Armstrong Property Wetland and Stream Mitigation Project
EEP ID (IMS#) 92487
FDP Contract Number D06012-A
USACE Action ID # SAW-2007-03020-148
DWQ Project# 07-1378

CLOSEOUT REPORT

STREAM AND WETLAND

Project Setting and Classifications	
County	Hyde County
General Location	Ponzer
Basin	Chowan
Physiographic Region	Coastal Plain
Ecoregion	8.5.1 Middle Atlantic Coastal Plain
USGS Hydro Unit	03020104
NCDWQ Sub-basin	03-03-07
Cowardin Classification	PEM, PSS, PFO
Thermal Regime	Warm
Trout Water	No
Project Performers	
Source Agency	EEP
Provider	Albemarle Restorations, LLC
Designer	Ecotone, Inc.
Monitoring Firm	Woods, Water and Wildlife, Inc.
Channel Remediation	Woods, Water and Wildlife, Inc.
Plant Remediation	Carolina Silvics, Inc
Property Interest Holder	EEP

Project Activities and Timeline	
Activity or Report	**Date of Delivery**
Restoration Plan	July 2007
Final Design -90%	July 2007
Construction	November 2007
Temporary S & E mix applied	February 2008
Permanent seed mix applied	February 2008
Containerized and Bare Root Planting	January 2008
Mit. Plan/As-built	March 2008
Year 1 monitoring	December 2008
Year 2 monitoring	January 2010
Partial subsoiling	September 2010
Year 3 monitoring	November 2010
Partial replant (subsoiled area)	January 2011
Year 4 monitoring	December 2011
Year 5 monitoring	December 2012

Project Setting and Background Summary

The Armstrong Property Wetland Mitigation Site is a headwater riverine wetland and stream mitigation project located just east of State Route 45 near its intersection with State Route 264, in Hyde County, North Carolina. It was constructed by Albemarle Restorations, LLC, under contract with EEP to provide compensatory wetland mitigation credits in the Tar-Pamlico River Basin. Construction activities, in accordance with the approved restoration plan, began October 1, 2007, and were completed on November 30, 2007. Tree and shrub planting on the project site occurred on January 28 and 29, 2008.

Hydrologic monitoring began in 2008 after construction and tree planting was completed. Five water level monitoring gauges are located at varying elevations throughout the riverine wetland areas of the site to measure subsurface water elevations. Two additional gauges are located in the headwater stream (swamp run) to help monitor flow and water level within the stream. Two more gauges are installed at the reference site. Corrective action to improve hydrologic performance on a portion of the project was taken in September, 2010 in the form of subsoiling on 11 acres with the intent of improving water penetration and retention. It appears the treatment has had a positive effect by enhancing infiltration and groundwater recharge.

Water flow in headwater projects can be difficult to measure and document, but flow events were both video documented and measured with the use of hydrologic monitoring gauges. Flow events were video recorded/measured for each year from 2008-2012 and the data show evidence of rainwater charged flow events occurring over the entire length of the project.

Goals and Objectives:

The goal of the Armstrong Property Mitigation Project was to create a riverine wetland system typically found in the middle to upper reaches of first or zero order tributary systems. The project is to serve as compensation for wetland loss in the Tar-Pamlico River Basin. The restoration plan was developed and implemented to eliminate pattern drainage and restore topography and hydrology that more closely resembled that of similar undisturbed land. Construction resulted in the development of a broad, frequently flooded swamp run following a historical path as evidenced by archived aerial photographs and signature topography. Subsequent planting was designed to restore a wetland forest ecosystem that is typically found in the immediate area characteristic of similar soils, topography and hydrology.

Ecological benefits of the restored riparian headwater system and its associated riverine wetlands are the following:

1. Water quality improvements, including nutrient, toxicant and sediment retention and reduction, increasing dissolved oxygen levels, as well as reducing excessive algae growth, and reducing surface water temperatures in receiving waters by providing permanent shading in the form of a shrub/scrub and forested headwater wetland system.
2. Wildlife habitat enhancement by adding to the existing adjacent forested areas creating a continuous travel corridor between habitat blocks and providing a wide range of habitat areas (open water, emergent, shrub/scrub and forested) for amphibians, reptiles, birds, insects and mammals.

3. Flood flow attenuation during storm events which reduces sedimentation and erosion downstream, and improves long term water quality within the Pungo River.
4. Passive outdoor recreation and educational opportunities for the landowner and the surrounding community.
5.

Success Criteria

Vegetation: The vegetation success criterion was developed in accordance with the CVS-EEP protocol. The Armstrong project was designed to include both riverine and bottomland hardwood plant communities. The project was planted with a mixture of tree and shrub species that would resemble that of naturally occurring swamp runs and adjacent riverine wetlands in the local area. The run and area immediately adjacent were planted heavily with cypress, oaks and tupelo. The riverine wetland zone beyond the swamp run is populated by a broader mix of native hydrophytic tree and shrub species. The species mix was based on the vegetation noted at the reference site and all species are classified from FAC to OBL. The success criterion in year 5 is to have a minimum of 260 live stems per acre.

Hydrology: The hydrologic success criterion is to achieve a minimum of 21 consecutive days (8%) where the groundwater level is within 12 inches of the soil surface during the growing season. The growing season for this site is from March 11 to November 27, a period of 261 days (WETS Table for Belhaven, NC). Success for any particular monitoring location is to show soil saturation to within 12 inches of the surface for 21 consecutive days during that period.

Flow: Measured or otherwise documented flow events during the monitoring period over the entire length of the project.

Restoration Type	Pre-Construction Acres/Linear Feet	Mitigation Approach	Watershed Acreage	As Built Acres/ Linear Feet	Mitigation Ratio	Mitigation Units SMU/WMU
Riverine Wetland	20.0 acres	R		20.0 acres	1:1	20.0 WMUs
Stream (Swamp Run)	2,200 linear feet	R		2,200 linear feet	1:1	2,200 SMUs

MITIGATION UNIT TOTALS

Stream Mitigation Units (SMU)	Riverine Wetland Units	Non-Riverine Wetland Units	Total Wetland (WMU)	Riparian Buffer	Nutrient Offset
2,200	20		20		

Rain Gauge
Monitoring Gauge #5
Run Gauge 2
Vegetation Monitoring Plot Run-2
Vegetation Monitoring Plot #4
Monitoring Gauge #4
Run Gauge 1
Vegetation Monitoring Plot Run-1
Vegetation Monitoring Plot #3
Monitoring Gauge #2
Monitoring Gauge #1
Vegetation Monitoring Plot #1
Vegetation Monitoring Plot #2
Monitoring Gauge #3

0 150 300 Feet

MONITORING WELL SUMMARY

Gauge Number	Latitude	Longitude
#1	35-35-08.35	76-28-52.88
#2	35-35-13.04	76-28-47.08
#3	35-35-05.49	76-28-45.29
#4	35-34-59.33	76-28-41.70
#5	35-35-04.85	76-28-49.46
Run Gauge 1	35-35-18.41	76-29-05.65
Run Gauge 2	35-35-18.08	76-29-05.59
Rain Gauge	35-35-14.19	76-28-47.53

LEGEND

- PROPERTY LINE
- EASEMENT BOUNDARY
- EXISTING FARM LANE
- ASSET 1 - STREAM RESTORATION
- ASSET 2 - WETLAND RESTORATION
- MONITORING WELL LOCATION
- RAIN GAUGE LOCATION
- VEGETATION MONITORING PLOT
- 4.5 AS-BUILT GRADES
- +6.11 AS-BUILT SPOT ELEVATIONS

FIGURE 2
JANUARY 2015

ARMSTRONG PROPERTY
RIVERINE WETLAND AND STREAM RESTORATION
MITIGATION MONITORING
HYDE COUNTY, NORTH CAROLINA
EEP CONTRACT #: EEP-092-A

Ecosystem Enhancement Program

ALBEMARLE RESTORATIONS, LLC
WETLAND RESTORATION,
STREAM RESTORATION,
& WILDLIFE HABITAT CREATION
404 COURT STREET • GATESVILLE, NC 27938
(252) 339-0249 • FAX (252) 357-4892

FIGURE 2: ASSET MAP

MONITORING WELL SUMMARY

Gauge Number	Latitude	Longitude
#1	35-35-08.35	76-28-52.88
#2	35-35-13.04	76-28-47.08
#3	35-35-05.49	76-28-45.29
#4	35-34-59.33	76-28-41.70
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LEGEND

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- MONITORING WELL LOCATION
- RAIN GAUGE LOCATION
- VEGETATION MONITORING PLOT
- 4.5 AS-BUILT GRADES
- +6.11 AS-BUILT SPOT ELEVATIONS

FIGURE 2
JANUARY 2015

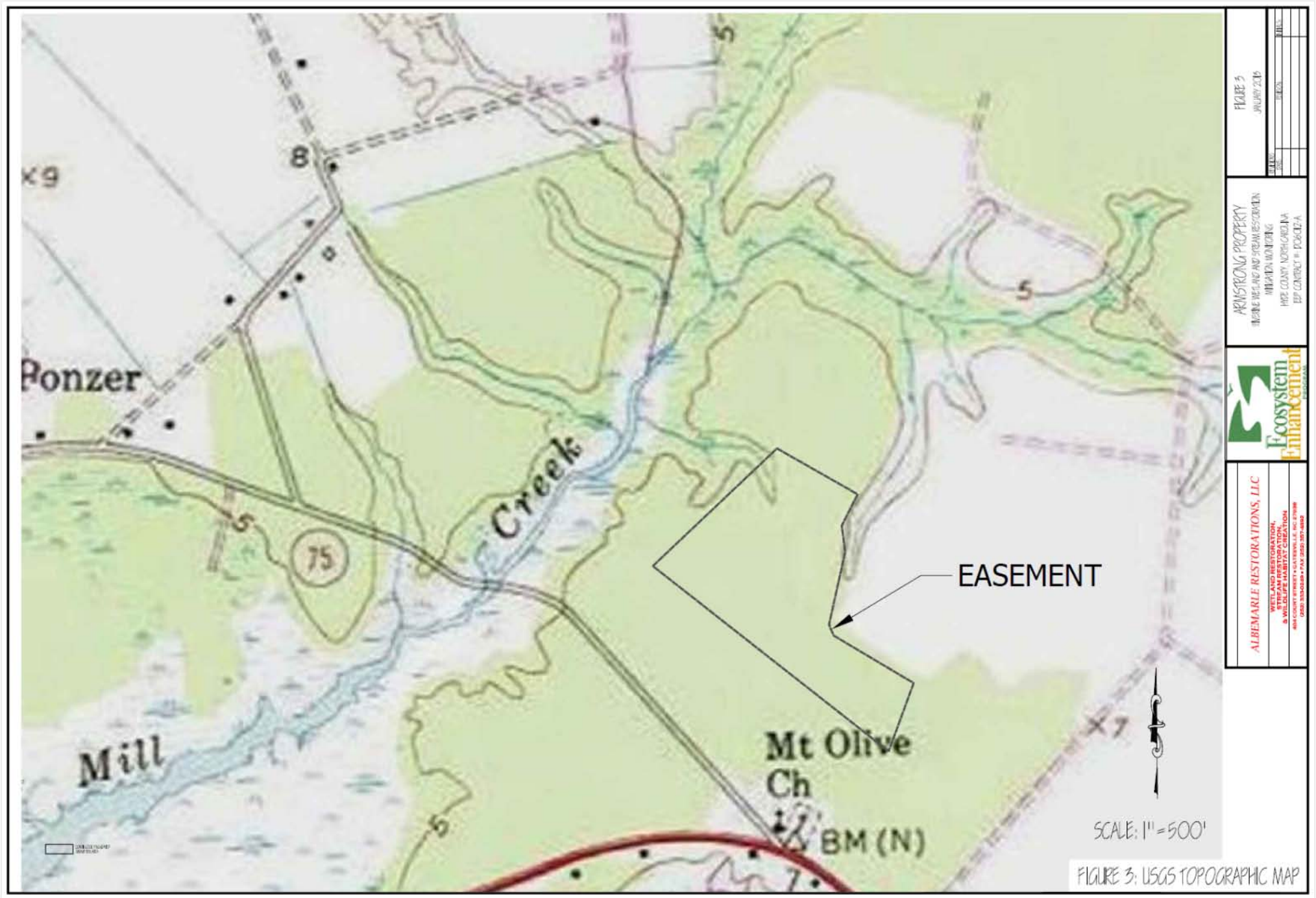
REVISIONS	
DATE	DESCRIPTION

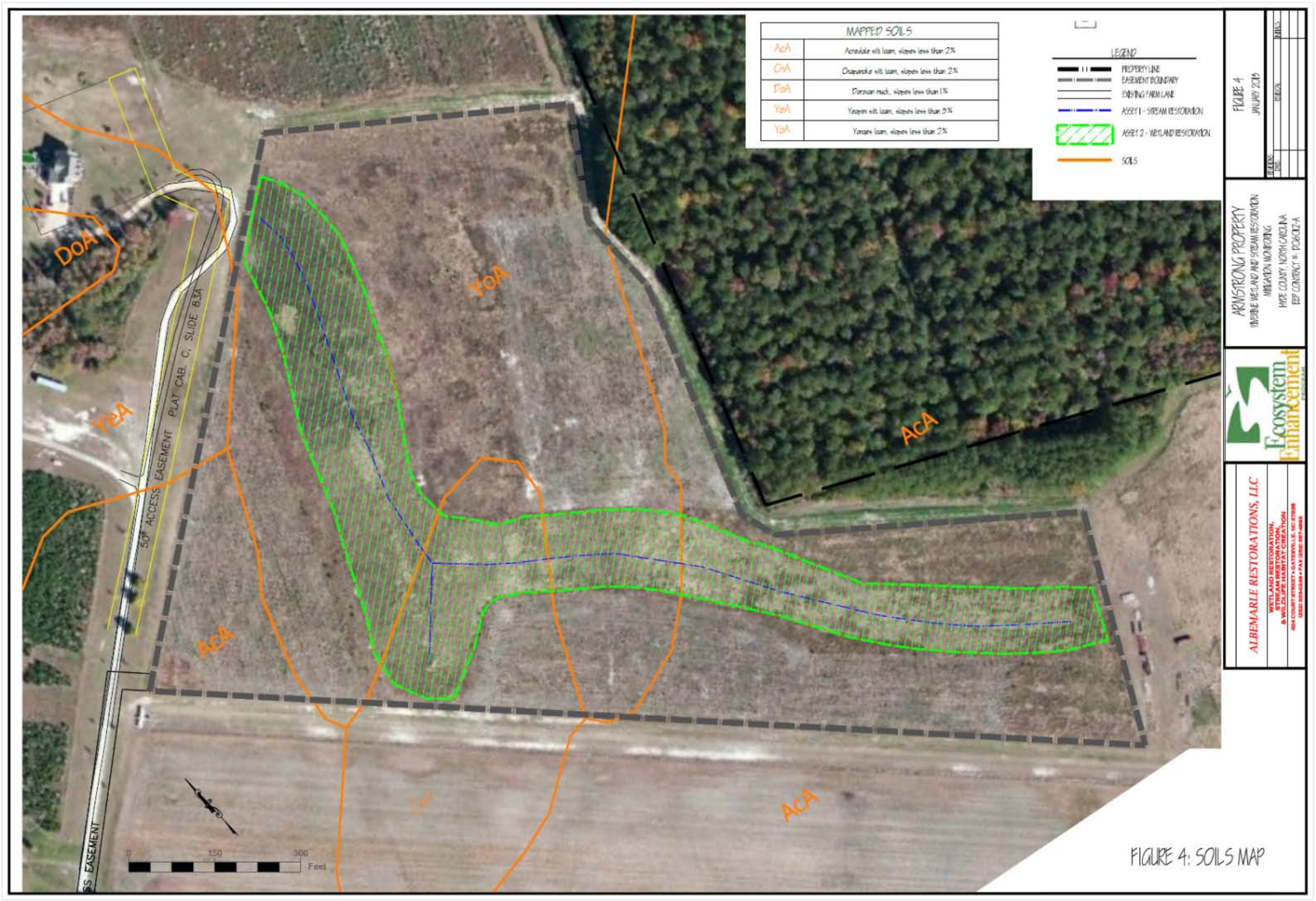
ARMSTRONG PROPERTY
RIVERINE WETLAND AND STREAM RESTORATION
MITIGATION MONITORING
HYDE COUNTY, NORTH CAROLINA
EEP CONTRACT #: D06012-A

Ecosystem Enhancement Program

ALBEMARLE RESTORATIONS, LLC
WETLAND RESTORATION,
STREAM RESTORATION,
& WILDLIFE HABITAT CREATION
404 COURT STREET • GATESVILLE, NC 27938
(252) 330-0249 • FAX (252) 357-4892

FIGURE 2A: ASSET MAP
WITH REFERENCE GAUGES


Ponzer
Creek
Mill
Mt Olive
Ch
BM (N)
EASEMENT
SCALE: 1" = 500'
FIGURE 3: USGS TOPOGRAPHIC MAP
ARMSTRONG PROPERTY
ALBEMARLE RESTORATIONS, LLC
Ecosystem Enhancement


MAPPED SOILS
AcA Acredale silt loam, slopes less than 2%
ChA Chapanoke silt loam, slopes less than 2%
DoA Dorovan muck, slopes less than 1%
YeA Yeopim silt loam, slopes less than 2%
YoA Yonges loam, slopes less than 2%
LEGEND
PROPERTY LINE
EASEMENT BOUNDARY
EXISTING FARM LANE
ASSET 1 - STREAM RESTORATION
ASSET 2 - WETLAND RESTORATION
SOILS
DoA
YeA
YoA
AcA
ChA
50' ACCESS EASEMENT PLAT CAB. C, SLIDE 83A
0 150 300 Feet
FIGURE 4: SOILS MAP
FIGURE 4
JANUARY 2015
ARMSTRONG PROPERTY
TOWNSHIP WETLAND AND STREAM RESTORATION
MITIGATION MONITORING
HYDE COUNTY, NORTH CAROLINA
EEP CONTRACT #: 92612-2A
Ecosystem Enhancement Program
ALBEMARLE RESTORATIONS, LLC
WETLAND RESTORATION,
STREAM RESTORATION,
& WILDLIFE HABITAT CREATION


LEGEND
PROPERTY LINE
EASEMENT BOUNDARY
AS-BUILT SWAMP RUN LIMITS
PLANTED RIVERINE WETLAND COMMUNITY
PLANTED "SWAMP RUN" BOTTOMLAND HARDWOOD RIPARIAN COMMUNITY
AREA SUBSOILED & PLANTED (2010)
50' ACCESS EASEMENT PLAT CAB. C, SLIDE 83A
50' ACCESS EASEMENT
0
150
300
Feet
FIGURE 5: CONTINGENCIES MAP
FIGURE 5
JANUARY 2016
ARMSTRONG PROPERTY
RIVERINE WETLAND AND STREAM RESTORATION
MITIGATION MONITORING
HOKE COUNTY, NORTH CAROLINA
EEP CONTRACT #: D08012-A
ALBEMARLE RESTORATIONS, LLC
WETLAND RESTORATION,
STREAM RESTORATION,
& WILDLIFE HABITAT CREATION

Discussion of headwater system flow:

Since there is no established stream channel and hence no true bankfull events to measure, documentation of flow on the Armstrong project was done by means of measuring the above ground water levels using hydrologic monitoring devices and verifying that water was indeed moving through the project when water levels were sufficient to produce flow.

After five years of monitoring, it was found that data from the monitoring devices correlates precisely with visual confirmation of flow events. Flow events were video documented when it was believed there had been enough rainfall to create visually verifiable flow. However, evidence of flow can be determined by examination of the data captured by the monitoring devices.

Other evidence of water moving through the project is shown in both still and video shots taken over the monitoring period. Some of the indicators that were verified and recorded are: destruction of terrestrial vegetation, presence of litter and debris after flow events, vegetation matted down or absent and change in plant community. In fact, the change in vegetation accurately maps the extent of flooding during a normal flow event. Cattails (*Typha latifolia)* are the main non-woody vegetation in the stream bed area of the project and fairly well dominate the area.

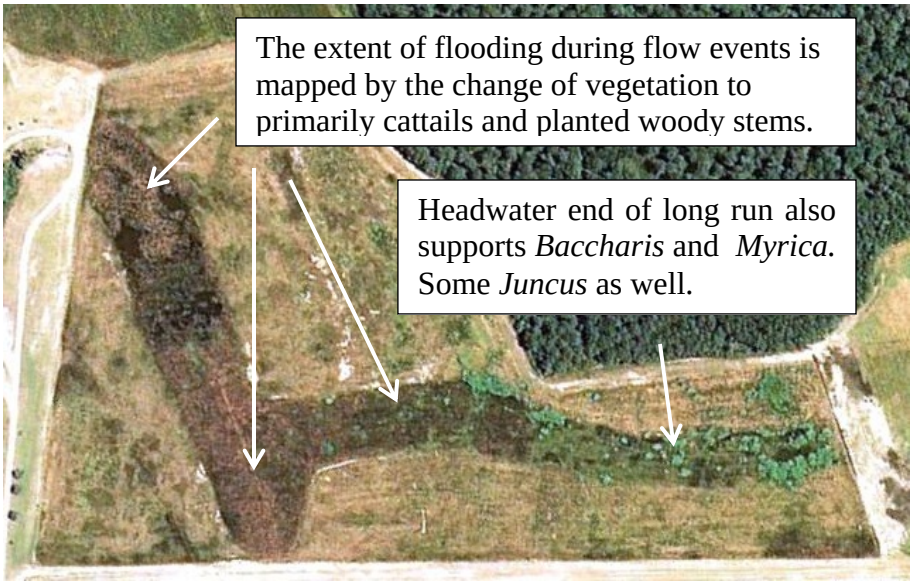


Table 1. Verification of Flow Events

Year	Number of flow events documented	Those that were video documented also	Time of Year
2008	2	1	Aug, Sept
2009	2		Aug, Sept
2010	1	1	October
2011	2	1	Aug, Sept
2012	2	2	March, June

Figure 6. Historic average vs. observed rainfall

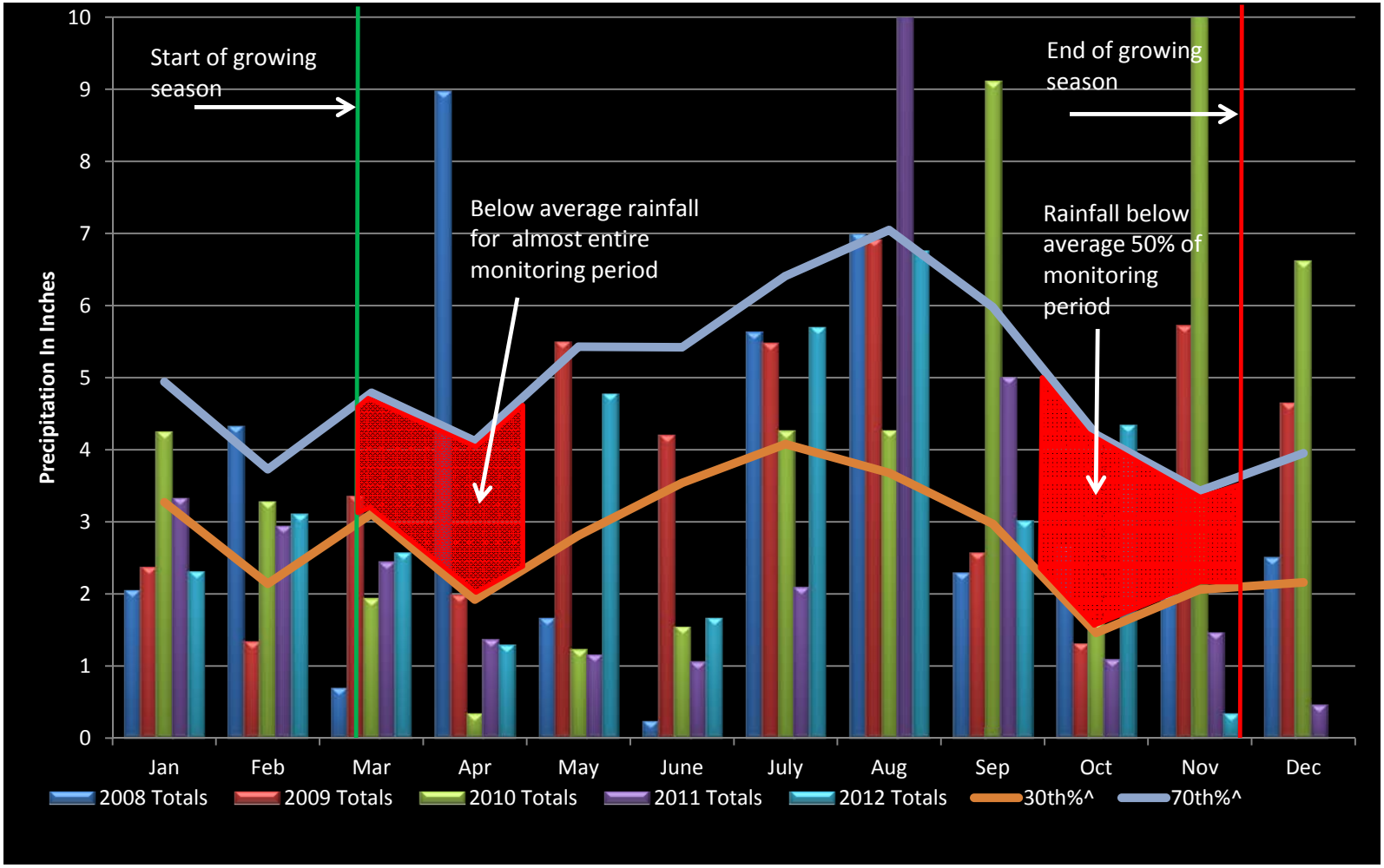


Figure 7. 5-year average of onsite rainfall vs. normal expected range of rainfall. Rainfall during the critical periods at the beginning and end of the growing season over the five years the project was monitored, was drastically below normal. For the two months at the beginning of the growing season – March and April – rainfall was below average for almost the entire monitoring period. For the two months at the end – October and November – rainfall was below average for 50% of the entire monitoring period.

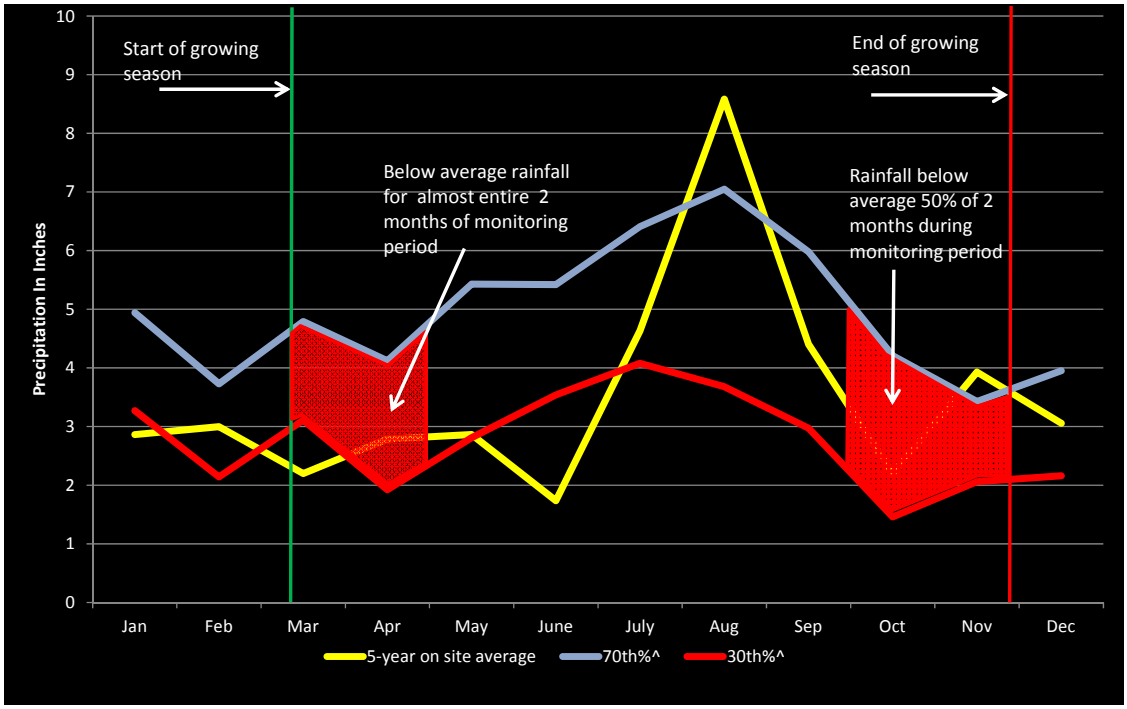


Table 2. 5-Year On-Site Precipitation vs. Historic Averages

	2008	2009	2010	2011	2012	5-yr avg	30%^	70%^
Jan	2.05	2.37	4.25	3.33	2.31	2.86	3.27	4.94
Feb	4.33	1.33	3.28	2.94	3.10	3.00	2.14	3.73
Mar	0.69	3.36	1.93	2.44	2.57	2.20	3.11	4.79
Apr	8.98	1.98	0.33	1.36	1.28	2.79	1.92	4.12
May	1.66	5.50	1.22	1.15	4.78	2.86	2.81	5.43
June	0.23	4.20	1.54	1.05	1.66	1.74	3.54	5.42
July	5.63	5.48	4.26	2.09	5.70	4.63	4.08	6.41
Aug	7.00	6.92	4.27	17.97	6.76	8.58	3.68	7.05
Sep	2.29	2.57	9.12	5.01	3.01	4.40	2.97	5.98
Oct	2.65	1.31	1.61	1.08	4.34	2.20	1.46	4.21
Nov	1.98	5.72	10.15	1.46	0.33	3.93	2.06	3.43
Dec	2.50	4.65	6.62	0.45	3.06	3.46	2.16	3.95

Table 3. Summary of Hydrologic Monitoring Data															
Longest hydrologic period in days (and % of Growing Season) and Time of Year Period Began															
Gauge	Year 1			Year 2			Year 3			Year 4			Year 5		
	Days	%	ToY	Days	%	ToY	Days	%	ToY	Days	%	ToY	Days	%	ToY
1	9	3	Nov	19	7	July	14	5	Mar	19	7	Mar	29	11	Aug
2	4	2	Nov	17	7	Nov	9	3	Mar	12	4	Mar	26	10	Aug
3	12	5	Nov	17	7	Nov	13	5	Mar	12	4	Mar	12	4	Aug
4	8	3	Mar	13	5	Mar	30	12	Mar	18	7	Mar	14	5	Oct
5	18	7	Aug	27	10	Mar	51	20	Sept	67	26	Aug	58	22	Aug
6 (Ref)	100	38	Aug	98	38	Aug	99	38	Aug	108	41	July	119	46	Mar
7 (Ref)	14	5	Apr	17	7	Nov	28	11	Mar	19	7	Mar	19	7	Mar
Run 1	35	13	Aug	124	48	Mar	49	19	Sept	65	25	Aug	54	21	Mar
Run 2	140	54	July	261	100	Mar	92	35	Mar	93	36	Mar	261	100	Mar

5% of growing season is 13 days, 8% is 21 days

The three previous graphics and tables, when taken together show a pattern of consistently low rainfall at the beginning and end of the growing season, the most critical time for the site to achieve positive hydrology. Perceived problem areas around Gauges 1, 2, 3 and 4 were subsoiled and replanted in 2010 in an effort to improve water penetration and retention and the favorable results of those activities are seen in Table 3. Gauges 1-4 showed their longest hydrologic period typically at the end of the growing season when rainfall was more close to normal, but after subsoiling in 2010, those four gauges began to show longer hydroperiods at the beginning of the growing season *despite* the continued below normal rainfall during that time period.

Other patterns that can be seen: Run Reference Gauge 6 closely mirrors the average hydrology seen between Run Gauges 1 and 2. All three gauges are at or near the center of their runs. Wetland Reference Gauge 7 shows similarities in performance to the average performance of the other wetland gauges.

Table 4. Planting schedule

Quantity	Botanical Name	Common Name	Percent of Total
Trees			
938	*Taxodium distichum*	Bald cypress	11
938	*Acer rubrum*	Red Maple	11
186	*Nyssa auquatica*	Water tupelo	2
938	*Nyssa biflora*	Swamp black gum	11
937	*Quercus phellos*	Willow oak	11
186	*Quercus bicolor*	Swamp white oak	2
186	*Quercus nigra*	Water oak	2
752	*Quercus michauxii*	Swamp chestnut oak	9
751	*Quercus palustris*	Pin oak	9
751	*Liquidambar styraciflua*	Sweetgum	9
6563	Total tree stems		75
Shrubs			
109	*Vaccinium corymbosum*	Blueberry	1
109	*Lyonia lucida*	Fetterbush	1
456	*Itea virginica*	Virginia sweetspire	5
347	*Myrica cerifera*	Wax myrtle	4
347	*Magnolia virginiana*	Sweet bay	4
347	*Baccharis halmifolia*	High tide bush	4
457	*Cephalanthus occidentalis*	Buttonbush	5
2172	Total shrub stems		25
8735	Total of all stems		

Table 5. Tree Survival

	Stems per acre for these years:				
Plot	2008	2009	2010	2011	2012
1	364	454	412	784	660
2	486	577	577	907	619
3	243	536	371	454	454
4	162	371	289	330	330
Run 1	162	371	371	371	330
Run 2	243	247	495	495	495

A portion of the project area was subsoiled in 2010 to improve hydrologic performance. That area was replanted in 2010 with the following stems: *Cephalanthus occidentalis* (Buttonbush) 300 stems, *Magnolia virginiana* (Sweet bay) 300 stems, *Myrica cerifera* (Wax myrtle) 500 stems, *Quercus bicolor* (Swamp white oak) 300 stems, *Taxodium distichum* (Bald cypress), 2,450 stems. See Figure 4, Contingencies Map for locations of subsoiling and replanting.

EEP Recommendations and Conclusions

The Armstrong site has completed 5 years of vegetative, hydrologic, and coastal stream monitoring. Coastal stream morphology and vegetative growth appear to have met success criteria.

Wetland hydrologic data show the coastal stream valley to be moderately wet and easily meets the flow requirements for coastal stream restoration requirements. The gauges outside the stream valley, while in general do not meet the 8% target (except for gauge 5), average at least 5% for the monitoring period. The hydrologic data shows these gauges are trending towards a wetter hydroperiod from year 1 through 5(gauges average yr 1-4%, yr 2-7.2%, yr 3-9%, yr 4-9.6%, and yr 5-10.4%).

The coastal stream portion of the site has shown appropriate flow in the upper, middle and lower sections of the stream valley. The wetland portion of the site is trending toward success. EEP is recommending the Armstrong site for a closeout site visit.

Pre-Construction Photos – 2007

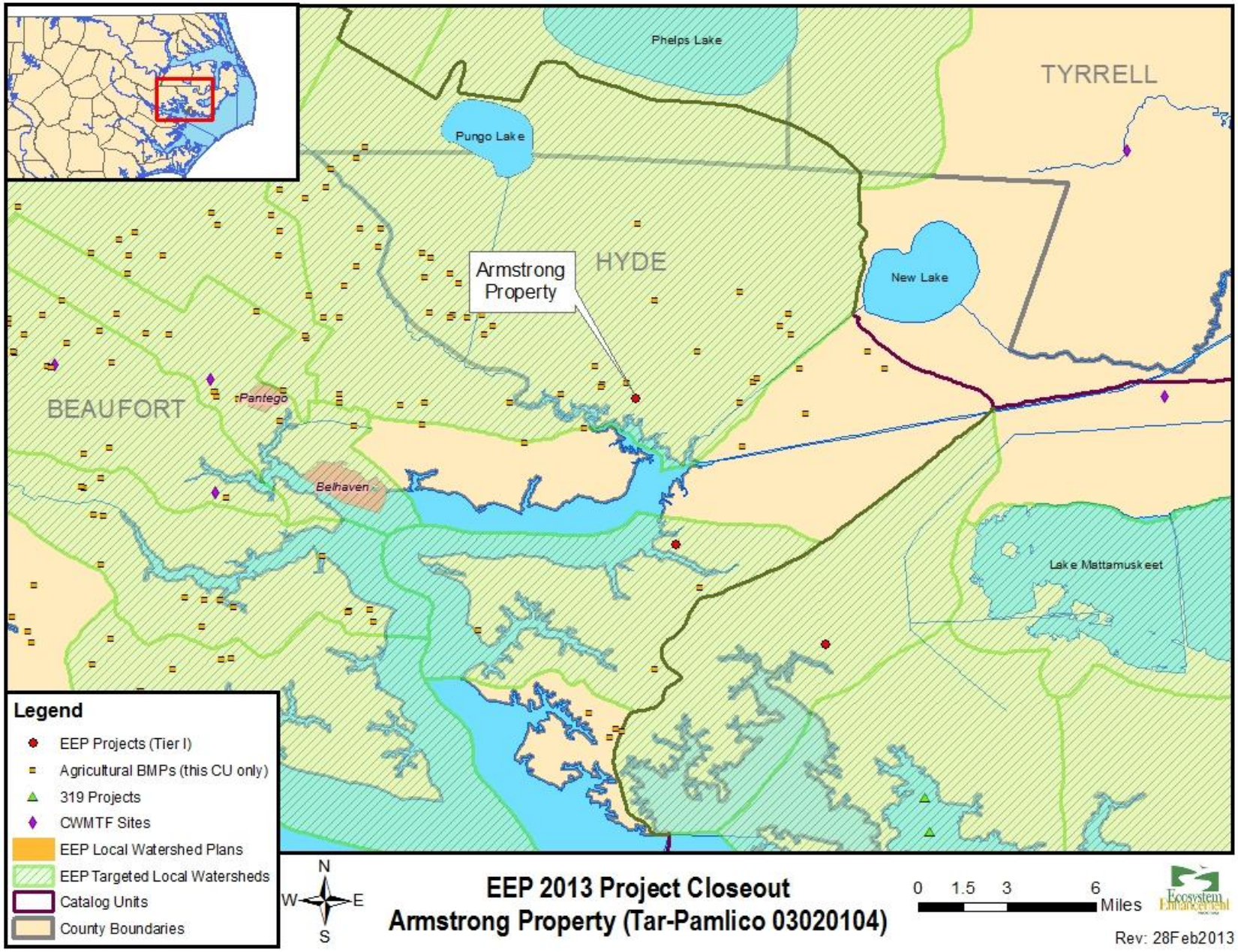
Post-Construction Photos – 2008

Post Construction 2012 photos

Armstrong Property Project

The Armstrong Property project is in Hyde County, roughly 10 miles east of the town of Belhaven in the Tar-Pamlico River Basin. It is located within HUC 03020104090010, the Pungo Lake watershed, which is listed as a Targeted Local Watershed (TLW) in the 2010 Tar-Pamlico River Basin Restoration Priorities (RBRP) plan, as well as in the previous 2004 RBRP (http://portal.ncdenr.org/web/eep/rbrps/tar-pamlico). Currently, the EEP has no other project located within this TLW. The project site drains immediately into Clark Mill Creek, which then flows into the Pungo River located about 1 mile to the southwest. The 2010 RBRP plan states that roughly 67% of streams and ditches in this TLW are unbuffered, 57% of wetlands are forested, virtually all soils are hydric, and 33% is designated conservation land. There are no designated 303(d) impaired waters, nor any HQWs or ORWs found in this TLW, though 20% is designated a SNHA and 27 NHEOs are located here. Thirty-six percent of the watershed is in agriculture, including 11 swine operations and 2 permitted cattle farms. The RBRP recommends that projects in this TLW address the impacts of extreme ditching and reduce agricultural runoff. The more general basin-wide goals are to promote nutrient and sediment reduction through agricultural and municipal practices, through restoration/preservation projects, and to protect, expand, and connect Natural Heritage Areas and other conservation lands.

The Armstrong Property is a 25-acre project that restored over 2,000 feet of stream and roughly 20 acres of adjacent riparian wetlands from its heavily degraded condition as a straightened agricultural ditch with row crops planted right up to the top of bank. The stream has been returned to its natural condition as a headwater tributary to Clark Mill Creek and its surrounding cypress swamp. The project contributes to the general river basin and TLW-specific water quality improvement goals as it includes significant amounts of both stream and wetland restoration. These will serve to re-connect the stream to the floodplain, increase stream stability (thus reducing sediment loss), and improve overall nutrient removal capacity, which should reduce the volume of pollutants draining into the Pungo River and ultimately into the Pamlico River and Estuary.



EEP 2013 Project Closeout
Armstrong Property (Tar-Pamlico 03020104)

Rev: 28Feb2013

Appendix B. Land Ownership and Protection

SITE PROTECTION INSTRUMENT

The land required for the construction, management, and stewardship of this mitigation project includes a portion of the following parcels.

Grantor	County	Site Protection Instrument	Deed Book & Page Number	Acreage protected
Bobby Armstrong and wife, Lou M. Armstrong	Hyde	Conservation Easement	225/031	25.008

http://www.nceep.net/GIS_DATA/PROPERTY/92487_ArmstrongProperty.pdf

LONG-TERM MANAGEMENT PLAN

Upon approval for close-out by the Interagency Review Team (IRT), the site will be transferred to the DENR Stewardship Program, which will be responsible for periodic inspection of the site to ensure that restrictions required in the conservation easement are upheld.

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action ID. **SAW-2007-03020-148** County: **Hyde** USGS Quad: **Ponzer**

GENERAL PERMIT (REGIONAL AND NATIONWIDE) VERIFICATION

Property Owner / Authorized Agent: **Albemarle Restorations, LLC**
Address: **P.O. Box 204**
Gatesville, North Carolina 27938

Telephone No.: **(252) 333-0249**
Size and location of property (water body, road name/number, town, etc.): **The project area is approximately 25 acres located on the north side of US Hwy 264 and northeast of NC Highway 45 adjacent to Clark Mill Creek.**

Description of projects area and activity: **Restoration of former waters impacting 3,180 linear feet (.40 acres) of waters of the U.S.**

Applicable Law: ☒ Section 404 (Clean Water Act, 33 USC 1344)
☐ Section 10 (Rivers and Harbors Act, 33 USC 403)
Authorization: Regional General Permit Number: ____
Nationwide Permit Number: **# 27**

Your work is authorized by the above referenced permit provided it is accomplished in strict accordance with the attached conditions and your submitted plans. Any violation of the attached conditions or deviation from your submitted plans may subject the permittee to a stop work order, a restoration order and/or appropriate legal action.

This verification will remain valid until the expiration date identified below unless the nationwide authorization is modified, suspended or revoked. If, prior to the expiration date identified below, the nationwide permit authorization is reissued and/or modified, this verification will remain valid until the expiration date identified below, provided it complies with all requirements of the modified nationwide permit. If the nationwide permit authorization expires or is suspended, revoked, or is modified, such that the activity would no longer comply with the terms and conditions of the nationwide permit, activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon the nationwide permit, will remain authorized provided the activity is completed within twelve months of the date of the nationwide permit's expiration, modification or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend or revoke the authorization.

Activities subject to Section 404 (as indicated above) may also require an individual Section 401 Water Quality Certification. You should contact the NC Division of Water Quality (telephone (919) 733-1786) to determine Section 401 requirements.

For activities occurring within the twenty coastal counties subject to regulation under the Coastal Area Management Act (CAMA), prior to beginning work you must contact the N.C. Division of Coastal Management .

This Department of the Army verification does not relieve the permittee of the responsibility to obtain any other required Federal, State or local approvals/permits.

If there are any questions regarding this verification, any of the conditions of the Permit, or the Corps of Engineers regulatory program, please contact **Bill Biddlecome at (252) 975-1616 ext 26**.

Corps Regulatory Official William J. Biddlecome Date: **09/18/2007**

Expiration Date of Verification: **09/18/2009**

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://www.saw.usace.army.mil/WETLANDS/index.html to complete the survey online.

Determination of Jurisdiction:

☐ Based on preliminary information, there appear to be waters of the US including wetlands within the above described project area. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).

☐ There are Navigable Waters of the United States within the above described project area 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 US and/or wetlands within the above described project area 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.

☐ The jurisdictional areas within the above described project area have been identified under a previous action. Please reference jurisdictional determination issued _____. Action ID _____

Basis of Jurisdictional Determination: **This waterbody exhibits an Ordinary High Water Mark as indicated by changes in soil character and absence of terrestrial vegetation and is hydrologically connected to Clark Mill Creek which is a tributary to the Pungo River.**

Appeals Information (This information applies only to approved jurisdictional determinations.)

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:

District Engineer, Wilmington Regulatory Division
Attn:Bill Biddlecome, Project Manager,
Washington Regulatory Field Office
P.O. Box 1000
Washington, North Carolina 27858

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 District 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 **Novemeber 18, 2007**.

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

Corps Regulatory Official: William J. Biddlecome

Date **09/18/2007** Expiration Date **09/18/2009**

SURVEY PLATS, FIELD SKETCH, WETLAND DELINEATION FORMS, PROJECT PLANS, ETC., MUST BE ATTACHED TO THE FILE COPY OF THIS FORM, IF REQUIRED OR AVAILABLE.

Copy Furnished:
Mr. Scott McGill
Albemarle Restorations, LLC
P.O. Box 5, 1204 Baldwin Mill Road
Jarrettsville, MD 21084

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen H. Sullins, Director
Division of Water Quality

September 17, 2007

DWQ Project # 07-1378
Hyde County

Mr. Scott McGill
Albemarle Restorations, LLC
P.O. Box 204
Gatesville, NC 27938

Subject Property: **Armstrong Property Wetland Restoration**
Duke Swamp [030101, 25-17-1, C, NSW]

Approval of 401 Water Quality Certification with Additional Conditions

Dear Mr. McGill:

You have our approval, in accordance with the attached conditions and those listed below, to place fill within or otherwise impact 3,180 linear feet of intermittent stream and impact 0.00 square feet of Zone 1 Tar-Pamlico River basin protected riparian buffers and impact 0.00 square feet of Zone 2 Tar-Pamlico River basin protected riparian buffers as described in your application dated July 27, 2007, and received by the Division of Water Quality (DWQ) on August 13, 2007, to construct the proposed wetland restoration at the site. After reviewing your application, we have decided that the impacts are covered by General Water Quality Certification Number(s) 3626 (GC3626). The Certification(s) allows you to use Nationwide Permit(s) NW27 when issued by the US Army Corps of Engineers (USACE). In addition, you should obtain or otherwise comply with any other required federal, state or local permits before you go ahead with your project including (but not limited to) Erosion and Sediment Control, and Non-discharge regulations. **Also, this approval to proceed with your proposed impacts or to conduct impacts to waters as depicted in your application shall expire upon expiration of the 404 or CAMA Permit.**

This approval is for the purpose and design that you described in your application. If you change your project, you must notify us and you may be required to send us a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter and is thereby responsible for complying with all conditions. If total fills for this project (now or in the future) exceed one acre of wetland or 150 linear feet of stream, compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h). **This approval requires you to follow the conditions listed in the attached certification and any additional conditions listed below.**

The Additional Conditions of the Certification are:

1. Impacts Approved

   The following impacts are hereby approved as long as all of the other specific and general conditions of this Certification (or Isolated Wetland Permit) are met. No other impacts are approved including incidental impacts:

Type of Impact	Amount Approved (Units)	Plan Location or Reference
Stream - intermittent	3,180 (linear feet)	PCN page 8 of 13
Zone 1 TPBR	0.00 (square feet)	Page 12 of 13
Zone 2 TPBR	0.00 (square feet)	Page 12 of 13

401 Oversight/Express Review Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

2. No Waste, Spoil, Solids, or Fill of Any Kind

   No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the Pre-Construction Notification. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices, shall be performed so that no violations of state water quality standards, statutes, or rules occur.

3. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:

   a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
   b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
   c. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

4. Sediment and Erosion Control Measures

   Sediment and erosion control measures shall not be placed in wetlands or waters to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored within six months of the date that the Division of Land Resources has released the project;

5. Protective Fencing

   The outside buffer, wetland or water boundary and along the construction corridor within these boundaries approved under this authorization shall be clearly marked with orange warning fencing (or similar high visibility material) for the areas that have been approved to infringe within the buffer, wetland or water prior to any land disturbing;

6. Wetland Restoration Plans

   You have our approval for your proposed final wetland restoration at the site. The wetland restoration at the site must be constructed, maintained, and monitored according to the plans approved by this Office. Any repairs or adjustments to the site must be made according to the approved plans or must receive written approval from this Office to make the repairs or adjustments. The restored wetland must be preserved in perpetuity by use of a conservation easement or other similar mechanism as part of the approved plans.

7. Certificate of Completion

   Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return the attached

certificate of completion to the 401 Oversight/Express Review Permitting Unit, North Carolina Division of Water Quality, 1650 Mail Service Center, Raleigh, NC, 27699-1650.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. The authorization to proceed with your proposed impacts or to conduct impacts to waters as depicted in your application and as authorized by this Certification, shall expire upon expiration of the 404 or CAMA Permit.

If you do not accept any of the conditions of this Certification (associated with the approved wetland or stream impacts), you may ask for an adjudicatory hearing. You must act within 60 days of the date that you receive this letter. To ask for a hearing, send a written petition, which conforms to Chapter 150B of the North Carolina General Statutes to the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. This certification and its conditions are final and binding unless you ask for a hearing.

Any disputes over determinations regarding this Authorization Certificate (associated with the approved buffer impacts) shall be referred in writing to the Director for a decision. The Director's decision is subject to review as provided in Articles 3 and 4 of G.S. 150B.

This letter completes the review of the Division of Water Quality under Section 401 of the Clean Water Act. If you have any questions, please telephone Cyndi Karoly or Ian McMillan at 919-733-1786.

Sincerely,

Coleen H. Sullins, Director
Division of Water Quality

CHS/*ijm*

Enclosures: GC3626
Certificate of Completion

cc: USACE Washington Regulatory Field Office
Kyle Barnes, DWQ Washington Regional Office
DLR Washington Regional Office
File Copy
Central Files

Filename: 071378ArmstrongPropertyWetlandRestoration(Hyde)401_TPBR

Mitigation Project Name Armstrong Property
EEP IMS ID 92487
River Basin TAR-PAMLICO
Cataloging Unit 03020104

			Applied Credit Ratios:	1:1	1.5:1	2.5:1	5:1	1:1	3:1	2:1	5:1	1:1	3:1	2:1	5:1	1:1	3:1	2:1	5:1	1:1	3:1	0.5:1		1:1	1:1
				Stream Restoration	Stream Enhancment I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Nonriparian Restoration	Nonriparian Creation	Nonriparian Enhancement	Nonriparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation	Stream Buffer Restoration (sf)	Stream Buffer Enhancement (sf)	Buffer Nutrient Offset Only (sf)	Total Stream Buffer (acres)	NO Nitrogen	NO Phosphorus
Beginning Balance (feet and acres)				**2,200.00**				**20.00**																	
NCDOT Pre-EEP Debits (feet and acres):		Not Applicable																							
EEP Debits (feet and acres):																									
DWQ Permits	USACE Action IDs	Impact Project Name																							
2005-0785	1999-301143	NCDOT TIP R-2510 - Washington Bypass		2,200.00				17.06																	
2008-0231	2007-041981	Cypress Corner Sec. 4						0.29																	
2007-0278	2008-01047	Bay Harbour Lot 46						0.08																	
2007-1960	2007-02972-107	Bridge Harbor						0.32																	
2009-0143	2009-00066	Dowry Creek Subdivision						0.20																	
2008-1775	2009-00211	Shady Shores						0.26																	
NCDOT ILF Credit Purchase								1.79																	
Riparian Buffer ILF Credit Purchase																									
Remaining Balance (feet and acres)				**0.00**				**0.00**																	

Information as of 3/17/2013