

# North Carolina's Wetland Program Plan 2013-2017

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Insert new date 2013

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## LIST OF ABBREVIATIONS

Abbreviation	Description
APNEP	Albermarle-Pamlico National Estuary Partnership
C of C	Coefficient of Conservatism
CAMA	Coastal Area Management Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
ELI	Environmental Law Institute
EPA	Environmental Protection Agency
HUC	Hydrologic Unit Code
IBI	Index of Biological Integrity or Index of Biotic Integrity
IRT	Interagency Review Team
Level 1	
Level 2	
Level 3	
NC	North Carolina
NC DCM	North Carolina Division of Coastal Management
NC DENR	North Carolina Department of Environment and Natural Resources
NC DWR	North Carolina Division of Water Resources
NC EEP	North Carolina Ecosystem Enhancement Program
NC SAM	North Carolina Stream Assessment Method
NC WAM	North Carolina Wetland Assessment Method
NCAC	North Carolina Administrative Code
NCGS	North Carolina General Statutes
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Services
NRCS-WRP	Natural Resources Conservation Services – Wetland Reserve Program
NWCA	National Wetland Condition Assessment
NWP	Nationwide Permit
PILT	Payments in lieu of taxes
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plans
SWITC	Surface Water Identification Training and Certification
SWL	Saltwater Wetlands
T&E	Threatened and Endangered
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
UWL	Unique Wetlands
WL	Freshwater Wetlands
WPDG	Wetland Program Development Grant
WPP	Wetland Program Plan
WRC	Wildlife Resources Commission

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# North Carolina Wetland Program Plan

Insert new date, 2013

## INTRODUCTION

The North Carolina Division of Water Resources<sup>1</sup> (NC DWR), with assistance from an EPA Wetland Program Development Grant (WPDG), is developing North Carolina's Wetland Program Plan (WPP). The WPP will address North Carolina's wetland program development plans for the next five years and will incorporate all four Core Elements of the Environmental Protection Agency's (EPA) Wetlands Program Framework (Monitoring and Assessment, Regulation, Voluntary Restoration and Protection, and Water Quality Standards for Wetlands) as well as address community outreach and education and sustainable financing options. Given the large number of agencies, organizations, and individuals that contribute to the understanding and protection of streams and wetlands in North Carolina, it is important for NC DWR to obtain feedback from members of a stakeholder group in order to develop a comprehensive WPP. This is consistent with the "fundamental science" component of North Carolina Department of Environment and Natural Resources' (NC DENR) mission statement, which sets forth that "all public programs and scientific conclusions must be reflective of input from a variety of legitimate, diverse and thoughtful perspectives." (NC DENR 2013) The members of the stakeholder group are listed in Appendix A.

The stakeholder process for the development and refinement of all four Core Elements began in May 2013. Considering the amount of work that has already been done, NC DWR has the necessary experience to lay the groundwork for the WPP and began with the Monitoring and Assessment Core Element. The Monitoring and Assessment component of the WPP was shared with the stakeholder group in May 2013 and appropriate adjustments were made based on stakeholder feedback. All portions of the WPP will be part of a living document that will be reviewed and revised when appropriate and/or necessary.

## GOALS

NC DWR works to protect and enhance North Carolina's surface water and groundwater resources for the citizens of North Carolina and future generations through water quality monitoring programs, efficient permitting, responsible management, fair and effective enforcement and excellence in public service. Many other federal, state, and local governments have similar missions, and along with private companies, organizations, and citizens are working to protect the waters of the state while encouraging responsible development practices.

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<sup>1</sup> On August 1, 2013 North Carolina's Division of Water Quality (NC DWQ) was merged with the Division of Water Resources (NC DWR). For simplicity of this document, except when necessary for clarification, all work done by NC DWQ prior to August 1, 2013 and all subsequent work by NC DWR will be attributed to NC DWR.

The goals of the WPP are to evaluate existing resources, identify needs of North Carolina's wetland program participants (public, private, groups and individuals), and determine the future direction for development of wetland programs in North Carolina.

The objectives and activities identified will assess the extent and quality of the state's wetlands, encourage and improve the amount and quality of wetland restoration and protection, and support planning and regulatory programs. Future collaboration among the wetland program participants will expand available resources and improve program efficiency. Improved integration between individual programs will provide more comprehensive water quality protection through monitoring and assessment, regulation, restoration and protection, acquisition, mapping, planning, and education/outreach.

## **CORE ELEMENT 1: MONITORING AND ASSESSMENT**

### **BACKGROUND**

NC DWR's wetland monitoring program has primarily been supported by EPA WPDGs since 2004, when the wetland monitoring program first began within NC DWQ. The grant-supported wetland monitoring projects have allowed NC DWR to address specific wetland issues related to monitoring and assessment as North Carolina's wetland programs have evolved over time; however, they have not necessarily been part of an overarching monitoring and assessment strategy. Each grant had specific wetland monitoring goals identified which focused on different pertinent wetland related research topics such as particular wetland types (natural or mitigated), unique wetlands, reference and disturbed wetlands, wetlands in particular watersheds and regions, specific wetland characteristics (e.g. amphibian usage, hydrology, etc.), and wetland assessment tools. NC DWR's wetland monitoring work in NC has monitored over 10 wetland types (as defined by the North Carolina Wetland Assessment Method (NC WAM) version 4.1) and collected extensive data including GIS/land use analysis, rapid assessments, water quality, soils, hydrology, and biological surveys of vegetation, amphibians, and macroinvertebrates.

The work that has already been done through WPDGs includes conducting research, implementing rules and policies, developing regulatory tools, and performing training; thus, establishing a sturdy foundation for the continued development and growth of a strong, sustainable wetland monitoring and assessment program. A consistent scientific methodology for monitoring wetlands in the southeastern United States has already been established based on this work.

NC DWR's wetland monitoring and assessment protocols and data have many uses throughout the state and can continue to be integrated into other state programs through various partnerships, collaborations and sharing of data. The Wetland and Stormwater Branch and the Aquifer Protection Section of NC DWR utilize the wetland monitoring protocols and data to assist with permitting decisions and mitigation guidelines associated with wetland impacts due to 401 Water

Quality Certification approvals, stormwater, dewatering, and mining operations. Wetlands monitoring data will be made available so it can be used to help determine, assess, and improve impaired waters of the state and be incorporated in various reports (e.g. biannual 305 (b) Water Quality Report, etc.). Monitoring data was collected in the Fishing Creek and Lockwoods Folly watersheds so NC EEP could utilize the data while developing watershed plans. Future plan developments can utilize similar monitoring data from other watersheds. Collaborations with Albermarle-Pamlico National Estuary Partnership (APNEP) were established to provide data from existing wetland monitoring sites. This type of collaboration will improve the ability of organizations to accomplish their program goals. Wetland monitoring macroinvertebrate data have been provided to the NC DWR Environmental Sciences Section/Biological Assessment Unit and amphibian data have been provided to the NC Museum of Natural Sciences Amphibian Collection. These data sets are increasing their respective databases and increasing the scientists' knowledge of species ranges and requirements. This improved data set will improve the ability to determine wetland and water quality assessments based on these biological indices. These integration activities will build program capacity and improve regulatory decision making and long term planning efforts across NC water quality programs.

The initial WPDG (CD 97426001) began North Carolina's monitoring initiative by focusing on headwater forest wetlands as well as defining, establishing, and implementing supplemental Unique Wetland water quality classifications. NC DWR also worked with the state's in lieu fee program, NC Ecosystem Enhancement Program (NC EEP) (CD 96422105), to monitor Basin Wetlands, Riverine Swamp Forests, and Bottomland Hardwood Forests on a watershed basis. Several sites from each of these two projects are incorporated into a suite of sites that have been monitored on a long term basis.

Wetland monitoring data from the grants mentioned above and additional headwater monitoring data collected from disturbed headwater forest sites were used to verify and validate the North Carolina Wetland Assessment Method (NC WAM). NC WAM is a rapid assessment method that assesses wetland site hydrology, water quality and habitat functions. NCDWR is also working to develop another wetland assessment tool for wetland vegetation (CD 95488411). A team of expert botanists from the Southeast was assembled to develop a Coefficient of Conservatism database for the Southeast region of the US that ranks wetland species according to affinity to natural and undisturbed wetland habitat.

Two additional grants dealing with isolated wetlands (CD 95415809 and a Regional Environmental and Assessment Program Grant) resulted in the development of an isolated wetland mapping tool, and the determination of frequency, acreage, volume, depth, condition and hydric connectivity to other connected wetlands and streams. The biocriteria, soil carbon stores, water storage volume, and pollution absorption capacity of isolated wetlands were also

characterized. The statistically designed study enabled the extension of individual wetland characteristics to the entire eight-county study area.

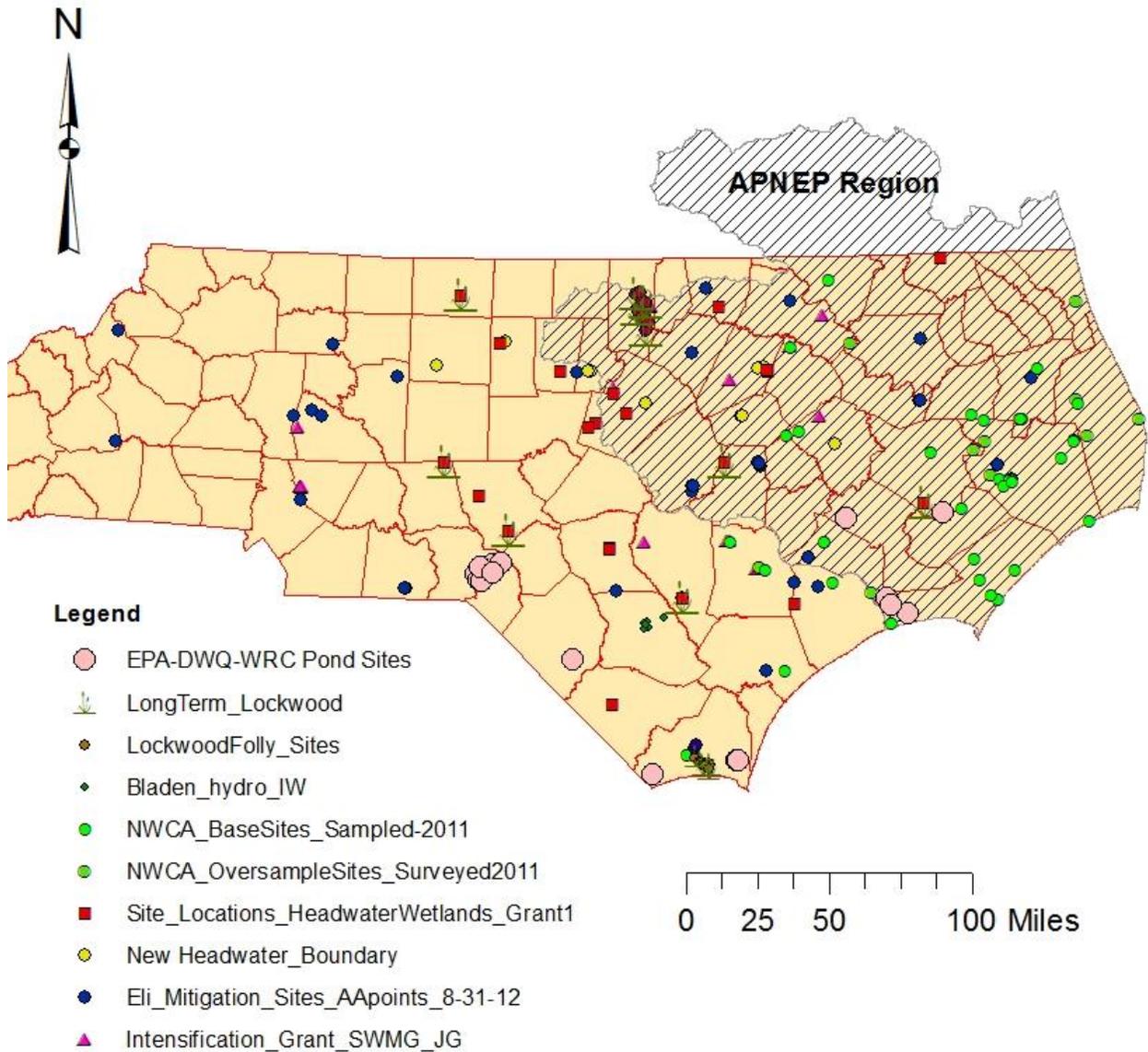
NC DWR's involvement in several projects has been used to evaluate, guide, and improve the quality of wetland mitigation in the state. One study (WL 96435005) found that approximately 75% of stream and wetland mitigation projects installed in NC met some definition of success, while another study looked at the spatial relationship between aquatic resource impacts and compensatory mitigation in North Carolina (CD 95415709). NC DWR was contracted to assist with the Environmental Law Institute's (ELI) North Carolina Wetland Mitigation Evaluation Pilot Survey. One of the isolated wetland grants (CD 95415809) also queried two NC DWR maintained databases to determine how many acres of IWs had been impacted and mitigated since IW rules were adopted in 2001.

North Carolina participated in the EPA's National Wetland Condition Assessment (NWCA) wetland survey in 2011 and is working collaboratively with South Carolina, Georgia, and Alabama on the Southeast Wetlands Monitoring Intensification grant (CD 95449910) in order to apply a regional emphasis to wetlands monitoring and draw conclusions about wetland condition on a regional level. Information gained from these collaborations will be shared amongst the EPA's Region 4 states through NC's instrumentation of the Southeast Wetlands Workgroup. Figure 1 shows the wetland sites that have been monitored as part of NC DWQ's Wetlands Monitoring Program's various wetland projects, as of August 2013.

NC DWR is finalizing a Wetland Mitigation Guidance document (CD 95450010) and previously developed guidelines for stream and wetland restoration in response to violations of the Clean Water Act (CD 95415509). Training on this latter set of guidelines and NC WAM (CD 95450109) were provided to public employees throughout the state.

In the past few years, the NC wetlands monitoring program has begun to have an influence on multiple state regulatory programs. For example, portions of the methodology for monitoring wetlands has been used in the 401 Water Quality Certification process where monitoring the impact to the affected wetland was needed on a long term basis. The Aquifer Protection regulatory program has also used the wetland monitoring methodology to develop monitoring requirements for wetlands adjacent to large wastewater land application systems. The need of other regulatory programs to have accurate wetland monitoring and assessment data available for regulatory decision making underscores the fact that a comprehensive wetlands monitoring and assessment strategy needs to be finalized, publicized, and utilized in order to help everyone better understand and protect the wetlands of North Carolina.

## Wetlands Monitored by the NC Wetland Monitoring Program



## THE PLAN

Development and distribution of a wetland monitoring strategy document will increase the opportunities for wetland monitoring data to be integrated into other monitoring programs. Integration of the various aquatic monitoring programs entails building partnerships to share data and experiences that will further common goals such as restoring and protecting wetlands and improving stream conditions in order to improve the overall water quality of the state. Monitoring and assessment data can support the regulatory programs (i.e. 401 Water Quality Certification, Isolated Wetlands, Stormwater, NPDES, Non-discharge Wastewater, etc.) and be used in future projects such as determining success criteria for wetland mitigation projects and developing monitoring protocols for wetlands adjacent to mining operations or wastewater disposal facilities.

## OBJECTIVES

**OBJECTIVE 1: Refine and publish the North Carolina wetland monitoring and assessment strategy, keeping it consistent with *Elements of a State Water Monitoring and Assessment Program for Wetlands* (EPA, 2003 & 2006).**

The North Carolina wetland monitoring and assessment strategy, as developed by the WPP Stakeholder group members, already identifies objectives of the monitoring and assessment program, types of monitoring, site selection processes, field methodology, and core indicators of wetland function and condition. It also identifies other programs that can use the monitoring and assessment data and how these programs can use the collected data to support their programs and to assist with watershed planning. Along with the specifications already laid out in the draft monitoring and assessment strategy document, the following activities are proposed as part of the WPP over the next five years:

### ACTION 1: Define Wetland Monitoring Objectives and Strategies

*Program Capacity Development: An increase in public input and awareness concerning the state's wetland monitoring initiatives will improve public support and participation.*

*Establishing overarching and focused baseline data will provide scientific support for future policy decisions.*

#### ACTIVITIES:

- a) Establish a stakeholder group to provide input into the Monitoring and Assessment strategy and determine shared activities and goals [2013-2014]
  - i. Determine the survey types and levels of intensity needed for various wetland and/or project types
- b) Finalize and publish North Carolina's Wetland Monitoring and Assessment Strategy [2014]

**OBJECTIVE 1 (cont.): Refine and publish the North Carolina wetland monitoring and assessment strategy**

- c) Use the developed monitoring protocols to assess environmental, technology, and development issues that arise

Short Term [2013-2014]

- i. Obtain baseline data for wetlands that may be impacted by hydraulic fracturing for shale gas extraction
- ii. Assess the effects of mine dewatering/groundwater lowering and the impacts of associated discharges into wetlands

Long Term [2015-2017]

- iii. Monitor and assess the impacts to wetlands by other various technology or development issues that arise (e.g. offshore drilling, coastal road and bridge construction, etc.)
- iv. Monitor the impacts of climate change on selected wetland types
- v. Monitor the impact of changes in land use in the density, extent, and quality of wetland resources

**ACTION 2: Develop and refine the monitoring design**

*Program Capacity Development: Obtaining additional professional input and publication of standardized wetland monitoring protocols will provide a consistent data format that will allow for the compilation of wetland data into a primary dataset. This dataset can then be analyzed by multiple groups, agencies, etc. for various purposes.*

**ACTIVITIES:**

- a) Formalize wetlands monitoring methods into statewide guidance (utilize stakeholder group) [2013-2014]

- i. Establish approved protocols for usage of data from third parties with standardization and ways to compile data to be valid and usable by regulatory agencies (e.g. use licensed professionals, categorize data as voluntary or secondary data, etc.)
- ii. Develop QA/QC for submitted third party data
- iii. Clarify how to monitor and assess stormwater wetland BMPs

- b) Continue to use a consistent scientific methodology for monitoring wetlands

Short Term [2013-2014]

- i. Publicize the current wetland monitoring methodology being utilized by NC DWR's wetland monitoring program on the NC DWR website

Long Term [2013-2017]

- ii. As necessary, update the wetland methodology based on current scientific data and project needs, and publicize any necessary changes
- iii. Consider use of probability sampling in the design of wetland monitoring projects

**OBJECTIVE 1 (cont.): Refine and publish the NC DWR wetland monitoring and assessment strategy**

- iv. Conduct a cost benefit analysis for any proposed monitoring and assessment changes
- v. Utilize the current wetland monitoring methodology on current and future monitoring projects
- vi. Determine if certain wetland types need new or additional monitoring (e.g. mountain bogs, small size wetlands, coastal wetlands for information on sea level rise and/or greenhouse gas emissions, etc.)

**ACTION 3:** Identify additional core indicators to represent wetland condition or a suite of functions

*Program Capacity Development: Continued work on improving assessment methods is important in obtaining the most reliable data. Validation of these methods and training users on the methodology will ensure the reliability of the methods and the data obtained.*

**ACTIVITIES:**

a) Development of Rapid Assessment Methods for Natural Wetlands and Wetland-Stream Complexes

Short Term

- i. Provide training on NC Wetland Assessment Method (NC WAM) [2013]
- ii. Validation of NC WAM in conjunction with other monitoring projects
  - Validate NC WAM for Headwater Wetlands [2013]
  - Validate NC WAM for Basin Wetlands [2013]
  - Validate NC WAM for Riverine Swamp Forests and Bottomland Hardwood Forests [2014]
- iii. Complete development of NC Stream Assessment Method (NC SAM) [2013]
- iv. Provide training for NC SAM [2013-2014]
- v. Validate NC SAM level 2 forms with level 3 field data[2013-2014]

Long Term

- vi. Continue validating NC WAM on other wetland types as projects and sufficient data warrant [2015-2017]
  - vii. Continue validating NC SAM based on geographic location and stream size [2015-2017]
- b) Evaluate the feasibility of establishing a Level 2 assessment for restoration sites to help determine the success or functionality of the site (possibly including a sliding scale/benchmarks based on the age of the site)[2015-2017]

**OBJECTIVE 2: Implement a sustainable wetlands monitoring program consistent with the wetlands monitoring and assessment strategy and effectively communicate monitoring activities and results with interested stakeholders.**

NC DWR has been implementing several projects as part of the monitoring and assessment program. Quality Assurance Project Plans (QAPPs) were developed using EPA guidelines (<http://www.epa.gov/QUALITY/qapps.html>) for all projects that are actively collecting data and will be developed for all proposed projects as well. Evaluation of collected data and dissemination of results will allow for detection of changes over time and ultimately lead to better wetland management decisions. Wetland monitoring data will be accessible for use in various reports (e.g. biannual state CWA 305(b) Water Quality Report, etc.).

**ACTION 1:** Ensure the scientific validity of monitoring and laboratory activities

*Program Capacity Development: Assessment of current monitoring techniques and development of new, appropriate techniques will provide the most accurate, up to date information on the condition of the waters of the state.*

**ACTIVITIES:**

- a) Develop QAPPs for all appropriate projects [all years]
- b) Develop and validate assessment tools to assist with the monitoring of natural and mitigation wetland sites

Short Term [2013-2014]

- i. Evaluate existing tools and provide needs assessment and validation plan (dependent on staff and resources)
- ii. Develop and validate Coefficient of Conservatism for wetland vegetation

Long Term [2015-2017]

- iii. Develop assessment tools based on the needs assessment and validation plan
- iv. Evaluate if Level 2 and Level 3 monitoring data can be used to develop a Level 1 monitoring and/or assessment method to provide an additional accurate, cost efficient monitoring method

**ACTION 2:** Monitor Wetland Resources as specified in North Carolina's monitoring and assessment strategy

*Program Capacity Development: Following wetland monitoring strategies and protocols schedule and establishing wetland monitoring networks will provide project focus and trackability, and improve data consistency.*

**ACTIVITIES:**

- a) Conduct the various types of wetland monitoring [2013-2017]
  - i. Ambient Monitoring Data (rotating basin approach)
  - ii. Basinwide/watershed data (need based, targeted monitoring)
  - iii. Random Monitoring data (~2 year intensive sampling)
  - iv. NWCA Survey Schedule

**OBJECTIVE 2 (cont.): Implement a sustainable wetlands monitoring program**

- b) Include the following items as part of the wetland monitoring data: [yearly]
  - i. Include routine, consistent, long term monitoring data so valid data will be available and can be used for decision making purposes
  - ii. Include monitoring of natural and restored sites and impact sites
  - iii. Include statewide data for certain wetland types in order to have stronger statewide data
  - iv. Ensure auxiliary data such as relevant stressor management are also available
- c) Establish a list of sites for North Carolina's Wetland Monitoring Reference Network [2013]
- d) Provide leadership for the establishment of a regional wetland monitoring network in the Southeast
  - Short Term [2013-2014]
    - i. Determine the participants and level of responsibility to the group
    - ii. Establish the guidelines for locations and types of wetlands to be monitored
    - iii. Establish protocols for monitoring and data management
  - Long Term [2015-2017]
    - iv. Determine the sites to be monitored as part of the Southeast Regional Wetland Monitoring Reference Network
    - v. Coordinate data collection and reporting
    - vi. Coordinate data entry using a standard format and reliable data entry system
- e) Assist the EPA with the development of a national wetland reference network [yearly]

**ACTION 3: Establish Reference Condition**

*Program Capacity Development: Defining wetland reference conditions will provide realistic, attainable guidelines for wetland preservation, enhancement and restoration.*

**ACTIVITIES:**

- a) Develop and refine metrics, based on the monitoring data, that can be utilized to support regulatory programs (e.g. Index of Biological Integrity (IBI)) [2013-2015]
- b) Utilize data from North Carolina, the Southeast region, and NWCA monitoring reference networks to define reference condition [2013-2015]
- c) Utilize collected wetland data to develop typical profiles for North Carolina wetland types and establish reference wetland parameters [2013-2015]

**ACTION 4: Track monitoring data in an Electronic Monitoring Data Management System**

*Program Capacity Development: The establishment and maintenance of one primary, publicly accessible, electronic wetland monitoring database will improve the consistency and accessibility of the wetland data and improve an agency's ability to access and analyze that data. These improvements should improve public awareness, interest, and involvement in the protection and enhancement of the waters of the state.*

**OBJECTIVE 2 (cont.): Implement a sustainable wetlands monitoring program**

**ACTIVITIES:**

- a) Evaluate, determine, and develop a means of sharing wetland monitoring data electronically [2013-2015]
  - i. Ensure public outreach and education to share monitoring data in a useable format
- b) Begin population of the wetland monitoring electronic data set, and evaluate for any necessary changes [2015-2017]
- c) Report on wetland monitoring activities and results in the State's Integrated Water Quality report [2014 and 2016]
- d) Continue to identify sites that can be repeatedly sampled as part of the State, Regional, and National monitoring networks [yearly]

**ACTION 5:** Analyze monitoring data to evaluate wetlands extent, density, and condition/function or to inform decision-making

*Program Capacity Development: Data analysis to establish baseline conditions will be followed by subsequent analyses in order to show trends in wetland condition. These analyses and trend determinations can be used to help determine the condition of the waters of the state.*

**ACTIVITIES:**

- a) Draft an initial reporting format for showing baseline wetland condition and showing trends in wetland ambient conditions [2013-2014]
- b) Use the various types of monitoring data (ambient, basinwide, random, and NWCA) and the data from the monitoring networks to establish baseline wetland conditions [2014]
- c) Use the various types of monitoring data (ambient, basinwide, random, and NWCA) and the data from the monitoring networks to show trends in the ambient conditions of wetlands [2014 forward]
- d) Track the quantity and quality of wetlands statewide (based on mapping and monitoring data) and assign wetlands to a categorical scale such as "good", "fair", or "poor" to indicate their condition [2014 and 2016]
- e) Identify changes in wetlands in order to establish a relationship between changing wetland condition and stream condition (e.g. due to human impact, climate change, etc.) [2014 forward]
- f) Identify and collect data on stressors that are associated with changes in wetland condition
- g) Produce estimates of relative risks, relative extent, and similar statistics to explain the association between the observed risks and the stressors
- h) Document the condition of wetlands that have been restored [2015 forward]
- i) Report wetland impacts and compensatory mitigation as part of the quarterly reports for NC Division of Water Resource's strategic plan [yearly]

**OBJECTIVE 3: Make wetlands monitoring data available for use in wetland planning, actions, procedures and regulatory programs.**

Integration of the wetlands monitoring program with existing monitoring initiatives and other regulatory programs will strengthen partnerships in order to share data and experience that will further common goals such as restoring and protecting wetlands and improving stream condition. Implementation of an effective and consistent wetlands monitoring program and working with other regulatory and resource agencies will result in better management decisions, overall improvements in water quality and reduced impairments.

ACTION 1: Incorporation of monitoring and assessment data into other programs and planning units

*Program Capacity Development: The incorporation of the wealth of wetland monitoring data into the functions and documentation of other programs in the state will greatly improve the protection and enhancement of wetlands and additional waters of the state.*

**ACTIVITIES:**

a) Make wetland monitoring data available for use by programs in North Carolina

Short Term

- i. Initiate discussions with other North Carolina monitoring programs (e.g. Ambient Monitoring Program for streams, lakes, and rivers; Biological Assessment Program, Albemarle-Pamlico National Estuary Program (APNEP), Mining and Stormwater, etc.) [2013]
- ii. Begin integrating wetlands monitoring data into other monitoring program reports (305(b) Report, APNEP, etc.) [2014]

Long Term [2015-2017]

- iii. Continue reporting wetlands monitoring data in monitoring program reports (305(b) Report)
  - iv. Formally integrate wetlands monitoring data into other long term agency plans (106 workplan and NC DWR Surface Water Monitoring Strategy)
  - v. Add additional APNEP sites to the state's wetland monitoring reference network
- b) Make wetland monitoring and assessment data available for use in watershed planning

Short Term [2013-2014]

- i. Collaborate with NC DWR Planning Section to provide wetland monitoring and assessment data for potential use in watershed planning efforts

Long Term [2015-2017]

- ii. Integrate wetland protection and restoration into watershed planning

**OBJECTIVE 3 (cont.): Make wetlands monitoring data available for use in wetland planning, actions, procedures and regulatory programs.**

ACTION 2: Evaluate the environmental consequences of an action or group of actions; modify programs as needed based on monitoring and assessment data

*Program Capacity Development: Improvement on the collection and storage of the scientific wetland data will aid in the assessment, understanding, and improvement of statewide guidance documents, policies, and regulations.*

**ACTIVITIES:**

- a) Report to the EPA through grant reports (CD 95488411) on the permitted impacts and required compensatory mitigation prior to and following various 401 programmatic changes [2014-2015]
- b) Use the monitoring protocols and data to support regulatory programs (e.g. 401 Water Quality Certifications, Isolated Wetlands, Stormwater, NPDES, Non-discharge Wastewater, etc.) [yearly]
- c) Establish a restoration value and ecosystem service approach to evaluate the services provided by wetland restoration projects and their return on investment

ACTION 3: Improve the site-specific management of wetland resources

*Program Capacity Development: The monitoring data will assist in improving the guidelines, guidance documents, and assessment of wetland enhancement and restoration projects.*

**ACTIVITIES:**

- a) Use the monitoring data to establish guidelines for wetland mitigation project success [2015 forward]
  - i. Include voluntary restoration projects and establish success criteria that assess the project's success relative to its established goals
  - ii. Include success criteria that take the restoration of extent, function, quality, and/or condition of compensatory and voluntary mitigation sites into account
  - iii. Evaluate the need for additional or alternative success criteria for wetland restoration sites within urban areas
- b) Utilize the monitoring data to document the condition of restored wetlands and the resulting improvements to water quality and/or impaired streams [2015-2017]

ACTION 4: Develop geographically-defined wetland protection, restoration, and management plans

*Program Capacity Development: Improve the state's water quality by improving the location and success of mitigation projects through advancements in assessment tools, focused mitigation projects in areas with impaired waters, and improved mapping tools.*

**ACTIVITIES:**

- a) Guide mitigation planning for wetlands or wetland-stream complexes with the particular goal of improving impaired streams (can identify wetland restoration sites that can improve water quality) [2015-2017]

**OBJECTIVE 3 (cont.): Make wetlands monitoring data available for use in wetland planning, actions, procedures and regulatory programs.**

- b) Evaluate tools to monitor and assess the success of wetland or wetland-stream complex mitigation sites (e.g. mitigation project construction protocols, Coefficient of Conservatism scores, IBI, wetland profiles of biological communities, rapid assessments, measures of hydrologic function, etc.) [2014-2017]
- c) Develop mapping tools to help prioritize monitoring and management areas [2014-2017]
- d) Evaluate the ecosystem services provided by impacted and restored streams and wetlands to determine what roles they play in overall environmental health/protection programs

**OBJECTIVE 4: Identify sustainable financing for long term wetlands monitoring activities.**

To date, wetlands monitoring in NC has been accomplished primarily through competitive EPA WPDGs. To effectively report on wetland condition and improve water quality, we cannot continue to rely solely on the funding sources of the past. Obtaining stable and renewable funding sources is critical to ensure that the wetlands monitoring groundwork developed over the past decade can be sustained for full integration into state and federal water quality programs.

ACTION 1: Investigate alternative funding sources for NC's wetland monitoring program  
*Program Capacity Development: All facets of the state's wetland monitoring program will be enhanced by securing long term and/or recurring funding sources.*

**ACTIVITIES:**

- a) Work with wetlands program plan stakeholder group to determine funding opportunities [2013-2014]
- b) Evaluate opportunities for obtaining federal 106 funding to support wetland monitoring staff positions and activities [present-2014]
- c) Research methods utilized in other states to fund wetland monitoring activities and evaluate applicability in NC [2014-2015]
- d) Investigate feasibility of developing and/or revising fee based programs to fund wetlands monitoring initiatives [2015-2016]
- e) Investigate other grant funding opportunities [yearly]
- f) Continue to request state appropriated funding to support wetland monitoring staff positions and activities [yearly]

## CORE ELEMENT 2: REGULATIONS

### BACKGROUND

#### Section 404 of the Clean Water Act:

In accordance with Section 404 of the Clean Water Act as amended in 1977, the United States Army Corps of Engineers (USACE) is responsible for regulating the discharge of dredge or fill material in waters of the United States, including open waters, streams, and wetlands. The purpose of the Clean Water Act is to restore and maintain the physical, chemical, and biological integrity of the nation's waters. Under Section 10 of the Rivers and Harbors Act and this program, the USACE is responsible for receiving and evaluating permit applications affecting waters of the United States. Frequently, the required public interest review of applications results in a finding that the public must be compensated for unavoidable aquatic resource losses, including wetland resources.

Section 404(b)(1) Guidelines of the Clean Water Act: Section 230.10 (d) of the Section 404 (b)(1) Guidelines states that "... no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."

#### Compensatory Mitigation for Losses of Aquatic Resources; Final Rule. 2008:

This comprehensive rule (33 CFR Parts 325 and 332; 40 CFR Part 230) updates and revises many aspects of compensatory mitigation nationwide. The intent of the rule is to establish standards and criteria for use on all types of compensatory mitigation, including on-site and off-site permittee-responsible mitigation, mitigation banks, and in-lieu fee mitigation to offset unavoidable impacts to waters of the U.S. through issuance of Department of Army permits. The rule reinforces the applicability of the 404(b)(1) guidelines to all projects permitted by the USACE. The rule addresses all aspects of compensatory mitigation, and includes definitions, general compensatory mitigation requirements, requirements for planning and documentation, mitigation performance standards, and monitoring and management requirements. The rule also provides details on the necessity of applying a watershed approach when establishing mitigation requirements and details on the operation of mitigation banks and in-lieu fee programs. This rule supersedes, in whole or in part, some previous guidance documents, Regulatory Guidance Letters (RGLs), and memoranda relating to compensatory mitigation.

#### 401 Water Quality Certification Program:

NC DWR, a Division of NC DENR, currently administers a comprehensive wetlands regulatory program. Impacts to wetlands, streams and open waters in North Carolina are regulated under three categories. **404 Wetlands:** The USACE is the federal agency responsible for issuing

permits pursuant to Section 404 of the Clean Water Act. These permits are required for the discharge of fill material into streams, wetlands and open waters. ***Coastal (CAMA) Wetlands:*** Along with being subject to 404 rules, CAMA permits are required under the Coastal Area Management Act and are issued by the North Carolina Division of Coastal Management (NC DCM) for development projects within one of North Carolina's twenty coastal counties in or affecting an Area of Environmental Concern. ***Isolated/non-404 Wetlands:*** According to the EPA's June 2007 Guidance, as a result of U.S. Supreme Court decisions, a wetland that does not have a significant nexus to a Traditionally Navigable Waterway (i.e., isolated wetland) is not protected under Section 404 of the Clean Water Act and therefore is not under USACE jurisdiction. Since isolated wetlands perform many of the same functions as other wetlands, impacts to isolated wetlands in North Carolina are subject to state permitting and compensatory mitigation requirements under Title 15A North Carolina Administrative Code (15A NCAC) 02H .1300.

Section 401 of the Clean Water Act stipulates that no Federal permit, including 404 permits, will be issued unless a 401 Water Quality Certification has been issued or waived. 401 Water Quality Certifications correspond with the permits issued by the USACE and NC DCM. 401 Certifications are required for any federally permitted or licensed activity that may result in a discharge to or filling of streams, wetlands or open waters. DWR requires applicants to document measures taken to avoid and minimize impacts to these resources during design of projects and to perform compensatory mitigation in accordance with the 401 Water Quality Certification requirements in 15A NCAC 02H .0506. The 401 process essentially provides verification by NC DWR that a given project authorized by a federal permit will not contravene the water quality standards provided in 15A NCAC 2B .0200.

*North Carolina Wetland Compensatory Mitigation:*

The 401 Water Quality Certification Program has compensatory mitigation requirements for 404 wetlands and isolated/non-404 wetlands. For 404 wetlands, 15A NCAC 2B .0506(h)(6) states that all mitigation proposals shall provide for replacement of wetland area lost due to proposed activity at a minimum of a 1:1 ratio through restoration or creation prior to utilizing enhancement or preservation to satisfy the mitigation requirements, unless the Director determines that the public good would be better served by other types of mitigation. For isolated wetlands, 15A NCAC 2H .1300 requires a 2:1 mitigation requirement, and also specifies that the mitigation must include at least a 1:1 ratio of restoration or creation prior to utilizing enhancement or preservation to satisfy the mitigation requirements, unless the Director determines that the public good would be better served by other types of mitigation.

On-site and off-site permittee-responsible mitigation is one option for fulfilling mitigation requirements within North Carolina. N.C. Session Law 2011-343 (Rewrite of NCGS 143-214.11) requires that applicants other than the State of North Carolina or the federal government

who wish to purchase wetland mitigation credits to satisfy compensatory mitigation requirements for impacts to wetlands must participate in a private wetlands mitigation bank, if 1) a bank that has been approved by USACE is located in the appropriate hydrologic area (identified as eight-digit HUC) and 2) if the bank has available and appropriate mitigation credits. Payment of a fee to the state in-lieu fee program (NC EEP) is only available to an applicant if a private bank as described above is not available as an option. The Federal government, State agencies, including NCDOT, and county/municipal governmental entities with an Existing Local Compensatory Mitigation Bank are not subject to the sequencing requirements of this legislation.

Water Quality Standards:

North Carolina's water quality standards for streams and/or open waters are contained in 15A NCAC 02B .0211 - .0222, and are dependent on use classifications. These water quality standards were designed to protect various uses, such as aquatic life propagation, biological integrity, secondary recreation, etc.

North Carolina's water quality standards for wetlands were implemented in 1996. The wetland standards contained in 15A NCAC 02B .0231 are narrative in nature (non-numeric) and were designed to protect, preserve, restore and enhance the quality and uses of wetlands and other waters of the state that are influenced by wetlands. Wetland uses protected in the rule include the following:

- Storm and flood water storage/retention;
- Hydrologic functions such as groundwater discharge and groundwater recharge;
- Filtration/storage of pollutants;
- Shoreline protection; and
- Habitat for the propagation of wetland-dependent aquatic organisms and other wildlife species.

The uses outlined above are maintained and/or enhanced through standards contained in 15A NCAC 02B .0231 (b) which states the following:

- Liquids, fill or other solids or dissolved gases may not be present in amounts which may cause adverse impacts on existing wetland uses;
- Floating or submerged debris, oil, deleterious substances, or other material may not be present in amounts which may cause adverse impacts on existing wetland uses;
- Materials producing color, odor, taste or unsightliness may not be present in amounts which may cause adverse impacts on existing wetland uses;
- Concentrations or combinations of substances which are toxic or harmful to human, animal or plant life may not be present in amounts which individually or cumulatively may cause adverse impacts on existing wetland uses;
- Hydrological conditions necessary to support the biological and physical characteristics naturally present in wetlands shall be protected to prevent adverse impacts on:
  - Water currents, erosion or sedimentation patterns;

- Natural water temperature variations;
  - chemical, nutrient and dissolved oxygen regime of the wetland;
  - movement of aquatic fauna;
  - pH of the wetland; and
  - Water levels or elevations.
- Populations of wetland flora and fauna shall be maintained to protect biological integrity as defined at 15A NCAC 02B .0202.

These narrative standards have provided NC DWR with the basic regulatory structure needed to protect wetlands from various detrimental activities outside of USACE jurisdiction such as ditching and draining. NC DWR has also utilized these standards to require some mining operations to maintain natural hydrology of surrounding wetlands that may be affected by groundwater pumping.

Finally, the state's Antidegradation Standard (15A NCAC 02B .0201) explicitly refers to wetlands and also provides an important mechanism of protection for wetlands in North Carolina.

Activities deemed to comply with wetlands standards are outlined in 15A NCAC 02B .0230. These activities do not require Section 404 permits; therefore, no 401 Water Quality Certification is required. North Carolina's program plan for water quality standards is addressed in Core Element 4 of this document.

#### Wetlands Classifications:

Classifications for surface waters in North Carolina are outlined in 15A NCAC 02B .0101. Certain classifications are subject to more stringent levels of protection depending upon their use, uniqueness, and/or sensitivity to pollutants. In North Carolina all wetlands are classified as either "WL" (freshwater wetlands) or "SWL" (saltwater wetlands) pursuant to 15A NCAC 02B .0101(c)(8) and (d)(4). The class SWL wetlands are defined to coincide with the estuarine wetlands that are regulated by the NC DCM. North Carolina also has a class "UWL" (unique wetlands) which are "wetlands of exceptional state or national ecological significance" and require special additional regulatory protection to maintain existing uses pursuant to 15A NCAC 02B .0101(e)(7). Data collected as part of North Carolina's monitoring and assessment program was instrumental in securing this level of protection for UWLs. The Dichotomous Key that accompanies the NC WAM manual can also be used to classify a wetland as one of the 16 general wetland types occurring in NC.

## **THE PLAN**

The primary environmental goals of existing wetland regulatory programs are the protection of existing uses, compliance with water quality standards, and "No Net Loss" of the state's aquatic resources. It is important to continuously assess the success of regulatory programs and allow for changes in areas needing improvement. A successful program will be clear and consistently

implemented, efficient for the regulated community, and provide appropriate protection and compensation for impacts to the state's aquatic resources. North Carolina's regulatory programs can attain these levels of success through continued and improved incorporation of the wetland monitoring and assessment data and collaborations among public and private entities that are impacted by regulatory actions and decisions.

## OBJECTIVES

### **OBJECTIVE 1: Clearly Define the Jurisdictional Scope of Regulatory Programs**

As described above, along with the USACE 404 program, NC DENR regulates a comprehensive scope of activities through the 401, CAMA and Isolated Wetland permit programs along with the Water Quality standards. Waters of the state are defined in NC General Statute 143-212(6) and water classifications and regulated activities are described in 15A NCAC 02B .0100, 02B.0200, 02B.0300, 02H.0500, and 02H.1300.

The following activities are proposed as part of the WPP over the next five years:

**ACTION 1:** Clearly identify a comprehensive scope of activities to be regulated.

*Program Capacity Development: Although North Carolina has a comprehensive scope of regulated activities, addressing concerns over the regulation of various wetland sizes, types, locations, etc. can improve the understanding and/or protection of these various communities.*

#### ACTIVITIES:

- a) Investigate wetland types or geographic areas where wetlands are below the current impact or mitigation size thresholds [2014-2015]
  - i. Evaluate if there are certain Wetland types needing greater protection
    - possibly determine using wetland function, ecosystem services, stressors, etc.
    - wetland types often impacted by permitting or forestry activities vs. amount left in the state
    - cypress swamps and old growth forests
    - wetlands near streams with threatened and endangered (T&E) or state species nearby or downstream
  - ii. Determine possible methods of protection (e.g. cumulative impact triggers, TMDL's, linking with planning efforts, review general certifications, etc.)
- b) Investigate ways to improve tracking of cumulative impacts within and across agencies (e.g. 404/401 programs, DCM, DEMLR (mining, stormwater, etc.), USACE, logging permits outside of the permitting process, etc.) [2015-2016]
- c) Investigate the benefits of state rules that exceed the federal regulations and determine if current regulations sufficiently protect the aquatic resource (e.g. no discharge dredging, isolated wetlands, etc.) [2014]

**OBJECTIVE 1 (cont.): Clearly Define the Jurisdictional Scope of Regulatory Programs**

**ACTION 2:** Provide clear guidance to the public on how to identify jurisdictional waters and activities that may require a 401 Water Quality Certification or Isolated Waters permit.

*Program Capacity Development: Clear guidance on how to identify waters of the state and what activities require authorization will decrease the likelihood of violations and increase compliance rates.*

**ACTIVITIES:**

- a) Evaluate sustainable ways to continue to provide guidance and training on Surface Water Identification Training and Certification (SWITC) [2014-2015]
- b) Evaluate sustainable ways to continue to provide guidance and training on North Carolina Wetland Assessment Method (NC WAM) to identify wetland types and to determine a wetland's functional value relative to reference condition [2014-2015]
- c) Provide a consolidated guidance document showing what activities require what authorization [2014]
- d) Provide transparency on existing guidance documents and on future guidance documents that will be promulgated in a rational and legal way [yearly]
- e) Educate the regulated communities (local governments, realtors, etc.) regarding waters, 401/404 process, 401/404 exemptions, etc. as a joint effort amongst several agencies and/or local governments

**ACTION 3: Ongoing Short and Long Term Evaluation**

*Program Capacity Development: Periodic review of the Regulatory program will improve the responsiveness of the program to the changes in environmental needs and the corresponding scientific knowledge.*

**ACTIVITIES:**

- a) Evaluate the status of regulatory program resources to help determine the most efficient use of limited funds [yearly]
- b) Periodic review of the regulatory programs to ensure all aquatic resources are being regulated as needed and in an efficient and effective manner [2013 +]

**OBJECTIVE 2: Administer Regulatory Activities Efficiently and Consistently**

NC DWR implements several regulations regarding waters of the state which include regulatory timelines for review of and response to permit applications including 401 Water Quality Certifications which are reviewed in conjunction with the USACE's 404/Section 10 Permits. NC DWR works to administer its regulatory program in an efficient and consistent manner. Continued work with the regulated community and ongoing evaluation of the regulatory program will improve efficiency and consistency of the program.

**OBJECTIVE 2 (cont.): Administer Regulatory Activities Efficiently and Consistently**

**ACTION 1:** Develop and operate according to a clear and effective set of criteria for reviewing and responding to applications

*Program Capacity Development: Providing the regulated community with the available permit application submittal and review criteria and guidelines will enhance the efficiency of the permitting program by decreasing the amount of incomplete or inaccurate applications and will improve the consistency of the permit review process.*

**ACTIVITIES:**

- a) Refine the publicly accessible review criteria for permit applications and compliance guidelines in order to provide consistency in interpretation and consistency in the permit review, implementation, and evaluation of compliance (e.g. consistent timelines, single request for more information, etc.) [2016-2017]
- b) Examine what is causing inconsistency in permit review, implementation, and evaluation of compliance (e.g. philosophy, training, experience, etc.) [2013-2014]

**ACTION 2:** Coordinate among agencies, programs, and industry groups to reduce duplicative efforts by the programs and the regulated public

*Program Capacity Development: Eliminating redundancy and improving program coordination will assist in accomplishing NC DENR's fundamental philosophy of being, "a resource of invaluable public assistance, rather than a bureaucratic obstacle of resistance."*

**ACTIVITIES:**

- a) Consolidate rules (e.g. 401 and isolated waters, state and federal, etc.) where possible [2014 +]
- b) Continue to coordinate and improve upon program implementation among the agencies [yearly]
  - i. Determine where various programs overlap
  - ii. Reduce redundancy
  - iii. Increase resources in needed areas
  - iv. Share data across agencies
- c) Provide a clear, consistent, and complimentary regulatory environment [2013-2015]
  - i. Study the implications of the state assumption of the 404 program including:
    - Positive/negative impacts to the regulated community and mitigation providers
    - Positive/negative impacts to water quality
    - Cost to the state and necessary resources
    - Potential cost savings to regulated community?
    - Other potential issues/challenges (e.g. CWA citizen's lawsuit provisions, coverage of the endangered species act, cultural resources protection, etc.)
    - Stability of NC DENR's regulatory program (i.e. program requirements seem to constantly change)

**OBJECTIVE 2 (cont.): Administer Regulatory Activities Efficiently and Consistently****ACTION 3:** Require effective mitigation for authorized impacts

*Program Capacity Development: Mitigation is currently required for certain approved permits. Continued refinement of the mitigation requirements based on monitoring and assessment data and other acquired scientific data, will improve the quantity and quality of successful mitigation projects.*

**ACTIVITIES:**

- a) Review criteria for mitigation proposals, including the monitoring plan and establishment of success criteria determination and/or protocols (e.g. consideration of full-year assessment of hydrologic criterion) [2015-2017]
- b) Utilize assessment tools (e.g. NC WAM) to determine appropriate mitigation based on impacts to wetland functions

**ACTION 4:** Track and/or Evaluate permit activities

*Program Capacity Development: Tracking and evaluating the regulatory programs will improve program consistency and efficiency, and it will allow for programmatic improvements.*

**ACTIVITIES:**

- a) Conduct cost/benefit analyses for the permitting program [2016-2017]
  - i. Examine the cost efficiencies for the state and permit applicants (stakeholders please provide specific items you would like to see addressed here)
  - ii. Examine the economic impacts of regulations and/or modifications to regulations
    - Economic impact of IW loss if IW regulations are altered
    - Economic impact of the loss of Wetland Ecosystem services due to rule changes
  - iii. Identify regulatory incentives to facilitate wetlands restoration
    - Easier to work with and more user friendly
    - Nationwide Permit (NWP) 27
    - Grants
    - USACE Partners Program
  - iv. Identify disincentives that result in less than desirable alternatives (e.g. applicants unwilling to go through the hassle of the permitting process)
- b) Develop and apply consistent performance metrics that can be tracked across and between programs [2014-2015]
- c) Administer and regularly update publicly accessible tracking system for stream and wetland impacts and mitigation [yearly]
  - i. Database
  - ii. Live, interactive maps
- d) Determine if there are any resources in certain locations that need additional regulatory protection or enhancement or restoration through mitigation (may need to go outside

of the HUC or watershed, areas around known T&E or state listed species especially landscape scale projects) [2016-2017]

### **OBJECTIVE 3: Evaluate Regulatory Activities to Ensure Environmental Results**

NC DWR values the importance of evaluating the water quality regulatory programs in order to protect the waters of the state and to provide exceptional service to the regulated community. Permitted impact and mitigation activities, average review times, compliance visits, etc. are assessed on a quarterly basis. It is important to continue to review the most recent science (e.g. monitoring and assessment data, ecosystem service values, etc.) in order to make appropriate updates to the various permits and conditions (e.g. mitigation success requirements, etc.), and to make sure that all current and updated information is made publicly available.

#### ACTION 1: Enforce Aquatic resource protection

*Program Capacity Development: Although NC DWR currently assesses the implementation of the water quality regulatory program on a quarterly basis, the protection of the state's water quality will improve with continued focus on enforcement and compliance mechanisms to work with sites that may be in violation of the permitting process.*

#### ACTIVITIES:

- a) Examine whether to place additional focus on the monitoring of impacts, follow-up, compliance, and enforcement within the water quality regulatory programs (short and long term)

#### Short Term [2013-2014]

- i. Develop a tracking system for re-inspections or complaints
- ii. Track USACE compliance sheets to confirm mitigation implemented and functioning
- iii. Continue to improve IRT interactions with mitigation banks/EEP

#### Long Term [2015-2017]

- iv. Utilize monitoring and assessment data
- v. Use wetland function and ecosystem services as a measuring tool

ACTION 2: Ensure impact assessments and mitigation crediting lead to replacement of aquatic resources with similar structural, functional or condition attributes on a watershed basis

*Program Capacity Development: The use of monitoring and assessment data and additional scientific information, as well as addressing the flux in environmental condition will provide the greatest success in replacing the state's aquatic resources.*

**OBJECTIVE 3(cont.): Evaluate Regulatory Activities to Ensure Environmental Results**  
**ACTIVITIES:**

- a) Examine opportunities for flexibility in mitigation by looking at local needs and specific resources (e.g. alternative mitigation methods, watershed planning, preservation in threatened areas, etc.)
- b) Examine opportunities for flexibility in using alternative measures to achieve compliance (e.g. higher credit for higher quality wetlands, additional site management like prescribed burns, etc.?)
- c) Examine opportunities to develop or utilize assessment methods to improve regulatory consistency [yearly]
- d) Evaluate current mitigation success criteria (especially hydrology and carbon sequestration) and establish new success criteria/methodologies based on the current science [2014-2016]
- e) Address how to equally value protection of existing waters vs. improving impaired waters [2015-2017]
  - i. Continue to examine avoidance/minimization vs. restoration for not net loss (preservation may provide an increase in function, not just restoration)
- f) Prioritize funding

**ACTION 3:** Provide public education and resource tools concerning wetland protection, regulated waters and activities, and authorization process.

*Program Capacity Development: Providing the regulated community with more information will give them a greater understanding of the regulatory process and improve the rate of programmatic compliance.*

**ACTIVITIES:**

- a) Create a document summarizing all existing regulations affecting wetlands [2014]
  - i. Summarize the existing regulations
  - ii. Target high-use groups (e.g. city officials, planners, real estate agents, consultants, etc.) for outreach and education opportunities
  - iii. Summarize the implications (purpose, impacts, etc.) of such regulations and how they impact economic and aesthetic aspects on a regional scale
  - iv. Summarize the quantitative measures of regulatory success (impacts on water quality, habitat, storm protection, etc.)
- b) Present information at public events and local schools
  - i. Bug Fest
  - ii. State Fair
  - iii. School Presentations

## **CORE ELEMENT 3: VOLUNTARY RESTORATION AND PROTECTION**

### **BACKGROUND**

Voluntary restoration and protection programs are paramount in accomplishing “no net loss” of wetlands (1988 Presidential Mandate) and also play a crucial role in having a net gain in wetlands over the long term (2004 Presidential Wetland Conservation Strategy) . Voluntary restoration and protection in North Carolina is encouraged and implemented on federal, state, local, and public-private partnership levels. At the federal level, agencies like the United States Department of Agriculture (USDA), Fish and Wildlife Service (USFWS), Army Corps of Engineers (USACE), etc. work to provide opportunities for voluntary restoration and protection of wetlands. The USDA’s Natural Resources Conservation Services’ (NRCS) Wetland Reserve Program (NRCS-WRP) is one such program. It is a voluntary program where land owners receive incentives for restoring, enhancing and protecting wetlands.

The North Carolina Wetlands Partnership was established in 1997 to promote the conservation of wetland, riparian buffer, and watershed values. This group consisted of individuals from federal, state, non-profit and private interest groups focused on identifying wetlands needing conservation, developing strategies for wetland and watershed conservation, providing public outreach and education, and supporting local efforts to conserve, preserve and restore wetlands and watersheds. Several state agencies like NC DCM and NC DENR have programs which provide opportunities for individuals or groups to understand the state’s wetland restoration and protection goals while offering them a way to volunteer as part of the process. Some of the ways to get involved include the donation of land or placement of a parcel of land under an easement or contract, as with Wildlife Resources Commission’s (WRC) Wildlife Conservation Land Program, the NC Conservation Tax Credit Program, and various land trust groups throughout the state. Other types of voluntary research, conservation, and restoration projects can also be funded through programs like the NC Division of Soil and Water Conservation’s Agricultural Cost Share Program, the NC Division of Water Infrastructure funding programs, and the Clean Water Management Trust Fund.

Local governments also play an important part in protecting and restoring the water resources throughout the state. Groups which represent and have the vested interest of the local governments in mind work diligently to improve waters throughout the state. The NC Regional Councils, NC League of Municipalities, and the NC Association of County Commissioners are a few of the groups that represent the interest of the local governments when it comes to protecting and improving water quality. Riverkeeper organizations and other conservation groups also work on a local level to protect the water resources within their immediate area.

There are numerous groups (e.g. land trust and conservancy groups, environmental advocacy groups, The Nature Conservancy, Environmental Defense Fund, NC Coastal Federation, NC

Sierra Club, etc.) that work to protect and restore water resources throughout the state. Special interest groups like the Farm Bureau, Forestry Association, Home Builders Association, and other professional organizations can have a statewide influence on the restoration and protection of aquatic resources. These groups are often able to obtain and sometimes provide funding sources for work in these important ecosystems.

Independent work as well as consolidated efforts can be combined to protect the water resources we have and ultimately contribute to the increase in amount or function and value of the aquatic resources across the state. The wetland program plan for voluntary wetland restoration and protection is aimed at improving the collaborative efforts to protect and restore North Carolina's wetlands.

### **THE PLAN**

Voluntary restoration and protection can help maintain, increase and/or improve the amount, function, and/or condition of the state's wetlands. Review and refinement, where necessary, of the state's voluntary restoration efforts can improve public outreach and education, collaborations between agencies, and the sharing of data. Voluntary protection and restoration of wetlands throughout the state can provide additional storm buffers, prevent erosion, help abate flooding, moderate groundwater levels, filter/assimilate nutrients, provide economic benefits, and accomplish watershed goals. Wetlands also have recreational and aesthetic values, and can improve wildlife habitats, especially those for endangered species.

### **OBJECTIVES**

#### **OBJECTIVE 1: Clearly and consistently define restoration and protection goals throughout the state**

Many agencies, groups, organizations and individuals throughout the state of North Carolina are involved with protecting and restoring wetlands within NC on a voluntary basis. In order to accomplish the greatest good for the resource, it is important to understand the restoration and protection goals that exist statewide so that everyone can attain their goals. The state's aquatic resources can greatly benefit from planning on a watershed scale and taking project goals into account (e.g. wildlife habitat, economic benefit, etc.) when selecting restoration/protection sites. The level of expertise in wetland sciences in the state can also provide clear guidance on appropriate restoration and management techniques and measures of success for the protected and restored systems. The following activities are proposed as part of the WPP over the next five years:

**ACTION 1:** Establish goals that are consistent or compatible across relevant agencies  
*Program Capacity Development: NC already has an Interagency Review Team (IRT) that evaluates projects and works with the parties involved with projects utilized for*

**OBJECTIVE 1 (cont.): Clearly and consistently define restoration and protection goals throughout the state**

*compensatory mitigation throughout the state. Collaborative efforts on establishing goals for voluntary restoration and protection projects will provide greater focus and likelihood of success in protecting and improving the quality of the state's aquatic resources.*

**ACTIVITIES:**

- a) Compile a living summary document that lists agencies and organizations that provide voluntary restoration and protection opportunities [2013-2014]
  - i. List restoration/protection goals
  - ii. List restoration strategies (priorities, planning methods, project coordination, restoration techniques, etc.)
  - iii. List timeframes for project and restoration goal completion
- b) Investigate the formation of a collaborative group that would jointly evaluate and assist with voluntary restoration/protection projects [2014-2015]
- c) Encourage collaboration and/or use of state funds to enhance federal projects (e.g. NRCS-WRP) [yearly]
- d) Evaluate the goals of current stewardship programs and provide recommendations for improvement [2015-2017]
- e) Develop public outreach tools to encourage voluntary restoration [2015-2017]
- f) Provide access to available data on wetland locations, class and condition/function [2013-2015]

**ACTION 2:** Consider watershed planning, wildlife habitat, and other factors when selecting restoration/protection sites

*Program Capacity Development: Restoration/protection site selection should be made based upon the goals of the proposed project. Looking at the needs within a watershed, species, resource, etc. may maximize the benefit to the designated ecosystem service. Selection of restoration sites should be strategic, such that more emphasis is given to sites that can maximize a suite of ecosystem services, especially improvements in water quality.*

**ACTIVITIES:**

- a) Develop a strategy and provide guidance for identifying voluntary restoration projects in order to maximize the ecosystem service provided by the project [2015-2017]
  - i. Establish consistent metrics and criteria to rank projects based on projected ecosystem service provided (e.g. improved water quality, habitat, overall functionality, carbon sequestration, etc.).
  - ii. Identify ways to coordinate the restoration efforts with other social or economic benefits (e.g. improved agricultural production through tail water recovery, monetary pay out, increase in functionality by 5% to 10%, salt marsh restoration for carbon benefits for sea level rise, etc.)
- b) Identify rare, vulnerable, or important wetlands and prioritize for restoration/protection (e.g. wetland types, corridors, complexes, etc.) [2015-2017]

**OBJECTIVE 1 (cont.): Clearly and consistently define restoration and protection goals throughout the state**

- c) Include protection of state and federally listed endangered species whose habitat needs protection
- d) Use monitoring and assessment data for spatial prioritization/ranking of wetlands to target restoration areas.
- e) Develop and maintain accurate and up-to-date inventory (including ecosystem services estimates, like carbon sequestration) of wetlands, especially maps
- f) Develop and apply tools to identify and prioritize restorable wetlands
- g) Develop a method (e.g. database, website, etc.) for sharing priority items, locations, etc. with other agencies, groups, organizations, etc.
- h) Seek public opinion on restoration needs and/or site locations

**ACTION 3:** Provide clear guidance on appropriate restoration and management techniques and success measures

*Program Capacity Development: There are continuous advancements in the understanding of wetland systems and the benefits they offer. A guidance document on restoration and management techniques as well as on measurable success criteria will improve the likelihood of project success and improvements to the aquatic resources.*

**ACTIVITIES:**

- a) Update the NC Wetland Mitigation Guidance Document as necessary to provide restoration and management guidance specific to wetland types and locations within watersheds [2014-2015]
  - i. For areas with local stormwater regulatory requirements, include information on constructed, stormwater wetland systems that can provide ecosystem services
- b) Utilize wetlands monitoring data to establish performance standard measures for restoration success, beginning with hydrology [2015-2017]
- c) Provide guidance to encourage natural, self-sustaining restoration outcomes that do not require ongoing maintenance. [2015-2017]
- d) Compile data on the success of various restoration techniques (e.g. planting or seeding methods, mulching, pre-burning, etc.) [2013-2014]
- e) Train restoration partners to use guidance techniques [2017]

**OBJECTIVE 2: Protect wetlands from degradation or destruction**

NC DWR requires avoidance and minimization as part of its' 401 Water Quality Certification program. Wetland preservation can also be utilized as part of the compensatory mitigation requirements. Encouraging, promoting, and practicing wetland protection on a voluntary basis will help maintain "no net loss" of wetlands within North Carolina.

**OBJECTIVE 2 (cont.): Protect wetlands from degradation or destruction**

ACTION 1: Establish partnerships to leverage additional protection

*Program Capacity Development: Many groups within NC work to protect the wetlands throughout the state, but concerted efforts in wetland protection can go much further in protecting the state's aquatic resources.*

ACTIVITIES: [yearly]

- a) Publicize the summary document that lists agencies and organizations that provide voluntary restoration and protection opportunities (from 1.1.a. above)
- b) Develop management plans for protected wetlands
- c) Track partnership projects (partners and project details)

ACTION 2: Encourage long term protection, using mechanisms such as incentives, purchase of land title or easements to protect wetlands.

*Program Capacity Development: Some individuals care about wetlands and their benefits enough to voluntarily protect their wetlands, but some individuals need an additional incentive to protect wetlands for ecosystem services. Providing additional incentives will increase the likelihood of individuals offering their land for protection.*

ACTIVITIES:

- a) Develop management plans for protected wetlands [2014-2015]
- b) Survey property owners requesting useful incentives for implementing long term protection on their property [2014-2015]
- c) Investigate the benefits and drawbacks of providing additional incentives such as:
  - i. Title restrictions as a match for funding options
  - ii. Tax incentives
  - iii. Term contracts versus perpetual easements
  - iv. More encouragements for buyouts (e.g. stormwater utilities, floodplains, restoration, etc., especially for local governments)
  - v. Payment in lieu of taxes (PILTs)
  - vi. Service based financial incentives
- d) Track location, acres, and functional/service attributes of protected wetlands [2014-2015]

**OBJECTIVE 3: Restore wetland acres, condition, and function**

Restoration of wetland acres, condition, and function are important towards achieving “no net loss” and "overall increase" in wetland extent, function, and quality. The goal of the project and the ecological service of interest will determine whether a project works to increase acreage or improve the functions and/or quality of the wetlands. Continued collaborations between groups will assist in achieving this end.

**OBJECTIVE 3 (cont.): Restore wetland acres, condition, and function**

ACTION 1: Increase wetland acreage and improve natural wetland conditions, functions, and services through restoration

*Program Capacity Development: Providing additional guidance on monitoring wetland sites and post restoration assessments of the ecosystem services provided by a site will help determine the success of current methods and improve the success, economy, and efficiency of future restoration endeavors.*

**ACTIVITIES:**

- a) Establish timelines and protocols for pre and post monitoring of voluntary restoration sites
- b) Determine if voluntary restoration projects (e.g. hunting sites, etc.) are having a positive impact on local ecology, water quality, etc.
- c) Track and map impacts and results of wetland restoration efforts

ACTION 2: Establish partnerships to leverage more voluntary restoration

*Program Capacity Development: Restoration efforts can be greatly enhanced by combining the efforts of more than one group. An up to date list of entities that provide wetland restoration as well as a list of restoration projects can connect parties with similar goals and/or interests in order to produce a larger and/or more successful restoration project.*

**ACTIVITIES:**

- a) Publicize the summary document that lists agencies and organizations that provide voluntary restoration and protection opportunities (from 1.1.a. above)
- b) Provide public access to the NC DWR mitigation database data (see 4.1.a. below) in order to facilitate coordinated efforts on projects
- c) Develop close working relationships amongst conservation organizations, groups, etc. (e.g. The Nature Conservancy, River-Keepers, land trusts, etc.)

**OBJECTIVE 4: Monitor and track progress over time, document results, and modify practices as appropriate.**

Monitoring and tracking the progress of voluntary restoration and protection projects in the state are important to maintaining an understanding of how well we are doing at protecting our wetland resources in acreage, function and quality. It is also important to continue to review the most recent science in order to make appropriate updates to the various monitoring and assessment practices (e.g. mitigation success requirements, etc.), and to make sure that all current and updated information is made publicly available.

ACTION 1: Track restoration/protection projects

*Program Capacity Development: Tracking the voluntary restoration and protection projects will give us a more accurate picture of accomplishing “no net Loss” in North Carolina.*

**OBJECTIVE 4 (cont.): Monitor and track progress over time, document results, and modify practices as appropriate.**

**ACTIVITIES:**

- a) Continue to populate and track the NC DWR mitigation database (ensure that voluntary projects are included in the database)
- b) Utilize GIS so restoration project locations and site data can be viewed and analyzed in a spatial context and assessed for overall watershed hydrologic and water quality conditions

**ACTION 2:** Monitor restoration/protection sites to ensure that they are implemented and managed correctly and linked to relevant watershed planning efforts

*Program Capacity Development: Monitoring the restoration and protection sites will ensure that mitigation plans are implemented correctly, are progressing towards meeting the success criteria, and are providing their intended ecological service.*

**ACTIVITIES:**

- a) Monitor effectiveness of voluntary restoration methods
- b) Monitor success of voluntary restoration/protection sites
- c) Regularly report on the effectiveness of restoration methods and/or sites
- d) Provide public access to mapped locations and data from monitoring results, successes, and failures
- e) Identify sustainable funding sources for monitoring restoration sites (currently not available/allowable with most restoration funding)

**ACTION 3:** Modify voluntary restoration/protection techniques as needed

*Program Capacity Development: The voluntary restoration and protection programs will be improved by making any necessary modifications to the recommended construction, monitoring, and management techniques. Assessing and making any necessary changes to the regulatory process for these projects will also improve the willingness for participation and efficiency of the voluntary restoration process.*

**ACTIVITIES:**

- a) Examine regulatory impediments to restoration
  - i. Review state and federal regulations to ensure they promote and not inhibit restoration efforts (e.g. NWP 27)
  - ii. Balance short term impacts with long term gains
  - iii. Modify the monitoring efforts noted in Action 2 above as needed

## **CORE ELEMENT 4: WATER QUALITY STANDARDS FOR WETLANDS**

### **BACKGROUND**

As described in more detail in the “Background” for the “Core Element 2: Regulations” section of this document, waters of the state are defined in NC General Statute 143-212(6) and water classifications and regulated activities are described in 15A NCAC 02B .0100, 02B.0200, 02B.0300, 02H.0500, and 02H.1300.

### **THE PLAN**

North Carolina wetlands are treated as waters within the state water quality program. In rule 15A NCAC 02B .0202(71), “[w]etlands are “waters” as defined by G.S. 143-212(6) and are areas that are inundated or saturated by an accumulation of surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” North Carolina currently has narrative water quality standards for wetlands. The goal of these standards is, “to protect, preserve, restore and enhance the quality and uses of wetlands and other waters of the state influenced by wetlands.” Addressing North Carolina’s approach to water quality standards for wetlands can provide greater insight into the functions and conditions of wetlands throughout the state. The standards can also be used in conjunction with the permitting, monitoring and assessment, and restoration and protection of North Carolina wetlands.

### **OBJECTIVES**

#### **OBJECTIVE 1: Evaluate current narrative and any proposed numeric wetland-specific water quality standards.**

North Carolina has already ensured that wetlands are treated as waters within the state water quality program and has established narrative water quality standards to protect the designated uses of wetlands. As with other aspects of the state’s regulatory and scientific programs, it is important to assess the current information pertinent to and the status of these programs. Narrative and numeric water quality standards may benefit the state programs, but it is important to review the implications of both types of standards in order to provide the best protection of these aquatic resources. The following activities are proposed as part of the WPP over the next five years:

**ACTION 1:** Gather and analyze monitoring data and other information that will support the water quality standard decisions

*Program Capacity Development: It is important that all water quality standards be based on the most accurate and up to date scientific data. To this end, the appropriate wetland monitoring and assessment data can be utilized to help establish and/or maintain the most valuable set of wetland-specific water quality standards.*

**OBJECTIVE 1 (cont.): Evaluate narrative and numeric wetland-specific water quality standards.**

**ACTIVITIES:**

- a) Publicize monitoring protocols for obtaining water quality data from wetlands [2013-2014]
  - i. Provide guidance on sampling location within the wetland (groundwater, influent, effluent, etc.)
  - ii. Provide guidance on how alternative water quality parameters (e.g. soils, macroinvertebrates, etc.) can be used to indicate the function or condition of the wetlands
  - iii. List any methods specific to wetland types (16 NC WAM wetland types)
- b) Determine how to use biological integrity data as part of the standards development process (e.g. data along a disturbance gradient) [2014-2015]
- c) Investigate the implications of using wetland monitoring data to establish and assess water quality standards for wetlands [2014-2015]

**ACTION 2: Evaluate North Carolina's current designated uses**

*Program Capacity Development: It is important for North Carolina to have an accurate understanding of its' current designated uses and to understand the implications on aquatic resources. This evaluation will provide greater resources and understanding for the regulated community and will shed light on any gaps in the current levels of protection.*

**ACTIVITIES:**

- a) Evaluate which designated uses apply to which NC WAM wetland types [2014-2015]
- b) Determine any additional designated uses that may be applicable to the NC WAM wetland types [2014-2015]
- c) Public outreach and education: Provide a summary of the existing designated uses and how and where they are relevant to North Carolina's wetlands [2015]

**ACTION 3: Evaluate North Carolina's current narrative wetland-specific water quality standards**

*Program Capacity Development: It is important for North Carolina to evaluate whether the current narrative wetland-specific water quality standards are meeting their goals. This evaluation will allow the state to maintain the standards that are working well and to adjust the standards that may need improvements.*

**ACTIVITIES:**

- a) Determine how the current narrative standards are being used and if they are working efficiently [2016-2017]
- b) Determine if additional narrative standards are needed (e.g. biological criteria to protect plant and animal diversity, endangered species, etc.) [2016-2017]

**OBJECTIVE 1 (cont.): Evaluate narrative and numeric wetland-specific water quality standards.**

- c) Evaluate the 16 NC WAM wetland types to determine if certain wetland types, subsets, locations, etc. need additional narrative standards in order to protect threatened resources. [2016-2017]

**ACTION 4:** Evaluate the need for numeric water quality standards for wetlands

*Program Capacity Development: Narrative water quality standards provide increased flexibility and provide adequate protection for many wetland types or regions. However, some wetland types or areas require a greater level of protection. Incorporating numeric wetland-specific water quality standards along with the current narrative standards, where feasible, could provide additional protection of the aquatic resources.*

**ACTIVITIES:**

- a) Develop a technical document that shows how numerical data can support narrative standards. [2015]
- b) Evaluate the feasibility of establishing wetland-specific numeric water quality standards given the potential complexity of establishing standards for 16 NC WAM wetland types and/or multiple designated uses [2015-2016]
- i. Determine which NC WAM wetland types (if any) could support numeric standards
  - ii. Examine the literature and poll other states to determine scientific and academically supported values for reasonable numeric standards
    - e.g. Selenium with power plants, etc.
    - pH for swamp waters, the range, and how it applies
    - Note: it may be difficult to determine the breaking point for various nutrients due to the wetland serving as a filter/sink
  - iii. Investigate the possibility of creating a numeric standards reference/guidance document that can be referred to in the rules so that when changes are made based on new scientific evidence, new rule making is not required
- c) Evaluate the 16 NC WAM wetland types to determine if any particular wetland types, subsets, locations, etc. need numeric standards in order to protect threatened resources (e.g. salt/brackish marsh for shell fishing, salinity levels affected by sea level rise, etc.) [2016-2017]

**OBJECTIVE 2: Incorporate wetland-specific water quality standards into agency decision-making**

NC DWR already has narrative wetland water quality standards established that are being used by other programs. As additional guidance becomes available, or as water quality standards are updated, it is important that the various programs continue to use the water quality standards to strengthen their programs.

ACTION 1: Use water quality standards as a guide in regulatory decisions

*Program Capacity Development: Use of wetland-specific water quality standards can improve regulatory consistency by providing additional guidance with permitting decisions. Various regulatory programs can be strengthened by understanding how the water quality standards are impacting the programs.*

**ACTIVITIES:**

- a) Investigate how to ensure proposed projects are meeting the water quality standards for wetlands (e.g. hydrology) [2016-2017]
- b) Evaluate how to ensure consistency in interpretation of the standards (narrative and numeric) [2016-2017]
- c) Public outreach and education: Provide a summary on the existing water quality standards, how they are implemented, and how they are relevant to North Carolina's conditions [2017]

ACTION 2: Use water quality standards in evaluating restoration/protection and mitigation/compensation projects

*Program Capacity Development: The wetland monitoring data collected from reference and wetland restoration and/or mitigation sites can provide valuable information on the improvements in downstream water quality and ecosystem services, and the resource's ability to meet established standards. Likewise, the use of numeric water quality standards as success criteria can help ensure the success of restoration and/or mitigation projects. The water quality program and the wetland restoration community will both benefit from continued feedback between the programs.*

**ACTIVITIES:**

- a) Investigate whether water quality standards can be used in conjunction with restoration planning to strategically improve downstream water quality [2016-2017]
- b) Evaluate ways to assess how restoration projects improve downstream water quality and ecosystem services [2015-2016]
- c) Determine how to use IBIs developed from the wetland monitoring and assessment data to develop planning tools for restoration projects [2016-2017]
- d) Evaluate the potential to calculate credits for the role of functioning wetlands in the removal of sediment and nutrients from the larger systems [2016-2017]

**OBJECTIVE 2 (cont.): Incorporate wetland-specific water quality standards into agency decision-making**

- e) Evaluate the potential to provide additional credit for mitigation projects that are affiliated with a 303d/TMDL and a 404 permit at the same time [2016-2017]

**ACTION 3:** Incorporate water quality standards into the monitoring and assessment program  
*Program Capacity Development: The data from the wetland monitoring and assessment program plays a crucial role in providing data for and determining the water quality standards. The monitoring and water quality programs will both benefit from continued feedback between the programs.*

**ACTIVITIES:**

- a) Update the wetland monitoring and assessment strategy and methodology to include the data collection necessary to provide supporting information for water quality standards [2016-2017]
- b) Track and report on the water quality portion of the monitoring and assessment data [yearly]

Appendix A

NC Wetland Program Plan Stakeholder Group Members

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**North Carolina Wetland Program Plan Stakeholder Group as of November 18, 2013**

<b>Last Name</b>	<b>First Name</b>	<b>Group/organization</b>
Bruton	Jeff	NC Division of Water Resources
Burchell	Mike	NC State Bio & Ag
Coan	Anne	NC Farm Bureau
Cox	David	NC Wildlife Resources Commission
Ellison	Michael	Ecosystem Enhancement Program
		NC League of Municipalities-Western Piedmont Council of Govts.
Higgins	Karen	NC Division of Water Resources-401 & Buffer Permitting
Hulka	Bryan	NC Forestry Association
Jernigan	Emily	US Fish & Wildlife Services-Raleigh ES Field Office
Jewell	Ian	Professional Engineers of NC
Kreiser	Gary	NC DWR-Water Planning Section
Mallin	Michael	UNC Wilmington
Marotti	Ward	NC Association of Environmental Professionals
Martin	Lisa	NC Home Builders Association
Miller	Todd	NC Coastal Federation
Paugh	Leilani	NC Department Of Transportation
Peet	Robert K.	UNC Chapel Hill-Biology Dept.
Reese	Johanna	NC Association of County Commissioners
Richardson	Curtis	Duke
Saunders Benson	Heather	NC Regional Councils-Western Piedmont Council of Govts.
Smart	Lindsey	Albermarle-Pamlico Natural Estuary Partnership
Tompkins	Bryan	US Fish & Wildlife Service-Asheville ES Field Office
Truesdale	Robert S.	Restoration Technologies Inc.
Tugwell	Todd	US Army Corps of Engineers
Webster	Norton	NC Environmental Restoration Association
		NC Association of Floodplain Managers

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**Appendix B**

**Summary of Monitoring and Assessment Activities  
by Year**

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