MITIGATION PLAN

Stanley's Slough Stream and Wetland Restoration Site
EEP Contract 004635
EEP Project Number 95356

Stanley's II Wetland Restoration Site
EEP Contract 5151
EEP Project Number 95838

Northampton County, North Carolina

Chowan River Basin
Cataloging Unit 03010204

Prepared for:

NC Department of Environment and Natural Resources
Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699

FINAL - AUGUST 2013

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Prepared by:

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FINAL - AUGUST 2013

EXECUTIVE SUMMARY

This mitigation plan has been written in conformance with the requirements of the following:

- *Federal rule for compensatory mitigation project sites as described in the Federal Register Title 33 Navigation and Navigable Waters Volume 3 Chapter 2 Section § 332.8 paragraphs (c)(2) through (c)(14).*
- *NCDENR Ecosystem Enhancement Program In-Lieu Fee Instrument signed and dated July 28, 2010*

These documents govern NCEEP operations and procedures for the delivery of compensatory mitigation.

The Stanley's Slough Stream and Wetland Restoration Site (SSS) is a full-delivery mitigation project being developed for the North Carolina Ecosystem Enhancement Program (EEP). The SSS is a former headwater stream and riparian wetland system in the Chowan River Basin (03010204 8-digit HUC) in northern Northampton County, North Carolina, that has been substantially modified to maximize agricultural production. The site offers the chance to restore impacted agricultural lands to riparian wetland habitat.

The Stanley's II Wetland Restoration Site (SII) is located directly adjacent to SSS and consists of a drained wetland complex. This site offers the opportunity to restore, enhance, and protect wetlands within a productive headwater stream/wetland system.

The Chowan River Basin Restoration Priorities state the goals for the SSS and SII's 14-digit HUC are to protect and improve water quality throughout the Basin by reducing sediment and nutrient inputs into streams and rivers and to support efforts to restore local watersheds (NCDENR EEP, 2009). The project goals for SSS and SII are in line with the basin priorities and include the following:

- Restore streams and riparian buffers to provide shade and temperature control and increase instream woody debris for habitat.
- Restore and protect sensitive aquatic resources to improve habitat and species diversity through the restoration of wetlands, streams, and riparian buffers.
- Implement wetland and stream restoration projects that reduce sources of nutrient pollution and surface runoff by restoring hydrology and vegetation, stabilizing banks, and restoring natural geomorphology where appropriate.

Additional goals for the project include:

- Increase the local hydroperiod by encouraging both surface and subsurface storage and retention.
- Restore and establish a functional and diverse headwater stream/wetland community.

The project goals will be addressed through the following objectives:

- Restore a headwater stream/wetland vegetation community through planting of native trees and shrubs, and incorporation of a custom native seed mix
- Elevate the local groundwater table through the elimination of lateral drainage ditches and modification of existing channelized streams.
- Reconnect site hydrology to historic flow paths.

Both sites are located approximately 0.3 miles north of Margarettsville, North Carolina, in Northampton County. The projects begin just north of Margarettsville Road. The SSS will aim to restore and enhance the stream/wetland complex. The dredged channels will be filled creating a shallow braided headwater stream/wetland complex. Additionally, flow will be reconnected to a relic stream channel and adjacent

drained wetlands in a forested portion of the site. The SII will aim to restore and enhance the headwater wetland complex. Select ditches will be filled and productive seeps will be redirected or developed to integrate the wetland area into the adjacent headwater stream/wetland complex. Once grading is complete at both sites, the riparian communities will be planted as Headwater Forest Communities (NCWAM, v. 4.1 2010). Both sites will be monitored for seven years or until the success criteria are met.

Stanley's Slough Restoration Site, Northampton County EEP Contract 004635; EEP Project Number 95356									
Mitigation Credits									
	Stream		**Riparian Wetland**		**Non-riparian Wetland**		**Buffer**	**Nitrogen Nutrient Offset**	**Phosphorous Nutrient Offset**
Type	R	RE	R	RE	R	RE			
Linear Feet/Acres	4,274	-	3.6	-	-	-			
Credits	4,274	-	3.1	-	-	-			
TOTAL CREDITS	4,274		3.1		-				

R= Restoration RE= Restoration Equivalent of Creation or Enhancement

Stanley's II Restoration Site, Northampton County EEP Contract 5151; EEP Project Number 95838									
Mitigation Credits									
	Stream		**Riparian Wetland**		**Non-riparian Wetland**		**Buffer**	**Nitrogen Nutrient Offset**	**Phosphorous Nutrient Offset**
Type	R	RE	R	RE	R	RE			
Linear Feet/Acres	-	-	7.6	-	-	-			
Credits	-	-	6.9	-	-	-			
TOTAL CREDITS	-		6.9		-				

R= Restoration RE= Restoration Equivalent of Creation or Enhancement

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1.0 RESTORATION PROJECT GOALS AND OBJECTIVES

EEP develops River Basin Restoration Priorities to guide its restoration activities within each of the state's 54 cataloging units. RBRPs delineate specific watersheds that exhibit both the need and opportunity for wetland, stream, and riparian buffer restoration. These watersheds are called Targeted Local Watersheds (TLWs) and receive priority for EEP planning and restoration project funds.

The 2009 Chowan River Basin RBRP identified HUC 03010204180040 (Cypress Creek) as a Targeted Local Watershed (http://portal.ncdenr.org/c/document_library/get_file?uuid=87802543-d3e1-4e0a-803fcc3354f75cd9&groupId=60329). The watershed is characterized by 57.4% forested land, 40.1% agricultural area, and 1.5% developed land with impacts to streams including channelization and nonpoint source pollution.

Stanley's Slough Restoration Site (SSS) Project and Stanley's II Restoration Site (SII) Project were identified as stream and wetland opportunities to improve habitat within the TLW.

The project goals address stressors identified in the TLW and include the following:

- Restore streams and riparian buffers to provide shade and temperature control and increase instream woody debris for habitat.
- Restore and protect sensitive aquatic resources to improve habitat and species diversity through the restoration of wetlands, streams, and riparian buffers.
- Implement wetland and stream restoration projects that reduce sources of nutrient pollution and surface runoff by restoring hydrology and vegetation, stabilizing banks, and restoring natural geomorphology where appropriate.

Additional goals for the project include:

- Increase the local hydroperiod by encouraging both surface and subsurface storage and retention.
- Restore and establish a functional and diverse headwater stream/wetland community.

The project goals will be addressed through the following objectives:

- Restore a headwater stream/wetland vegetation community through maintenance and germination of volunteer wetland vegetation from adjacent seed sources, planting of native trees and shrubs, and incorporation of a custom native seed mix
- Elevate the local groundwater table through the elimination of lateral drainage ditches and modification of existing channelized streams.
- Reconnect site hydrology to historic flow paths.

2.0 SITE SELECTION

2.1 Directions

SSS and SII are located just north of Margarettsville Road approximately 0.3 miles north of Margarettsville, North Carolina. To reach the sites from Raleigh: proceed east on US-64 for approximately 45 miles. Then travel on I-95 north towards Richmond for approximately 37 miles. Turn onto NC 46 towards Gaston/Garysburg, travel approximately 3 miles, and then turn left onto US 301 north. Travel 0.1 miles and then make a slight left onto NC 186 north. Travel about 13 miles and then turn left onto Margarettsville Road. The sites will be approximately 0.3 miles straight ahead.

2.2 Site Selection

The sites are part of the 03010204 USGS Cataloging Unit (Meherrin Watershed) located within the Chowan River Basin. The Chowan River Basin straddles the border of North Carolina and Virginia and is populated throughout with small municipalities. The populations of the counties within the watershed are stable or minimally declining and land use is predominately agricultural. For this reason, the restoration priorities laid out by EEP focus on mitigating impact to streams and wetlands from agricultural use (NCDENR EEP, 2009).

The project sites are bounded by NC 186 to the south and by agricultural land on all other sides. The sites have a long history of hydrologic modification in order to allow for farming to take place on the property. The existing site conditions are shown in Section 2.6 and seen in site photographs (Section 2.8). Within the Meherrin Watershed, the Cypress Creek watershed remains only minimally affected by urban development, having its start in Seaboard, North Carolina, before flowing into southern Virginia and emptying into the Chowan River. Approximately 57.4% of the 14-digit HUC is forested and 40.1% is used as agricultural land (NCDENR EEP, 2009). Although the project sites are located in the Cypress Creek 14-digi HUC, the nearest named water body downstream of the sites is Fountains Creek (030102040706), which is located in southern Virginia. Fountains Creek is currently listed as impaired under the Virginia 2012 303(d) listing for aquatic life and recreation designated uses (VA DEQ, 2012). The project watershed for the SSS comprises 113 acres to the bottom of project site. Current land use in the project watershed consists of forested land (49.2 ac/ 43.7%), rangeland (38.1 ac/ 33.8%), and agriculture (25.3 ac/ 22.5%). The project watershed drains from the south and east into the project site. The project watershed for the SII is made up of 80 acres and is located within the watershed for the SSS. Current land use in the SII project watershed consists of forested land (42.6 ac/ 53.0%), rangeland (28.0 ac/ 34.9%), and agriculture (9.7 ac/ 12.1%). The impervious surface within both project watersheds is limited to the impervious areas within rural residential properties, amounting to less than 1% of the total drainage area.

Historic aerials from Northampton County were examined for any information about how the site hydrology and vegetation have changed over the last century. Historic aerials were obtained from the USGS Earth Explorer for 1950, 1959, 1961, 1973, 1978, 1989, 1998, and 2010. The reviewed aerials are found in Section 2.7. The photographs show that since as early as 1950 most of the site has been under agricultural production, with a similar footprint to the sites today. An area of forest to the northwest of the site was cleared between 1950 and 1973. The ditch that cuts through the drainage divide to join Tributary 1 (T1) to the top of Tributary 2 (T2) is not visible until the 1973 photo. It is unclear whether the ditch was not there before that or if it was not discernible in earlier photos. The photos clearly show that the area around the upstream section of T1 in the southwestern portion of the site was cleared between 1950 and 1959. After it was cleared, the stream was channelized and surface drains were built to connect to the stream and drain the field. Since the area was cleared, it has been used for livestock grazing and the cattle have had unrestricted access to the channel. The eastern half of the site appears to be relatively unchanged since 1950. The surrounding area is rural with low development pressure at this time. These land use trends indicate that restoring this property back to a forested wetland will provide an important habitat enhancement in the watershed.

The sites lie within the Rolling Coastal Plains (Level IV 65m) ecoregion of the Coastal Plain physiographic province. This region is described as a rolling, hilly, dissected portion of the Inner Coastal Plain that is made up of sedimentary material. The geology at the site is classified as part of the Yorktown formation,

which is comprised of fossiliferous clay with varying amounts of fine-grained sand. Bluish gray, shell material is commonly concentrated in lenses.

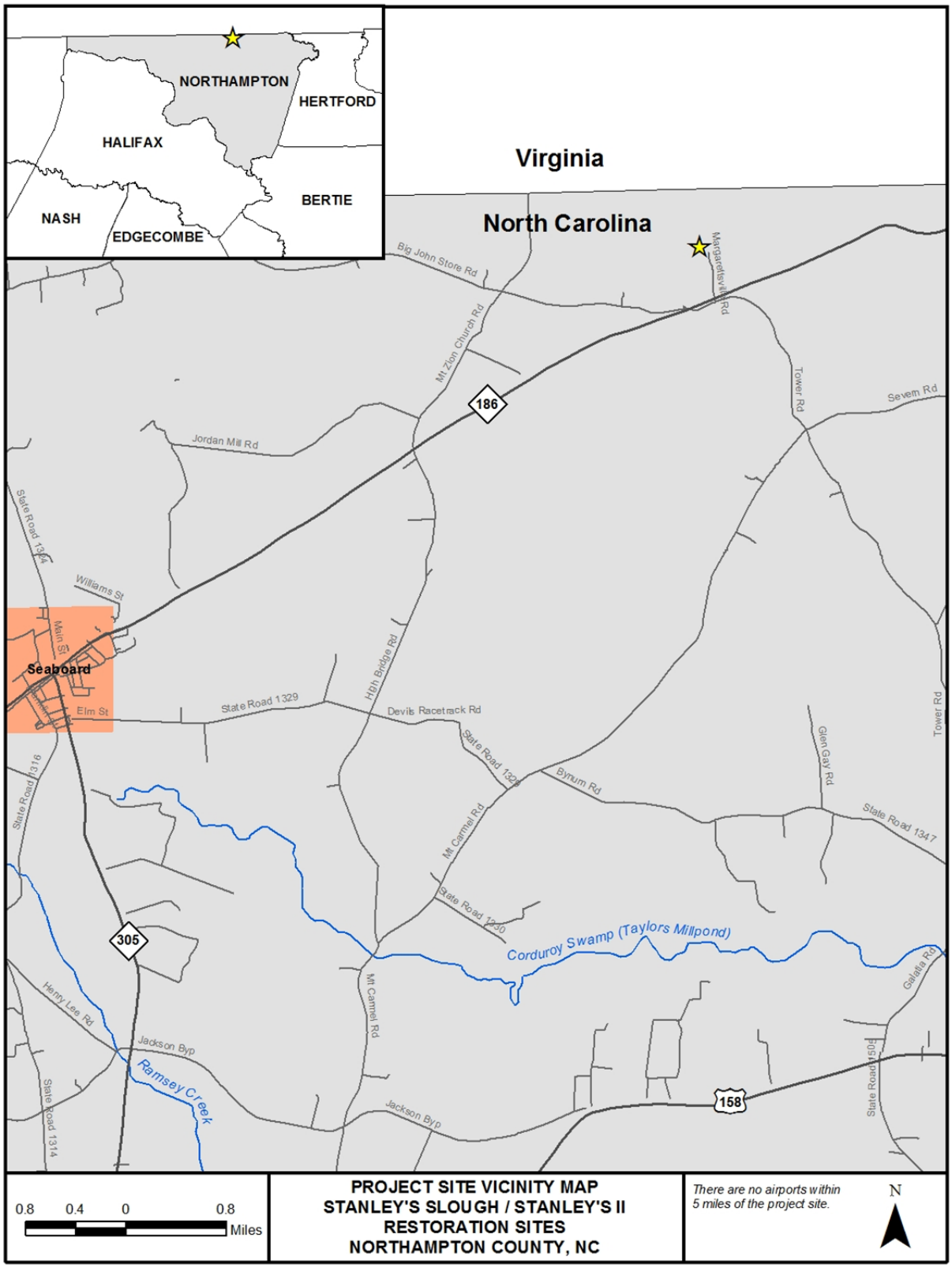
The soils at both sites were also examined for their wetland potential. The soil data sheets and a map of the soil borings are included in Appendix C.

Stanley's Slough
According to the soil survey of Northampton County, the soils within the project site are mapped as Tomotley loam for the southernmost tributary, Roanoke silt loam for the central and eastern part of the site, Altavista fine sandy loam for the western tributary, and Wehadkee loam for the most northern tributary (USDA, NRCS Web Soil Survey, 2011). A soils investigation by KCI's licensed soil scientist confirmed that the Roanoke series occupies a central portion of the site. The Roanoke series, a hydric soil, is described as a poorly drained soil located on terraces and drainage ways in the piedmont and the upper and middle coastal plains. There are also two inclusions of the Altavista series, which is nonhydric. This area has relic braided channels, drained wetlands, and some existing wetlands. The hydrologic sources for the existing wetlands are seeps at the base of the upland area to the south. The hydrologic source that historically contributed wetland hydrology to all of the hydric soils was the headwater stream/wetland complex that previously flowed through this area, but has been diverted to the north away from this part of the site.

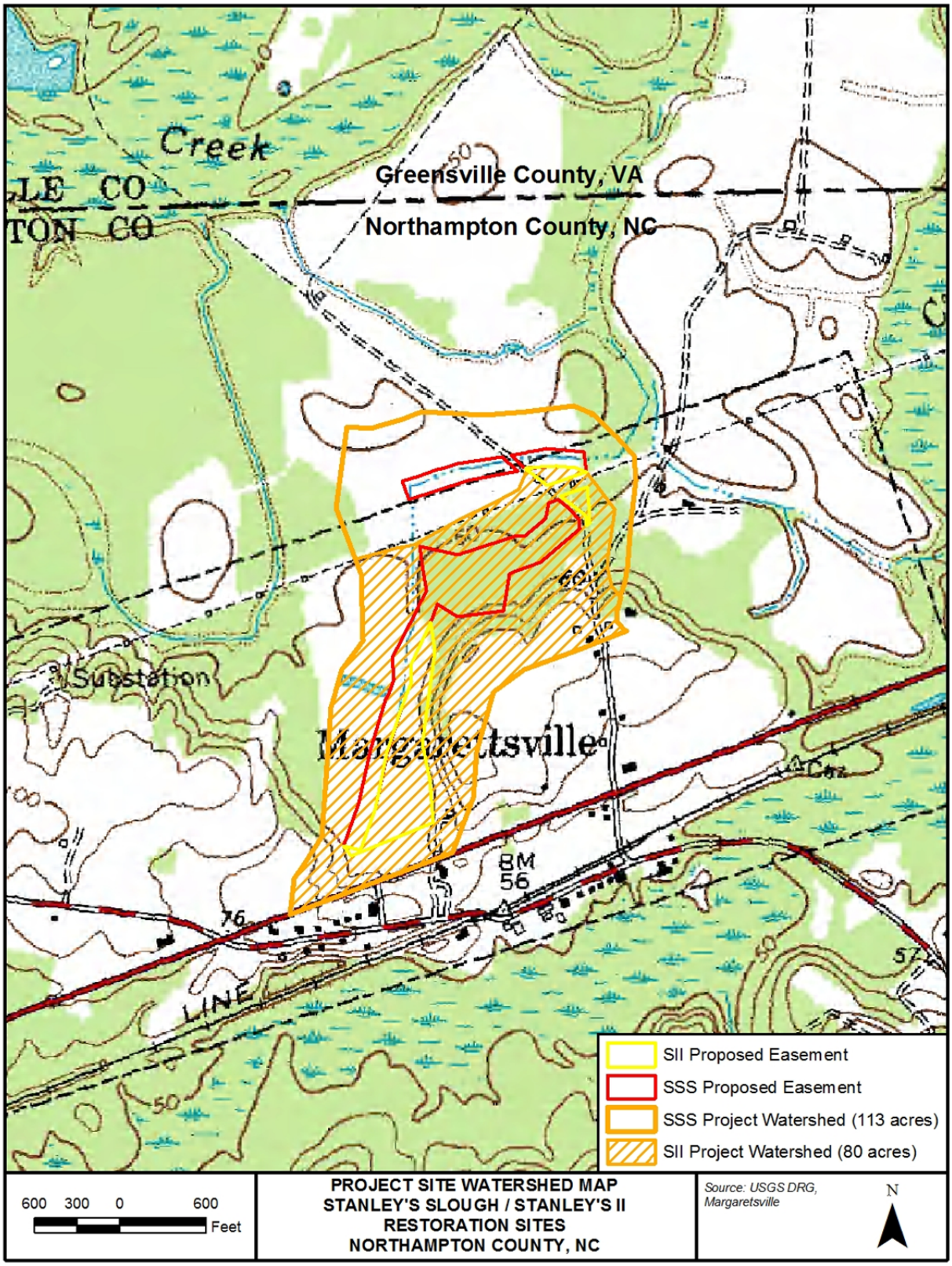
Stanley's II
According to the soil survey for the project area, the soils within the project site are primarily mapped as Tomotley loam for the southern portion of the SII and Roanoke silt loam for the northern portion of the SII easement. Small areas of Winton loam and Altavista fine sandy loam are also present within the southern restoration area (USDA, NRCS Web Soil Survey, 2011). A soils investigation by KCI's licensed soil scientist confirmed that the Roanoke series occupies the northern portion of SII but extends approximately 150 feet to the west of its current location. The Roanoke series, a hydric soil, is described as a poorly drained soil located on terraces and drainage ways in the piedmont and the upper and middle coastal plains. The soil investigation also confirmed the presence of Tomotley loam, also a hydric soil, in the southern portion of SII. The evaluation also confirmed an area of Winton soils along the bluff slope. Where seepage occurred along the bluff, inclusions of Pelham soils were noted within the Winton unit. A small area of Augusta silt loam was also mapped along the southern project boundary. This was mapped as a non-hydric area within the project boundaries.

Based on these watershed and site-specific attributes, the SSS and SII were selected as candidates for wetland mitigation. The restored sites will expand forested wetland habitat in an area that has been actively used for agriculture since at least 1950.

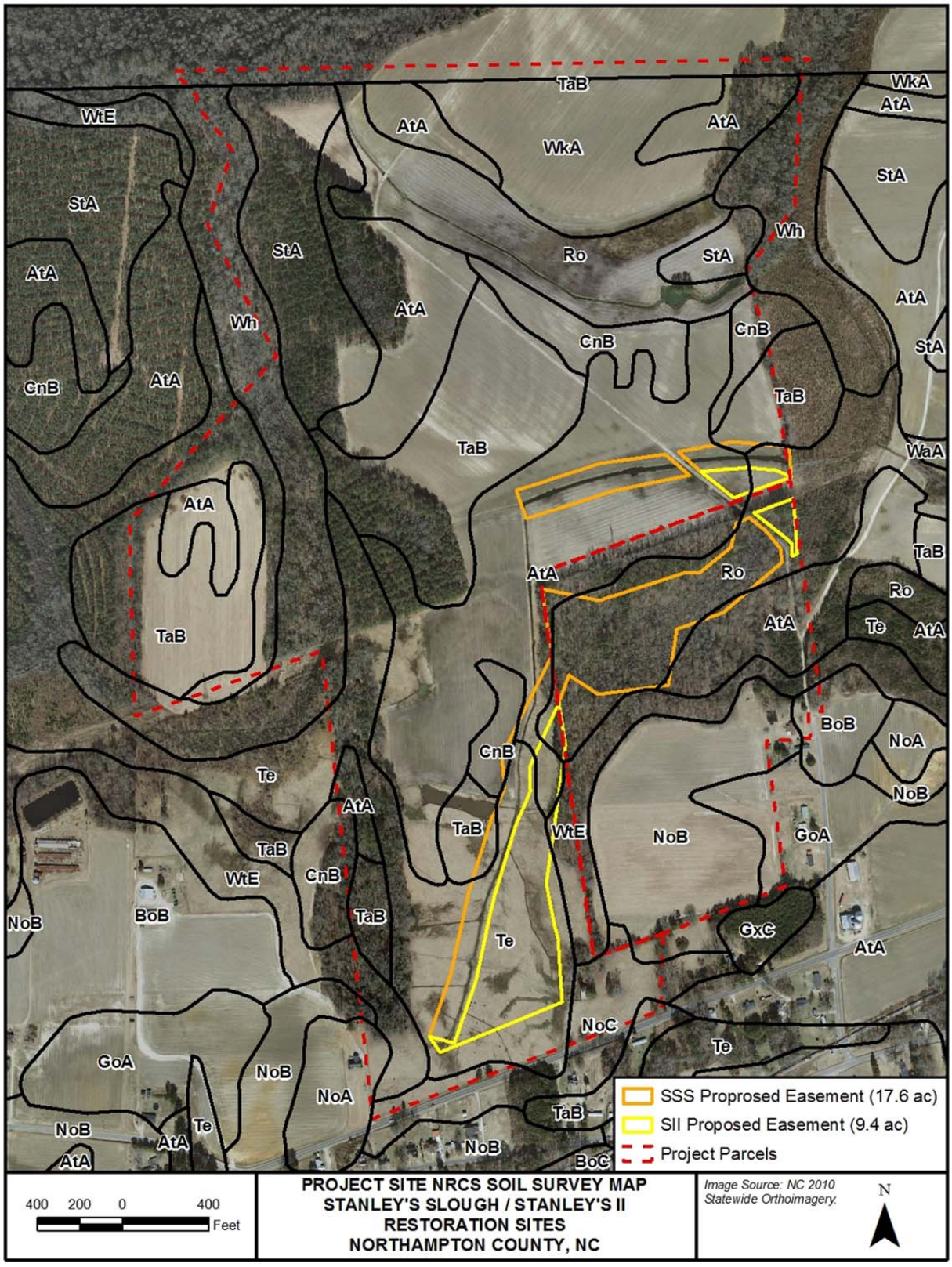
2.3 Vicinity Map



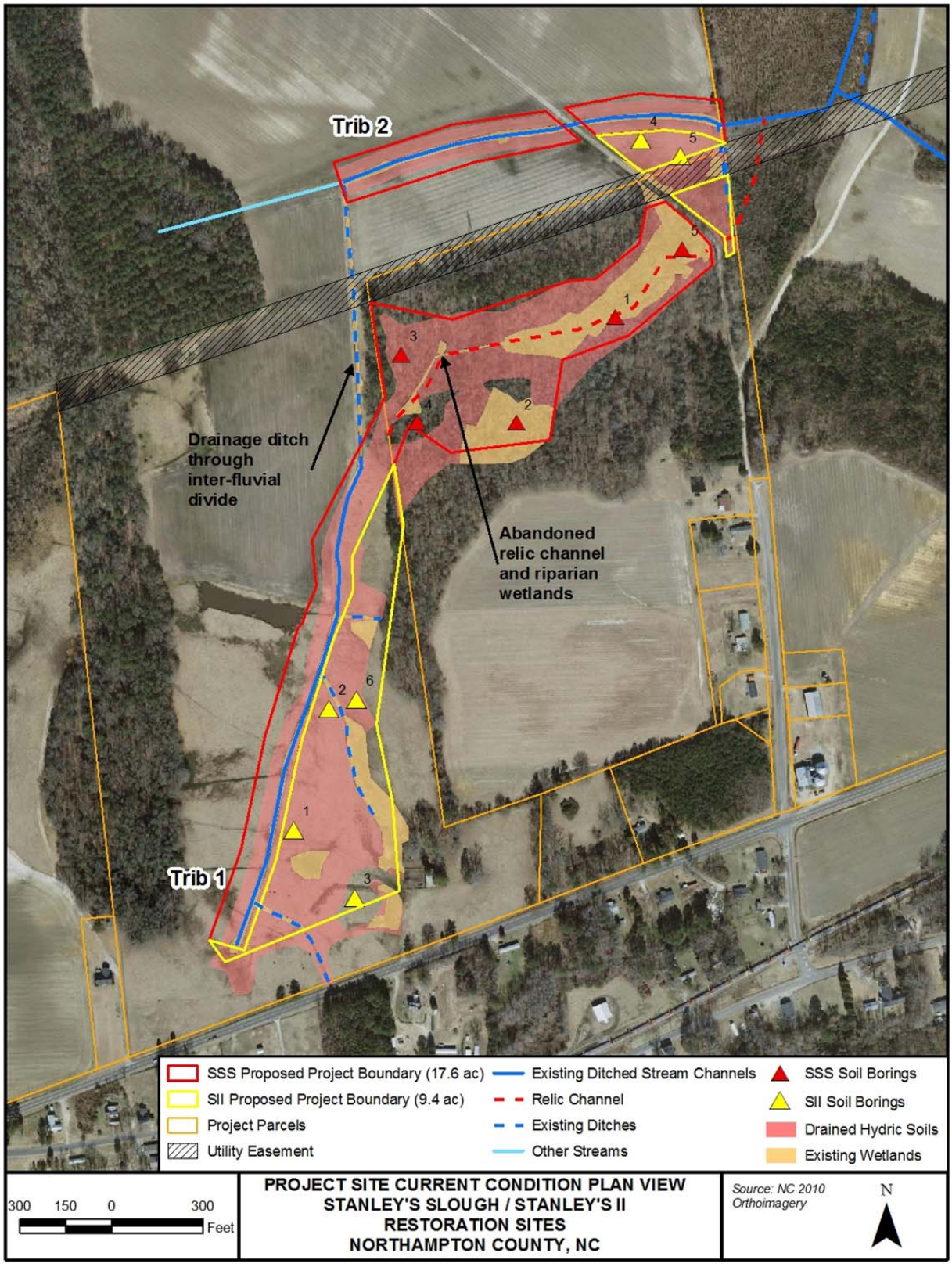
2.4 Watershed Map



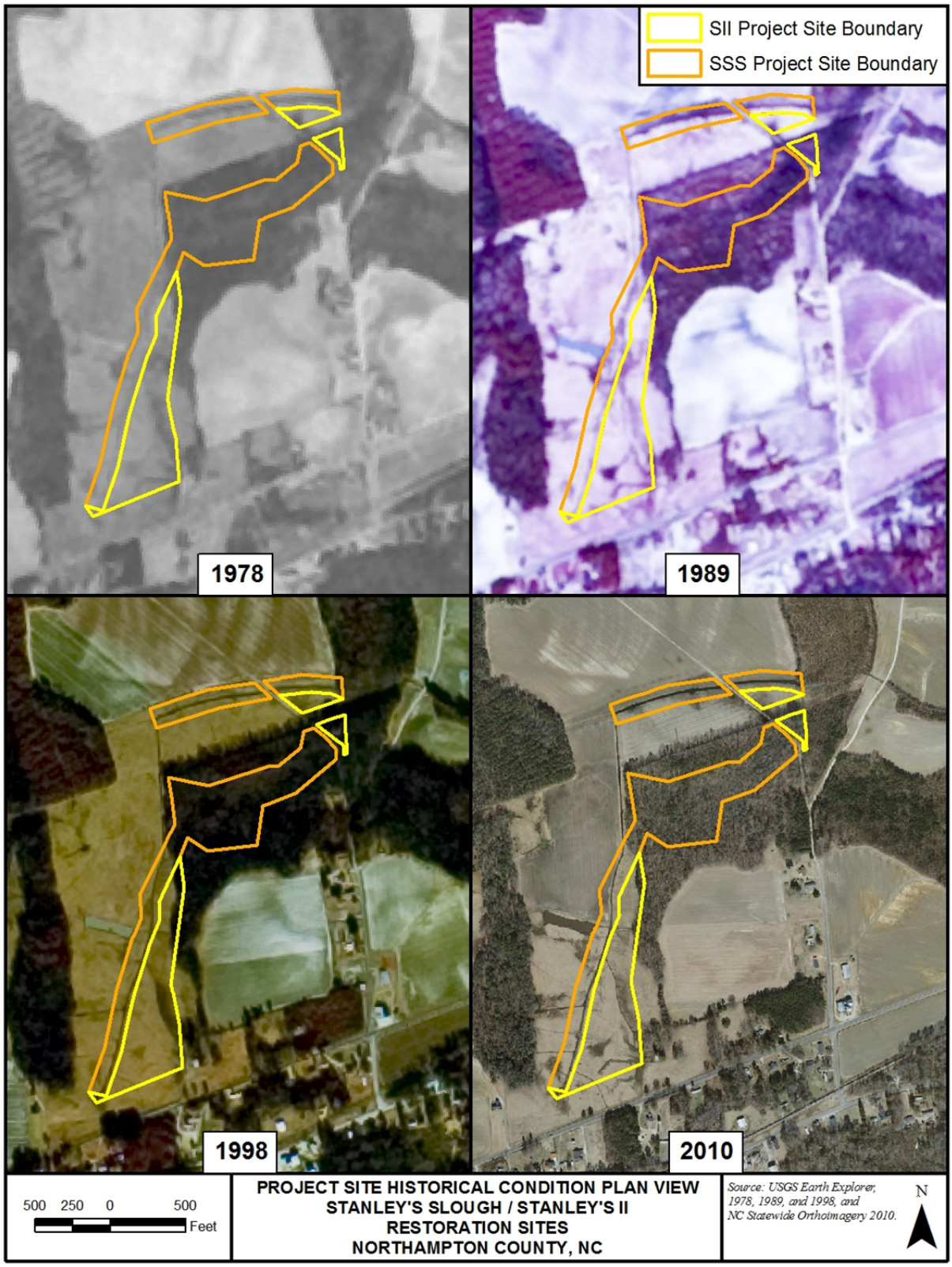
2.5 Soil Survey



2.6 Current Condition Plan View



2.7 Historical Condition Plan View


SII Project Site Boundary
SSS Project Site Boundary
1978
1989
1998
2010
500 250 0 500
Feet
PROJECT SITE HISTORICAL CONDITION PLAN VIEW
STANLEY'S SLOUGH / STANLEY'S II
RESTORATION SITES
NORTHAMPTON COUNTY, NC
Source: USGS Earth Explorer, 1978, 1989, and 1998, and NC Statewide Orthoimagery 2010.
N

2.8 Site Photographs

View looking southwest across SII mitigation area. 9/22/2011

View looking north from hill slope seepage area in SII. 9/22/2011

View looking west across SII mitigation area. 9/26/2012

View looking northwest across portions of SSS and SII mitigation areas. 9/22/2011

View looking north from existing stream mitigation project (SSS). 10/4/2011

View of farm pond across portions of SSS and SII mitigation areas. 9/22/2011

View of existing wetland looking north across the SII mitigation area. 9/22/2011

View of northern SII mitigation area looking east from the existing farm road. 9/22/2011

View of proposed wetland restoration area looking east across the SSS project and northern portion of the SII project. 10/4/2011

View of northern SII mitigation area looking north from the existing farm road. 9/22/2011

View of toe seep wetland area looking northeast in SII. 9/25/2012

View of southern wetland area in SII looking west. 9/26/2012

3.0 SITE PROTECTION INSTRUMENT

3.1 Site Protection Instrument Summary Information

The land required for the construction, management, and stewardship of this mitigation project includes portions of the following parcels. The conservation easement documents were finalized for SSS in March 2013. A copy of the land protection instruments are included in Appendix A.

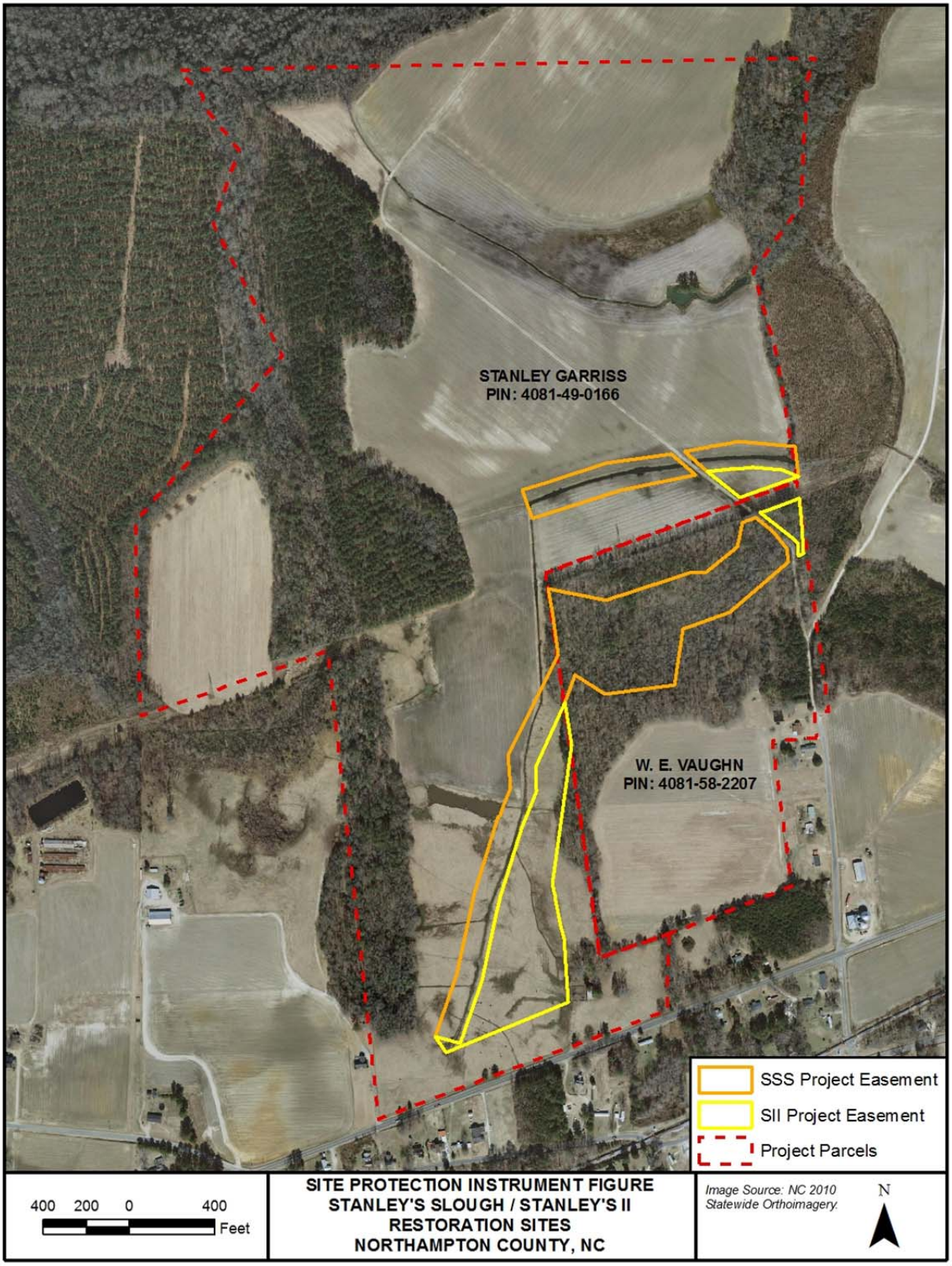
Stanley's Slough

	Landowners	PIN	County	Site Protection Instrument	Deed Book and Page Number	Acreage protected
Parcel A	W. E. Vaughn	4081-58-2207	Northampton	Conservation Easement	DB 336 PG 148	9.0
Parcel B	Stanley Garriss	4081-49-0166	Northampton	Conservation Easement	DB 875 PG 760	8.5

Stanley's II

	Landowners	PIN	County	Site Protection Instrument	Deed Book and Page Number	Acreage protected
Parcel A	W. E. Vaughn	4081-58-2207	Northampton	Conservation Easement	DB 336 PG 148	0.4
Parcel B	Stanley Garriss	4081-49-0166	Northampton	Conservation Easement	DB 875 PG 760	8.9

3.2 Site Protection Instrument Figure



4.0 BASELINE INFORMATION

Project Information			
Project Name	Stanley's Slough Restoration Site		
County	Northampton County		
Project Area (acres)	17.6 acres		
Project Coordinates (lat. and long.)	36.539006 N, -77.348222 W		
Project Watershed Summary Information			
Physiographic Province	Coastal Plain		
River Basin	Chowan		
USGS Hydrologic Unit 8-digit	03010204	**USGS Hydrologic Unit 14-digit**	03010204180040
DWQ Sub-basin	03-01-02		
Project Drainage Area (acres)	113 acres		
Project Drainage Area Percentage of Impervious Area	<1%		
CGIA Land Use Classification	43.7% forested land, 33.8% rangeland, 22.5% agriculture		

Reach Summery Information		
Parameters	**T1**	**T2**
Length of reach (linear feet)	3,054	1,220
Valley classification	Valley Type X	Valley Type X
Drainage area (acres)	84 acres	29 acres
NCDWQ Water Quality Classification	Project Reach Not Classified; Receiving water = Meherrin River (C; NSW)	Project Reach Not Classified; Receiving water = Meherrin River (C; NSW)
Morphological Description (stream type)	N/A – ditched channel	N/A – ditched channel
Evolutionary trend	Channelized	Channelized
Mapped Soil Series	Tomotley, Roanoke, Altavista, Wehadkee	Altavista, Roanoke
Drainage class	Poorly drained, poorly drained, moderately well drained, poorly drained	Moderately well drained, poorly drained
Soil Hydric status	Drained hydric	Drained hydric
Slope	0.2%	0.06%
FEMA classification	Zone X, parts in Zone AE(backwater of Meherrin River)	Zone X, parts in Zone AE (backwater of Meherrin River)
Existing vegetation	Crops, pasture	Crops, pasture
Percent composition of exotic invasive vegetation	0%	0%

Project Information continued - Stanley's Slough Restoration Site			
Existing Wetland Summary Information			
Parameters	**Area 1***	**Area 2***	**Area 11***
Size of Wetland (acres)	2.26 acres	0.88 acres	0.01 acres
Wetland Type	Riparian	Riparian	Riparian
Mapped Soil Series	Roanoke	Roanoke	Tomotley
Drainage class	Poorly drained	Poorly drained	Poorly drained
Soil Hydric Status	Drained Hydric	Drained Hydric	Drained Hydric
Source of Hydrology	Hillside seepage and precip.	Hillside seepage and precip.	Hillside seepage and precip.
Hydrologic Impairment	Ditching and Cattle damage	Ditching and Cattle damage	Ditching and Cattle damage
Existing vegetation	Crops, Pasture	Crops, Pasture	Crops, Pasture
Percent composition of exotic invasive vegetation	0%	0%	0%

Regulatory Considerations			
Regulation	**Applicable?**	**Resolved?**	**Supporting Documentation**
Waters of the United States – Section 404	Yes	Applying for NWP 27	Jurisdictional Determination
Waters of the United States – Section 401	Yes	Applying for NWP 27	Jurisdictional Determination
Endangered Species Act**	No	N/A	N/A
Historic Preservation Act**	No	N/A	N/A
Coastal Zone Management Act ** (CZMA)/ Coastal Area Management Act (CAMA)	No	N/A	N/A
FEMA Floodplain Compliance	Yes	In process	FEMA Floodplain Checklist
Essential Fisheries Habitat**	No	N/A	N/A

* Refer to Jurisdictional Determination wetland delineation map in Appendix B for numbering.
** Items addressed in the Categorical Exclusion in Appendix B.

Project Information						
Project Name	Stanley's II Restoration Site					
County	Northampton County					
Project Area (acres)	9.4 acres					
Project Coordinates (lat. and long.)	34.922569 N , -77.319871 W					
Project Watershed Summary Information						
Physiographic Province	Coastal Plain					
River Basin	Chowan					
USGS Hydrologic Unit 8-digit	03010204		**USGS Hydrologic Unit 14-digit**		03010204180040	
DWQ Sub-basin	03-01-02					
Project Drainage Area (acres)	80 acres					
Project Drainage Area Percentage of Impervious Area	<1%					
CGIA Land Use Classification	53.0% forested land, 34.9% rangeland, 12.1% agriculture					
Existing Wetland Summary Information						
Parameters	**Area 3***	**Area 7***	**Area 8***	**Area 9***	**Area 10***	**Area 11***
Size of Wetland (acres)	0.01 acres	0.02 acres	0.20 acres	0.72 acres	0.14 acres	0.04 acres
Wetland Type	Riparian	Riparian	Riparian	Riparian	Riparian	Riparian
Mapped Soil Series	Roanoke	Tomotley	Tomotley	Tomotley, Roanoke	Roanoke, Winton with Pelham inclusions	Tomotley
Drainage class	Poorly Drained	Poorly Drained	Poorly Drained	Poorly Drained	Poorly Drained	Poorly Drained
Soil Hydric Status	Drained Hydric	Drained Hydric	Drained Hydric	Drained Hydric	Drained Hydric	Drained Hydric
Source of Hydrology	Hillside seepage and precip.	Hillside seepage and precip.	Hillside seepage and precip.	Hillside seepage and precip.	Hillside seepage and precip.	Hillside seepage and precip.
Hydrologic Impairment	Ditching and Crops	Ditching and Crops	Ditching and Crops	Ditching and Crops	Ditching and Crops	Ditching and Crops
Existing vegetation	Crops, Pasture	Crops, Pasture	Crops, Pasture	Crops, Pasture	Crops, Pasture	Crops, Pasture
Percent composition of exotic invasive vegetation	0%	0%	0%	0%	0%	0%

Project Information continued - Stanley's II Restoration Site			
Regulatory Considerations			
Regulation	**Applicable?**	**Resolved?**	**Supporting Documentation**
Waters of the United States – Section 404	Yes	Applying for NWP 27	Jurisdictional Determination
Waters of the United States – Section 401	Yes	Applying for NWP 27	Jurisdictional Determination
Endangered Species Act**	No	N/A	N/A
Historic Preservation Act**	No	N/A	N/A
Coastal Zone Management Act ** (CZMA)/ Coastal Area Management Act (CAMA)	No	N/A	N/A
FEMA Floodplain Compliance	Yes	In process	FEMA Floodplain Checklist
Essential Fisheries Habitat**	No	N/A	N/A

* Refer to Jurisdictional Determination wetland delineation map in Appendix B for numbering.
** Items addressed in the Categorical Exclusion in Appendix B.

4.1 Watershed Summary Information

The sites are part of the 03010204 USGS Cataloging Unit (Meherrin Watershed) located within the Chowan River Basin. The Chowan River Basin straddles the border of North Carolina and Virginia and is populated throughout with small municipalities. The populations of the counties within the watershed are stable or minimally declining and land use is predominately agricultural. For this reason, the restoration priorities laid out by EEP focus on mitigating impact to streams and wetlands from agricultural use (NCDENR EEP, 2009).

The project watershed for the SSS comprises 113 acres. Current land use in the project watershed consists of forested land (49.2 ac/ 43.7%), rangeland (38.1 ac/ 33.8%), and agriculture (25.3 ac / 22.5%). The project watershed drains from the south and east into the project site. The project watershed for the SII is made up of 80 acres and is located within the watershed for the SSS. Current land use in the project watershed consists of forested land (42.6 ac/ 53.0%), rangeland (28.0 ac/ 34.9%), and agriculture (9.7 ac/ 12.1%). The impervious surface within both project watersheds is limited to impervious areas within rural residential properties, amounting to less than 1% of the total drainage area. The nearest named downstream water body is Fountains Creek located in southern Virginia, which drains to the Meherrin River. The project area is located in the United States Geological Survey (USGS) Margarettsville, North Carolina, Quadrangle (2010).

4.2 Reach Summary Information

Stanley's Slough

Existing Conditions

The streams at the SSS have historically been impacted by channelization, surrounding row crop production, and cattle grazing. Two separate streams make up the site: Tributary 1 (T1) begins in the southwestern project corner and flows north. Tributary 2 (T2) flows east to join T1 and comes onto the site from the west. T1 then flows north to the project boundary where it continues to flow north into the swamp system surrounding the Meherrin River. Both streams are headwater channels due to their small drainage areas. The broad flat topography of the site means that the streams have minimal slope and are slow-moving systems. Section 2.6 Current Conditions Plan View shows the existing conditions at the SSS and site photographs are included in Section 2.8.

T1 begins in the southwestern corner of the property and is a perennial first-order stream that is channelized for approximately 1,700 linear feet before being ditched through the middle of a slight drainage divide until connecting with T2. T1 originates from a perennial seep in the middle of a field used for livestock grazing. This part of the stream has been ditched and numerous surficial field drains have been cut into the field that drains to T1. After T2 joins T1, T1 flows east with row crops on either side of it. T2's hydrology comes from the surface flows from a swale that drains from a forested area to the west, surface flows from the surrounding fields, and groundwater. After T1 reaches a wood line, it continues to be ditched until it turns north at the end of the project into a forested section that appears to have been clear cut within the past 10 years.

The project was evaluated using the NCDWQ Stream Classification Form on October 19, 2011 (Appendix C). The NCDWQ form was used to determine if the tributaries were classified as perennial or intermittent streams. A numerical value of at least 30 points is determined from the NCDWQ stream identification form to classify the stream as a perennial stream (NCDENR, 2010). Project reach T1, which

is currently an upstream reach of T2, scored a numerical value of 31.75 points and was classified as a stream.

Channel Classification

Channel Morphology (Pattern, Dimension, and Profile)
A Rosgen Level II assessment was conducted to gather existing stream dimension, pattern, and profile data to determine the degree of channel instability. Channel cross-sections were surveyed at seven representative locations along the project; three locations on T1, two locations on T2, and two locations on the relic channel in SSS. Data developed from these surveys are presented in a channel morphology summary in Appendix C.

Channel Stability Assessment
The channels being restored in the SSS are maintained as agricultural ditches and are not considered highly unstable. As reflected in the project goals and objects, sediment is not a large concern at this site. For these reasons, a Bank Erosion Hazard Index (BEHI) evaluation was not conducted for the project.

Bankfull Verification
The standard methodology used in natural channel design is based on the ability to select the appropriate bankfull discharge and generate the corresponding bankfull hydraulic geometry from a stable reference system(s). The determination of bankfull stage is typically the most critical component of the natural channel design process. However, given that this is a headwater project, the channel design will not have traditional bankfull-based morphology. Therefore, bankfull is not relevant to this particular project.

With the exception of the relic channel in the woods, project reaches within the SSS are altered (ditched) channels. T1 is a perennial first-order channelized stream that receives hydrology from a perennial spring at the beginning of the reach. T2 is also a perennial first-order channelized stream that receives hydrology from T1 in addition to groundwater sources. The relic channel of T1 is not channelized and follows a more natural stream morphology. This channel was historically part of an existing wetland/stream complex with lower banks and high width/depth ratios.

While KCI is not developing a traditional bankfull channel based on specific reference reach ratios or regional curve geometry, an alternative design process has been used to develop the criteria for the restoration of the headwater wetland/streams on site. As evidenced by the data collected in the relic channel in the wooded section of the project and from visual observations in adjacent reaches with more natural flow patterns, these headwater wetland/stream systems generally have a low flow channel associated with them. These low flow channels are morphologically highly variable and the conditions in the wooded section were used as a guide to develop what the headwater stream/wetland restoration should look like. Some of the observations that contributed to this concept include: in many instances the low flow channel not being in the center or even the lowest part of the valley; that numerous side channels can be almost the same size as the low flow channel; that sometimes side channels are nonexistent and the low flow channel conveys a greater concentrated flow; that the size and dimensions of the low flow channel vary depending on governing valley morphology; and that the profiles have some areas of high variability and other areas with little grade change. These qualities, and the morphological parameters of the relic channel, contributed to the design plan for the restoration of the ditched streams on site.

In the project plan sheets (Appendix D), there is a set range of dimensions for the low flow channel. Given this range of dimensions and the designed grade of the floodplain, the designer will work with the equipment operator to grade this low flow channel through the valley. Similar to the wooded area, the low flow channel will be experience minor variations in size, the profile and planform will vary depending on the controlling valley morphology, and there will be smaller side channels throughout the width of the valley. It is the intention of the design for the low flow channel to be undersized, so that during most precipitation events and dependent on the seasonal elevation of the water table, the low flow channel capacity is exceeded and additional overbank flow is spread throughout the valley, accessing multiple flow paths. An example of what the constructed channel cross-section could look like is best illustrated by existing Cross-Section 6. This cross-section has a primary channel, but there are also low areas adjacent to the channel that have flow in them during storm events. The other cross-section from the wooded area, Cross-Section 7 is an example of how the primary channel is not in the exact low point in the valley. Here the channel has a depression adjacent to it that may or may not have an outlet to the primary channel. These two cross-sections are indicative of the natural variation found in these systems and discussed above. It is expected that as vegetation grows in and around the stream valley, the form of the channels could experience minor variations, with some portions becoming thick with vegetation and causing a rerouting of the predominant low flow channel to occur. The final stable form of this channel evolution is a low flow channel whose location and morphological condition are set by the mature vegetation around it. This is the natural progression for these systems. As these systems change over time, they are still considered stable, with any rate of change happening slowly and over long time periods. Erosion is not a problem in these systems because the minimal sediment that is generated from the changing channel form is captured within the site's dense vegetation.

Stanley's II

Not applicable for this project.

4.3 Wetland Summary Information

Based on field topographic survey data and LIDAR elevation data, the contours at SSS and SII range from 42 – 78 feet. The topography of the sites begins with the highest elevations at the southeastern edge of the site boundaries, and extending from there to the west and up towards the northeastern most corner. The elevation decreases quickly as one moves from the southeastern corner to the center of the sites. The drained hydric soils at the sites experience approximately a 4 feet change in elevation as the slope grades down slightly from the center and out of the northeastern corner.

Stanley's Slough

Existing Wetlands

Currently, small areas of wetland exist along the relic channel in the forested portion of the site as well as throughout T1 and T2. These areas were delineated by KCI wetland scientists and the boundaries were confirmed through a jurisdictional determination with the US Army Corps of Engineers (Section 4.4). The goal of this project will be to join these areas to a larger whole with a braided stream/wetland complex. The wetland data forms are included in Appendix B.

T1 drains the site south to north until the confluence with T2, where the site drains west to east. The relic channel is primarily dry, but during rain events the channel picks up seepage from the southern hillside and flows to the east. Any flow through these woods is separated from the downstream wetland system because of the farm road that cuts off flow from west to east. Pockets of standing water are

present throughout this area. Wetlands outside of the forested area are found within the banks of T1 and T2.

Vegetation

The project includes a mature wooded area east of the existing T1 channel and south of T2. This bottomland area contains the relic channel for T1 and a series of drained braided channels that weave through mature trees. The bottomland has a variety of tree species, including: persimmon (*Diospyros virginiana*), black gum (*Nyssa sylvatica*), green ash (*Fraxinus pennsylvanica*), ironwood (*Carpinus caroliniana*), American holly (*Ilex opaca*), willow oak (*Quercus phellos*), tulip poplar (*Liriodendron tulipifera*), and swamp chestnut oak (*Quercus michauxii*). A more mature forest is located north of the SSS and is composed of green ash (*Fraxinus pennsylvanica*), swamp tupelo (*Nyssa aquatic*), laurel oak (*Quercus laurifolia*), willow oak (*Quercus phellos*), water oak (*Quercus nigra*), American holly (*Ilex opaca*), American beautyberry (*Callicarpa americana*), swamp cottonwood (*Populus heterophylla*), river birch (*Betula nigra*), and ironwood (*Carpinus caroliniana*).

Stanley's II

Existing Wetlands

SII has been impacted by a history of ditching, surrounding row crop production, and cattle grazing. Despite efforts to effectively drain wetlands on the property, several small areas of existing wetland exist within the SII. These areas were delineated by KCI wetland scientists and the boundaries were confirmed through a jurisdictional determination with the US Army Corps of Engineers (Section 4.4). The existing wetlands are generally located in depressions or along man-made drainage features created to drain the adjacent pastureland. Approximately 1.1 acres of existing wetlands exist within SII. The goal of this project will be to join these areas to a larger whole with the stream/wetland complex of the SSS. The wetland data forms are included in Appendix B.

Drained wetlands within the SII generally flow in a northwesterly direction towards T1. Strong indications of seepage flow exist along the terrace slope that runs along the eastern boundary of the SII. Three ditched channels are located within the southern portion of the SII easement. These ditches serve to drain the surrounding areas along T1.

The northern portion of the SII is currently a soybean field that shows evidence of prolonged exposure to inundation in many areas of the field. The northern portion of SII is drained by a tributary that runs to the north of the site as well as by a ditch that runs to the east of the field. A 100' wide electric transmission line easement is located along the tree line in the southern portion of the field. South of the soybean field, this section of SII extends into the woods and joins with the proposed easement for the SSS project. This area which includes degraded and drained wetland areas is characterized by a mix of forested and scrub-shrub species.

Vegetation

The bottomland has a variety of tree species, including: persimmon (*Diospyros virginiana*), black gum (*Nyssa sylvatica*), green ash (*Fraxinus pennsylvanica*), American holly (*Ilex opaca*), willow oak (*Quercus phellos*), tulip poplar (*Liriodendron tulipifera*), and swamp chestnut oak (*Quercus michauxii*). A ditch serves to drain a portion of this area and hydrology has been diverted from the area by upstream ditching.

4.4 Regulatory Considerations

A jurisdictional determination was approved by the US Army Corps of Engineers on November 29, 2012 for the SSS and on October 3, 2012 for the SII. Following the completion of the mitigation plan, a pre-construction notification (PCN) will be completed to apply for a Nationwide 27 Permit (NWP) to comply with Sections 401 and 404 of the Clean Water Act with the Wilmington District of the US Army Corps of Engineers and the NCDENR Division of Water Quality.

Once the jurisdictional boundaries of the wetlands were determined and formalized through the jurisdictional determination process, KCI evaluated the potential of restoring functions of the existing and drained wetland areas using the definitions of "rehabilitation" and "reestablishment" provided in 40 CFR Part 230 (Final Rule). Although these definitions were adopted in 2008, the use of these terms to justify restoration had not previously been applied to NC EEP full delivery projects. As such, KCI initiated discussions with the US Army Corps of Engineers regarding the applicability of these definitions to this project. Appendix B contains the negotiated results of KCI's discussions of the assets associated with both the SSS and SII projects. This negotiation was used as the basis for the credit scenarios presented in this report.

SSS and SII are located within a FEMA Zone AE for the backwater of the Meherrin River. A no-rise flood study is expected for this project.

5.0 DETERMINATION OF CREDITS

Stanley's Slough Restoration Site, Northampton County EEP Contract 004635; EEP Project Number 95356									
Mitigation Credits									
	Stream		**Riparian Wetland**		**Non-riparian Wetland**		**Buffer**	**Nitrogen Nutrient Offset**	**Phosphorous Nutrient Offset**
Type	R	RE	R	RE	R	RE			
Linear Feet/ Acres	4,274	-	3.6	-	-	-	-	-	-
Credits	4,274	-	3.1	-	-	-	-	-	-
TOTAL CREDITS									

Project Components						
Project Component -or- Reach ID	**Stationing/ Location**	**Existing Footage/ Acreage**	**Approach (PI, PII etc.)**	**Restoration -or- Restoration Equivalent**	**Restoration Footage or Acreage**	**Mitigation Ratio**
Trib 1	10+00 – 41+55	2,600	N/A	Restoration	3,054	1:1
Trib 2	50+00 – 62+85	1,220	N/A	Restoration	1,220	1:1
Wetland Reestablishment	-	-	-	Restoration	2.8	1:1
Wetland Rehabilitation	-	-	-	Restoration	0.8	2.5:1
Wetland Preservation	-	-	-	NA	0.5	NA

Component Summation						
Restoration Level	**Stream (linear feet)**	**Riparian Wetland (acres)**		**Non-riparian Wetland (acres)**	**Buffer (square feet)**	**Upland (acres)**
		Riverine	Non-Riverine			
Restoration	4,274	-	3.1			
Enhancement						
Enhancement I						
Enhancement II						
Creation						
Preservation						
High Quality Preservation						
TOTAL	4,274		3.1			

R= Restoration RE= Restoration Equivalent of Creation or Enhancement

Stanley's II Restoration Site, Northampton County EP Contract 5151; EEP Project Number 95838									
Mitigation Credits									
	Stream		**Riparian Wetland**		**Non-riparian Wetland**		**Buffer**	**Nitrogen Nutrient Offset**	**Phosphorous Nutrient Offset**
Type	R	RE	R	RE	R	RE			
Acres	-	-	7.6	-	-	-	-	-	-
Credits	-	-	6.9	-	-	-	-	-	-
TOTAL CREDITS									

Project Components						
Project Component -or- Reach ID	**Stationing/ Location**	**Existing Footage/ Acreage**	**Approach (PI, PII etc.)**	**Restoration -or- Restoration Equivalent**	**Restoration Footage or Acreage**	**Mitigation Ratio**
Wetland Reestablishment	-	-	-	Restoration	6.5	1:1
Wetland Rehabilitation	-	-	-	Restoration	1.1	2.5:1

Component Summation						
Restoration Level	**Stream (linear feet)**	**Riparian Wetland (acres)**		**Non-riparian Wetland (acres)**	**Buffer (square feet)**	**Upland (acres)**
		Riverine	Non-Riverine			
Restoration		-	6.9			
Enhancement						
Enhancement I						
Enhancement II						
Creation						
Preservation						
High Quality Preservation						
TOTAL			6.9			

R= Restoration RE= Restoration Equivalent of Creation or Enhancement

6.0 CREDIT RELEASE SCHEDULE

All credit releases will be based on the total credit generated as reported by the as-built survey of the mitigation sites. Under no circumstances shall any mitigation project be debited until the necessary DA authorization has been received for its construction or the District Engineer (DE) has otherwise provided written approval for the project in the case where no DA authorization is required for construction of the mitigation project. The DE, in consultation with the Interagency Review Team (IRT), will determine if performance standards have been satisfied sufficiently to meet the requirements of the release schedules below. In cases where some performance standards have not been met, credits may still be released depending on the specifics of the case. Monitoring may be required to restart or be extended, depending on the extent to which the site fails to meet the specified performance standard. The release of project credits will be subject to the criteria described as follows:

Forested Wetlands Credits			
Monitoring Year	**Credit Release Activity**	**Interim Release**	**Total Released**
0	Initial Allocation – see requirements below	30%	30%
1	First year monitoring report demonstrates performance standards are being met	10%	40%
2	Second year monitoring report demonstrates performance standards are being met	10%	50%
3	Third year monitoring report demonstrates performance standards are being met	10%	60%
4	Fourth year monitoring report demonstrates performance standards are being met	10%	70%
5	Fifth year monitoring report demonstrates performance standards are being met; Provided that all performance standards are met, the IRT may allow the NCEEP to discontinue hydrologic monitoring after the fifth year, but vegetation monitoring must continue for an additional two years after the fifth year for a total of seven years.	10%	80%
6	Sixth year monitoring report demonstrates performance standards are being met	10%	90%
7	Seventh year monitoring report demonstrates performance standards are being met, and project has received close-out approval	10%	100%

Initial Allocation of Released Credits

The initial allocation of released credits, as specified in the mitigation plan can be released by the NCEEP without prior written approval of the DE upon satisfactory completion of the following activities:

- Approval of the final Mitigation Plan
- Recordation of the preservation mechanism, as well as a title opinion acceptable to the USACE covering the property
- Completion of project construction (the initial physical and biological improvements to the mitigation site) pursuant to the mitigation plan; Per the NCEEP Instrument, construction means that a mitigation site has been constructed in its entirety, to include planting, and an as-built report has been produced. As-built reports must be sealed by an engineer prior to project closeout, if appropriate but not prior to the initial allocation of released credits.

- Receipt of necessary DA permit authorization or written DA approval for projects where DA permit issuance is not required.

Subsequent Credit Releases

All subsequent credit releases must be approved by the DE, in consultation with the IRT, based on a determination that required performance standards have been achieved. For stream projects a reserve of 15% of a site's total stream credits shall be released after two bank-full events have occurred, in separate years, provided the channel is stable and all other performance standards are met. In the event that less than two bank-full events occur during the monitoring period, release of these reserve credits shall be at the discretion of the IRT. As projects approach milestones associated with credit release, the NCEEP will submit a request for credit release to the DE along with documentation substantiating achievement of criteria required for release to occur. This documentation will be included with the annual monitoring report.

7.0 MITIGATION WORK PLAN

7.1 Target Wetland Types and Plant Communities

Stanley's Slough

Disturbed areas of T1 and T2 will be planted with species from the Headwater Forest Community (NCWAM, v. 4.1 2010) as well as other similar species that have been observed in the adjacent wetland areas. The planting plan in the attached project plan sheets (Appendix D) lists these areas as the Wetland Planting Plan and the Stream Planting Plan. These two areas have many of the same species, differing only slightly based on the distribution of species. The restored wetlands and the part of T1 that will be returned to the relic channel will not receive wholesale planting because these areas are already forested. Any areas that have a low density of existing vegetation will be supplementally planted with the species listed above for T1 and T2. Trees and shrubs will be planted at a density of 968 stems per acre (9 feet x 5 feet spacing) to achieve a survivability of two hundred ten (210) live planted stems per acre after seven years. Woody vegetation planting will be conducted during dormancy. Species to be planted may consist of the following and any substitutions from the planting plan will be taken from this list:

Headwater Forest Community - Wetland and Stream Planting Area

Common Name	Scientific Name	Wetland Indicator
Tag alder	*Alnus serrulata*	FACW
Silky dogwood	*Cornus amomum*	FACW
Persimmon	*Diospyros virginiana*	FAC
Green ash	*Fraxinus pennsylvanica*	FACW
River birch	*Betula nigra*	FACW
Tulip poplar	*Liriodendron tulipifera*	FACU
Sweet bay	*Magnolia virginiana*	FACW
Swamp tupelo	*Nyssa biflora*	OBL
Overcup oak	*Quercus lyrata*	OBL
Swamp chestnut oak	*Quercus michauxii*	FACW
Laurel oak	*Quercus laurifolia*	FACW
Water oak	*Quercus nigra*	FAC
Willow oak	*Quercus phellos*	FAC
Bald cypress	*Taxodium distichum*	OBL
Red maple	*Acer rubrum*	FAC
American elm	*Ulmus americana*	FAC

An herbaceous seed mix composed of appropriate native species will also be developed and used to further stabilize and restore the wetland.

Stanley's II

Restored riparian wetland areas will be planted with species from the Headwater Forest Community (NCWAM, v. 4.1 2010) as well as other similar species that have been observed in the adjacent wetland areas. For the SII areas, it is called the Wetland Planting Plan in the project plan sheets (Appendix D). Trees and shrubs will be planted at a density of 968 stems per acre (9 feet x 5 feet spacing) to achieve a survivability of two hundred ten (210) live planted stems per acre after seven years. The unvegetated areas that are not in hydric soils and are upland will be planted as a transitional zone. The planting plan

lists these areas as the Upland Planting Plan. Woody vegetation planting will take place during dormancy. The headwater stream/wetland systems will be planted as Headwater Forest communities (NCWAM, v. 4.1 2010) and may consist of the following:

Headwater Forest Community - Wetland Planting Area

Common Name	Scientific Name	Wetland Indicator
Tag alder	*Alnus serrulata*	FACW
Silky dogwood	*Cornus amomum*	FACW
Persimmon	*Diospyros virginiana*	FAC
Green ash	*Fraxinus pennsylvanica*	FACW
River birch	*Betula nigra*	FACW
Tulip poplar	*Liriodendron tulipifera*	FACU
Sweet bay	*Magnolia virginiana*	FACW
Swamp tupelo	*Nyssa biflora*	OBL
Overcup oak	*Quercus lyrata*	OBL
Swamp chestnut oak	*Quercus michauxii*	FACW
Laurel oak	*Quercus laurifolia*	FACW
Water oak	*Quercus nigra*	FAC
Willow oak	*Quercus phellos*	FAC
Bald cypress	*Taxodium distichum*	OBL
Red maple	*Acer rubrum*	FAC
American elm	*Ulmus americana*	FAC

Transitional Zone - Upland Planting Area

Common Name	Scientific Name	Wetland Indicator
Beautyberry	*Callicarpa americana*	FACU
Persimmon	*Diospyros virginiana*	FAC
Green ash	*Fraxinus pennsylvanica*	FACW
American holly	*Ilex opaca*	FACU
Tulip poplar	*Liriodendron tulipifera*	FACU
Sweet bay	*Magnolia virginiana*	FACW
Black cherry	*Prunus serotina*	FACU
Swamp chestnut oak	*Quercus michauxii*	FACW
Willow oak	*Quercus phellos*	FAC
Pin oak	*Quercus palustris*	FACW
Southern red oak	*Quercus falcata*	FACU
American elm	*Ulmus americana*	FAC

A herbaceous seed mix composed of appropriate native species will be developed and used to further stabilize and restore the headwater stream/wetland complex and buffer zones following construction.

The project easements will be marked and surveyed as per EEP's requirements contained within http://portal.ncdenr.org/web/eep/fd-forms-templates. The boundary marking plan is described in the attached project plan sheets (Appendix D).

7.2 Design Parameters

Stanley's Slough

The mitigation approach for the SSS will aim to restore the headwater stream/wetland complex that drains to the Meherrin River. The available historic data, detailed soils mapping, and topographic and geographic positions suggest that a headwater forest used to exist in the lowland areas of the site (NCWAM, v. 4.1 2010). The site will be restored to a condition that resembles the former stream/wetland community.

While the credit type and ratio for this project generally follow the framework of the restoration mitigation type, these mitigation types have been further refined to be considered either reestablishment or rehabilitation, which are both forms of restoration. Reestablishment occurs where the functions are returned to the site where an aquatic resource previously existed. Rehabilitation results in an improvement in most, if not all, aquatic resource functions at a degraded site (40 CFR Part 230). Based upon discussions with the IRT, it was decided that using these more specific mitigation types was the best way to address the fact that the existing conditions and current suite of functions are different for these restoration areas. The results of these discussions are different ratios for rehabilitation and reestablishment, although they are both considered restoration credit. The correspondence related to this discussion is included in Appendix B.

Mitigation actions will focus on filling the dredged channels and creating a shallow braided headwater stream/wetland complex. Each of the individual restoration reaches have valley widths >100' and will be approached in a manner consistent with the guidance document *Information Regarding Stream Restoration with Emphasis on the Coastal Plain* (USACE, 2007). This design aims to restore the function of these systems, applying the guidance as described in that document for restoring riparian headwater systems.

The restored streams will not be a single thread channel, but instead there will be multiple threads that will meander through a valley bottom, similar to existing reference systems found at the site. In these areas (channelized portions of T1 and T2), the stream/wetland valley will be protected by a 120' wide conservation easement (60' on either side of the wetland valley). T1 will also be reconnected to the relic forested headwater stream/wetland complex, which in turn will restore hydrology to the adjacent drained riparian wetlands

For the first 1,700 linear feet of T1, the channelized stream will be redeveloped into a gently sloping (0.2%, matching the slope of the channel in the existing wooded area) headwater stream valley. This will place shallow diffuse flow at the surface, creating a braided stream system. In this part of T1, the resource will be rehabilitated, since there will be an improvement to the entire suite of functions for the stream system. By eliminating the ditched channel and returning the flow to a braided system all of the wetland/stream functions will be improved and the functions of the system will be significantly increased compared to the existing conditions.

When T1 approaches the tree line where it is currently ditched to the north, the restoration will connect the stream to the relic forested headwater stream/wetland system. By returning the hydrologic source to this relic stream/wetland system, the resource will be reestablished. By effectively rebuilding the system in this location the historic functions will be returned to this resource and there will be an overall gain in the resource area and function. Because there is already a stable system of braided channels that will be reclaimed, there will be minimal impact to the existing forested buffer. This diffuse channel will

continue until it reaches an existing road and flows through a culvert under an existing road. The ditch to the north of T1, which currently connects drainage from T1 to T2, will be filled. Hydrology in T2 will continue to be driven by groundwater and precipitation inputs upstream of the ditch.

Adjacent to the section of T1 through the forested area, wetlands will be reestablished and rehabilitated. Where the hydric soils are anticipated to regain wetland hydrology because of the stream being reconnected to the adjacent historic channel, wetland functions will be returned to these resources, resulting in wetland reestablishment. Where there are currently low lying areas that exhibit compromised wetland functions, the suite of functions will be greatly improved with this hydrologic regime change, resulting in wetland rehabilitation. At the current farm road, there will be culverts installed to continue the proper alignment of the wetland/stream valley. Currently there is no hydrologic connection between the western and eastern sides of the road, except when the road is overtopped. This will extend the stream reestablishment to the eastern side of the road where it flows into a channel that leads north to the confluence with T2.

Similarly to T1, T2 will be rehabilitated by grading the channelized stream into a headwater stream/wetland valley in its place. The restored stream will leave shallow diffuse flow at the surface, creating a braided stream system similar to the rehabilitation for the upper portion of T1. At the beginning of T2 the area will be developed into a wetland seep, where the headwater stream/wetland valley begins. There is an existing culvert approximately halfway down T2, which will remain in place.

Please see the mitigation overview in Section 7.4 and the project plan sheets included in Appendix D. The following elements of functional uplift, increase, and improvement are expected from this project:

1. Increase in groundwater recharge
2. Increase in sediment trapping and filtration
3. Increase in carbon storage
4. Increase in biochemical cycling of nutrients and other pollutants
5. Increase in habitat utilization by wildlife (migrants and residents)
6. Increase in landscape patch structure

Summary

Stream Restoration (Rehabilitation and Reestablishment) – 4,274 linear feet

The existing channelized reaches, T1 (3,054 linear feet) and T2 (1,220 linear feet), will be filled and graded to a headwater stream/wetland complex. The restored streams will have shallow diffuse flow, creating a braided stream system. The relic channel will be restored to reconnect site hydrology to historic flow paths.

Riparian Wetland Restoration (Rehabilitation and Reestablishment) – 3.6 acres

The drained hydric soils adjacent to the relic forested stream/wetland valley will be restored to riparian wetland as part of the restoration of T1. There are also existing riparian wetlands that will be included within this part of the project and protected under the conservation easement. Wetland hydrology will be restored to the drained hydric soils when T1 is redirected to the existing relic channel, raising the groundwater elevations and providing overbank flow. The functional uplift will be significant in this wetland system because there is already a mature canopy of appropriate tree species. Following the completion of site grading, the riparian wetland will be planted as Headwater Forest Community as described in Section 7.1. Proposed project conditions are shown in Section 7.4.

Reference Wetland
A suitable reference wetland was found approximately 900 feet north of the northeastern edge of the SSS, within the Garriss parcel. The reference wetland is comprised of deciduous hardwoods over a shrub layer and is consistent with the Headwater Forest Community that will be the target wetland type at the project site. A groundwater monitoring well has been installed to document the reference wetland hydrology during the course of monitoring.

Stanley's II
The mitigation approach for SII will aim to restore and enhance the headwater wetland complex that drains to the Meherrin River. The restored riparian system will resemble a Headwater Forest community (NCWAM, v. 4.1). Mitigation actions will focus on filling ditches, developing and redirecting productive seeps, enhancing soil structure through targeted surface manipulation, and integrating the wetland area into the adjacent headwater stream/wetland complex. When the grading work is complete, the site will be stabilized with a native seed mix and planted with woody species typically found in a Headwater Forest community.

While the credit type and ratio for this project generally follow the framework of the restoration mitigation type, these mitigation types have been further refined to be considered either reestablishment or rehabilitation, which are both forms of restoration. Reestablishment occurs where the functions are returned to the site where an aquatic resource previously existed. Rehabilitation results in an improvement in most, if not all, aquatic resource functions at a degraded site (40 CFR Part 230). Based upon discussions with the IRT, it was decided that using these more specific mitigation types was the best way to address the fact that the existing conditions and current suite of functions are different for these restoration areas. The results of these discussions are different ratios for rehabilitation and reestablishment, although they are both considered restoration credit. The correspondence related to this discussion is included in Appendix B.

With the upper portion of T1 to the west, the southern portion of SII contains a mix of existing and drained wetlands. The existing drainage ditches and low lying areas, which drain SII to T1, will be graded to reconnect the wetland complex as a whole. This will be considered wetland rehabilitation in the low lying areas where there are minimally functioning wetlands currently. Where there are currently drained hydric soils adjacent to these wet areas, the wetlands will be reestablished, by the grading and filling of drainage features. This will maximize the functional uplift potential of both the SII and the SSS by incorporating upland buffers as well as additional and improved wetland acreage in this area of the site.

The northern portion of the SII easement also contains a mix of existing and drained wetlands. The majority of this area will be reestablished through ditch filling, drainage area re-establishment (from the SSS), and development of the adjacent wetland areas within the soybean field. Please see the mitigation overview in Section 7.4 and the project plan sheets included in Appendix D. The following elements of functional uplift, increase, and improvement are expected from this project:

1. Increase in flood storage
2. Increase in groundwater recharge
3. Increase in sediment trapping and filtration
4. Increase in carbon storage
5. Increase in biochemical cycling of nutrients and other pollutants
6. Increase in habitat utilization by wildlife (migrants and residents)
7. Increase in landscape patch structure

8. Increase in shade and temperature control for the aquatic resources

Summary

Riparian Wetland Restoration (Rehabilitation and Reestablishment) – 7.6 acres

The drained hydric soil areas within the project site will be restored to riparian wetland as part of this project and the marginal existing wetlands will be improved.

Reference Wetland

The same reference wetland used for the SSS will also be used as a reference site for the SII.

7.3 Data Analysis

In order to model the effect of filling the onsite ditches and grading the wetland restoration areas of SSS and SII, DRAINMOD was used to simulate the before and after conditions. DRAINMOD is a computer simulation water balance model that follows the groundwater elevation in the surface profile using soil inputs, climatic data, and drainage conditions (NCSU, 2013). It was originally developed for agricultural drainage design, but has been adapted for evaluating wetland hydrology due to its modeling of poorly drained soils over a time step.

Two different models were used for SII based on the restoration areas that have primarily either Tomotley or Roanoke soils. Climatic data (daily rainfall and maximum and minimum daily temperatures) were obtained from the Jackson, North Carolina COOP Station (314456), approximately 10 miles from the site and the closest station with at least 50 years of data. For the model simulation, 60 years of available data were used (1953-2012). The daily rainfall was distributed to an hourly increment within the computer program. The temperatures were used in the Thornthwaite potential evapotranspiration calculations. The soils data were obtain from the NRCS parameters for the two soil series and from onsite observations (USDA 1994). The wetland criteria were set to evaluate the success of meeting 9% continuous saturation (23 days) over the growing period of March 11 – November 20 (254 days).

The Tomotley model was developed for the southern portion of the SII restoration area. For the existing conditions model, the average drain spacing for this area is approximately 200 feet and the average drain depth is 1.0 between the existing ditches and the channelized stream. The proposed conditions model has the same drain spacing (assuming a restored headwater stream-wetland complex), but with a drain depth of 0.5 feet. The surface storage was also increased to 2.0 inches to account for increased surface roughness in the restored wetland. Based on these conditions, the existing conditions model showed that wetland hydrology was achieved 0 out of 60 years. For the proposed conditions, the site achieved wetland hydrology for 41 out of 60 years, or 68% probability of reoccurrence.

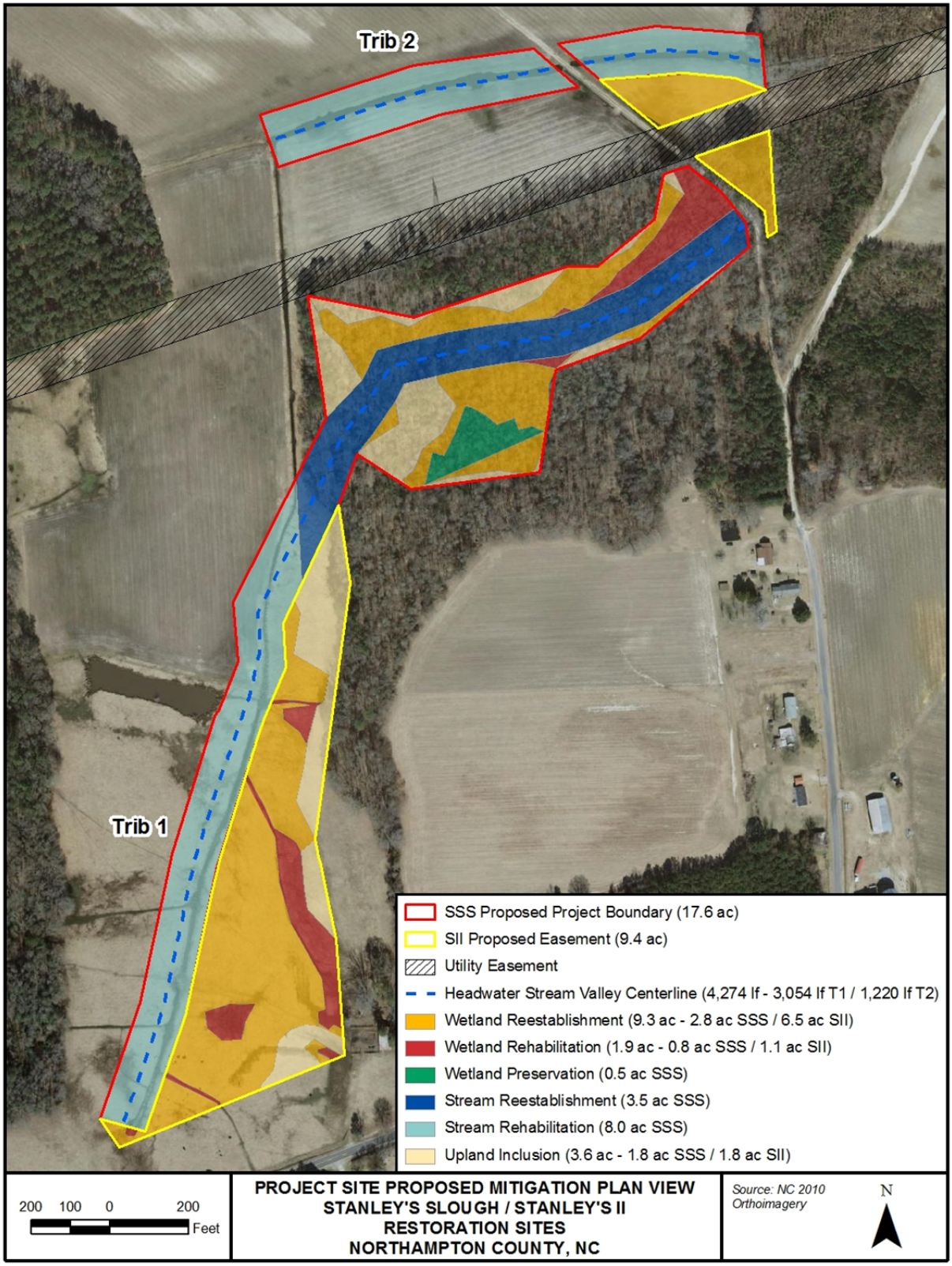
The Roanoke model was used for the northern section of SII. The ditch spacing in this area is closer together at an average of 120 feet. The average drain depth is 1.5 feet deep, primarily due to the channelized stream. For the proposed condition, the drain spacing was again kept the same and the drain depth was limited to 0.5 feet with 2 inches of surface storage. The existing conditions model indicated 1 out of 60 years (2%) with wetland hydrology whereas the proposed conditions model predicted 51 out of 60 years, or 85%.

For the section of wetland in the wooded section of SSS, a relic stream channel exists in this area that will be reclaimed. Using the existing conditions within this area, the channel is approximately 1 foot

deep and averages 75 feet wide within the drained hydric soils. Given these conditions, DRAINMOD models marginal wetland conditions, with hydrology being achieved 32 out 60 years. By restoring the stream through this section, additional hydrology within the channel will elevate the groundwater table and produce overbank flooding to restore the hydrologic conditions.

The model results are included in Appendix C.

7.4 Proposed Mitigation Plan View



8.0 MAINTENANCE PLAN

The sites will be monitored on a regular basis, with a physical inspection of the sites conducted a minimum of once per year throughout the post-construction monitoring period until performance standards are met. These site inspections may identify site components and features that require routine maintenance. Routine maintenance should be expected most often in the first two years following site construction and may include the following:

Component/Feature	Maintenance Through Project Close-Out
Stream	Routine channel maintenance and repair activities may include chinking of in-stream structures to prevent piping, securing of loose coir matting, and supplemental installations of live stakes and other target vegetation along the channel. Areas where stormwater and floodplain flows intercept the channel may also require maintenance to prevent bank failures and head-cutting
Wetland	Routine wetland maintenance and repair activities may include securing of loose coir matting and supplemental installations of live stakes and other target vegetation within the wetland. Areas where stormwater and floodplain flows intercept the wetland may also require maintenance to prevent scour.
Vegetation	Vegetation shall be maintained to ensure the health and vigor of the targeted plant community. Routine vegetation maintenance and repair activities may include supplemental planting, pruning, mulching, and fertilizing. Exotic invasive plant species shall be controlled by mechanical and/or chemical methods. Any vegetation control requiring herbicide application will be performed in accordance with NC Department of Agriculture (NCDA) rules and regulations.
Site Boundary	Site boundaries shall be identified in the field to ensure clear distinction between the mitigation site and adjacent properties. Boundaries may be identified by fence, marker, bollard, post, tree-blazing, or other means as allowed by site conditions and/or conservation easement. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as needed basis.
Road Crossing	Road crossings within the site may be maintained only as allowed by Conservation Easement or existing easement, deed restrictions, rights of way, or corridor agreements.

Additionally, a utility right of way exists adjacent to the northern extent of the SII, but because there is no creditable acreage within this right of way, it is not expected that the utility maintenance will affect the restored wetland.

9.0 PERFORMANCE STANDARDS

Both the SSS and SII will be monitored to determine if the development of the wetland indicators on site meet the standards for mitigation credit production as presented in Section 5.0. The site will also be monitored to document the development of the headwater stream system. The credits will be validated upon confirmation that the success criteria described below are met. The sites will be monitored for performance standards for seven years after completion of construction.

Headwater Stream Performance
Stream hydrology monitoring will be conducted to determine if the restored headwater streams meet the proposed performance criteria for headwater stream hydrology and form. The headwater stream will have continuous surface water flow within the valley, every year for at least 30 consecutive days. Additionally, the stream must show signs of supporting the restored channel form as documented with photos. These indicators may include evidence of: scour, sediment deposition and sorting, multiple flow events, wrack lines and flow over vegetation, leaf litter, or water staining.

Hydrologic Performance
Wetland hydrology monitoring will be conducted to determine if the restored wetland areas meet the proposed performance criteria for wetland hydrology. The sites will present continuous saturated or inundated hydrologic conditions for at least 9.0% of the growing season for riparian mitigation areas (2.8 acres for SSS and 6.4 acres for SII) during normal weather conditions based on a conservative estimate. A "normal" year is based on NRCS climatological data for Northampton County, and using the 30th to 70th percentile thresholds as the range of normal, as documented in the USACE Technical Report "Accessing and Using Meteorological Data to Evaluate Wetland Hydrology, April 2000." The soil survey for Northampton County estimates that the growing season begins March 11 and ends November 20 (254 days).

Section 10 describes the monitoring requirements for the sites. Monitoring will comply with guidance included in "Monitoring Requirements and Performance Standards for Stream and/or Wetland Mitigation" (NCDENR EEP, 2011). Hydrologic performance will be determined through evaluation of automatic recording gauge data supplemented by documentation of wetland hydrology indicators as defined in the 1987 US ACOE Wetland Delineation Manual, daily data will be collected from automatic wells over the 7-year monitoring period following implementation. These data will determine if the wetland meets the hydrology success criterion of the water table being within 12 inches of the ground surface continuously for greater than 9.0% of the growing season. Visual monitoring will also be conducted two times per year in each monitoring year as per the NC EEP guidance referenced above.

Vegetation Success
For both sites, the vegetation success criteria will comply with guidance included in "Monitoring Requirements and Performance Standards for Stream and/or Wetland Mitigation" (NCDENR EEP, 2011), which states that the plots must achieve a stem density of 320 stems/acre after three years, 260 stems/acre after five years, and 210 live planted stems/acre after seven years to be considered successful. In addition to density requirements, plant height will be monitored within the monitoring plots to ensure that trees average 10 feet in height after seven years.

10.0 MONITORING REQUIREMENTS

Annual monitoring data will be reported using the EEP monitoring template. The monitoring reports shall provide a project data chronology that will facilitate an understanding of project status and trends, population of EEP databases for analysis, research purposes, and assist in decision making regarding project close-out.

Required	Parameter	Quantity	Frequency	Notes
Yes	Groundwater Hydrology	SSS – 3 gauges distributed in the wetland reestablishment areas; 1 gauge in the wetland rehabilitation area SII - 7 gauges distributed in the wetland reestablishment areas; 1 gauge in the wetland rehabilitation area	Annual	Groundwater monitoring gauges with data recording devices will be installed on site; the data will be downloaded on a monthly basis during the growing season
	Surface Flow	SSS – 9 gauges will be installed throughout the stream/wetland areas to document surface water	Annual	In addition to the gauge data, physical indicators of flow will be documented and reported in the annual monitoring reports.
Yes	Vegetation	SSS – 11 permanent vegetation monitoring plots SII – 9 permanent vegetation monitoring plots	During monitoring years 1, 2, 3, 5, and 7.	Vegetation will be monitored using the Carolina Vegetation Survey (CVS) protocols
Yes	Exotic and nuisance vegetation		Annual	Locations of exotic and nuisance vegetation will be mapped
Yes	Project boundary		Semi-annual	Locations of vegetation damage, boundary encroachments, etc. will be mapped

The first scheduled monitoring will be conducted during the first full growing season following project completion. Monitoring shall subsequently be conducted annually for a total period of seven years or until the project meets its success criteria.

Groundwater elevations will be monitored to evaluate the attainment of jurisdictional wetland hydrology. Verification of wetland hydrology will be determined by automatic recording well data collected within the project area and reference wetland. Automatic recording gauges will be established within the mitigation areas. Daily data will be collected from the automatic gauges for a minimum of a 7-year monitoring period following wetland construction. A nearby reference wetland will also be monitored using the same procedures for comparative analysis (see Appendix B for reference wetland data sheet and location map).

In the headwater stream/wetland areas of SSS automatic recording gauges will also be installed to document the presence of surface water. In addition to the presence of surface water, flow indicators, will also be documented to demonstrate that there are surface flows through the stream/wetland valley.

Beginning at the end of the first growing season, KCI will monitor the planted vegetation in monitoring years 1, 2, 3, 5, and 7 or until the success criterion is met. The survivability of the vegetation plantings will be evaluated using a sufficient number of 100 m^2 vegetative sampling plots randomly placed

throughout both restored sites. Permanent monuments will be established at the corners of each monitoring plot and documented by either conventional survey or GPS. These plots will be monitored according to the current CVS/EEP monitoring protocol. The vegetation monitoring will follow the Level 2 method of the current CVS-EEP protocol (http://cvs.bio.unc.edu/methods.htm).

Photograph reference points (PRPs) will be established to assist in characterizing each site and to allow qualitative evaluation of the site conditions. The location of each photo point will be marked in the monitoring plan and the bearing/orientation of the photograph will be documented.

Annual monitoring reports will be prepared and submitted after all monitoring tasks for each year are completed. The report will document the monitored components and include all collected data, analyses, and photographs. Each report will provide the new monitoring data and compare the most recent results against previous findings. The monitoring report format will be similar to that set out in the most recent EEP monitoring protocol.

11.0 LONG-TERM MANAGEMENT PLAN

Upon approval for close-out by the Interagency Review Team (IRT), the sites will be transferred to the NCDENR Division of Natural Resource Planning and Conservation's Stewardship Program. This party shall be responsible for periodic inspection of the sites to ensure that restrictions required in the conservation easement are upheld. Endowment funds required to uphold easement and deed restrictions shall be negotiated prior to site transfer to the responsible party.

The NCDENR Division of Natural Resource Planning and Conservation's Stewardship Program currently houses EEP stewardship endowments within the non-reverting, interest-bearing Conservation Lands Stewardship Endowment Account. The use of funds from the Endowment Account is governed by North Carolina General Statute GS 113A-232(d)(3). Interest gained by the endowment fund may be used only for the purpose of stewardship, monitoring, stewardship administration, and land transaction costs, if applicable. The NCDENR Stewardship Program intends to manage the account as a non-wasting endowment. Only interest generated from the endowment funds will be used to steward the compensatory mitigation sites. Interest funds not used for those purposes will be re-invested in the Endowment Account to offset losses due to inflation.

12.0 ADAPTIVE MANAGEMENT PLAN

Upon completion of site construction KCI will implement the post-construction monitoring protocols previously defined in this document. Project maintenance will be performed as described previously in this document. If, during the course of annual monitoring it is determined the site's ability to achieve site performance standards are jeopardized, KCI will notify the EEP and the USACE of the need to develop a Plan of Corrective Action. The Plan of Corrective Action may be prepared using in-house technical staff or may require engineering and consulting services. Once the Corrective Action Plan is prepared and finalized KCI will:

1. Notify the EEP and USACE as required by the Nationwide 27 permit general conditions.
2. Revise performance standards, maintenance requirements, and monitoring requirements as necessary and/or required by the USACE.

3. Obtain other permits as necessary.
4. Implement the Corrective Action Plan.
5. Provide the USACE a Record Drawing of Corrective Actions. This document shall depict the extent and nature of the work performed.

13.0 FINANCIAL ASSURANCES

Pursuant to Section IV H and Appendix III of the Ecosystem Enhancement Program's In-Lieu Fee Instrument dated July 28, 2010, the North Carolina Department of Environment and Natural Resources has provided the U.S. Army Corps of Engineers Wilmington District with a formal commitment to fund projects to satisfy mitigation requirements assumed by EEP. This commitment provides financial assurance for all mitigation projects implemented by the program.

14.0 OTHER INFORMATION

14.1 Definitions

8-digit Catalog Unit (CU) – The USGS developed a hydrologic coding system to delineate the country into uniquely identified watersheds that can be commonly referenced and mapped. North Carolina has 54 of these watersheds uniquely defined by an 8-digit number. EEP typically addresses watershed – based planning and restoration in the context of the 17 river basins (each has a unique 6-digit number), 54 catalog units and 1,601 14-digit hydrologic units.

14–digit Hydrologic Unit (HU) – In order to address watershed management issues at a smaller scale, the U.S. Natural Resources Conservation Service (NRCS) developed methodology to delineate and uniquely identify watersheds at a scale smaller than the 8-digit catalog unit. A hydrologic unit is a drainage area delineated to nest in a multilevel, hierarchical drainage system. Its boundaries are defined by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream or similar surface waters. North Carolina has 1,601 14-digit hydrologic units.

DWQ – North Carolina Division of Water Quality

EEP – The North Carolina Ecosystem Enhancement combines existing wetlands restoration initiatives (formerly the Wetlands Restoration Program or NCWRP) of the N.C. Department of Environment and Natural Resources with ongoing efforts by the N.C. Department of Transportation (NCDOT) to offset unavoidable environmental impacts from transportation-infrastructure improvements.

Native vegetation community – a distinct and reoccurring assemblage of populations of plants, animals, bacteria and fungi naturally associated with each other and their population; as described in Schafale, M.P. and Weakley, A. S. (1990), Classification of the Natural Communities of North Carolina, Third Approximation.

Project Area - includes all protected lands associated with the mitigation project.

RBRP - The River Basin Restoration Priorities are documents that delineate specific watersheds (Targeted Local Watersheds) within a River Basin that exhibit both the need and opportunity for wetland, stream and riparian buffer restoration.

TLW - Targeted Local Watershed, are 14-digit hydrologic units which receive priority for EEP planning and restoration project funds.

USGS – United States Geological Survey

14.2 References

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14.3 Appendix A. Site Protection Instrument

BK:00976 PG:0760

Northampton CO. 03-22-2013
NORTH CAROLINA
Real Estate
Excise Tax $401.00

FILED
NORTHAMPTON COUNTY, NC
PAULINE E. DELOATCH
REGISTER OF DEEDS

FILED	Mar 22, 2013
AT	01:51:12 pm
BOOK	00976
START PAGE	0760
END PAGE	0769
INSTRUMENT #	00557

PED

STATE OF NORTH CAROLINA

CONSERVATION EASEMENT PROVIDED PURSUANT TO FULL DELIVERY MITIGATION CONTRACT

NORTHAMPTON COUNTY
SPO File Number 66-K (1)
EEP Site ID Number 95356 (Stanley's Slough)
Prepared by: Office of the Attorney General
Property Control Section
Return to: NC Department of Administration
State Property Office
1321 Mail Service Center
Raleigh, NC 27699-1321

THIS CONSERVATION EASEMENT DEED, made this 22 day of March, 2013, by Stanley T. Garriss and Wife Linda B. Garriss (collectively, "**Grantor**"), whose mailing address is 6523 NC Highway 186, Margarettsville, NC 27853, to the State of North Carolina, ("**Grantee**"), whose mailing address is State of North Carolina, Department of Administration, State Property Office, 1321 Mail Service Center, Raleigh, NC 27699-1321. The designations of Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine, or neuter as required by context.

WITNESSETH:

WHEREAS, pursuant to the provisions of N.C. Gen. Stat. § 143-214.8 et seq., the State of North Carolina has established the Ecosystem Enhancement Program (formerly known as the Wetlands Restoration Program) within the Department of Environment and Natural Resources for the purposes of acquiring, maintaining, restoring, enhancing, creating and preserving wetland and riparian resources that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; and

WHEREAS, this Conservation Easement from Grantor to Grantee has been negotiated, arranged and provided for as a condition of a full delivery contract between **KCI Technologies, Inc.** and the North Carolina Department of Environment and Natural Resources, to provide stream, wetland and/or buffer mitigation pursuant to the North Carolina Department of Environment and Natural Resources Purchase and Services Contract Number **004635.**

401.00 RS
26.00 RF

WHEREAS, The State of North Carolina is qualified to be the Grantee of a Conservation Easement pursuant to N.C. Gen. Stat. § 121-35; and

WHEREAS, the Department of Environment and Natural Resources, the North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District entered into a Memorandum of Agreement, (MOA) duly executed by all parties in Greensboro, NC on July 22, 2003, which recognizes that the Ecosystem Enhancement Program is to provide for compensatory mitigation by effective protection of the land, water and natural resources of the State by restoring, enhancing and preserving ecosystem functions; and

WHEREAS, the acceptance of this instrument for and on behalf of the State of North Carolina was granted to the Department of Administration by resolution as approved by the Governor and Council of State adopted at a meeting held in the City of Raleigh, North Carolina, on the 8th day of February 2000; and

WHEREAS, the Ecosystem Enhancement Program in the Department of Environment and Natural Resources, which has been delegated the authority authorized by the Governor and Council of State to the Department of Administration, has approved acceptance of this instrument; and

WHEREAS, Grantor owns in fee simple certain real property situated, lying, and being in **Wiccacanee Township, Northampton County**, North Carolina (the "**Property**"), and being more particularly described as that certain parcel of land containing approximately **214 net** acres, described on plat recorded in **Plat Book 2, Page 178, Northampton County** Registry, and being conveyed to the Grantor by deed as recorded in **Deed Book 875 at Page 760** of the **Northampton County** Registry, North Carolina; and

WHEREAS, Grantor is willing to grant a Conservation Easement over the herein described areas of the Property, thereby restricting and limiting the use of the included areas of the Property to the terms and conditions and purposes hereinafter set forth, and Grantee is willing to accept such Conservation Easement. This Conservation Easement shall be for the protection and benefit of **Meherrin River**.

NOW, THEREFORE, in consideration of the mutual covenants, terms, conditions, and restrictions hereinafter set forth, Grantor unconditionally and irrevocably hereby grants and conveys unto Grantee, its successors and assigns, forever and in perpetuity, a Conservation Easement along with a general Right of Access.

The Easement Area consists of the following:

Conservation Easement #3 containing a total of **5.67 acres** as shown on the plat of survey entitled "Final Plat, Conservation Easement for North Carolina Ecosystem Enhancement Program, Project Name: **Stanley Slough Wetland and Stream Restoration Project**, EEP Project #: **95356**, SPO#: **66-K and 66-L**," dated **August 23, 2012, revised March 13, 2013** by **James M. Gellenthin**, PLS Number **L-3860** and recorded in the **Northampton County**, North Carolina Register of Deeds at **Map Book 43 Page 68** (the "**Easement Plat**").

The Conservation Easement tracts described above are conveyed together with and including a perpetual nonexclusive right and easement appurtenant for ingress, egress and regress to the above described Conservation Easement tracts over and across farm paths, crossings and access areas in-between the Conservation Easement Areas as depicted on the Easement Plat referred to above.

See attached "**Exhibit A**", Legal Description of area of the Property hereinafter referred to as the "Easement Area"

The purposes of this Conservation Easement are to maintain, restore, enhance, construct, create and preserve wetland and/or riparian resources in the Easement Area that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; to maintain permanently the Easement Area in its natural condition, consistent with these purposes; and to prevent any use of the Easement Area that will significantly impair or interfere with these purposes. To achieve these purposes, the following conditions and restrictions are set forth:

I. DURATION OF EASEMENT

Pursuant to law, including the above referenced statutes, this Conservation Easement and Right of Access shall be perpetual and it shall run with, and be a continuing restriction upon the use of, the Property, and it shall be enforceable by the Grantee against the Grantor and against Grantor's heirs, successors and assigns, personal representatives, agents, lessees, and licensees.

II. GRANTOR RESERVED USES AND RESTRICTED ACTIVITES

The Easement Area shall be restricted from any development or usage that would impair or interfere with the purposes of this Conservation Easement. Unless expressly reserved as a compatible use herein, any activity in, or use of, the Easement Area by the Grantor is prohibited as inconsistent with the purposes of this Conservation Easement. Any rights not expressly reserved hereunder by the Grantor have been acquired by the Grantee. Any rights not expressly reserved hereunder by the Grantor, including the rights to all mitigation credits, including, but not limited to, stream, wetland, and riparian buffer mitigation units, derived from each site within the area of the Conservation Easement, are conveyed to and belong to the Grantee. Without limiting the generality of the foregoing, the following specific uses are prohibited, restricted, or reserved as indicated:

A. **Recreational Uses.** Grantor expressly reserves the right to undeveloped recreational uses, including hiking, bird watching, hunting and fishing, and access to the Easement Area for the purposes thereof.

B. **Motorized Vehicle Use.** Motorized vehicle use in the Easement Area is prohibited.

C. **Educational Uses.** The Grantor reserves the right to engage in and permit others to engage in educational uses in the Easement Area not inconsistent with this Conservation Easement, and the right of access to the Easement Area for such purposes including organized

educational activities such as site visits and observations. Educational uses of the property shall not alter vegetation, hydrology or topography of the site.

D. Vegetative Cutting. Except as related to the removal of non-native plants, diseased or damaged trees, or vegetation that destabilizes or renders unsafe the Easement Area to persons or natural habitat, all cutting, removal, mowing, harming, or destruction of any trees and vegetation in the Easement Area is prohibited.

Notwithstanding the foregoing, the Grantor reserves the right to mow and maintain vegetation inside the easement within 6 feet of the fence ***as shown on the Survey Plat*** and extending along the entire length of the fence. The Grantee is not responsible for fence maintenance, but reserves the right to maintain, repair or replace the fence at the sole discretion of the Grantee.

E. Industrial, Residential and Commercial Uses. All industrial, residential and commercial uses are prohibited in the Easement Area.

F. Agricultural Use. All agricultural uses are prohibited within the Easement Area including any use for cropland, waste lagoons, or pastureland.

G. New Construction. There shall be no building, facility, mobile home, antenna, utility pole, tower, or other structure constructed or placed in the Easement Area.

H. Roads and Trails. There shall be no construction of roads, trails, walkways, or paving in the Easement Area.

I. Signs. No signs shall be permitted in the Easement Area except interpretive signs describing restoration activities and the conservation values of the Easement Area, signs identifying the owner of the Property and the holder of the Conservation Easement, signs giving directions, or signs prescribing rules and regulations for the use of the Easement Area.

J. Dumping or Storing. Dumping or storage of soil, trash, ashes, garbage, waste, abandoned vehicles, appliances, machinery, or any other material in the Easement Area is prohibited.

K. Grading, Mineral Use, Excavation, Dredging. There shall be no grading, filling, excavation, dredging, mining, drilling; removal of topsoil, sand, gravel, rock, peat, minerals, or other materials.

L. Water Quality and Drainage Patterns. There shall be no diking, draining, dredging, channeling, filling, leveling, pumping, impounding or diverting, causing, allowing or permitting the diversion of surface or underground water in the Easement Area. No altering or tampering with water control structures or devices, or disruption or alteration of the restored, enhanced, or created drainage patterns is allowed. All removal of wetlands, polluting or discharging into waters, springs, seeps, or wetlands, or use of pesticide or biocides in the Easement Area is prohibited. In the event of an emergency interruption or shortage of all other water sources,

water from within the Easement Area may temporarily be used for good cause shown as needed for the survival of livestock and agricultural production on the Property.

M. Subdivision and Conveyance. Grantor voluntarily agrees that no subdivision, partitioning, or dividing of the underlying Property owned by the Grantor in fee simple ("fee") that is subject to this Easement is allowed. Unless agreed to by the Grantee in writing, any future conveyance of the underlying fee and the rights conveyed herein shall be as a single block of property. Any future transfer of the fee simple shall be subject to this Conservation Easement. Any transfer of the fee is subject to the Grantee's right of unlimited and repeated ingress and egress over and across the Property to the Easement Area for the purposes set forth herein.

N. Development Rights. All development rights are permanently removed from the Easement Area and are non-transferrable.

O. Disturbance of Natural Features. Any change, disturbance, alteration or impairment of the natural features of the Easement Area or any intentional introduction of non-native plants, trees and/or animal species by Grantor is prohibited.

The Grantor may request permission to vary from the above restrictions for good cause shown, provided that any such request is not inconsistent with the purposes of this Conservation Easement, and the Grantor obtains advance written approval from the N.C. Ecosystem Enhancement Program, whose mailing address is 1652 Mail Services Center, Raleigh, NC 27699-1652.

III. GRANTEE RESERVED USES

A. Right of Access, Construction, and Inspection. The Grantee, its employees and agents, successors and assigns, are hereby granted and receive a perpetual non-exclusive easement for access to the Easement Area over the Property at reasonable times to undertake any activities to restore, construct, manage, maintain, enhance, and monitor the stream, wetland and any other riparian resources in the Easement Area, in accordance with restoration activities or a long-term management plan. Unless otherwise specifically set forth in this Conservation Easement, the rights granted herein do not include or establish for the public any access rights. The recommended access to the site from Margarettsville Street is shown on the Easement Plat referred to above.

B. Restoration Activities. These activities include planting of trees, shrubs and herbaceous vegetation, installation of monitoring wells, utilization of heavy equipment to grade, fill, and prepare the soil, modification of the hydrology of the site, and installation of natural and manmade materials as needed to direct in-stream, above ground, and subterraneous water flow.

C. Signs. The Grantee, its employees and agents, successors or assigns, shall be permitted to place signs and witness posts on the Property to include any or all of the following: describe the project, prohibited activities within the Conservation Easement, or identify the project boundaries and the holder of the Conservation Easement.

D. Fences. The Grantee, its employees and agents, successors or assigns, shall be permitted to place fencing on the Property to restrict livestock access. Although the Grantee is not

responsible for fence maintenance, the Grantee reserves the right to repair the fence, at its sole discretion.

IV. ENFORCEMENT AND REMEDIES

A. Enforcement. To accomplish the purposes of this Conservation Easement, Grantee is allowed to prevent any activity within the Easement Area that is inconsistent with the purposes of this Easement and to require the restoration of such areas or features in the Easement Area that may have been damaged by such unauthorized activity or use. Upon any breach of the terms of this Conservation Easement by Grantor, the Grantee shall, except as provided below, notify the Grantor-in writing of such breach and the Grantor shall have ninety (90) days after receipt of such notice to correct the damage caused by such breach. If the breach and damage remains uncured after ninety (90) days, the Grantee may enforce this Conservation Easement by bringing appropriate legal proceedings including an action to recover damages, as well as injunctive and other relief. The Grantee shall also have the power and authority, consistent with its statutory authority: (a) to prevent any impairment of the Easement Area by acts which may be unlawful or in violation of this Conservation Easement; (b) to otherwise preserve or protect its interest in the Property; or (c) to seek damages from any appropriate person or entity. Notwithstanding the foregoing, the Grantee reserves the immediate right, without notice, to obtain a temporary restraining order, injunctive or other appropriate relief, if the breach is or would irreversibly or otherwise materially impair the benefits to be derived from this Conservation Easement, and the Grantor and Grantee acknowledge that the damage would be irreparable and remedies at law inadequate. The rights and remedies of the Grantee provided hereunder shall be in addition to, and not in lieu of, all other rights and remedies available to Grantee in connection with this Conservation Easement.

B. Inspection. The Grantee, its employees and agents, successors and assigns, have the right, with reasonable notice, to enter the Easement Area over the Property at reasonable times for the purpose of inspection to determine whether the Grantor is complying with the terms, conditions and restrictions of this Conservation Easement.

C. Acts Beyond Grantor's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury or change in the Easement Area caused by third parties, resulting from causes beyond the Grantor's control, including, without limitation, fire, flood, storm, and earth movement, or from any prudent action taken in good faith by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to life or damage to the Property resulting from such causes.

D. Costs of Enforcement. Beyond regular and typical monitoring expenses, any costs incurred by Grantee in enforcing the terms of this Conservation Easement against Grantor, including, without limitation, any costs of restoration necessitated by Grantor's acts or omissions in violation of the terms of this Conservation Easement, shall be borne by Grantor.

E. No Waiver. Enforcement of this Easement shall be at the discretion of the Grantee and any forbearance, delay or omission by Grantee to exercise its rights hereunder in the event of any breach of any term set forth herein shall not be construed to be a waiver by Grantee.

V. MISCELLANEOUS

A. This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings or agreements relating to the Conservation Easement. If any provision is found to be invalid, the remainder of the provisions of the Conservation Easement, and the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

B. Grantor is responsible for any real estate taxes, assessments, fees, or charges levied upon the Property. Grantee shall not be responsible for any costs or liability of any kind related to the ownership, operation, insurance, upkeep, or maintenance of the Property, except as expressly provided herein. Upkeep of any constructed bridges, fences, or other amenities on the Property are the sole responsibility of the Grantor. Nothing herein shall relieve the Grantor of the obligation to comply with federal, state or local laws, regulations and permits that may apply to the exercise of the Reserved Rights.

C. Any notices shall be sent by registered or certified mail, return receipt requested to the parties at their addresses shown herein or to other addresses as either party establishes in writing upon notification to the other.

D. Grantor shall notify Grantee in writing of the name and address and any party to whom the Property or any part thereof is to be transferred at or prior to the time said transfer is made. Grantor further agrees that any subsequent lease, deed, or other legal instrument by which any interest in the Property is conveyed subject to the Conservation Easement herein created.

E. The Grantor and Grantee agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof.

F. This Conservation Easement and Right of Access may be amended, but only in writing signed by all parties hereto, or their successors or assigns, if such amendment does not affect the qualification of this Conservation Easement or the status of the Grantee under any applicable laws, and is consistent with the purposes of the Conservation Easement. The owner of the Property shall notify the U.S. Army Corps of Engineers in writing sixty (60) days prior to the initiation of any transfer of all or any part of the Property. Such notification shall be addressed to: Justin McCorkle, General Counsel, US Army Corps of Engineers, 69 Darlington Avenue, Wilmington, NC 28403

G. The parties recognize and agree that the benefits of this Conservation Easement are in gross and assignable provided, however, that the Grantee hereby covenants and agrees, that in the event it transfers or assigns this Conservation Easement, the organization receiving the interest will be a qualified holder under N.C. Gen. Stat. § 121-34 et seq. and § 170(h) of the Internal Revenue Code, and the Grantee further covenants and agrees that the terms of the transfer or assignment will be such that the transferee or assignee will be required to continue in perpetuity the conservation purposes described in this document.

H. Linda B. Garriss is not an owner of the Property, and joins in this instrument solely for the purpose of releasing and quitclaiming any rights in or to the Property that she may have or hereafter acquire under law by virtue of her marriage to Stanley T. Garriss.

VI. QUIET ENJOYMENT

Grantor reserves all remaining rights accruing from ownership of the Property, including the right to engage in or permit or invite others to engage in only those uses of the Easement Area that are expressly reserved herein, not prohibited or restricted herein, and are not inconsistent with the purposes of this Conservation Easement. Without limiting the generality of the foregoing, the Grantor expressly reserves to the Grantor, and the Grantor's invitees and licensees, the right of access to the Easement Area, and the right of quiet enjoyment of the Easement Area

TO HAVE AND TO HOLD, the said rights and easements perpetually unto the State of North Carolina for the aforesaid purposes.

AND Grantor covenants that Grantor is seized of said premises in fee and has the right to convey the permanent Conservation Easement herein granted; that the same is free from encumbrances and that Grantor will warrant and defend title to the same against the claims of all persons whomsoever.

IN TESTIMONY WHEREOF, the Grantor has hereunto set his hand and seal, the day and year first above written.

_____ (SEAL)
Stanley T. Garriss

_____ (SEAL)
Linda B. Garriss

NORTH CAROLINA
COUNTY OF NORTHAMPTON

I, Charles M. Slade Jr, a Notary Public in and for the County and State aforesaid, do hereby certify that **Stanley T. Garriss and wife Linda B. Garriss**, Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and Notary Seal this the 22 day of March, 2013.

Print name: Charles M. Slade Jr. Notary Public

My commission expires:

2-5-2016

CHARLES M. SLADE, JR. NOTARY PUBLIC NORTHAMPTON CO., N.C.

"Exhibit A"

STANLEY T. GARRISS
CONSERVATION EASEMENT 3

A parcel of land to be used for Conservation Easement purposes located on lands now or formerly owned by Stanley T. Garriss (Deed Book 875 Page 760) located in Wiccacanee Township, Northampton County, North Carolina and being more particularly described as follows:

Commencing at the Northwest corner of lands now or formerly owned by John William Vaughan (Deed Book 366 Page 148, Estate Ref.# 85 E 71) being on the South line of a 100 foot Virginia Electric and Power Company Right of Way, said point having North Carolina State Plane coordinates of N:1018881.86, E:2484517.06; Thence S 08°21'37" E on the West line of said lands owned by John William Vaughan, a distance of 313.33 feet to the Point of Beginning;

Thence S 08°21'37" E, continuing on the said West line of John William Vaughan, a distance of 222.82 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 24°59'05" W a distance of 329.96 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 02°22'26" E a distance of 114.69 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 12°01'46" W a distance of 278.89 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 20°11'43" W a distance of 346.60 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 11°03'05" W a distance of 294.07 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 19°13'32" W a distance of 311.40 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 74°19'33" W a distance of 139.72 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 19°14'58" E a distance of 311.32 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 12°00'06" E a distance of 385.06 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 17°10'59" E a distance of 366.04 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 38°11'22" E a distance of 18.35 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 21°15'07" E a distance of 132.80 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 04°50'15" W a distance of 150.91 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 26°43'54" E a distance of 524.30 feet to the Point of Beginning.
Containing 246,930 square feet or 5.67 acres, more or less.

LBG

BK: 00976 PG: 0770

Northampton CO. 03-22-2013
NORTH CAROLINA
Real Estate
Excise Tax $267.00

FILED
NORTHAMPTON COUNTY, NC
PAULINE E. DELOATCH
REGISTER OF DEEDS

FILED	Mar 22, 2013
AT	01:53:24 pm
BOOK	00976
START PAGE	0770
END PAGE	0778
INSTRUMENT #	00558

PED

STATE OF NORTH CAROLINA

CONSERVATION EASEMENT PROVIDED PURSUANT TO FULL DELIVERY MITIGATION CONTRACT

NORTHAMPTON COUNTY
SPO File Number 66-L
EEP Site ID Number 95356 (Stanley's Slough)
Prepared by: Office of the Attorney General
Property Control Section
Return to: NC Department of Administration
State Property Office
1321 Mail Service Center
Raleigh, NC 27699-1321

THIS CONSERVATION EASEMENT DEED, made this 22 day of March, 2013, by John William Vaughan, widower ("**Grantor**"), whose mailing address is 253 Margarettsville Street, Margarettsville, NC 27853, to the State of North Carolina, ("**Grantee**"), whose mailing address is State of North Carolina, Department of Administration, State Property Office, 1321 Mail Service Center, Raleigh, NC 27699-1321. The designations of Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine, or neuter as required by context.

WITNESSETH:

WHEREAS, pursuant to the provisions of N.C. Gen. Stat. § 143-214.8 et seq., the State of North Carolina has established the Ecosystem Enhancement Program (formerly known as the Wetlands Restoration Program) within the Department of Environment and Natural Resources for the purposes of acquiring, maintaining, restoring, enhancing, creating and preserving wetland and riparian resources that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; and

WHEREAS, this Conservation Easement from Grantor to Grantee has been negotiated, arranged and provided for as a condition of a full delivery contract between **KCI Technologies, Inc.** and the North Carolina Department of Environment and Natural Resources, to provide stream, wetland and/or buffer mitigation pursuant to the North Carolina Department of Environment and Natural Resources Purchase and Services Contract Number 004635.

WHEREAS, The State of North Carolina is qualified to be the Grantee of a Conservation Easement pursuant to N.C. Gen. Stat. § 121-35; and

WHEREAS, the Department of Environment and Natural Resources, the North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District entered into a Memorandum of Agreement, (MOA) duly executed by all parties in Greensboro, NC on July 22, 2003, which recognizes that the Ecosystem Enhancement Program is to provide for compensatory mitigation by effective protection of the land, water and natural resources of the State by restoring, enhancing and preserving ecosystem functions; and

WHEREAS, the acceptance of this instrument for and on behalf of the State of North Carolina was granted to the Department of Administration by resolution as approved by the Governor and Council of State adopted at a meeting held in the City of Raleigh, North Carolina, on the 8th day of February 2000; and

WHEREAS, the Ecosystem Enhancement Program in the Department of Environment and Natural Resources, which has been delegated the authority authorized by the Governor and Council of State to the Department of Administration, has approved acceptance of this instrument; and

WHEREAS, Grantor owns in fee simple certain real property situated, lying, and being in **Wiccacanee Township, Northampton County**, North Carolina (the "**Property**"), and being more particularly described as that certain parcel of land containing approximately **40.3 net** acres, and being conveyed to the Grantor by deed as recorded in **Deed Book 366 at Page 148 and 85-E-71** of the **Northampton County** Registry, North Carolina; and

WHEREAS, Grantor is willing to grant a Conservation Easement over the herein described areas of the Property, thereby restricting and limiting the use of the included areas of the Property to the terms and conditions and purposes hereinafter set forth, and Grantee is willing to accept such Conservation Easement. This Conservation Easement shall be for the protection and benefit of **Meherrin River**.

NOW, THEREFORE, in consideration of the mutual covenants, terms, conditions, and restrictions hereinafter set forth, Grantor unconditionally and irrevocably hereby grants and conveys unto Grantee, its successors and assigns, forever and in perpetuity, a Conservation Easement along with a general Right of Access.

The Easement Areas consist of the following:

Conservation Easement 4 containing **8.87 acres** as shown on the plat of survey entitled "Final Plat, Conservation Easement for North Carolina Ecosystem Enhancement Program, Project Name: **Stanley Slough Wetland and Stream Restoration Project**, EEP Project #: **95356**, SPO#: **66-K and 66-L**," dated **August 23, 2012, revised March 13, 2013** by **James M. Gellenthin**, PLS Number **L-3860** and recorded in the **Northampton County**, North Carolina Register of Deeds at **Map Book 43 Page 68** (the "**Easement Plat**").

The Conservation Easement tracts described above are conveyed together with and including a perpetual nonexclusive right and easement appurtenant for ingress, egress and regress to the

above described Conservation Easement tracts over and across Margarettsville Road (a public right of way), farm paths, crossings and access areas in-between the Conservation Easement Areas as depicted on the Easement Plat referred to above.

See attached "**Exhibit A**", Legal Description of areas of the Property hereinafter referred to as the "Easement Area"

The purposes of this Conservation Easement are to maintain, restore, enhance, construct, create and preserve wetland and/or riparian resources in the Easement Area that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; to maintain permanently the Easement Area in its natural condition, consistent with these purposes; and to prevent any use of the Easement Area that will significantly impair or interfere with these purposes. To achieve these purposes, the following conditions and restrictions are set forth:

I. DURATION OF EASEMENT

Pursuant to law, including the above referenced statutes, this Conservation Easement and Right of Access shall be perpetual and it shall run with, and be a continuing restriction upon the use of, the Property, and it shall be enforceable by the Grantee against the Grantor and against Grantor's heirs, successors and assigns, personal representatives, agents, lessees, and licensees.

II. GRANTOR RESERVED USES AND RESTRICTED ACTIVITES

The Easement Area shall be restricted from any development or usage that would impair or interfere with the purposes of this Conservation Easement. Unless expressly reserved as a compatible use herein, any activity in, or use of, the Easement Area by the Grantor is prohibited as inconsistent with the purposes of this Conservation Easement. Any rights not expressly reserved hereunder by the Grantor have been acquired by the Grantee. Any rights not expressly reserved hereunder by the Grantor, including the rights to all mitigation credits, including, but not limited to, stream, wetland, and riparian buffer mitigation units, derived from each site within the area of the Conservation Easement, are conveyed to and belong to the Grantee. Without limiting the generality of the foregoing, the following specific uses are prohibited, restricted, or reserved as indicated:

A. Recreational Uses. Grantor expressly reserves the right to undeveloped recreational uses, including hiking, bird watching, hunting and fishing, and access to the Easement Area for the purposes thereof.

B. Motorized Vehicle Use. Motorized vehicle use in the Easement Area is prohibited.

C. Educational Uses. The Grantor reserves the right to engage in and permit others to engage in educational uses in the Easement Area not inconsistent with this Conservation Easement, and the right of access to the Easement Area for such purposes including organized educational activities such as site visits and observations. Educational uses of the property shall not alter vegetation, hydrology or topography of the site.

D. Vegetative Cutting. Except as related to the removal of non-native plants, diseased or damaged trees, or vegetation that destabilizes or renders unsafe the Easement Area to persons or natural habitat, all cutting, removal, mowing, harming, or destruction of any trees and vegetation in the Easement Area is prohibited.

E. Industrial, Residential and Commercial Uses. All industrial, residential and commercial uses are prohibited in the Easement Area.

F. Agricultural Use. All agricultural uses are prohibited within the Easement Area including any use for cropland, waste lagoons, or pastureland.

G. New Construction. There shall be no building, facility, mobile home, antenna, utility pole, tower, or other structure constructed or placed in the Easement Area.

H. Roads and Trails. There shall be no construction of roads, trails, walkways, or paving in the Easement Area.

I. Signs. No signs shall be permitted in the Easement Area except interpretive signs describing restoration activities and the conservation values of the Easement Area, signs identifying the owner of the Property and the holder of the Conservation Easement, signs giving directions, or signs prescribing rules and regulations for the use of the Easement Area.

J. Dumping or Storing. Dumping or storage of soil, trash, ashes, garbage, waste, abandoned vehicles, appliances, machinery, or any other material in the Easement Area is prohibited.

K. Grading, Mineral Use, Excavation, Dredging. There shall be no grading, filling, excavation, dredging, mining, drilling; removal of topsoil, sand, gravel, rock, peat, minerals, or other materials.

L. Water Quality and Drainage Patterns. There shall be no diking, draining, dredging, channeling, filling, leveling, pumping, impounding or diverting, causing, allowing or permitting the diversion of surface or underground water in the Easement Area. No altering or tampering with water control structures or devices, or disruption or alteration of the restored, enhanced, or created drainage patterns is allowed. All removal of wetlands, polluting or discharging into waters, springs, seeps, or wetlands, or use of pesticide or biocides in the Easement Area is prohibited. In the event of an emergency interruption or shortage of all other water sources, water from within the Easement Area may temporarily be used for good cause shown as needed for the survival of livestock and agricultural production on the Property.

M. Subdivision and Conveyance. Grantor voluntarily agrees that no subdivision, partitioning, or dividing of the underlying Property owned by the Grantor in fee simple ("fee") that is subject to this Easement is allowed. Unless agreed to by the Grantee in writing, any future conveyance of the underlying fee and the rights conveyed herein shall be as a single block of property. Any future transfer of the fee simple shall be subject to this Conservation Easement. Any transfer of the fee is subject to the Grantee's right of unlimited and repeated ingress and egress over and across the Property to the Easement Area for the purposes set forth herein.

N. **Development Rights.** All development rights are permanently removed from the Easement Area and are non-transferrable.

O. **Disturbance of Natural Features.** Any change, disturbance, alteration or impairment of the natural features of the Easement Area or any intentional introduction of non-native plants, trees and/or animal species by Grantor is prohibited.

The Grantor may request permission to vary from the above restrictions for good cause shown, provided that any such request is not inconsistent with the purposes of this Conservation Easement, and the Grantor obtains advance written approval from the N.C. Ecosystem Enhancement Program, whose mailing address is 1652 Mail Services Center, Raleigh, NC 27699-1652.

III. GRANTEE RESERVED USES

A. **Right of Access, Construction, and Inspection.** The Grantee, its employees and agents, successors and assigns, are hereby granted and receive a perpetual non-exclusive easement for access to the Easement Area over the Property at reasonable times to undertake any activities to restore, construct, manage, maintain, enhance, and monitor the stream, wetland and any other riparian resources in the Easement Area, in accordance with restoration activities or a long-term management plan. Unless otherwise specifically set forth in this Conservation Easement, the rights granted herein do not include or establish for the public any access rights. The recommended access to the site from Margarettsville Street is shown on the Easement Plat referred to above. Without limitation of the foregoing, Grantor grants to Grantee, its employees and agents, successors and assigns, a perpetual non-exclusive easement for access to the land located North of the Property (now owned by Stanley T. Garriss), along the farm path or road leading from Margarettsville Street across the Northeast corner of the Property.

B. **Restoration Activities.** These activities include planting of trees, shrubs and herbaceous vegetation, installation of monitoring wells, utilization of heavy equipment to grade, fill, and prepare the soil, modification of the hydrology of the site, and installation of natural and manmade materials as needed to direct in-stream, above ground, and subterraneous water flow.

C. **Signs.** The Grantee, its employees and agents, successors or assigns, shall be permitted to place signs and witness posts on the Property to include any or all of the following: describe the project, prohibited activities within the Conservation Easement, or identify the project boundaries and the holder of the Conservation Easement.

D. **Fences.** The Grantee, its employees and agents, successors or assigns, shall be permitted to place fencing on the Property to restrict livestock access. Although the Grantee is not responsible for fence maintenance, the Grantee reserves the right to repair the fence, at its sole discretion.

IV. ENFORCEMENT AND REMEDIES

A. **Enforcement.** To accomplish the purposes of this Conservation Easement, Grantee is allowed to prevent any activity within the Easement Area that is inconsistent with the purposes of this Easement and to require the restoration of such areas or features in the Easement Area

that may have been damaged by such unauthorized activity or use. Upon any breach of the terms of this Conservation Easement by Grantor, the Grantee shall, except as provided below, notify the Grantor-in writing of such breach and the Grantor shall have ninety (90) days after receipt of such notice to correct the damage caused by such breach. If the breach and damage remains uncured after ninety (90) days, the Grantee may enforce this Conservation Easement by bringing appropriate legal proceedings including an action to recover damages, as well as injunctive and other relief. The Grantee shall also have the power and authority, consistent with its statutory authority: (a) to prevent any impairment of the Easement Area by acts which may be unlawful or in violation of this Conservation Easement; (b) to otherwise preserve or protect its interest in the Property; or (c) to seek damages from any appropriate person or entity. Notwithstanding the foregoing, the Grantee reserves the immediate right, without notice, to obtain a temporary restraining order, injunctive or other appropriate relief, if the breach is or would irreversibly or otherwise materially impair the benefits to be derived from this Conservation Easement, and the Grantor and Grantee acknowledge that the damage would be irreparable and remedies at law inadequate. The rights and remedies of the Grantee provided hereunder shall be in addition to, and not in lieu of, all other rights and remedies available to Grantee in connection with this Conservation Easement.

B. Inspection. The Grantee, its employees and agents, successors and assigns, have the right, with reasonable notice, to enter the Easement Area over the Property at reasonable times for the purpose of inspection to determine whether the Grantor is complying with the terms, conditions and restrictions of this Conservation Easement.

C. Acts Beyond Grantor's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury or change in the Easement Area caused by third parties, resulting from causes beyond the Grantor's control, including, without limitation, fire, flood, storm, and earth movement, or from any prudent action taken in good faith by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to life, or damage to the Property resulting from such causes.

D. Costs of Enforcement. Beyond regular and typical monitoring expenses, any costs incurred by Grantee in enforcing the terms of this Conservation Easement against Grantor, including, without limitation, any costs of restoration necessitated by Grantor's acts or omissions in violation of the terms of this Conservation Easement, shall be borne by Grantor.

E. No Waiver. Enforcement of this Easement shall be at the discretion of the Grantee and any forbearance, delay or omission by Grantee to exercise its rights hereunder in the event of any breach of any term set forth herein shall not be construed to be a waiver by Grantee.

V. MISCELLANEOUS

A. This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings or agreements relating to the Conservation Easement. If any provision is found to be invalid, the remainder of the provisions of the Conservation Easement, and the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

B. Grantor is responsible for any real estate taxes, assessments, fees, or charges levied upon the Property. Grantee shall not be responsible for any costs or liability of any kind related to the ownership, operation, insurance, upkeep, or maintenance of the Property, except as expressly provided herein. Upkeep of any constructed bridges, fences, or other amenities on the Property are the sole responsibility of the Grantor. Nothing herein shall relieve the Grantor of the obligation to comply with federal, state or local laws, regulations and permits that may apply to the exercise of the Reserved Rights.

C. Any notices shall be sent by registered or certified mail, return receipt requested to the parties at their addresses shown herein or to other addresses as either party establishes in writing upon notification to the other.

D. Grantor shall notify Grantee in writing of the name and address and any party to whom the Property or any part thereof is to be transferred at or prior to the time said transfer is made. Grantor further agrees that any subsequent lease, deed, or other legal instrument by which any interest in the Property is conveyed subject to the Conservation Easement herein created.

E. The Grantor and Grantee agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof.

F. This Conservation Easement and Right of Access may be amended, but only in writing signed by all parties hereto, or their successors or assigns, if such amendment does not affect the qualification of this Conservation Easement or the status of the Grantee under any applicable laws, and is consistent with the purposes of the Conservation Easement. The owner of the Property shall notify the U.S. Army Corps of Engineers in writing sixty (60) days prior to the initiation of any transfer of all or any part of the Property. Such notification shall be addressed to: Justin McCorkle, General Counsel, US Army Corps of Engineers, 69 Darlington Avenue, Wilmington, NC 28403

G. The parties recognize and agree that the benefits of this Conservation Easement are in gross and assignable provided, however, that the Grantee hereby covenants and agrees, that in the event it transfers or assigns this Conservation Easement, the organization receiving the interest will be a qualified holder under N.C. Gen. Stat. § 121-34 et seq. and § 170(h) of the Internal Revenue Code, and the Grantee further covenants and agrees that the terms of the transfer or assignment will be such that the transferee or assignee will be required to continue in perpetuity the conservation purposes described in this document.

VI. QUIET ENJOYMENT

Grantor reserves all remaining rights accruing from ownership of the Property, including the right to engage in or permit or invite others to engage in only those uses of the Easement Area that are expressly reserved herein, not prohibited or restricted herein, and are not inconsistent with the purposes of this Conservation Easement. Without limiting the generality of the foregoing, the Grantor expressly reserves to the Grantor, and the Grantor's invitees and licensees, the right of access to the Easement Area, and the right of quiet enjoyment of the Easement Area

TO HAVE AND TO HOLD, the said rights and easements perpetually unto the State of North Carolina for the aforesaid purposes.

AND Grantor covenants that Grantor is seized of said premises in fee and has the right to convey the permanent Conservation Easement herein granted; that the same is free from encumbrances and that Grantor will warrant and defend title to the same against the claims of all persons whomsoever.

IN TESTIMONY WHEREOF, the Grantor has hereunto set his hand and seal, the day and year first above written.

John William Vaughan (SEAL)
John William Vaughan

NORTH CAROLINA
COUNTY OF NORTHAMPTON

I, Charles M. Slade Jr., a Notary Public in and for the County and State aforesaid, do hereby certify that **John William Vaughan**, Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and Notary Seal this the 22 day of March, 2013.

Charles M. Slade Jr.
Print name: Charles M. Slade Jr, Notary Public

My commission expires:

2-5-2016

CHARLES M. SLADE, JR. NOTARY PUBLIC NORTHAMPTON CO. N.C.

"Exhibit A"
(Legal Description)

JOHN WILLIAM VAUGHAN
CONSERVATION EASEMENT 4

A parcel of land to be used for Conservation Easement purposes located on lands now or formerly owned by John William Vaughan (Deed Book 366 Page 148, Estate Ref.# 85 E 71) located in Wiccacanee Township, Northampton County, North Carolina and being more particularly described as follows:

Beginning at the Northwest corner of said lands owned by John William Vaughan and being on the South line of a 100 foot Virginia Electric and Power Company Right of Way, said point having North Carolina State Plane coordinates of N:1018881.86, E:2584517.06;

Thence S 78°22'05" E a distance of 274.93 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 71°35'24" E a distance of 410.13 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 89°25'53" E a distance of 76.27 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 50°22'49" E a distance of 186.00 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 11°55'16" E a distance of 116.11 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 70°17'48" E a distance of 65.48 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 51°17'22" E a distance of 107.30 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 40°07'40" E a distance of 98.12 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 06°08'39" E a distance of 64.55 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 49°51'00" W a distance of 358.82 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 69°38'33" W a distance of 230.15 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 08°47'20" W a distance of 263.34 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 82°29'55" W a distance of 328.41 feet to a 5/8 inch rebar set with aluminum cap;
Thence N 56°30'16" W a distance of 164.20 feet to a 5/8 inch rebar set with aluminum cap;
Thence S 19°51'14" W a distance of 137.52 feet to a 5/8 inch rebar set with aluminum cap on the West line of said lands owned by John William Vaughan;
Thence N 08°21'37" W, on the said West line of John William Vaughan, a distance of 536.15 feet to the Point of Beginning.
Containing 386,293 square feet or 8.87 acres, more or less.

STATE OF NORTH CAROLINA
NORTHAMPTON COUNTY

I, CHRISTY N CLEMENT, REVIEW OFFICER OF NORTHAMPTON COUNTY, CERTIFY THAT THE MAP OR PLAT WHICH THIS CERTIFICATION IS AFFIXED MEETS ALL STATUTORY REQUIREMENTS FOR RECORDING.

Christy N Clement 3-19-2013
REVIEW OFFICER DATE

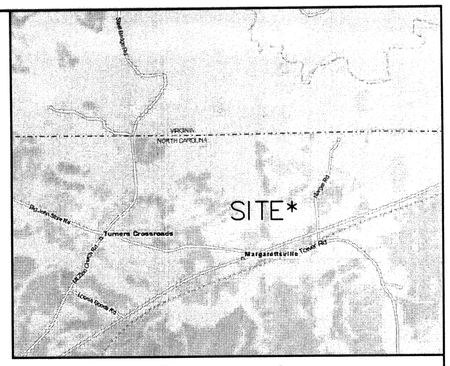
FILED
NORTHAMPTON COUNTY, NC
PAULINE E. DELOATCH
REGISTER OF DEEDS

FILED	Mar 19, 2013
AT	11:51:33 am
BOOK	00043
START PAGE	0068
END PAGE	0068
INSTRUMENT #	00528

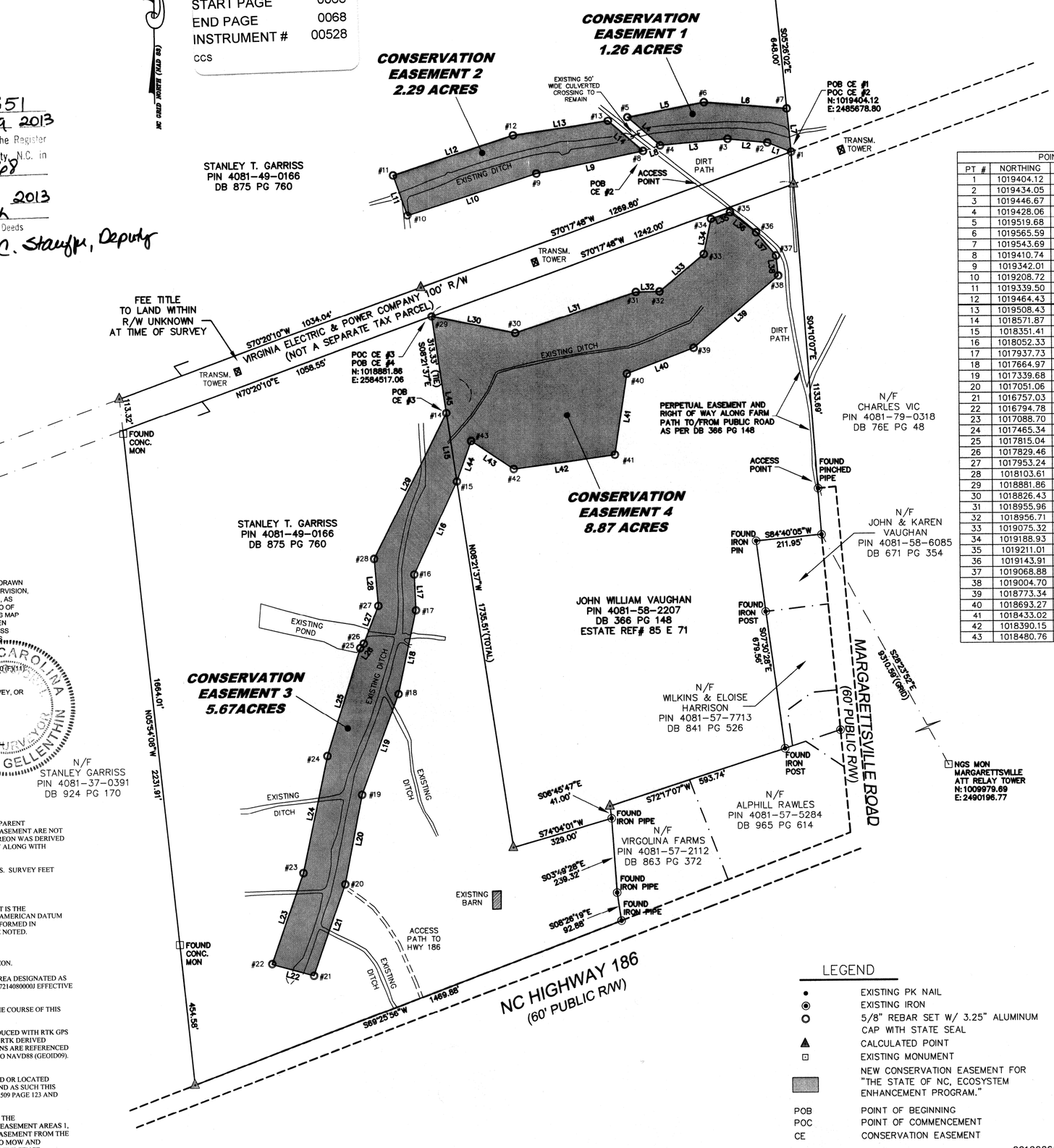
CCS

Filed for registration at 11:51 o'clock A M., Mar 19 2013 and registered in the office of the Register of Deeds of Northampton County N.C. in Book 43 Page 68 and verified.
March 19 2013
Pauline E. Deloatch
Register of Deeds
By: Crystal C. Stanley, Deputy

NC GRID NORTH (NAD 83)



VICINITY MAP
(NOT TO SCALE)



POINT TABLE			
PT #	NORTHING	EASTING	DECRIPTION
1	1019404.12	2485678.80	ESMT COR
2	1019434.05	2485602.45	ESMT COR
3	1019446.67	2485474.12	ESMT COR
4	1019428.06	2485256.85	ESMT COR
5	1019519.68	2485151.85	ESMT COR
6	1019565.59	2485398.74	ESMT COR
7	1019543.69	2485665.53	ESMT COR
8	1019410.74	2485201.83	ESMT COR
9	1019342.01	2484857.71	ESMT COR
10	1019208.72	2484441.39	ESMT COR
11	1019339.50	2484396.03	ESMT COR
12	1019464.43	2484783.35	ESMT COR
13	1019508.43	2485088.92	ESMT COR
14	1018571.87	2484562.62	ESMT COR
15	1018351.41	2484595.02	ESMT COR
16	1018052.33	2484455.65	ESMT COR
17	1017937.73	2484460.40	ESMT COR
18	1017664.97	2484402.28	ESMT COR
19	1017339.68	2484282.62	ESMT COR
20	1017051.06	2484226.25	ESMT COR
21	1016757.03	2484123.71	ESMT COR
22	1016794.78	2483989.19	ESMT COR
23	1017088.70	2484091.82	ESMT COR
24	1017465.34	2484171.89	ESMT COR
25	1017815.04	2484280.03	ESMT COR
26	1017829.46	2484291.37	ESMT COR
27	1017953.24	2484339.51	ESMT COR
28	1018103.61	2484326.78	ESMT COR
29	1018881.86	2484517.06	ESMT COR
30	1018826.43	2484786.35	ESMT COR
31	1018955.96	2485175.49	ESMT COR
32	1018956.71	2485251.76	ESMT COR
33	1019075.32	2485395.03	ESMT COR
34	1019188.93	2485419.02	ESMT COR
35	1019211.01	2485480.66	ESMT COR
36	1019143.91	2485564.39	ESMT COR
37	1019068.88	2485627.62	ESMT COR
38	1019004.70	2485634.53	ESMT COR
39	1018773.34	2485360.26	ESMT COR
40	1018693.27	2485144.49	ESMT COR
41	1018433.02	2485104.25	ESMT COR
42	1018390.15	2484778.65	ESMT COR
43	1018480.76	2484641.72	ESMT COR

LINE TABLE		
LINE	LENGTH	BEARING
L1	82.01	N68°35'44"W
L2	128.95	N84°22'57"W
L3	218.06	S85°06'12"W
L4	139.36	N48°53'41"W
L5	251.13	N79°27'54"E
L6	267.68	S85°18'25"E
L7	140.20	S05°26'02"E
L8	57.69	S72°31'55"W
L9	350.92	S78°42'21"W
L10	437.14	S72°14'47"W
L11	138.42	N19°07'46"W
L12	406.97	N72°07'21"E
L13	308.72	N81°48'23"E
L14	149.31	S49°08'02"E
L15	222.82	S08°21'37"E
L16	329.96	S24°59'05"W
L17	114.69	S02°22'26"E
L18	278.89	S12°01'46"W
L19	346.60	S20°11'43"W
L20	294.07	S11°03'05"W
L21	311.40	S19°13'32"W
L22	139.72	N74°19'33"W
L23	311.32	N19°14'58"E
L24	385.06	N12°00'06"E
L25	366.04	N17°10'59"E
L26	18.35	N38°11'22"E
L27	132.80	N21°15'07"E
L28	150.91	N04°50'15"W
L29	524.30	N26°43'54"E
L30	274.93	S78°22'05"E
L31	410.13	N71°35'24"E
L32	76.27	N89°25'53"E
L33	186.00	N50°22'49"E
L34	116.11	N11°55'16"E
L35	65.48	N70°17'48"E
L36	107.30	S51°17'22"E
L37	98.12	S40°07'40"E
L38	64.55	S06°08'39"E
L39	358.82	S49°51'00"W
L40	230.15	S69°38'33"W
L41	263.34	S08°47'20"W
L42	328.41	S82°29'55"W
L43	164.20	N56°30'16"W
L44	137.52	S19°51'14"W
L45	536.15	N08°21'37"W

I, JAMES M. GELLENTHIN, HEREBY DECLARE THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM A SURVEY MADE UNDER MY SUPERVISION, THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED, AS DRAWN FROM INFORMATION AS SHOWN HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS GREATER THAN 1:10,000; THAT THIS MAP DOES REPRESENT AN OFFICIAL BOUNDARY SURVEY AND HAS BEEN PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 19TH DAY OF MARCH, 2013

I FURTHER CERTIFY TO THE FOLLOWING AS REQUIRED BY G.S. 47-30(f)(11):

THE SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF SUBDIVISION.

NORTH CAROLINA PROFESSIONAL SEAL L-3860 LAND SURVEYOR JAMES M. GELLENTHIN

NORTH CAROLINA REGISTRATION NUMBER L-3860

JAMES M. GELLENTHIN

NORTH CAROLINA LICENSED LAND SURVEYOR JAMES M. GELLENTHIN

NOTES:

1. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARENT TRACTS. THE PARENT TRACT BOUNDARIES ADJACENT TO THIS EASEMENT ARE NOT CHANGED BY THIS PLAT. BOUNDARY INFORMATION SHOWN HEREON WAS DERIVED FROM DEEDS AND MAPS OF RECORD IN NORTHAMPTON COUNTY ALONG WITH MONUMENTATION FOUND IN THE FIELD.
2. DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
3. AREA COMPUTED BY COORDINATE METHOD.
4. THE BASIS OF THE MERIDIANS AND COORDINATES FOR THIS PLAT IS THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD 83), BASED ON DIFFERENTIAL GPS OBSERVATIONS PERFORMED IN AUGUST 2012. ALL DISTANCES ARE GROUND UNLESS OTHERWISE NOTED.
5. DEED REFERENCES: AS SHOWN HEREON.
6. SUBJECT PROPERTIES KNOWN AS TAX NUMBER: AS SHOWN HEREON.
7. SUBJECT PROPERTIES PARTIALLY LIE PARTIALLY WITHIN THE AREA DESIGNATED AS ZONE "AE", BASED ON FEDERAL FLOOD INSURANCE RATE MAP 3721408000DJ EFFECTIVE FEB. 4, 2009.
8. NO UNDERGROUND UTILITY LOCATING PERFORMED DURING THE COURSE OF THIS SURVEY.
9. THE STATE PLANE COORDINATES FOR THIS PROJECT WERE PRODUCED WITH RTK GPS OBSERVATIONS. THE NETWORK POSITIONAL ACCURACY OF THE RTK DERIVED POSITIONAL INFORMATION IS 0.02 METER. HORIZONTAL POSITIONS ARE REFERENCED TO NAD 83 (NSRS2007). VERTICAL POSITIONS ARE REFERENCED TO NAVD88 (GEOID09). COMBINED SCALE FACTOR = 1.00012880
10. NO AERIAL TRANSMISSION OR DISTRIBUTION LINES WERE NOTED OR LOCATED WITHIN THE BOUNDARIES OF THE CONSERVATION EASEMENT AND AS SUCH THIS PROJECT WILL NOT IMPACT AGREEMENTS CONTAINED IN BOOK 509 PAGE 123 AND BOOK 385 PAGE 151
11. LIVESTOCK EXCLUSION FENCING WILL BE INSTALLED ALONG THE CONSERVATION EASEMENT BOUNDARY FOR CONSERVATION EASEMENT AREAS 1, 2, AND 3. A MAINTENANCE ZONE WILL EXTEND 6' INTO THE EASEMENT FROM THE FENCE LINE. THE PROPERTY OWNER RESERVES THE RIGHT TO MOW AND MAINTAIN THIS 6' WIDE AREA ALONG THE ENTIRE LENGTH OF THE FENCE .

LEGEND

- EXISTING PK NAIL
- EXISTING IRON
- 5/8" REBAR SET W/ 3.25" ALUMINUM CAP WITH STATE SEAL
- CALCULATED POINT
- EXISTING MONUMENT
- NEW CONSERVATION EASEMENT FOR "THE STATE OF NC, ECOSYSTEM ENHANCEMENT PROGRAM."
- POB POINT OF BEGINNING
- POC POINT OF COMMENCEMENT
- CE CONSERVATION EASEMENT

20122265

Exemption Certificate
I hereby certify that this plat is exempt from the Subdivision Ordinance of Northampton County, and may be recorded with the Northampton Co. Register of Deeds providing all other conditions for review and recording are met.

Land Use Administrator 3-19-13 Date

GRAPHIC SCALE
250 0 125 250 500
1 INCH = 250 FEET

FINAL PLAT
CONSERVATION EASEMENT
FOR
NORTH CAROLINA ECOSYSTEM ENHANCEMENT PROGRAM
PROJECT NAME: STANLEY SLOUGH WETLAND AND STREAM RESTORATION PROJECT
EEP PROJECT #: 95356
SPO FILE NO. 66-K: PROPERTY OF STANLEY T. GARRISS
SPO FILE NO. 66-L: PROPERTY OF W.E. VAUGHAN HEIRS
WICCACANEE TOWNSHIP, NORTHAMPTON COUNTY, NC

DATE:	SCALE:	SHEET:
AUGUST 23, 2012 REVISED: 3/18/13	1" = 250'	1 OF 1

KCI ASSOCIATES OF NORTH CAROLINA C-0764

KCI ASSOCIATES OF N.C.
ENGINEERS, SURVEYORS AND PLANNERS
4601 SIX FORKS ROAD, SUITE 220
RALEIGH, NC 27609
PHONE (919) 783-9214 * FAX (919) 783-9266

STATE OF NORTH CAROLINA

CONSERVATION EASEMENT PROVIDED PURSUANT TO FULL DELIVERY MITIGATION CONTRACT

NORTHAMPTON COUNTY
SPO File Number 66-N
EEP Site ID Number 95838 (Stanley's II)
Prepared by: Office of the Attorney General
Property Control Section
Return to: NC Department of Administration
State Property Office
1321 Mail Service Center
Raleigh, NC 27699-1321

THIS CONSERVATION EASEMENT DEED, made this _____day of _____, 20__, by Stanley T. Garriss and Wife Linda B. Garriss (collectively, "**Grantor**"), whose mailing address is 6523 NC Highway 186, Margarettsville, NC 27853, to the State of North Carolina, ("**Grantee**"), whose mailing address is State of North Carolina, Department of Administration, State Property Office, 1321 Mail Service Center, Raleigh, NC 27699-1321. The designations of Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine, or neuter as required by context.

WITNESSETH:

WHEREAS, pursuant to the provisions of N.C. Gen. Stat. § 143-214.8 et seq., the State of North Carolina has established the Ecosystem Enhancement Program (formerly known as the Wetlands Restoration Program) within the Department of Environment and Natural Resources for the purposes of acquiring, maintaining, restoring, enhancing, creating and preserving wetland and riparian resources that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; and

WHEREAS, this Conservation Easement from Grantor to Grantee has been negotiated, arranged and provided for as a condition of a full delivery contract between **KCI Technologies, Inc.** and the North Carolina Department of Environment and Natural Resources, to provide

stream, wetland and/or buffer mitigation pursuant to the North Carolina Department of Environment and Natural Resources Purchase and Services Contract Number **005151.**

WHEREAS, The State of North Carolina is qualified to be the Grantee of a Conservation Easement pursuant to N.C. Gen. Stat. § 121-35; and

WHEREAS, the Department of Environment and Natural Resources, the North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District entered into a Memorandum of Agreement, (MOA) duly executed by all parties in Greensboro, NC on July 22, 2003, which recognizes that the Ecosystem Enhancement Program is to provide for compensatory mitigation by effective protection of the land, water and natural resources of the State by restoring, enhancing and preserving ecosystem functions; and

WHEREAS, the acceptance of this instrument for and on behalf of the State of North Carolina was granted to the Department of Administration by resolution as approved by the Governor and Council of State adopted at a meeting held in the City of Raleigh, North Carolina, on the 8th day of February 2000; and

WHEREAS, the Ecosystem Enhancement Program in the Department of Environment and Natural Resources, which has been delegated the authority authorized by the Governor and Council of State to the Department of Administration, has approved acceptance of this instrument; and

WHEREAS, Grantor owns in fee simple certain real property situated, lying, and being in **Wiccananee Township, Northampton County**, North Carolina (the "**Property**"), and being more particularly described as that certain parcel of land containing approximately **214 net** acres, described on plat recorded in **Plat Book 2, Page 178, Northampton County** Registry, and being conveyed to the Grantor by deed as recorded in **Deed Book 875 at Page 760** of the **Northampton County** Registry, North Carolina; and

WHEREAS, Grantor is willing to grant a Conservation Easement over the herein described areas of the Property, thereby restricting and limiting the use of the included areas of the Property to the terms and conditions and purposes hereinafter set forth, and Grantee is willing to accept such Conservation Easement. This Conservation Easement shall be for the protection and benefit of **Meherrin River**.

NOW, THEREFORE, in consideration of the mutual covenants, terms, conditions, and restrictions hereinafter set forth, Grantor unconditionally and irrevocably hereby grants and conveys unto Grantee, its successors and assigns, forever and in perpetuity, a Conservation Easement along with a general Right of Access.

The Easement Area consists of the following:

Conservation Easement # 5 containing **0.73 acres** and Conservation Easement # 6 containing **7.58 acres** for a total of **8.31 acres** as shown on the plat of survey entitled “Final Plat, Conservation Easement for North Carolina Ecosystem Enhancement Program, Project Name:

Stanley's II Wetland Restoration Project, EEP Project #: **95838**, SPO#: **66-N and 66-M**," dated **May 17, 2013** by **James M. Gellenthin**, PLS Number **L-3860** and recorded in the **Northampton County**, North Carolina Register of Deeds at **Map Book _____ Page _____.**

The Conservation Easement tracts described above are conveyed together with and including a perpetual nonexclusive right and easement appurtenant for ingress, egress and regress to the above described Conservation Easement tracts over and across Margarettsville Road, farm paths, crossings and access areas in-between the Conservation Easement Areas as depicted on the above described survey entitled "Final Plat, Conservation Easement for North Carolina Ecosystem Enhancement Program, Project Name: **Stanley's II Wetland Restoration Project**, EEP Project #: **95838**, SPO#: **66-N** and **66-M** ," dated **May 17, 2013** by **James M. Gellenthin**, PLS Number **L-3860** and recorded in the **Northampton County**, North Carolina Register of Deeds at **Map Book _____ Page _____.**

See attached "**Exhibit A**", Legal Description of area of the Property hereinafter referred to as the "Easement Areas"

The purposes of this Conservation Easement are to maintain, restore, enhance, construct, create and preserve wetland and/or riparian resources in the Easement Area that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; to maintain permanently the Easement Area in its natural condition, consistent with these purposes; and to prevent any use of the Easement Area that will significantly impair or interfere with these purposes. To achieve these purposes, the following conditions and restrictions are set forth:

I. DURATION OF EASEMENT

Pursuant to law, including the above referenced statutes, this Conservation Easement and Right of Access shall be perpetual and it shall run with, and be a continuing restriction upon the use of, the Property, and it shall be enforceable by the Grantee against the Grantor and against Grantor's heirs, successors and assigns, personal representatives, agents, lessees, and licensees.

II. GRANTOR RESERVED USES AND RESTRICTED ACTIVITES

The Easement Area shall be restricted from any development or usage that would impair or interfere with the purposes of this Conservation Easement. Unless expressly reserved as a compatible use herein, any activity in, or use of, the Easement Area by the Grantor is prohibited as inconsistent with the purposes of this Conservation Easement. Any rights not expressly reserved hereunder by the Grantor have been acquired by the Grantee. Any rights not expressly reserved hereunder by the Grantor, including the rights to all mitigation credits, including, but not limited to, stream, wetland, and riparian buffer mitigation units, derived from each site within the area of the Conservation Easement, are conveyed to and belong to the Grantee. Without limiting the generality of the foregoing, the following specific uses are prohibited, restricted, or reserved as indicated:

A. Recreational Uses. Grantor expressly reserves the right to undeveloped recreational uses, including hiking, bird watching, hunting and fishing, and access to the Easement Area for the purposes thereof.

B. Motorized Vehicle Use. Motorized vehicle use in the Easement Area is prohibited.

C. Educational Uses. The Grantor reserves the right to engage in and permit others to engage in educational uses in the Easement Area not inconsistent with this Conservation Easement, and the right of access to the Easement Area for such purposes including organized educational activities such as site visits and observations. Educational uses of the property shall not alter vegetation, hydrology or topography of the site.

D. Vegetative Cutting. Except as related to the removal of non-native plants, diseased or damaged trees, or vegetation that destabilizes or renders unsafe the Easement Area to persons or natural habitat, all cutting, removal, mowing, harming, or destruction of any trees and vegetation in the Easement Area is prohibited.

E. Industrial, Residential and Commercial Uses. All industrial, residential and commercial uses are prohibited in the Easement Area.

F. Agricultural Use. All agricultural uses are prohibited within the Easement Area including any use for cropland, waste lagoons, or pastureland.

G. New Construction. There shall be no building, facility, mobile home, antenna, utility pole, tower, or other structure constructed or placed in the Easement Area.

H. Roads and Trails. There shall be no construction of roads, trails, walkways, or paving in the Easement Area.

I. Signs. No signs shall be permitted in the Easement Area except interpretive signs describing restoration activities and the conservation values of the Easement Area, signs identifying the owner of the Property and the holder of the Conservation Easement, signs giving directions, or signs prescribing rules and regulations for the use of the Easement Area.

J. Dumping or Storing. Dumping or storage of soil, trash, ashes, garbage, waste, abandoned vehicles, appliances, machinery, or any other material in the Easement Area is prohibited.

K. Grading, Mineral Use, Excavation, Dredging. There shall be no grading, filling, excavation, dredging, mining, drilling; removal of topsoil, sand, gravel, rock, peat, minerals, or other materials.

L. Water Quality and Drainage Patterns. There shall be no diking, draining, dredging, channeling, filling, leveling, pumping, impounding or diverting, causing, allowing or permitting the diversion of surface or underground water in the Easement Area. No altering or tampering with water control structures or devices, or disruption or alteration of the restored, enhanced, or

created drainage patterns is allowed. All removal of wetlands, polluting or discharging into waters, springs, seeps, or wetlands, or use of pesticide or biocides in the Easement Area is prohibited. In the event of an emergency interruption or shortage of all other water sources, water from within the Easement Area may temporarily be used for good cause shown as needed for the survival of livestock and agricultural production on the Property.

M. Subdivision and Conveyance. Grantor voluntarily agrees that no subdivision, partitioning, or dividing of the underlying Property owned by the Grantor in fee simple ("fee") that is subject to this Easement is allowed. Unless agreed to by the Grantee in writing, any future conveyance of the underlying fee and the rights conveyed herein shall be as a single block of property. Any future transfer of the fee simple shall be subject to this Conservation Easement. Any transfer of the fee is subject to the Grantee's right of unlimited and repeated ingress and egress over and across the Property to the Easement Area for the purposes set forth herein.

N. Development Rights. All development rights are permanently removed from the Easement Area and are non-transferrable.

O. Disturbance of Natural Features. Any change, disturbance, alteration or impairment of the natural features of the Easement Area or any intentional introduction of non-native plants, trees and/or animal species by Grantor is prohibited.

The Grantor may request permission to vary from the above restrictions for good cause shown, provided that any such request is not inconsistent with the purposes of this Conservation Easement, and the Grantor obtains advance written approval from the N.C. Ecosystem Enhancement Program, whose mailing address is 1652 Mail Services Center, Raleigh, NC 27699-1652.

III. GRANTEE RESERVED USES

A. Right of Access, Construction, and Inspection. The Grantee, its employees and agents, successors and assigns, are hereby granted and receive a perpetual non-exclusive easement for access to the Easement Area over the Property at reasonable times to undertake any activities to restore, construct, manage, maintain, enhance, and monitor the stream, wetland and any other riparian resources in the Easement Area, in accordance with restoration activities or a long-term management plan. Unless otherwise specifically set forth in this Conservation Easement, the rights granted herein do not include or establish for the public any access rights. The recommended access locations to the site from NC Highway 186 and Margarettsville Street are shown on the plat of survey entitled "Final Plat, Conservation Easement for North Carolina Ecosystem Enhancement Program, Project Name: **Stanley's II Wetland Restoration Project**, EEP Project #: **95838**, SPO#: **66-N and 66-M,"** dated **May 17 2013** by **James M. Gellenthin**, PLS Number **L-3860** and recorded in the **Northampton County**, North Carolina Register of Deeds at **Map Book _____ Page _____.**

B. Restoration Activities. These activities include planting of trees, shrubs and herbaceous vegetation, installation of monitoring wells, utilization of heavy equipment to grade, fill, and

prepare the soil, modification of the hydrology of the site, and installation of natural and manmade materials as needed to direct in-stream, above ground, and subterraneous water flow.

C. Signs. The Grantee, its employees and agents, successors or assigns, shall be permitted to place signs and witness posts on the Property to include any or all of the following: describe the project, prohibited activities within the Conservation Easement, or identify the project boundaries and the holder of the Conservation Easement.

D. Fences. The Grantee, its employees and agents, successors or assigns, shall be permitted to place fencing on the Property to restrict livestock access. Although the Grantee is not responsible for fence maintenance, the Grantee reserves the right to repair the fence, at its sole discretion.

IV. ENFORCEMENT AND REMEDIES

A. Enforcement. To accomplish the purposes of this Conservation Easement, Grantee is allowed to prevent any activity within the Easement Area that is inconsistent with the purposes of this Easement and to require the restoration of such areas or features in the Easement Area that may have been damaged by such unauthorized activity or use. Upon any breach of the terms of this Conservation Easement by Grantor, the Grantee shall, except as provided below, notify the Grantor-in writing of such breach and the Grantor shall have ninety (90) days after receipt of such notice to correct the damage caused by such breach. If the breach and damage remains uncured after ninety (90) days, the Grantee may enforce this Conservation Easement by bringing appropriate legal proceedings including an action to recover damages, as well as injunctive and other relief. The Grantee shall also have the power and authority, consistent with its statutory authority: (a) to prevent any impairment of the Easement Area by acts which may be unlawful or in violation of this Conservation Easement; (b) to otherwise preserve or protect its interest in the Property; or (c) to seek damages from any appropriate person or entity. Notwithstanding the foregoing, the Grantee reserves the immediate right, without notice, to obtain a temporary restraining order, injunctive or other appropriate relief, if the breach is or would irreversibly or otherwise materially impair the benefits to be derived from this Conservation Easement, and the Grantor and Grantee acknowledge that the damage would be irreparable and remedies at law inadequate. The rights and remedies of the Grantee provided hereunder shall be in addition to, and not in lieu of, all other rights and remedies available to Grantee in connection with this Conservation Easement.

B. Inspection. The Grantee, its employees and agents, successors and assigns, have the right, with reasonable notice, to enter the Easement Area over the Property at reasonable times for the purpose of inspection to determine whether the Grantor is complying with the terms, conditions and restrictions of this Conservation Easement.

C. Acts Beyond Grantor's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury or change in the Easement Area caused by third parties, resulting from causes beyond the Grantor's control, including, without limitation, fire, flood, storm, and earth movement, or from any prudent action

taken in good faith by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to life, or damage to the Property resulting from such causes.

D. Costs of Enforcement. Beyond regular and typical monitoring expenses, any costs incurred by Grantee in enforcing the terms of this Conservation Easement against Grantor, including, without limitation, any costs of restoration necessitated by Grantor's acts or omissions in violation of the terms of this Conservation Easement, shall be borne by Grantor.

E. No Waiver. Enforcement of this Easement shall be at the discretion of the Grantee and any forbearance, delay or omission by Grantee to exercise its rights hereunder in the event of any breach of any term set forth herein shall not be construed to be a waiver by Grantee.

V. MISCELLANEOUS

A. This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings or agreements relating to the Conservation Easement. If any provision is found to be invalid, the remainder of the provisions of the Conservation Easement, and the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

B. Grantor is responsible for any real estate taxes, assessments, fees, or charges levied upon the Property. Grantee shall not be responsible for any costs or liability of any kind related to the ownership, operation, insurance, upkeep, or maintenance of the Property, except as expressly provided herein. Upkeep of any constructed bridges, fences, or other amenities on the Property are the sole responsibility of the Grantor. Nothing herein shall relieve the Grantor of the obligation to comply with federal, state or local laws, regulations and permits that may apply to the exercise of the Reserved Rights.

C. Any notices shall be sent by registered or certified mail, return receipt requested to the parties at their addresses shown herein or to other addresses as either party establishes in writing upon notification to the other.

D. Grantor shall notify Grantee in writing of the name and address and any party to whom the Property or any part thereof is to be transferred at or prior to the time said transfer is made. Grantor further agrees that any subsequent lease, deed, or other legal instrument by which any interest in the Property is conveyed subject to the Conservation Easement herein created.

E. The Grantor and Grantee agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof.

F. This Conservation Easement and Right of Access may be amended, but only in writing signed by all parties hereto, or their successors or assigns, if such amendment does not affect the qualification of this Conservation Easement or the status of the Grantee under any applicable laws, and is consistent with the purposes of the Conservation Easement. The owner of the Property shall notify the U.S. Army Corps of Engineers in writing sixty (60) days prior to the

initiation of any transfer of all or any part of the Property. Such notification shall be addressed to: Justin McCorkle, General Counsel, US Army Corps of Engineers, 69 Darlington Avenue, Wilmington, NC 28403

G. The parties recognize and agree that the benefits of this Conservation Easement are in gross and assignable provided, however, that the Grantee hereby covenants and agrees, that in the event it transfers or assigns this Conservation Easement, the organization receiving the interest will be a qualified holder under N.C. Gen. Stat. § 121-34 et seq. and § 170(h) of the Internal Revenue Code, and the Grantee further covenants and agrees that the terms of the transfer or assignment will be such that the transferee or assignee will be required to continue in perpetuity the conservation purposes described in this document.

VI. QUIET ENJOYMENT

Grantor reserves all remaining rights accruing from ownership of the Property, including the right to engage in or permit or invite others to engage in only those uses of the Easement Area that are expressly reserved herein, not prohibited or restricted herein, and are not inconsistent with the purposes of this Conservation Easement. Without limiting the generality of the foregoing, the Grantor expressly reserves to the Grantor, and the Grantor's invitees and licensees, the right of access to the Easement Area, and the right of quiet enjoyment of the Easement Area

TO HAVE AND TO HOLD, the said rights and easements perpetually unto the State of North Carolina for the aforesaid purposes.

AND Grantor covenants that Grantor is seized of said premises in fee and has the right to convey the permanent Conservation Easement herein granted; that the same is free from encumbrances and that Grantor will warrant and defend title to the same against the claims of all persons whomsoever.

IN TESTIMONY WHEREOF, the Grantor has hereunto set his hand and seal, the day and year first above written.

_____ (SEAL)
Stanley T. Garriss

_____ (SEAL)
Linda B. Garriss

NORTH CAROLINA
***COUNTY OF*_____**

I, _____, a Notary Public in and for the County and State aforesaid, do hereby certify that **Stanley T. Garriss and wife Linda B. Garriss**, Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and Notary Seal this the _____ day of _____, 2013.

_____
Notary Public

My commission expires:

_____

“Exhibit A”

(Legal Description- Stanley T. Garriss)

STANLEY T. GARRISS
CONSERVATION EASEMENT 5

TBD

STANLEY T. GARRISS
CONSERVATION EASEMENT 6

TBD

STATE OF NORTH CAROLINA

CONSERVATION EASEMENT PROVIDED PURSUANT TO FULL DELIVERY MITIGATION CONTRACT

NORTHAMPTON COUNTY
SPO File Number 66-M
EEP Site ID Number 95838 (Stanley's II)
Prepared by: Office of the Attorney General
Property Control Section
Return to: NC Department of Administration
State Property Office
1321 Mail Service Center
Raleigh, NC 27699-1321

THIS CONSERVATION EASEMENT DEED, made this _____day of _____, 20__, by John William Vaughan, widower ("Grantor"), whose mailing address is 253 Margarettsville Street, Margarettsville, NC 27853, to the State of North Carolina, ("**Grantee**"), whose mailing address is State of North Carolina, Department of Administration, State Property Office, 1321 Mail Service Center, Raleigh, NC 27699-1321. The designations of Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine, or neuter as required by context.

WITNESSETH:

WHEREAS, pursuant to the provisions of N.C. Gen. Stat. § 143-214.8 et seq., the State of North Carolina has established the Ecosystem Enhancement Program (formerly known as the Wetlands Restoration Program) within the Department of Environment and Natural Resources for the purposes of acquiring, maintaining, restoring, enhancing, creating and preserving wetland and riparian resources that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; and

WHEREAS, this Conservation Easement from Grantor to Grantee has been negotiated, arranged and provided for as a condition of a full delivery contract between **KCI Technologies, Inc.** and the North Carolina Department of Environment and Natural Resources, to provide stream, wetland and/or buffer mitigation pursuant to the North Carolina Department of Environment and Natural Resources Purchase and Services Contract Number 005151.

WHEREAS, The State of North Carolina is qualified to be the Grantee of a Conservation Easement pursuant to N.C. Gen. Stat. § 121-35; and

WHEREAS, the Department of Environment and Natural Resources, the North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District entered into a Memorandum of Agreement, (MOA) duly executed by all parties in Greensboro, NC on July 22, 2003, which recognizes that the Ecosystem Enhancement Program is to provide for compensatory mitigation by effective protection of the land, water and natural resources of the State by restoring, enhancing and preserving ecosystem functions; and

WHEREAS, the acceptance of this instrument for and on behalf of the State of North Carolina was granted to the Department of Administration by resolution as approved by the Governor and Council of State adopted at a meeting held in the City of Raleigh, North Carolina, on the 8th day of February 2000; and

WHEREAS, the Ecosystem Enhancement Program in the Department of Environment and Natural Resources, which has been delegated the authority authorized by the Governor and Council of State to the Department of Administration, has approved acceptance of this instrument; and

WHEREAS, Grantor owns in fee simple certain real property situated, lying, and being in **Wiccananee Township, Northampton County**, North Carolina (the "**Property**"), and being more particularly described as that certain parcel of land containing approximately **40.3 net** acres, described as on plat recorded in **Plat Book 2, Page 178, Northampton County** Registry, and being conveyed to the Grantor by deed as recorded in **Deed Book 366 at Page 148 and 85-E-71** of the **Northampton County** Registry, North Carolina; and

WHEREAS, Grantor is willing to grant a Conservation Easement over the herein described areas of the Property, thereby restricting and limiting the use of the included areas of the Property to the terms and conditions and purposes hereinafter set forth, and Grantee is willing to accept such Conservation Easement. This Conservation Easement shall be for the protection and benefit of **Meherrin River**.

NOW, THEREFORE, in consideration of the mutual covenants, terms, conditions, and restrictions hereinafter set forth, Grantor unconditionally and irrevocably hereby grants and conveys unto Grantee, its successors and assigns, forever and in perpetuity, a Conservation Easement along with a general Right of Access.

The Easement Areas consist of the following:

Conservation Easement 7 containing **0.52 acres** as shown on the plat of survey entitled "Final Plat, Conservation Easement for North Carolina Ecosystem Enhancement Program, Project Name: **Stanley's II Wetland Restoration Project**, EEP Project #: **95838**, SPO#: **66-N and 66-M**," dated **May 17, 2013** by **James M. Gellenthin**, PLS Number **L-3860** and recorded in the **Northampton County**, North Carolina Register of Deeds at **Map Book _____ Page _____.**

The Conservation Easement tracts described above are conveyed together with and including a perpetual nonexclusive right and easement appurtenant for ingress, egress and regress to the above described Conservation Easement tracts over and across Margarettsville Road (a public right of way), farm paths, crossings and access areas in-between the Conservation Easement Areas as depicted on the above described survey entitled "Final Plat, Conservation Easement for North Carolina Ecosystem Enhancement Program, Project Name: **Stanley's II Wetland Restoration Project**, EEP Project #: **95838**, SPO#: **66-N** and **66-M** ," dated **May 17, 2013** by **James M. Gellenthin**, PLS Number **L-3860** and recorded in the **Northampton County**, North Carolina Register of Deeds at **Map Book _____ Page _____.**

See attached "**Exhibit A**", Legal Description of areas of the Property hereinafter referred to as the "Easement Area"

The purposes of this Conservation Easement are to maintain, restore, enhance, construct, create and preserve wetland and/or riparian resources in the Easement Area that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; to maintain permanently the Easement Area in its natural condition, consistent with these purposes; and to prevent any use of the Easement Area that will significantly impair or interfere with these purposes. To achieve these purposes, the following conditions and restrictions are set forth:

I. DURATION OF EASEMENT

Pursuant to law, including the above referenced statutes, this Conservation Easement and Right of Access shall be perpetual and it shall run with, and be a continuing restriction upon the use of, the Property, and it shall be enforceable by the Grantee against the Grantor and against Grantor's heirs, successors and assigns, personal representatives, agents, lessees, and licensees.

II. GRANTOR RESERVED USES AND RESTRICTED ACTIVITES

The Easement Area shall be restricted from any development or usage that would impair or interfere with the purposes of this Conservation Easement. Unless expressly reserved as a compatible use herein, any activity in, or use of, the Easement Area by the Grantor is prohibited as inconsistent with the purposes of this Conservation Easement. Any rights not expressly reserved hereunder by the Grantor have been acquired by the Grantee. Any rights not expressly reserved hereunder by the Grantor, including the rights to all mitigation credits, including, but not limited to, stream, wetland, and riparian buffer mitigation units, derived from each site within the area of the Conservation Easement, are conveyed to and belong to the Grantee. Without limiting the generality of the foregoing, the following specific uses are prohibited, restricted, or reserved as indicated:

A. Recreational Uses. Grantor expressly reserves the right to undeveloped recreational uses, including hiking, bird watching, hunting and fishing, and access to the Easement Area for the purposes thereof.

B. Motorized Vehicle Use. Motorized vehicle use in the Easement Area is prohibited.

C. Educational Uses. The Grantor reserves the right to engage in and permit others to engage in educational uses in the Easement Area not inconsistent with this Conservation Easement, and the right of access to the Easement Area for such purposes including organized educational activities such as site visits and observations. Educational uses of the property shall not alter vegetation, hydrology or topography of the site.

D. Vegetative Cutting. Except as related to the removal of non-native plants, diseased or damaged trees, or vegetation that destabilizes or renders unsafe the Easement Area to persons or natural habitat, all cutting, removal, mowing, harming, or destruction of any trees and vegetation in the Easement Area is prohibited.

E. Industrial, Residential and Commercial Uses. All industrial, residential and commercial uses are prohibited in the Easement Area.

F. Agricultural Use. All agricultural uses are prohibited within the Easement Area including any use for cropland, waste lagoons, or pastureland.

G. New Construction. There shall be no building, facility, mobile home, antenna, utility pole, tower, or other structure constructed or placed in the Easement Area.

H. Roads and Trails. There shall be no construction of roads, trails, walkways, or paving in the Easement Area.

I. Signs. No signs shall be permitted in the Easement Area except interpretive signs describing restoration activities and the conservation values of the Easement Area, signs identifying the owner of the Property and the holder of the Conservation Easement, signs giving directions, or signs prescribing rules and regulations for the use of the Easement Area.

J. Dumping or Storing. Dumping or storage of soil, trash, ashes, garbage, waste, abandoned vehicles, appliances, machinery, or any other material in the Easement Area is prohibited.

K. Grading, Mineral Use, Excavation, Dredging. There shall be no grading, filling, excavation, dredging, mining, drilling; removal of topsoil, sand, gravel, rock, peat, minerals, or other materials.

L. Water Quality and Drainage Patterns. There shall be no diking, draining, dredging, channeling, filling, leveling, pumping, impounding or diverting, causing, allowing or permitting the diversion of surface or underground water in the Easement Area. No altering or tampering with water control structures or devices, or disruption or alteration of the restored, enhanced, or created drainage patterns is allowed. All removal of wetlands, polluting or discharging into waters, springs, seeps, or wetlands, or use of pesticide or biocides in the Easement Area is prohibited. In the event of an emergency interruption or shortage of all other water sources, water from within the Easement Area may temporarily be used for good cause shown as needed for the survival of livestock and agricultural production on the Property.

M. Subdivision and Conveyance. Grantor voluntarily agrees that no subdivision, partitioning, or dividing of the underlying Property owned by the Grantor in fee simple ("fee")

that is subject to this Easement is allowed. Unless agreed to by the Grantee in writing, any future conveyance of the underlying fee and the rights conveyed herein shall be as a single block of property. Any future transfer of the fee simple shall be subject to this Conservation Easement. Any transfer of the fee is subject to the Grantee's right of unlimited and repeated ingress and egress over and across the Property to the Easement Area for the purposes set forth herein.

N. Development Rights. All development rights are permanently removed from the Easement Area and are non-transferrable.

O. Disturbance of Natural Features. Any change, disturbance, alteration or impairment of the natural features of the Easement Area or any intentional introduction of non-native plants, trees and/or animal species by Grantor is prohibited.

The Grantor may request permission to vary from the above restrictions for good cause shown, provided that any such request is not inconsistent with the purposes of this Conservation Easement, and the Grantor obtains advance written approval from the N.C. Ecosystem Enhancement Program, whose mailing address is 1652 Mail Services Center, Raleigh, NC 27699-1652.

III. GRANTEE RESERVED USES

A. Right of Access, Construction, and Inspection. The Grantee, its employees and agents, successors and assigns, are hereby granted and receive a perpetual non-exclusive easement for access to the Easement Area over the Property at reasonable times to undertake any activities to restore, construct, manage, maintain, enhance, and monitor the stream, wetland and any other riparian resources in the Easement Area, in accordance with restoration activities or a long-term management plan. Unless otherwise specifically set forth in this Conservation Easement, the rights granted herein do not include or establish for the public any access rights. The recommended access to the site from Margarettsville Street is shown on the plat of survey entitled "Final Plat, Conservation Easement for North Carolina Ecosystem Enhancement Program, Project Name: **Stanley's II Wetland Restoration Project**, EEP Project #: **95838**, SPO#: **66-N** and **66-M**," dated **May 17, 2013** by **James M. Gellenthin,** PLS Number **L-3860** and recorded in the **Northampton County**, North Carolina Register of Deeds at **Map Book _____ Page _____.**

B. Restoration Activities. These activities include planting of trees, shrubs and herbaceous vegetation, installation of monitoring wells, utilization of heavy equipment to grade, fill, and prepare the soil, modification of the hydrology of the site, and installation of natural and manmade materials as needed to direct in-stream, above ground, and subterraneous water flow.

C. Signs. The Grantee, its employees and agents, successors or assigns, shall be permitted to place signs and witness posts on the Property to include any or all of the following: describe the project, prohibited activities within the Conservation Easement, or identify the project boundaries and the holder of the Conservation Easement.

D. Fences. The Grantee, its employees and agents, successors or assigns, shall be permitted to place fencing on the Property to restrict livestock access. Although the Grantee is not

responsible for fence maintenance, the Grantee reserves the right to repair the fence, at its sole discretion.

IV. ENFORCEMENT AND REMEDIES

A. Enforcement. To accomplish the purposes of this Conservation Easement, Grantee is allowed to prevent any activity within the Easement Area that is inconsistent with the purposes of this Easement and to require the restoration of such areas or features in the Easement Area that may have been damaged by such unauthorized activity or use. Upon any breach of the terms of this Conservation Easement by Grantor, the Grantee shall, except as provided below, notify the Grantor in writing of such breach and the Grantor shall have ninety (90) days after receipt of such notice to correct the damage caused by such breach. If the breach and damage remains uncured after ninety (90) days, the Grantee may enforce this Conservation Easement by bringing appropriate legal proceedings including an action to recover damages, as well as injunctive and other relief. The Grantee shall also have the power and authority, consistent with its statutory authority: (a) to prevent any impairment of the Easement Area by acts which may be unlawful or in violation of this Conservation Easement; (b) to otherwise preserve or protect its interest in the Property; or (c) to seek damages from any appropriate person or entity. Notwithstanding the foregoing, the Grantee reserves the immediate right, without notice, to obtain a temporary restraining order, injunctive or other appropriate relief, if the breach is or would irreversibly or otherwise materially impair the benefits to be derived from this Conservation Easement, and the Grantor and Grantee acknowledge that the damage would be irreparable and remedies at law inadequate. The rights and remedies of the Grantee provided hereunder shall be in addition to, and not in lieu of, all other rights and remedies available to Grantee in connection with this Conservation Easement.

B. Inspection. The Grantee, its employees and agents, successors and assigns, have the right, with reasonable notice, to enter the Easement Area over the Property at reasonable times for the purpose of inspection to determine whether the Grantor is complying with the terms, conditions and restrictions of this Conservation Easement.

C. Acts Beyond Grantor's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury or change in the Easement Area caused by third parties, resulting from causes beyond the Grantor's control, including, without limitation, fire, flood, storm, and earth movement, or from any prudent action taken in good faith by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to life~~,~~ or damage to the Property resulting from such causes.

D. Costs of Enforcement. Beyond regular and typical monitoring expenses, any costs incurred by Grantee in enforcing the terms of this Conservation Easement against Grantor, including, without limitation, any costs of restoration necessitated by Grantor's acts or omissions in violation of the terms of this Conservation Easement, shall be borne by Grantor.

E. No Waiver. Enforcement of this Easement shall be at the discretion of the Grantee and any forbearance, delay or omission by Grantee to exercise its rights hereunder in the event of any breach of any term set forth herein shall not be construed to be a waiver by Grantee.

V. MISCELLANEOUS

A. This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings or agreements relating to the Conservation Easement. If any provision is found to be invalid, the remainder of the provisions of the Conservation Easement, and the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

B. Grantor is responsible for any real estate taxes, assessments, fees, or charges levied upon the Property. Grantee shall not be responsible for any costs or liability of any kind related to the ownership, operation, insurance, upkeep, or maintenance of the Property, except as expressly provided herein. Upkeep of any constructed bridges, fences, or other amenities on the Property are the sole responsibility of the Grantor. Nothing herein shall relieve the Grantor of the obligation to comply with federal, state or local laws, regulations and permits that may apply to the exercise of the Reserved Rights.

C. Any notices shall be sent by registered or certified mail, return receipt requested to the parties at their addresses shown herein or to other addresses as either party establishes in writing upon notification to the other.

D. Grantor shall notify Grantee in writing of the name and address and any party to whom the Property or any part thereof is to be transferred at or prior to the time said transfer is made. Grantor further agrees that any subsequent lease, deed, or other legal instrument by which any interest in the Property is conveyed subject to the Conservation Easement herein created.

E. The Grantor and Grantee agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof.

F. This Conservation Easement and Right of Access may be amended, but only in writing signed by all parties hereto, or their successors or assigns, if such amendment does not affect the qualification of this Conservation Easement or the status of the Grantee under any applicable laws, and is consistent with the purposes of the Conservation Easement. The owner of the Property shall notify the U.S. Army Corps of Engineers in writing sixty (60) days prior to the initiation of any transfer of all or any part of the Property. Such notification shall be addressed to: Justin McCorkle, General Counsel, US Army Corps of Engineers, 69 Darlington Avenue, Wilmington, NC 28403

G. The parties recognize and agree that the benefits of this Conservation Easement are in gross and assignable provided, however, that the Grantee hereby covenants and agrees, that in the event it transfers or assigns this Conservation Easement, the organization receiving the interest will be a qualified holder under N.C. Gen. Stat. § 121-34 et seq. and § 170(h) of the Internal Revenue Code, and the Grantee further covenants and agrees that the terms of the transfer or assignment will be such that the transferee or assignee will be required to continue in perpetuity the conservation purposes described in this document.

VI. QUIET ENJOYMENT

Grantor reserves all remaining rights accruing from ownership of the Property, including the right to engage in or permit or invite others to engage in only those uses of the Easement Area that are expressly reserved herein, not prohibited or restricted herein, and are not inconsistent with the purposes of this Conservation Easement. Without limiting the generality of the foregoing, the Grantor expressly reserves to the Grantor, and the Grantor's invitees and licensees, the right of access to the Easement Area, and the right of quiet enjoyment of the Easement Area

TO HAVE AND TO HOLD, the said rights and easements perpetually unto the State of North Carolina for the aforesaid purposes.

AND Grantor covenants that Grantor is seized of said premises in fee and has the right to convey the permanent Conservation Easement herein granted; that the same is free from encumbrances and that Grantor will warrant and defend title to the same against the claims of all persons whomsoever.

IN TESTIMONY WHEREOF, the Grantor has hereunto set his hand and seal, the day and year first above written.

_____ (SEAL)
John William Vaughan

NORTH CAROLINA
COUNTY OF NORTHAMPTON

I, _____, a Notary Public in and for the County and State aforesaid, do hereby certify that **John William Vaughan**, Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and Notary Seal this the _____ day of _____, 2013.

_____
Notary Public

My commission expires:

_____

“Exhibit A”
(Legal Description)

JOHN WILLIAM VAUGHAN
CONSERVATION EASEMENT 7

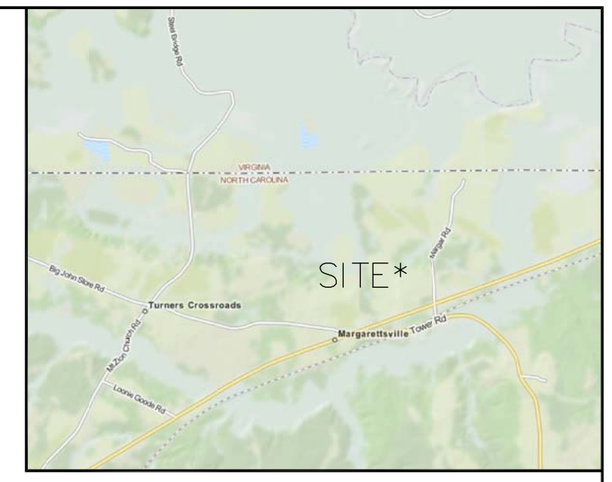
TBD

STATE OF NORTH CAROLINA
NORTHAMPTON COUNTY

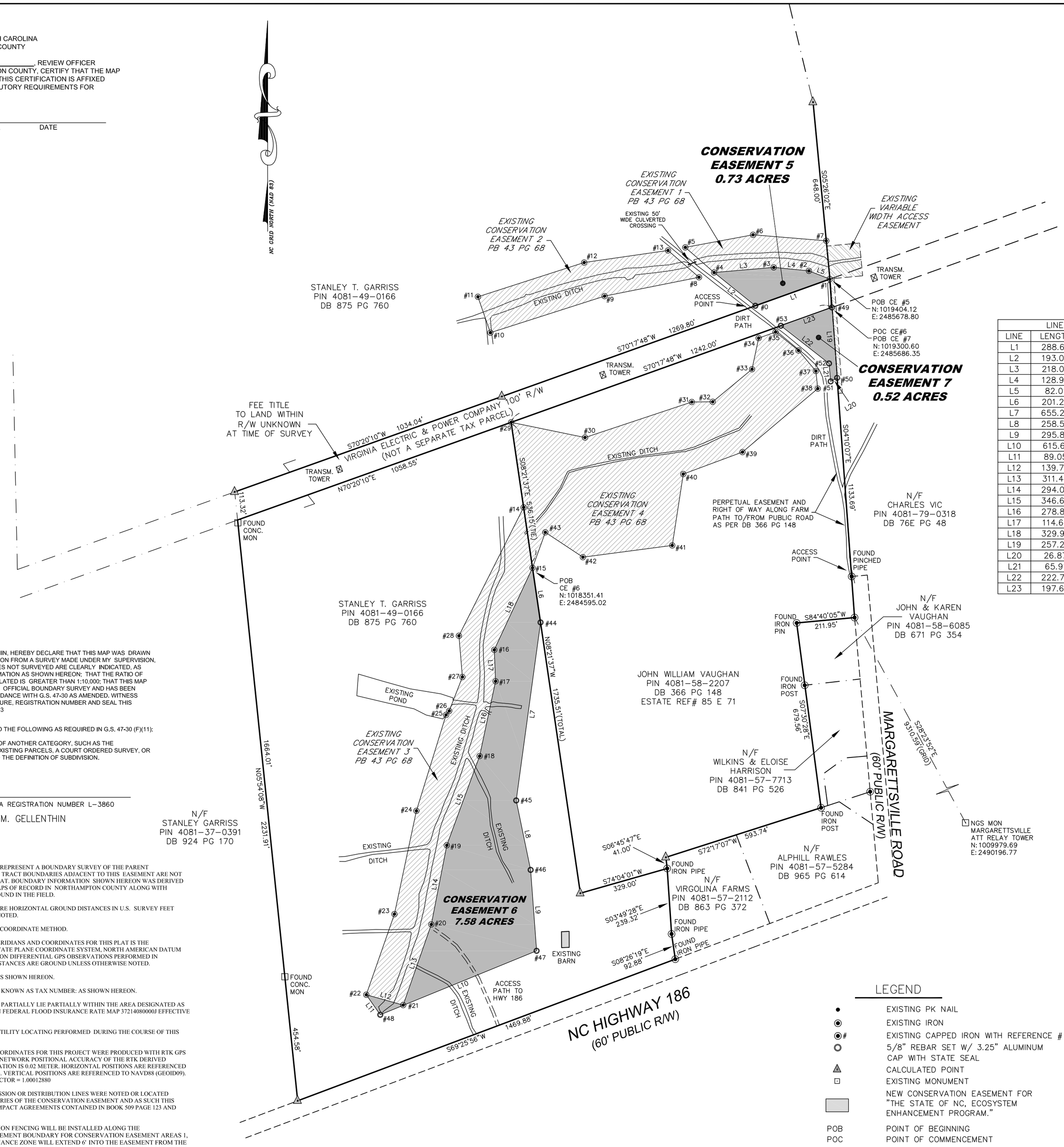
I, _____, REVIEW OFFICER OF NORTHAMPTON COUNTY, CERTIFY THAT THE MAP OR PLAT WHICH THIS CERTIFICATION IS AFFIXED MEETS ALL STATUTORY REQUIREMENTS FOR RECORDING.

_____
REVIEW OFFICER DATE

NC GRID NORTH (NAD 83)



VICINITY MAP
(NOT TO SCALE)



LINE TABLE		
LINE	LENGTH	BEARING
L1	288.66	S70°17'48"W
L2	193.03	N51°05'01"W
L3	218.06	N85°06'12"E
L4	128.95	S84°22'57"E
L5	82.01	S68°35'44"E
L6	201.20	S08°21'37"E
L7	655.23	S07°46'49"W
L8	258.58	S11°44'00"E
L9	295.86	S04°12'53"E
L10	615.61	S67°44'41"W
L11	89.05	N34°54'31"W
L12	139.72	S74°19'33"E
L13	311.40	N19°13'32"E
L14	294.07	N11°03'05"E
L15	346.60	N20°11'43"E
L16	278.89	N12°01'46"E
L17	114.69	N02°22'26"W
L18	329.96	N24°59'05"E
L19	257.27	S04°10'07"E
L20	26.87	S60°51'44"W
L21	65.91	N05°12'52"W
L22	222.77	N51°55'18"W
L23	197.69	N70°17'48"E

POINT TABLE			
PT #	NORTHING	EASTING	DECRIPTION
0	1019306.80	2485407.04	ESMT COR
44	1018152.35	2484624.27	ESMT COR
45	1017503.15	2484535.57	ESMT COR
46	1017249.97	2484588.15	ESMT COR
47	1016954.91	2484609.90	ESMT COR
48	1016721.75	2484040.15	ESMT COR
49	1019300.60	2485686.35	ESMT COR
50	1019044.01	2485705.05	ESMT COR
51	1019030.93	2485681.58	ESMT COR
52	1019096.56	2485675.59	ESMT COR
53	1019233.95	2485500.23	ESMT COR

I, JAMES M. GELLENTHIN, HEREBY DECLARE THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM A SURVEY MADE UNDER MY SUPERVISION, THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED, AS DRAWN FROM INFORMATION AS SHOWN HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS GREATER THAN 1:10,000; THAT THIS MAP DOES REPRESENT AN OFFICIAL BOUNDARY SURVEY AND HAS BEEN PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 16TH DAY OF MAY, 2013

I FURTHER CERTIFY TO THE FOLLOWING AS REQUIRED IN G.S. 47-30 (F)(11):

THAT THE SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF SUBDIVISION.

_____
NORTH CAROLINA REGISTRATION NUMBER L-3860

JAMES M. GELLENTHIN

NOTES:

1. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARENT TRACTS. THE PARENT TRACT BOUNDARIES ADJACENT TO THIS EASEMENT ARE NOT CHANGED BY THIS PLAT. BOUNDARY INFORMATION SHOWN HEREON WAS DERIVED FROM DEEDS AND MAPS OF RECORD IN NORTHAMPTON COUNTY ALONG WITH MONUMENTATION FOUND IN THE FIELD.
2. DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
3. AREA COMPUTED BY COORDINATE METHOD.
4. THE BASIS OF THE MERIDIANS AND COORDINATES FOR THIS PLAT IS THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD 83), BASED ON DIFFERENTIAL GPS OBSERVATIONS PERFORMED IN AUGUST 2012. ALL DISTANCES ARE GROUND UNLESS OTHERWISE NOTED.
5. DEED REFERENCES: AS SHOWN HEREON.
6. SUBJECT PROPERTIES KNOWN AS TAX NUMBER: AS SHOWN HEREON.
7. SUBJECT PROPERTIES PARTIALLY LIE PARTIALLY WITHIN THE AREA DESIGNATED AS ZONE "AE", BASED ON FEDERAL FLOOD INSURANCE RATE MAP 37214080000J EFFECTIVE FEB. 4, 2009.
8. NO UNDERGROUND UTILITY LOCATING PERFORMED DURING THE COURSE OF THIS SURVEY.
9. THE STATE PLANE COORDINATES FOR THIS PROJECT WERE PRODUCED WITH RTK GPS OBSERVATIONS. THE NETWORK POSITIONAL ACCURACY OF THE RTK DERIVED POSITIONAL INFORMATION IS 0.02 METER. HORIZONTAL POSITIONS ARE REFERENCED TO NAD 83 (NSRS2007). VERTICAL POSITIONS ARE REFERENCED TO NAVD88 (GEOID09). COMBINED SCALE FACTOR = 1.00012880
10. NO AERIAL TRANSMISSION OR DISTRIBUTION LINES WERE NOTED OR LOCATED WITHIN THE BOUNDARIES OF THE CONSERVATION EASEMENT AND AS SUCH THIS PROJECT WILL NOT IMPACT AGREEMENTS CONTAINED IN BOOK 509 PAGE 123 AND BOOK 385 PAGE 151
11. LIVESTOCK EXCLUSION FENCING WILL BE INSTALLED ALONG THE CONSERVATION EASEMENT BOUNDARY FOR CONSERVATION EASEMENT AREAS 1, 2, AND 3. A MAINTENANCE ZONE WILL EXTEND 6' INTO THE EASEMENT FROM THE FENCE LINE. THE PROPERTY OWNER RESERVES THE RIGHT TO MOW AND MAINTAIN THIS 6' WIDE AREA ALONG THE ENTIRE LENGTH OF THE FENCE.

LEGEND

- EXISTING PK NAIL
- EXISTING IRON
- EXISTING CAPPED IRON WITH REFERENCE #
- 5/8" REBAR SET W/ 3.25" ALUMINUM CAP WITH STATE SEAL
- CALCULATED POINT
- EXISTING MONUMENT
- NEW CONSERVATION EASEMENT FOR "THE STATE OF NC, ECOSYSTEM ENHANCEMENT PROGRAM."

POB POINT OF BEGINNING
POC POINT OF COMMENCEMENT
CE CONSERVATION EASEMENT

20122265

GRAPHIC SCALE
250 0 125 250 500
1 INCH = 250 FEET

FINAL PLAT
CONSERVATION EASEMENT
FOR
NORTH CAROLINA ECOSYSTEM ENHANCEMENT PROGRAM
PROJECT NAME: STANLEY'S II WETLAND PROJECT
EEP PROJECT #: 95838
SPO FILE NO. 66-N: PROPERTY OF STANLEY T. GARRISS
SPO FILE NO. 66-M: PROPERTY OF JOHN WILLIAM VAUGHAN
WICCACANEE TOWNSHIP, NORTHAMPTON COUNTY, NC

DATE:	SCALE:	SHEET:
MAY 17, 2013	1" = 250'	1 OF 1

KCI ASSOCIATES OF NORTH CAROLINA C-0764

KCI ASSOCIATES OF N.C.
ENGINEERS, SURVEYORS AND PLANNERS

4601 SIX FORKS ROAD, SUITE 220
RALEIGH, NC 27609
PHONE (919) 783-9214 * FAX (919) 783-9266

14.4 Appendix B. Baseline Information Data

USACE Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Stanley's Slough - pasture City/County: Margaretsville / Northampton Sampling Date: 9-25-12

Applicant/Owner: RCI Associates of NC. State: NC Sampling Point: DP#1 NW

Investigator(s): Steven Stokes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 2

Subregion (LRR or MLRA): LRR P Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Winton NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Wetter than normal

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): _____	
Water Table Present?	Yes _____	No ✓	Depth (inches): > 18"	
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____	**Wetland Hydrology Present?** Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Last significant Rain 9-19-12

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: DP#1 WW

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 1m)			
1. Festuca Arundinacea	50	yes	FAC
2. Eleusine indica (Goosegrass)	50	yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (If observed, list morphological adaptations below).

Mowed Pasture

SOIL Sampling Point: DP#1 NW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10yr 4/2	100					ls	
3-9	10yr 4/2	90	10yr 4/3	10	C	M	ls	
9-12	10yr 5/3	83	10yr 4/4	10	C	M	ls-sl	
			7.5yr 5/6	2	C	PL		
			10yr 5/2	5	D	M		
12-18	10yr 5/4	100					sl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Stanley's Slough - Pasture City/County: Margarettsville/ Northampton Sampling Date: 9-25-12

Applicant/Owner: KCE / Associates of NC State: NC Sampling Point: DP#2 @ WP-20

Investigator(s): S. Stokes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR P Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Winton NWI classification: PEM2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:
Wetter than normal

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) (LRR U)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) (LRR T, U)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): Surface
Water Table Present?	Yes ✓	No _____	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Last significant rain 9-19-12.

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: DP#2

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 1m)			
1. Rhexia Virginica Meadow Beauty	40	yes	FACW
2. Vernonia gigantea	10	No	FAC
3. Juncus effusus	50	yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (If observed, list morphological adaptations below).

Mowed previously

SOIL

Sampling Point: DP# 2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10yr 3/2	100					mucl	
1-3	10yr 5/2	100	10yr 5/6	2	C	PL	ls	
3-10	10yr 5/1	50	10yr 4/1	45	C	M		
			7.5yr 4/6	5	C	M	ls	indurated PAN
10-15	10yr 7/1	100			C	M	S	
15-18	10yr 7/1	95	10yr 4/6	5	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

F3 - 2" within top 6".

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Stanley's Slough - Pasture City/County: Narragansett Sampling Date: 9-25-12

Applicant/Owner: KLI Associates of NC State: NC Sampling Point: DP# 3NW @ WB-4

Investigator(s): S. Stokes Section, Township, Range:

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): convex Slope (%): 1%

Subregion (LRR or MLRA): LRR P Lat: Long: Datum:

Soil Map Unit Name: Tomotley NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

wetter than normal

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) (LRR U)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) (LRR T, U)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): >18"
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Last significant Rain 9-19-12

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: NW 3 NW

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 1m)			
1. Festuca Arundinacea	50		FAC
2. Elcusine indica (Goosegrass)	50		FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (If observed, list morphological adaptations below).

Mowed pasture

SOIL

Sampling Point: DP4 WW

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr 4/2	100					scl	
4-8	10yr 4/2	68	7.5yr 4/4	2	C	M/PL	fsl	
			10yr 5/2	30	C	M		
8-14	10yr 4/2	55	10yr 5/6	25	C	M	sl	
			10yr 4/2	20	C	M/PL/PM		
14-18	10yr 5/2	80	7.5yr 5/8	20	C	M/PL	sal	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Stanley's Slough - Pasture City/County: Margaretsville / Northampton Sampling Date: _____

Applicant/Owner: KCP Associates of NC State: NC Sampling Point: DP # 4 W

Investigator(s): S. Stokes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): depression Slope (%): 0

Subregion (LRR or MLRA): LRR P Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Tomotley NWI classification: PEM2

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
Wetter than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) (LRR U)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ✓ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) (LRR T, U)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): Surface
Water Table Present?	Yes _____	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
CAGX significant rain 9-19-12

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: BP#4W

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 1m)			
1. Juncus effusus	40	yes	OBL
2. Eleocharis Obtusa Spikerush	30	yes	OBL
3. Ludwigia palustris	30	yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: DP#4W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	90	7.5YR 4/6	10	C	PL/M	L-cl	
8-14	10YR 5/2	85	7.5YR 5/8	15	C	M	scl	
14-18	10YR 4/1	80	7.5YR 5/8	20	C	M/PL	sc	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

Reference Wetland Information

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Stanley's Slough Reference City/County: Margarettsville/Northampton Sampling Date: 4-18-2013

Applicant/Owner: KCI Associates of NC State: NC Sampling Point: DP #1

Investigator(s): S. Stokes Section, Township, Range:

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave/flat Slope (%): 0.1

Subregion (LRR or MLRA): LRR P Lat: N 36 32' 33.2 Long: W 077 20' 50.6" Datum:

Soil Map Unit Name: Roanoke NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes X	No _____	Depth (inches): 11
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 9

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: DP#1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus michauxii (Swamp Chestnut)	30	X	FACW-
2. Acer rubrum (Red Maple)	30	X	FAC
3. Betula nigra (River Birch)	25	X	FACW
4. Liquidambar styraciflua (Sweetgum)	20		FAC+
5. Magnolia virginiana (Sweetbay)	10		FACW+
6. Quercus laurifolia (Laurel Oak)	5		FACW
7.			
8.			
	120	= Total Cover	

50% of total cover: 60 20% of total cover: 24

Sapling/Shrub Stratum (Plot size: 30')			
1. Ilex opaca (American Holly)	40	X	FAC-
2. Carpinus caroliniana (American Hornbeam)	40	X	FAC
3. Fraxinus pennsylvanica (Green Ash)	20	X	FACW
4. Liquidambar styraciflua (Sweetgum)	15		FAC+
5.			
6.			
7.			
8.			
	115	= Total Cover	

50% of total cover: 57.5 20% of total cover: 23

Herb Stratum (Plot size: 1 m)			
1. Arundinaria gigantea (Giant Cane)	25	X	FACW
2. Woodwardia areolata (Netted Chain Fern)	10	X	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	35	= Total Cover	

50% of total cover: 17.5 20% of total cover: 7

Woody Vine Stratum (Plot size: 30')			
1. Smilax rotundifolia (Common Greenbrier)	5	X	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	

50% of total cover: 1 20% of total cover: 1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 77 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: DP#1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					l	mucky loam
4-7	10YR 4/1	100					l	
7-12	10YR 4/1	70	7.5YR 4/6 c2d	15	C	C, PL	sl	
			10YR 5/4 f1d	5	C	M		
			10YR 6/1 c2f	1	D	M		
12-18	10YR 5/1	65	10YR 5/8	30	RM	M	scl	
			7.5YR 4/6	5	C	PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

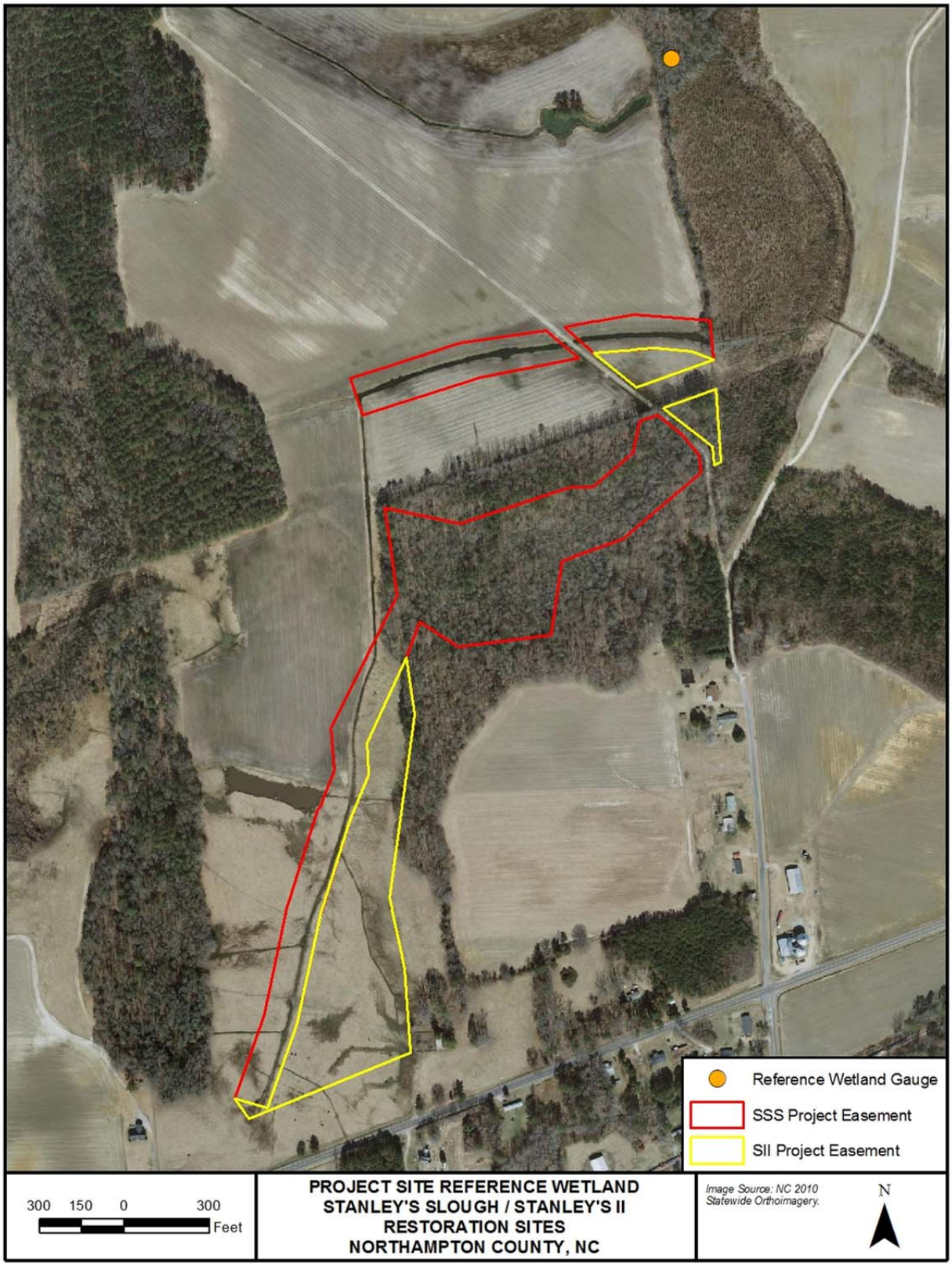
Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:


Reference Wetland Gauge
SSS Project Easement
SII Project Easement
300 150 0 300
Feet
PROJECT SITE REFERENCE WETLAND
STANLEY'S SLOUGH / STANLEY'S II
RESTORATION SITES
NORTHAMPTON COUNTY, NC
Image Source: NC 2010
Statewide Orthoimagery.
N

NC DWQ Stream Identification Form

NC DWQ Stream Identification Form Version 4.11

Date: 10-10-2011	**Project/Site:** Stanley's Slough	**Latitude:**
Evaluator: A. Spiller, T. Morris	**County:** Northampton	**Longitude:**
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 31.75	**Stream Determination (circle one)** **Ephemeral Intermittent Perennial**	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	(0)	1	2	3
2. Sinuosity of channel along thalweg	(0)	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	(0)	1	2	3
4. Particle size of stream substrate	(0)	1	2	3
5. Active/relict floodplain	0	1	2	(3)
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	(0)	0.5	1	1.5
10. Natural valley	0	0.5	1	(1.5)
11. Second or greater order channel	(No = 0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 13.5)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	0	1	2	(3)
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	(1.5)
16. Organic debris lines or piles	0	0.5	1	(1.5)
17. Soil-based evidence of high water table?	No = 0		(Yes = 3)	

C. Biology (Subtotal = 13.75)				
18. Fibrous roots in streambed	3	2	1	(0)
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	2	(3)
21. Aquatic Mollusks	0	1	(2)	3
22. Fish	0	0.5	1	(1.5)
23. Crayfish	0	(0.5)	1	1.5
24. Amphibians	0	0.5	1	(1.5)
25. Algae	0	0.5	1	(1.5)
26. Wetland plants in streambed	(FACW = 0.75; OBL = 1.5 Other = 0)			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Jurisdictional Determination

COPY

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. SAW-2012-01918 County: Northampton U.S.G.S. Quad: VA-MARGARETTSVILLE

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner: Stanley Garriss

Address: 6523 NC Highway 186
Margarettsville, NC 27853

Property Owner: John Vaughan

Address: 253 Margarettsville St
Maragarettsville, NC 27853

Agent: KCI Associates of North Carolina, P.A.
Steven Stokes
Address: Landmark Center II, Suite 220
4601 Six Forks Road
Raleigh, NC, 27609

Coordinates Latitude: 36.5373984395785 Longitude: -77.349050034246
Location description: The property is located on the north side of NC Hwy 186, west, east and north of Margarettsville Rd, Margarettsville, Northampton County, NC.

Indicate Which of the Following Apply:

A. Preliminary Determination

X Based on preliminary information, there may be wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

B. Approved Determination

_ There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ There are waters of the U.S. including wetlands on the above described property subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ We strongly suggest you have the wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.

_ The waters of the U.S. including wetlands on your project area have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.

_ The waters of the U.S. including wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on ___. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ There are no waters of the U.S., to include wetlands, present on the above described project area which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our

published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ The property is located in one of the 20 Coastal Counties subject to regulation under the Coastal Area Management Act (CAMA). You should contact the Division of Coastal Management in Morehead City, NC, at (252) 808-2808 to determine their requirements.

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **Thomas Brown** at **919-554-4884 x22/Thomas.L.Brown@usace.army.mil.**

C. Basis For Determination

1987 Corps of Engineers Wetland Delineation Manual and appropriate Regional Supplement.

D. Remarks

E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

F. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

US Army Corps of Engineers
South Atlantic Division
Attn: Jason Steele, Review Officer
60 Forsyth Street SW, Room 10M15
Atlanta, Georgia 30303-8801

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by _____.

It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: _____

Date: **November 29, 2012** Expiration Date: **November 29, 2017**

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the attached customer Satisfaction Survey or visit http://per2.nwp.usace.army.mil/survey.html to complete the survey online.

Copy furnished:

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL		
Applicant:	File Number: SAW-2012-01918	Date: November 29, 2012

Attached is:	See Section below
☐ INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☐ PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐ PERMIT DENIAL	C
☐ APPROVED JURISDICTIONAL DETERMINATION	D
☒ PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
District Engineer, Wilmington Regulatory Division, **Attn: Thomas Brown** **Raleigh Regualtory Field Office** **3331 Heritage Trade Dr, Suite 105** **Wake Forest, NC 27587**	Mr. Jason Steele, Administrative Appeal Review Officer CESAD-PDO U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 10M15 Atlanta, Georgia 30303-8801 Phone: (404) 562-5137

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

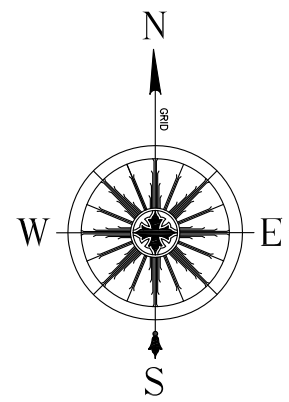
For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Thomas Brown, 69 Darlington Avenue, Wilmington, North Carolina 28403

For Permit denials, Proffered Permits and approved Jurisdictional Determinations send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801 Phone: (404) 562-5137

VICINITY MAP
NOT TO SCALE



GRAPHIC SCALE

0 200 400 800

1 INCH = 400 FEET

KCI
ASSOCIATES OF
NORTH CAROLINA

KCI ASSOCIATES OF N.C.
ENGINEERS, SURVEYORS AND PLANNERS

4601 SIX FORKS ROAD, SUITE 220
RALEIGH, NC 27609
PHONE (919) 783-9214 * FAX (919) 783-9266

WETLAND DELINEATION MAP
FOR
STANLEY SLOUGH
WICCACANEE TOWNSHIP,
NORTHAMPTON COUNTY
NORTH CAROLINA

DATE:	SCALE:	SHEET:
SEPT 25, 2012	1" = 400'	1 OF 3

OUT OF STUDY AREA

STREAM - 10,325 SF

WETLAND 3
3,593 SF

WETLAND 4
2,709 SF

STANLEY GARRISS
PIN 4081-49-0166
DB 875 PG 760

VIRGINIA ELECTRIC
& POWER COMPANY
100' R/W

WETLAND 1
101,206 SF

DP-6

DP-5

DP-8

DP-7

STREAM
47,500 SF

DP-9

DP-10

WETLAND
22,537 SF

OUT OF STUDY AREA

OUT OF STUDY AREA

STANLEY GARRISS
PIN 4081-49-0166
DB 875 PG 760

W.E. VAUGHN HEIRS
PIN 4081-58-2207
DB 366 PG 148

N

W E

S

GRAPHIC SCALE

0 100 200 400

1 INCH = 200 FEET

KCI
ASSOCIATES OF
NORTH CAROLINA

KCI ASSOCIATES OF N.C.
ENGINEERS, SURVEYORS AND PLANNERS

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RALEIGH, NC 27609
PHONE (919) 783-9214 * FAX (919) 783-9266

WETLAND DELINEATION MAP
FOR
STANLEY SLOUGH
WICCACANEE TOWNSHIP,
NORTHAMPTON COUNTY
NORTH CAROLINA

DATE:	SCALE:	SHEET:
SEPT 25, 2012	1" = 200'	2 OF 3

STANLEY GARRISS
PIN 4081-49-0166
DB 875 PG 760

STREAM
47,500 SF

OUT OF STUDY AREA

WETLAND 10
6,177 SF

WETLAND 9
37,514 SF

DP-1

DP-2

DP-3

DP-4

WETLAND 8
8,576 SF

WETLAND 7
8,563 SF

WETLAND 11
2,237 SF

OUT OF STUDY AREA

W.E. VAUGHN HEIRS
PIN 4081-58-2207
DB 366 PG 148

OUT OF STUDY AREA

MARGARETTSVILLE ROAD

HIGHWAY 186

N
W E
S

GRID

GRAPHIC SCALE
0 100 200 400
1 INCH = 200 FEET

KCI ASSOCIATES OF NORTH CAROLINA

KCI ASSOCIATES OF N.C.
ENGINEERS, SURVEYORS AND PLANNERS

4601 SIX FORKS ROAD, SUITE 220
RALEIGH, NC 27609
PHONE (919) 783-9214 * FAX (919) 783-9266

WETLAND DELINEATION MAP
FOR
STANLEY SLOUGH
WICCACANEE TOWNSHIP,
NORTHAMPTON COUNTY
NORTH CAROLINA

DATE:	SCALE:	SHEET:
SEPT 25, 2012	1" = 200'	3 OF 3

Field Memorandum and Agency Response

Memoranda

ENGINEERS ♦ SURVEYORS ♦ SCIENTISTS ♦ CONSTRUCTION MANAGERS

LANDMARK CENTER II, SUITE 220 ♦ 4601 SIX FORKS ROAD ♦ RALEIGH, NC 27609 ♦ 919-783-9214 ♦ (FAX) 919-783-9266

TO:	Heather Smith, EEP PM Tyler Crumbley, ACOE
FROM:	Tim Morris, KCI
DATE:	Site Meeting - September 6, 2012 Memo Date – December 7, 2012
SUBJECT:	Stanley's Slough Stream and Wetland Restoration Project IRT Site Review Meeting KCI Project Number: 20122005 EEP Project Number 95356

Attendees:

Eric Kulz, NC DWQ
Todd Tugwell, ACOE
Tyler Crumbley, ACOE
Jeff Garnett, EPA
Travis Wilson, NC WRC
Maria Dunn, NC WRC
Tim Morris, KCI
Joe Pfeiffer, KCI
Adam Spiller, KCI
Jeff Shaffer, EEP
Heather Smith, EEP
Guy Pearce, EEP

An IRT field review was conducted for the above referenced project on September 6th, 2012. Field conditions were overcast and hot with storm activity in the general area. Recent rains were apparent. Local rainfall data indicated above average rainfall (10.73") for the month of August including two rainfall events of above 3" within 10 days of the site visit. Joe Pfeiffer and Tim Morris from KCI presented the project to the attendees. The following issues and concerns were documented at the meeting and will be addressed in the future development of the site.

1. ACOE expressed concern regarding the anticipated hydrology of Tributary 2 (northern tributary) after a large portion of its drainage area would be diverted and restored to its

natural course. The main concern was that the reduced size of the drainage area to Tributary 2 would not support a perennial or potentially even an intermittent stream classification. It was mentioned that the area may be a stream at some point along the channel length but that it may be downstream of its current inception point as described in the Proposal. Streamflow data and/or streamflow indicators (development of a clearly defined high-water mark, rack/drift lines, etc.) would need to be provided to justify credits on Tributary 2. A more clearly defined drainage area map would also help to clarify the disposition of the resource. ACOE acknowledged that if it was determined that the inception point of Tributary 2 was further downstream than its current location, wetland restoration potential would exist above that point, assuming KCI could demonstrate pre-existing hydric soils.

Prior to leaving the area ACOE indicated that they believed there was a credit risk in developing portion of the project due to the hydrology issue.

- KCI will further examine the drainage area to Tributary 2 and attempt to refine the inception point of the stream in this area. A detailed analysis of this work will be presented in the mitigation plan. The monitoring plan will address the specifics of documenting the jurisdictional status of the stream (or wetland) for credit purposes. At this point, KCI has no intent to remove this stream from the mitigation plan, but will consider the Corps concerns and recommendations in determining and potentially revising the future credit yield from the area.

2. The IRT group was generally in agreement with the rest of the proposal from a stream credit perspective. The group walked the entire channel including the area of the channel that would be diverted back into the wooded area (Vaughan Property). DWQ indicated that stream function would be increased significantly by diverting the stream back into its historic location. It was noted that the stream within the wooded area had been channelized; however the channel size and shape seemed consistent with the downstream reference condition. Credit generation through this area would be 1:1. Grading would be required at the tie-in points as well as targeted areas within the woods to allow the stream to better access its historic floodplain.

3. The IRT group had several issues associated with the call to consider portions of the wooded floodplain on the Vaughan property as wetland "restoration". Currently there are 2.8 acres (out of approximately 8.5 wooded easement acres) proposed for wetland restoration. The 2.8 acres are located outside the proposed 100'- stream mitigation corridor. The wetland restoration areas contain hydric soils, however the hydrology component was determined to be lacking during previous visits to the site. KCI

explained that the area could be considered restoration if additional hydrology could be added back into the system from the abandoned drainage area. The group questioned whether the site was already jurisdictional and therefore more appropriately considered being enhancement or perhaps re-establishment or rehabilitation (forms of restoration). According to 40 CFR Part 230 "Compensatory Mitigation for Losses of Aquatic Resources; Final Rule," Restoration (including re-establishment and rehabilitation) differs from enhancement in that "it results in either the reestablishment of an aquatic resource or the rehabilitation of a suite of functions at a degraded aquatic resource. In contrast enhancement activities focus on the improvement of a subset of specific functions." Discussion ensued and there was a general consensus that since the hydrology of the site would be restored, the entire floodplain area may be more appropriately described as rehabilitation and/or reestablishment as opposed to enhancement as significant uplift would occur to a suite of functions through the re-introduction of the historic drainage area to the site. The group agreed that the first order of business would be to get a Jurisdictional Determination (JD). If the JD concurred that the entire area was jurisdictional, then a call of "rehabilitation" might be appropriate based on the circumstances. Credit ratios would then need to be determined prior to the development of the mitigation plan. If the local Corps office agreed with the delineation, then appropriate methods to determine functional uplift within the 2.8 acre restoration area would need to be documented during development of the mitigation plan.

Post hoc:

- *A JD meeting was held on 10-3-12 with Thomas Brown of the Raleigh Field Office of the ACOE. Three flags were moved at the direction of Mr. Brown. The final delineation plat is attached along with the Corps JD Concurrence Notification (dated November 29, 2012) is included in Attachment A. Of the approximately 8.5-acre wooded area, 3.30 acres are in the existing 100 foot stream buffer, 0.77 acres are existing wetland that can be rehabilitated, 2.81 acres contain hydric soils that lack appropriate hydrology (restoration/re-establishment),0.80 acres contain upland soils (upland preservation) and 0.52 acres of jurisdictional wetlands exists that KCI believes will not be appropriate for rehabilitation. These wetlands would be non-credit bearing units (preservation only).*
- *A second Full Delivery proposal has been submitted to add approximately 6.5 acres of wetland restoration Stanley's Slough project. Although this project has not been awarded at this time, we have included the project boundaries and a similar analysis of the sites rehabilitation/re-establishment potential. KCI would like to solicit pre-contract comments from the agencies on the "Stanley's II" project since the two projects are*

so closely linked together. Attachment B shows the boundaries of both projects along with soil delineation information and a proposed asset map. KCI's proposed recommendations for rehabilitation and re-establishment are included for both project areas. We have also included recommendations for ratios. These are included in the tables below:

Stanley's Slough - Mitigation

Mitigation Category	Acres	Linear Feet	Ratio/1	WMUs	SMU's
Wetland Preservation	0.52		0	0.00	
Wetland Reestablishment	2.81		1	2.81	
Wetland Rehabilitation	0.78		1.5	0.52	
Stream Reestablishment	3.56	1437	1	0.00	1437
Stream Rehabilitation	6.36	2884	1	0.00	2884
Upland Inclusion	0.75		0	0.00	
TOTALS	**14.78**			**3.33**	**4321**

Stanley's II

Mitigation Category	Acres	Ratio	WMUs
*Constrained Reestablishment	0.47	1.5	0.31
*Constrained Rehabilitation	0.09	2	0.05
Wetland Reestablishment	5.75	1	5.75
Wetland Rehabilitation	1.12	1.5	0.75
Upland Inclusion	1.87	0	0.00
	9.29		**6.85**

* Under Electric Transmission Line

- *We understand that the interpretation of the CFR as it relates to rehabilitation and re-establishment is un-vetted at this point in time. KCI would like to meet with the Corps/IRT to discuss this concept and come to an equitable resolution prior to the submittal of our mitigation plan.*

ATTACHMENT A – JD Plat and Letter

Attachment A Not Included –
Refer to Jurisdictional Determination Letter and Plat in Appendix

ATTACHMENT B – Soils and Proposed Asset Maps

Eliminated area under power line due to access issues and ROW conflicts with terms of Conservation Easement

Added sliver of land to offset loss of power line acreage. Approximately .4 acres.

Stanley's Slough Mitigation - SSS and SII

KCI

- SSS Project Boundary
- SII Project Boundary
- Approximate Utility Easement
- Wetland Reestablishment (8.55 ac - 2.80 ac SSS / 5.75ac SII)
- Constrained Wetland Reestablishment (0.47 ac SII)
- Wetland Rehabilitation (1.90 ac - 0.78 ac SSS / 1.12 ac SII)
- Constrained Wetland Rehabilitation (0.09 ac SII)
- Wetland Preservation (0.52 ac SSS)
- Stream Reestablishment (3.56 ac SSS)
- Stream Rehabilitation (6.36 ac SSS)
- Upland Inclusion (2.62 ac - 0.75 ac SSS / 1.87 ac SII)

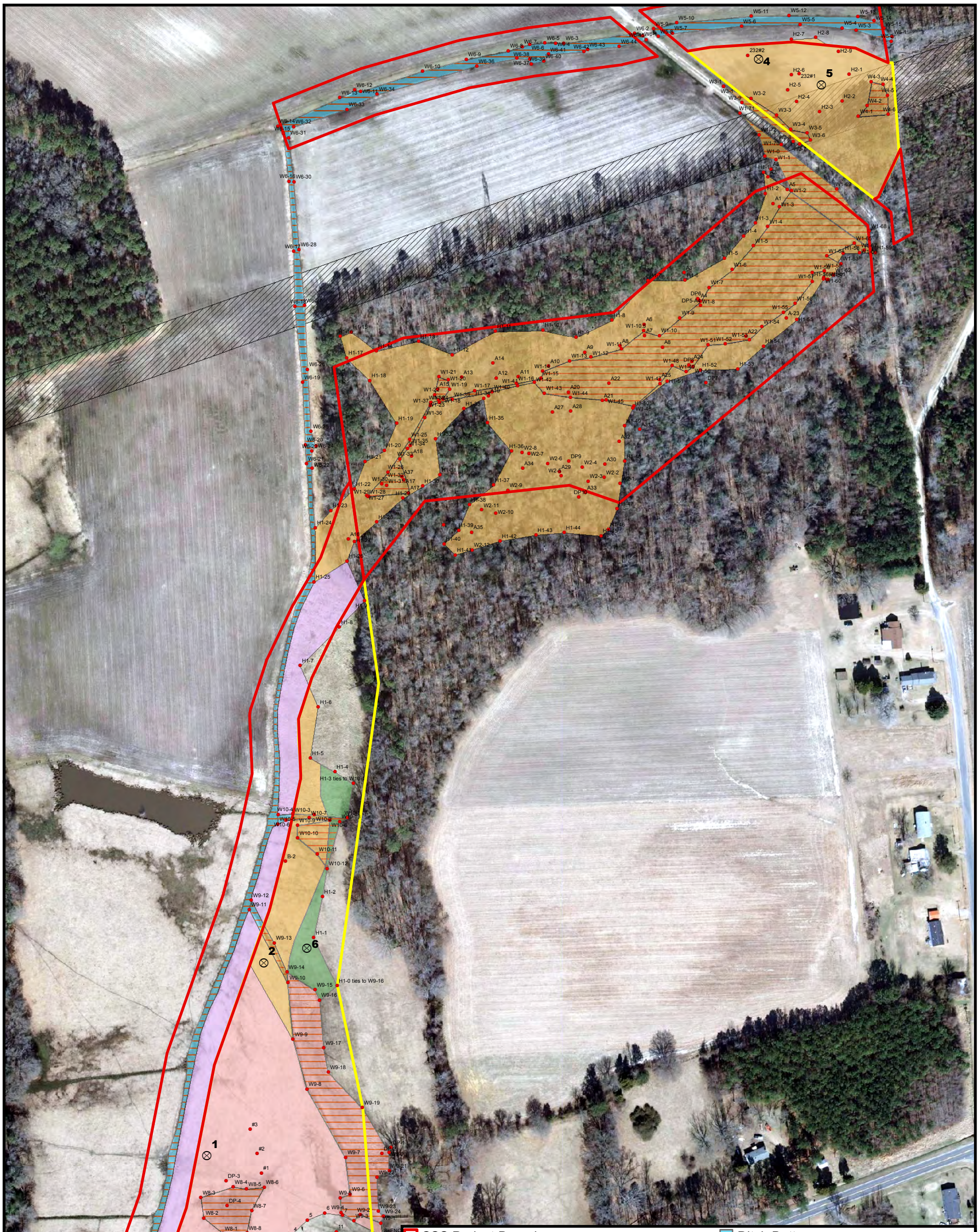
N W E S

1:2,400 1 inch =200 feet

0 50 100 200 Feet

Source: NC 2010 Orthoimagery

Environmental Technologies and Construction, Inc.



Stanley's Slough Soils

KCI

1:2,400

1 inch =200 feet

200 100 0 200 Feet

Source: NC 2010 Orthoimagery

Environmental Technologies and Construction, Inc.

Tim Morris

From: Tugwell, Todd SAW <Todd.Tugwell@usace.army.mil>
Sent: Wednesday, January 02, 2013 12:35 PM
To: Tim Morris; Crumbley, Tyler SAW
Cc: Smith, Heather (heather.c.smith@ncdenr.gov); Joe Pfeiffer
Subject: RE: Stanley's Slough - Rehabilitation/Re-establishment Assessment (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Tim,
Our guidance regarding wetland ratios has never been fixed to the point where we can't adjust ratios based on our best professional judgment. Typically, in enhancement scenarios, the functional degradation can be very easily identified, but in the system you are proposing for enhancement, we feel that the existing wetland is already very high functioning (no major ditching, mature and appropriate vegetation structure, and acceptable hydrology). In comparing this to what the site might be like after the work is complete, we don't see a substantial improvement - basically the site will be a bit wetter. This could actually bring some potential negatives (e.g., mortality of the existing trees). The goal should be to look at the function provided by the site in its current condition and compare that to what it will be like once the improvements have been made, then base the ratio on the uplift. In this case, I don't believe that uplift will be that much, so considering the unique circumstances of what is proposed on the site, we feel that a ratio of 2.5: 1 is appropriate.

We have spent a lot of time thinking though this very issue as we have been working on the NC WAM implementation. Even once NC WAM is fully implemented, it will not necessarily address these scenarios since it is not intended to be used to predict/measure functional uplift from mitigation sites, but it may at least provide some insights into what functional categories we consider when making that determination.

Hope this helps,

Todd Tugwell
Special Projects Manager
Regulatory Division
Wilmington District
U.S. Army Corps of Engineers
11405 Falls of Neuse Road
Wake Forest, NC 27587
(919) 846-2564

We would appreciate your feedback on how we are performing our duties. Our automated Customer Service Survey is located at: http://per2.nwp.usace.army.mil/survey.html Thank you for taking the time to visit this site and complete the survey.

Todd

-----Original Message-----
From: Tim Morris [mailto:Tim.Morris@kci.com]
Sent: Friday, December 21, 2012 1:19 PM

To: Crumbley, Tyler SAW
Cc: Smith, Heather (heather.c.smith@ncdenr.gov); Tugwell, Todd SAW; Joe Pfeiffer
Subject: RE: Stanley's Slough - Rehabilitation/Re-establishment Assessment (UNCLASSIFIED)

Thanks for the quick response Tyler. I think we can live with the 2.5:1 ratio for this particular project, but wanted to let you know our thought process on the ratios that we provided. Wetland enhancement is generally give a 2:1 ratio for the improvement of a single function. Rehabilitation, based on the description provided in the CFR, is considered an improvement in a suite of functions. This led us to propose a ratio that was slightly better than what we typically get for enhancement. I understand the grey area in all this, but would you consider a 2:1 so that we are at least the same as the typical enhancement ratio? Seems like if this type of analysis comes up on future projects there would be an inconsistency between the ratio and the definition. If the ratios will be evaluated case by case and this is just more of a gut feeling for this particular site, we can live with that too.

Thanks for your feedback and have a great holiday!

-----Original Message-----
From: Crumbley, Tyler SAW [mailto:Tyler.Crumbley@usace.army.mil]
Sent: Friday, December 21, 2012 11:26 AM
To: Tim Morris
Cc: Smith, Heather (heather.c.smith@ncdenr.gov); Tugwell, Todd SAW; Joe Pfeiffer
Subject: RE: Stanley's Slough - Rehabilitation/Re-establishment Assessment (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Tim,

Thanks again for sending the notes from the meeting. Most of the minutes capture what was discussed on-site accurately. There are however a few discrepancies between what was shown in the associated table and where we think we should go with the credit proposals. We believe that the potential functional uplift for the stream and wetland areas slated for Rehabilitation may be lower than anticipated and a ratio of 2.5:1 would be more appropriate. Additionally, as noted in your response to item #1, there will be further discussions on the Reestablishment portion of the streams and we can address that issue during the review process on the portal.

We are glad to see that you were able to incorporate the other parcel for Stanley II. That should be beneficial to site and the project success of Stanley I.

Let me know if you have any questions.

v/r

-Tyler

Tyler Crumbley
Regulatory Division
Wilmington District
U.S. Army Corps of Engineers
11405 Falls of Neuse Road
Wake Forest, NC 27587
(919) 846-2564

-----Original Message-----
From: Tim Morris [mailto:Tim.Morris@kci.com]
Sent: Monday, December 17, 2012 11:17 AM
To: Crumbley, Tyler SAW
Subject: RE: Stanley's Slough - Rehabilitation/Re-establishment Assessment (UNCLASSIFIED)

10-4, thanks.

-----Original Message-----
From: Crumbley, Tyler SAW [mailto:Tyler.Crumbley@usace.army.mil]
Sent: Monday, December 17, 2012 10:14 AM
To: Tim Morris
Subject: RE: Stanley's Slough - Rehabilitation/Re-establishment Assessment (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thanks Tim,

Todd and I will take a look at it and get back with you soon.

-Tyler

-----Original Message-----
From: Tim Morris [mailto:Tim.Morris@kci.com]
Sent: Monday, December 17, 2012 9:53 AM
To: Crumbley, Tyler SAW
Cc: Smith, Heather (heather.c.smith@ncdenr.gov); Tugwell, Todd SAW; Joe Pfeiffer
Subject: Stanley's Slough - Rehabilitation/Re-establishment Assessment

Hey Tyler,

Sorry for the delay in getting this to you, but attached are meeting minutes from our September 6 IRT field review meeting as well as an assessment of the credit potential at the Stanley's Slough site. As you may recall, we talked in the field review meeting about whether this site could be a candidate to test out some of the new-ish terminology contained in the CFR (08 Final Mitigation Rule). Specifically the definitions of rehabilitation and re-establishment, since a good portion of the project would be improving multiple functions by reintroducing hydrology and drainage area to degraded aquatic resources. The piece of data that was missing at the time of the meeting was a JD for the property which we recently received from Thomas Brown. The attached letter report details what we believe is a fair interpretation of the rule. We recognize that this is unchartered waters to some extent so we would like to get some feedback from the Corps and/or the IRT before developing our mitigation plan for the site. A meeting is probably the best way to hash this all out.

Also, we have included the boundaries and details for "Stanley's II" which is a FDP proposal that we recently submitted to EEP. This expands the Stanley's Slough project to add close to 7 acres of additional RWMU's. We recognize that this project has not been awarded yet, but the projects are so closely tied together we figured we should include the project boundaries and credit analysis should the project come to be (we were the only submittal, so there is good potential - knock on wood).

Your feedback is appreciated.

Thanks,

Timothy J. Morris

Senior Environmental Scientist

KCI Associates of North Carolina, P.A.

Landmark Center II, Suite 220

4601 Six Forks Road

Raleigh NC 27609

Office Phone - 919-278-2511

Mobile Phone - 919-793-6886

Fax - 919-783-9266

Email - tim.morris@kci.com

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

FHWA Categorical Exclusion Form

Categorical Exclusion Form for Ecosystem Enhancement Program Projects
Version 1.4

Note: Only Appendix A should to be submitted (along with any supporting documentation) as the environmental document.

Part 1: General Project Information	
Project Name:	Stanley's Slough Stream Restoration Project
County Name:	Northampton County, NC
EEP Number:	95356
Project Sponsor:	KCI Technologies, Inc.
Project Contact Name:	Tim Morris
Project Contact Address:	4601 Six Forks Rd, Suite 220, Raleigh, NC 27609
Project Contact E-mail:	tim.morris@kci.com
EEP Project Manager:	Heather Smith

Project Description

The Stanley's Slough stream and wetland restoration project will restore 4,248 linear feet of coastal plain stream and 2.8 acres of riparian wetland that have impacted by years of agricultural use. This work will occur on two headwater streams that drain directly to the Meherrin River.

For Official Use Only

Reviewed By:

10-1-12
Date

EEP Project Manager

Conditional Approved By:

Date

For Division Administrator FHWA

☐ **Check this box if there are outstanding issues**

Final Approval By:

10-22-12
Date

For Division Administrator FHWA

RECEIVED
SEP 28 2012
NC ECOSYSTEM ENHANCEMENT PROGRAM

Part 2: All Projects Regulation/Question	Response
Coastal Zone Management Act (CZMA)	
1. Is the project located in a CAMA county?	☐ Yes ☒ No
2. Does the project involve ground-disturbing activities within a CAMA Area of Environmental Concern (AEC)?	☐ Yes ☐ No ☒ N/A
3. Has a CAMA permit been secured?	☐ Yes ☐ No ☒ N/A
4. Has NCDCM agreed that the project is consistent with the NC Coastal Management Program?	☐ Yes ☐ No ☒ N/A
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	
1. Is this a "full-delivery" project?	☒ Yes ☐ No
2. Has the zoning/land use of the subject property and adjacent properties ever been designated as commercial or industrial?	☐ Yes ☒ No ☐ N/A
3. As a result of a limited Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area?	☐ Yes ☒ No ☐ N/A
4. As a result of a Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area?	☐ Yes ☐ No ☒ N/A
5. As a result of a Phase II Site Assessment, are there known or potential hazardous waste sites within the project area?	☐ Yes ☐ No ☒ N/A
6. Is there an approved hazardous mitigation plan?	☐ Yes ☐ No ☒ N/A
National Historic Preservation Act (Section 106)	
1. Are there properties listed on, or eligible for listing on, the National Register of Historic Places in the project area?	☐ Yes ☒ No
2. Does the project affect such properties and does the SHPO/THPO concur?	☐ Yes ☐ No ☒ N/A
3. If the effects are adverse, have they been resolved?	☐ Yes ☐ No ☒ N/A
Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act)	
1. Is this a "full-delivery" project?	☒ Yes ☐ No
2. Does the project require the acquisition of real estate?	☒ Yes ☐ No ☐ N/A
3. Was the property acquisition completed prior to the intent to use federal funds?	☐ Yes ☒ No ☐ N/A
4. Has the owner of the property been informed: * prior to making an offer that the agency does not have condemnation authority; and * what the fair market value is believed to be?	☒ Yes ☐ No ☐ N/A

Part 3: Ground-Disturbing Activities Regulation/Question	Response
American Indian Religious Freedom Act (AIRFA)	
1. Is the project located in a county claimed as "territory" by the Eastern Band of Cherokee Indians?	☐ Yes ☒ No
2. Is the site of religious importance to American Indians?	☐ Yes ☐ No ☒ N/A
3. Is the project listed on, or eligible for listing on, the National Register of Historic Places?	☐ Yes ☐ No ☒ N/A
4. Have the effects of the project on this site been considered?	☐ Yes ☐ No ☒ N/A
Antiquities Act (AA)	
1. Is the project located on Federal lands?	☐ Yes ☒ No
2. Will there be loss or destruction of historic or prehistoric ruins, monuments or objects of antiquity?	☐ Yes ☐ No ☒ N/A
3. Will a permit from the appropriate Federal agency be required?	☐ Yes ☐ No ☒ N/A
4. Has a permit been obtained?	☐ Yes ☐ No ☒ N/A
Archaeological Resources Protection Act (ARPA)	
1. Is the project located on federal or Indian lands (reservation)?	☐ Yes ☒ No
2. Will there be a loss or destruction of archaeological resources?	☐ Yes ☐ No ☒ N/A
3. Will a permit from the appropriate Federal agency be required?	☐ Yes ☐ No ☒ N/A
4. Has a permit been obtained?	☐ Yes ☐ No ☒ N/A
Endangered Species Act (ESA)	
1. Are federal Threatened and Endangered species and/or Designated Critical Habitat listed for the county?	☒ Yes ☐ No
2. Is Designated Critical Habitat or suitable habitat present for listed species?	☐ Yes ☒ No ☐ N/A
3. Are T&E species present or is the project being conducted in Designated Critical Habitat?	☐ Yes ☒ No ☐ N/A
4. Is the project "likely to adversely affect" the specie and/or "likely to adversely modify" Designated Critical Habitat?	☐ Yes ☐ No ☒ N/A
5. Does the USFWS/NOAA-Fisheries concur in the effects determination? (By virtue of no-response)	☒ Yes ☐ No ☐ N/A
6. Has the USFWS/NOAA-Fisheries rendered a "jeopardy" determination?	☐ Yes ☐ No ☒ N/A

Executive Order 13007 (Indian Sacred Sites)	
1. Is the project located on Federal lands that are within a county claimed as "territory" by the EBCI?	☐ Yes ☒ No
2. Has the EBCI indicated that Indian sacred sites may be impacted by the proposed project?	☐ Yes ☐ No ☒ N/A
3. Have accommodations been made for access to and ceremonial use of Indian sacred sites?	☐ Yes ☐ No ☒ N/A
Farmland Protection Policy Act (FPPA)	
1. Will real estate be acquired?	☒ Yes ☐ No
2. Has NRCS determined that the project contains prime, unique, statewide or local important farmland?	☒ Yes ☐ No ☐ N/A
3. Has the completed Form AD-1006 been submitted to NRCS?	☒ Yes ☐ No ☐ N/A
Fish and Wildlife Coordination Act (FWCA)	
1. Will the project impound, divert, channel deepen, or otherwise control/modify any water body?	☒ Yes ☐ No
2. Have the USFWS and the NCWRC been consulted?	☒ Yes ☐ No ☐ N/A
Land and Water Conservation Fund Act (Section 6(f))	
1. Will the project require the conversion of such property to a use other than public, outdoor recreation?	☐ Yes ☒ No
2. Has the NPS approved of the conversion?	☐ Yes ☐ No ☒ N/A
Magnuson-Stevens Fishery Conservation and Management Act (Essential Fish Habitat)	
1. Is the project located in an estuarine system?	☐ Yes ☒ No
2. Is suitable habitat present for EFH-protected species?	☐ Yes ☐ No ☒ N/A
3. Is sufficient design information available to make a determination of the effect of the project on EFH?	☐ Yes ☐ No ☒ N/A
4. Will the project adversely affect EFH?	☐ Yes ☐ No ☒ N/A
5. Has consultation with NOAA-Fisheries occurred?	☐ Yes ☐ No ☒ N/A
Migratory Bird Treaty Act (MBTA)	
1. Does the USFWS have any recommendations with the project relative to the MBTA?	☐ Yes ☒ No
2. Have the USFWS recommendations been incorporated?	☐ Yes ☐ No ☒ N/A
Wilderness Act	
1. Is the project in a Wilderness area?	☐ Yes ☒ No
2. Has a special use permit and/or easement been obtained from the maintaining federal agency?	☐ Yes ☐ No ☒ N/A

Categorical Exclusion Form for Ecosystem Enhancement Program Projects
Version 1.4

Note: Only Appendix A should to be submitted (along with any supporting documentation) as the environmental document.

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County Name:	Northampton County, NC
EEP Number:	95
Project Sponsor:	KCI Technologies, Inc.
Project Contact Name:	Tim Morris
Project Contact Address:	4601 Six Forks Rd, Suite 220, Raleigh, NC 27609
Project Contact E-mail:	tim.morris@kci.com
EEP Project Manager:	Heather Smith

Project Description

The Stanley's II wetland restoration project will restore 6.5 acres of riparian wetland that have impacted by years of agricultural use. This work will occur on two headwater streams that drain directly to the Meherrin River.

For Official Use Only

Reviewed By:

Date | **EEP Project Manager**

Conditional Approved By:

Date | **For Division Administrator FHWA**

☐ **Check this box if there are outstanding issues**

Final Approval By:

Date | **For Division Administrator FHWA**

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FEMA Floodplain Checklist

EEP Floodplain Requirements Checklist

This form was developed by the National Flood Insurance program, NC Floodplain Mapping program and Ecosystem Enhancement Program to be filled for all EEP projects. The form is intended to summarize the floodplain requirements during the design phase of the projects. The form should be submitted to the Local Floodplain Administrator with three copies submitted to NFIP (attn. State NFIP Engineer), NC Floodplain Mapping Unit (attn. State NFIP Coordinator) and NC Ecosystem Enhancement Program.

Project Location

Name of project:	Stanley's Slough Stream and Wetland Restoration Site / Stanley's II Wetland Restoration Site
Name if stream or feature:	Backwater of Meherrin River
County:	Northampton County
Name of river basin:	Chowan
Is project urban or rural?	Rural
Name of Jurisdictional municipality/county:	Northampton County
DFIRM panel number for entire site:	4080
Consultant name:	KCI Technologies, Inc.
Phone number:	919-783-9214
Address:	4601 Six Forks Rd. Raleigh, NC 27609

Design Information

Provide a general description of project (one paragraph). Include project limits on a reference orthophotograph at a scale of 1" = 500".

Summarize stream reaches or wetland areas according to their restoration priority.

Reach	Length	Priority
Tributary 1	*3,097 feet*	*Headwater Restoration*
Tributary 2	*1,221 feet*	*Headwater Restoration*
Wetland Reestablishment (Stanley's Slough)	*2.8 acres*	*Reestablishment*
Wetland Rehabilitation (Stanley's Slough)	*0.8 acre*	*Rehabilitation*
Wetland Reestablishment (Stanley's II)	*6.4 acre*	*Reestablishment*
Wetland Rehabilitation (Stanley's II)	*1.1 acre*	*Rehabilitation*

Floodplain Information

Is project located in a Special Flood Hazard Area (SFHA)?

(•) Yes ( ) No

If project is located in a SFHA, check how it was determined:

- [ ] Redelineation
- [ ] Detailed Study
- [x] Limited Detail Study
- [ ] Approximate Study
- [ ] Don't know

List flood zone designation:

Check if applies:

- [x] AE Zone
  - ( ) Floodway
  - ( ) Non-Encroachment
  - (•) None
- [ ] A Zone
  - ( ) Local Setbacks Required
  - ( ) No Local Setbacks Required

If local setbacks are required, list how many feet:

Does proposed channel boundary encroach outside floodway/non-encroachment/setbacks?

○ Yes ◉ No

Land Acquisition (Check)

☐ State owned (fee simple)

☐ Conservation easment (Design Bid Build)

☑ Conservation Easement (Full Delivery Project)

Note: if the project property is state-owned, then all requirements should be addressed to the Department of Administration, State Construction Office (attn: Herbert Neily, (919) 807-4101)

Is community/county participating in the NFIP program?

◉ Yes ○ No

Note: if community is not participating, then all requirements should be addressed to NFIP (attn: State NFIP Engineer, (919) 715-8000)

Name of Local Floodplain Administrator: William Flynn
Phone Number: (252) 534-1905

Floodplain Requirements

This section to be filled by designer/applicant following verification with the LFPA

☑ No Action

☐ No Rise

☐ Letter of Map Revision

☐ Conditional Letter of Map Revision

☐ Other Requirements

List other requirements:

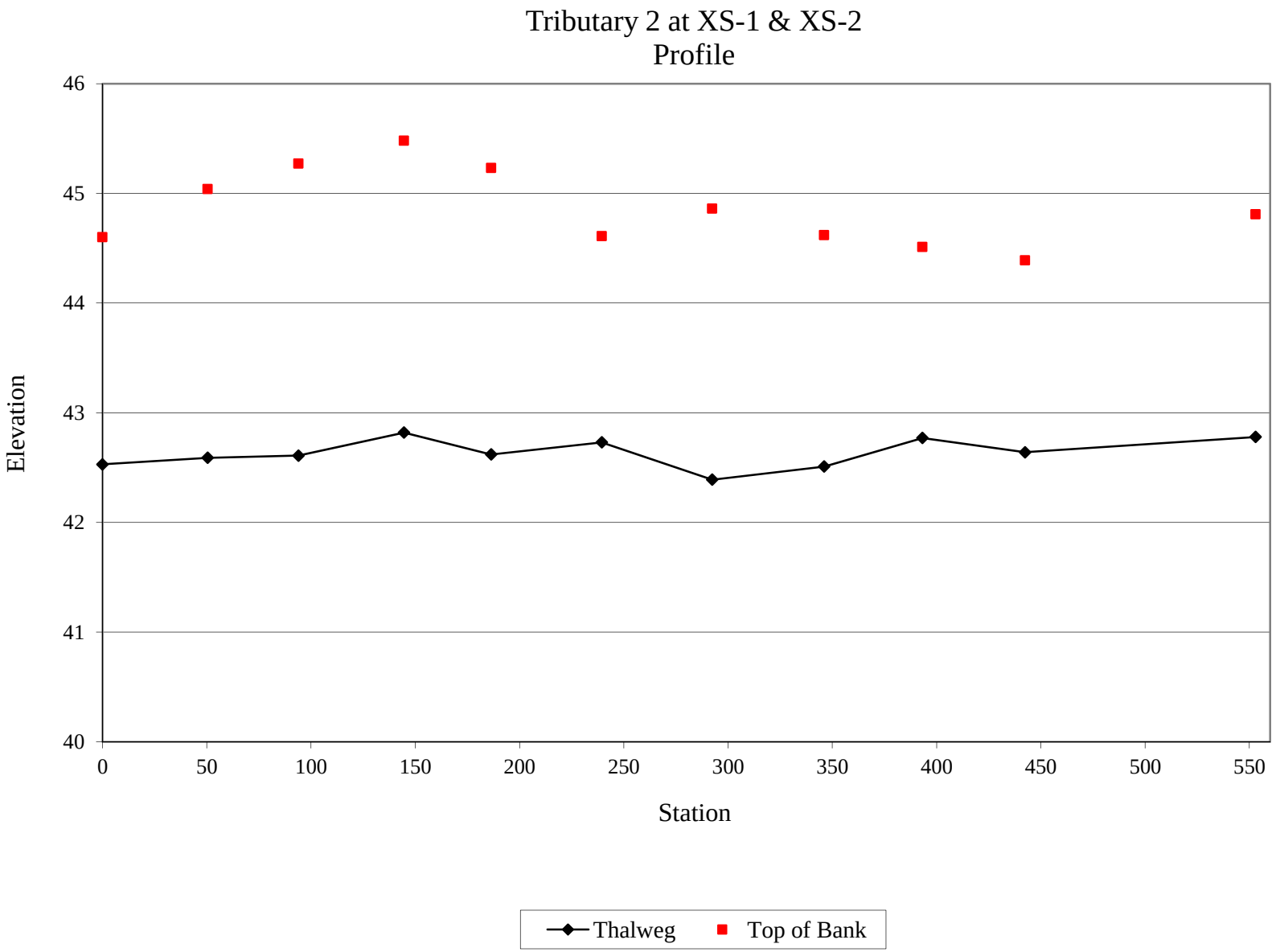
Comments:

Name: William E. Flynn, Jr. Signature: William E. Flynn Jr.

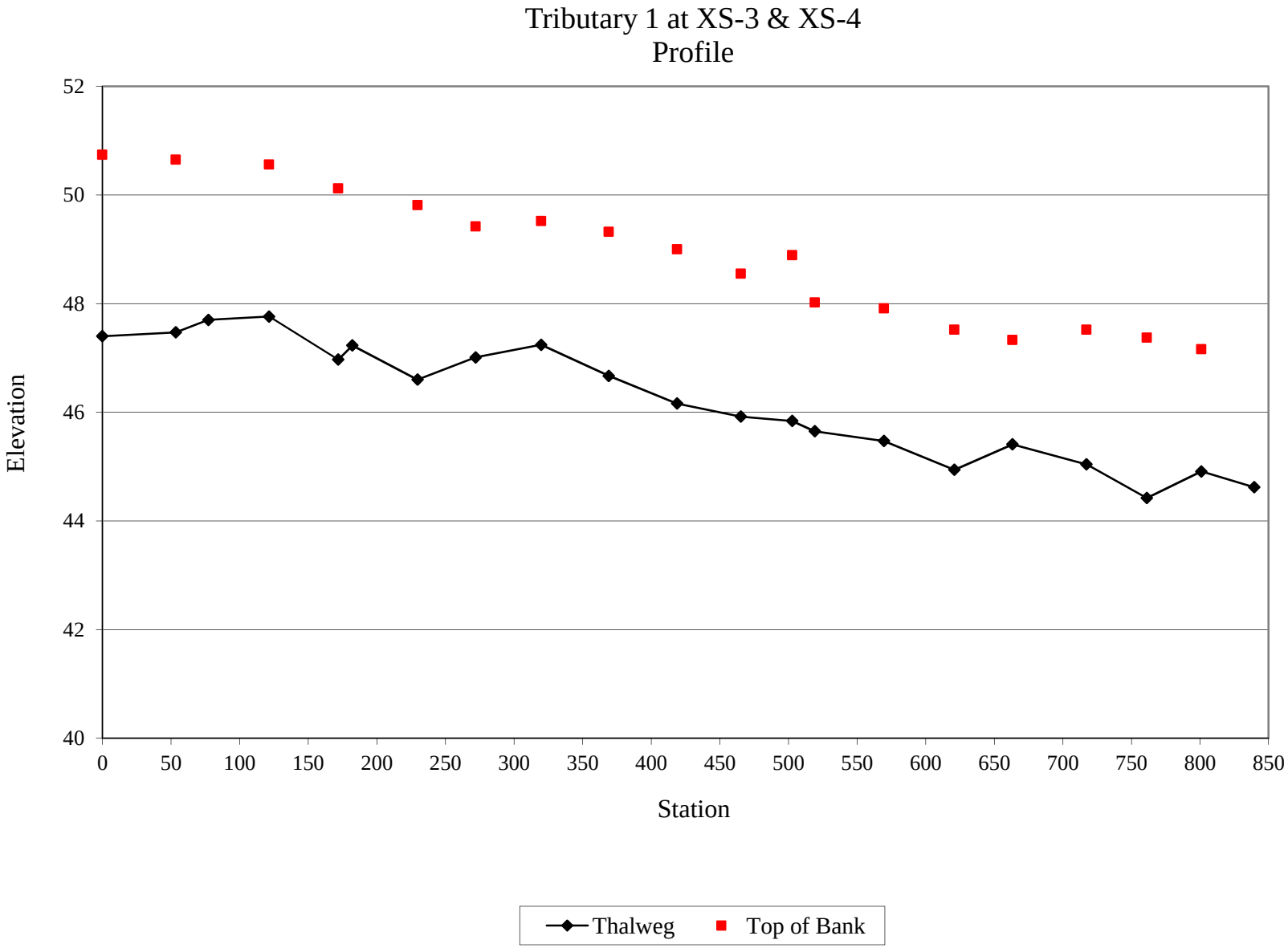
Title: Planning & Zoning Director Date: 7-17-13

14.5 Appendix C. Mitigation Work Plan Data and Analyses

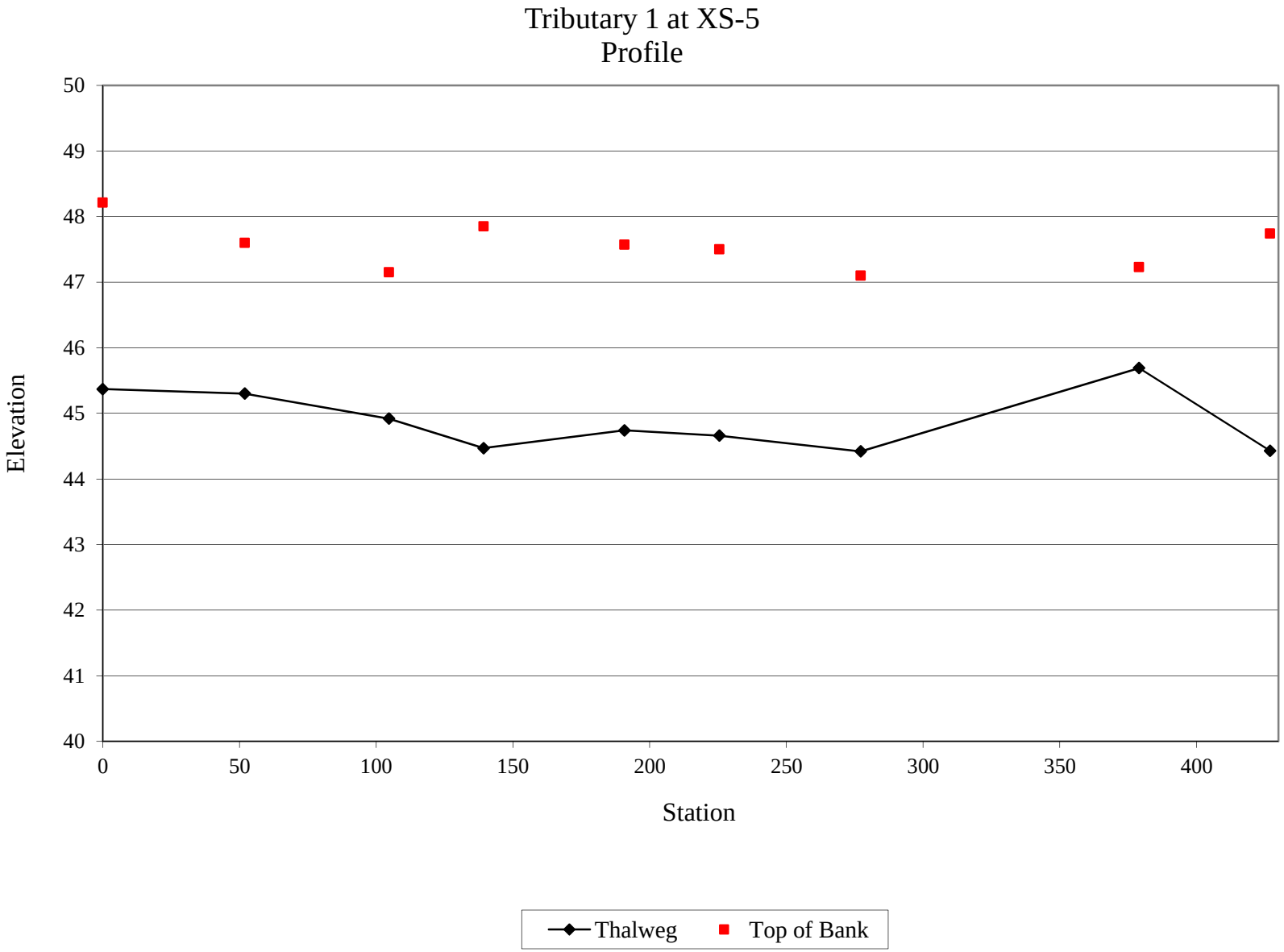
Channel Morphology (Rosgen Analysis)



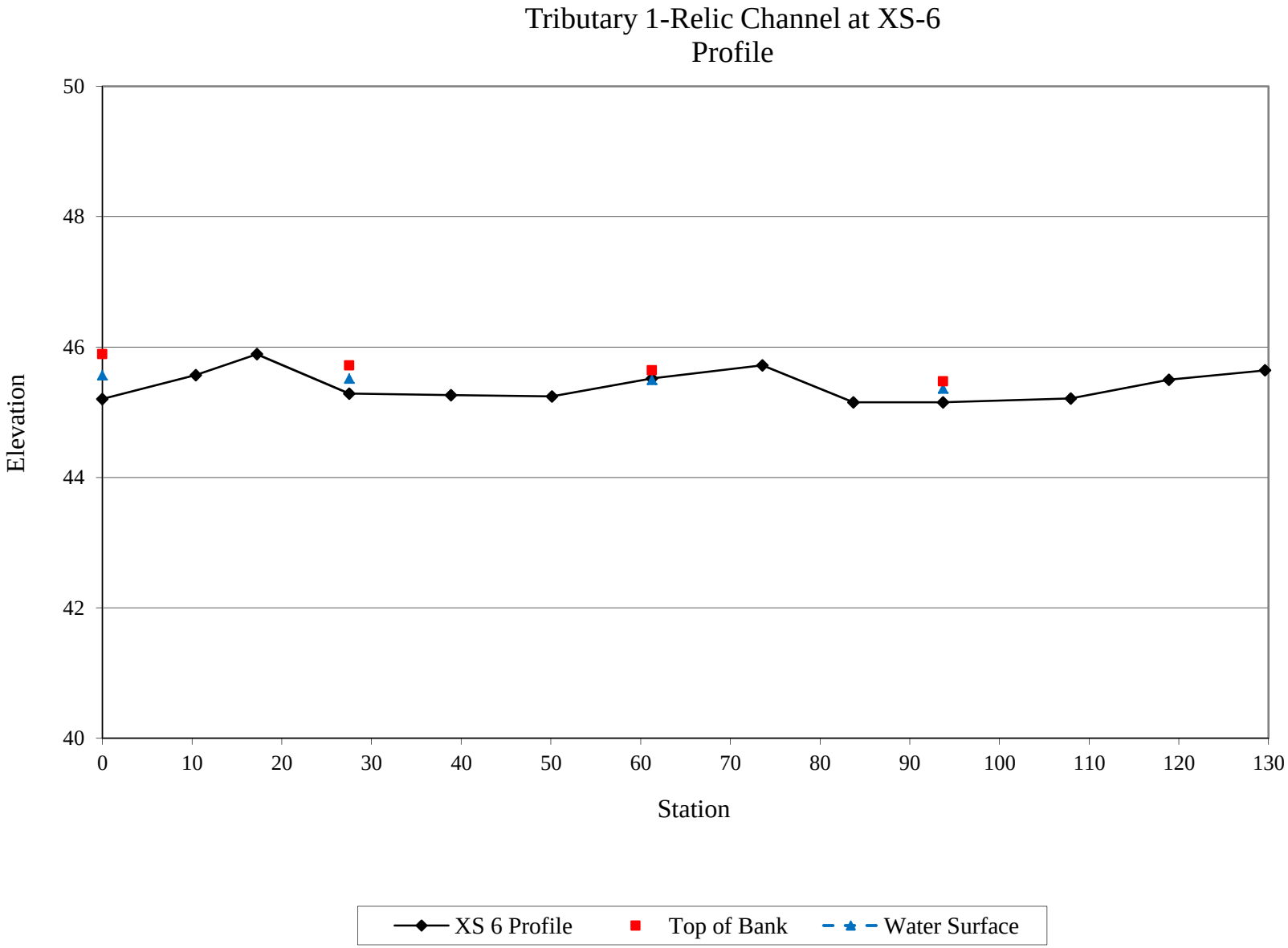
Water surface was not surveyed

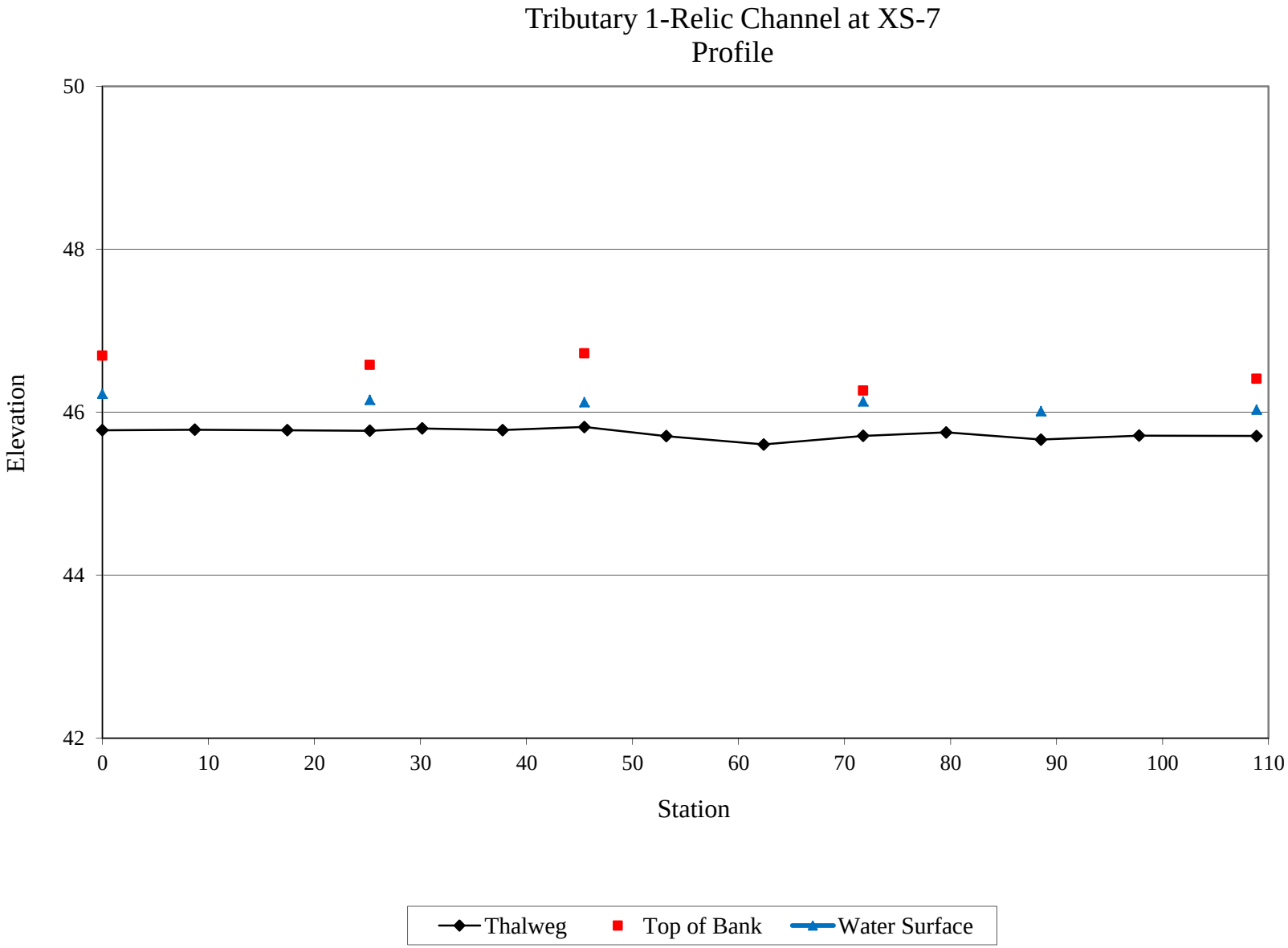


Water surface was not surveyed



Water surface was not surveyed


Tributary 1-Relic Channel at XS-6
Profile
Elevation
50
48
46
44
42
40
0
10
20
30
40
50
60
70
80
90
100
110
120
130
Station
XS 6 Profile
Top of Bank
Water Surface

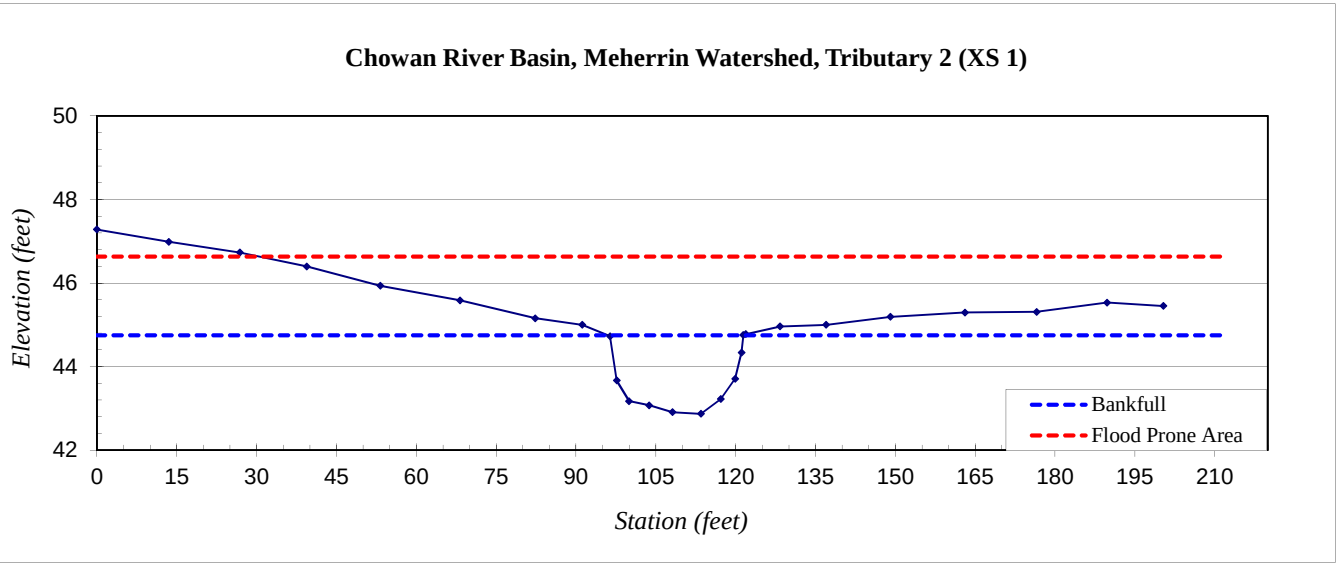

Tributary 1-Relic Channel at XS-7
Profile
Elevation
50
48
46
44
42
0
10
20
30
40
50
60
70
80
90
100
110
Station
Thalweg
Top of Bank
Water Surface

Stanley's Slough Stream and Wetland Restoration Site
Existing Conditions

River Basin:	Chowan
Watershed:	Meherrin Watershed
XS ID	Tributary 2 (XS 1)
Drainage Area (sq mi):	0.045 (29 acres)
Date:	February 2013
Field Crew:	French, Helms

Station	Elevation
0.0	47.28
13.5	46.99
26.9	46.73
39.4	46.40
53.2	45.93
68.2	45.58
82.4	45.15
91.2	45.00
96.4	44.73
97.6	43.66
100.0	43.17
103.7	43.07
108.1	42.91
113.5	42.87
117.2	43.22
119.9	43.71
121.1	44.34
121.4	44.75
121.9	44.78
128.3	44.96
137.0	45.00
149.1	45.19
163.1	45.30
176.5	45.31
189.8	45.53
200.3	45.45
212.5	45.58

SUMMARY DATA	
Bankfull Elevation:	44.8
Bankfull Cross-Sectional Area:	38.4
Bankfull Width:	25.5
Flood Prone Area Elevation:	46.6
Flood Prone Width:	>180
Max Depth at Bankfull:	1.9
Mean Depth at Bankfull:	1.5
W / D Ratio:	16.9
Entrenchment Ratio:	7.1
Bank Height Ratio:	1.0

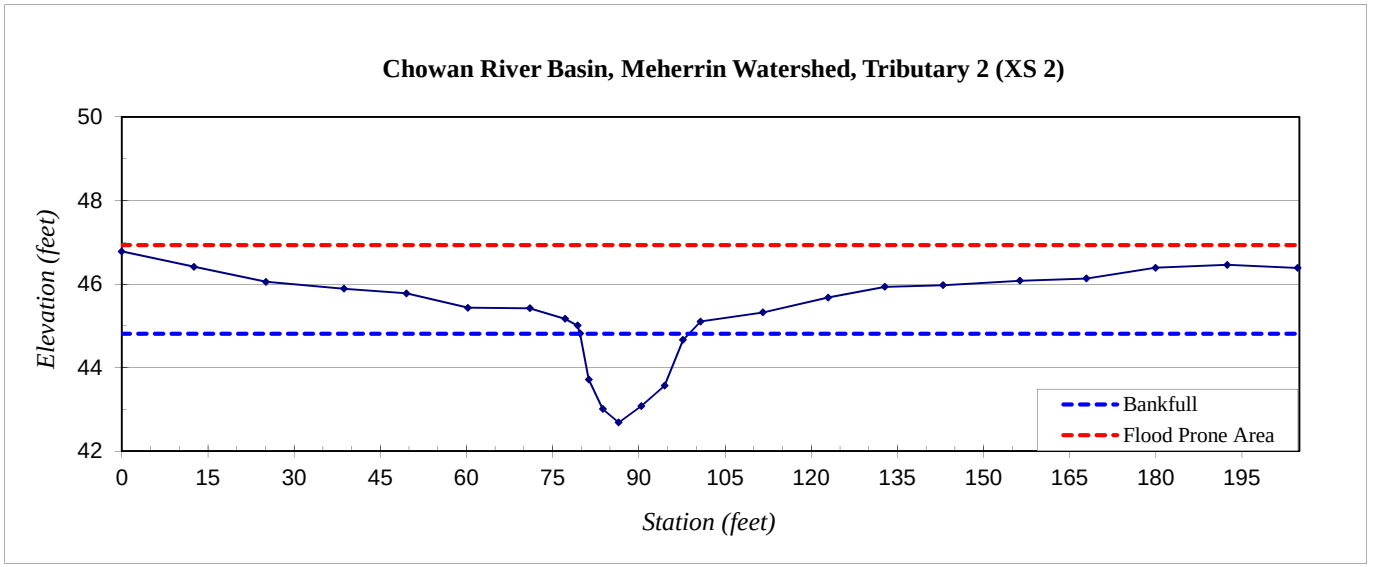


Stanley's Slough Stream and Wetland Restoration Site
Existing Conditions

River Basin:	Chowan
Watershed:	Meherrin Watershed
XS ID	Tributary 2 (XS 2)
Drainage Area (sq mi):	0.045 (29 acres)
Date:	February 2013
Field Crew:	French, Helms

Station	Elevation
0.0	46.78
12.6	46.41
25.1	46.05
38.7	45.89
49.5	45.78
60.3	45.43
71.0	45.42
77.2	45.17
79.3	45.00
79.8	44.81
81.3	43.71
83.7	43.01
86.5	42.69
90.4	43.08
94.5	43.57
97.7	44.66
100.8	45.10
111.6	45.32
123.0	45.68
132.8	45.93
143.0	45.97
156.3	46.08
167.9	46.13
180.0	46.39
192.4	46.46
204.7	46.38

SUMMARY DATA	
Bankfull Elevation:	44.8
Bankfull Cross-Sectional Area:	25.7
Bankfull Width:	18.9
Flood Prone Area Elevation:	46.9
Flood Prone Width:	>200
Max Depth at Bankfull:	2.1
Mean Depth at Bankfull:	1.4
W / D Ratio:	13.9
Entrenchment Ratio:	10.6
Bank Height Ratio:	1.1



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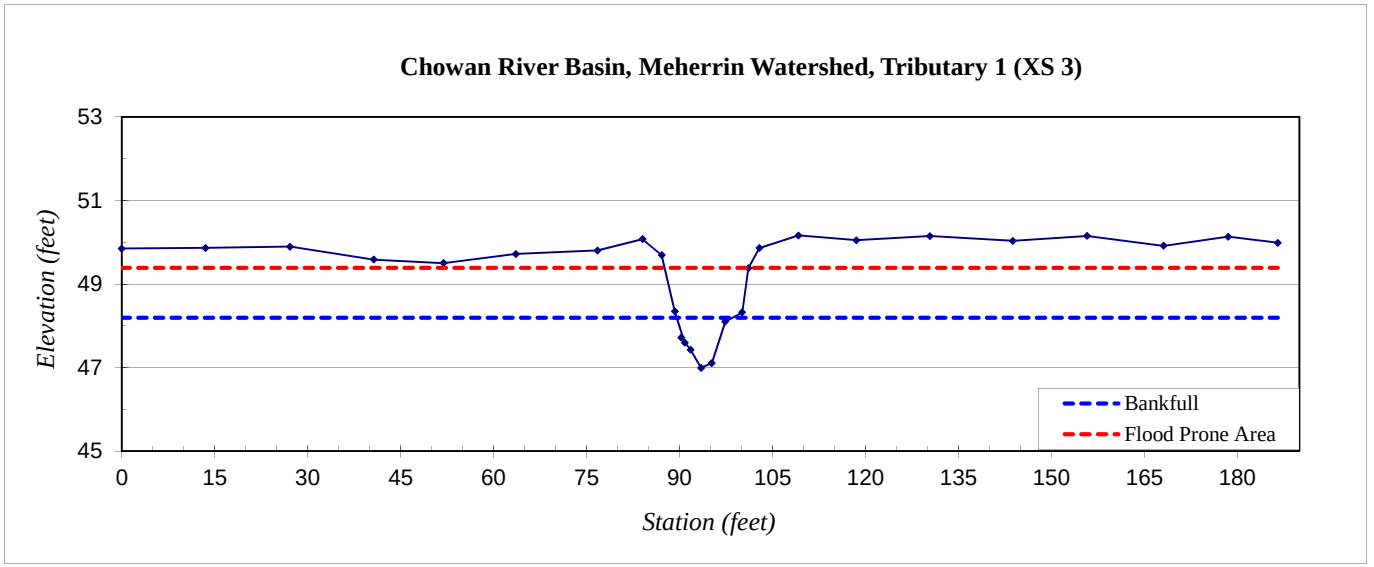
Existing Conditions

River Basin:	Chowan
Watershed:	Meherrin Watershed
XS ID	Tributary 1 (XS 3)
Drainage Area (sq mi):	0.131 (84 acres)
Date:	February 2013
Field Crew:	French, Helms

Station	Elevation
0.0	49.85
13.5	49.86
27.1	49.89
40.7	49.58
51.9	49.50
63.6	49.72
76.8	49.80
84.0	50.07
87.1	49.69
89.2	48.34
90.8	47.59
90.2	47.72
91.8	47.43
93.4	46.99
95.2	47.11
97.4	48.10
100.1	48.32
101.1	49.38
102.9	49.86
109.2	50.16
118.5	50.05
130.4	50.15
143.8	50.03
155.7	50.15
168.1	49.91
178.5	50.13
186.5	49.99

SUMMARY DATA	
Bankfull Elevation:	48.2
Bankfull Cross-Sectional Area:	6.0
Bankfull Width:	8.9
Flood Prone Area Elevation:	49.4
Flood Prone Width:	14.0
Max Depth at Bankfull:	1.2
Mean Depth at Bankfull:	0.7
W / D Ratio:	13.2
Entrenchment Ratio:	1.6
Bank Height Ratio:	2.4

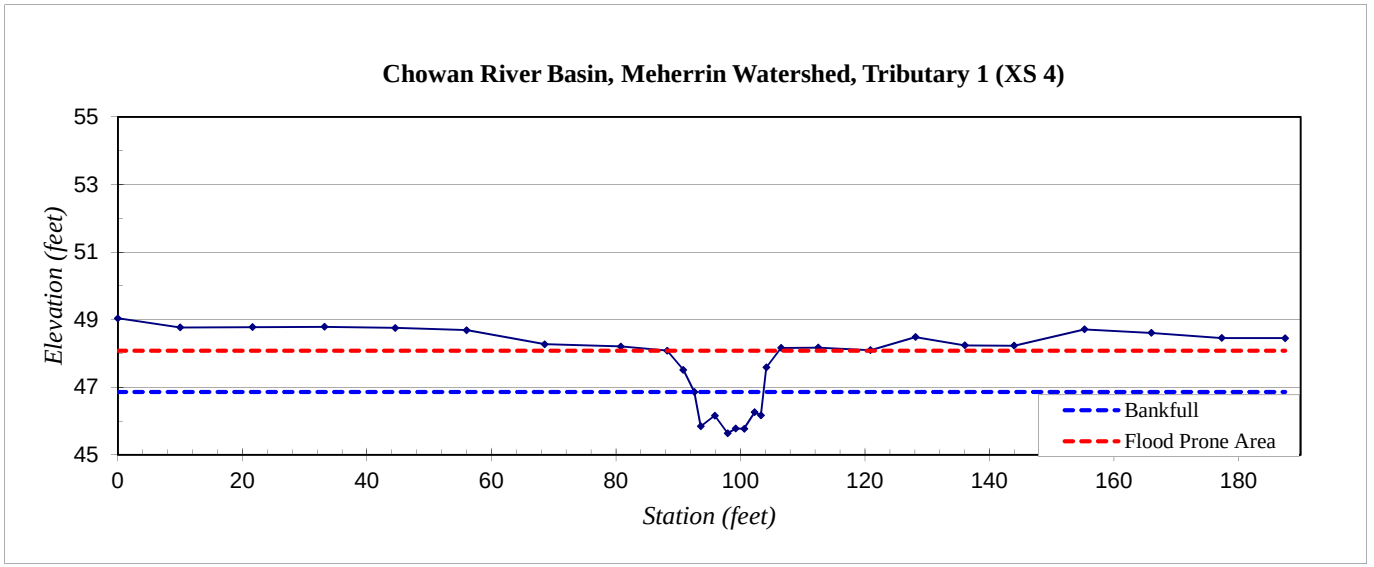


Stanley's Slough Stream and Wetland Restoration Site
Existing Conditions

River Basin:	Chowan
Watershed:	Meherrin Watershed
XS ID	Tributary 1 (XS 4)
Drainage Area (sq mi):	0.131 (84 acres)
Date:	February 2013
Field Crew:	French, Helms

Station	Elevation
0.0	49.04
10.0	48.77
21.6	48.78
33.2	48.79
44.6	48.75
56.0	48.69
68.6	48.27
80.8	48.20
88.2	48.08
90.8	47.51
92.6	46.86
93.6	45.84
95.9	46.16
97.9	45.64
99.2	45.77
100.6	45.77
102.3	46.26
103.3	46.16
104.2	47.58
106.5	48.16
112.5	48.17
120.9	48.09
128.1	48.49
136.1	48.24
144.0	48.23
155.2	48.71
166.0	48.61
177.3	48.46
187.5	48.45

SUMMARY DATA	
Bankfull Elevation:	46.9
Bankfull Cross-Sectional Area:	9.7
Bankfull Width:	11.1
Flood Prone Area Elevation:	48.1
Flood Prone Width:	18.0
Max Depth at Bankfull:	1.2
Mean Depth at Bankfull:	0.9
W / D Ratio:	12.7
Entrenchment Ratio:	1.6
Bank Height Ratio:	2.0

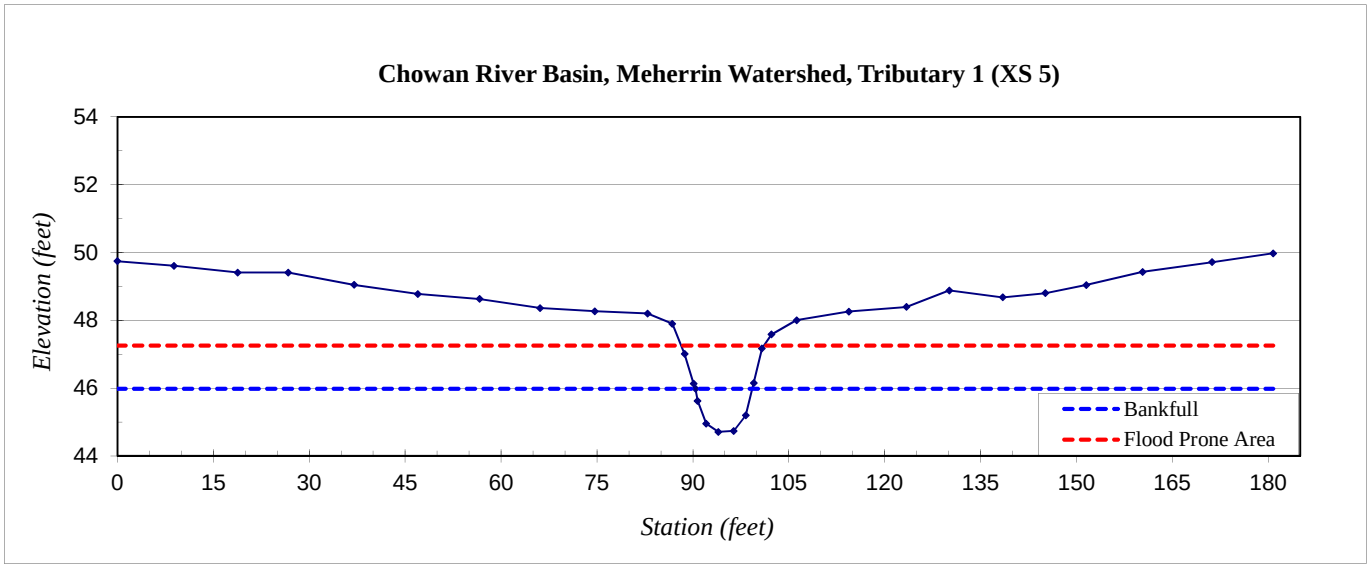


Stanley's Slough Stream and Wetland Restoration Site
Existing Conditions

River Basin:	Chowan
Watershed:	Meherrin Watershed
XS ID	Tributary 1 (XS 5)
Drainage Area (sq mi):	0.131 (84 acres)
Date:	February 2013
Field Crew:	French, Helms

Station	Elevation
0.0	49.74
8.9	49.61
18.8	49.41
26.7	49.41
37.0	49.04
47.0	48.78
56.6	48.63
66.1	48.36
74.7	48.27
82.9	48.20
86.8	47.90
88.7	47.01
90.1	46.13
90.4	45.98
90.7	45.62
92.1	44.95
94.0	44.71
96.4	44.74
98.3	45.19
99.5	46.15
100.8	47.17
102.3	47.58
106.2	48.00
114.4	48.26
123.4	48.40
130.1	48.88
138.5	48.68
145.1	48.80
151.5	49.04
160.3	49.43
171.2	49.72
180.7	49.97

SUMMARY DATA	
Bankfull Elevation:	46.0
Bankfull Cross-Sectional Area:	8.5
Bankfull Width:	8.9
Flood Prone Area Elevation:	47.3
Flood Prone Width:	12.0
Max Depth at Bankfull:	1.3
Mean Depth at Bankfull:	1.0
W / D Ratio:	9.3
Entrenchment Ratio:	1.3
Bank Height Ratio:	2.5

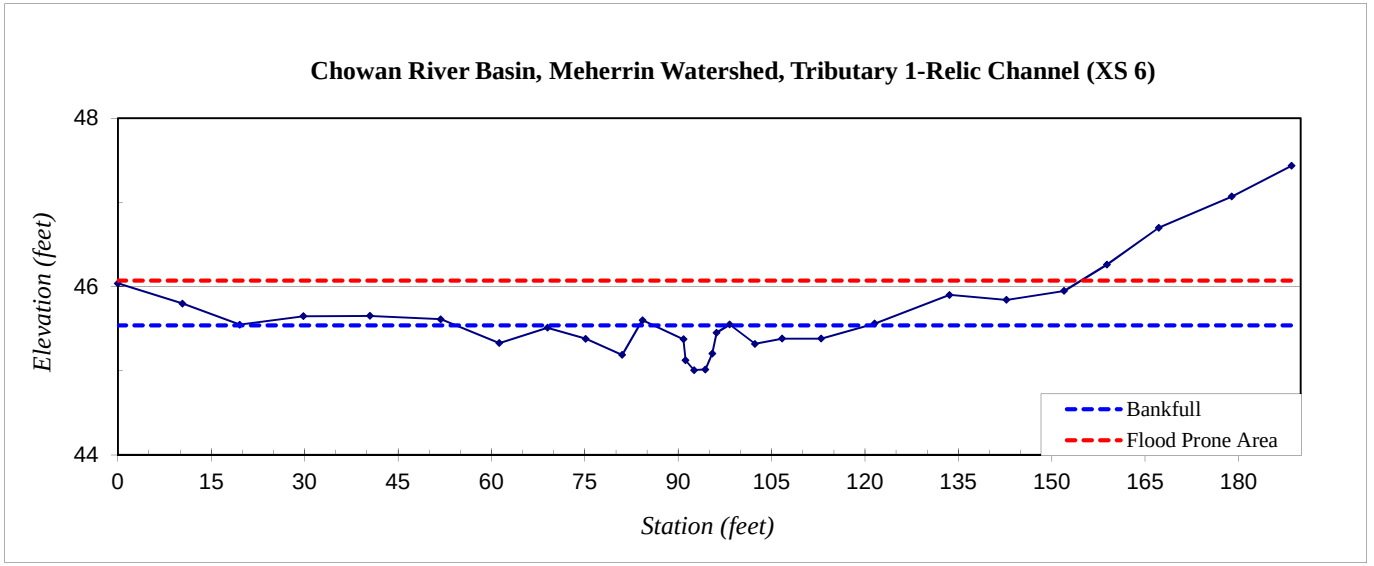


Stanley's Slough Stream and Wetland Restoration Site
Existing Conditions

River Basin:	Chowan
Watershed:	Meherrin Watershed
XS ID	Tributary 1-Relic Channel (XS 6)
Drainage Area (sq mi):	0.131 (84 acres)
Date:	February 2013
Field Crew:	French, Helms

Station	Elevation
0.0	46.04
10.4	45.80
19.6	45.55
29.8	45.65
40.5	45.65
51.9	45.61
61.3	45.33
69.0	45.51
75.1	45.38
81.0	45.19
84.3	45.60
90.8	45.37
91.2	45.12
92.5	45.01
94.4	45.02
95.5	45.20
96.2	45.45
98.3	45.55
102.3	45.32
106.7	45.38
113.0	45.38
121.6	45.56
133.6	45.90
142.7	45.84
152.0	45.95
158.8	46.26
167.2	46.70
178.9	47.07
188.5	47.44

SUMMARY DATA	
Bankfull Elevation:	45.5
Bankfull Cross-Sectional Area:	4.1
Bankfull Width:	20.3
Flood Prone Area Elevation:	46.1
Flood Prone Width:	150.0
Max Depth at Bankfull:	0.5
Mean Depth at Bankfull:	0.2
W / D Ratio:	7.4
Entrenchment Ratio:	7.4
Bank Height Ratio:	1.0

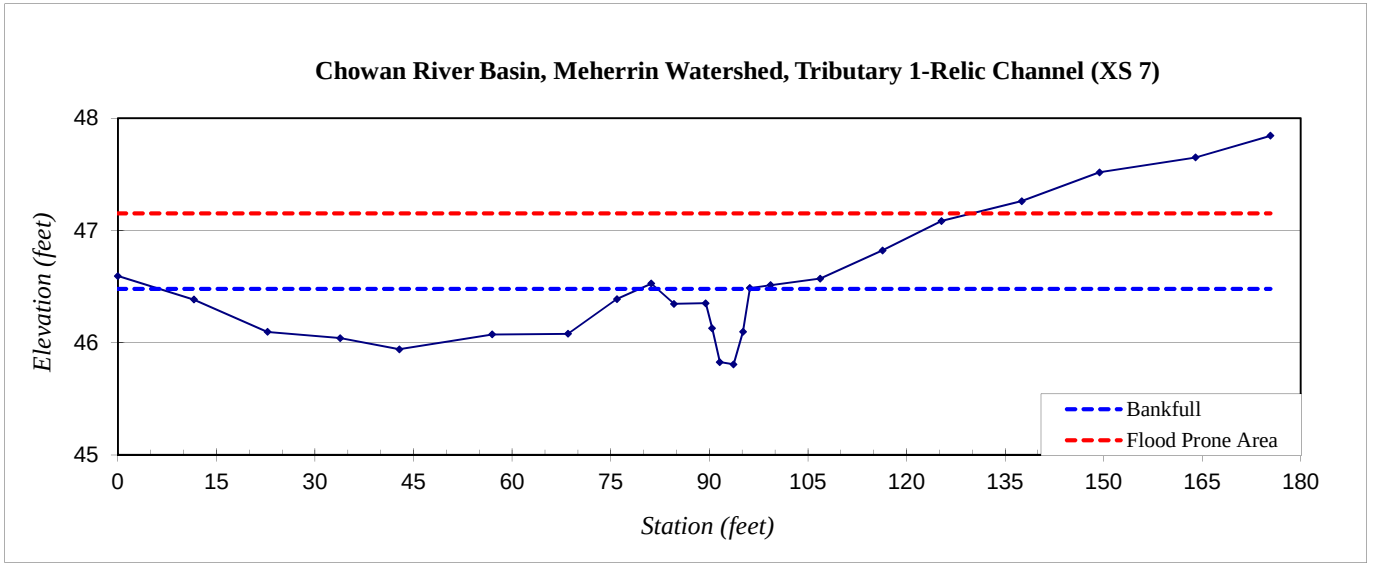


Stanley's Slough Stream and Wetland Restoration Site
Existing Conditions

River Basin:	Chowan
Watershed:	Meherrin Watershed
XS ID	Tributary 1-Relic Channel (XS 7)
Drainage Area (sq mi):	0.131 (84 acres)
Date:	February 2013
Field Crew:	French, Helms

Station	Elevation
0.0	46.59
11.6	46.38
22.8	46.10
33.8	46.04
42.8	45.94
57.0	46.07
68.5	46.08
75.9	46.39
81.2	46.53
84.6	46.35
89.4	46.35
90.4	46.13
91.6	45.83
93.7	45.81
95.1	46.10
96.2	46.49
99.3	46.51
106.9	46.57
116.4	46.82
125.3	47.08
137.5	47.26
149.4	47.52
164.0	47.65
175.4	47.84

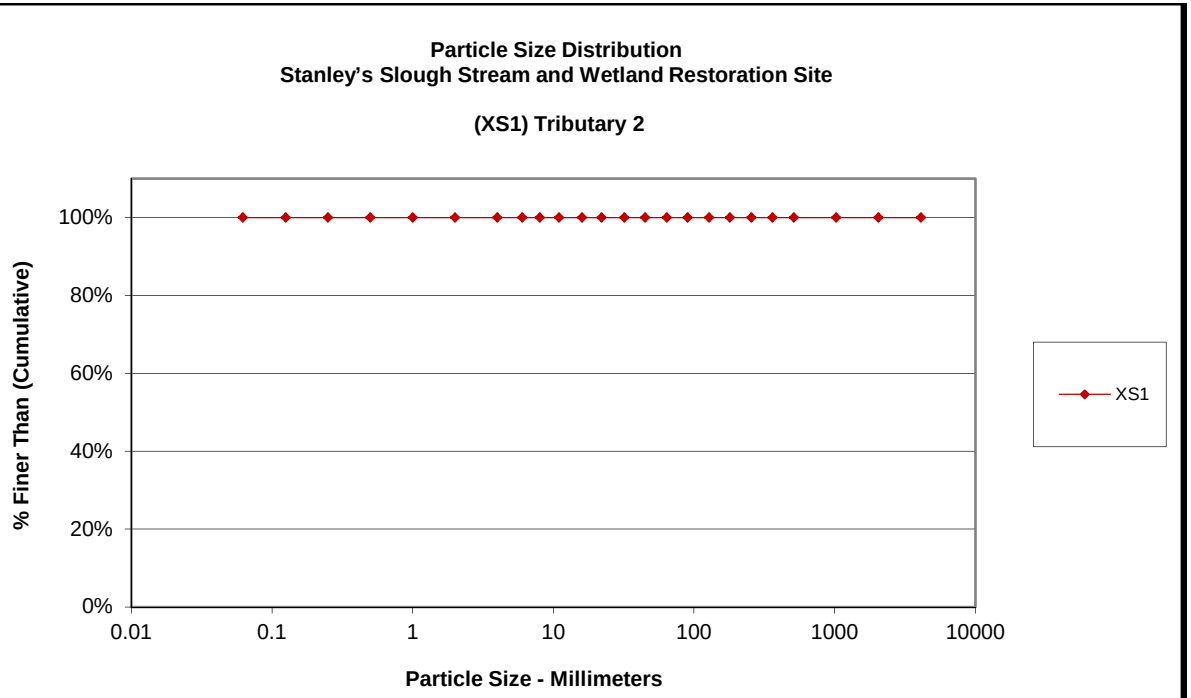
SUMMARY DATA	
Bankfull Elevation:	46.5
Bankfull Cross-Sectional Area:	4.0
Bankfull Width:	14.1
Flood Prone Area Elevation:	47.2
Flood Prone Width:	>135
Max Depth at Bankfull:	0.7
Mean Depth at Bankfull:	0.3
W / D Ratio:	9.6
Entrenchment Ratio:	9.6
Bank Height Ratio:	1.0



Pebble Count Plots

Cross-Section 1			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	100
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	
Coarse	22.6 - 32	L	
Very Coarse	32 - 45	S	
Very Coarse	45 - 64		
Small	64 - 90	C	
Small	90 - 128	O	
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



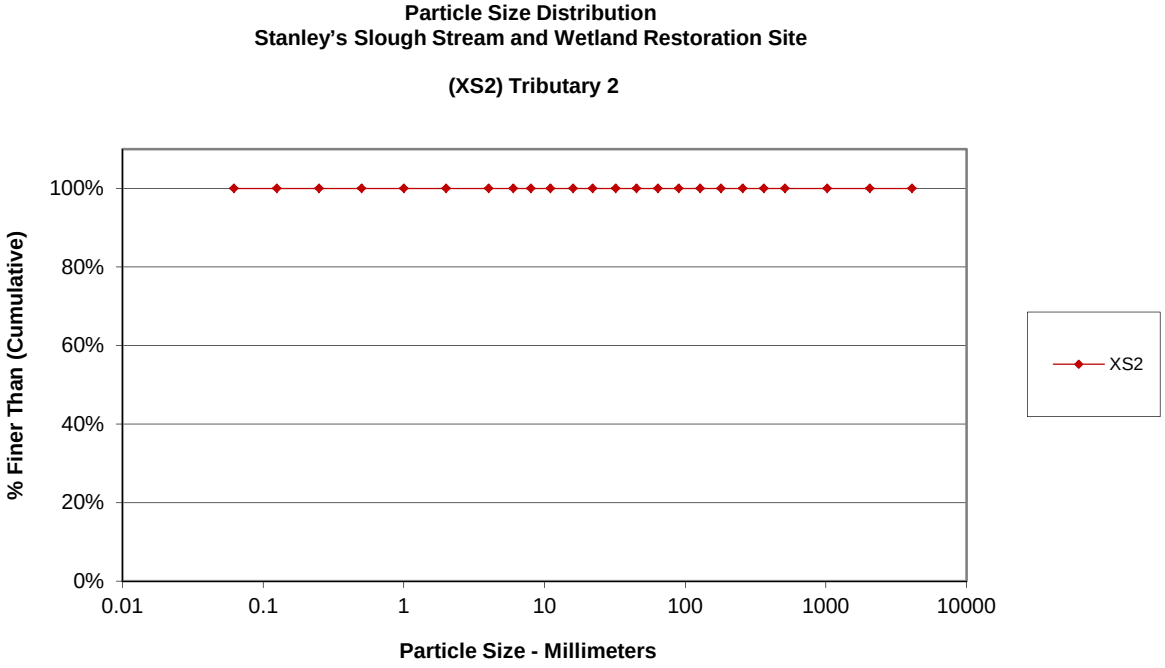
Size (mm)	
D16	0.62
D35	0.62
D50	0.62
D65	0.62
D84	0.62
D95	0.62

Size Distribution	
mean	0.1
dispersion	1.0
skewness	-

Type	
silt/clay	100%
sand	0%
gravel	0%
cobble	0%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 2			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	100
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	
Coarse	22.6 - 32	L	
Very Coarse	32 - 45	S	
Very Coarse	45 - 64		
Small	64 - 90	C	
Small	90 - 128	O	
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



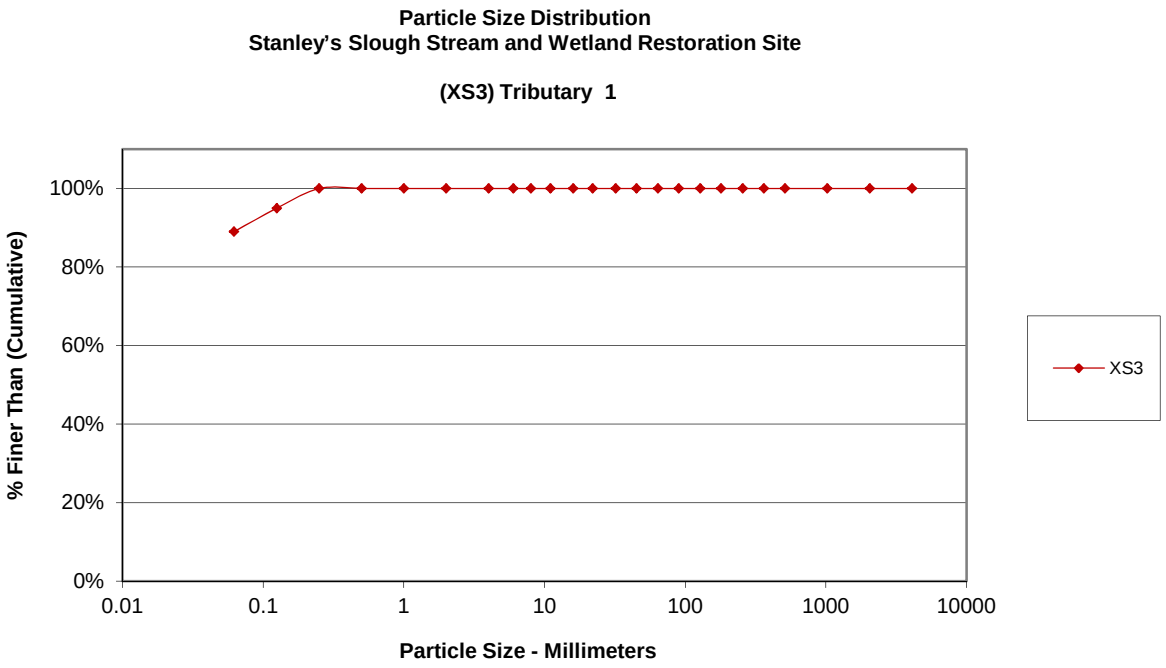
Size (mm)	
D16	0.62
D35	0.62
D50	0.62
D65	0.62
D84	0.62
D95	0.62

Size Distribution	
mean	0.1
dispersion	1.0
skewness	-

Type	
silt/clay	100%
sand	0%
gravel	0%
cobble	0%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 3			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	96
Very Fine	.062 - .125	S	4
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	
Coarse	22.6 - 32	L	
Very Coarse	32 - 45	S	
Very Coarse	45 - 64		
Small	64 - 90	C	
Small	90 - 128	O	
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



Size (mm)	
D16	0.62
D35	0.62
D50	0.62
D65	0.62
D84	0.62
D95	0.62

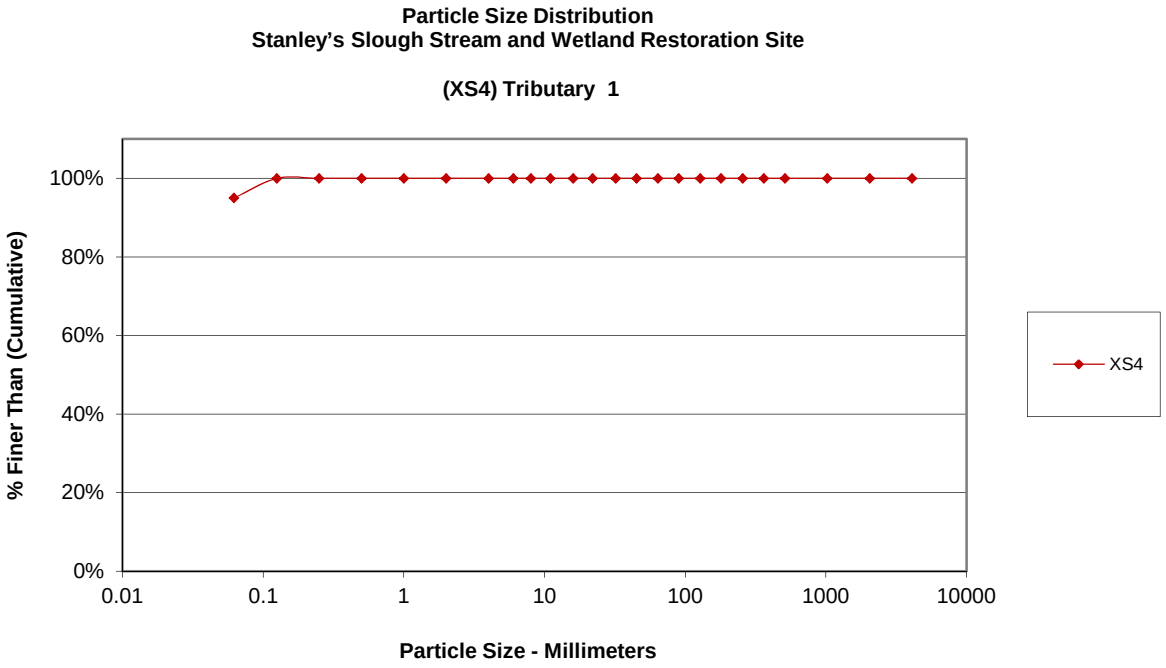
Size Distribution	
mean	0.1
dispersion	1.0
skewness	-

Type	
silt/clay	96%
sand	4%
gravel	0%
cobble	0%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 4

Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	95
Very Fine	.062 - .125	S	5
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	
Coarse	22.6 - 32	L	
Very Coarse	32 - 45	S	
Very Coarse	45 - 64		
Small	64 - 90	C	
Small	90 - 128	O	
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



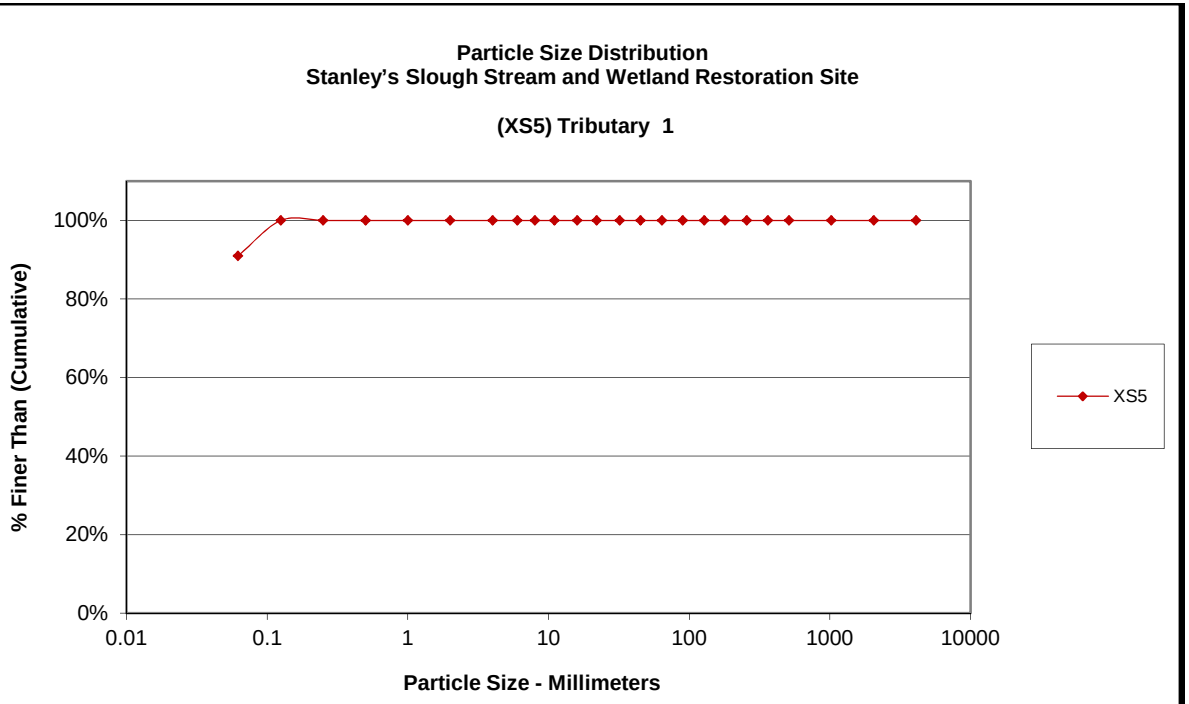
Size (mm)	
D16	0.62
D35	0.62
D50	0.62
D65	0.62
D84	0.62
D95	0.62

Size Distribution	
mean	0.1
dispersion	1.0
skewness	-

Type	
silt/clay	95%
sand	5%
gravel	0%
cobble	0%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 5			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	91
Very Fine	.062 - .125	S	9
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	
Coarse	22.6 - 32	L	
Very Coarse	32 - 45	S	
Very Coarse	45 - 64		
Small	64 - 90	C	
Small	90 - 128	O	
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



Size (mm)	
D16	0.062
D35	0.062
D50	0.062
D65	0.062
D84	0.062
D95	0.085

Size Distribution	
mean	0.1
dispersion	1.0
skewness	-

Type	
silt/clay	91%
sand	9%
gravel	0%
cobble	0%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross Section Photographs

Cross Section 1 – T2
2/25/2013

Cross Section 2 – T2
2/25/2013

Cross Section 3 – T1
2/25/2013

Cross Section 4 – T1
2/25/2013

Cross Section 5 – T1
2/25/2013

Cross Section 6 – Relic Channel
2/25/2013

Cross Section Photographs

Cross Section 7 – Relic Channel
2/25/2013

T2 looking upstream
2/22/2013

T1 from road looking downstream
2/22/2013

T1 floodplain
2/22/2013

DRAINMOD Model Results

SII_Tomotley Existing.WET

```
-----------------------------------------------------
*              DRAINMOD version 6.1                 *
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```

Pre-existing Conditions Stanley's II Wetland Site - Tomotley

Jackson, NC 314456 Station

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```
  ----------RUN STATISTICS ----------          time:  4/29/2013  @ 13:56
 input file:   C:\DrainMod\inputs\Stanleys_Slough_Tomotley_v2.p
 parameters:    free drainage              and yields not calculated
               drain spacing =    6100. cm   drain depth =   30.5 cm
-----------------------------------------------------------------------
```

DRAINMOD --- WET PERIOD EVALUATION
****** Version 6.1 ******

Number of periods with water table closer than 30.00 cm
for at least 23 days. Counting starts on day
70 and ends on day 324 of each year

YEAR	Number of Periods of 23 days or more with WTD < 30.00 cm	Longest Consecutive Period in Days
1953	0.	6.
1954	0.	10.
1955	0.	5.
1956	0.	19.
1957	0.	9.
1958	0.	19.
1959	0.	10.
1960	0.	16.
1961	0.	8.
1962	0.	7.
1963	0.	10.
1964	0.	6.
1965	0.	13.
1966	0.	8.
1967	0.	9.
1968	0.	7.
1969	0.	5.
1970	0.	9.
1971	0.	7.
1972	0.	6.
1973	0.	5.
1974	0.	8.
1975	0.	11.
1976	0.	17.
1977	0.	5.
1978	0.	8.
1979	0.	7.
1980	0.	16.
1981	0.	11.

SII_Tomotley Existing.WET

1982	0.	7.
1983	0.	7.
1984	0.	7.
1985	0.	5.
1986	0.	4.
1987	0.	11.
1988	0.	10.
1989	0.	13.
1990	0.	7.
1991	0.	9.
1992	0.	10.
1993	0.	9.
1994	0.	8.
1995	0.	9.
1996	0.	7.
1997	0.	11.
1998	0.	8.
1999	0.	9.
2000	0.	9.
2001	0.	8.
2002	0.	13.
2003	0.	8.
2004	0.	8.
2005	0.	14.
2006	0.	9.
2007	0.	7.
2008	0.	7.
2009	0.	10.
2010	0.	7.
2011	0.	12.
2012	0.	13.

Number of Years with at least one period = 0. out of 60 years.

SII_Tomotley Proposed.WET

```
-------------------------------------------------
*              DRAINMOD version 6.1               *
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-------------------------------------------------
```

Proposed Conditions Stanley's II Wetland Site - Tomotley
Jackson, NC 314456 Station

****

----------RUN STATISTICS ---------- time: 4/29/2013 @ 13:58
input file: C:\DrainMod\inputs\Stanleys_Slough_Tomotley_v2.p
parameters: free drainage and yields not calculated
drain spacing = 6100. cm drain depth = 12.3 cm

DRAINMOD --- WET PERIOD EVALUATION
****** Version 6.1 ******

Number of periods with water table closer than 30.00 cm
for at least 23 days. Counting starts on day
70 and ends on day 324 of each year

YEAR	Number of Periods of 23 days or more with WTD < 30.00 cm	Longest Consecutive Period in Days
1953	0.	15.
1954	0.	20.
1955	0.	20.
1956	3.	34.
1957	1.	23.
1958	1.	40.
1959	1.	52.
1960	2.	34.
1961	1.	44.
1962	1.	43.
1963	0.	17.
1964	2.	33.
1965	1.	30.
1966	1.	24.
1967	0.	16.
1968	0.	17.
1969	0.	22.
1970	2.	40.
1971	1.	46.
1972	1.	26.
1973	0.	21.
1974	1.	34.
1975	1.	43.
1976	1.	31.
1977	1.	38.
1978	1.	25.
1979	1.	37.
1980	2.	30.
1981	0.	21.
1982	1.	27.

Stanleys_II_Tomotley Proposed.WET

1983	1.	44.
1984	1.	51.
1985	0.	16.
1986	0.	22.
1987	0.	18.
1988	1.	29.
1989	3.	44.
1990	0.	22.
1991	0.	17.
1992	1.	32.
1993	1.	51.
1994	1.	31.
1995	0.	15.
1996	2.	40.
1997	0.	20.
1998	0.	19.
1999	3.	33.
2000	0.	19.
2001	1.	30.
2002	2.	40.
2003	2.	24.
2004	2.	36.
2005	1.	40.
2006	1.	45.
2007	1.	27.
2008	0.	16.
2009	2.	75.
2010	1.	26.
2011	2.	33.
2012	2.	43.

Number of Years with at least one period = 41. out of 60 years.

SII_Roanoke Existing.WET

```
-----------------------------------------------------
*              DRAINMOD version 6.1                 *
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-----------------------------------------------------
```

Pre-existing Conditions Stanley's II Wetland Site – Roanoke
Jackson, NC 314456 Station

****

```
 ----------RUN STATISTICS ----------          time:  4/29/2013  @ 14: 3
input file:   C:\DrainMod\inputs\Stanleys_Slough_Roanoke_v2.pr
parameters:    free drainage              and yields not calculated
              drain spacing =    3700. cm   drain depth =   46.0 cm
```

DRAINMOD --- WET PERIOD EVALUATION
****** Version 6.1 ******

Number of periods with water table closer than 30.00 cm
for at least 23 days. Counting starts on day
70 and ends on day 324 of each year

YEAR	Number of Periods of 23 days or more with WTD < 30.00 cm	Longest Consecutive Period in Days
1953	0.	8.
1954	0.	11.
1955	0.	5.
1956	0.	20.
1957	0.	9.
1958	1.	23.
1959	0.	11.
1960	0.	17.
1961	0.	9.
1962	0.	11.
1963	0.	12.
1964	0.	7.
1965	0.	13.
1966	0.	9.
1967	0.	10.
1968	0.	10.
1969	0.	6.
1970	0.	19.
1971	0.	8.
1972	0.	6.
1973	0.	13.
1974	0.	8.
1975	0.	11.
1976	0.	18.
1977	0.	7.
1978	0.	10.
1979	0.	8.
1980	0.	16.
1981	0.	6.
1982	0.	8.

SII_Roanoke Existing.WET

1983	0.	7.
1984	0.	14.
1985	0.	5.
1986	0.	4.
1987	0.	12.
1988	0.	10.
1989	0.	17.
1990	0.	13.
1991	0.	9.
1992	0.	9.
1993	0.	10.
1994	0.	9.
1995	0.	9.
1996	0.	8.
1997	0.	11.
1998	0.	8.
1999	0.	10.
2000	0.	9.
2001	0.	8.
2002	0.	14.
2003	0.	9.
2004	0.	15.
2005	0.	15.
2006	0.	15.
2007	0.	8.
2008	0.	7.
2009	0.	18.
2010	0.	8.
2011	0.	16.
2012	0.	13.

Number of Years with at least one period = 1. out of 60 years.

SII_Roanoke Proposed.WET

---

* DRAINMOD version 6.1 *

* Copyright 1980-2011 North Carolina State University *

Proposed Conditions Stanley's II Wetland Site – Roanoke
Jackson, NC 314456 Station

****

----------RUN STATISTICS ---------- time: 4/29/2013 @ 14: 6
input file: C:\DrainMod\inputs\Stanleys_Slough_Roanoke_v2.pr
parameters: free drainage and yields not calculated
drain spacing = 3700. cm drain depth = 15.2 cm

DRAINMOD --- WET PERIOD EVALUATION
****** Version 6.1 ******

Number of periods with water table closer than 30.00 cm
for at least 23 days. Counting starts on day
70 and ends on day 324 of each year

YEAR	Number of Periods of 23 days or more with WTD < 30.00 cm	Longest Consecutive Period in Days
1953	0.	19.
1954	2.	40.
1955	2.	23.
1956	3.	65.
1957	1.	40.
1958	2.	41.
1959	2.	52.
1960	3.	36.
1961	3.	49.
1962	1.	46.
1963	0.	19.
1964	2.	41.
1965	3.	39.
1966	1.	25.
1967	0.	19.
1968	0.	19.
1969	1.	32.
1970	2.	43.
1971	2.	51.
1972	1.	31.
1973	2.	38.
1974	1.	38.
1975	2.	45.
1976	1.	31.
1977	1.	38.
1978	2.	28.
1979	2.	45.
1980	2.	32.
1981	1.	24.
1982	2.	27.

Stanleys_II_Roanoke Proposed.WET

1983	1.	53.
1984	1.	53.
1985	0.	22.
1986	1.	27.
1987	2.	32.
1988	3.	40.
1989	2.	73.
1990	1.	27.
1991	1.	35.
1992	1.	36.
1993	1.	54.
1994	1.	33.
1995	0.	18.
1996	3.	75.
1997	0.	20.
1998	0.	20.
1999	3.	41.
2000	1.	24.
2001	1.	31.
2002	3.	40.
2003	3.	45.
2004	2.	116.
2005	2.	42.
2006	3.	45.
2007	1.	27.
2008	0.	19.
2009	2.	75.
2010	3.	28.
2011	3.	51.
2012	2.	122.

Number of Years with at least one period = 51. out of 60 years.

SSS_Roanoke_woods.WET

```
-----------------------------------------------------
*              DRAINMOD version 6.1                 *
* Copyright 1980-2011 North Carolina State University *
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```

Pre-existing Conditions SSS Wetland Site - Woods
Jackson, NC 314456 Station

****

```
 ----------RUN STATISTICS ----------          time:  4/29/2013  @ 14:11
 input file:   C:\DrainMod\inputs\Stanleys_Roanoke_woods.prj
 parameters:    free drainage              and yields not calculated
               drain spacing =    2286. cm   drain depth =   25.4 cm
```

DRAINMOD --- WET PERIOD EVALUATION
****** Version 6.1 ******

Number of periods with water table closer than 30.00 cm
for at least 23 days. Counting starts on day
70 and ends on day 324 of each year

YEAR	Number of Periods of 23 days or more with WTD < 30.00 cm	Longest Consecutive Period in Days
1953	0.	13.
1954	0.	21.
1955	0.	15.
1956	2.	34.
1957	0.	21.
1958	1.	39.
1959	1.	52.
1960	2.	26.
1961	0.	21.
1962	1.	42.
1963	0.	17.
1964	1.	26.
1965	1.	29.
1966	1.	23.
1967	0.	15.
1968	0.	15.
1969	0.	20.
1970	2.	30.
1971	0.	22.
1972	0.	12.
1973	0.	20.
1974	1.	33.
1975	1.	29.
1976	1.	31.
1977	1.	26.
1978	1.	24.
1979	1.	37.
1980	2.	26.
1981	0.	15.
1982	1.	27.

1983	1.	23.
1984	1.	51.
1985	0.	16.
1986	0.	19.
1987	0.	17.
1988	0.	19.
1989	2.	43.
1990	0.	19.
1991	0.	15.
1992	0.	22.
1993	1.	46.
1994	0.	15.
1995	0.	15.
1996	1.	31.
1997	0.	20.
1998	0.	18.
1999	2.	31.
2000	0.	18.
2001	1.	25.
2002	1.	40.
2003	1.	23.
2004	2.	31.
2005	1.	27.
2006	1.	45.
2007	0.	21.
2008	0.	15.
2009	2.	65.
2010	0.	18.
2011	1.	23.
2012	2.	42.

Number of Years with at least one period = 32. out of 60 years.

Soil Delineation and Characterization

A detailed soils investigation at the NPRS was conducted by a licensed soil scientist (# 187) to determine the extent and distribution of the hydric soils and to classify the predominate soils to the soil series level. The investigation consisted of delineating the hydric soil boundaries with pink flagging and wooden survey stakes in accordance with the US Army Corps of Engineers, Wetland Delineation Manual (1987) and the USDA Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 7.0 (2010). Areas that were identified as possible hydric soil mapping units were surveyed at a higher intensity until the edge of the mapping unit was identified. The boundary of the hydric and non-hydric soil mapping units were then followed by continual sampling and observations as the boundary line was identified and delineated. In those areas where the boundary was found to be a broad gradient rather than a distinct break, microtopography, landscape position, soil textural changes, redoximorphic features, and depleted matrices were additionally considered to identify the extent of the hydric soils.

In developing a detailed soils map, several soil borings were advanced on the site in the general hydric soil areas identified by landscape position, vegetation and slope. Once the hydric soil borings were identified, the soil scientist marked the points and established a visual line to the next auger boring where again hydric soil conditions were confirmed by additional borings. The soil scientist moved along the edges of the mapping unit and marked each point along the line. To confirm the hydric soil mapping unit and taxonomic classification, soil borings were advanced to a depth of 50 inches. The soil profile descriptions identified the individual horizons in the topsoil and upper subsoil as well as the depth, color, texture, structure, boundary, and evidence of restrictive horizons and redoximorphic features. Delineated hydric soils boundaries were in contrast to those mapped in the Soil Survey of Northampton County, North Carolina. The delineated hydric soil boundaries are shown in the following figure, Detailed Soils Map.

Taxonomic Classification
The predominant soils identified on the site were of the Wehadkee (Fine-loamy, mixed, active, nonacid, thermic Fluvaquentic Endoaquepts), Altavista (Fine-loamy, mixed, semiactive, thermic Aquic Hapludults), Roanoke (Fine, mixed, semiactive, thermic Typic Endoaquults), and Tomotley (Fine-loamy, mixed, semiactive, thermic Typic Endoaquults) soil series. Other soil series include Tarboro, Winton, and Winton with Pelham inclusions. All of these series except for Altavista and Augusta are listed as hydric soils in Northampton County, North Carolina. They are defined as hydric due to saturation for a significant period during the growing season. This soil is listed as hydric on the federal, state and local lists. They are also listed by the Natural Resources Conservation Service (NRCS) as hydric soils.

Profile Description
Typical Pedon Descriptions:

WEHADKEE SERIES
TAXONOMIC CLASS: Fine-loamy, mixed, active, nonacid, thermic Fluvaquentic Endoaquepts

TYPICAL PEDON: Wehadkee fine sandy loam -- cultivated (Colors are for moist soil unless otherwise stated.)

Ap--0 to 8 inches; grayish brown (10YR 5/2) fine sandy loam; weak medium granular structure; very friable; few flakes of mica; moderately acid; abrupt smooth boundary. (6 to 14 inches thick)

Bg1--8 to 17 inches; dark gray (10YR 4/1) loam; common medium prominent strong brown (7.5YR 5/6) soft masses of iron accumulation; weak fine and medium subangular blocky structure; friable; few flakes of mica; moderately acid; clear smooth boundary. (8 to 20 inches thick)

Bg2--17 to 40 inches; gray (10YR 6/1) sandy clay loam; common medium prominent strong brown (7.5YR 5/6) soft masses of iron accumulation; weak medium subangular blocky structure; friable; common flakes of mica; moderately acid; clear smooth boundary. (0 to 30 inches thick)

Cg--40 to 50 inches; gray (10YR 6/1) sandy loam; common medium faint grayish brown (10YR 5/2) iron depletions and prominent strong brown (7.5YR 5/6) soft masses of iron accumulation; massive; friable; common flakes of mica; moderately acid.

TYPE LOCATION: Catawba County, North Carolina; 1/2 mile south of Witherspoon Crossroads on SR 1801, 3/4 mile east on SR 1807, and 650 feet north of bridge on Hogan Creek.

RANGE IN CHARACTERISTICS: Solum thickness ranges from about 20 to more than 60 inches. The content of mica flakes ranges from few to many. The soil ranges from very strongly acid through neutral, but some part of the 10 to 40 inch control section is moderately acid through neutral. Content of rock fragments ranges from 0 to 5 percent by volume in the A and B horizons, and from 0 to 20 percent by volume in the C horizons. Fragments are dominantly pebbles in size.

The Ap or A horizon has hue of 10YR or 2.5Y or is neutral, value of 3 to 6, and chroma of 0 to 4. Some pedons have soft masses of iron accumulation in shades of brown or red. Texture is fine sandy loam, very fine sandy loam, loam, silty clay loam, sandy loam, or silt loam. Some pedons have recent layers of overwash as much as 20 inches thick that are loamy and variable in color. Many pedons have an Ab horizon that has the same color and texture range as the A horizon.

The Bg horizon has hue of 10YR to 5Y or is neutral, value of 4 to 6, and chroma of 0 to 2. Soft masses of iron accumulation are in shades of red, yellow, and brown. Texture is sandy clay loam, silt loam, loam, clay loam, or silty clay loam.

The Cg horizon has hue of 10YR to 5Y or is neutral, value of 4 to 7, and chroma of 0 to 2. Soft masses of iron accumulation are in shades of brown, red, and yellow. Texture is commonly sandy loam, loam, or silt loam, but in some pedons the Cg horizon contains stratified layers of sandy clay loam, clay loam, silty clay loam, loamy sand, sand, and gravel. Sandy textures are restricted to depths below 40 inches.

ALTAVISTA SEIRES

TAXONOMIC CLASS: Fine-loamy, mixed, semiactive, thermic Aquic Hapludults

TYPICAL PEDON: Altavista fine sandy loam--cultivated. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 8 inches; grayish brown (10YR 5/2) fine sandy loam; weak medium granular structure; very friable; many fine roots; moderately acid; abrupt smooth boundary. (5 to 12 inches thick)

E--8 to 12 inches; pale brown (10YR 6/3) fine sandy loam; weak fine granular structure; very friable; few fine roots; moderately acid; abrupt smooth boundary. (0 to 12 inches thick)

BE--12 to 15 inches; brownish yellow (10YR 6/6) sandy clay loam; weak fine subangular blocky structure; friable; few medium roots; moderately acid; clear wavy boundary. (0 to 6 inches thick)

Bt1--15 to 20 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; common fine prominent yellowish red (5YR 5/8) masses of iron accumulation; few fine roots; few flakes of mica; common faint clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2--20 to 35 inches; yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; common medium prominent light brownish gray (10YR 6/2) iron depletions; few flakes of mica; common faint clay films on faces of peds; strongly acid; gradual smooth boundary. (Combined thickness of the Bt horizon is 14 to 40 inches.)

BC--35 to 42 inches; brownish yellow (10YR 6/6) sandy loam; weak fine subangular blocky structure; friable; many medium prominent light brownish gray (10YR 6/2) iron depletions; few flakes of mica; strongly acid; gradual smooth boundary. (0 to 25 inches thick)

C--42 to 60 inches; mottled yellowish brown (10YR 5/8) and gray (10YR 6/1) coarse sandy loam; massive; very friable; many gravel; few flakes of mica; strongly acid.

TYPE LOCATION: Wake County, North Carolina; 12 miles south of Raleigh on Old Stage Road, 1.5 miles southwest of Plymouth Church on farm road; near Middle Creek, 200 yards east of farm road.

RANGE IN CHARACTERISTICS:
Solum Thickness: 30 to more than 60 inches
Depth to Bedrock: Greater than 60 inches
Depth to Seasonal High Water Table: 18 to 30 inches, December to April
Soil Reaction: Extremely acid to moderately acid except where the surface has been limed
Gravel Content: 0 to 5 percent in the A and B horizons and 0 to 35 percent in the C horizon
Other Features: Flakes of mica range from none to common in the B and C horizons

A or Ap horizon:
Color--hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 1 to 4
Texture--loamy sand, loamy fine sand, fine sandy loam, very fine sandy loam, silt loam, sandy loam, or loam

E horizon, (where present):
Color--hue of 10YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8
Texture--loamy sand, loamy fine sand, fine sandy loam, very fine sandy loam, silt loam, sandy loam, or loam

The BE horizon (where present):
Color--hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 7, and chroma of 3 to 8
Texture--fine sandy loam, sandy loam, loam, or sandy clay loam

Bt horizon:
Color--hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 7, and chroma of 3 to 8.
Texture--dominantly loam, clay loam, or sandy clay loam. Subhorizons of the Bt horizon in some pedons are fine sandy loam or sandy loam. Content of silt is less than 30 percent

Redoximorphic features--masses of oxidized iron in shades of brown, yellow, or red and iron depletions in shades of olive or gray (iron depletions occur within the upper 24 inches of the Bt horizon)

Btg horizons (where present):
Color--neutral or hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2
Texture--loam, clay loam, or sandy clay loam; subhorizons horizons in some pedons are fine sandy loam or sandy loam; content of silt is less than 30 percent
Redoximorphic features--masses of oxidized iron in shades of brown, yellow, or red and iron depletions in shades of olive or gray (iron depletions occur within the upper 24 inches of the Bt horizon)

BC horizon (where present):
Color--hue of 7.5YR, 10YR, or 2.5Y, value of 5 to 7, and chroma of 3 to 8.
Texture--sandy loam, loam, sandy clay loam, fine sandy loam, loamy fine sand, or loamy sand
Redoximorphic features--masses of oxidized iron in shades of brown, yellow, or red and iron depletions in shades of olive or gray

C horizon:
Color--hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8
Texture--loamy sediment, commonly sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam; some pedons have 2C horizons that are clayey
Redoximorphic features--masses of oxidized iron in shades of brown, yellow, or red and iron depletions in shades of olive or gray

Cg horizon (where present):
Color--neutral or hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2
Texture--loamy sediment, commonly sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam
Redoximorphic features--masses of oxidized iron in shades of brown, yellow, or red and iron depletions in shades of olive or gray

ROANOKE SERIES
TAXONOMIC CLASS: Fine, mixed, semiactive, thermic Typic Endoaquults

TYPICAL PEDON: Roanoke silt loam - on a 1 percent slope in a pasture. (Colors are for moist soil.)

Ap--0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine roots; strongly acid; abrupt smooth boundary. (5 to 9 inches thick)

Btg1--7 to 12 inches; gray (10YR 5/1) silty clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; many fine and medium roots; few faint clay films on faces of peds; few medium prominent yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation; few fine flakes of mica; very strongly acid; clear smooth boundary.

Btg2--12 to 20 inches; gray (10YR 5/1) clay; moderate medium and coarse angular blocky structure; firm, moderately sticky, moderately plastic; few medium and large roots; few faint clay films on faces of peds; few medium prominent brownish yellow (10YR 6/8) irregularly shaped masses of iron accumulation; few fine flakes of mica; very strongly acid; gradual smooth boundary.

Btg3--20 to 40 inches; gray (N 6/0) clay; moderate coarse prismatic structure parting to weak medium subangular blocky; firm, moderately sticky, moderately plastic; few medium and large roots; common medium prominent yellowish brown (10YR 5/4) irregularly shaped masses of iron accumulation; common faint clay films on faces of peds; 2 percent quartz gravel; few fine flakes of mica; very strongly acid; gradual smooth boundary. (Combined thickness of the Btg horizon is 25 to 50 inches.)

BCg--40 to 50 inches; light brownish gray (2.5Y 6/2) silty clay loam with a few pockets of sand; weak fine subangular and angular blocky structure; firm, slightly sticky, slightly plastic; many medium distinct pale yellow (2.5Y 7/4) and many medium prominent yellowish brown (10YR 5/6) irregularly shaped masses of iron accumulation; 2 percent quartz gravel; common fine flakes of mica; very strongly acid; gradual smooth boundary. (0 to 20 inches thick)

2Cg--50 to 72 inches; gray (5Y 6/1) strata ranging from sand to clay; massive; many gray and green iron depletions and yellow irregularly shaped masses of iron accumulation; some strata contain up to 40 percent quartz gravel; few fine flakes of mica; very strongly acid.

TYPE LOCATION: Halifax County, Virginia; 2 miles north of Clover, 100 yards from the Southern Railroad on east side of highway VA-600.

RANGE IN CHARACTERISTICS:
Solum Thickness: 40 to 60 inches
Depth to Bedrock: Greater than 60 inches
Depth to Seasonal High Water Table: 0 to 12, November to May
Soil Reaction: Extremely acid to strongly acid in the solum unless limed, and extremely acid to slightly acid in the Cg or 2Cg horizon
Other Features: Particle-size control section has more than 30 percent silt; flakes of mica range from few to common in most pedons; quartz gravels make up 0 to 10 percent of the solum and 0 to 50 percent of the C horizon

A or Ap horizon:
Color--hue of 10YR to 5Y, value of 2 to 6, and chroma of 0 to 2; where value is 2 or 3 it is less than 6 inches thick
Texture--fine sandy loam, loam, silt loam, clay loam, or silty clay loam

Eg horizon (if it occurs):
Color--hue of 10YR to 5Y or is neutral, value of 4 to 7, and chroma of 0 to 2
Texture--fine sandy loam, loam, silt loam, clay loam, or silty clay loam

BA or BE horizon (if it occurs):
Color--hue of 10YR to 5Y or is neutral, value of 4 to 7, and chroma of 0 to 2
Texture--loam, silt loam, clay loam, or silty clay loam
Redoximorphic features (if they occur)--iron masses in shades of brown, yellow, or red and iron depletions in shades of olive or gray

Btg horizon:
Color--hue of 10YR to 5Y or is neutral, value of 4 to 7, and chroma of 0 to 2
Texture--clay loam, silty clay loam, silty clay, or clay.

Redoximorphic features--iron masses in shades of brown, yellow, or red and iron depletions in shades of olive or gray

BCg horizon (if it occurs):
Color--has hue of 10YR to 5Y or is neutral, value of 4 to 7, and chroma of 0 to 2
Texture--clay loam, silty clay loam, sandy clay loam, sandy clay, or clay; some pedons have pockets or strata of coarser textures
Redoximorphic features (if they occur)--iron masses in shades of brown, yellow, or red and iron depletions in shades of olive or gray

Cg or 2Cg horizon:
Color--hue of 10YR to 5Y or is neutral, value of 4 to 7, and chroma of 0 to 2
Texture--commonly stratified ranging from sand to clay in the fine-earth fraction.

TOMOTLEY SERIES
TAXONOMIC CLASS: Fine-loamy, mixed, semiactive, thermic Typic Endoaquults

TYPICAL PEDON: Tomotley fine sandy loam--cultivated. (Colors are for moist soil.)

Ap--0 to 7 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; very friable; common fine and medium roots; slightly acid; abrupt smooth boundary. (5 to 10 inches thick)

Btg1--7 to 12 inches; light gray (10YR 7/1) fine sandy loam; weak medium subangular blocky structure; friable; few fine prominent yellowish brown (10YR 5/6) soft masses of iron accumulation; few faint clay films on faces of peds; few fine and medium roots; slightly acid; clear smooth boundary.

Btg2--12 to 42 inches; light brownish gray (2.5Y 6/2) sandy clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; common medium prominent strong brown (7.5YR 5/8) and yellowish brown (10YR 5/6) soft masses of iron accumulation; few distinct clay films on faces of peds; strongly acid; clear smooth boundary. (Combined thickness of the Btg horizon is 20 to 40 inches.)

BCg--42 to 50 inches; 35 percent light brownish gray (2.5Y 6/2), 35 percent gray (10YR 6/1), and 30 percent yellowish brown (10YR 5/8) sandy loam with pockets of loamy sand; weak fine subangular blocky structure; friable; very strongly acid; clear smooth boundary. (0 to 30 inches)

Cg--50 to 72 inches; gray (10YR 6/1) loamy sand; massive; friable; many medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/8) soft masses of iron accumulation; very strongly acid.

TYPE LOCATION: Chowan County, North Carolina; 0.3 mile southeast of the intersection of N.C. Highway 32 and Bypass U.S. 17; 100 feet east of N.C. Highway 32.

RANGE IN CHARACTERISTICS:
Solum Thickness: 30 to more than 60 inches
Depth to Bedrock: Greater than 60 inches
Depth to Seasonal High Water Table: 0 to 12, November to April
Soil Reaction: Extremely acid to strongly acid in the A, Eg, BEg, BA, and Btg horizons and extremely acid to moderately acid in the BCg and Cg horizons.

Other Features: Few to common fine flakes of mica and fine black minerals are in the lower B and C horizons of some pedons. The content of rounded pebbles range from 0 to 5 percent throughout the solum. . Some pedons have a few concretions of ironstone in one or all horizons.

A or Ap horizon:
Color--hue of 10YR to 5Y or is neutral, value of 2 to 4, and chroma of 0 to 2
Texture--loamy sand, loamy fine sand, sandy loam, fine sandy loam, loam, or silt loam

Eg horizon (if it occurs):
Color--hue of 10YR or 2.5Y or is neutral, value of 4 to 8, and chroma of 0 or 2
Texture--loamy sand, loamy fine sand, sandy loam, fine sandy loam, loam, or silt loam
Redoximorphic features (if they occur)--iron masses in shades of brown, yellow, or red and iron depletions in shades of olive or gray

BEg or BA horizon (if it occurs):
Color--hue of 10YR or 2.5Y or is neutral, value of 4 to 7, and chroma of 0 to 2.
Texture--sandy loam, fine sandy loam, loam, or silt loam
Redoximorphic features (if they occur)--iron masses in shades of brown, yellow, or red and iron depletions in shades of olive or gray

Btg horizon:
Color--hue of 10YR to 5Y or is neutral, value of 4 to 7, and chroma of 0 to 2.
Texture--commonly sandy clay loam, clay loam, loam, sandy loam, or fine sandy loam; some pedons have thin subhorizons of silt loam or silty clay loam; some pedons are clay or sandy clay below 40 inches
Redoximorphic features--iron masses in shades of brown, yellow, or red and iron depletions in shades of olive or gray

BCg or CBg horizon (if it occurs):
Color--hue of 10YR to 5Y or is neutral, value of 4 to 8, and chroma of 0 to 2.
Texture--fine sandy loam, sandy loam, loam, clay loam, sandy clay loam, silt loam, or sandy clay; this horizon commonly has thin strata or pockets of contrasting textures
Redoximorphic features--iron masses in shades of brown, yellow, or red and iron depletions in shades of olive or gray

Cg horizon:
Color--hue of 10YR, 2.5Y, 5Y, 5BG, 5GY or is neutral, value of 4 to 8, and chroma of 0 to 2
Texture--is variable, ranging from sand to clay; pockets or strata of
contrasting textures are common
Redoximorphic features--iron masses in shades of brown, yellow, or red and iron depletions in shades of olive or gray

COMPETING SERIES:
Partlow soils--have angular quartz fragments in the solum, may be underlain by saprolite, and the geographic setting is in the Piedmont Province.

KCI ASSOCIATES OF NORTH CAROLINA, PA

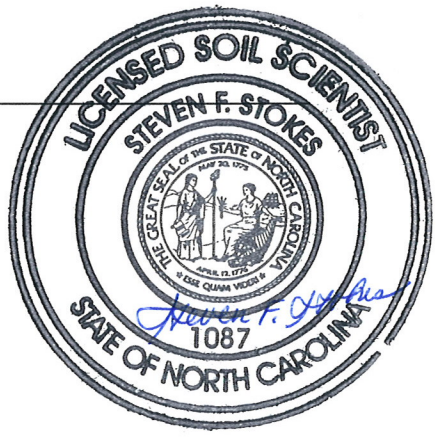
SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** September 29, 2011
Project: Stanley's Slough Stream and Wetland Restoration Site **Project #:** 20110659P-CH_04
County: Northampton **State:** NC
Location: Margarettsville, NC **Site/Lot:** Boring # 1
Soil Series: Roanoke
Soil Classification: Fine, mixed, semiactive, thermic Typic Endoaquults
AWT: 52" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:**
Elevation: **Drainage:** Poorly Drained **Permeability:** Slow to Very Slow
Vegetation: Hardwoods
Borings terminated at 55 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
A1	0-5	10YR 4/2		sil-vfsl	1fgr	mfr	cs	
Btg1	5-15	10YR 5/1	10YR 5/4f2d	sicl-cl	2fsbk	mfi	cs	
Btg2	15-36	10YR 5/1	10YR 5/6c2d	cl-c	2msbk	mfi	cw	
Btg3	36-48	10YR 5/1	2.5Y 5/3f1f	sc	1msbk	mfi	gs	
BCg	48-52	10YR 5/1		scl	1fsbk	mfr	gs	
Cg	52-55	10YR 5/1		s	sg	ml		

COMMENTS:
The Roanoke series is a poorly drained soil formed in clayey fluvial sediments on terraces and drainageways of the piedmont and upper and middle coastal plain. The Roanoke soil has slow to very slow runoff and permeability and a seasonally high water table at or near the surface during wet seasons, typically between 0-12 inches.

DESCRIBED BY: SFS DATE: 9/29/2011



KCI ASSOCIATES OF NORTH CAROLINA, PA

SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** September 29, 2011
Project: Stanley's Slough Stream and Wetland Restoration Site **Project #:** 20110659P-CH_04
County: Northampton **State:** NC
Location: Margarettsville, NC **Site/Lot:** Boring # 2
Soil Series: Roanoke
Soil Classification: Fine, mixed, semiactive, thermic Typic Endoaquults
AWT: >60" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:**
Elevation: **Drainage:** Poorly Drained **Permeability:** Slow to Very Slow
Vegetation: Hardwoods
Borings terminated at 60 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
A1	0-4	10YR 3/2	10YR 4/3f1f	fsl	1fgr	mfr	cs	
			10YR 2/2f1f					
Eg	4-8	10YR 5/2	10YR 6/2f1f	fsl	1fgr	mfr	cs	
BA	8-15	10YR 6/2	10YR 5/4c2d	sl	1fsbk	mfr	gs	
			7.5YR 5/8f1p					
Btg1	15-26	10YR 6/1	7.5YR 5/8c2d	scl	2msbk	mfr	gs	
Btg2	26-46	10YR 5/1	10YR 5/6m2d	sc	2msbk	mfi	gs	
BCg	46-60	10YR 6/1	7.5YR 4/6c2d	scl	1csbk	mfr		

COMMENTS:
The Roanoke series is a poorly drained soil formed in clayey fluvial sediments on terraces and drainageways of the piedmont and upper and middle coastal plain. The Roanoke soil has slow to very slow runoff and permeability and a seasonally high water table at or near the surface during wet seasons, typically between 0-12 inches.

DESCRIBED BY: SFS DATE: 9/29/2011

KCI ASSOCIATES OF NORTH CAROLINA, PA

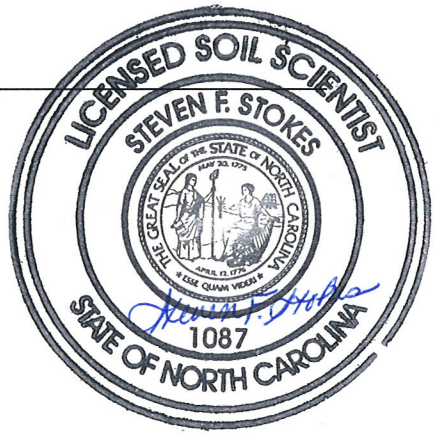
SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** September 29, 2011
Project: Stanley's Slough Stream and Wetland Restoration Site **Project #:** 20110659P-CH_04
County: Northampton **State:** NC
Location: Margarettsville, NC **Site/Lot:** Boring # 3
Soil Series: Roanoke
Soil Classification: Fine, mixed, semiactive, thermic Typic Endoaquults
AWT: >60" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:**
Elevation: **Drainage:** Poorly Drained **Permeability:** Slow to Very Slow
Vegetation: Hardwoods
Borings terminated at 60 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
A1	0-4	10YR 4/2		vfsl-sil	1fgr	mfr	cs	
BA	4-8	10YR 5/2		vfsl-sil	1fsbk	mfr	cs	
Btg1	8-18	10YR 5/2	10YR 5/6c2d	sc	2msbk	mfi	gs	
Btg2	18-25	10YR 5/2	7.5YR 5/8c2d	c	2msbk	mfi	gs	
Btg3	25-36	10YR 6/1	10YR 5/6c2d	sic-c	2msbk-2csbk	mfi	gs	
BCg	36-45	10YR 6/1	10YR 5/6c2d	sc	1fsbk	mfi	gs	clay skins
Cg	45-60	10YR 6/1	10YR 7/3f1f	sc	1csbk-mass	mfi		tending to massive

COMMENTS:
The Roanoke series is a poorly drained soil formed in clayey fluvial sediments on terraces and drainageways of the piedmont and upper and middle coastal plain. The Roanoke soil has slow to very slow runoff and permeability and a seasonally high water table at or near the surface during wet seasons, typically between 0-12 inches.

DESCRIBED BY: SFS DATE: 9/29/2011



KCI ASSOCIATES OF NORTH CAROLINA, PA

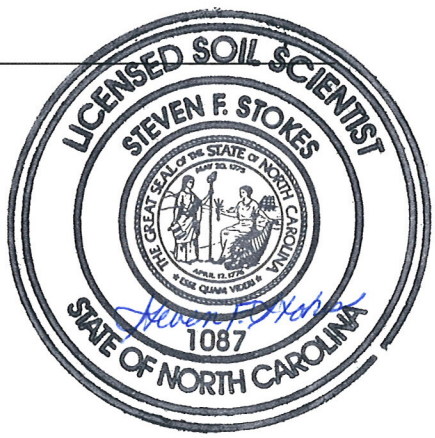
SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** September 29, 2011
Project: Stanley's Slough Stream and Wetland Restoration Site **Project #:** 20110659P-CH_04
County: Northampton **State:** NC
Location: Margarettsville, NC **Site/Lot:** Boring # 4
Soil Series: State
Soil Classification: Fine-loamy, mixed, semiactive, thermic Typic Hapludults
AWT: 56" **SHWT:** >36" **Slope:** 2-3% **Aspect:**
Elevation: **Drainage:** Well Drained **Permeability:** Moderate
Vegetation: Hardwoods
Borings terminated at 60 **Inches**

HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
A1	0-4	10YR 3/2		lfs	1fgr	mfr	cs	
A2	4-7	10YR 4/3		fsl	1fgr	mfr	cs	
E1	7-13	10YR 5/4		sl	1fsbk	mfr	cw	
E2	13-20	10YR 6/4		sl	1msbk	mfr	cw	
Bt1	20-33	10YR 5/6	10YR 5/4c2d	scl	2msbk	mfr	gs	
BC	33-48	10YR 5/6	10YR 5/4f2d	ls	1msbk		gs	
C	48-60	10YR 5/6	10YR 6/2c1d	s	sg			

COMMENTS:
The State series is a well drained soil occuring on stream terraces of the piedmont and upper and middle coastal plain.
The State soil has moderate permeability and a seasonally high water table of greater than 36 inches.
This State soil is an inclusion within the moderately well drained Altavista soil mapping unit as shown on KCI soil maps.

DESCRIBED BY: SFS DATE: 9/29/2011



KCI ASSOCIATES OF NORTH CAROLINA, PA

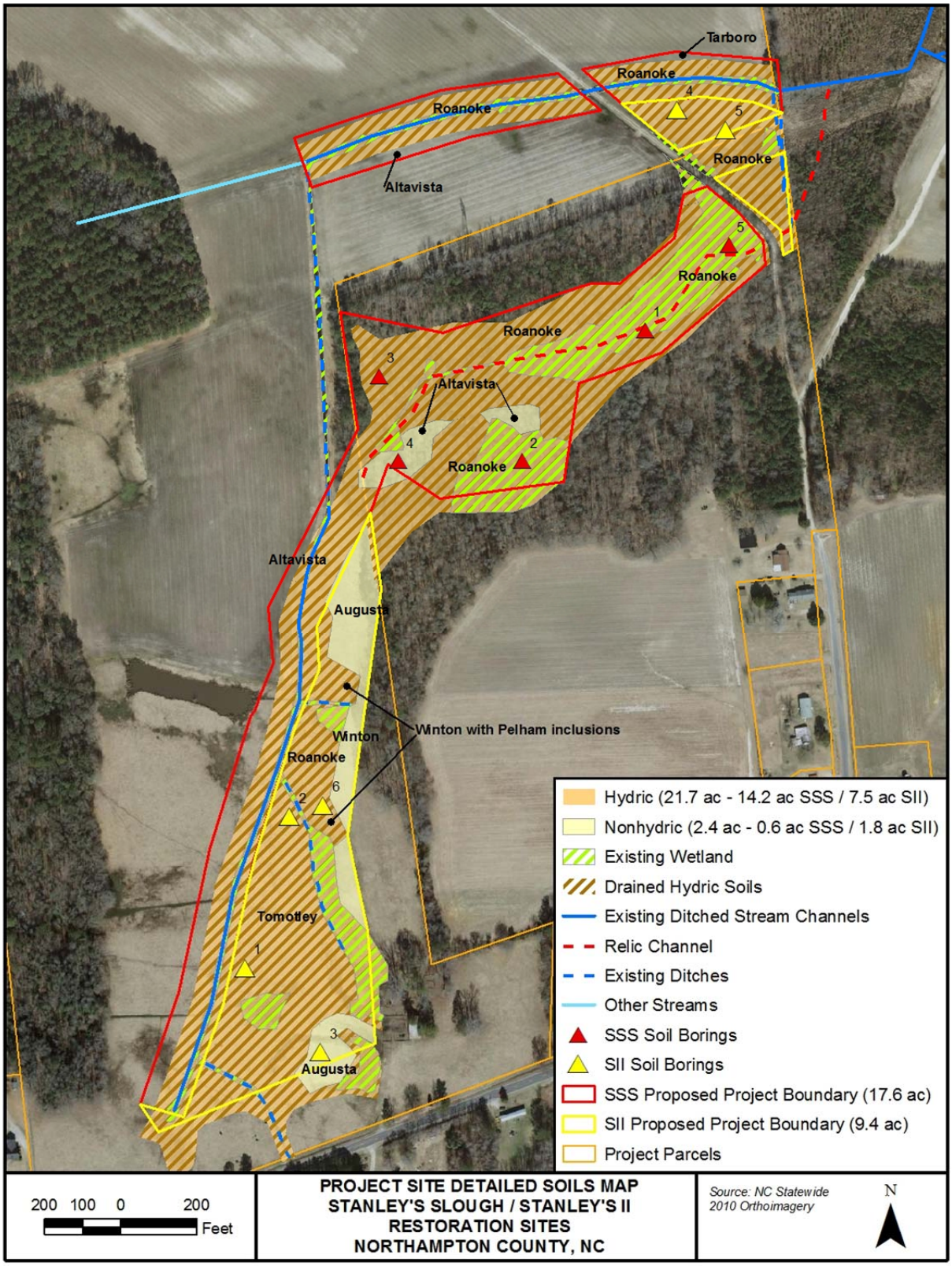
SOIL PROFILE DESCRIPTION

Client: KCI Associates of North Carolina, P.A. **Date:** September 29, 2011
Project: Stanley's Slough Stream and Wetland Restoration Site **Project #:** 20110659P-CH_04
County: Northampton **State:** NC
Location: Margarettsville, NC **Site/Lot:** Boring # 5
Soil Series: Roanoke
Soil Classification: Fine, mixed, semiactive, thermic Typic Endoaquults
AWT: 22" **SHWT:** 0-12" **Slope:** 0-1% **Aspect:**
Elevation: **Drainage:** Poorly Drained **Permeability:** Slow to Very Slow
Vegetation: Hardwoods
Borings terminated at 45 **Inches**

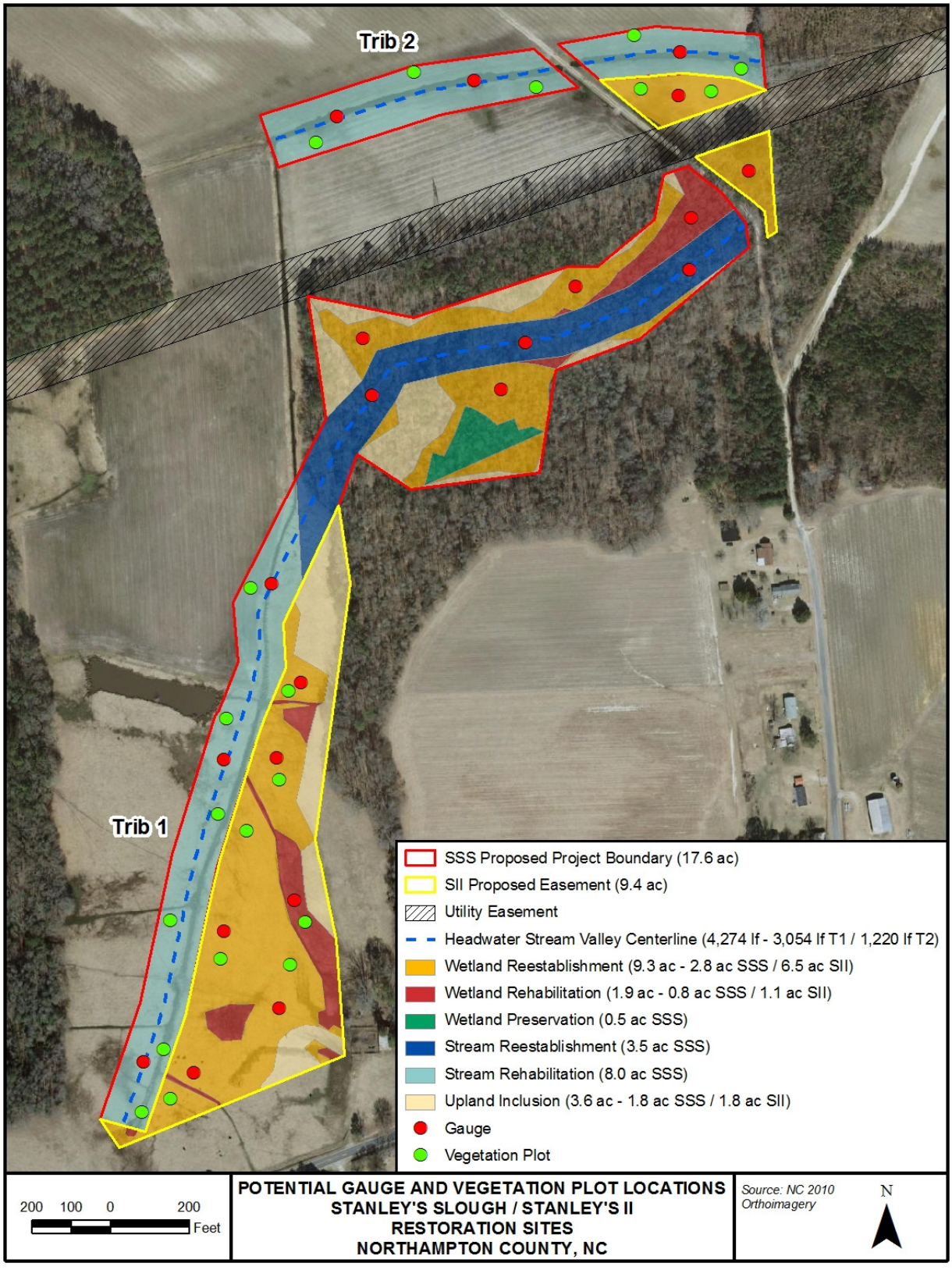
HORIZON	DEPTH (IN)	MATRIX	MOTTLES	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	NOTES
A1	0-3	10YR 3/1		l	1fgr	mfr	cs	
A2	3-10	10YR 5/1	7.5YR 4/4f1d	sil	1fsbk	mfr	cs	
Btg1	10-15	10YR 5/1	10YR 6/1f1f	scl	1msbk	mfr	gs	
			7.5YR 4/4c2d					
Cg1	15-30	6/N	7.5YR 5/6c2d	sic-c	massive	mfi	gw	
			7.5YR 5/4c3d					
Cg2	30-39	10YR 6/1	7.5YR 5/6f1d	scl	massive	mfi	gw	
Cg3	39-45	10YR 6/1		ls-s	sg	ml		

COMMENTS:
The Roanoke series is a poorly drained soil formed in clayey fluvial sediments on terraces and drainageways of the piedmont and upper and middle coastal plain. The Roanoke soil has slow to very slow runoff and permeability and a seasonally high water table at or near the surface during wet seasons, typically between 0-12 inches.

DESCRIBED BY: SFS DATE: 9/29/2011


Tarboro
Roanoke
Roanoke
Altavista
Roanoke
Roanoke
Roanoke
Altavista
Roanoke
Altavista
Augusta
Winton
Winton with Pelham inclusions
Roanoke
Tomotley
Augusta
1
2
3
4
5
6
Hydric (21.7 ac - 14.2 ac SSS / 7.5 ac SII)
Nonhydric (2.4 ac - 0.6 ac SSS / 1.8 ac SII)
Existing Wetland
Drained Hydric Soils
Existing Ditched Stream Channels
Relic Channel
Existing Ditches
Other Streams
SSS Soil Borings
SII Soil Borings
SSS Proposed Project Boundary (17.6 ac)
SII Proposed Project Boundary (9.4 ac)
Project Parcels
200 100 0 200
Feet
PROJECT SITE DETAILED SOILS MAP
STANLEY'S SLOUGH / STANLEY'S II
RESTORATION SITES
NORTHAMPTON COUNTY, NC
Source: NC Statewide
2010 Orthoimagery
N

Potential Vegetation Plot and Wetland/Stream Gauge Locations


Trib 2
Trib 1
SSS Proposed Project Boundary (17.6 ac)
SII Proposed Easement (9.4 ac)
Utility Easement
Headwater Stream Valley Centerline (4,274 lf - 3,054 lf T1 / 1,220 lf T2)
Wetland Reestablishment (9.3 ac - 2.8 ac SSS / 6.5 ac SII)
Wetland Rehabilitation (1.9 ac - 0.8 ac SSS / 1.1 ac SII)
Wetland Preservation (0.5 ac SSS)
Stream Reestablishment (3.5 ac SSS)
Stream Rehabilitation (8.0 ac SSS)
Upland Inclusion (3.6 ac - 1.8 ac SSS / 1.8 ac SII)
Gauge
Vegetation Plot
200 100 0 200
Feet
POTENTIAL GAUGE AND VEGETATION PLOT LOCATIONS
STANLEY'S SLOUGH / STANLEY'S II
RESTORATION SITES
NORTHAMPTON COUNTY, NC
Source: NC 2010 Orthoimagery
N

14.6 Appendix D. Project Plan Sheets

CONTRACT #: STANLEY'S SLOUGH = 4635
STANLEY'S II = 5151

KCI JOB# : 20122005

STATE	EEP PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
N.C.	STANLEY'S SLOUGH = 95356 STANLEY'S II = 95838	1	14

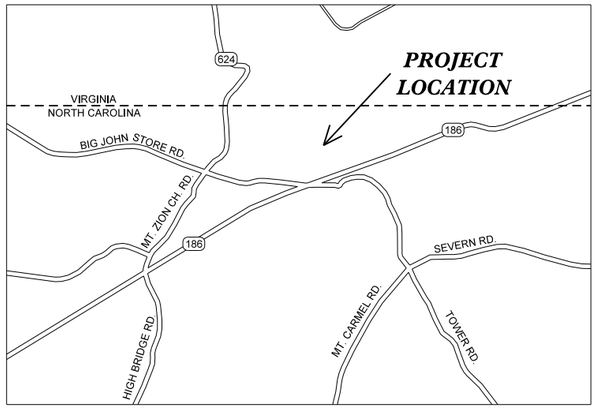
A	SUBMITTED WITH MITIGATION PLAN	MAY 2013
B	REVISED PER IRT COMMENTS	AUG 2013
SYM	DESCRIPTION	DATE
REVISIONS		

STATE OF NORTH CAROLINA
ECOSYSTEM ENHANCEMENT PROGRAM

STANLEY'S SLOUGH /STANLEY'S II RESTORATION SITES

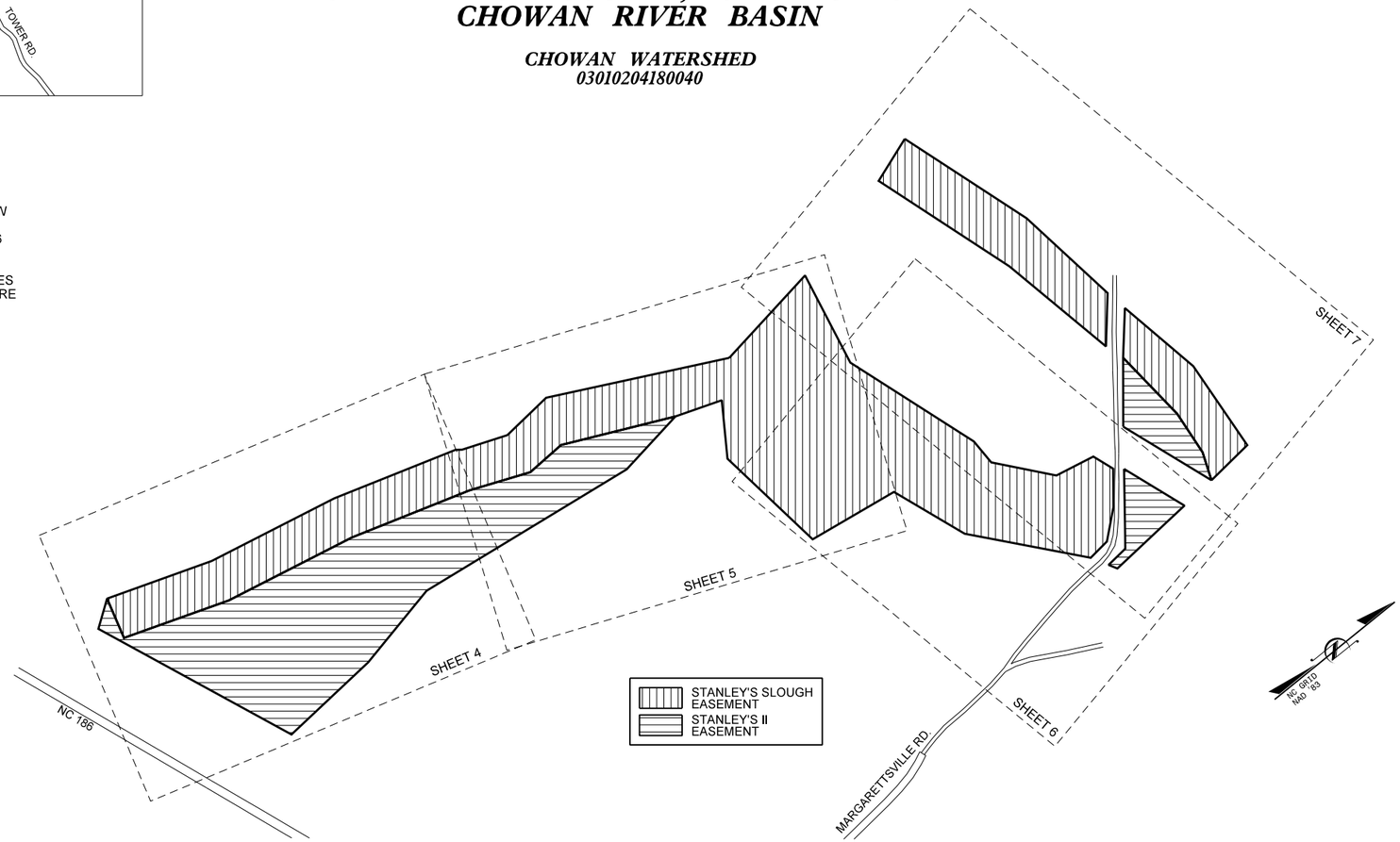
NORTHAMPTON COUNTY, NORTH CAROLINA
CHOWAN RIVER BASIN

CHOWAN WATERSHED
03010204180040



VICINITY MAP
NOT TO SCALE

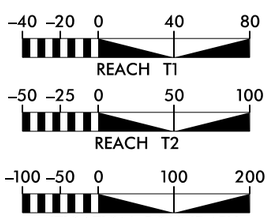
FROM RALEIGH TAKE US-64 EAST TOWARDS ROCKY MOUNT. TAKE I-95 NORTH AND FOLLOW FOR APPROX 40 MILES. TAKE EXIT 176 FOR NORTH CAROLINA 46. TURN RIGHT ONTO NC46 AND FOLLOW FOR 3 MILES. TURN LEFT ONTO US-301 N AND QUICKLY MERGE RIGHT ONTO NC 186 EAST. THE SITE WILL BE APPOX 13 MILES DOWN ON THE LEFT, EAST OF BIG JOHNS STORE ROAD AND MARGARETTSVILLE ROAD.



INDEX OF SHEETS

*** TO BE SUBMITTED WITH FINAL PLANS*

GRAPHIC SCALES



PROJECT DATA

	WETLAND REESTABLISHMENT (1:1)	WETLAND REHABILITATION (2.5:1)	WETLAND PRESERVATION (N.C.)	STREAM REESTABLISHMENT (1:1)	STREAM REHABILITATION (1:1)	UPLAND INCLUSION (N.C.)
STANLEY'S SLOUGH CREDITS	2.8 AC./ 2.8 CR.	0.8 AC./ 0.3 CR.	0.5 AC./ 0 CR.	3.5 AC./ 1465 L.F./ 1465 CR.	8.0 AC./ 2809 L.F./ 2809 CR.	1.8 AC./ 0 CR.
STANLEY'S II CREDITS	6.5 AC./ 6.5 CR.	1.1 AC./ 0.5 CR.	–	–	–	1.8 AC./ 0 CR.
TOTAL CREDITS	9.3 AC./ 9.3 CR.	1.9 AC./ 0.8 CR.	0.5 AC./ 0 CR.	3.5 AC./ 1465 L.F./ 1465 CR.	8.0 AC./ 2809 L.F./ 2809 CR.	3.7 AC./ 0 CR.

Prepared in the Office of:

KCI Associates of North Carolina, P.A.
SUITE 220 LANDMARK CENTER II, 4601 SIX FORKS RD., RALEIGH, NC 27609
ENGINEERS • PLANNERS • ECOLOGISTS

GARY M. MRYNCZA, P.E.
PROJECT ENGINEER

ALEX FRENCH / TIM MORRIS
STREAM /WETLAND DESIGN

PROJECT ENGINEER

P.E.
SIGNATURE:

Prepared for:

Ecosystem Enhancement PROGRAM

JEFF JUREK
CONTRACT ADMINISTRATOR

GENERAL NOTES:

BEARING AND DISTANCES:
ALL BEARINGS ARE NAD 1983 GRID BEARINGS.
ALL DISTANCES AND COORDINATES SHOWN ARE HORIZONTAL (GROUND) VALUES.
ALL INFORMATION IS BASED ON THE FOLLOWING KCI CONTROL POINTS.

GRADING:
PROPOSED CROSS SECTIONS IN THE PLANS ARE A GENERAL GUIDE FOR GRADING. EXACT TIE OUTS FROM THE DITCH TO THE RESTORED WETLAND SHALL BE GRADED UNDER THE DIRECTION OF THE ENGINEER.

UTILITY/SUBSURFACE PLANS:
NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. EXISTING UNDERGROUND UTILITIES HAVE NOT BEEN VERIFIED. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING A UTILITY LOCATOR AND ESTABLISHING THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES IN THE PROJECT REACH.

CONTROL:

NAME	NORTHING	EASTING	ELEV.
KCI#1	1016720.93	2484608.74	57.91
KCI#3	1019481.32	2485120.13	45.15
KCI#4	1019310.06	2485382.05	45.13
KCI#5	1019310.06	2485382.05	45.13
KCI#6	1019084.72	2485651.46	46.48
KCI#7	1019042.88	2485242.23	46.39
KCI#8	1018912.52	2484912.50	46.93
KCI#9	1018851.22	2485361.74	45.21
KCI#10	1018757.42	2485093.29	45.52
KCI#11	1018753.50	2484753.72	45.96
KCI#12	1018588.72	2484677.15	47.00
KCI#13	1018462.81	2484569.90	47.61
KCI#14	1018856.12	2485685.87	50.98
KCI#15	1019391.62	2485748.55	44.27
KCI#16	1019474.14	2485792.29	44.58
KCI#17	1016535.09	2484118.26	63.17
KCI#18	1018586.87	2485169.82	50.87
KCI#19	1019249.87	2484417.07	45.99
KCI#21	1016989.95	2484843.11	72.67
KCI#30	1017598.27	2485864.81	67.03
KCI#31	1017838.59	2485845.29	71.83
KCI#32	1017838.59	2485845.29	71.87

PROJECT LEGEND:

Proposed Stream Valley Centerline ..... 12+00 13+00

Proposed Braided Channel .....

Existing Ditch to be Filled .....

Proposed Ditch Plug .....

Proposed Stabilized Drainage Outfall .....

Existing Woods Line .....

Minor Contour Line .....

Major Contour Line 720

A	SUBMITTED WITH MITIGATION PLAN	SWL	MAY 2013
		DESCRIPTION	DATE

REVISIONS

APPROVED

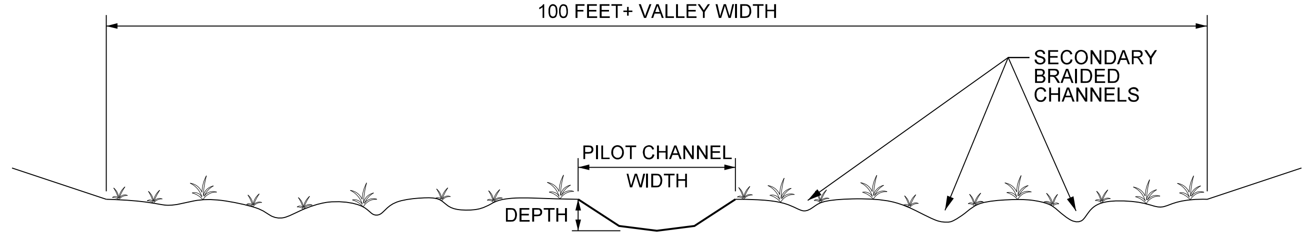
Ecosystem Enhancement Program

KCI ASSOCIATES OF NC
ENGINEERS • PLANNERS • SCIENTISTS
4601 SIX FORKS ROAD, SUITE 220
RALEIGH, NORTH CAROLINA 27609

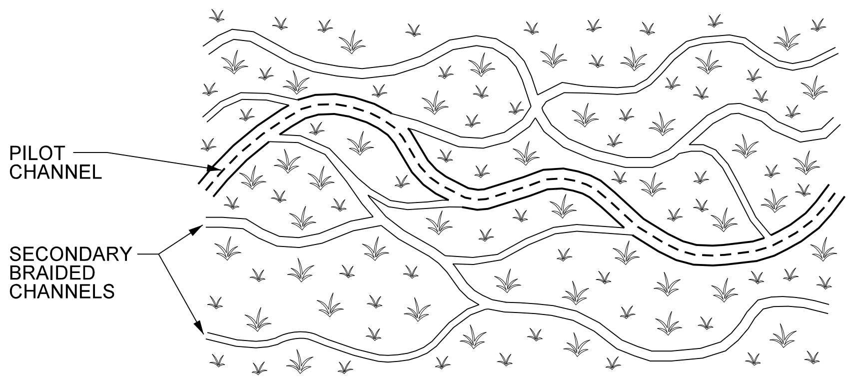
STANLEY'S SLOUGH / STANLEY'S II
RESTORATION SITES
NORTHAMPTON COUNTY, NORTH CAROLINA

DATE: MAY 2013
SCALE: N.T.S.

GENERAL NOTES & PROJECT LEGEND



CROSS-SECTION



PLAN VIEW

	PILOT CHANNEL SIZING	
	REACH T1	REACH T2
WIDTH	2.5 - 4 FT	1.5 - 2.4 FT
DEPTH	0.5 - 1.0 FT	0.3 - 0.6 FT

PER DIRECTION OF THE DESIGNER, CONTRACTOR TO GRADE PILOT CHANNEL IN A RANDOM MANNER, USING THE WIDTH AND DEPTH RANGES STATED ABOVE FOR THE APPROPRIATE REACH.

EXACT LOCATION OF PILOT CHANNEL AND CORRESPONDING PILOT CHANNELS TO BE DETERMINED IN FIELD BY DESIGNER.

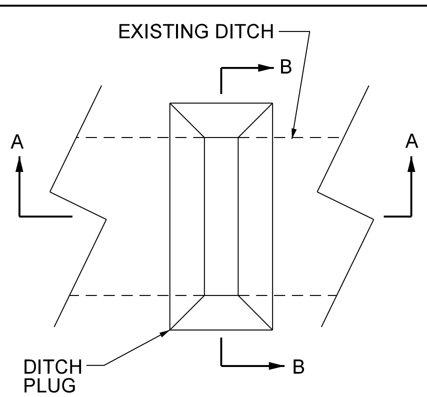
SEE SHEET 8 FOR VALLEY GRADE CROSS-SECTIONS. FINAL GRADE TO BE DETERMINED IN FIELD BY DESIGNER.

PILOT CHANNEL FOR REACH T1 TO BE TIED INTO EXISTING CHANNEL AT APPROXIMATELY STATION 28+25.

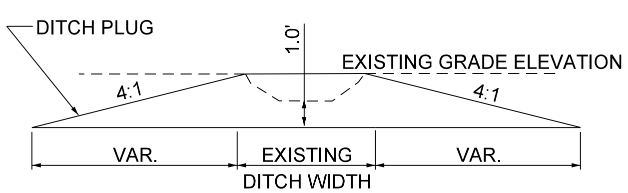
IF NECESSARY, WOODY DEBRIS TO BE INCORPORATED THROUGHOUT STREAM SYSTEM TO ACT AS WATER DIVERSION AND GRADE CONTROL. EXACT LOCATION AND QUANTITY TO BE DETERMINED BY DESIGNER REPRESENTATIVE IN THE FIELD.

BRAIDED CHANNEL DETAIL

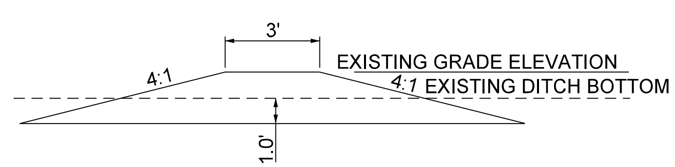
SCALE: NTS



PLAN VIEW



SECTION B-B

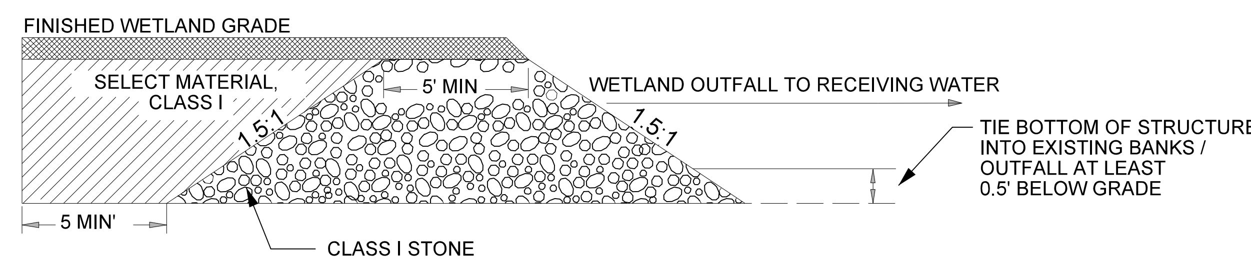


SECTION A-A

NOTE:
SEE PLAN SHEETS FOR LOCATIONS OF DITCH PLUGS.
USE SELECT MATERIAL, CLASS I OR SUITABLE SALVAGED MATERIAL, IF AVAILABLE FOR DITCH PLUGS.

DITCH PLUG DETAIL

SCALE: NTS



PROFILE VIEW

NOTE:
IF AVAILABLE SUITABLE SALVAGED MATERIAL MAY BE SUBSTITUTED FOR SELECT MATERIAL, CLASS I.

STABILIZED DRAINAGE OUTFALL

SCALE: NTS

SYM.	DESCRIPTION	DATE	APPROVED
A	SUBMITTED WITH MITIGATION PLAN	MAY 2013	

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RALEIGH, NORTH CAROLINA 27609

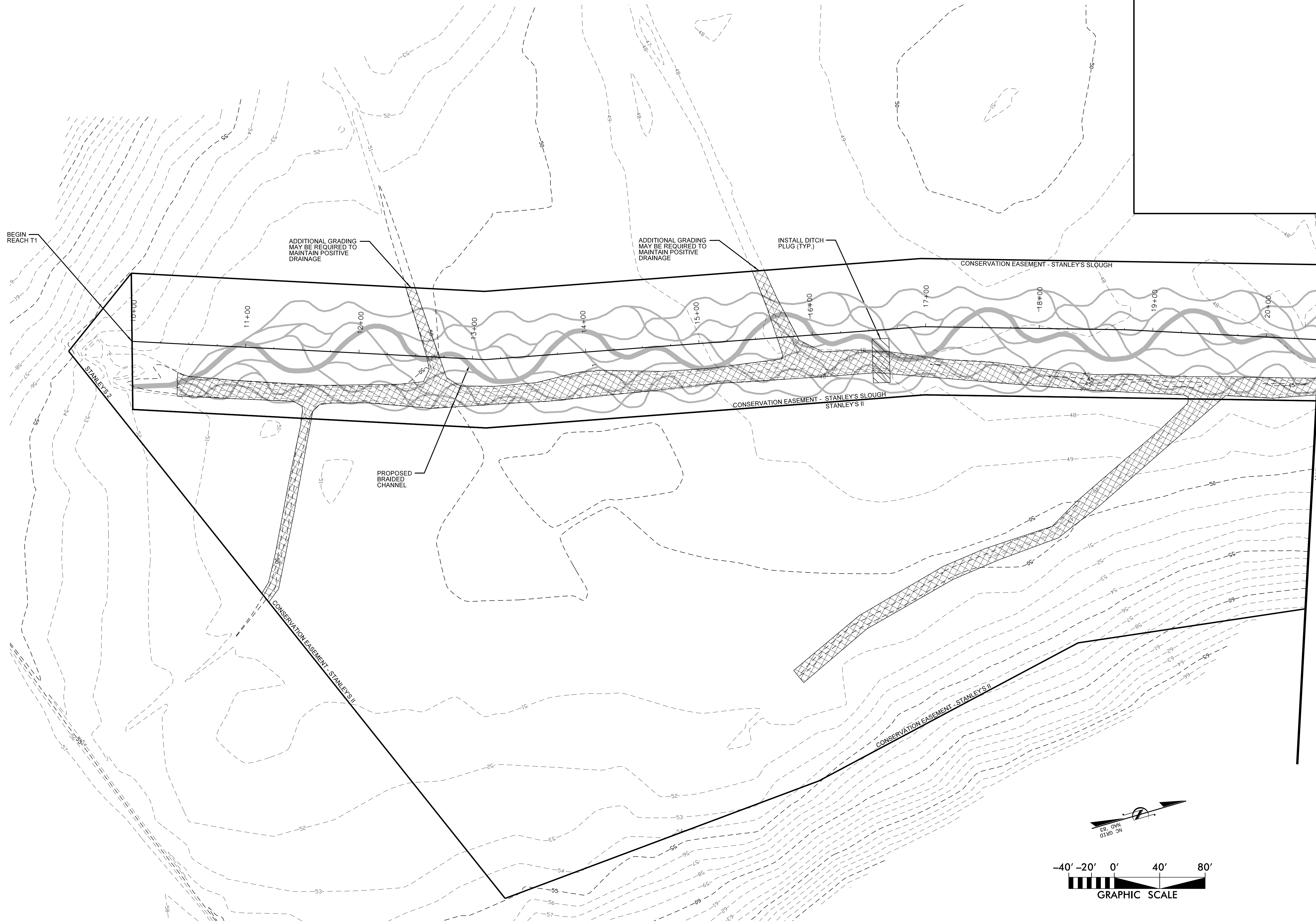
STANLEY'S SLOUGH / STANLEY'S II RESTORATION SITES

NORTHAMPTON COUNTY, NORTH CAROLINA

DATE: MAY 2013
SCALE: N.T.S.

DETAILS

SHEET 3 OF 14



SYM.	DESCRIPTION	DATE	APPROVED
A	SUBMITTED WITH MITIGATION PLAN	MAY 2013	

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STANLEY'S SLOUGH / STANLEY'S II RESTORATION SITES
NORTHAMPTON COUNTY, NORTH CAROLINA

REACH T1

DATE: MAY 2013
SCALE: GRAPHIC

SITE PLAN

SHEET 4 OF 14

NC GRID
NAD '83

–40′ –20′ 0′ 40′ 80′
GRAPHIC SCALE

CONSERVATION EASEMENT - STANLEY'S SLOUGH

CONSERVATION EASEMENT - STANLEY'S SLOUGH

CONSERVATION EASEMENT - STANLEY'S SLOUGH
STANLEY'S II

CONSERVATION EASEMENT - STANLEY'S II

MATCHLINE - SEE SHEET 4

PROPOSED BRAIDED CHANNEL

PROPOSED BRAIDED CHANNEL TO BE TIED INTO EXISTING CHANNEL

INSTALL DITCH PLUG (TYP.)

STABILIZE OUTLET WITH CLASS I AND SURGE STONE MIXTURE

CONSERVATION EASEMENT - STANLEY'S SLOUGH

MATCHLINE - SEE SHEET 6

21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00

A	SUBMITTED WITH MITIGATION PLAN	MAY 2013	
B	REVISED PER IRT COMMENTS	AUG 2013	
SVML	DESCRIPTION	DATE	APPROVED

REVISIONS

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RALEIGH, NORTH CAROLINA 27609

STANLEY'S SLOUGH / STANLEY'S II RESTORATION SITES

NORTHAMPTON COUNTY, NORTH CAROLINA

REACH T1

DATE: MAY 2013
SCALE: GRAPHIC

SITE PLAN

SHEET 6 OF 14

SITE PLAN

DATE: MAY 2013
SCALE: GRAPHIC

STANLEY'S SLOUGH / STANLEY'S II RESTORATION SITES

NORTHAMPTON COUNTY, NORTH CAROLINA

REACH T1

KCI ASSOCIATES OF NC
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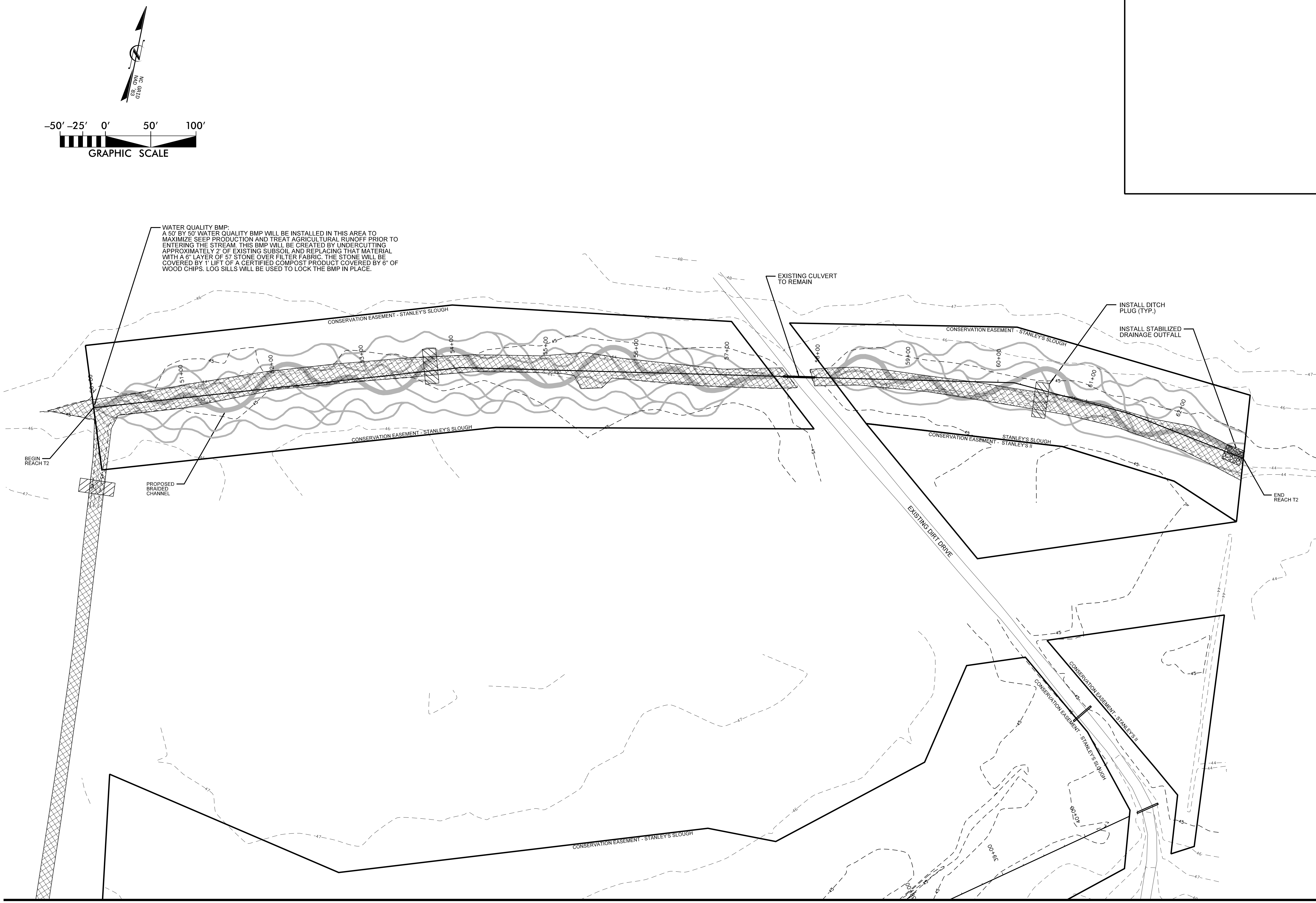
RALEIGH, NORTH CAROLINA 27609

Ecosystem Enhancement Program

SYM.	DESCRIPTION	DATE	APPROVED
A	SUBMITTED WITH MITIGATION PLAN	MAY 2013	

REVISIONS



SYM.	DESCRIPTION	DATE	APPROVED
A	SUBMITTED WITH MITIGATION PLAN	MAY 2013	

REVISIONS

Ecosystem Enhancement PROGRAM

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4601 SIX FORKS ROAD, SUITE 220
RALEIGH, NORTH CAROLINA 27609

STANLEY'S SLOUGH / STANLEY'S II RESTORATION SITES

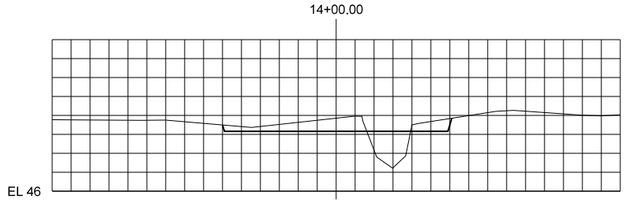
NORTHAMPTON COUNTY, NORTH CAROLINA

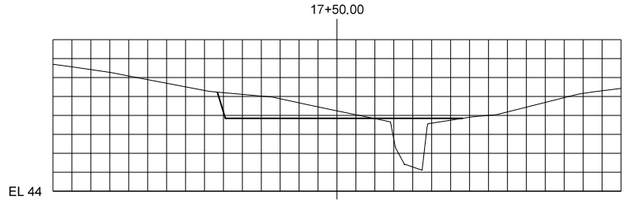
REACH T2

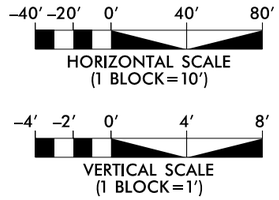
DATE: MAY 2013
SCALE: GRAPHIC

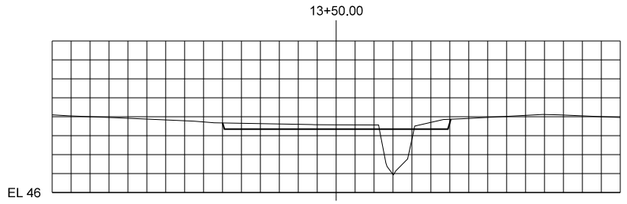
SITE PLAN

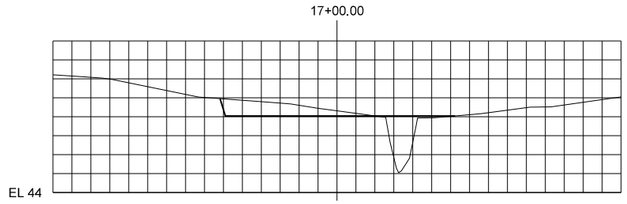
SHEET 7 OF 14









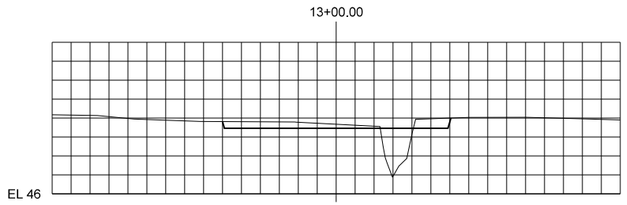


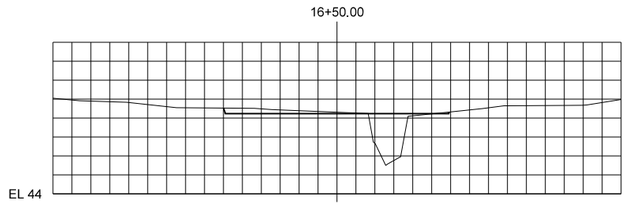
NOTES:

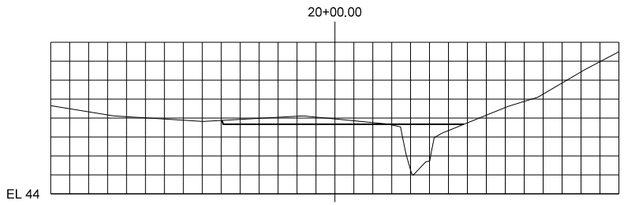
CROSS SECTIONS SHOWN FOR CUT/FILL QUANTITIES ONLY. EXACT GRADING TO BE DETERMINED BY DESIGN REPRESENTATIVE IN FIELD.

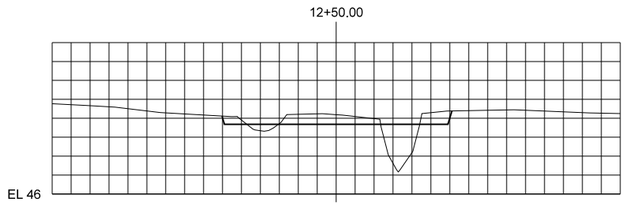
ALL TOPSOIL TO BE STOCKPILED AND RESPREAD UNIFORMLY THROUGHOUT HEADWATER STREAM VALLEY.

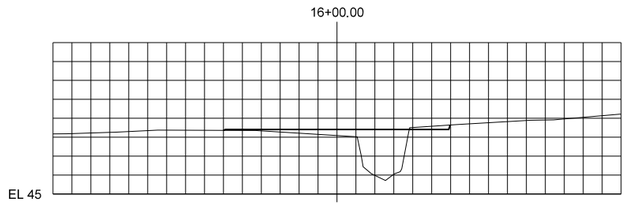
ALL TRANSITIONS FROM HEADWATER STREAM VALLEY TO ADJACENT UPLANDS TO BE 3:1 OR LOWER.

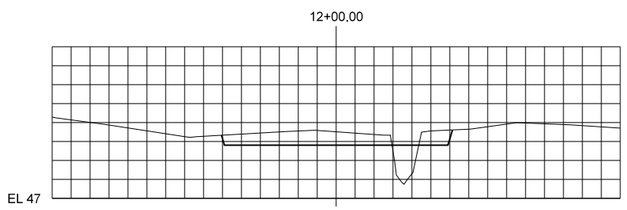


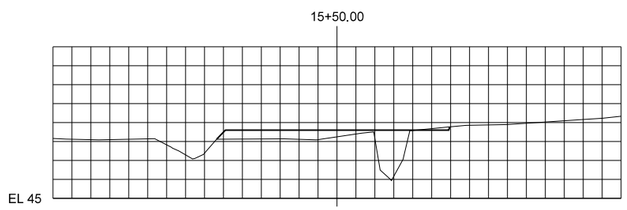


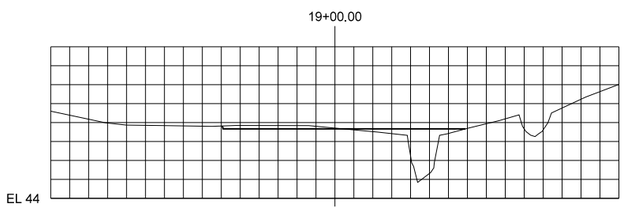


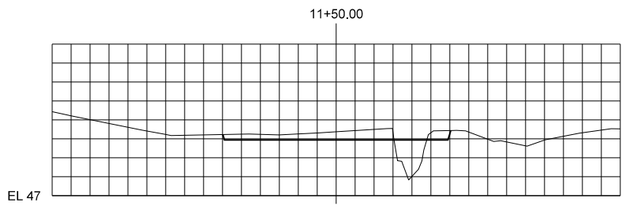


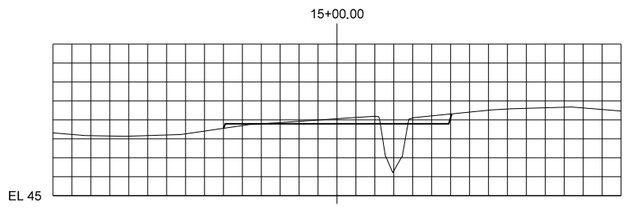


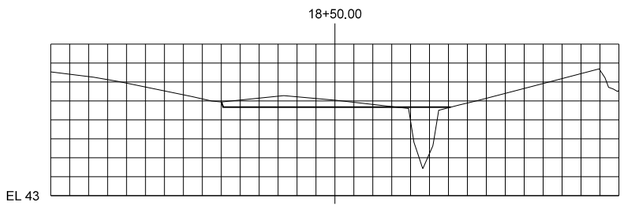


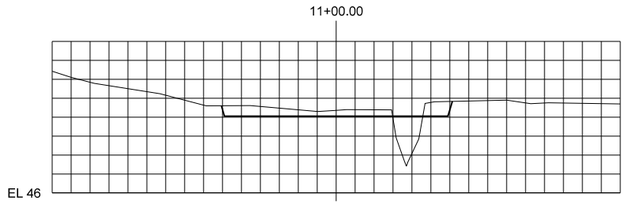


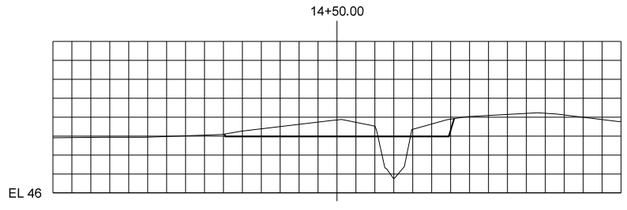


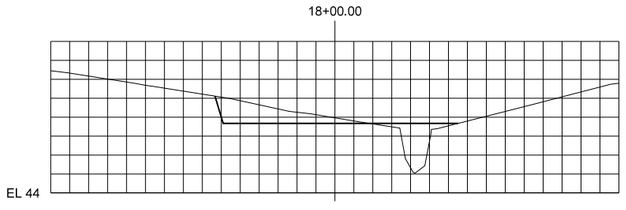












REVISIONS			
DESCRIPTION	DATE	APPROVED	
SUBMITTED WITH MITIGATION PLAN	MAY 2013		
SYM.			
A			

Ecosystem Enhancement Program

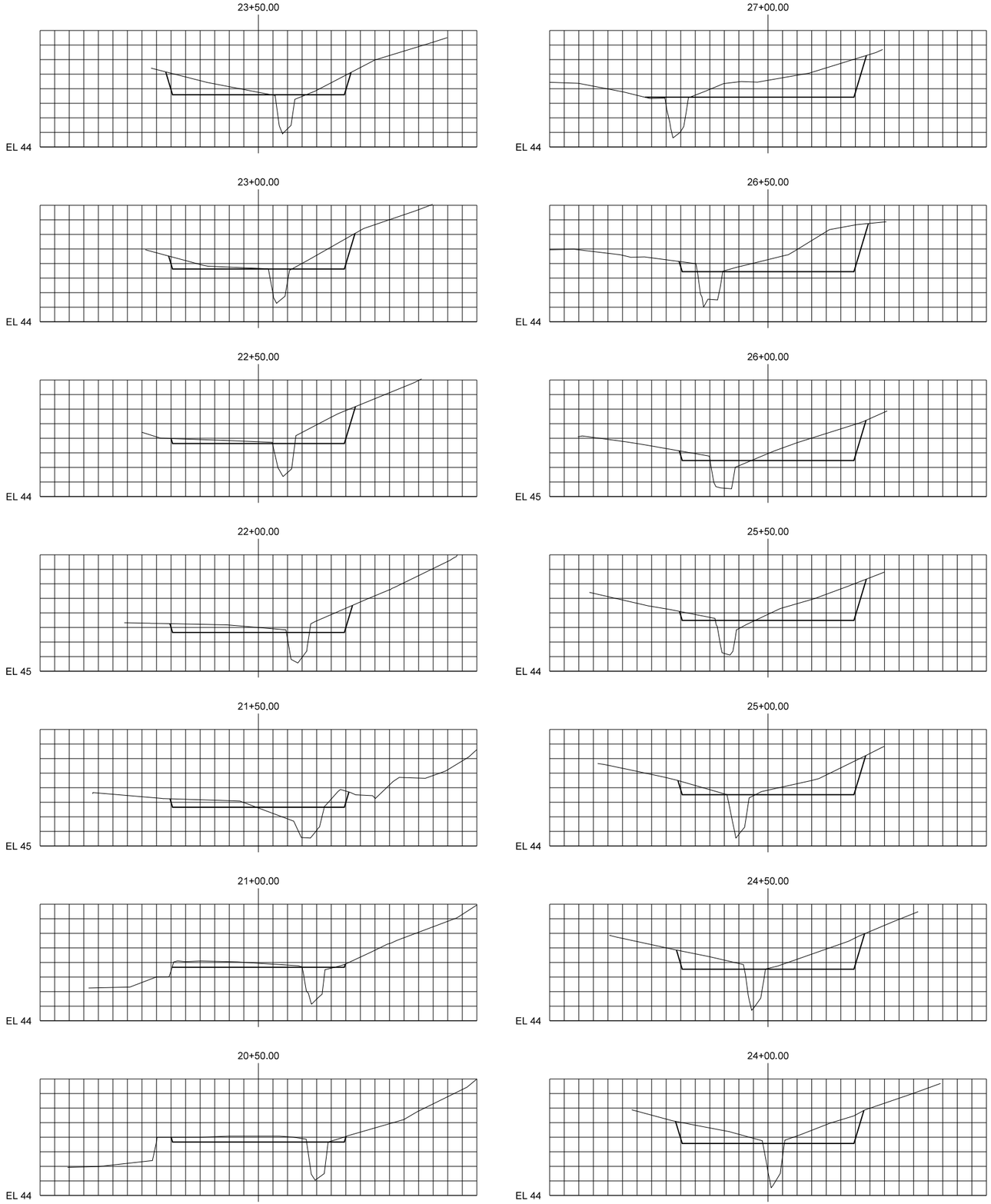
KCI ASSOCIATES OF NC
ENGINEERS • PLANNERS • SCIENTISTS
4601 SIX FORKS ROAD, SUITE 220
RALEIGH, NORTH CAROLINA 27609

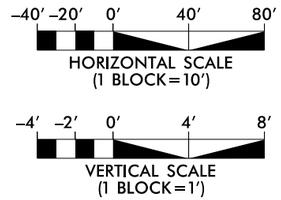
STANLEY'S SLOUGH / STANLEY'S II
RESTORATION SITES
NORTHAMPTON COUNTY, NORTH CAROLINA

REACH T1

DATE: MAY 2013
SCALE: GRAPHIC

CROSS SECTIONS (REACH T1)





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REVISIONS			
	DESCRIPTION	DATE	APPROVED
A	SUBMITTED WITH MITIGATION PLAN	MAY 2013	SVM

Ecosystem Enhancement Program

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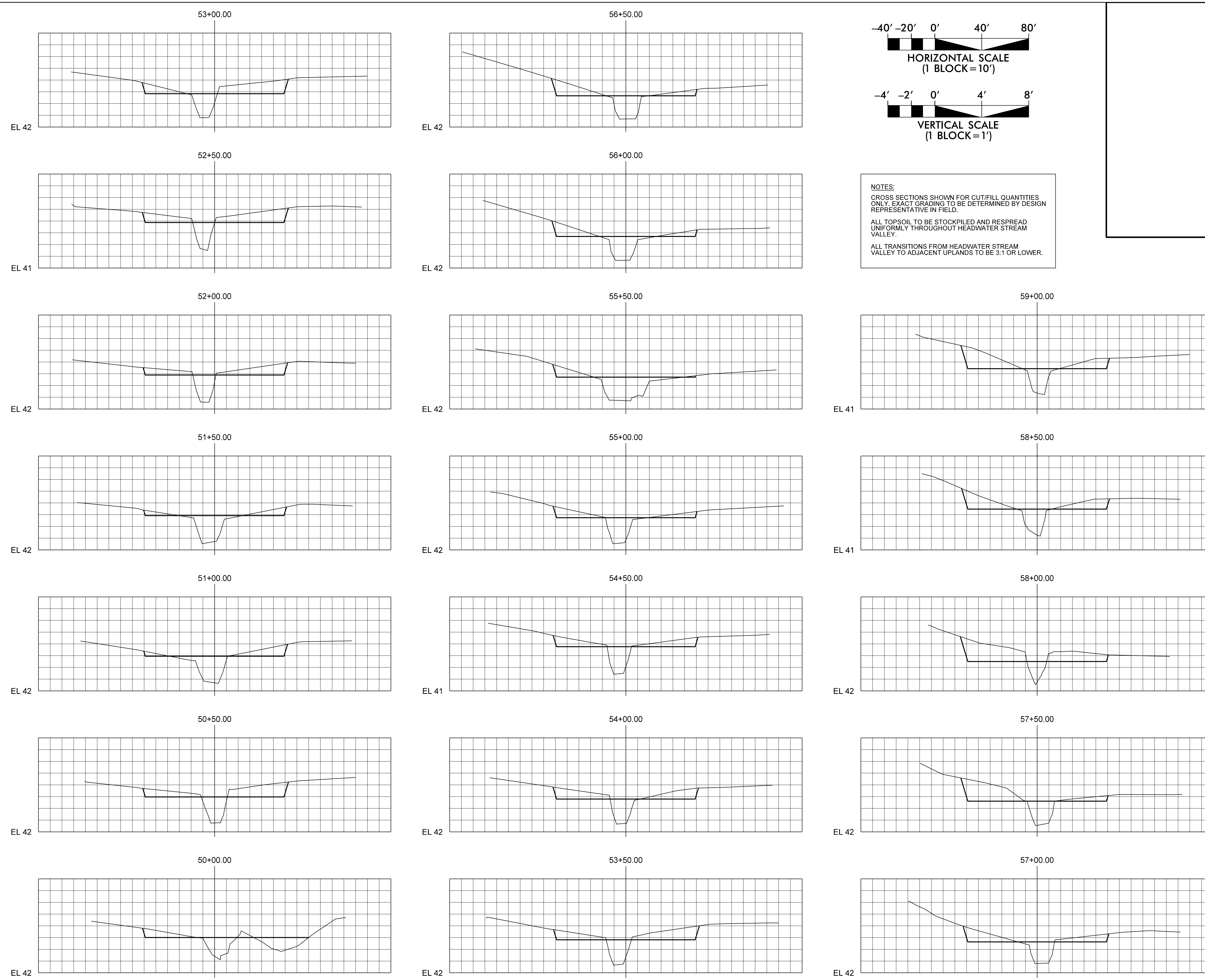
STANLEY'S SLOUGH / STANLEY'S II
RESTORATION SITES
NORTHAMPTON COUNTY, NORTH CAROLINA

REACH T1

DATE: MAY 2013
SCALE: GRAPHIC

CROSS SECTIONS (REACH T1)



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SYM.	DESCRIPTION	DATE	APPROVED
A	SUBMITTED WITH MITIGATION PLAN	MAY 2013	

REVISIONS

Ecosystem Enhancement PROGRAM

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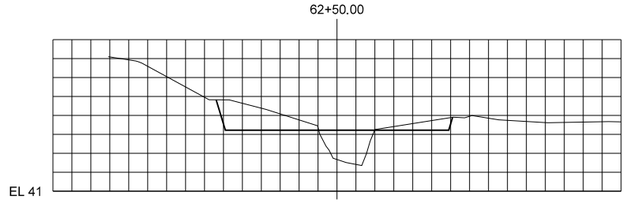
STANLEY'S SLOUGH / STANLEY'S II
RESTORATION SITES
NORTHAMPTON COUNTY, NORTH CAROLINA

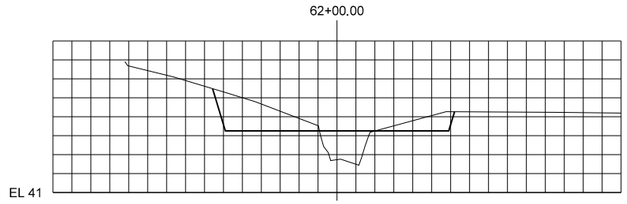
REACH T2

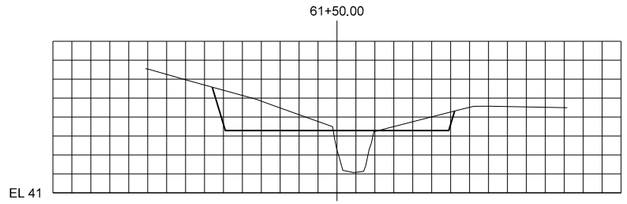
DATE: MAY 2013
SCALE: GRAPHIC

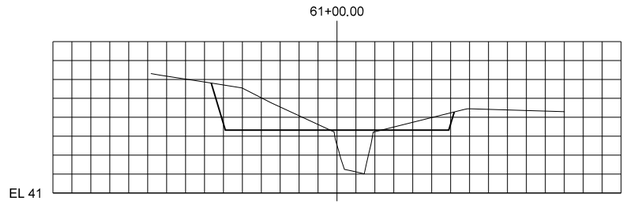
CROSS SECTIONS (REACH T2)

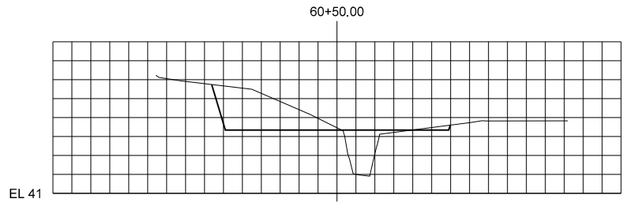
SHEET 10 OF 14

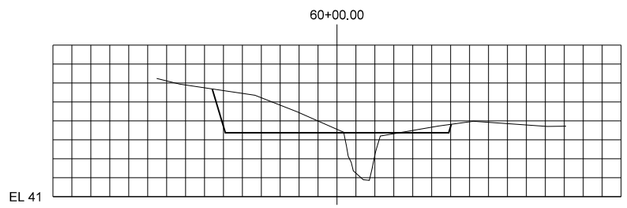


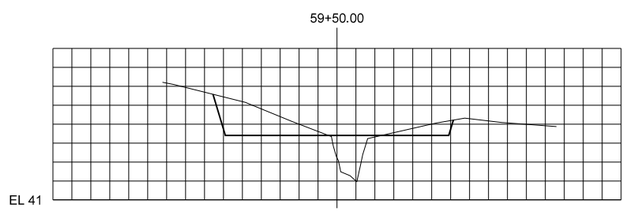


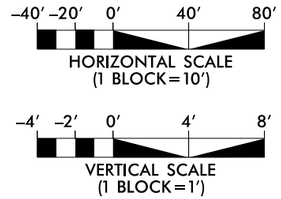












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REVISIONS

	DESCRIPTION	DATE	APPROVED
A	SUBMITTED WITH MITIGATION PLAN	MAY 2013	

Ecosystem Enhancement Program

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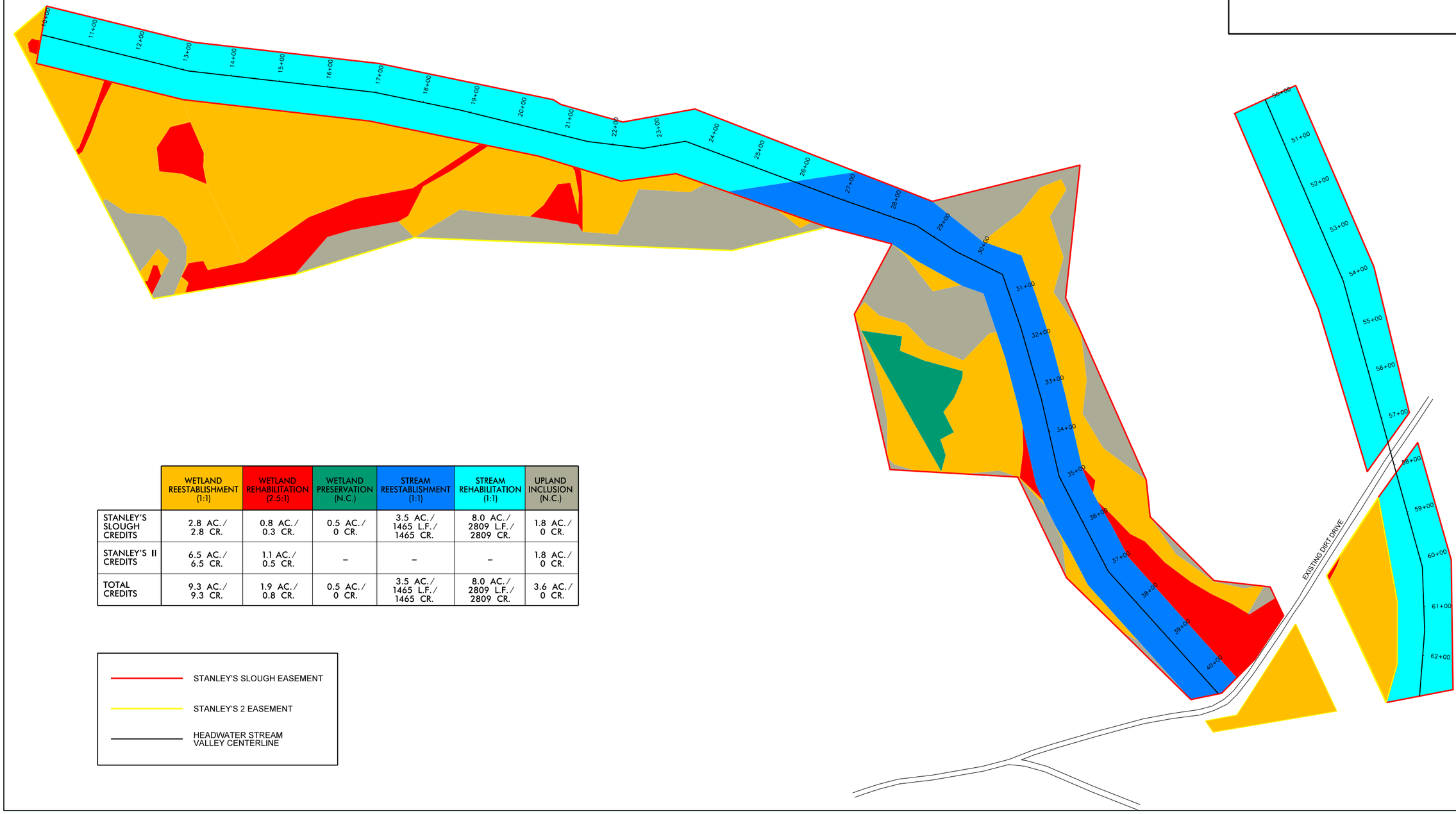
STANLEY'S SLOUGH / STANLEY'S II
RESTORATION SITES
NORTHAMPTON COUNTY, NORTH CAROLINA

REACH T2

DATE: MAY 2013
SCALE: GRAPHIC

CROSS SECTIONS (REACH T2)



	WETLAND REESTABLISHMENT (1:1)	WETLAND REHABILITATION (2.5:1)	WETLAND PRESERVATION (N.C.)	STREAM REESTABLISHMENT (1:1)	STREAM REHABILITATION (1:1)	UPLAND INCLUSION (N.C.)
STANLEY'S SLOUGH CREDITS	2.8 AC./ 2.8 CR.	0.8 AC./ 0.3 CR.	0.5 AC./ 0 CR.	3.5 AC./ 1465 L.F./ 1465 CR.	8.0 AC./ 2809 L.F./ 2809 CR.	1.8 AC./ 0 CR.
STANLEY'S II CREDITS	6.5 AC./ 6.5 CR.	1.1 AC./ 0.5 CR.	–	–	–	1.8 AC./ 0 CR.
TOTAL CREDITS	9.3 AC./ 9.3 CR.	1.9 AC./ 0.8 CR.	0.5 AC./ 0 CR.	3.5 AC./ 1465 L.F./ 1465 CR.	8.0 AC./ 2809 L.F./ 2809 CR.	3.6 AC./ 0 CR.

STANLEY'S SLOUGH EASEMENT

STANLEY'S 2 EASEMENT

HEADWATER STREAM VALLEY CENTERLINE

A	SUBMITTED WITH MITIGATION PLAN	SWL	MAY 2013
		DESCRIPTION	DATE

REVISIONS

APPROVED

Ecosystem Enhancement Program

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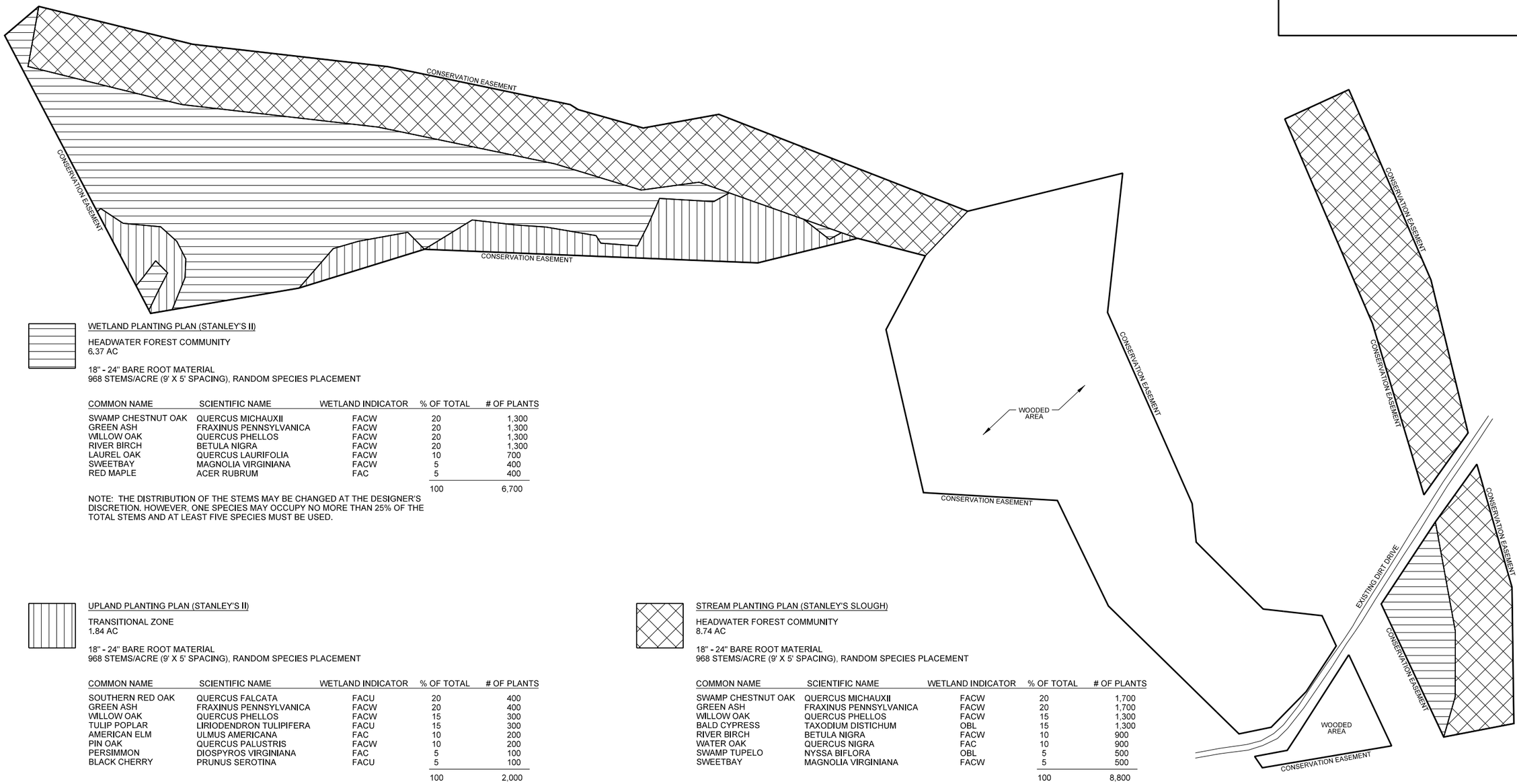
STANLEY'S SLOUGH / STANLEY'S II RESTORATION SITES

NORTHAMPTON COUNTY, NORTH CAROLINA

DATE: MAY 2013

SCALE: GRAPHIC

MITIGATION CLASSIFICATION



WETLAND PLANTING PLAN (STANLEY'S II)

HEADWATER FOREST COMMUNITY
6.37 AC

18" - 24" BARE ROOT MATERIAL
968 STEMS/ACRE (9' X 5' SPACING), RANDOM SPECIES PLACEMENT

COMMON NAME	SCIENTIFIC NAME	WETLAND INDICATOR	% OF TOTAL	# OF PLANTS
SWAMP CHESTNUT OAK	QUERCUS MICHAUXII	FACW	20	1,300
GREEN ASH	FRAXINUS PENNSYLVANICA	FACW	20	1,300
WILLOW OAK	QUERCUS PHELLOS	FACW	20	1,300
RIVER BIRCH	BETULA NIGRA	FACW	20	1,300
LAUREL OAK	QUERCUS LAURIFOLIA	FACW	10	700
SWEETBAY	MAGNOLIA VIRGINIANA	FACW	5	400
RED MAPLE	ACER RUBRUM	FAC	5	400
			100	6,700

NOTE: THE DISTRIBUTION OF THE STEMS MAY BE CHANGED AT THE DESIGNER'S DISCRETION. HOWEVER, ONE SPECIES MAY OCCUPY NO MORE THAN 25% OF THE TOTAL STEMS AND AT LEAST FIVE SPECIES MUST BE USED.

UPLAND PLANTING PLAN (STANLEY'S II)

TRANSITIONAL ZONE
1.84 AC

18" - 24" BARE ROOT MATERIAL
968 STEMS/ACRE (9' X 5' SPACING), RANDOM SPECIES PLACEMENT

COMMON NAME	SCIENTIFIC NAME	WETLAND INDICATOR	% OF TOTAL	# OF PLANTS
SOUTHERN RED OAK	QUERCUS FALCATA	FACU	20	400
GREEN ASH	FRAXINUS PENNSYLVANICA	FACW	20	400
WILLOW OAK	QUERCUS PHELLOS	FACW	15	300
TULIP POPLAR	LIRIODENDRON TULIPIFERA	FACU	15	300
AMERICAN ELM	ULMUS AMERICANA	FAC	10	200
PIN OAK	QUERCUS PALUSTRIS	FACW	10	200
PERSIMMON	DIOSPYROS VIRGINIANA	FAC	5	100
BLACK CHERRY	PRUNUS SEROTINA	FACU	5	100
			100	2,000

NOTE: THE DISTRIBUTION OF THE STEMS MAY BE CHANGED AT THE DESIGNER'S DISCRETION. HOWEVER, ONE SPECIES MAY OCCUPY NO MORE THAN 25% OF THE TOTAL STEMS AND AT LEAST FIVE SPECIES MUST BE USED.

STREAM PLANTING PLAN (STANLEY'S SLOUGH)

HEADWATER FOREST COMMUNITY
8.74 AC

18" - 24" BARE ROOT MATERIAL
968 STEMS/ACRE (9' X 5' SPACING), RANDOM SPECIES PLACEMENT

COMMON NAME	SCIENTIFIC NAME	WETLAND INDICATOR	% OF TOTAL	# OF PLANTS
SWAMP CHESTNUT OAK	QUERCUS MICHAUXII	FACW	20	1,700
GREEN ASH	FRAXINUS PENNSYLVANICA	FACW	20	1,700
WILLOW OAK	QUERCUS PHELLOS	FACW	15	1,300
BALD CYPRESS	TAXODIUM DISTICHUM	OBL	15	1,300
RIVER BIRCH	BETULA NIGRA	FACW	10	900
WATER OAK	QUERCUS NIGRA	FAC	10	900
SWAMP TUPELO	NYSSA BIFLORA	OBL	5	500
SWEETBAY	MAGNOLIA VIRGINIANA	FACW	5	500
			100	8,800

NOTE: THE DISTRIBUTION OF THE STEMS MAY BE CHANGED AT THE DESIGNER'S DISCRETION. HOWEVER, ONE SPECIES MAY OCCUPY NO MORE THAN 25% OF THE TOTAL STEMS AND AT LEAST FIVE SPECIES MUST BE USED.

REVISIONS

	DESCRIPTION	DATE	APPROVED
A	SUBMITTED WITH MITIGATION PLAN	MAY 2013	
B	REVISED PER IRT COMMENTS	AUG 2013	
	SWL		

Ecosystem Enhancement Program

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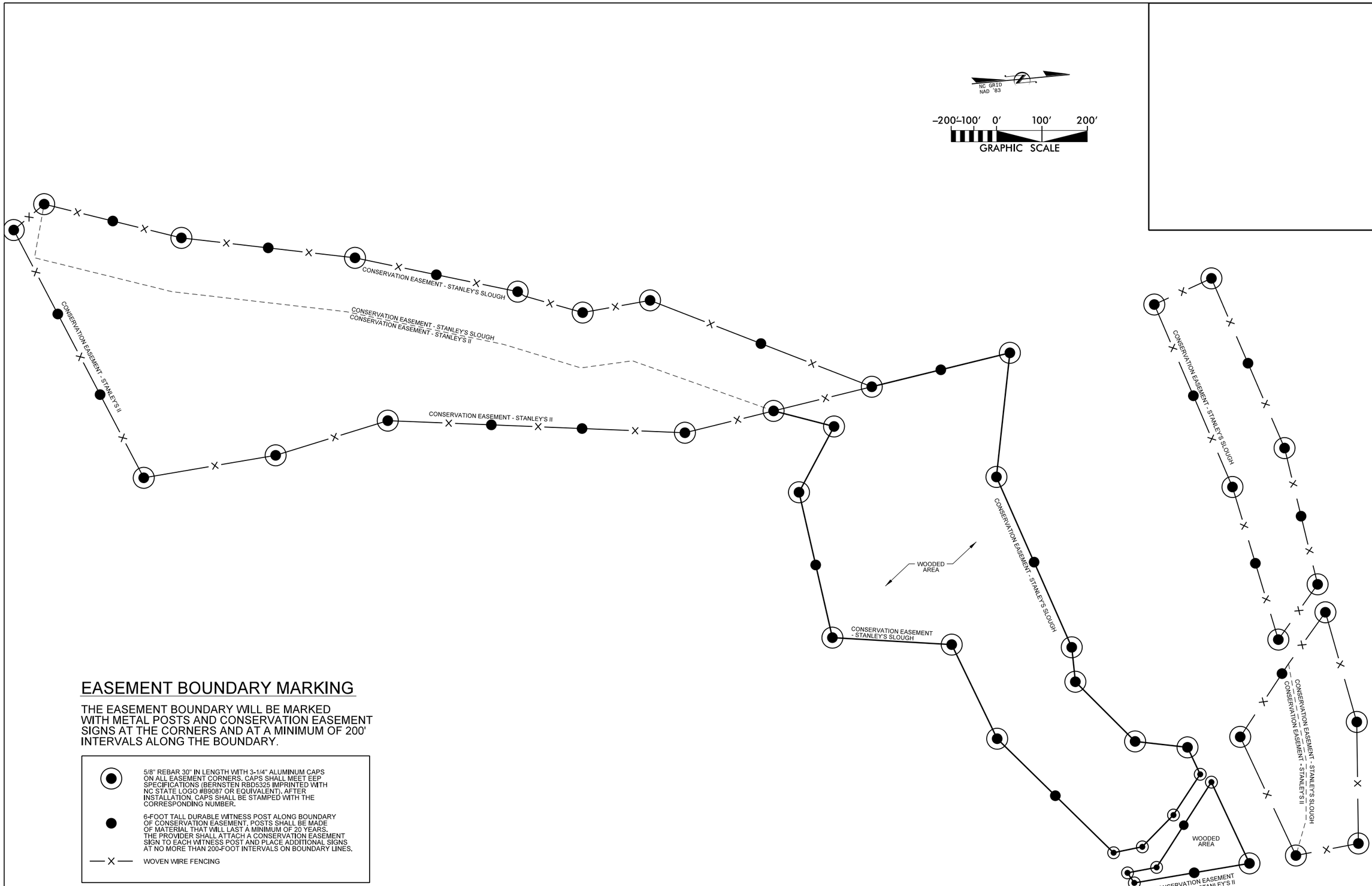
STANLEY'S SLOUGH / STANLEY'S II RESTORATION SITES

NORTHAMPTON COUNTY, NORTH CAROLINA

DATE: MAY 2013
SCALE: GRAPHIC

PLANTING PLAN

SHEET 13 OF 14



EASEMENT BOUNDARY MARKING

THE EASEMENT BOUNDARY WILL BE MARKED WITH METAL POSTS AND CONSERVATION EASEMENT SIGNS AT THE CORNERS AND AT A MINIMUM OF 200' INTERVALS ALONG THE BOUNDARY.

●	5/8" REBAR 30" IN LENGTH WITH 3-1/4" ALUMINUM CAPS ON ALL EASEMENT CORNERS. CAPS SHALL MEET EEP SPECIFICATIONS (BERNSTEN RBD5325 IMPRINTED WITH NC STATE LOGO #B9087 OR EQUIVALENT). AFTER INSTALLATION, CAPS SHALL BE STAMPED WITH THE CORRESPONDING NUMBER.
●	6-FOOT TALL DURABLE WITNESS POST ALONG BOUNDARY OF CONSERVATION EASEMENT. POSTS SHALL BE MADE OF MATERIAL THAT WILL LAST A MINIMUM OF 20 YEARS. THE PROVIDER SHALL ATTACH A CONSERVATION EASEMENT SIGN TO EACH WITNESS POST AND PLACE ADDITIONAL SIGNS AT NO MORE THAN 200-FOOT INTERVALS ON BOUNDARY LINES.
—X—	WOVEN WIRE FENCING

REVISIONS			
DESCRIPTION	DATE	APPROVED	
A SUBMITTED WITH MITIGATION PLAN	MAY 2013	SVM	

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BOUNDARY MARKING PLAN

SHEET 14 OF 14