.8	183.0	0.7 ☐		243	2.5	☐			
115	Platanus occidentalis	(d)	R	2.5	2.8	365.0	6.0 ☑		548	8.0	☐			
118	Liriodendron tulipifera	(h)	R	7.6	2.8	228.0	1.5 ☑		426	4.0	☐			
689	Liriodendron tulipifera	(a)	R	0.1	8.5	98.0	☐		175	1.0	☐			

 # stems: 10

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes

***Notes by ID:**
111-broken stem
112-No leaves
115-No leaves
118-No leaves

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

X DIAG Y

Plot (continued): LRBMS-01-0007

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data ddh (mm)	Height (cm)	DBH (cm)	Notes*	THIS YEAR'S DATA ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
SW Gum		___	•		••	___		•			
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					

**Required if cut-off >10cm or subsample ? 100%.

●1 ●2 ●3 ●●4 ●●5 ●●6 ●●7 ●●8 ●●9 ●●10

Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0008

VMD Year (1-5): 4 Date: / / - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.841098 Datum:

Longitude or UTM-E: -79.884179 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 10

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
120	Quercus phellos	ⓑ	R	0.3	9.9	243.0	1.0	☑	365	3.0	☐	4		
121	Quercus phellos	ⓔ	R	3.3	9.9	139.0	0.5	☑	335	2.0	☐	4		
122	Platanus occidentalis	ⓒ	R	0.6	1.5	228.0	1.2	☐	385	3.0	☐	4		
125	Quercus phellos	ⓗ	R	6.0	9.9	237.0	1.4	☑	365	3.0	☐	4		
126	Platanus occidentalis	ⓖ	R	5.9	1.6	245.0	1.9	☐	365	3.0	☐	4		
127	Platanus occidentalis	ⓐ	R	0.2	7.0	426.0	4.0	☐	487	7.0	☐			
128	Platanus occidentalis	ⓚ	R	8.4	1.7	213.0	1.2	☐	396	3.0	☐	4		
131	Quercus phellos	ⓘ	R	7.1	4.3	80.0		☑	161	0.5	☐	4		
132	Platanus occidentalis	ⓙ	R	7.8	7.1	548.0	4.5	☐	670	8.0	☐	4		
133	Quercus phellos	ⓕ	R	4.1	4.3	83.0		☑	128	0.5	☐	4		
134	Platanus occidentalis	ⓓ	R	0.7	4.2	243.0	1.5	☐	426	4.0	☐	4		

 # stems: 11 New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes
Betula nigra		8.3	0.3	61		4		

***Notes by ID:**

120-No leaves
121-No leaves
125-No leaves
131-yr0: No leaves | yr1: broken stem
133-No leaves

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

4 DIA 6 4

Plot (continued): LRBMS-01-0008

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data: ddh (mm)	Height (cm)	DBH (cm)	Notes*	THIS YEAR'S DATA: ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
Baccharis		___				___	•				
Sw. Gum		___		•		___					
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					

**Required if cut-off >10cm or subsample ? 100%. ●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10 Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0009

VMD Year (1-5): 4 Date: / / - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.840212 Datum:

Longitude or UTM-E: -79.883204 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 10

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
135	Liriodendron tulipifera	ⓑ	R	0.4	9.0	170.0	0.9	☑	396	3.0	☐			
136	Platanus occidentalis	ⓒ	R	3.4	9.1	176.0	1.0	☐	301	2.5	☐			
137	Liriodendron tulipifera	ⓖ	R	6.1	9.1	304.0	2.5	☐	426	6.0	☐			
139	Platanus occidentalis	ⓘ	R	8.9	9.2	365.0	2.0	☐	426	5.0	☐			
140	Betula nigra	ⓓ	R	3.3	0.4	213.0	0.7	☑	274	1.5	☐			
141	Platanus occidentalis	ⓐ	R	0.2	6.0	243.0	2.5	☑	426 ~~365~~	4.0	☐			
145	Platanus occidentalis	ⓕ	R	5.4	6.0	243.0	2.0	☑	365	4.0	☐			
147	Platanus occidentalis	ⓗ	R	8.0	3.2	170.0	1.2	☐	304	2.0	☐			
531	Platanus occidentalis	ⓒ	R	1.0	3.1	121.0	*DBH?*	☑	245	1.5	☐			

 # stems: 9

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes
Green Ash		9.8	1.0	52		4		
Green Ash		2.0	9.8	50		4		
Green Ash		0.2	9.9	83		4		

***Notes by ID:**
135-No leaves
140-No leaves
141-No leaves
145-No leaves
531- resprout

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

X DIA 6 4

Plot (continued): LRBMS-01-0009

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data: ddh (mm)	Height (cm)	DBH (cm)	Notes*	THIS YEAR'S DATA: ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
Sw Gum		___	●●	⊠		___		●●	●		
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					
		___				___					

**Required if cut-off >10cm or subsample ? 100%. ●1 ●●2 ●●3 ●●4 ●●5 ●●6 ●●7 ●●8 ●●9 ●●10

Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0010

VMD Year (1-5): 4 Date: / / - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.840777 Datum:

Longitude or UTM-E: -79.882729 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 0

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
152	Platanus occidentalis	ⓓ	R	2.9	9.8	170.0	1.3	☐	243	2.0	☐	4		
157	Fraxinus pennsylvanica	ⓐ	R	0.1	0.1	125.0	*DBH?*	☑	178	1.0	☐	4		
158	Liriodendron tulipifera	ⓔ	R	3.1	6.8	96.0		☑	117	0.5	☐	4		
159	Liriodendron tulipifera	ⓕ	R	3.2	1.4	79.0		☑	140	0.5	☐	4		
160	Platanus occidentalis	ⓗ	R	6.2	1.4	61.0		☑	74		☐	4		
161	Fraxinus pennsylvanica	ⓒ	R	0.2	5.8	195.0	1.0	☑	243	2.0	☐	4		
162	Fraxinus pennsylvanica	ⓑ	R	0.2	3.0	140.0	0.5	☑	243	1.5	☐	4		
163	Platanus occidentalis	ⓖ	R	3.2	4.2	115.0	*DBH?*	☑	177	1.0	☐	4		
694	Platanus occidentalis	ⓙ	R	9.5	8.5	49.0		☐	65		☐	4		
695	Platanus occidentalis	ⓘ	R	7.7	1.5	58.0		☐	88		☐	4		

 # stems: 10

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes
Betula nigra		6.5	7.5	106		4		resprout

***Notes by ID:**

157-No leaves
158-No leaves
159-broken stem
160-yr0: No leaves | yr1: shade
161-No leaves
162-No leaves
163-broken stem

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

X DIA 6 4

Plot (continued): LRBMS-01-0010

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data: ddh (mm)	Height (cm)	DBH (cm)	Notes*	THIS YEAR'S DATA: ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	SEEDLINGS — HEIGHT CLASSES: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	SAPLINGS — DBH: Sub-Sapl	0-1 cm	1-2.5	TREES — DBH: 2.5-	5-	=10 (write DBH)
~~Douglas fir~~ Shotleaf											
Red cedar											
SW Gum											
Box elder											

**Required if cut-off >10cm or subsample ? 100%.

●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10

Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu='Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Vegetation Monitoring Data (VMD) Datasheet **Please fill in any missing data and correct any errors.**

Plot LRBMS-01-0011

VMD Year (1-5): 4 Date: / / - / /

Taxonomic Standard:

Taxonomic Standard DATE:

Latitude or UTM-N: (dec.deg. or m) 35.840864 Datum:

Longitude or UTM-E: -79.881218 UTM Zone:

Coordinate Accuracy (m): X-Axis bearing (deg): 350

Plot Dimensions: X: 10 Y: 10 ☐ Plot has reverse orientation for X and Y axis (Y is 90 degrees to the right of X

Party: Role:

Date last planted:

New planting date m/yy? /

☐ Check box if plot was not sampled, specify reason below

Notes:

ID	Species Name	Map char	Source*	X 0.1m	Y 0.1m	Oct 2022 Data Height 1cm*	Oct 2022 Data DBH 1 cm	Notes*	THIS YEAR'S DATA Height 1cm*	DBH 1 cm	Re-sprout	Vigor*	Damage*	Notes
167	Quercus phellos	b	R	2.1	9.4	213.0	1.0 ☑		426	3.0	☐	4		
168	Betula nigra	g	R	5.0	9.1	243.0	1.5 ☑		304	3.0	☐	4		
169	Liriodendron tulipifera	n	R	8.0	9.6	160.0	0.7 ☑		274	2.0	☐	4		
170	Liriodendron tulipifera	m	R	7.9	7.4	123.0	1.5 ☑		243	2.0	☐	4		
171	Quercus phellos	i	R	5.2	7.1	130.0	DBH? ☑		200	1.0	☐	4		
172	Liriodendron tulipifera	c	R	2.3	7.0	153.0	0.7 ☑		278	2.0	☐	4		
174	Liriodendron tulipifera	e	R	2.7	3.8	168.0	0.7 ☑		259	2.5	☐	4		
175	Liriodendron tulipifera	h	R	5.3	3.9	274.0	2.0 ☐		365	4.0	☐	4		
177	Liriodendron tulipifera	l	R	7.9	4.0	72.0	☑		110		☐	4		
178	Liriodendron tulipifera	k	R	7.9	1.8	135.0	DBH? ☑		259	2.0	☐	4		
179	Quercus phellos	j	R	5.5	1.0	93.0	☑		135	0.5	☐	4		
180	Platanus occidentalis	o	R	8.2	0.1	274.0	1.8 ☐		335	3.0	☐	4		
182	Platanus occidentalis	p	R	9.3	6.1	243.0	1.3 ☐		325	4.0	☐	4		
183	Platanus occidentalis	a	R	1.2	2.5	213.0	0.9 ☐		274	2.5	☐	4		
533	Ulmus americana	d	R	2.5	7.0	95.0	☑		75		☐	3	under mowing	
698	Betula nigra	f	R	3.8	0.8	40.0	☐		88		☐	4		

 # stems: 16

New Stems, not included last year, but are obviously planted. If more space needed, use blank PWS (Planted Woody Stems) Form:

Species Name	Source*	X (m)	Y (m)	Height 1 cm*	DBH 1 cm	Vigor*	Damage*	Notes
Ulmus americana		4.6	9.2	57		3		
Betula nigra		4.9	3.5	46				

***Notes by ID:**

167-No leaves
168-No leaves
169-No leaves
170-No leaves
171-No leaves
172-No leaves
174-No leaves
177-No leaves
178-No leaves
179-No leaves
533- resprout

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.

Printed in the CVS Entry Tool ver. 2.5.0

X DIAG Y

Plot (continued): LRBMS-01-0011

ID	Species	map char	source	X (m)	Y (m)	Oct 2022 Data ddh (mm)	Height (cm)	DBH (cm)	Notes*	THIS YEAR'S DATA ddh (mm)	Height (cm)	DBH (cm)	Re-sprout	Vigor*	Damage*	Notes

Natural Woody Stems - tallied by species

Explanation of cut-off & subsampling**:

Height Cut-Off (All stems shorter than this are ignored. If >10cm, explain why to the right.): ☐ 10cm ☐ 50cm ☐ 100cm ☐ 137cm

Species Name	☑ c	Seedlings — Height Classes: Sub-Seed	10 cm-50 cm	50 cm-100 cm	100 cm-137 cm	Saplings — DBH: Sub-Sapl	0-1 cm	1-2.5	Trees — DBH: 2.5-	5-	=10 (write DBH)
Sw Gum			●● ●				●				
Red Cedar			●	●							
Elm winged			●	●							

**Required if cut-off >10cm or subsample ? 100%.

●1 ●2 ●3 ●4 ●5 ●6 ●7 ●8 ●9 ●10

Form WS2, ver 9.1

*SOURCE: Tr=Transplant, L=Live stake, B=Ball and burlap, P=Potted, Tu=Tubling, R=bare Root, M=Mechanically, U=Unknown

*VIGOR: 4=excellent, 3=good, 2=fair, 1=unlikely to survive year, 0=dead, M=missing.

*DAMAGE: REMoval, CUT, MOWing, BEAVer, DEER, RODents, INSects, GAME, LIVESTock, Other/Unknown ANIMal, Human TRAMpled, Site Too WET, Site Too DRY, FLOOD, DROUght, STORM, HURRicane, DISeased, VINE Strangulation, UNKNown, specify other.

*HEIGHT PRECISION drops to 10cm if >2.5m and 50cm if >4m.