STALLINGS BUFFER RESTORATION SITE -- DMS #357
Jones County NC -- Neuse River HUC# 03020204-010050
MY-2 Annual Monitoring Report (Draft)

North Carolina Department of Environmental Quality
Division of Mitigation Services (DEQ-DMS) -- Contract # 5765

Data Collected: September 2015 **Final Report Submitted: Jan 2016**

Environmental Quality	**N.C. Department of Environmental Quality** **Division of Mitigation Services** **1652 Mail Service Center** **Raleigh, NC 27699-1652** --- **DMS Project Manager: Kristin Miguez**

Data Collection & Report Prepared by: **MOGENSEN MITIGATION, INC.** **P.O. Box 690429 Charlotte, NC 28227** **(704) 576-1111 Rich@MogMit.com**	***Robert J. Goldstein & Assoc., Inc.*** **1221 Corporation Parkway, suite 100** **Raleigh NC 27610 --- (919) 872-1174** **MMI-RJGA project mgr: Gerald Pottern** **Gpottern@RJGAcarolina.com**

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ENVIRONMENTAL CONSULTANTS

1.0. Project Summary

1.1. Project Goals & Objectives

The Stallings Buffer Restoration Project is located on a 146-acre parcel of former cropland in northern Jones County NC, in the Trent River sub-basin of the Neuse River Basin, USGS Cataloging Unit (CU) #03020204 (Figure 1A). The NC Department of Transportation (NCDOT) purchased this property east of Wyse Fork Rd (SR-1002) in 2003 for conservation use, and also acquired a conservation easement on 3 additional acres of farmed riparian land immediately upstream on the west side of Wyse Fork Rd.

The 2010 Neuse River Basin Restoration Priority Plan (RBRP) identifies agricultural impacts including stream channelization, wetland ditching, loss of forested riparian buffers, and nonpoint source runoff as causes of water quality degradation in the Trent River watershed. The Plan identifies "reestablishment of riparian buffers and corridors of substantial width to improve connectivity of protected areas" and "projects that address agricultural runoff" as priority goals for this watershed. Restoration Goals for CU #03020204 as identified in the 2010 plan include:

- Promote nutrient and sediment reduction in agricultural areas by restoring and preserving wetlands, streams and riparian buffers.
- Continue targeted implementation of Nutrient Offset and Riparian Buffer program projects, and focus NCDOT-sponsored restoration in areas where it will provide ecosystem functional improvement.
- Protect, augment and connect Natural Heritage Areas and other conservation lands.

The Stallings Buffer Restoration Project was identified as an opportunity to improve water quality and augment conservation lands within the Trent River watershed. The project goals include the following:

- Provide improved water quality by reducing nutrient and sediment loads to the receiving waters.
- Improve terrestrial and aquatic habitat and connectivity in the Flat Swamp Watershed.

These goals will be achieved through implementation of the following project objectives (Figure 1B):

- Restore 31.6 acres of riparian buffers by planting native tree species at a sufficient density to promote native forest succession, thus increasing riparian area root density and nutrient uptake.
- Preserve 19.1 acres of riparian riverine wetlands along Flat Swamp and its tributaries.

1.2. Project Success Criteria

Tree planting on 31.6 acres of riparian buffers along Streams A, B, and C was conducted in February to early March 2014. Post-construction annual monitoring will be conducted from 2014 through 2018 using 25 permanent CVS vegetation plots all five years, and 25 temporary warranty plots during the first three years. These plots were established by RJG&A and Mogensen Mitigation Inc. (MMI) staff during March 2014. The vegetative success of the buffer restoration site will be evaluated based on planted woody stem density and survival rates. The vegetation success criteria for riparian buffer mitigation

units (BMUs) require a minimum of 260 planted native hardwood trees per acre at the end of 5 years, based on the 2014 Consolidated Buffer Mitigation Rules. (The previous criterion of 320 trees per acre at three years has been rescinded).

1.3. Project Setting & Pre-Restoration Conditions

The Stallings Buffer Restoration Project is located on a 146-acre parcel of former cropland in the northern corner of Jones County NC, along the transition zone between the Inner Coastal Plain and Outer Coastal Plain, eight miles southeast of downtown Kinston NC. Traveling to the site from Kinston, drive east on US-70 into Jones County, turn right on Wyse Fork Rd (SR-1002) about 0.5 mile past the Lenoir/Jones County line, then travel south approximately 3.5 miles to Webb Farm Road (SR-1306). The Stallings site is located southeast of the intersection of Wyse Fork Road and Webb Farm Road (Figure 1A). The northern portion of the site is accessible from Webb Farm Road, and the southern portion is accessible from Wyse Fork Road near the intersection with Moore Rd (SR-1306). Elevations on the site range from 42 to 52 feet above mean seal level (NAVD-83).

The Stallings site is drained by channelized streams and ditches flowing southeastward into Flat Swamp along the eastern boundary of the site (Figures 1B-C). In May 2011 the NC Division of Water Resources (DWR) agent Chris Pullinger provided a letter and color-coded map indicating streams subject to Neuse River Buffer Rules (Appendix A). Intermittent or perennial channels subject to Buffer Rules are mapped in blue, and ephemeral channels or ditches **not** subject to Buffer Rules are mapped in red by DWR. The three streams where DMS seeks buffer credits (blue streams in DWR's map) are labeled A, B and C in Figures 1B-C. A fourth stream segment near the northeast corner of the site is also mapped in blue (Stream D in Figures 1B-C), but is not labeled on the DWR map or listed in the letter. Due to this discrepancy DMS is not seeking buffer credit along Stream D. Flat Swamp flows into Beaver Creek in the Trent River sub-basin of the Neuse River basin, USGS Cataloging Unit #03020204-010050 and DWR sub-basin 03-04-11. An adjacent protected conservation area (non-DMS) across Flat Swamp east of the Stallings site creates a combined conservation area of 307 acres. This site in turn connects with Great Dover Swamp, comprising several thousand acres of mostly undeveloped land in the Beaver Creek and Trent River watershed, between Wyse Fork Rd and US-70.

The USDA Soil Survey of Jones County (Barnhill, 1981) shows Goldsboro fine sandy loam (GoA) mapped on the higher, well-drained areas on the northern part of the site, Meggett loam (Me) on the majority of the site including the planted areas, and Stockade fine sandy loam (Sx) along the Flat Swamp floodplain. Meggett loam and Stockade fine sandy loam are designated hydric soils, although much of the area mapped as Meggett has been drained and altered by agricultural activity and is not jurisdictional wetland in its current condition. Vegetation on the former cropland areas includes a mix of grasses, herbs, shrubs, vines, and tree seedlings typical of abandoned fields. A 120-ft-wide mowed powerline right-of-way lies east-west across the middle of the site. The floodplain of Flat Swamp along the eastern edge of the site supports about 16 acres of mature bottomland hardwood and swamp forest wetlands, and the lower reaches of Streams A and C (north and south of the powerline) have about 3 acres of disturbed (previously farmed) scrub-dominated riparian wetlands. Wetland hydrology is maintained by a combination of upland runoff and occasional overbank flooding (Stantec, 2011).

1.4. Project Design Approach, Components and Mitigation Assets

The 146-acre Stallings Buffer Restoration Site is former cropland purchased by NC Department of Transportation (NCDOT) in 2003, and is protected for conservation use by a deed restriction. The 3-acre riparian buffer on the adjacent Lee property west of Wyse Fork Rd is protected by a conservation easement. In 2003 the Stallings site had sparse cover of predominantly herbaceous old-field weeds, but vegetation density and height increased over the subsequent decade (2003 to 2013) as shrubs and sapling trees became established, especially *Baccharis*, *Morella*, *Rubus*, and *Pinus*.

The Mitigation Plan (Stantec Consulting Services, 2011) included 40.0 acres of Riparian Buffer Restoration (40.0 Mitigation Units), 27.2 acres of Nitrogen Nutrient Offset (27.2 Mitigation Units), 3.0 acres of Wetland Enhancement (1.5 Mitigation Units), 16.1 acres of Wetland Preservation (3.2 Mitigation Units), and 5,403 feet of Stream Enhancement (2,161 Mitigation Units), all on the 146-acre eastern tract. The 3-acre western tract has no mitigation credits.

During the interval between development of the 2011 Mitigation Plan and project implementation in Feb-Mar 2014, natural colonization and growth of tree saplings and shrubs continued in the fallow fields and proposed wetland enhancement areas. The Riparian Buffer Restoration area was subsequently reduced from 40.0 acres to 31.6 acres, with buffers extending 200 feet laterally from the DWR-verified stream-banks, except where limited by the powerline right-of-way, roads, and areas with adequate natural woody stem density (other than pines and exotics). DMS and DWR determined that the proposed Wetland Enhancement areas along the lower reaches of Streams A and C would instead be categorized as Wetland Preservation, since supplemental tree planting was no longer needed. Stream channel reconstruction was determined to be unnecessary and was deleted from the plan based on the engineer's calculations of shear stress and stream power, and confirmation by DWR in May 2011 that the existing channels appear relatively stable. The proposed nutrient offset buffers along the non-stream ditches were deleted, as were the proposed stream enhancement mitigation credits along Streams A, B and C.

The original plan to clear, grub, and rip the soils in the riparian buffer planting areas was changed to mowing only to preserve the many native volunteer saplings. Areas to be planted in 2014 were mowed with a bush-hog to facilitate planting and reduce competition for the planted trees. *Pinus, Liquidambar*, and most shrubs were mowed or cut, but other volunteer native hardwood trees (*Ulmus, Acer, Platanus, Fraxinus, Carpinus, Quercus* and others) were left standing to the extent practicable. Some areas were too wet and soft to effectively bush-hog, and were left as is prior to planting. The contractor planted 14,200 bare-root tree seedlings of Tulip poplar, Sycamore, Black gum, Water oak, and Red oak within the 31.6 acres of riparian buffer restoration areas using Dibble bars during late February to early March 2014. The non-mowed planted areas are dominated by *Baccharis*, *Morella*, *Rubus*, *Juncus*, *Solidago*, *Eupatorium*, and grasses, plus scattered *Pinus* and *Liquidambar* saplings. Most of the planted seedlings were 10 to 18 inches tall, with a few seedlings 24 inches or taller, and average planting density was 449 stems/acre.

The final built project as surveyed in March 2014 includes 31.6 acres of Riparian Buffer Restoration, which may be applied as either 31.6 Riparian Buffer Mitigation Credits, 31.6 Nitrogen Nutrient Offset Credits, or a combination of Riparian Buffer and Nitrogen Nutrient Offset Mitigation Credits up to a

total of 31.6 (not on the same footprint) depending on mitigation need as per agreement with DWR (Table 1). The other 19.1 acres of wetland preservation, 86 acres of non-buffer upland preservation, and 3-acre conservation easement west of Wyse Fork Rd do not provide any mitigation credits, but will help improve water quality and habitat along waterways that are not subject to Neuse River Buffer Rules but may be Section 404 jurisdictional waters (Tables 1 to 4 and Figures 1A to 1C).

The monitoring contractor (MMI/RJG&A with assistance from DMS staff) installed 25 permanent CVS vegetation monitoring plots (10 x 10 meter) marked with steel conduit at the corners (including a tall pipe at the (0,0) corner) during March 11-12, 2014. The side closest to the stream was designated as the x-axis, and a photo of each plot was taken from the 0,0 corner. For each plot the latitude and longitude coordinates of the 0,0 corner were recorded with a Trimble sub-meter GPS unit, and the x-axis angle (from 0,0 corner to 10,0 corner) was recorded with a magnetic compass. The x,y coordinates of each planted tree within the plots was recorded using meter tapes laid along the plot edges, and survey flagging was tied loosely around each tree to facilitate subsequent measurements and to distinguish them from volunteer trees.

1.5. Current Conditions (2015) and Performance Summary

The Stallings site was evaluated visually and vegetation plot data collected during September 28-30, 2015, about 19 months after the original planting in Feb 2014. Native volunteer shrubs, especially *Morella*, *Baccharis*, and *Rubus* are continuing to grow vigorously over most of the site, interspersed with a dense herb layer dominated by *Solidago*, *Eupatorium*, *Juncus*, and grasses overtopping the planted trees. Larger volunteer *Pinus taeda*, *Platanus*, *Liquidambar*, *Acer*, *Fraxinus*, *Celtis*, and *Ulmus* ranging from 4 to 8 inches dbh are scattered across the site and common in some areas, but not dense.

Areas where low planted tree density was reported in MY-1 (Sep 2014) received supplemental planting in February 2015 by the original planting contractor, Carolina Silvics. Approximately 3,800 bare-root seedlings of *Liriodendron*, *Quercus*, and *Fraxinus* were planted on 20 acres, at densities of 109 to 242 trees per acre based on the 2014 CVS plot and warranty plot data (Appendix C, Figure 5).

Thirteen of the 25 permanent CVS plots (10 m x 10 m) had 3 to 6 living planted trees found, and did not meet the 260 stems/acre success criteria. The other 12 CVS plots had 7 to 12 living planted stems, and exceeded the 260 stems/acre success criteria. The average density of surviving planted stems for all 25 plots in 2015 was 275 trees per acre, down from 327 trees per acre in 2014, but meeting success criteria on average. Most trees were less than 1.0 m tall and were difficult to find among the 1.5 to 2.5 m tall dense herbs and shrubs; detection success rate for planted stems is probably lower on the Stallings site than on other typical buffer restoration sites. Many of the trees found had low vigor, apparently due to shading and competition from fast-growing shrubs and herbs.

The 25 temporary warranty plots (107.6 x 10 ft = 100 m2) yielded a range of 2 to 9 trees and average of 4.6 trees per plot, or 186 trees per acre, an increase from the 2014 average of 139 trees per acre. This apparent increase may be due to better stem detection rates due to tree growth, and/or supplemental planting conducted in Feb 2015. It remains difficult, as noted in the 2014 report, to find un-flagged

planted trees, especially the small-leaved oak species and black gum, among the dense volunteer growth. The resulting 2015 warranty plot counts may still under-represent the actual planted stem density.

Using live planted stem counts only, we mapped those areas where both the CVS plots and warranty plots had fewer than seven stems as Low Woody Density Problem Areas (Figure 2.1-2.2; Table 5). Other areas where either the CVS plots or warranty plots had seven or more stems were considered as having adequate planted stem density, given the difficulty in locating unflagged planted stems.

Scattered small patches of invasive *Ligustrum sinense*, *Rosa multiflora*, and *Lonicera japonica* were noted in many areas, especially along ditch banks and near unmowed edges of the planted areas, but did not appear abundant or large enough to be suppressing planted tree growth. Three large and dense patches of invasive *Lespedeza cuneata* were located and mapped in the eastern portion of the site, each 0.25 to 0.50 acre (Figure 2.1-2.2). Two CVS plots had more than 50 percent *Lespedeza* cover, and low planted tree counts (5 trees each), although additional surviving trees may have escaped detection among the dense shrub cover. Small and diffuse patches of *Lespedeza* are present in many other areas elsewhere on the project site.

2.0. Monitoring Methods

Baseline Monitoring and Annual Monitoring and reporting methods shall follow the current DMS - provided templates and guidelines (Lee *et al* 2008; NC-EEP 2012). The 25 permanent CVS vegetation plots (10 x 10 meters) installed will be evaluated and photographed in Sep-Oct each year from 2014 through 2018. For planted trees, the species, height, dbh, and qualitative vigor rating of each tree will be recorded (CVS Level 1 data). For volunteer trees and shrubs, the numbers of stems of each species within each height category will be recorded (CVS Level 2 data). Planted and volunteer species will be identified using Radford et al. (1968) and Weakley (2012).

For the first three years (2014 through 2016) an additional 25 temporary vegetation warranty plots (100 m^2 each) scattered throughout the restored buffer areas will be evaluated. Warranty plots may be either square (10 x 10 m) or strip plots (107.6 x 10 ft) with locations varying from year to year to maximize the cumulative sampling area covered. These plots will record the total number of surviving planted tree species only; species and size data will not be recorded, unless a high prevalence of invasive exotic species is observed. Warranty plots will be mapped cumulatively on the CCPV figures, with the current year's plots shown in a contrasting color.

The Stallings site does not have a perimiter fence, but the monitoring team will check the "Conservation Area" signage along the boundary roads and look for evidence of encroachment by off-road vehicles, livestock, or other potential sources of damage. Areas of invasive exotic vegetation in or adjacent to the planted areas will be mapped in accordance with current DMS guidance. No stream monitoring or hydrology monitoring is included in the Stallings project monitoring scope. Yearly monitoring reports will be submitted to DWR for approval.

3.0. References

Barnhill, W.L. (1981). *Soil Survey of Jones County, North Carolina*. USDA Soil Conservation Service (Natural Resources Conservation Service), Raleigh, NC.

Lee, Michael T., Peet, Robert K., Roberts, Steven D., Wentworth, Thomas R. (2008). *CVS-EEP Protocol for Recording Vegetation version 4.2, October 2008*. Retrieved September 2011, from: http://cvs.bio.unc.edu/methods.htm

NC Ecosystem Enhancement Program. (2014). *NC-EEP Monitoring Report Template and Guidance version 1.0, February 2014.* http://portal.ncdenr.org/web/eep/dbb-resources

NC Ecosystem Enhancement Program. (2010). *Neuse River Basin Restoration Priority Plan, Draft 2010*. http://www.nceep.net/services/restplans/DRAFT_RBRP_Neuse_201007.pdf

Radford, A.E., H.E. Ahles, and C.R. Bell (1968). *Manual of the Vascular Flora of the Carolinas*. University of North Carolina Press. Chapel Hill, NC.

Robert J. Goldstein & Associates, Inc. (2014). *Stallings Buffer Restoration Site #357 MY-0 Baseline Monitoring Report, Final, July 2014*. Prepared for NC Ecosystem Enhancement Program, Raleigh, NC.

Stantec Consulting Services, Inc. (2011). *Mitigation Plan: Stallings Buffer Restoration, EEP Project # 357, December 2011*. Prepared for NC Ecosystem Enhancement Program, Raleigh, NC.

US Army Corps of Engineers (2003) *Stream Mitigation Guidelines*. US Army Corps of Engineers, US Environmental Protection Agenmcy Region 4, USDA Natural Resources Conservation Service, NC Wildlife Resources Commission, and NC Dept. Environment & Natural Resources.

Weakley, Alan (2012). *Flora of the Carolinas, Virginia, Georgia, and Surrounding Areas*. http://www.herbarium.unc.edu/flora.htm.

Figure 1A. Project Vicinity Map, Stallings Buffer Restoration Site, DMS #357 -- Neuse River Basin HUC #03020204-010050, Jones County, NC. Directions to Site: From Kinston, drive east on US-70, turn right on Wyse Fork Rd (SR-1002) about 0.5 mile past the Lenoir/Jones County line, then drive south 3.5 miles to Webb Farm Road (SR-1306). The northern portion of the site can be accessed from Webb Farm Road, and the southern portion can be accessed from Wyse Fork Road near the Moore Rd intersection.

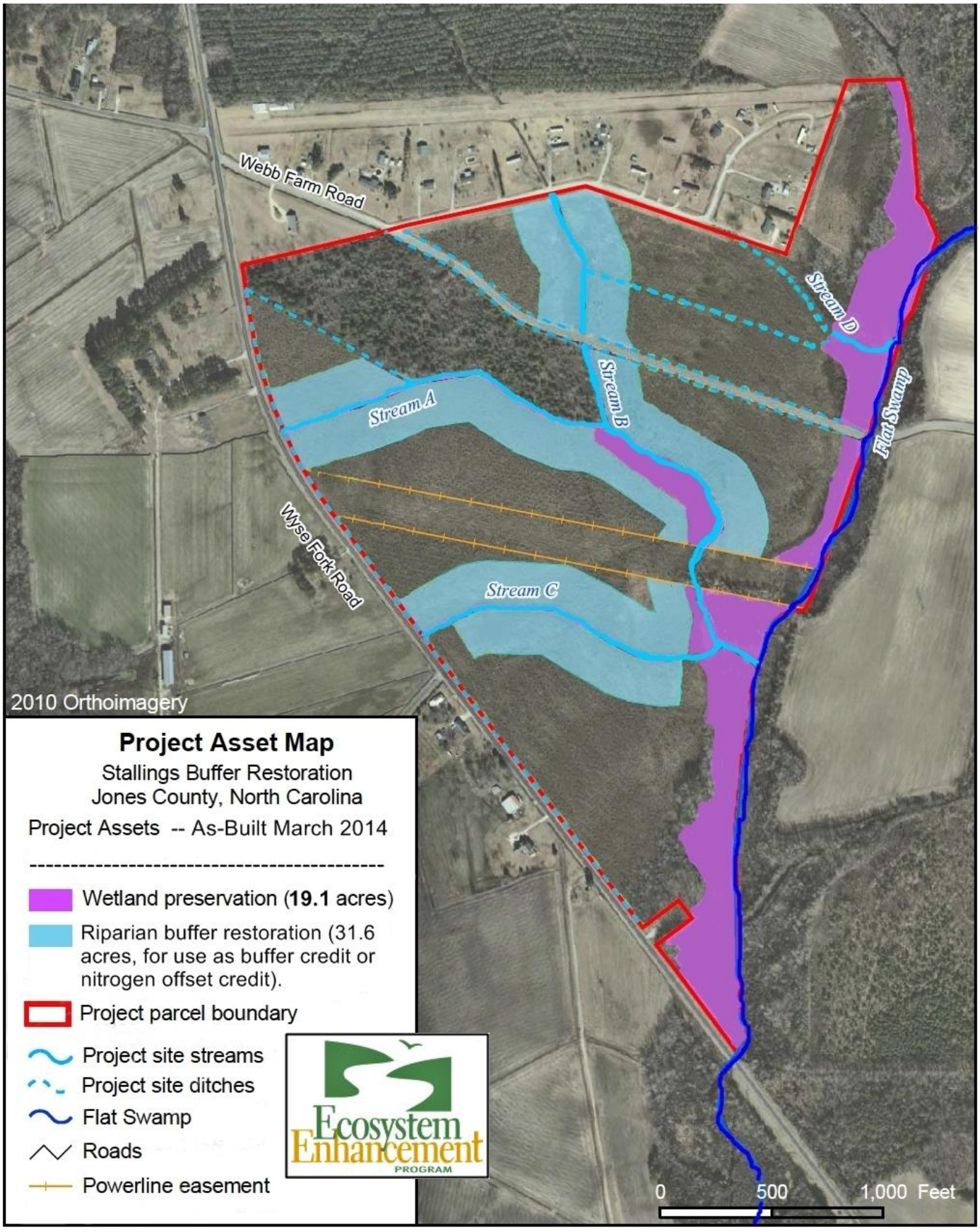


Figure 1B. Stallings Buffer Restoration, As-Built Project Components and Mitigation Assets Map.

Appendix A. Project Background Tables

Table 1. Project Components & Mitigation Credits

Table 2. Project Activity and Reporting History

Table 3. Project Contacts Table

Table 4. Project Attributes Table

Table 1. Project Components and Mitigation Credits
Stallings Buffer Restoration, Flat Swamp, Jones County, DMS Project # 357

Mitigation Credits

	Stream		Riparian Wetland		Non-riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Totals							**31.6**	**(31.6) a**	

(a): Buffer restoration is applicable for Buffer Credit and/or Nutrient Offset Credit, but not both within the same footprint, up to a combined total of 31.6 units.

Project Components

Project Component or Reach ID	Stationing or Location	Existing Footage or Acreage	Approach (PI, PII etc.)	Restoration or Restoration Equivalent	Restoration Footage or Acreage	Mitigation Ratio	Mitigation Units
Stream Enhancement							
Riparian Buffer	**Streams A,B,C**	**31.6 ac**	**Rest**	**R**	**31.6 ac**	**1:1**	**31.6**
Wetland Enhancement							
Wetland Preservation	**Flat Swamp, streams A.C**	**19.1 ac**	**Pres**				**0**
Nitrogen Nutrient Offset							**(31.6) a**

(a): Combined total of 31.6 units of Buffer Credit and/or Nutrient Offset Credit, not applied within the same footprint.

Component Summation

Restoration Level	Stream (linear feet)	Riparian Wetland (acres)		Non-riparian Wetland (acres)	Buffer (square feet)	Upland (acres)
		Riverine	Non-Riverine			
Restoration					**1,377,325**	
Enhancement						
Enhancement I						
Enhancement II						
Creation						
Preservation		**19.1 ac**				
High Quality Preservation						

BMP Elements

Element	Location	Purpose/Function	Notes

BMP Elements: BR = Bioretention Cell; SF = Sand Filter; SW = Stormwater Wetland; WDP = Wet Detention Pond; DDP = Dry Detention Pond; FS = Filter Strip; S = Grassed Swale; LS = Level Spreader; NI = Natural Infiltration Area; FB = Forested Buffer

Table 2. Project Activity and Reporting History Stallings Buffer Restoration -- DMS #357 -- Jones County NC		
Elapsed Time Since Grading Complete: NA		
Elapsed Time Since Planting Complete: 21 Months		
Number of Reporting Years: 2		
Activity or Deliverable	**Data Collection Complete**	**Completion or Delivery**
Restoration Plan	---	Dec 2011
Construction (Mowing)	---	Jan-Feb 2014
Bare Root Tree Planting	---	Feb 2014
MY-0: As-built Baseline Survey	Mar 2014	Jul 2014
MY-1: Plant Warranty Plot Data	Sep 2014	Dec 2014
MY-1: 2014 Monitoring Report	Sep 2014	Apr 2015
Supplemental Tree Planting	---	Feb 2015
MY-2: Plant Warranty Plot Data	Sep 2015	Oct 2015
MY-2: 2015 Monitoring Report	Sep 2015	Nov 2015
MY-3 Plant Warranty Plot Data		
MY-3 2016 Monitoring Report		
MY-4 2017 Monitoring Report		
MY-5 2018 Monitoring Report		
Final Close-Our Report		

Table 3. Project Contacts Table Stallings Buffer Restoration -- DMS #357 -- Jones County NC	
Designer	Stantec Consulting Services, Inc. P.C. 801 Jones Franklin Rd, Suite 300 Raleigh, NC 27606 (919) 851-6866
Construction Contractor	None
Survey Contractor	McKim & Creed 200 MacKenan Court Cary, NC 27511 (919) 233-8091
Planting Contractor	Carolina Silvics 908 Indian Trail Rd Edenton, NC 27932 Mary-Margaret McKinney (252) 482-8491
Nursery Stock Suppliers	ArborGen South Carolina Supertree Nursery 5594 Highway 38 South Blenheim, SC 29516 (843) 528-3203
Monitoring Performers	Robert J. Goldstein & Assoc. (Mogensen Mitigation Inc). 1221 Corporation Parkway, Suite 100 Raleigh, NC 27610 Gerald Pottern, (919) 872-1174

Table 4.0. Project Baseline Information and Attributes			
Stallings Buffer Restoration (EEP#357)			
Project Information			
Project County	Jones		
Project Area (acres)	146 ac NCDOT + 3 ac Private = 149 ac		
Project Coordinates (latitude and longitude)	35.1718 -77.4841		
Project Watershed Summary Information			
Physiographic Region	Coastal Plain		
River Basin	Neuse		
USGS HUC for Project (14 digit)	03020204-010050		
NCDWQ Sub-basin for Project	03-04-11		
Project Drainage Area (sq mi)	0.72		
Project Drainage Area % Impervious	3.80%		
CGIA Landuse Classification	Forest Land, Cultivated Land, Herbaceous Cover and Shrubland,		
Reach Summary Information			
n/a			
Wetland Summary Information			
	Wetland 1	Wetland 2	
Size of wetland (acres)	3.0 ac	16.1	
Wetland Type (non-riparian, riparian riverine or riparian non-riverine	Riparian riverine	Riparian riverine	
Mapped Soil Series	Megget loam	Megget loam & Stockade fine sandy loam	
Drainage class	Poorly drained	Poorly drained & very poorly drained	
Soil hydric status	Yes	Yes	
Source of Hydrology	Overbank flooding	Overbank flooding	
Hydrologic Impairment	None	None	
Native vegetation community	Disturbed/cutover	Riverine bottomland hardwood	
Percent composition of exotic invasive vegetation	0%	0%	
Regulatory Considerations			
Regulation	Applicable?	Resolved?	Supporting Documentation
Waters of the United States - Section 404	No	n/a	n/a
Waters of the United States - Section 401	No	n/a	n/a
Endangered Species Act	No	n/a	n/a
Historic Preservation Act	Yes	Yes	Correspondence with NC Dept. Cultural Resources
Coastal Zone Management Act (CZMA)/Coastal Aream Management Act (CAMA)	No	n/a	n/a
FEMA Floodplain Compliance	No	n/a	n/a
Essential Fisheries Habitat	No	n/a	n/a

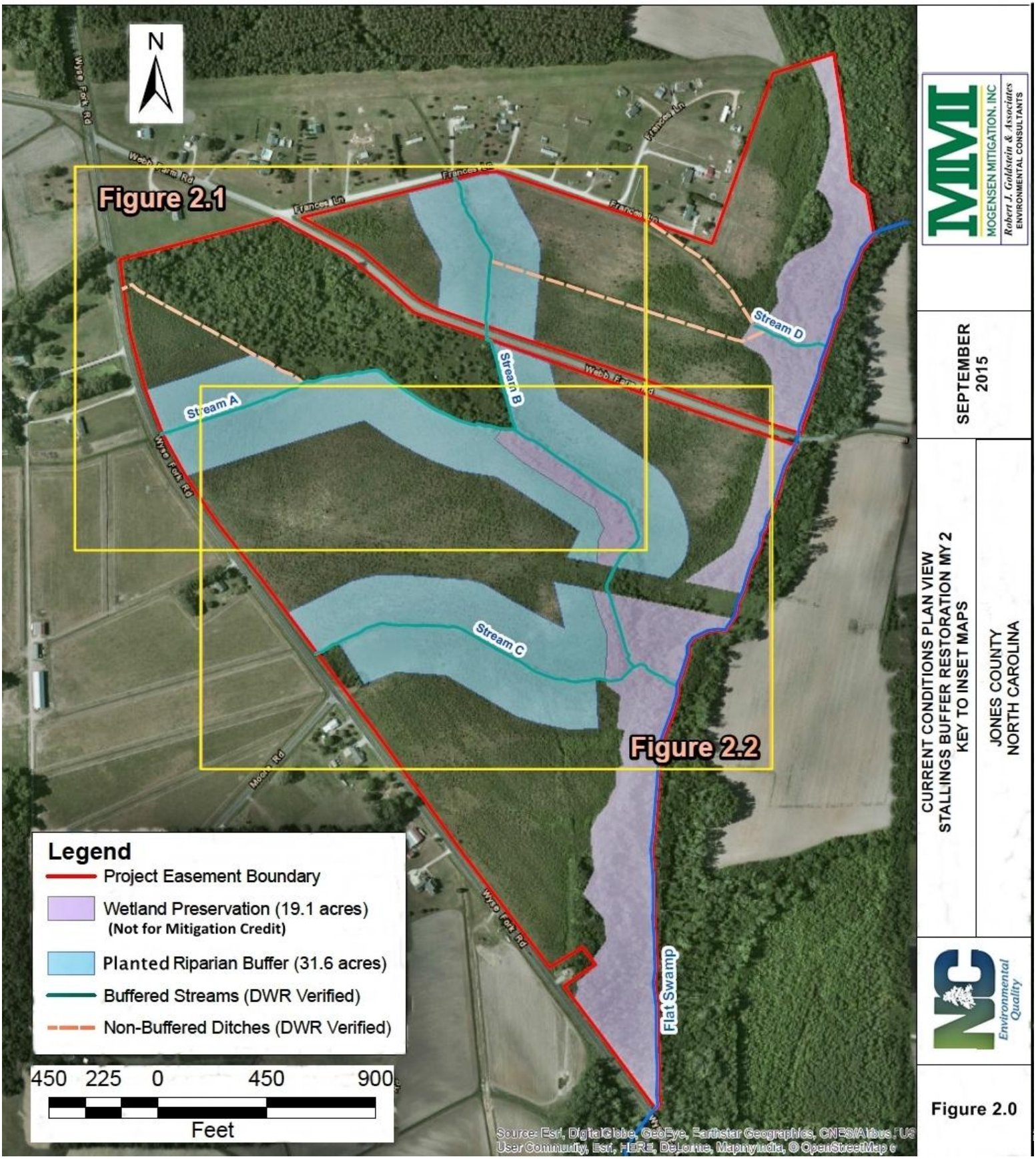
Appendix B. Visual Assessment Data

Figure 2. Current Conditions Plan View: Sept, 2015.

2.0. Key Map to CCPV Inset Maps
2.1. Stallings Buffer Restoration Site, Northern Area
2.2. Stallings Buffer Restoration Site, Southern Area

Figure 3. Vegetation Monitoring Plot Photos

Figure 4. Problem Areas and Other Photos


N
Figure 2.1
Figure 2.2
Stream A
Stream B
Stream C
Stream D
Wyse Fork Rd
Webb Farm Rd
Frances Ln
Mack Rd
Flat Swamp
Legend
Project Easement Boundary
Wetland Preservation (19.1 acres)
(Not for Mitigation Credit)
Planted Riparian Buffer (31.6 acres)
Buffered Streams (DWR Verified)
Non-Buffered Ditches (DWR Verified)
450 225 0 450 900
Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap c
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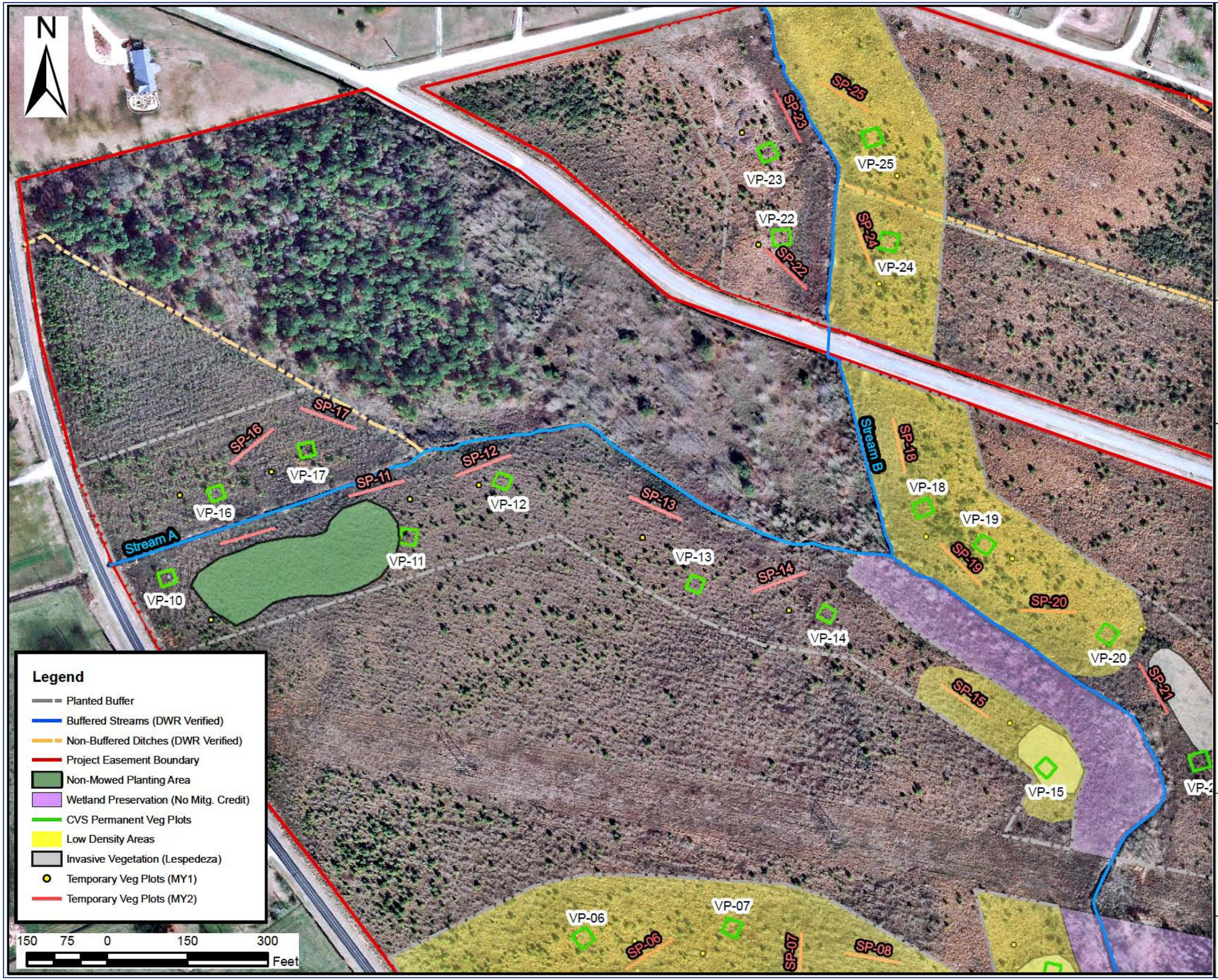
Robert J. Goldstein & Associates
ENVIRONMENTAL CONSULTANTS
SEPTEMBER 2015
CURRENT CONDITIONS PLAN VIEW
STALLINGS BUFFER RESTORATION MY 2
KEY TO INSET MAPS
JONES COUNTY
NORTH CAROLINA
Environmental Quality
Figure 2.0



Mogensen Mitigation Inc
P.O. Box 690429
Charlotte, NC 28227

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CURRENT CONDITIONS PLAN VIEW
STALLINGS BUFFER RESTORATION #357

JONES COUNTY, NORTH CAROLINA

NC Environmental Quality

Figure 2.1

N

VP-11 VP-13 SP-14 VP-14 SP-20 VP-20 SP-21 SP-15 VP-15 VP-21 VP-06 VP-07 SP-06 SP-07 SP-08 VP-05 SP-05 SP-01 VP-08 SP-09 VP-09 VP-01 VP-02 SP-02 Stream C Stream A VP-03 SP-03 SP-04 VP-04

Legend

- Planted Buffer
- Buffered Streams (DWR Verified)
- Non-Buffered Ditches (DWR Verified)
- Project Easement Boundary
- Non-Mowed Planting Area
- Wetland Preservation (No Mitg. Credit)
- CVS Permanent Veg Plots
- Low Density Areas
- Invasive Vegetation (Lespedeza)
- Temporary Veg Plots (MY1)
- Temporary Veg Plots (MY2)

150 75 0 150 300
Feet

Mogensen Mitigation, Inc.
P.O. Box 690429
Charlotte, NC 28227

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CURRENT CONDITIONS PLAN VIEW
STALLINGS BUFFER RESTORATION #357
JONES COUNTY, NORTH CAROLINA

NC Environmental Quality

Figure 2.2

Table 5: Vegetation Condition Assessment Table
Stallings Site Buffer Restoration (Flat Swamp tributaries): Project #357
Monitoring Year 2 of 5 (2015)

Planted Acreage = **31.6**

Vegetation Problem Category	Definitions	Mapping Threshold (acres)	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material	0.1	N/A	0	0	0%
Low Stem Density Areas*	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1	yellow	5	15.3	48%
			Total	**0**	**0**	**48%**
Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25	N/A	0	0	0%
			Cumulative Total	0	0	**48%**

Easement Acreage = **50.7**

Vegetation Problem Category	Definitions	Mapping Threshold (SF)	CCPV Depiction	Number of Polygons	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern**	Areas of points (if too small to render as polygons at map scale).	1000	green	3	1.1	2%
Easement Encroachment Areas	Areas of points (if too small to render as polygons at map scale).	none	N/A	0	0	0%

Problem areas are based on field observations in Sept 2015, 19 months after initial tree planting.

Competition from tall Grasses, Solidago, Eupatorium, Rubus, Baccharis, Morella, and other dense native plants may be limiting planted tree survival and growth.

Easement acreage = 31.6 acres planted + 19.1 acres preserved riparian buffers. Total conservation parcel acreage = 146 acres.

*** Low stem density and vigor of <u>planted</u> trees occurs over much of the site, but total native woody stem density is high throughout when volunteer shrubs and trees are included. The high density and height of native shrubs and herbs makes it impractical to map boundaries of areas with low planted stem density.**

Figure 3.1 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-1: MY-1 Sep 23-25, 2014

CVS VegPlot-1: MY-2 Sep 28-30, 2015

CVS VegPlot-2: MY-0 Mar 11-12, 2014

CVS VegPlot-2: MY-2 Sep 28-30, 2015

Figure 3.2 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-3: MY-1 Sep 23-25, 2014

CVS VegPlot-3: MY-2 Sep 28-30, 2015

CVS VegPlot-4: MY-1 Sep 23-25, 2014

CVS VegPlot-4: MY-2 Sep 28-30, 2015

Figure 3.3 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-5: MY-1 Sep 23-25, 2014

CVS VegPlot-5: MY-2 Sep 28-30, 2015

CVS VegPlot-6: MY-1 Sep 23-25, 2014

CVS VegPlot-6: MY-2 Sep 28-30, 2015

Figure 3.4 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-7: MY-0 Mar 11-12, 2014

CVS VegPlot-7: MY-2 Sep 28-30, 2015

CVS VegPlot-8: MY-0 Mar 11-12, 2014

CVS VegPlot-8: MY-2 Sep 28-30, 2015

Figure 3.5 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-9: MY-0 Mar 11-12, 2014

CVS VegPlot-9: MY-2 Sep 28-30, 2015

CVS VegPlot-10: MY-0 Mar 11-12, 2014

CVS VegPlot-10: MY-2 Sep 28-30, 2015

Figure 3.6 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-11: MY-0 Mar 11-12, 2014

CVS VegPlot-11: MY-2 Sep 28-30, 2015

CVS VegPlot-12: MY-0 Mar 11-12, 2014

CVS VegPlot-12: MY-2 Sep 28-30, 2015

Figure 3.7 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-13: MY-0 Mar 11-12, 2014

CVS VegPlot-13: MY-2 Sep 28-30, 2015

CVS VegPlot-14: MY-0 Mar 11-12, 2014

CVS VegPlot-14: MY-2 Sep 28-30, 2015

Figure 3.8 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-15: MY-0 Mar 11-12, 2014

CVS VegPlot-15: MY-2 Sep 28-30, 2015

CVS VegPlot-16: MY-0 Mar 11-12, 2014

CVS VegPlot-16: MY-2 Sep 28-30, 2015

Figure 3.9 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY1 MY2 (2015)

CVS VegPlot-17: MY-0 Mar 11-12, 2014

CVS VegPlot-17: MY-2 Sep 28-30, 2015

CVS VegPlot-18: MY-0 Mar 11-12, 2014

CVS VegPlot-18: MY-2 Sep 28-30, 2015

Figure 3.10 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-19: MY-0 Mar 11-12, 2014

CVS VegPlot-19: MY-2 Sep 28-30, 2015

CVS VegPlot-20: MY-0 Mar 11-12, 2014

CVS VegPlot-20: MY-2 Sep 28-30, 2015

Figure 3.11 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-21: MY-0 Mar 11-12, 2014

CVS VegPlot-21: MY-2 Sep 28-30, 2015

CVS VegPlot-22: MY-0 Mar 11-12, 2014

CVS VegPlot-22: MY-2 Sep 28-30, 2015

Figure 3.12 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-23: MY-0 Mar 11-12, 2014

CVS VegPlot-23: MY-2 Sep 28-30, 2015

CVS VegPlot-24: MY-0 Mar 11-12, 2014

CVS VegPlot-24: MY-2 Sep 28-30, 2015

Figure 3.13 Vegetation Monitoring Plot Photos - Stallings Buffer Restoration #357 - MY2 (2015)

CVS VegPlot-25: MY-0 Mar 11-12, 2014

CVS VegPlot-25: MY-2 Sep 28-30, 2015

Figure 4.1 Problem Areas and Other Photos - Stallings Buffer Restoration #357 - MY2 (2015)

Area dominated by low grasses and herbs, Temp Warr Plot near VP-25.

Area dominated by Rubus and tall grasses and herbs, near VP-8.

Area dominated by Baccharis, Myrica, Rubus, and tall herbs, near VP-2.

Area dominated by Lespedeza, Rubus, and tall herbs, near VP-15.

Appendix C. Vegetation Plot Monitoring Data

Table 6. CVS Plot Stem Density & Success Summary
Table 7. CVS Plot Stem Counts & Density by Species and Year
Table 8. Temporary (Warranty) Plot Planted Stem Counts
Figure 5. Warranty Replanting Areas, Carolina Silvics, Feb 2015

Table 6. CVS Vegetation Plot Stem Densities, MY-2: SEP 2015
Stallings Buffer Site (#357) -- Flat Swamp, Neuse 03020204

Riparian Buffer (Planted Trees) & Total Stem Densities						
(stem count per plot & stems per acre, MY-1: Sep 28-30, 2015)						
CVS Plot #	Riparian Buffer # Stems [1]	Volunteer Native # Stems [3]	Total Native # Stems [4]	Riparian Buffer Stems /ac	Total Planted + Vol Stems /ac	Buffer Success Criteria Met?
1	8	5	13	324	526	**yes**
2	7	2	9	283	364	**yes**
3	10	6	16	405	647	**yes**
4	5	5	10	202	405	no
5	5	0	5	202	202	no
6	3	0	3	121	121	no
7	6	4	10	243	405	no
8	5	6	11	202	445	no
9	5	0	5	202	202	no
10	7	0	7	283	283	**yes**
11	4	2	6	162	243	no
12	8	2	10	324	405	**yes**
13	7	1	8	283	324	**yes**
14	7	1	8	283	324	**yes**
15	5	2	7	202	283	no
16	9	0	9	364	364	**yes**
17	9	1	10	364	405	**yes**
18	5	0	5	202	202	no
19	6	0	6	243	243	no
20	6	3	9	243	364	no
21	9	0	9	364	364	**yes**
22	10	1	11	405	445	**yes**
23	12	2	14	486	566	**yes**
24	6	0	6	243	243	no
25	6	1	7	243	283	no
Project Avg	6.8	**1.8**	8.6	275	346	**yes**

Stem Class

[1]Buffer Stems = Native planted hardwood trees. Does NOT include shrubs, pines, or vines.

[2]Stream/Wetland Stems = Native planted trees and shrubs. Does NOT include live stakes or vines.

[3]Volunteers = Native volunteer trees and shrubs. Excludes vines, Baccharis & Myrica (this project).

[4]Total = Planted + Volunteer native woody stems, including live stakes. Excludes exotics & vines.

Buffer Success Criteria = 260 planted trees per acre, per 2014 Consolidated Buffer Mitigation Rule.

Table 7a. CVS Vegetation Plot Stem Counts by Species, MY-2: SEP 2015
Stallings Buffer Site (#357) -- Flat Swamp, Neuse 03020204

			Stallings Buffer Restoration Site, Flat Swamp, Jones Co -- DMS # 357 -- Current CVS Veg Plot Data (MY2- Sep 2015)																	
Scientific Name	Common Name	Type	357-01-0001			357-01-0002			357-01-0003			357-01-0004			357-01-0005			357-01-0006		
			PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total
Acer negundo	Boxelder Maple	Tree (vol)																		
Acer rubrum	Red Maple	Tree (vol)																		
Fraxinus pennsylvan	Green Ash	Tree (vol)			1									1						
Ilex opaca	American Holly	Tree (vol)																		
Liquidambar styraciflua	Sweetgum	Tree (vol)			4			2			4			2						
Liriodendron tulipifera	Tulip Poplar	Tree				1	1	1	1	1	1				2	2	2	1	1	1
Nyssa sylvatica	Blackgum	Tree	3	3	3	2	2	2							1	1	1	2	2	2
Pinus taeda	Loblolly Pine	Tree (vol)																		
Platanus occidentalis	American Sycamore	Tree	5	5	5	4	4	4			2	3	3	5	2	2	2			
Prunus serotina	Black Cherry	Tree (vol)																		
Quercus sp. unknown	Oaks (unk)	Tree																		
Quercus nigra	Water Oak	Tree																		
Quercus phellos	Willow Oak	Tree							6	6	6									
Quercus rubra	Northern Red Oak	Tree							3	3	3	2	2	2						
Stem count			8	8	13	7	7	9	10	10	16	5	5	10	5	5	5	3	3	3
size (ares)			1.00			1.00			1.00			1.00			1.00			1.00		
size (ACRES)			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247		
Species count			2	2	4	3	3	4	3	3	5	2	2	4	3	3	3	2	2	2
Stems per ACRE			324	324	526	283	283	364	405	405	647	202	202	405	202	202	202	121	121	121

Color Codes for Planted Tree Density

Exceeds 260 trees/acre requirements by 10% or more (286+)
Exceeds 260 trees/acre requirements, by less than 10% (260 - 285)
Fails to meet 260 trees/acre requirements, by less than 10% (234 - 259)
Fails to meet 260 trees/acre requirements by more than 10% (0 - 233)

Table 7b. CVS Vegetation Plot Stem Counts by Species, MY-2: SEP 2015
Stallings Buffer Site (#357) -- Flat Swamp, Neuse 03020204

			Stallings Buffer Restoration Site, Flat Swamp, Jones Co -- DMS # 357 -- Current CVS Veg Plot Data (MY2- Sep 2015)																	
Scientific Name	Common Name	Type	357-01-0007			357-01-0008			357-01-0009			357-01-0010			357-01-0011			357-01-0012		
			PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total
Acer negundo	Boxelder Maple	Tree (vol)																		
Acer rubrum	Red Maple	Tree (vol)																		
Fraxinus pennsylvan	Green Ash	Tree (vol)															1			
Ilex opaca	American Holly	Tree (vol)																		
Liquidambar styraciflua	Sweetgum	Tree (vol)			4			5												
Liriodendron tulipifera	Tulip Poplar	Tree				2	2	2							1	1	1			
Nyssa sylvatica	Blackgum	Tree	1	1	1	1	1	1												
Pinus taeda	Loblolly Pine	Tree (vol)						1												2
Platanus occidentalis	American Sycamore	Tree	5	5	5	1	1	1	1	1	1	1	1	1	3	3	3	5	5	5
Prunus serotina	Black Cherry	Tree (vol)																		
Quercus sp. unknown	Oaks (unk)	Tree							1	1	1									
Quercus nigra	Water Oak	Tree																		
Quercus phellos	Willow Oak	Tree										4	4	4			1	2	2	2
Quercus rubra	Northern Red Oak	Tree				1	1	1	3	3	3	2	2	2				1	1	1
Stem count			6	6	10	5	5	11	5	5	5	7	7	7	4	4	6	8	8	10
size (ares)			1.00			1.00			1.00			1.00			1.00			1.00		
size (ACRES)			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247		
Species count			2	2	3	4	4	6	3	3	3	3	3	3	2	2	4	3	3	4
Stems per ACRE			243	243	405	202	202	445	202	202	202	283	283	283	162	162	243	324	324	405

Color Codes for Planted Tree Density

Exceeds 260 trees/acre requirements by 10% or more (286+)
Exceeds 260 trees/acre requirements, by less than 10% (260 - 285)
Fails to meet 260 trees/acre requirements, by less than 10% (234 - 259)
Fails to meet 260 trees/acre requirements by more than 10% (0 - 233)

Table 7c. CVS Vegetation Plot Stem Counts by Species, MY-2: SEP 2015
Stallings Buffer Site (#357) -- Flat Swamp, Neuse 03020204

			Stallings Buffer Restoration Site, Flat Swamp, Jones Co -- DMS # 357 -- Current CVS Veg Plot Data (MY2- Sep 2015)																	
Scientific Name	Common Name	Type	357-01-0013			357-01-0014			357-01-0015			357-01-0016			357-01-0017			357-01-0018		
			PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total
Acer negundo	Boxelder Maple	Tree (vol)																		
Acer rubrum	Red Maple	Tree (vol)			1															
Fraxinus pennsylvan	Green Ash	Tree (vol)						1									1			
Ilex opaca	American Holly	Tree (vol)																		
Liquidambar styraciflua	Sweetgum	Tree (vol)									2									
Liriodendron tulipifera	Tulip Poplar	Tree				3	3	3				1	1	1	1	1	1	1	1	1
Nyssa sylvatica	Blackgum	Tree													1	1	1			
Pinus taeda	Loblolly Pine	Tree (vol)																		
Platanus occidentalis	American Sycamore	Tree	3	3	3	1	1	1	1	1	1	7	7	7	3	3	3	1	1	1
Prunus serotina	Black Cherry	Tree (vol)																		
Quercus sp. unknown	Oaks (unk)	Tree	1	1	1															
Quercus nigra	Water Oak	Tree				1	1	1												
Quercus phellos	Willow Oak	Tree				1	1	1	3	3	3				2	2	2	1	1	1
Quercus rubra	Northern Red Oak	Tree	3	3	3	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
		Stem count	7	7	8	7	7	8	5	5	7	9	9	9	9	9	10	5	5	5
		size (ares)	1.00			1.00			1.00			1.00			1.00			1.00		
		size (ACRES)	0.0247			0.0247			0.0247			0.0247			0.0247			0.0247		
		Species count	3	3	4	5	5	6	3	3	4	3	3	3	5	5	6	4	4	4
		Stems per ACRE	283	283	324	283	283	324	202	202	283	364	364	364	364	364	405	202	202	202

Color Codes for Planted Tree Density

Exceeds 260 trees/acre requirements by 10% or more (286+)
Exceeds 260 trees/acre requirements, by less than 10% (260 - 285)
Fails to meet 260 trees/acre requirements, by less than 10% (234 - 259)
Fails to meet 260 trees/acre requirements by more than 10% (0 - 233)

Table 7d. CVS Vegetation Plot Stem Counts by Species, MY-2: SEP 2015
Stallings Buffer Site (#357) -- Flat Swamp, Neuse 03020204

			Stallings Buffer Restoration Site, Flat Swamp, Jones Co -- DMS # 357 -- Current CVS Veg Plot Data (MY2- Sep 2015)																	
Scientific Name	**Common Name**	**Type**	**357-01-0019**			**357-01-0020**			**357-01-0021**			**357-01-0022**			**357-01-0023**			**357-01-0024**		
			PnoLS	**P-all**	**Total**	**PnoLS**	**P-all**	**Total**	**PnoLS**	**P-all**	**Total**	**PnoLS**	**P-all**	**Total**	**PnoLS**	**P-all**	**Total**	**PnoLS**	**P-all**	**Total**
Acer negundo	Boxelder Maple	Tree (vol)																		
Acer rubrum	Red Maple	Tree (vol)																		
Fraxinus pennsylvan	Green Ash	Tree (vol)						1									1			
Ilex opaca	American Holly	Tree (vol)																		
Liquidambar styraciflua	Sweetgum	Tree (vol)																		
Liriodendron tulipifera	Tulip Poplar	Tree	1	1	1	1	1	1				1	1	1	1	1	1	1	1	1
Nyssa sylvatica	Blackgum	Tree	1	1	1	1	1	1							1	1	1			
Pinus taeda	Loblolly Pine	Tree (vol)												1			1			
Platanus occidentalis	American Sycamore	Tree	1	1	1			2	2	2	2	6	6	6				1	1	1
Prunus serotina	Black Cherry	Tree (vol)																		
Quercus sp. unknown	Oaks (unk)	Tree				2	2	2				2	2	2						
Quercus nigra	Water Oak	Tree																1	1	1
Quercus phellos	Willow Oak	Tree							4	4	4	1	1	1	2	2	2			
Quercus rubra	Northern Red Oak	Tree	3	3	3	2	2	2	3	3	3				8	8	8	3	3	3
		Stem count	6	6	6	6	6	9	9	9	9	10	10	11	12	12	14	6	6	6
		size (ares)	1.00			1.00			1.00			1.00			1.00			1.00		
		size (ACRES)	0.0247			0.0247			0.0247			0.0247			0.0247			0.0247		
		Species count	4	4	4	4	4	6	3	3	3	4	4	5	4	4	6	4	4	4
		Stems per ACRE	243	243	243	243	243	364	364	364	364	405	405	445	486	486	567	243	243	243

Color Codes for Planted Tree Density

Exceeds 260 trees/acre requirements by 10% or more (286+)
Exceeds 260 trees/acre requirements, by less than 10% (260 - 285)
Fails to meet 260 trees/acre requirements, by less than 10% (234 - 259)
Fails to meet 260 trees/acre requirements by more than 10% (0 - 233)

Table 7e. CVS Vegetation Plot Stem Counts by Species, MY-2: SEP 2015
Stallings Buffer Site (#357) -- Flat Swamp, Neuse 03020204

			Plot Data - 2015			Total Stem Counts & Annual Mean Density: 2014-2015														
Scientific Name	Common Name	Type	357-01-0025			MY5 (***)			MY4 (***)			MY3 (***)			MY2 (2015)			MY1 (2014)		
			PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total	PnoLS	P-all	Total
Acer negundo	Boxelder Maple	Tree (vol)																		2
Acer rubrum	Red Maple	Tree (vol)															1			
Fraxinus pennsylvan	Green Ash	Tree (vol)			1												8			
Ilex opaca	American Holly	Tree (vol)																		1
Liquidambar styraciflua	Sweetgum	Tree (vol)															23			24
Liriodendron tulipifera	Tulip Poplar	Tree													19	19	19	25	25	25
Nyssa sylvatica	Blackgum	Tree	3	3	3										17	17	17	25	25	25
Pinus taeda	Loblolly Pine	Tree (vol)															5			6
Platanus occidentalis	American Sycamore	Tree	3	3	3										59	59	65	73	73	89
Prunus serotina	Black Cherry	Tree (vol)																		14
Quercus sp. unknown	Oaks (unk)	Tree													6	6	6	4	4	4
Quercus nigra	Water Oak	Tree													2	2	2	1	1	1
Quercus phellos	Willow Oak	Tree													26	26	27	23	23	23
Quercus rubra	Northern Red Oak	Tree													41	41	41	51	51	52
		Stem count	6	6	7										170	170	214	202	202	266
		size (ares)	1.00			25.00			25.00			25.00			25.00			25.00		
		size (ACRES)	0.0247			0.6178			0.6178			0.6178			0.6178			0.6178		
		Species count	2	2	3										7	7	11	7	7	12
		Stems per ACRE	243	243	283										275	275	346	327	327	431

Color Codes for Planted Tree Density

Exceeds 260 trees/acre requirements by 10% or more (286+)
Exceeds 260 trees/acre requirements, by less than 10% (260 - 285)
Fails to meet 260 trees/acre requirements, by less than 10% (234 - 259)
Fails to meet 260 trees/acre requirements by more than 10% (0 - 233)

Table 8. Temporary Warranty Plots - Planted Tree Counts
Stallings Buffer Site (#357) -- Flat Swamp, Neuse 03020204

Temporary Warranty Plots: Planted Trees per 100 m2							
		Sep-2014: MY-1		Sep-2015: MY-2		Sep-2016: MY-3	
Temp		plot size:	10 x 10 m	plot size:	108 x 10 ft	plot size:	108 x 10 ft
Plot #		# trees	trees/ac	# trees	trees/ac		
1		4	162	4	162		
2		3	121	3	121		
3		4	162	3	121		
4		4	162	5	202		
5		5	202	3	121		
6		2	81	6	243		
7		2	81	3	121		
8		6	243	4	162		
9		4	162	2	81		
10		5	202	5	202		
11		5	202	6	243		
12		4	162	6	243		
13		1	40	3	121		
14		4	162	7	283		
15		2	81	5	202		
16		8	324	4	162		
17		1	40	3	121		
18		2	81	2	81		
19		2	81	6	243		
20		2	81	4	162		
21		5	202	5	202		
22		3	121	9	364		
23		1	40	6	243		
24		4	162	5	202		
25		3	121	6	243		
ave		3.44	139	4.60	186		

- Only tree species on the contractor's 2014 "planted" list were counted:
Liriodendron, Platanus, Nyssa, and Quercus.
- Other native volunteer trees noted (not counted) in Temp Plots include:
Acer, Fraxinus, Ulmus, Celtis, Salix, Prunus, Liquidambar, Diospyros, Pinus, Juglans.
- 600 Fraxinus were planted in Feb 2015. We did not receive the re-planting list until after the fall field survey, and some planted Fraxinus may not have been counted.
- Baccharis and Myrica are abundant throughout the project and in most plots.
- See CCPV Figures 2.1-2.2 for locations of Temporary Warranty Plots.

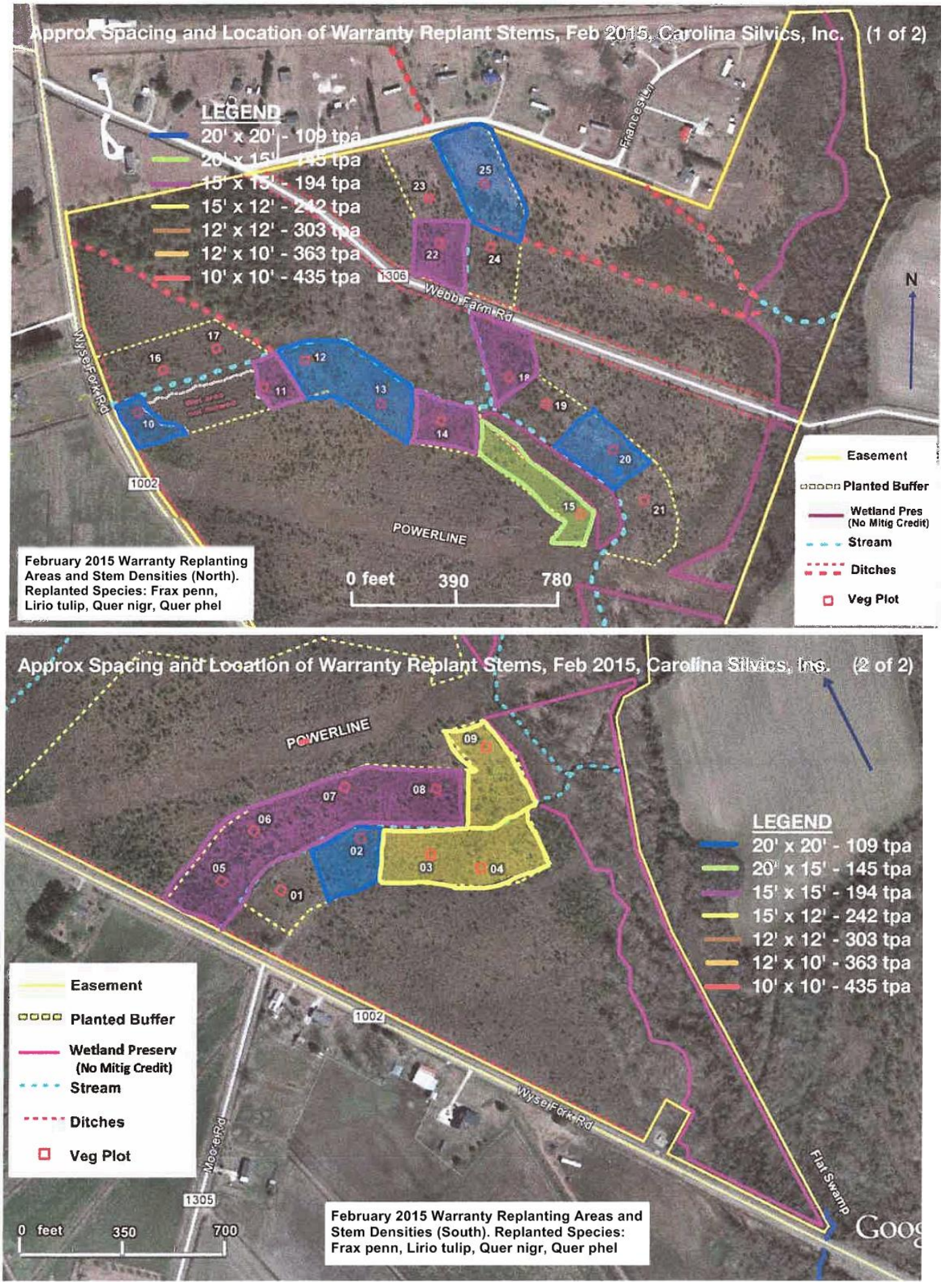

Figure 5. Warranty Replanting Areas, February 2015: New trees: 1300 Liriodendron, 1900 Quercus, 600 Fraxinus.