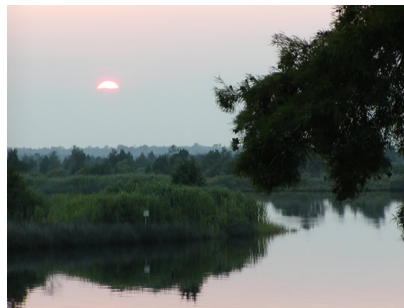


NORTH CAROLINA NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM

2019 5-YEAR PLAN

October 1, 2018



Prepared by the
Water Planning Section,
Division of Water Resources
North Carolina Department of Environmental Quality

Interim Division Director Linda Culpepper
Department Secretary Michael Regan
Governor Roy Cooper



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Executive Summary

This is the second 5-year strategic plan to carry out North Carolina's Nonpoint Source Management Program in response to revamped federal guidance released in 2013. This 5-year plan builds on and continues progress made during the last half decade. It continues to comply with April 2013 revisions to U.S. Environmental Protection Agency guidelines, which call for explicit 5-year plans to guide and focus watershed restoration and protection efforts, including the targeting of Section 319 grant funds under the Clean Water Act based on prioritization of activities. The revised guidelines also emphasize the importance of states coordinating with USDA Farm Bill programs to leverage water quality investments, and of directing at least 50% of grant funds to watershed restoration implementation projects unless states direct funds matching their entire 319 allocation to watershed restoration. North Carolina continues to utilize this exception option in our program, relying on restoration work funded by the NC Clean Water Management Trust Fund.

The Division of Water Resources NPS Program will continue its progress in targeting prioritized impaired waters for restoration and adding waters to those successfully recovered from NPS-impairment statewide. In addition, the Program will develop a protection blueprint for healthy waters as well as a set of priorities to respond to climate change as it affects nonpoint source management activities, including those funded by the 319 grant.

Prioritization and Restoration of Impaired Waters

In 2013, the Planning Section coordinated a crosscutting effort to develop a Division-wide prioritization approach to better target watershed restoration resources. The resulting restoration priorities list is partitioned into three tiers based on current local momentum, local capacity and readiness to implement, and currency and quality of plans. During the first cycle under our structured prioritization approach, restoration initiatives have made substantial progress. Staff has updated the priorities list (Table 1, Section II) to reflect that progress along with the current status of priority initiatives statewide. Progress highlights include: 5 new Success Stories capturing restoration of 9 impaired segments are grouped at the top of Tier 1; 8 initiatives progressed from "completed plan" status to active implementation, moving into Tier 1; a total of 13 new initiatives have been added, 6 of those in Tier 1 as actively implemented, with another 6 in position to pursue implementation in Tier 2; and at least 9 projects with approved plans are being implemented entirely with state or local funds. Over the next five years, the NPS Program will continue to target 319 and state and local water quality improvement resources under the watershed prioritization scheme.

Balanced Program

While the primary focus of our strategic improvements in the next five years is the area of voluntary watershed restoration projects, the NPS Program will also develop a plan to strategically improve watershed **protection**. In addition, we will continue to advance important **regulatory large-watershed restoration** initiatives addressing nutrient impairment as well as nutrient criteria development. Complementing these diverse watershed efforts, the Division along with our sister divisions and agencies will continue to implement and seek to improve statewide protection programs. This balanced water quality approach is detailed in the NPS Program action plans at the end of Section II.

Explicit 5-Year Strategic Plans

Addressing 2013 guidelines, Section II provides 5-year strategic action plans to advance restoration and protection goals. In general, DWR will continue the following activities to further watershed restoration and protection objectives:

- Utilize the state’s prioritized waters list to guide development of watershed plans for high priority NPS-impaired waters. Incentivize development of 9-element plans by local governments through the 205(j) water quality planning grant;
- Utilize basin planners, Use Restoration Waters coordinator, and DWR Regional Offices staff to foster and assist local actors to develop and implement restoration plans;
- Administer Section 319(h) Grant Program efficiently and effectively to support implementation actions with the best potential to achieve water quality goals;
- Collect data necessary to assess against designated uses, and use North Carolina’s 305(b)/303(d) Integrated Report to evaluate progress made toward restoring uses;
- Coordinate with USDA-NRCS on federally assisted agricultural implementation to achieve and quantify restoration of rural waters;
- Report water quality improvements to EPA and the public through the NPS Annual Report and DWR’s NPS program website; and
- Produce Success Stories for waterbodies that are partially or fully restored with 319 implementation assistance.

Partnerships

The NPS Program has developed a strong network of local partners, and we believe there is room to improve outreach to expand and strengthen partnerships that underpin our strategic intent. On the regulatory restoration side, we will continue to engage a full array of stakeholders some of whom represent interest groups statewide but most of whom are watershed-specific. We highlight planned partnering actions with italics in the NPS Program action plan in Section II.

Measures of Success

The NPS Program will continue to utilize the set of federal performance metrics identified below to gauge progress toward water quality goals. Two new metrics have been added, WQ-27 and WQ-28. The NPS Program will continue to report on progress made on each of these milestones in the Annual NPS Report submitted to EPA Region 4.

Table 1: Annual Milestones of Water Quality Improvement

Metric	2019	2020	2021	2022	2023
Cumulative number of water bodies, identified in NC 2002 IR or subsequent years as being primarily NPS impaired, that are partially or fully-restored , Success Story (WQ-10)	18	19	20	21	22
Annual number of waterbodies, identified in NC 2002 303(d) as not attaining water quality standards, where standards are fully attained (SP-10)	1	1	1	1	1
Annual # improved water quality conditions in impaired waters using the watershed approach vs. 2002 baseline (SP-12)	1	1	1	1	1
Cumulative annual reductions in pounds NPS Nitrogen to waters (from 319-funded projects) (WQ-9a)	10.8M	10.9M	11M	11.1M	11.2M
Cumulative annual reductions in pounds NPS Phosphorus to waters (from 319-funded projects) (WQ-9b)	3.00M	3.02M	3.05M	3.08M	3.10M
Cumulative annual reductions in tons NPS Sediment to waters (from 319-funded projects) (WQ-9c)	1.96M	1.97M	1.98M	1.99M	2.00M

Adaptive Management

North Carolina recognizes the need to utilize an iterative process in implementing, evaluating, and adjusting our NPS Program to most efficiently and effectively manage program resources. This adaptive

approach recognizes the complex, challenging and developing nature of the NPS management field, and hence the need to plan for iterations of “learning by doing,” improving with each iteration based on results of the previous ones. As we continue to use the prioritization framework, feedback will be solicited from partners, and progress will be assessed to help guide program revisions.

Enabling Authority

North Carolina has a range of federal and state statutes and rules that enable and govern the administration, function, and structure of the state NPS program. A more detailed discussion of that authority is presented in Section I.B.1., “State and Federal Mandates”.

This Plan is organized into four sections: **Section I** is an introduction to nonpoint source pollution management, including statutory foundations. **Section II** covers key NPS Program Strategic plans, including a discussion of watershed prioritization and tiered list of prioritized watersheds. **Section III** is a presentation of the state NPS programs and initiatives by NPS Category; and **Section IV** is the Appendix.

Acknowledgement

Although the Water Planning Section within the DEQ's Division of Water Resources prepared this Plan, it reflects the ongoing efforts of the numerous partners identified across NPS categories. Program staff will continue working with NPS partners to further the strategic plan. The success of this management plan will rely on the collective efforts of all NPS partners, from government to grass roots, and on continued funding of the 319 grant program. Nonpoint source management involves a mix of regulatory and voluntary programs, and structural and management practices. The Division of Water Resources extends its sincere appreciation to all parties involved in preparing this document and carrying out the business of nonpoint source management.

Table of Contents

ACRONYMS USED IN THIS PLAN.....	9
INTRODUCTION.....	11
NPS PROGRAM OVERVIEW	12
NPS PROGRAM STRATEGY AND PLANS OF ACTION.....	17
A. NPS PROGRAM VISION	18
B. BASIN PLANNING.....	27
C. WATER QUALITY MONITORING	29
D. WATER QUALITY ASSESSMENT, DATA ANALYSIS, AND MODELING.....	31
E. FUNDING PROGRAMS	33
F. VOLUNTARY RESTORATION: USE RESTORATION WATERS PROGRAM	38
G. REGULATORY WATERSHED RESTORATION: NUTRIENT STRATEGIES	39
H. NC NPS MANAGEMENT PROGRAM 5-YEAR ACTION PLAN (2019-2023)	45
CATEGORICAL PROGRAMS, INITIATIVES, AND PLANS OF ACTION BY NPS CATEGORY	49
A. AGRICULTURE.....	51
B. CONSTRUCTION AND MINING.....	55
C. FORESTRY.....	58
D. GROUNDWATER.....	62
E. MARINAS AND RECREATIONAL BOATING.....	64
F. ONSITE WASTEWATER	67
G. URBAN STORMWATER.....	70
H. WASTE MANAGEMENT.....	73
I. WETLAND AND HYDROLOGIC MODIFICATION	75
APPENDICES	78

List of Tables and Figures

Tables

Table 1: Annual Milestones of Water Quality Improvement	iv
Table 2: Cross-Cutting NPS Management Support Programs in NC	10
Table 3: Categorical Nonpoint Source Management Programs in NC	10
Table 4: NPS Workgroup Members by Category	11
Table 5: Prioritized List of Watershed Restoration Plans	17
Table 6: North Carolina 319(h) Grant Funding History (2014-2018)	29
Table 7: Other Funding Programs for Watershed Protection and Restoration in NC	32
Table 8. Existing Comprehensive Regulatory Watershed Nutrient Strategies in North Carolina	35
Table 9. Healthy Waters Protection Action Plan, DWR NPS Program	41
Table 10. Impaired Waters Restoration Voluntary Action Plan, DWR NPS Program	42
Table 11. Impaired Waters Restoration Regulatory Action Plan, DWR NPS Program	43
Table 12. Primary NC Laws and Rules Governing Silvicultural Activities	55

Figures

Figure 1. Watershed Restoration Prioritization Tool Input Elements	15
Figure 2. Watershed Restoration Prioritization Process	16
Figure 3. Priority Restoration Waters	19
Figure 4. High Priority Impaired Waters and Watersheds with 319-Eligible Restoration Plans	20
Figure 5. The Basinwide Planning Cycle	24

Acronyms Used in this Plan

Acronym	Explanation
ACF	Association of Consulting Foresters
APES	Albemarle-Pamlico Estuarine Study
ARS	NC Agricultural Research Service
ATF	Agriculture Task Force
BMP	Best Management Practice
BOC	Basin Oversight Committee
CAFO	Confined Animal Feeding Operation
CAMA	Coastal Area Management Act
CEFS	NC Center for Environmental Farming Systems
CES	NC Cooperative Extension Service
CLC	Catawba Land Conservancy
CREP	USDA Conservation Reserve Enhancement Program
CRP	USDA Conservation Reserve Program
CWMTF	Clean Water Management Trust Fund
CZARA	Coastal Zone Act Reauthorization Amendments
DCM	NC Division of Coastal Management
DEAO	NC Division of Environmental Assistance and Outreach
DEMLR	NC Division of Energy, Mineral, and Land Resources
DEQ	NC Department of Environment, and Natural Resources
DMF	NC Division of Marine Fisheries
DOT	NC Department of Transportation
DPH	NC Division of Public Health
DSWC	NC Division of Soil and Water Conservation, NCDA&CS
DWM	NC Division of Waste Management
DWR	NC Division of Water Resources
DMF	NC Division of Marine Fisheries
DMS	NC Division of Mitigation Services
EMC	NC Environmental Management Commission
EPA	U.S. Environmental Protection Agency
EQIP	USDA Environmental Quality Incentive Program
ESS	Environmental Sciences Section
FLA	Forest Landowners Association
FLP	Forest Legacy Program
FSA	Food Security Act of 1985 or USDA Farm Services Agency
IPM	Integrated Pest Management
LAC	Local Advisory Committee
MAB	NC DWR Modeling and Assessment Branch
NCACSP	NC Agriculture Cost-Share Program for NPS Pollution Control
NCARS	NC Agricultural Research Service
NCDA&CS	NC Department of Agriculture & Consumer Services
NCDOT	NC Department of Transportation
NCFA	NC Forestry Association
NCFBF	NC Farm Bureau Federation
NCDP	NC Nutrient Criteria Development Plan

Acronym	Explanation
NCFS	NC Forest Service
NCGS	NC General Statute
NCSU	North Carolina State University
NCSU CES FEOP	North Carolina State University, Cooperative Extension Service, Forestry Educational Outreach Program
NCWRC	NC Wildlife Resource Commission
NHP	NC Natural Heritage Program
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
NPSB	Nonpoint Source Planning Branch, NC DWR
NRCS	USDA Natural Resources Conservation Service
NSAB	NC Nutrient Scientific Advisory Board per SL 2009-216
NSW	Nutrient Sensitive Waters
NWQI	National Water Quality Initiative, USDA - USEPA
OEE	North Carolina Office of Environmental Education
ORW	Outstanding Resource Waters
PSNC	Public Service of North Carolina
QU	Quail Unlimited
RO	Regional Office, NC DEQ
SAC	Scientific Advisory Council to NC DWR for NC NCDP
SAF	Society of American Foresters
SMZ	Streamside Management Zone
SRF	State Revolving Fund
SW	Surface Water
SWCD	Soil and Water Conservation District
TAC	Forestry Technical Advisory Committee
T/E	Threatened/Endangered
TMDL	Total Maximum Daily Load
TPL	Trust for Public Land
TU	Trout Unlimited
TVA	Tennessee Valley Authority
UNRBA	Upper Neuse River Basin Association
URW	Use Restoration Waters Initiative, NC DWR
USACE	United States Army Corps of Engineers
USDA-FS	United States Department of Agriculture - Forest Service
USDA NRCS	United States Department of Agriculture, Natural Resources Conservation Service
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
WQC	Water Quality Committee
WRC	North Carolina Wildlife Resources Commission
WSS	Water Sciences Section, NC DWR
WSWS	Water Supply Watershed
WW	Wastewater

Section I

Introduction



NPS Program Overview

1. Federal Mandate and EPA 2013 Guidance

In 1987, amendments to the federal Clean Water Act launched the modern era of nonpoint source management by including requirements for states to develop and implement nonpoint source control programs and by creating at Section 319(h) a grant to assist states' efforts. In April 2013, EPA headquarters significantly revised its guidance to states on program design. The revised guidance identifies eight key components that characterize an effective NPS management program. These guidelines place an increased emphasis on watershed project implementation to restore impaired waters, increased accountability measures, and the targeting of 319 grant funds toward the highest priority activities. The updated 2013 guidelines also include as an appendix the updated guidelines to states for crafting the *Key Components of an Effective State Nonpoint Source Management Program*. These eight key components are listed below and are presented in further detail in Appendix B.

1. The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.
2. The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.
3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.
4. The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.
5. The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.
6. The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed.
7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.
8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.

2. State Mandates

There are several state statutes and rules that govern the administration, function, and structure of the state NPS Program. North Carolina's foundation for water quality management strategies is the policy adopted by the General Assembly to "achieve and maintain for the citizens of the state a total environment of superior quality" (NC G.S. 143-211). This policy builds upon Article XIV, Section 5, of the state Constitution, known as the North Carolina "Environmental Bill of Rights," which mandates that the state

take an active role in controlling and limiting the pollution of our water. The State Environmental Policy Act also declares that the state will seek to attain the widest range of beneficial uses of the environment without degradation (NC G.S. 113A-3).

Protection of existing uses and the water quality to support such uses are the key components of management strategies, whether for point or nonpoint sources of pollution. Most point source control strategies are integrated with the assimilative capacity of the water body and are based on numerous state regulations. The state's antidegradation policy (15A NCAC 2B .0201) is one tool for protecting uses of state water bodies.

An important statutory authority guiding nonpoint source management is provided at Chapter 143-215.8B regarding Basin water quality planning. This section charges the Environmental Management Commission with developing and implementing Basin plans on a cyclic basis. It stipulates that all point and nonpoint sources shall jointly share the responsibility of reducing pollutants to state waters in a fair, reasonable and proportionate manner. It also provides further authorities specifically targeting nutrient impairments. Of note to the timing of actions in this program plan is the fact that 2011 session law modified the Basin planning cycle from 5 years to 10. While many implementation specifics of this change have not been resolved, the frequency of full-scale Basin Plan revisions will be extended to 10 years here forward.

3. North Carolina's Nonpoint Source Program

The North Carolina Nonpoint Source Pollution Management Program (NPS Program) is led by the Nonpoint Source Planning Branch of the Division of Water Resources (DWR). NPS Branch staff interfaces with a broad network of federal, state, and local resource and land management agencies shown in **Table 2** whose responsibilities support the mission of addressing nonpoint source pollution in North Carolina. These various programs cover a range of responsibilities that have to varying degrees been delegated to county or municipal governments, from the authority to inspect and permit land clearing projects to septic system performance. In the field of agriculture, a well-established network of state and federal agricultural conservationists provide technical assistance and funding support to individual farmers. Implementers include not only central and regional office staff in state and federal agencies, but also county level personnel in each of North Carolina's 100 counties involved in forestry, agriculture (Soil and Water Conservation Districts, NRCS districts, Cooperative Extension), and onsite wastewater.

The DWR, which is housed within the Department of Environmental Quality (DEQ), serves as the lead agency for North Carolina's NPS Program. DWR works with agencies to ensure that program goals are incorporated into individual agency's management plans. Coordination with individual programs is achieved through updating the objectives and actions of the agencies in updates to the state NPS Program, by periodically revisiting the scope of 319-funded positions, and by the participation of the individual NPS programs in annual competitive 319-funded project selection through the NPS Workgroup. Annual reports are developed to describe individual program priorities, accomplishments, significant challenges, and issues yet to be addressed and resource needs.

This is the second 5-year strategic plan under EPA's 2013 guidance. This document includes condensed programmatic descriptions for individual NPS programs with links to web pages for more information. It also includes five-year action plans for each individual program.

4. Individual Nonpoint Source Programs in North Carolina

Several programs within state government provide broad support functions for NPS management in areas of planning, assessment, funding and regulation. Table 2 identifies these programs.

Table 2: Cross-Cutting NPS Management Support Programs in NC

Category/Program	Local	State	Federal
PLANNING			
NC NPS Program		NCDEQ, NCDACS	
Coastal Zone Act Reauthorization Amendments (CZARA)	county	DWR, DCM	EPA, NOAA
Basin Planning Branch		DWR	
Use Restoration Waters (URW)		DWR	
FUNDING			
Section 319 Clean Water Act		DWR	EPA
Section 205j		DWR	EPA
Clean Water Management Trust Fund (CWMTF)		DEQ	
ASSESSMENT			
Water Quality Monitoring		DWR	USGS
Assessment, Data Analysis, and Modeling		DWR	
REGULATION			
Nutrient Management Strategies		DWR	
Stream Classification and Standards		DWR	EPA

Table 3 identifies individual source or resource subject category NPS programs and the agencies and units of government that implement them. They are grouped by NPS subject category, hence this document will refer to them as categorical programs.

Table 3: Categorical Nonpoint Source Management Programs in NC

Category/Program	Local	State	Federal
AGRICULTURE			
Agricultural Cost-Share Program	SWCD	SWCC, DSWC	
NC Pesticide Law of 1971		NCDA&CS	
NCDA&CS Pesticide Disposal Assistance Program		NCDA&CS	
Federal Insecticide, Fungicide, and Rodenticide Act			EPA
Animal Waste Management Regulations	SWCD	DWR, DSWC, CES	NRCS
NC Coop. Ext. Service and Ag Research Service		NCARS, NCCES	
Laboratory Testing Services		NCDA&CS	
Watershed Protection (PL-566)			NRCS
1985, 1990, 1996, 2002, and 2008 Farm Bills Programs			NRCS
Ag Nutrient Regulations in Neuse and Tar-Pam River Basins and the Jordan and Falls Lake Watersheds	LACs	DWR, DSWC, NCDA&CS, BOCs	
Soil, Plant Tissue, and Animal Waste Testing Program		NCDA&CS	

URBAN			
Coastal Stormwater Program, ORW, HQW		DEMLR	
NSW Management Strategies Stormwater Rules	city, county	DWR	
Water Supply Watershed Protection Program	city, county	DEMLR	
NPDES stormwater permitting	city	DEMLR	EPA
Federal Insecticide, Fungicide, and Rodenticide Act			EPA
CONSTRUCTION AND MINING			
Sedimentation Pollution Control Act (SPCA)	ordinance	DEMLR, DOT	
Sedimentation and Erosion Control and NPDES program	ordinance	DEMLR, DOT, DWR	EPA
Coastal Area Management Act	ordinance	DCM	
Mining Act of 1971 and NPDES program		DEMLR	EPA
ON-SITE WASTEWATER DISPOSAL			
Shellfish Sanitation and Recreational Water Quality		DMF	
WASTE MANAGEMENT			
Resource Conservation and Recovery Act (RCRA)		DWM	EPA
Solid Waste Management Act of 2007	city, county	DWM	
Oil Pollution and Hazardous Substance Control Act of 1978 (OPHSCA) - UST Program and Trust Fund		DWM	
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)		DWM	EPA
Inactive Hazardous Sites Response Act (IHSRA)		DWM	
Dry-cleaning Solvent Cleanup Act (DSCA)		DWM	
Brownfields		DWM	EPA
FORESTRY			
Forest Practice Guidelines (part of SPCA)		NCFS	
Best Management Practices		NCFS	
National Best Management Practices for Water Quality Management on National Forest System Lands			USFS
Educational State Forests		NCFS	

Category/Program	Local	State	Federal
WETLANDS and HYDROLOGIC MODIFICATION			
Clean Water Act, Sections 401 and 404		DWR, DMS	COE
Isolated Wetland Permitting Program		DWR	
Section 10 Rivers and Harbors Act of 1899			COE
Dam Safety Permit		DEMLR	
GROUNDWATER			
Wellhead Protection Program	city, county	DWR	
Land Application of Wastewaters, Residuals and Septage		DWR, DWM	
Groundwater Classifications & Standards		DWR	
Underground Injection Control Program		DWR	

5. NPS Workgroup

One vehicle DWR uses to promote interagency coordination is the NPS Workgroup. Responsibilities of the NPS Workgroup members include acting as a point of contact and clearinghouse agent for their constituents and evaluating and prioritizing Section 319 project proposals during each annual competitive grant cycle. Current membership includes the state and federal agencies listed in **Table 4**.

Table 4: NPS Workgroup Members by Category

CATEGORY	AGENCY
<i>Agriculture</i>	Division of Soil and Water Conservation
	NC Department of Agriculture & Consumer Services
	USDA Natural Resources Conservation Service
<i>Construction/Mining</i>	Division of Energy, Mineral, and Land Resources*
<i>Forestry</i>	North Carolina Forest Service
<i>Groundwater</i>	DWR Aquifer Protection Section*
<i>On-site Wastewater</i>	DHHS, Division of Public Health
<i>Urban Stormwater</i>	DWR Water Permitting Section, DEMLR Stormwater Permitting *
<i>Wetlands</i>	DWR, Wetlands, Buffers, Stormwater Compliance/Permits *
	DEQ, Division of Mitigation Services (DMS)
<i>General Surface Water</i>	DWR Water Planning Section*
	DEQ, Clean Water Management Trust Fund (CWMTF)
	US Fish and Wildlife Service
	US EPA
	Division of Water Resources*
	Division of Coastal Management*
	Wildlife Resources Commission*

*Part of NC DEQ

Section II

NPS Program Strategy and Plans of Action



A. NPS Program Vision

1. Mission Statement

The mission of the North Carolina NPS Management Program is to coordinate the efforts of government agencies, industry, nonprofit, property owners and the public to restore waters whose uses have been impaired by nonpoint source pollution and to protect healthy waters of the State from becoming impaired by nonpoint source pollution. This mission is achieved through regulatory, voluntary and educational efforts.

2. NPS Program Goals

Having “explicit short- and long-term goals, objectives, and strategies to restore and protect surface and ground water” is the first component identified by EPA for a successful NPS Program. Two broad goals guide the administration of the Program: protection and restoration. These two goals and corresponding objectives (letter bullets) seek to bring both quantitative and qualitative changes to waters of the state.

In the body of Section II, the goals below are used as a framework upon which the NPS category action plans are developed. In some cases, the goals themselves are not used verbatim and new or restated objectives are used, but the intent of the language is left intact.

Goal 1) Protect waters currently meeting uses

- a. Prioritize non-impaired high-quality waters, outstanding resource waters, and threatened waters of the state for enhancement and protection.
- b. Work with voluntary and regulatory NPS programs and other partners to implement and strengthen NPS programs across the state in order to protect unimpaired waters from NPS pollution and encourage the control of NPS pollution in all waters of the state.

Goal 2) Restore NPS-impaired waters

- a. Prioritize waters based on an assessment of restoration potential.
- b. Scientifically assess causes, stressors, and/or sources in North Carolina’s impaired waters.
- c. Develop TMDLs or restoration strategies in strategically prioritized impaired watersheds.
- d. Support implementation of restoration strategies for prioritized impaired watersheds.

3. Five-Year Objectives

To support Goal 2 above, the NPS Program has more specific short-term goals:

- 1) Implement nutrient reduction strategies in prioritized watersheds. To date, the state has developed a total of four large-watershed, comprehensive regulatory nutrient restoration strategies, which now cover approximately a third of the state’s land area. Each strategy is unique in that it has distinct nutrient reduction goals aimed at achieving nutrient related water quality standards in the targeted waterbody in addition to a watershed-specific set of rules designed to achieve those goals. Each of these strategies involves regulation of nonpoint sources. The Division expects to continue implementing newly established strategies, address adaptive management needs of existing, steady state strategies, and also launch new strategies over time as resources allow. The state’s nutrient strategies are discussed in Section II.G.
- 2) Implement restoration projects in priority watersheds. In 2013, DWR’s Water Planning Section developed a GIS-based tool for prioritizing impaired watersheds for restoration to help target the Division’s resources and restoration efforts. The prioritization tool will continue to guide

implementation of watershed restoration projects funded by the 319 program under this second 5-year plan. The prioritization tool is discussed in Section II.A.4.

4. NPS Program Planning

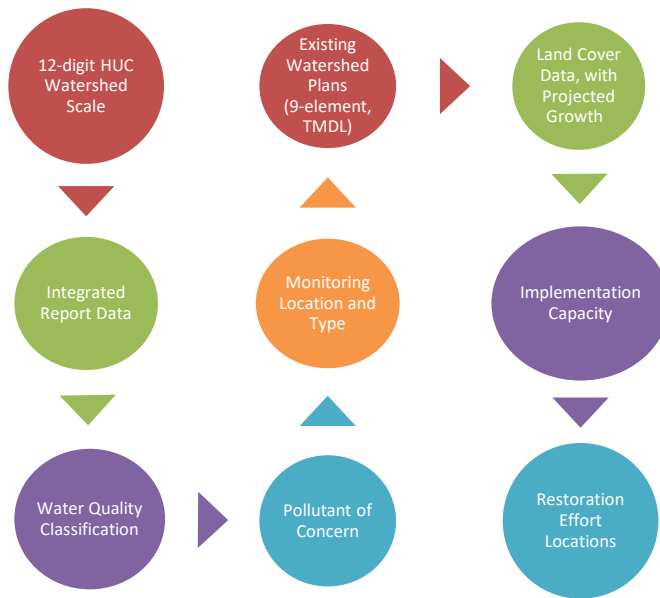
North Carolina recognizes the need to utilize an iterative process in implementing, evaluating, and adjusting our NPS Program to most efficiently and effectively manage program resources and ensure our water quality is protected and restored where needed. This adaptive approach recognizes the complex, challenging and fairly young nature of the NPS management field, and hence the need to plan for iterations of “learning by doing,” improving with each iteration based on results of the previous ones.

The various programs outlined in Sections II and III address different and sometimes multiple elements of the adaptive cycle. Many of the support programs identified in **Table 2** and described through Section II address the planning, funding, and evaluation elements, while programs in **Table 3** and Section III accomplish the implementation element.

5. Voluntary Watershed Restoration and Protection Prioritization Process

In 2013, North Carolina initiated a new approach to watershed restoration and protection by developing a GIS-based watershed prioritization tool. This tool allows the state to more efficiently target funds and Division efforts with watershed initiatives throughout the state. **Figure 1** provides a schematic of inputs for initial prioritization of watersheds across the state based on indicators of restorability to guide voluntary restoration efforts.

Figure 1. Watershed Restoration Prioritization Tool Input Elements

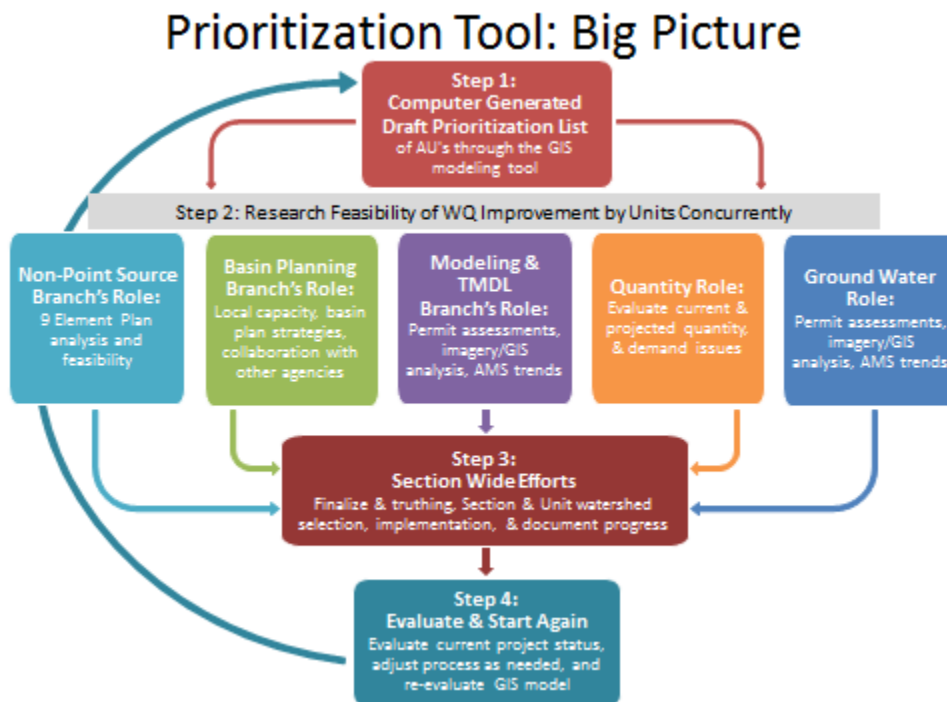


Watershed Restoration

The tool can be updated, and we expect to conduct periodic data runs to allow reassessment of priorities. The tool uses the 12-digit Hydrologic Unit (HUC) scale. The tool is designed for ranking of watersheds for any purpose by modifying the selection and weighting of data elements for that purpose. Available data layers include: 12-digit HUCs, water quality classification, biological factors, monitoring data, socio-economic factors, and land cover/impervious surface data to target areas for watershed scale work.

Now that the prioritization tool has been developed and a list of priority watersheds has been generated, the next step is to utilize regional office and DWR Water Planning Section staff to evaluate and ground truth the top priority watersheds to confirm feasibility of implementation efforts. The feedback provided during this step of the process will be used to refine the prioritization list and guide watershed restoration implementation. **Figure 2** below illustrates the steps of the watershed prioritization process and the roles of different branches of the Water Planning Section.

Figure 2. Watershed Restoration Prioritization Process



For the first 5-year plan in 2014, steps 1 and 2 of the above process were completed and an initial list of priority waters for restoration was generated by overlaying the priority waters list with existing GIS layer of 9-element watershed restoration plans and applying a local readiness filter to arrive at a ranked list of watersheds ready for implementation of existing management plans. This list was then divided into three tiers based on the following factors:

- Tier 1 Waters: Comprehensive and relevant Watershed Restoration Plans are in place and actively being implemented.
- Tier 2 Waters: Relevant Watershed Restoration Plans ready for implementation but currently not under contract. Plans are backed by local capacity, the Division is facilitating implementation.

- Tier 3 Waters: Watershed Restoration Plans exist but local capacity needs to be strengthened to fully implement them. Division staff will work with potential participants to build capacity.

This approach should serve as ongoing, revisable guidance for efficient use of implementation funds. Staff has updated the original tiered priorities list to reflect progress over the first 5-year period. Results are provided in **Table 5**, with all changes to the cycle 1 list shaded in **blue**. Noteworthy progress shown in **Table 5** includes: 5 new success stories restoring 9 segments at the top of Tier 1; 8 initiatives progressed from “completed plan” status to implementation, moving to Tier 1; 13 new initiatives have arisen – 6 are implementing plans (Tier 1) and another 6 have approved plans and are positioned to begin implementing; and at least 9 projects are being implemented entirely with state or local funds.

Table 5: Prioritized List of Watershed Restoration Plans

Tier 1

Plan Name	Partners	Status
Mud Creek, 2003 (French Broad)	Henderson County Cooperative Extension & SWCD; Conserving Carolina; NC Wildlife Resources Commission; USFWS; many others	Segment delisted for biology, 2016. Ongoing implementation – 319, other funds Success Story.
Dan River, 2012 (Roanoke)	NC Division of Soil and Water Conservation; Stokes, Rockingham, Caswell County SWCDs	Two segments delisted for fecal, 2012. Ongoing 319 implementation. Success Story.
Smith Creek - Warren County, 2008 (Roanoke)	NC Division of Soil and Water Conservation; Warren County SWCD	Elevated from Tier 2. Segment delisted for biology, 2016. Success Story.
Crowders Creek, 2008 (Catawba)	UNC Charlotte Civil & Environmental Engineering	New entry. Four segments delisted for fecal, biology, 2014. Ongoing implementation – local funds. Success Story.
Cullasaja River, 2010 (Little Tennessee)	Land Trust for the Little Tennessee River	Segment delisted for biology, 2012. Ongoing implementation – other funds. Success Story.
Franklin to Fontana, 2013 (Little Tennessee)	NC Division of Mitigation Services; NC Natural Heritage Program	Ongoing implementation - 319 project recently completed.
Valley River, 2008 (Hiwassee)	Hiwassee River Watershed Coalition	319 project recently completed.
Richland Creek, 2009 (French Broad)	Haywood Waterways Association	Ongoing implementation – shifted to state, local funds.
Ivy River, 2006 (French Broad)	Madison County SWCD	Elevated from Tier 2. 319 project underway.
Beaverdam Creek, 2010 (Watauga)	Watauga River Partners	Elevated from Tier 2. 319 project nearing completion.
McDowell Creek, 2008 (Catawba)	Town of Cornelius; Charlotte; Mecklenburg County Stormwater	Ongoing implementation - 319 project underway.
Little Sugar, 2003 (Catawba)	Charlotte Mecklenburg Stormwater; NC Division of Mitigation Services	Ongoing implementation - state and local funds.
Irwin Creek, 2003 (Catawba)	Charlotte Mecklenburg Stormwater; NC Division of Mitigation Services	Ongoing implementation - state and local funds.
Charlotte Area Plan, 2003 (Catawba)	Charlotte Mecklenburg Stormwater; NC Division of Mitigation Services	Ongoing implementation - state and local funds
Robeson Creek, 2011 (Cape Fear)	North Carolina State University – Water Quality Group, Biocenosis, Robeson Creek Watershed Council, Chatham Park	Ongoing implementation - shifted to private funds.
Third Fork Creek, 2012 (Cape Fear)	City of Durham; Durham SWCD	Ongoing implementation - Clean Water Trust Fund support.

Smith Creek, Wake Forest, 2014 (Neuse)	Town of Wake Forest	Ongoing implementation - 319 project underway.
Black Creek, 2005 (Neuse)	North Carolina State University WECO – Black Creek Watershed Association	Elevated from Tier 3. Ongoing 319-funded implementation.
Lick Creek, 2006 (Neuse)	Upper Neuse River Basin Association	Elevated from Tier 2. 319 project underway.
Ellerbe Creek, 2009 (Neuse)	Ellerbe Creek Watershed Association; NC Division of Mitigation Services	Elevated from Tier 3. 319 project beginning.
Lake Mattamuskeet, 2010 (Tar-Pamlico)	North Carolina Coastal Federation	Elevated from Tier 2. 319 project recently completed.
Bradley & Hewlett's Creek, 2009 (Cape Fear)	North Carolina Coastal Federation	Elevated from Tier 2. 319 project underway.
Lockwood's Folly, 2010 (White Oak)	North Carolina Coastal Federation	319 project recently completed.
Naked Creek (New)	New River Conservancy	New entry. 319 project underway.
North Toe (French Broad)	Blue Ridge RC&D	New entry. 319 project underway.
Mills River Source Water Prot'n /W'shed Restor'n (French Broad)	Mills River Partnership	New entry. 319 project underway.
Little Lick Creek (Neuse)	City of Durham	New entry. Implementing w/own funds.
Little River (Pasquotank)	Albemarle RC&D	New entry. 319 project underway.
Swansboro Watersheds (White Oak)	Town of Beaufort, Eastern Carolina Council, NC Coastal Federation	New entry. 319 project beginning.

Tier 2

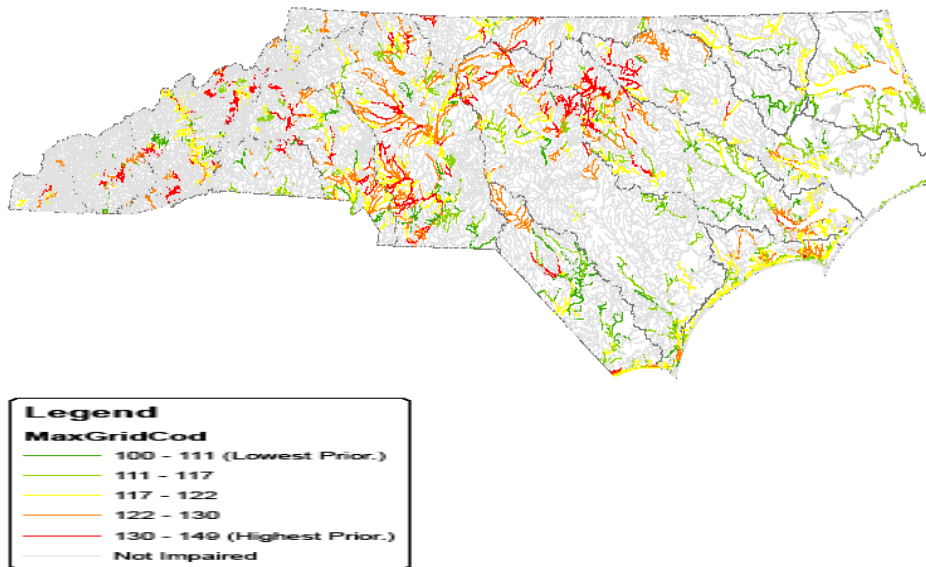
Plan Name	Partners	Status
East Fork New River (New)	New River Conservancy	New entry. Plan Developed
Middle Fork New River (New)	New River Conservancy	New entry. Plan Developed
Fines Creek (French Broad)	Lower Pidgeon River Watershed Restoration Group	New entry. Plan Developed
Greenfield Lake, 2016 (Cape Fear)	UNC Wilmington	New entry. Plan Developed
Beaufort Watersheds (White Oak)	Town of Beaufort, Eastern Carolina Council, NC Coastal Federation	New entry. Plan Developed
Pettiford Creek, 2005 (White Oak)	North Carolina Coastal Federation	New entry. Plan Developed
Corpening Creek, 2007 (French Broad)	Clean Water Management Trust Fund – Muddy Creek Partnership	Plan Developed
Ararat River, 2013 (Yadkin)	NC Division of Mitigation Services	Plan Developed
Bolin Creek, 2009 (Cape Fear)	Town of Chapel Hill, Carrboro	Plan Developed

Tier 3

Plan Name	Partners	Status
Bald Creek, 2016 (French Broad)	NC Division of Mitigation Services	New entry. Plan Developed
Newfound Creek, 2005 (French Broad)	Buncombe County SWCD	Plan Developed
Hunting Creek, 2008 (French Broad)	Clean Water Management Trust Fund; Muddy Creek Partnership	Plan Developed
Indians & Howards Creek, 2010 (Catawba)	NC Division of Mitigation Services	Plan Developed
Lake Rhodhiss, 2006 (Catawba)	Western Piedmont Council of Governments	Plan Developed
Lower Creek, 2008 (Catawba)	Caldwell, Burke County SWCDs	Plan Developed
Goose & Crooked Creeks, 2012 (Yadkin)	Union County; NC Division of Mitigation Services	Plan Developed
Lower Abbotts Creek, 2008 (Yadkin)	Piedmont Triangle Regional Commission	Plan Developed
Rocky River, 2009 (Yadkin)	Centralina Council of Governments	Plan Developed
Northeast Creek, 2005 (Cape Fear)	University of North Carolina Chapel Hill	Plan Developed
Little Alamance, Travis, Tickle, 2008 (Cape Fear)	NC Division of Mitigation Services	Plan Developed
Burnt Mill Creek, 2004 (Cape Fear)	City of Wilmington; North Carolina State University WECO	City of Wilmington continuing education & outreach

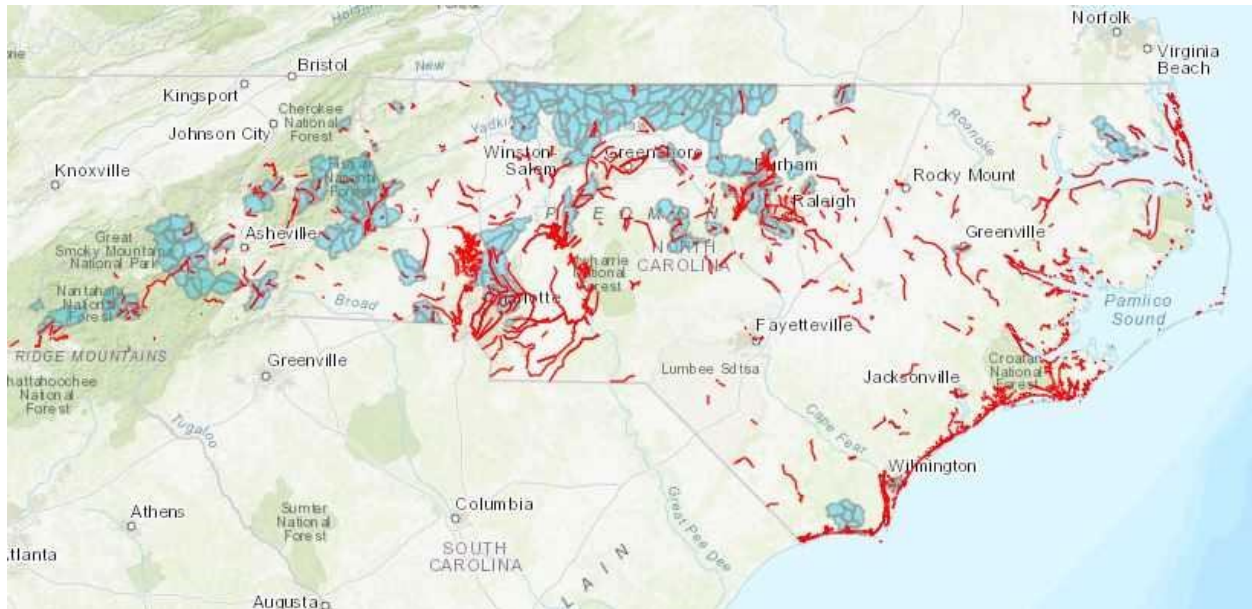
A map illustrating the list of prioritized waters for restoration is presented below as **Figure 3**. The highest priority waters show up as red on the map, lowest priority in green.

Figure 3. Priority Restoration Waters



The map in **Figure 4** below from the NPS Program's 319 web page shows only the highest priority impaired waters (red) along with the current set of approved 9-element watershed restoration plans as listed in **Table 5** above.

Figure 4. High Priority Impaired Waters and Watersheds with 319-Eligible Restoration Plans



Targeted Watershed Protection

In this second 5-year period, the Division is interested in developing a framework to promote targeted protection of water quality in unimpaired, healthy watersheds. An action is included for this interest in the Protection action plan in this section. A protection framework would support planning efforts of local partners and potentially facilitate the pursuit of funding incentives from various local, state and federal sources for protection activities. Basic prioritization criteria for protection would likely include protective designations on high-value waters such as state Outstanding Resource Waters, High Quality Waters, Trout Waters, and Water Supply Watershed designations, some element of threat or risk, and some metric of local readiness as done with restoration waters.

6. Implementation of Restoration and Protection Efforts

Implementation will follow the NPS Program action plans at the end of Section II. On the protection side, there are two aspects to protection: targeted watershed protection described above and ongoing statewide protection of water quality via the range of existing regulatory and other support programs that are supported in part by the 319 grant. For targeted protection, once a protection prioritization framework has been developed, it will be shared with Division leadership for consideration of potential uses before any plan is developed for engagement of local partners. Programmatic protection efforts continue and evolve as described in Section III of this Plan.

One subject that cuts across both protection and restoration interests is the NPS management implications of climate change. NPS Program staff will seek to evaluate this subject in the new 5-year cycle for

procedural needs and potential policy recommendations. Examples of potential NPS management implications to consider are: choice and siting of restoration projects, coastal and floodplain; stormwater practice selection and design modifications; practice operation and maintenance expectations and long-term stewardship guidance. An action is included in the Action Plans for this subject.

On the restoration side, NPS Program staff and others will continue to use the updated prioritization tiers to guide implementation actions. The Division will work to cultivate local champions and complete or develop watershed plans. The Division will also utilize internal staff resources to complete, update, or develop new watershed restoration plans. The framework will be used to prioritize the order in which new watershed plans are developed, with one of the criteria being an active watershed group or other local capacity ready and able to implement the plan once completed. More detailed information about the objectives and actions that will be taken to implement the NPS Program's watershed restoration and protection efforts is outlined in the NPS Management Program 5-Year Action Plan in Section H. For both protection and restoration efforts, water quality monitoring will be conducted to provide the data on which sound management decisions will be based.

Role of Regional Offices

While the Regional Offices carry out the bulk of the Division's regulatory protection and management support work, they also have the potential to play, and to varying degrees have played, a role in coordinating and supporting watershed restoration efforts of local partners. The Asheville Regional Office has historically been the biggest participant, playing a significant role in supporting restoration initiatives as evidenced by the number of projects that continue in the mountain region of the state. State budget cuts in recent years have affected the Regional Offices disproportionately and have reduced the extent to which they engage in these activities, but with the improved economy the NPS Program will be seeking to reenergize their participation in restoration efforts during this second 5-year cycle. The Use Restoration Watershed (URW) staff position in the Central office plays a key coordinating role with the Regional Offices and assisting with voluntary restoration efforts across the state.

Regional Office staff can provide a number of support activities for local restoration initiatives including:

- Collaborate with local and/or state government agencies to characterize sources and stressors of the waterbodies identified in the Division prioritization list, ideally 2 waterbodies in each region
- Follow up on compliance concerns in local watersheds,
- Prioritize restoration and protection efforts such as inspections, compliance, permitting, and implementation,
- Provide additional assistance to further watershed efforts including monitoring, stream walking, watershed restoration plan consultation and advocacy,
- Identify future restoration and protection needs in other watersheds,
- Cultivate local champions to increase the pool of 319 eligible projects,
- Provide a state voice with local watershed interest groups, municipal watershed staff, and other entities to assist with troubleshooting, translate regulatory issues within the watershed.

Partnerships

In addition to the many tasks carried out by the Division's regional offices outlined above, implementation of watershed restoration priorities relies on many key partnerships with other state agencies and organizations. The partnerships that are formed for voluntary restoration efforts have more flexibility than regulatory relationships and can evolve with program needs. Where there are primarily urban impairments, the NPS program has predominantly worked with partners consisting of local municipalities. When working on restoration efforts in primarily agricultural or smaller watersheds in the mountain region of the state, the NPS program has worked with a greater variety of partners including the

NC Division of Soil and Water Conservation, local Soil and Water Conservation district offices, or local non-profit watershed groups, including the North Carolina Coastal Federation which tackles restoration and protection projects along the coast. Many of the partners that have and will continue to be utilized for both regulatory and voluntary implementation efforts are listed earlier in **Table 3** of Section 1.

B. Basin Planning

Basin water quality planning is a nonregulatory, watershed-based approach to restoring and protecting the quality of North Carolina's surface waters. Basin water quality plans are prepared by the DWR for each of the 17 major river basins in the state. A map delineating the 17 river basins is presented in Appendix D. Preparation of a basin water quality plan is an iterative process. Plans are approved by the NC Environmental Management Commission (EMC) at least every 10 years. The plans are coordinated and prepared by the DWR, and their implementation entails the coordinated efforts of many agencies, local governments and stakeholder groups in the state.

1. Goals of Basin Water Quality Planning

The goals of basin planning are to:

- Identify water quality problems qualitatively and quantitatively, where possible.
- Enable identification and pooling of resources in order to ultimately restore full use, including all designated uses, to impaired waters.
- Identify high value resource waters and make recommendations for protection where needed.
- Protect unimpaired waters yet allow for reasonable economic growth.
- Meet any other requirements of state and federal law.

Basin planning and management benefits water quality and NPS management by:

- Focusing resources on one river basin at a time.
- Using sound ecological planning and fostering comprehensive NPDES permitting working on a watershed scale.
- Ensuring consistency and equitability by clearly defining the program's long-term goals and approaches regarding permits and water quality improvement strategies.
- Fostering public participation to increase involvement and awareness about water quality.
- Integrating and coordinating programs and agencies to improve implementation of point and nonpoint source pollution reduction strategies.

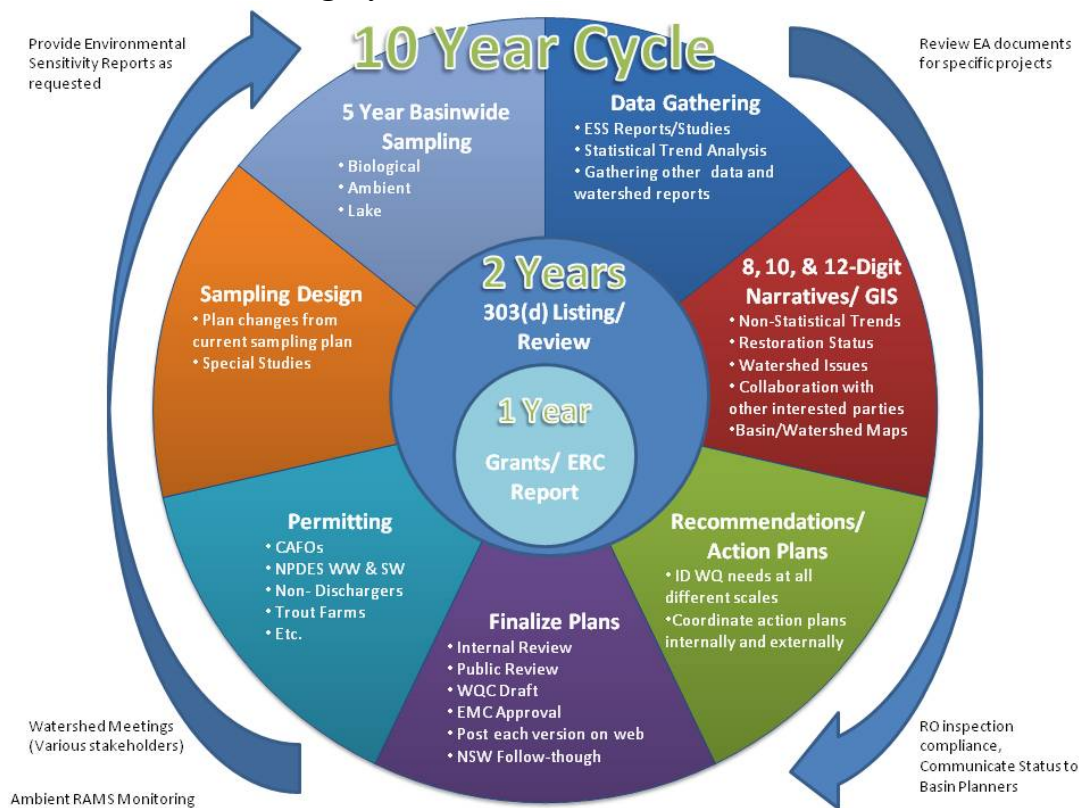
2. Determining Water Quality Through Basin Planning

North Carolina's watershed-based approach to restoring and protecting the State's waters is basin water quality planning. It has been NC's approach for over four cycles of basin plans for each of the 17 river basins that are in whole or in part within NC. This approach has allowed the limited state budget and staff to cover the entire state on a rotating basis to identify water quality problems and issues, and to work on solutions concurrent with each basin's NPDES permit renewal cycle.

The Basin Planning Branch in DWR is the organizational unit responsible for the preparation of, and more recently, for the oversight of the implementation of the basin plans. Because each basin plan is approved by the EMC, the EMC gets a highlight of the water quality information, trends, hot topics, restoration successes and an opportunity to approve recommendations within the basin plans. Basin plans entail the coordinated efforts of many agencies, local governments, community organizations, and can involve focused stakeholder groups for particular subbasins, watersheds, or subwatersheds within any particular river basin. Each basin plan is required by law to be reviewed and revised at least every ten years by the EMC to reflect changes in water quality, improvements in modeling methods, improvements in wastewater treatment technology, advances in scientific knowledge and modifications to management strategies to support designated uses of waters. Each year, an annual report on the status of developing and implementing basin plans is presented to the EMC and submitted to the state legislature.

3. The Cycle of a Basin Plan

Figure 5. The Basinwide Planning Cycle



Further detail on the Basin program as well as schedule and all river basin plans can be found at: <https://deq.nc.gov/about/divisions/water-resources/planning/basin-planning>

4. Basin Planning Program Staff Activities

Basin management is a core component of the state's NPS program, coordinating and integrating DWR activities such as water quality monitoring, modeling, assessments, and planning and management implementation by river basin and watershed. The 319 program considers it important to utilize 319 program funds to support Basin Planning staff as well as Classifications & Standards/Rules Review Branch staff. The Classification and Standards/Rules Review Branch is involved in the development of NPS-related special management strategies and regulations to protect waters' designated uses.

Preparing basin plans is a data and time-intensive process which includes synthesizing water quality data, public outreach and nonpoint education activities such as participating in public workshops and meetings, speaking to various interest groups, and coordinating with state and federal agency personnel and local watershed groups on plan development and implementation. Staff provides input into activities of local watershed groups and natural resource agencies, as well as point source discharger organizations. The research and data gathering involved in the preparation of basin plans helps identify potential nonpoint source impacts in smaller watersheds and areas in need of protection and/or restoration.

C. Water Quality Monitoring

The NPS Program relies heavily on the following monitoring programs conducted by the Water Sciences Section (WSS) and seven regional offices. The WSS publishes a Basin Assessment Report (BAR) every five years. The BAR includes information on ambient monitoring, aquatic toxicology, benthic populations, fisheries, and lake assessments. BARs published since 2000 can be found at: <http://portal.ncDEQ.org/web/wq/WSS/reports>.

1. Ambient Monitoring

The Division of Water Resource's seven regional offices and one Estuarine Response Team perform ambient water quality monitoring across the State's 17 river basins. For many stations, a database of results of this information extends back to the 1970's. Parameters measured depend on stream class and characteristics; more details are available here: <http://portal.ncDEQ.org/web/wq/WSS/eco/ams>

2. Benthic Monitoring

Benthic macroinvertebrates, or benthos, are organisms that live in and on the bottom substrates of rivers and streams. These organisms are primarily aquatic insect larvae. The use of benthos data has proven to be a reliable monitoring tool, as benthic macroinvertebrates are sensitive to subtle changes in water quality. The benthic community integrates the effects of a wide array of potential pollutant mixtures. Different benthic macroinvertebrate criteria have been developed for different ecoregions (mountains, piedmont, coastal plain, and swamp waters) within North Carolina. Bioclassifications fall into five categories ranging from Poor to Excellent, or Natural Moderate or Severe for Swamps. Assessment data, site information and methodology used to evaluate North Carolina's surface waters through biological indices can be found at: <http://portal.ncDEQ.org/web/wq/WSS/bau>

3. Fish Assessments

Fish community samples are evaluated using the North Carolina Index of Biotic Integrity (NCIBI). The NCIBI uses a cumulative assessment of 12 parameters or metrics. Each metric is designed to contribute unique information to the overall assessment. Application of the NCIBI has generally been restricted to wadeable streams following Standard Operating Procedures ([NCIBI SOP](#)). More information on the Stream Fish Community Program can be found at: <http://portal.ncDEQ.org/web/wq/WSS/bau/ncibi-data>

4. Lake Assessment

DWR's Ambient Lake Monitoring Program (ALMP) seeks to protect waters through monitoring, pollution prevention and control, and restoration activities. Historically, water quality assessments have been made at significant lakes and reservoirs, which include publicly accessible lakes, lakes that supply drinking water, and lakes where water quality problems have been observed. Data are used to determine the trophic state of each lake, a relative measure of nutrient enrichment and productivity, and whether the designated uses of the lake have been threatened or impaired by pollution. Additional ALMP information can be found at: <http://portal.ncDEQ.org/web/wq/ambientlake>

There are nearly 1,500 natural lakes and man-made reservoirs of 10 acres or more in North Carolina. DWR has conducted monitoring activities on approximately 160 of these lakes. The goal of this program is to monitor each significant lake at least once every five years. In order to accomplish this goal, approximately 35 lakes per year are monitored once a month from May through September.

In addition to baseline monitoring, intensive studies are used to better assess lakes with environmental problems, to support management strategies, and to aid TMDL development, trend analysis and model development/calibration. Some lakes have recently been monitored to evaluate lake restoration issues. Lake Rhodhiss and High Rock Lake were intensively monitored in response to problems associated with eutrophication. Waterville Lake was monitored to assess algal bloom activity, while Lake Mattamuskeet, Lake Waccamaw and Harris Lake were monitored for issues involving aquatic vegetation.

5. National Water Quality Initiative (NWQI)

In North Carolina, 5% of state EQIP allocation has been earmarked for NWQI implementation. To date, coordination between NRCS and DWR has not been as consistent as desired. Going forward, DWR will seek to establish a mutually agreeable schedule by which to ensure timely coordination of efforts compatible with NRCS funding cycles. Of particular interest will be coordinated site screenings to achieve optimal combinations of implementation and monitoring activities. DWR will continue seeking to provide appropriately designed and timed water quality monitoring to track progress toward water quality targets before and after conservation practice implementation. Separately, through a state-funded Water Resources Development Grant, DWR has implemented a new practice to conduct pre-application site visits to ensure sites selected by NRCS are viable for stream and other restoration activities. Increased accounting practices have also been initiated to ensure project costs are well-documented.

6. Groundwater Quality Monitoring

DWR operates groundwater quality monitoring programs that support the division's need to assess groundwater protection efforts but also provide information to make informed management decisions regarding surface water issues to which baseflow (natural groundwater discharge into a stream or river) may contribute, such as naturally-occurring contaminants and nutrients. Specific examples include using ambient groundwater data to determine whether to develop TMDLs, site-specific investigations of groundwater at sites where nutrients are applied under permits from DWR, and ambient monitoring of nutrients in groundwater to evaluate nutrient concentrations in groundwater over time. More information can be found at <http://portal.ncDEQ.org/web/wq/aps/gwp/gwmonitoring>.

7. Water Quality Monitoring Staffing

The NPS program has identified significant staffing needs to help address the state's water quality monitoring needs. Monitoring is a core component of the state's NPS program and affects the state's ability to document and demonstrate water quality improvements resulting from the variety of management efforts being carried out across the state. Because of the challenges to collecting the water quality data needed to adequately characterize conditions and capture improvements given the state's geographic diversity and management complexities, the 319 program has identified the need to support staff out of 319 Grant NPS Program and Watershed Project funds in several programmatic units of the Environmental Sciences Section. The one FTE that is supported by Watershed Project funds supports implementation of the nutrient strategies, which are discussed in Section G below.

Monitoring conducted by staff assists with the State section 303(d) lists and meeting the reporting requirements in the Integrated Report under section 305(b), and is also used to gauge the impacts of any restoration efforts. The data collected is also used to target management efforts for waters that are not currently meeting water quality criteria. Data are used to determine the need for more stringent NPS management requirements, permit limits, and standards

Staffs also provides intensive and routine assessment of water quality issues in watersheds with ongoing restoration activities, such as Lower Neuse and Pamlico and surrounding areas. The data staff collects help in assessing effectiveness of restoration strategies, including the nutrient rules and their TMDLs. Water quality issues in the Pamlico and Lower Neuse Rivers and other estuarine waters, which can

include fish kills, algal blooms, or other urgent environmental investigations within the state’s coastal water bodies, dictate frequent evaluation and response by DWR staff.

D. Water Quality Assessment, Data Analysis, and Modeling

Monitoring data and other information from many organizations around the state provide the foundation for assessing the quality of North Carolina’s waters. Assessment is critical to problem identification and prioritization for the NPS program and other Division programs, such as Basin Planning. Data analysis for trends and other statistical tests assist with source identification, and produce measures of overall program effectiveness and project- or site-specific incremental water quality improvement. Water quality modeling provides necessary load reductions to achieve and maintain standards, as well as load allocations by source, to guide DWR staff and stakeholder restoration activities.

Water Quality Assessment and Modeling Staffing

The NPS program has identified the need to support DWR’s assessment and modeling staff out of 319 Grant NPS Program funds. Staffs identify waters and watersheds impaired by NPS pollution, evaluate causal relationships, assess restorability, and coordinate watershed studies for detailed source identification. They convene and coordinate interagency collaborative teams, including technical advisory committees, to develop tools for nonpoint source pollution management in priority watersheds. These tools provide inputs to watershed-based plans, and facilitate rulemaking for state regulation of nonpoint sources.

Contributions to watershed plans include:

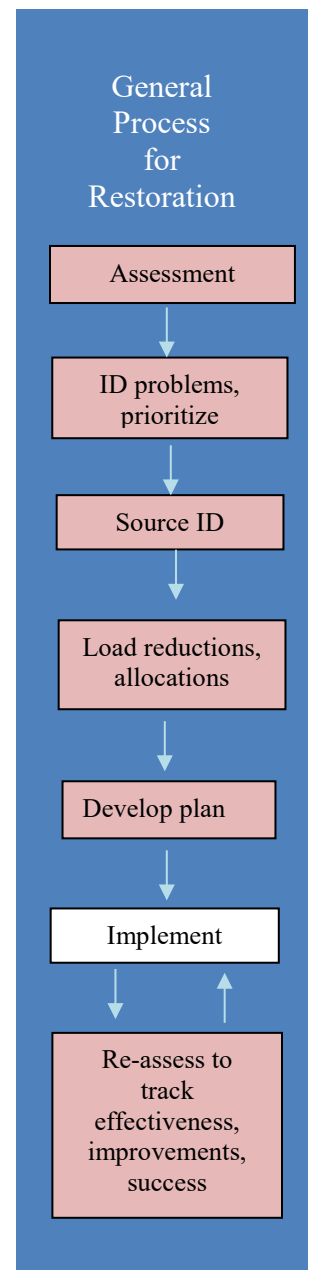
- Data analysis to identify causes and sources of pollution that need to be controlled
- Modeling or other analysis to determine load reductions to achieve standards
- Evaluation of management options and scenarios
- Assessment to measure progress and success

After a watershed plan is developed, DWR and local stakeholders can determine the most appropriate implementation, e.g., direct action, TMDL, TMDL alternative, rulemaking, etc.

As part of North Carolina’s nonpoint source implementation strategy, assessment and modeling staff works collaboratively with the NPS program, including 319 grant recipients, to inform selection and siting of NPS control measures, and to evaluate their effectiveness. Functioning as project partners, the assessment and modeling staff provide technical assistance on components such as sampling design and TMDLs, to ensure that local organizations effectively carry out watershed implementation projects. Staff also tracks water quality improvements and load reductions.

Additionally, staff promotes and provides technical assistance for local initiatives to reduce nonpoint source pollution directly, as alternatives to TMDLs. Indicators and performance measures for these alternative plans are tracked to ensure water quality targets and outcomes are achieved.

More information on water quality assessment, the current 303(d) list, source identification, and TMDLs and alternatives can be found on the following DWR web sites:



- Water quality assessment <http://portal.ncDEQ.org/web/wq/ps/mtu/assessment>
- Source identification <http://portal.ncDEQ.org/web/wq/ps/mtu/specialstudies>
- TMDLs <http://portal.ncDEQ.org/web/wq/ps/mtu/tmdl/tmdls>
- TMDL alternatives <http://portal.ncDEQ.org/web/wq/ps/mtu/alternatives>

E. Funding Programs

Beginning about 2011 and through 2016, the Division experienced significant funding cuts from the General Assembly. Regional Office programs were cut as much as 40%. These cuts further strained already limited abilities to carry out the range of mission elements. Impacts to the NPS Program have included reduced ability for Regional Office staff to support watershed restoration initiatives and difficulties moving staff off 319 funding. Legislation in 2018 (Session Law 2018-5) has provided additional positions to monitor water systems for emerging compounds, which will help support additional water quality monitoring across the state. The action plans in this document reflect best judgment of feasible activities based on current knowledge.

1. 319 Grant Program

Background

The Section 319(h) Grant Program is an important component of the state NPS Program. Section 319(h) is part of the Clean Water Act of 1987. The USEPA Clean Water Act Section 319(h) funds are provided to designated state and tribal agencies to implement their approved nonpoint source management programs. The lead NPS agency for North Carolina is the Division of Water Resources (DWR). North Carolina's 319 program supports numerous elements of the state's nonpoint source program including technical assistance, financial assistance, education, training, technology transfer, restoration of impaired water bodies, protection of high quality waters, and regulatory programs.

Some of the programmatic NPS activities described in this document are assisted by 319 funds. NPS-related positions in two DEQ divisions, as well as in Dept of Agriculture and Dept of Health and Human Services, are supported by 319 funds.

EPA currently awards approximately \$3.7 million annually to North Carolina under the 319 grant. **Table 6** below reports the funding history over the five most recent federal fiscal years.

Table 6: North Carolina 319(h) Grant Funding History (2014-2018)

Year	Program Funds	Project Funds	Total Award
2014	\$2,291,000	\$1,243,000	\$3,534,000
2015	\$2,167,000	\$1,331,000	\$3,498,000
2016	\$2,139,000	\$1,532,000	\$3,672,000
2017	\$2,229,000	\$1,449,000	\$3,678,000
2018	\$2,273,000	\$1,449,000	\$3,722,000

Selection of 319 watershed implementation projects in North Carolina is a competitive application process. Project proposals are reviewed, scored, and ranked by DWR staff and an interagency NPS Workgroup comprised of over 12 mostly state agency representatives. The top ranked project proposals are invited for interviews with DWR staff and NPS Workgroup members. NPS staff then holds a selection meeting with Workgroup members where final determinations are made collaboratively. While the NPS Program reserves the right to make final calls in the event of an impasse, to date there has not been need for that measure.

The 319 Program funds projects that implement approved watershed restoration plans to restore waters impaired by nonpoint source pollution. To be approved, a watershed restoration plan must include nine specific elements required by EPA, which help identify the causes of the impairment and the management

measures needed to reduce pollutant loads and, ultimately, restore water quality. All projects are encouraged to include an education or outreach component; sharing of project findings with as broad and large an audience as possible is an important element of the program. Proposals are also encouraged to show collaboration and partnership with other state or local agencies.

Leveraging

The NPS Program is fortunate to have significant state partners and funding sources to support watershed restoration work in addition to 319. At the same time, state funding of NPS-related positions was significantly reduced during and after the economic recession, leading to overreliance on the 319 grant to sustain work levels. As a result, over the first 5 year cycle, the 319 program was able to and did rely on the leveraging exemption option included in the 2013 Guidelines. Division leadership and budget office fully appreciate the unsustainable nature of this arrangement and are actively seeking ways to reduce the number of positions supported by the grant. A short-term option being investigated may involve moving positions onto 106 grant funds. A time-sensitive opportunity currently being pursued is Hurricane Florence recovery funding from the General Assembly. A longer-term interest is to rebuild permitting programs receipts to provide for fund-shifting of positions. In the meantime, the NPS Program will seek to continue use of the leveraging option while the transition occurs as the funding outlook improves. Some progress has been made in the last year, removing two positions that were being sustained on reallocated funds.

The largest state source funding restoration work in approved 9-element watersheds is the Clean Water Management Trust Fund (CWMTF), described in the following section. Leveraging proposals have relied on this source to date. The State Agricultural Cost-Share Program, housed in the NC Department of Agriculture and Consumer Services - Division of Soil and Water Conservation, and administered at the local level by Soil and Water Conservation Districts, is another funding source for watershed implementation work.

319 Grant Program Staffing

The NPS program has identified significant staffing needs to effectively and efficiently administer the 319 Grant program. The program has identified the need to support staff out of 319 Grant NPS Program funds to ensure smooth program delivery, accountability, and documentation of program results. There are numerous duties and responsibilities related to the administration of the Section 319 program, including: reporting requirements (annual reports, closeout reports, and annual workplans), grant preparation, contract preparation and compliance, financial management, site visits to ensure timely progress of projects and delivery of outputs, entry of load reduction data into EPA's GRTS database, personnel-related tasks, data management, and attendance of EPA-sponsored Section 319 conferences.

Staff is responsible for the successful annual funding and oversight of a suite of NPS management positions and projects, and the ongoing, concurrent oversight of five years' worth of grants. They are essential and instrumental in achieving the NPS water quality protection and restoration that is afforded and leveraged by the grant.

2. Clean Water Management Trust Fund

Summary

The Clean Water Management Trust Fund (CWMTF) is a non-regulatory, community-based program which provides grants to help protect and restore surface water supplies, meet infrastructure needs of municipalities, protect military installations, increase recreational opportunities, and enhance the quality of life in this state. Protecting and enhancing surface drinking water supplies is of critical importance as the population is expected to increase by 30% by 2030. Funding for the CWMTF is appropriated by the

General Assembly annually. It has ranged from \$10 million to \$100 million, but in recent years has run between \$10 and \$20 million.

Background

The 1996 General Assembly created the Clean Water Management Trust Fund (CWMTF) "to clean up pollution in the State's surface waters and to protect, preserve and conserve those waters that are not yet polluted." As stated further in the statute, the CWMTF "shall be used to help finance projects that specifically address water pollution problems and focus on upgrading surface waters, eliminating pollution, and protecting, preserving, and conserving unpolluted surface waters, including enhancement or development of drinking water supplies" and "to build a network of riparian buffers and greenways for environmental, educational, and recreational benefits. It is lastly the intent of the General Assembly that monies from the Fund also be used to preserve lands that could be used for water supply reservoirs."

The CWMTF is an independent agency housed for administrative purposes in the Department of Environmental Quality (DEQ). A 21-member board of trustees establishes criteria, allocates funds, reviews applications, approves grants, and hires the executive director. Seven members are appointed by the Governor; seven by the General Assembly upon the recommendation of the President Pro Tempore of the Senate; and seven by the General Assembly upon the recommendation of the Speaker of the House. An advisory council composed of the Commissioner of Agriculture, Chair of the Wildlife Resources Commission, Secretary of DEQ, and Secretary of Commerce or their designees advises the board of trustees. The board works through three principal committees: infrastructure/wastewater, restoration/stormwater/greenways, and land/conservation easement acquisition.

Monies from CWMTF may be used to:

- repair failing wastewater collection and treatment systems or to eliminate failing septic tanks and straight pipes;
- acquire land to protect military installations;
- acquire land to develop water supply reservoirs;
- prevent, reduce, collect and treat stormwater pollution;
- restore riparian buffers, streams, and wetlands;
- acquire conservation easements or land in fee simple to preserve riparian buffers, wetlands, floodplains, and greenways;
- plan water quality projects;
- retire debt incurred for these purposes; and
- fund operating expenses of the Board of Trustees and its staff.

Local governments, state agencies, and nonprofit conservation organizations, such as land trusts, are eligible applicants. The deadline for applications is February 1 of each year. CWMTF application forms for grants, grant evaluation guidelines, enabling legislation, lists of the board of trustees, staff directory, news releases, and other reports and documents are available at www.cwmtf.net.

3. Clean Water State Revolving Fund

Summary

The Infrastructure Finance Section (IFS), based in the Division of Water Infrastructure in DEQ, administers the Clean Water State Revolving Fund (CWSRF) program authorized by the Clean Water Act (CWA) and overseen by EPA. The CWSRF provides low-interest loans to local governments for both wastewater infrastructure projects and "green" projects, such as stormwater controls, stream/buffer/wetland restoration, and rainwater harvesting, all of which are considered to be projects that

address NPS pollution. Additionally, collection system projects that remove failing septic systems from service by providing sewer service to communities also address NPS pollution.

The last several appropriations from congress capitalizing the CWSRF program required promotion of green infrastructure. For green infrastructure projects and for projects that meet certain financial criteria and take failing septic systems offline, the interest rate for CWSRF loans is zero percent. Applications are offered twice a year, and IFS conducts outreach efforts to reach potential clients who have “green” projects needing funding. Annually, IFS loans approximately \$70 million for eligible projects.

4. Other Funding Programs

A number of state and federal funding programs support watershed protection and restoration efforts in addition to those already described. **Table 7** lists some more prominent funding programs.

Table 7: Other Funding Programs for Watershed Protection and Restoration in NC

Agency	Funding Program	Website	Types of Activities Funded
NC Division of Water Resources (NC DWR)	Water Resources Development Project Grants	http://www.ncwater.org/?page=7	<ul style="list-style-type: none"> • Navigation • Stream restoration, beach protection • Land acquisition and facility development for water-based recreation • Aquatic weed control
NC Division of Soil and Water Conservation (NC DSWC)	Agricultural Cost Share Program (ACSP)	http://www.ncagr.gov/SWC/costshareprograms/ACSP/index.html	Large suite of agricultural best management practices (BMPs) to reduce erosion and nonpoint source pollution.
NC Division of Soil and Water Conservation (NC DSWC)	Agricultural Water Resources Assistance Program (AgWRAP)	http://www.ncagr.gov/SWC/costshareprograms/AgWRAP/index.html	<ul style="list-style-type: none"> • Install BMPs to conserve and protect water resources in select NC counties. • Increase water use efficiency • Increase water storage and availability for agricultural purposes
NC Division of Soil and Water Conservation (NC DSWC)	Community Conservation Assistance Program (CCAP)	http://www.ncagr.gov/SWC/costshareprograms/CCAP/index.html	Large suite of BMPs installed on urban, suburban and rural lands not directly involved with agriculture production to treat and reduce stormwater runoff
U.S. Farm Service Agency (FSA)	Conservation Reserve Program (CRP)	http://www.apfo.usda.gov/FS/~/webapp?area=home&subject=copr&topic=crp	Removes environmentally sensitive land from agricultural production, plantings improve environmental health and quality. Contracts are 10-15 yrs.
U.S. Natural Resources Conservation Service (US NRCS) & NC DSWC	Conservation Reserve Enhancement Program (CREP)	http://www.ncagr.gov/SWC/costshareprograms/CREP/index.html	Places environmentally sensitive land near streams or other approved water bodies into a vegetative cover for a period of time (10-, 15-, 30-year, or permanent easement) to provide a riparian buffer and habitat corridor.
U.S. Natural Resources Conservation Service (US NRCS)	National Water Quality Initiative (NWQI)	http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/equip/?cid=stelprdb1047761	Agricultural BMPs installed from a suite of eligible practices on farmland, designed to improve water quality within eligible priority watersheds.

<p>U.S. Natural Resources Conservation Service (US NRCS)</p>	<p>Agricultural Conservation Easement Program (ACEP)</p>	<p>http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/easements/acep/?cid=stelpdb1242695</p>	<ul style="list-style-type: none"> • New in 2014, consolidates three programs – the Wetlands Reserve, Grassland Reserve and Farm and Ranch Land Protection. • Protects working lands, limits non-agricultural uses, helps restore enrolled wetlands.
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F. Voluntary Restoration: Use Restoration Waters Program

In July 1998, the state Environmental Management Commission approved the Use Restoration Waters (URW) program concept, which targets NPS impaired waters in the state. The program aims to motivate voluntary efforts by stakeholder groups in impaired watersheds to restore those waters by providing access to incentives and other support. Emphasis is on voluntary and collaborative local efforts.

The advent of restoration related funding programs such as EPA's 319 and North Carolina's Clean Water Management Trust Fund, and the evolution of the Division of Mitigation Services (see Section III.I.1.h) have resulted in significantly more funds for restoration work. Other programs such as the North Carolina Agriculture Cost Share Program, USDA programs, and the North Carolina Conservation Reserve Enhancement Program (see Section III.A for more information) also provide monies for water quality improvement efforts.

Successfully restoring water quality in watersheds across the state relies on collaboration among many different players. Since creation of the Watershed Coordination Section, EPA has worked more closely with DWR-URW. On the state level, in 2010, the Watershed Restoration Improvement Team (WRIT) formed. WRIT is comprised of representatives of many of the DEQ divisions/programs and also a couple of DA&CS divisions. These groups work together to further the mission "*Strengthen NC State Agency partnerships in order to enhance each agency's ability to carry out its own water-related goals and activities to improve watershed functions throughout North Carolina.*"

Another collaborative effort is the Watershed Stewardship Network (WSN) that formed to help fulfill the purpose of the Center of Excellence for Watershed Management (aka the Center). In 2010, the Water Resources Research Institute of University of North Carolina, NCDEQ, and EPA signed a Memorandum of Understanding (MOU) whereby the Center would use the 'diverse talent and expertise of colleges and universities in various geographic areas to provide hands on, practical product and services to help communities identify watershed based problems and develop and implement locally sustainable solutions.' WSN aims to facilitate sharing of knowledge, resources, and experience among all those involved in watershed efforts from paid professionals to volunteers. This sharing of resources contributes to building of skilled watershed teams across the state.

The URW program reports to EPA annually on the SP12 section of the EPA Strategic Plan since this requirement began in 2008.

For greater detail on the Use Restoration Watershed program, please see the following URW website: <http://portal.ncDEQ.org/web/wq/ps/bpu/urw> and in particular the URW program document at: http://portal.ncDEQ.org/c/document_library/get_file?uuid=ddab2b71-e34e-44fd-94c9-3b0eef0b56c6&groupId=38364

Use Restoration Watershed Staffing

The 319 program has identified the need to use 319 funds to support the Use Restoration Watershed program staff (one position) to ensure smooth program delivery, accountability, and documentation of program results.

G. Regulatory Watershed Restoration: Nutrient Strategies

Overview

Summary: In recent decades, EPA has increasingly recognized the importance of addressing the effects of nutrient over-enrichment; today the agency considers action on eutrophication a national water quality priority. In keeping with this federal perspective, North Carolina has been an innovator since the late 1970's in developing and implementing comprehensive watershed strategies to address the impact of nutrients and to restore impaired eutrophic waters. Our watershed-specific approach has generally involved progressively more comprehensive strategies with each new impairment targeted as our understanding of the challenges and needs deepens. Since the mid-1990's, the state has developed and carried out a total of four large-watershed, comprehensive regulatory nutrient restoration strategies, which now cover approximately a third of the state's land area. These strategies include regulations for both point and nonpoint sources. Each strategy is unique in that it has waterbody-specific nutrient reduction goals aimed at achieving standards in addition to a watershed-specific set of rules designed to achieve those goals. We expect to continue tailoring future strategies to meet the needs of the impaired waters. A strategy is currently under development for the High Rock Lake watershed in the upper Yadkin Pee-Dee River Basin. This Section provides an overview of current and planned strategies, the important role played by 319 funds, and our planned actions going forward.

Table 8. Existing Comprehensive Regulatory Watershed Nutrient Strategies in North Carolina

Year Rules Effective	Watershed	Land Area (mi ²)	Reduction Goal ¹	Baseline Period	Goal Achievement Dates	Strategy Status
1998	Neuse River Basin	6,100	30 % N	1991-1995	2003	Adapting
2001	Tar-Pamlico River Basin	5,300	30 % N, No Increase in P	1991	2006-2009	Adapting
2009	Jordan Lake Watershed • Upper New Hope Subwatershed • Haw River Subwatershed • Lower New Hope Subwatershed	1,700	35 % N, 5% P 8 % N, 5% P No Increase N & P	1997-2001	2026+	In progress; legislative delay
2011	Falls Lake Watershed	770	40% N , 77% P	2006	2041	In progress

¹ Reduction goals are relative to baseline year(s) dictated by response model data period.

Design of Strategies: The challenging, long-term nature of large-scale, nutrient restoration initiatives has become increasingly apparent with experience, and rules have evolved to accommodate this fact. Guided in part by authorizing statute, recent strategies have followed a fairly similar design that involves many or all of the following features:

- Waterbody response modeling to define overall nutrient load reduction needs to meet standards;
- Watershed modeling to characterize nature and magnitude of sources, source loading rates, watershed delivery factors, and potential management considerations;
- Inclusive, collaborative processes for development of regulations with affected parties and other interested stakeholders;
- New, watershed-specific regulation for each significant source;

- Requirements for proportional reductions across sources relative to baseline loading;
- Maximized flexibility in rules:
 - Load performance-based compliance to maximize options;
 - Including procedural options for compliance;
 - Providing for trading wherever possible;
- Dual accounting involving source-specific compliance accounting using load estimation tools, combined with instream and targeted waterbody progress evaluation monitoring;
- Staged implementation requirements; and
- Adaptive management provisions: conditional implementation, progress evaluation, revision opportunities.

Planned Implementation, Staffing and the Role of 319: While state funds have supported the great majority of the work to accomplish the elements identified above, both Base and Incremental 319 have played key roles funding various support activities. These include: contracts for research, e.g. to characterize various sources' loading rates, management practice reductions, and baseline management behaviors and conditions; development of accounting tools, technical outreach information, and training curricula; conducting training; stakeholder facilitation; contracts for technical assistance, data collection and modeling; BMP implementation funds; and recurring staff funding for various aspects of planning, implementation and assessment.

Planned Implementation: A revised 5-year action plan for NC nutrient strategies is provided in Section H, labeled the *Regulatory Watershed Restoration* action plan. In general, in the next 5 years, the Division expects to:

- Continue implementing the **Falls** Lake strategy under a mutually accepted, 2018 legislatively extended deadline for Stage 1 compliance,
- For **Jordan** Lake strategy, work with the UNC Collaboratory on legislatively mandated research products due by 2020, evaluate their recommendations in formulating draft rules to replace existing, legislatively frozen Jordan rules, and initiate an EMC rulemaking process by 2020,
- Carry out formal rulemaking to amend **Neuse and Tar-Pamlico** strategies as required under recent, statewide legislative changes to rulemaking requirements,
- Adaptively evaluate and advance revised management needs for the two “steady-state” strategies for **Neuse and Tar-Pamlico** River Basins, and
- Work with stakeholders to develop a new strategy for the **High Rock Lake** watershed.

Four positions (3.5 FTEs) supported by 319 Watershed Project funds are the key staff who lead implementation of the various nutrient strategies. In addition, half of the NPS Branch Supervisor's time comes from 319 project funds and goes into nutrient strategies support. These positions contribute significantly to NC's ability to fulfill the “recommended elements of a state framework for managing nitrogen and phosphorus pollution,” (Stoner memo, March 2011) particularly element #6 (Accountability and Verification Measures). The positions serve as lead staff carrying out the actions outlined here and detailed in the Action Plan:

Jordan and Falls: Implementation support for the Falls, and secondarily Jordan, rules currently commands about half of the nutrient staff's time. These time demands will lessen as development of practices crediting, accounting tools and policy development activities to enable individual rules implementation are completed and implementation procedural issues are resolved. In time there will be periodic staged implementation needs, oversight, coordination and strategy refinement actions. A 319-funded modeler continues to provide model review and technical support in both watersheds and will continue to contribute periodically in the new 5-year window.

Neuse and Tar-Pamlico: Both 319-funded nutrient staff and other 319- and state-funded modelers, basin planners and other staff participate in follow-ups on strategy adaptive actions identified in the 2009 and 2010 Basinwide Plans for the respective basins.

High Rock: One nutrient staffer will continue to participate in a nutrient criteria development process for High Rock Lake under NC's Nutrient Criteria Development Plan, while a different nutrient staffer is participating in a recently begun stakeholder-driven strategy development process for High Rock Lake.

Neuse River Basin Nutrient Strategy (<http://portal.ncDEQ.org/web/wq/ps/nps/neuse>)

The first set of relatively comprehensive rules addressing both point and nonpoint sources of nutrients was enacted for the Neuse River Basin and went into effect beginning in August 1998. These rules required a 30% reduction in the annual nitrogen load from point and nonpoint sources to be accomplished by August 2003. The NC Environmental Management Commission adopted rules addressing:

- **Agriculture**
- **Riparian buffers**
- **Fertilizer use**
- **Wastewater discharge**
- **Stormwater**
- **Offset payments**

The **agricultural** community was required to and did achieve a collective 30% reduction in nitrogen losses within five years, by 2003. Agricultural operators had the option to either participate in a county nitrogen reduction plan, or implement standard Best Management Practices. Approximately 80% of operators joined their collective county plans. Compliance accounting uses a spreadsheet-based county-scale empirical nitrogen loss estimation tool developed by North Carolina State University researchers in collaboration with various agencies. The rule is administered by a basin oversight committee coordinating with local committees in each county, the latter led by Soil and Water Conservation District staff. Division NPS Branch staff and Division of Soil and Water Conservation staff jointly administer, provide technical support for, and participate on the oversight committee. DSWC staff coordinates with local committees to produce annual progress accounting reports.

Three rules address **riparian buffer protection** ensuring that existing 50-foot vegetated riparian areas are protected and maintained on both sides of intermittent and perennial surface waters across all land uses. For specific activities, there are also procedures for achieving alternative means of compliance with the 50-foot requirement through approved mitigation activities. Division Surface Water Protection Section staff in both the central office and regional offices implement the buffer program, including review of impact proposals and variance requests, and compliance and enforcement actions. Local governments have the option of seeking program delegation; to date only 3 have done so.

A **fertilizer management** rule required that by 2003, applicators who apply fertilizer to ≥ 50 acres of residential, agricultural, commercial, or industrial land and right-of-way would either complete nutrient management training provided by the Cooperative Extension Service in coordination with the Division, or would adhere to nutrient management plans approved by a certified technical specialist. Extension trained approximately 2,000 applicators under this rule.

The **wastewater discharge** rule set requirements for nitrogen allocations and permit limits for individual dischargers, to be met by 2003, and provided the option to join an association of dischargers under a

group permit with a collective allocation. All of the major dischargers joined together under a watershed group permit, and collectively have reduced and maintained their N loads at 65 – 75% below baseline levels.

The **stormwater** rule required the 15 largest local governments in the Neuse basin to develop and implement stormwater programs controlling N loads by 2001. Programs have two basic elements. The first is permitting programs requiring new development projects to meet unit-area N loading rate targets post-construction that translate strategy percent reduction goals to a site basis. Projects exceeding the rate targets without treatment utilize onsite stormwater BMPs to meet the targets, with the option below certain loading thresholds to make **offset payments** to either the North Carolina Division of Mitigation Services, which implements load-reducing offset projects, or to an approved third party nutrient bank. The second element is programmatic activities similar to NPDES Phase II requirements – stormwater system mapping, illicit discharge elimination, and public education – along with identification of retrofit opportunities on existing developed lands. Division NPS Branch staff worked with stormwater permitting staff to establish accounting tools and a model local program in collaboration with local governments, to review and approve local program submittals, and to oversee local implementation. All parties complied with the rule and continue to implement these programs and submit annual reports.

Tar-Pamlico River Basin Nutrient Strategy (<http://portal.ncDEQ.org/web/wq/ps/nps/tarpamlico>)

While the Tar-Pamlico nutrient strategy was launched in 1990 with a point source agreement, nonpoint source rules were not developed until after the adjacent Neuse River Basin rules went into effect. A set of rules modeled after those implemented in the adjacent Neuse Basin went into effect during 2000-2001.

Primary differences from the Neuse rules were the inclusion of a ‘no-increase’ strategy goal for phosphorus and the omission of a point source rule given that an agreement with basin dischargers accomplishing the same general purposes was already in place since 1990, modified in 1995.

Status of Neuse and Tar-Pamlico Strategies

The Neuse and Tar-Pamlico strategies have been fully implemented since 2003 and 2006 respectively. Nevertheless, the goal of 30% reduction in N loading to the estuaries has not yet been achieved, and they have not recovered. Trend evaluations on loading to both estuaries have found similar patterns emerging of decreases in nitrate and offsetting increases in organic nitrogen, along with upswings in total phosphorus. These patterns prompt questions about additional research needs and potential adaptive strategy improvements. As part of cyclic revision of the Neuse Basinwide Management Plan in 2009 and the Tar-Pamlico Basin Plan in 2015, the Division evaluated the limitations of the current strategy and identified a range of adaptive needs that will advance the strategy. Staff compiled this evaluation in an action plan included in the Basinwide Plan. Identified needs include basic biological system knowledge improvements via research, applied management research questions, internal data evaluations, potential technical improvements to permitting programs, and potential revisions or additions to current nutrient strategy rules.

Chapter 24 of the 2009 Neuse Basinwide Plan, at <http://portal.ncDEQ.org/web/wq/ps/bpu/basin> addresses the nutrient strategy, and the action plan concludes that chapter. Similarly, an adaptive action plan was included in the 2016 Tar-Pamlico Basinwide Plan, available at <http://portal.ncDEQ.org/web/wq/ps/bpu/basin/tarpamlico/2010>.

Actions Planned for Neuse and Tar-Pamlico Strategies

Several activities have picked up recently for both basins:

- In 2018, a largely internal workgroup resumed various data analyses in efforts to determine causes and sources of the loading increase trends in both basins. Progress is being made but much additional work will be needed to make meaningful determinations. Staff will continue to work on addressing adaptive evaluation issues in the coming years.
- The next Neuse Basin Plan 10-year revision also began in 2018 and is targeted for completion in 2019. Progress on the adaptive evaluation will be documented in the next Basinwide Plan, and the plan will be revised accordingly with follow-on action needs.
- A statewide legislatively mandated rules re-adoption process commenced in earnest for Neuse and Tar-Pamlico rules in mid-2017. Draft rules have been vetted with stakeholders, taken through the Water Quality Committee of the EMC, a fiscal analysis on rule costs and benefits was completed in September 2018 and is under review by the NC Office of State Budget and Management for approval to proceed to rulemaking. The EMC has an adoption deadline of October 2019.

Jordan and Falls Lakes Nutrient Strategies

Jordan: <http://portal.ncDEQ.org/web/jordanlake>

Falls: <http://portal.ncDEQ.org/web/fallslake/home>

Similar to the earlier Neuse and Tar-Pamlico strategies, the nutrient sources addressed by the Falls and Jordan Lake management strategies include agriculture, fertilizer application, wastewater discharges, and stormwater runoff from new development. In addition, the Jordan and Falls strategies incorporate key additions that make them more comprehensive and provide the potential for greater flexibility and adaptability. These additions include:

- A precedent-setting *Existing Development Stormwater* rule requiring all local governments to achieve loading reductions toward strategy goals from the existing developed lands in their jurisdictions,
- New development stormwater requirements for *all* local governments in both watersheds, along with mandatory onsite treatment requirements for all development,
- A separate stormwater rule for *state and federal entities*, and
- A separate rule outlining an overarching *trading framework* to maximize options for cost-effective reductions.
- Provisions for *adaptive management*, given the combination of the long-term nature of any such restoration initiative, the potential costs associated with each management initiative, and uncertainties associated with the lake's response to lower nutrient inputs.
- *Staged implementation* of Falls rules and Jordan existing development rules given the extremely challenging magnitude of Falls reduction needs and the challenging new regulatory arena of existing development.
- The Jordan strategy was modified by the NC General Assembly before its enactment in 2009. One new feature added by session law is the *Nutrient Scientific Advisory Board*, which Division nutrient staff supports and coordinates. This board provides guidance on various existing development stormwater issues for both Falls and Jordan use, as well as for any future strategies that regulate this source.

Status and Next Steps: The Jordan rules were enacted in August 2009 after review and revision by the General Assembly. Subsequently, session laws affecting Jordan have been enacted virtually every year since 2011 to present, including in 2018. These laws have delayed parts of the rules and more recently halted implementation of the Jordan stormwater rules, in favor of in-lake experiments and now, studies by

the University of North Carolina to develop technical and policy recommendations for the EMC to consider in readopting the rules beginning in 2020.

Falls implementation has to date proceeded largely unaltered, advancing past Jordan on several rules. Currently the great majority of NPSB staff's time is being dedicated to Existing Development rule support, working closely with the NSAB. A model program will be brought to the EMC in mid-2019. Development and submittal of local programs for EMC approval will follow. Mutually accepted legislation enacted in 2018 extended the end of Stage 1 until the Falls rules are readopted around 2026. This will provide time for completion of the model program and a reasonable timeframe for local implementation of existing development practices to meet Stage 1 load reduction requirements.

For the Falls Existing Development model program, nutrient staff is completing several elements in collaboration with the Falls local governments, as the Upper Neuse River Basin Association, and the Jordan legislatively mandated NSAB: design standards and crediting for a number of additional practices to expand the toolbox of nutrient measures available to local governments; a trading policy framework to guide trading activities that can be used to meet loading requirements; development of loading assignments for the Falls local governments; and development of policy specifics needed to execute the Existing Development rule.

High Rock Lake Strategy

History: Strategy planning for this nutrient-impaired Yadkin Pee-Dee reservoir commenced in 2004 guided by a Technical Advisory Committee of dischargers and other stakeholders managed by DWR modeling staff. Lake and watershed monitoring to support modeling were conducted in 2005-2007. Lake response and watershed loading models were developed by a contractor 2010 through 2012 and subsequently reviewed by others. Based on stakeholder concerns the lake model was revised in 2013 by expert Region IV EPA staff who were involved in the framework's initial development. DWR finalized the model in 2015.

Status and Next Steps: Development of a nutrient strategy for High Rock Lake, set to begin in 2015, has been postponed while a Nutrient Scientific Advisory Council operating under the 2014 EPA-approved NC Nutrient Criteria Development Plan develops a set of recommendations for High Rock nutrient criteria as its first reservoir case for the state. The SAC process has moved slowly, but DWR intends to bring it to completion in early 2019. Depending on the outcome, staff may be able to use the lake model developed for strategy goal-setting purposes for those purposes.

In any case, SAC recommendations will be evaluated by DWR and the EMC, and rulemaking may be required to adopt any revisions to existing nutrient-related standards. Rulemaking would be a multi-year process. Rulemaking for a nutrient management strategy for High Rock Lake would likely need to follow nutrient criteria rulemaking.

Potentially protracted rulemaking timeframes may cause DWR to reconsider its near-term approach on a nutrient strategy for the lake. Interestingly, the dischargers association has been leading its own stakeholder process evaluating possible strategies that it may propose to the state. The association began sharing its thinking with DWR in 2018. At present, a stakeholder-driven strategy development process holds the most promise for making real progress on load reductions to the lake in the foreseeable future.

A conditional action plan is provided for High Rock Lake in the Regulatory Restoration Action Plan.

H. NC NPS Management Program 5-Year Action Plan (2019-2023)

The following three pages summarize key strategic improvement actions described in this document that DWR’s Nonpoint Source Program intends to carry out over the next five years to advance the state’s protection and restoration mission with respect to nonpoint source control. A **list of acronyms** used here is provided following the tables. Note that text in **bold** indicates organizational units in which there are one or more staff supported by 319 grant funds. *Italics* indicate interactions with external partners.

Table 9. Healthy Waters Protection Action Plan, DWR NPS Program

Goal 1 - PROTECTION: Protect waters currently meeting criteria	
Actions (and Responsible Parties)	Milestone/ Target Date (FFY)
Objective 1: Watersheds - Prioritize unimpaired high quality waters, outstanding resource waters, and threatened waters and develop strategies to protect and enhance.	
<ol style="list-style-type: none"> 1. Develop protection prioritization framework, rank waters. (Planning Workgroup) 2. Evaluate results, form initial plan. (Planning Workgroup) 3. Begin to <i>work with local, state partners</i> as indicated. 4. Capture priorities and progress in basin plans. (BPB) 	<ol style="list-style-type: none"> 1. 2019 2. 2020 3. 2021-2023 4. 2021-2023
Objective 2: Statewide - Work with categorical programs to strengthen statewide protections.	
<ol style="list-style-type: none"> 1. <i>Work with</i> internal and <i>external categorical protection programs</i> to identify climate change impacts, identify management options and recommendations, and advance them as indicated. (NPSB lead) 2. Continuously seek opportunities to move 319-funded staff onto other funding sources. 3. Revise NPS Plan to reflect categorical program changes, as needed (319). 	<ol style="list-style-type: none"> 1. 2021-2023 2. 2019-2023 3. 2021-2023
Objective 3: Measure and report progress. Revise strategies as needed.	
<ol style="list-style-type: none"> 1. Monitor water quality in strategy watersheds, analyze and report results. (WSS – monitor; BPB, MAB – analyze, report) 2. Conduct adaptive planning discussions <i>with NPS programs/agencies</i> to identify strategic improvements to protection strategies. (NPSB, BPB, CSB) 	<ol style="list-style-type: none"> 1. 2019-2023 2. 2022-2023

Table 10. Impaired Waters Restoration Voluntary Action Plan, DWR NPS Program

Goal 2 - RESTORATION: Restore NPS-Impaired waters	
Voluntary Watershed Restoration	
Actions (and Responsible Parties)	Milestone/ Target Date (FFY)
Objective 1: Prioritize waters based on an assessment of restoration potential.	
1. Revisit priorities during first 3 years, determine whether adjustments are needed; adjust. (Planning Workgroup)	1. 2019-2021
Objective 2: Facilitate action on 319 priorities.	
1. Tier 1: <i>Encourage additional implementation</i> as appropriate. (NPSB, BPB) 2. Tier 2, 3: <i>Review local readiness, assist where indicated.</i> (NPSB, BPB) 3. Evaluate new non 9-element plans for potential, <i>pursue accordingly.</i> (NPSB, BPB, MAB). 4. Seek to bolster Regional Office participation in restoration initiatives.	1. 2019 + yearly 2. 2019 + yearly 3. 2019 + yearly 4. 2019 + yearly
Objective 3: Increase pool of 319 priorities from list of Division priorities.	
1. For non-319 top 100, explore local potential, <i>cultivate</i> on Basin cycle. (BPB, ROs) 2. Increase 319 priorities by completing or obtaining 2 watershed restoration plans annually (205j contractors, MAB, BPB, URW, 319). 3. Update website with 9E watersheds, improve outreach to potential partners. (319)	1. 2019 + yearly 2. 2019 + yearly 3. 2019 + yearly
Objective 4: Fund, gain support for, and track implementation in 319 priority watersheds.	
1. Fund highest-ranking 319 implementation applications. (319 Workgroup) 2. <i>Partner with NRCS</i> toward mutually beneficial watershed restoration projects during annual NWQI process (319, MAB, BPB) . 3. <i>Enhance coordination with DMS</i> to identify shared restoration priorities, work with stakeholders, complete plans and fund projects (319, BPB) . 4. <i>Seek partners' funding, technical support in 319 priority waters - State Ag Cost Share, CWMTF, EQIP, CRP, CREP, DMS</i> (319, BPB) . 5. Track implementation of projects and incremental water quality improvements. (MAB, 319)	1. 2019 + yearly 2. 2019 + yearly 3. 2019 + yearly 4. 2019 + yearly 5. 2019 + yearly
Objective 5: Measure and report progress and effectiveness. Revise strategies as needed.	
1. Strategically monitor NWQI watersheds, compare results to implementation. (WSS – monitor; Planning, NRCS - assess) 2. Report N, P and sediment load reductions in GRTS from all 9-E implementation projects. (319) 3. Report instream WQ parameter improvements for SP10, 11, and 12 progress (BPB) 4. Report biennial WQ data for Category 4 and 5 303d/305b (MAB) 5. Produce one success story annually for waters meeting success criteria (319) . 6. Review findings, conduct adaptive planning internally <i>and with NPS programs/agencies</i> as appropriate. (Planning Workgroup)	1. 2019 + yearly 2. 2019 + yearly 3. 2019 + yearly 4. 2020 + biennially 5. 2019 + yearly 6. 2022 - 2023

Table 11. Impaired Waters Restoration Regulatory Action Plan, DWR NPS Program

Regulatory Watershed Restoration	
Actions and Responsible Parties	Milestone/ Target Date (FFY)
Objective 1: Implement Falls and Jordan Nutrient Strategies (NMS + as noted)	
1. Release new SNAP stormwater accounting tool	2019
2. Complete development, public review and Director approval of remaining practices design standards + crediting for ED model program (Buff, NPDES, <i>DEMLR SPU, DHHS, NCSU BAE, NSAB, UNRBA, public comment</i>)	2019
3. Complete Falls ED Model Program <i>w/input from UNRBA, seek EMC approval</i>	2019
4. Review Falls ED programs, work with local gov'ts, <i>seek EMC approval</i>	2020
5. <i>Work with UNC Collaboratory researchers</i> on Jordan, Falls projects, recommendations	2019-2023
6. Use Collaboratory results to inform Jordan rulemaking. <i>Conduct rulemaking process.</i>	2020-2023
7. <i>Work with UNRBA</i> on Falls remodeling, criteria policy recommendations	2021-2023
8. <i>Engage with WOCs</i> to improve Falls & Jordan <i>agriculture sector</i> annual reports	2019-2023
Objective 2: Develop and Coordinate High Rock Nutrient Strategy	
1. Assist NCDP SAC to complete High Rock nutrient criteria recommendations (CSB, WSS, MAB, NMS)	2019
2. Use criteria results with HRL model to quantify strategy reduction needs (MAB)	2020
3. Conduct rulemaking as needed on nutrient criteria (CSB)	2020-2022
4. <i>Work with stakeholders</i> on their strategy proposal, assist voluntary implementation, evaluate near-term permitting options (NMS, MAB, NPDES, BPB, W-SRO)	2019-2023
5. Undertake strategy rulemaking <i>process as indicated</i> (NMS)	2022-2023
Objective 3: Refine Tools Supporting Current Nutrient Strategies	
1. Complete rural buffer restoration credit method revisions & policy document, <i>stakeholder process, informal comment</i> , revise, Director approval (NMS, Buff, DMS)	2019-2020
2. Finalize trading framework per <i>public comment</i> , revise, Director approval (NMS, NPDES)	2019
3. Continue developing crediting for additional practices, <i>take through process</i> (NMS)	2020 + yearly
Objective 4: Adaptively Implement Neuse, Tar-Pamlico Nutrient Strategies	
1. Complete legislatively mandated N/T rules readoption process (NMS lead)	2020
2. Adaptive evaluation of rules compliance vs. estuary progress, identify additional management, research needs (NMS lead)	2020-2021
3. Initiate actions as indicated (NMS lead)	2021 - 2023

Key to Acronyms Used in Action Plans

- 319 – 319 Grant Program, Division of Water Resources
- BPB – Basin Planning Branch, Division of Water Resources
- Buff – Buffer & Wetland Permitting Branch, Division of Water Resources
- CIC - Nutrient Criteria Development Plan Criteria Implementation Committee
- CREP – USD Conservation Reserve Enhancement Program
- CRP – USDA Conservation Reserve Program
- CSB – Classification & Standards/Rules Review Branch, Division of Water Resources
- CWMTF – Clean Water Management Trust Fund
- DEMLR SPU – Division of Energy, Minerals, and Land Resources, Stormwater Permitting Unit
- DMF – Division of Marine Fisheries

DWR – Division of Water Resources, N.C. Department of Environmental Quality
DMS – Division of Mitigation Services, N.C. Department of Environmental Quality
EMC – N.C. Environmental Management Commission
EQIP – USDA Environmental Quality Incentive Program
MAB – Modeling and Assessment Branch, Division of Water Resources
NCDACS DSWC – N.C. Department of Agriculture & Consumer Services, Division of Soil & Water Conservation
NCDP – Nutrient Criteria Development Plan
NHP – Natural Heritage Program
NMS – Nutrient Management Strategy Staff, Nonpoint Source Planning Branch, Division of Water Resources
NPDES – National Pollutant Discharge Elimination System
NPSB – Non-Point Source Planning Branch, Division of Water Resources
NRCS – Natural Resources Conservation Service, U.S. Department of Agriculture
NSAB – Nutrient Science Advisory Board
NWQI – National Water Quality Initiative
PS-NPS – point source-nonpoint source pollution
ROs – Regional Offices, Division of Water Resources
RRC – Rules Review Commission
SAC – Nutrient Criteria Development Plan Scientific Advisory Council
SWPP – Surface Water Protection Program
UNH – Upper New Hope Arm, Jordan Lake
UNRBA – Upper Neuse River Basin Association
URW – Use Restoration Waters Program, Division of Water Resources
USFWS – U.S. Fish & Wildlife Service
WOC – Watershed Oversight Committee, Jordan or Falls Agriculture Rule
WRC – Wildlife Resources Commission
W-SRO – Winston-Salem Regional Office, Division of Water Resources
WSS – Water Sciences Section, Division of Water Resources

Section III

Categorical Programs, Initiatives, and Plans of Action by NPS Category



Introduction

The following sections provide overviews of protection-oriented statewide programs, and include both voluntary and regulation-driven programs. For the most part these programs, organized by NPS category, provide ongoing efforts to protect water quality across the state and don't include strategic improvement elements. Specific activities are identified in annual 319 grant work plans, and specific accomplishments and success will be documented and highlighted in Annual NPS Reports.

A. Agriculture

1. NC Agricultural NPS Control Programs and Initiatives

The Nonpoint Source Section of the Division of Soil and Water Conservation (DSWC) in the North Carolina Department of the Agriculture and Consumer Services (NCDA&CS) is the lead agency for voluntary agricultural NPS pollution control programs. The NPS Section along with the USDA Natural Resources Conservation Service (NRCS) is responsible for managing several programs related to nonpoint source pollution particularly from agricultural lands and providing technical assistance to Soil and Water Conservation Districts. The NC Division of Water Resources (DWR) is the lead agency for regulatory agricultural NPS Pollution control programs.

The approach taken in North Carolina for addressing agriculture's contribution to the nonpoint source water pollution problem is to primarily encourage voluntary participation by the agricultural community. This approach is supported by financial incentives, technical and educational assistance, research, and regulatory programs. The DSWC has a variety of cost share programs available. Each program offers best management practices targeted to meet specific program goals. These programs offer assistance to address agricultural, rural and urban water resource issues. Typically 75% cost share assistance is provided to an applicant to install best management practices that benefit all citizens by improving water resources in North Carolina. See the links below for more information regarding the following cost share programs available in North Carolina.

- North Carolina Agriculture Cost Share Program (ACSP) - <http://www.ncagr.gov/SWC/costshareprograms/ACSP/index.html>
- Agricultural Water Resources Assistance Program (AgWRAP) - <http://www.ncagr.gov/SWC/costshareprograms/AgWRAP/index.html>
- Community Conservation Assistance Program (CCAP) - <http://www.ncagr.gov/SWC/costshareprograms/CCAP/index.html>
- North Carolina Conservation Reserve Enhancement Program (CREP) - <http://www.ncagr.gov/SWC/costshareprograms/CREP/index.html>
- Lagoon Conversion Program - http://www.ncagr.gov/SWC/costshareprograms/Lagoon_Program/index.html
- USDA's Conservation Reserve Program (CRP) - <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp>
- USDA's Environmental Quality Incentives Program (EQIP) - <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/>
- USDA's Wetland Reserve Program - <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/wetlands/>
- Section 319 Grants and Technical Assistance to Districts - <http://portal.ncDEQ.org/web/wq/ps/nps/319program>
- NC Cooperative Extension Service and Agricultural Research Service - <http://www.ces.ncsu.edu/>

Notable laws and regulations that have influenced the management of agricultural sources of nonpoint source pollution in North Carolina include:

- **North Carolina Pesticide Law of 1971** - Regulates the use, application, sale, disposal and registration of pesticides for the protection of the health, safety, and welfare of the people and for the promotion of a healthy and safe environment.

- **NCDA&CS Pesticide Disposal Assistance Program (PDAP)** – 1976 saw new regulations governing the disposal of pesticides. These regulations make it illegal in North Carolina to dispose of hazardous waste (which includes certain pesticides) in sanitary landfills. The PDAP, part of the Structural Pest Control and Pesticides Division of the NCDA&CS, is a non-regulatory stewardship program that provides farmers and homeowners with cost-free assistance for a proper, safe, and environmentally-conscious option for disposal of unwanted, out-dated, banned, and obsolete pesticides. The PDAP was the first program of its kind in the United States. Since its inception in 1980, the PDAP has safely collected and properly disposed of over 2.7 million pounds of pesticides from farms and households from all 100 counties in North Carolina. www.ncagr.gov/PDAP
- **Animal Waste Management Regulations (1992)** - The Environmental Management Commission adopted a rule modification (15A NCAC 2H .0217) to establish procedures for properly managing and reusing animal wastes from intensive livestock operations. The rule required intensive animal operations to meet specific operational requirements and to operate so that animal waste is not discharged to waters of the state.
- **Swine Farm Siting Act (1995)** - The NC General Assembly passed an act restricting the location of new and expanding swine operations relative to surrounding land uses and to the proximity of any perennial stream or river.
- **Animal Waste Applicator Certification (1996)** - The NC General Assembly ratified legislation that requires all permitted animal facilities to have an “operator in charge,” or person under the operator’s supervision, to operate their animal waste management systems.
- **Animal Waste Management Statute Revisions – SB 1217 (1996)** – This bill established the statutory authority under GS 143-215.10 for a tiered permitting program for animal waste management systems. This program supplanted the “deemed permitted” approach established in the original 1992 regulations (see above). The ratified bill is quite detailed and it directed the EMC to develop general permits to be issued by the Division of Water Resources (DWR). DWR developed and implemented a Non-Discharge Permitting program for all animal facilities that exceeded the sizes established in NCAC 2H .0217 and in Senate Bill 1217, and began issuing permits in 1997.
- **Animal Waste Management Statute Revisions – House Bill 515 (1997)** - Established a moratorium on the construction or expansion of swine farms and on lagoons and animal waste management systems for swine farms. This legislation also added additional siting criteria for new and expanding swine facilities.
- **NPDES Permitting of Animal Facilities (2002)** - In order to bring animal facilities in North Carolina into compliance with federal permitting requirements, DWR developed NPDES General Permits for animal facilities in 2002.
- **Permitting of Waste Not Discharged to Surface Water (2006)** –The statutory authority under G.S. 143-215.1; 143-215.3(a)(1) set forth the requirements and procedures for application and issuance of permits for various systems, including animal waste management systems, which do not discharge to surface waters of the state. DWR’s Land Application Permits & Compliance Unit is responsible for the permitting and compliance of residual and wastewater effluent land application facilities. These rules, established in 15A NCAC 02T, updated the previous rules located in 15A NCAC 2H .0200.
- **Standards for New or Expanding Swine Farms (2007)** – Established a series of stringent environmental standards for any new or expanding swine farm in the state. This legislation also prohibited the use of anaerobic lagoons for waste treatment/storage at new or expanding swine farms.
- **Agricultural NPS Regulation**
North Carolina currently has four large-scale, long-term watershed restoration projects underway in the form of comprehensive nutrient reduction strategies that cover both point and nonpoint

sources. Each restoration strategy is unique in that it has distinct nutrient reduction goals aimed at achieving nutrient related water quality standards in the targeted waterbody, and is driven by a watershed-specific set of rules designed to achieve those goals. For more information and the rules specific to each nutrient reduction strategy, follow the links below:

- Jordan Lake Watershed: <http://portal.ncDEQ.org/web/jordanlake>
- Tar-Pamlico Basin: <http://portal.ncDEQ.org/web/wq/ps/nps/tarpamlico>
- Neuse River Basin: <http://portal.ncDEQ.org/web/wq/ps/nps/neuse>
- Falls Lake Watershed: <http://portal.ncDEQ.org/web/fallslake/home>

2. NC Agricultural NPS Program Staffing

The NPS program has identified significant staffing needs to help implement the numerous agricultural programs in the state to minimize nonpoint source pollution impacts. Given the breadth and diversity of programs, staff within both the Division of Water Resources (DWR) and the Division of Soil and Water Conservation (DSWC) of the Department of Agriculture and Consumer Services is supported.

The 319 program has identified the need to support staffs out of 319 Grant NPS Program funds who review application packages for non-discharge permits. As the population of North Carolina has grown and the waste assimilation capacity of the state's streams is diminished, nondischarge alternatives for treated wastewater disposal are becoming more prevalent. The nondischarge permitting program consists of all wastewater treatment and disposal systems that do not discharge directly to surface waters. These permits include land applications of residuals, spray irrigation of wastewater, recycle, and beneficial reuse of reclaimed water, animal feeding operations, as well as other permitted systems. Staff also develops and implements the residual management program to better improve phosphorus management.

Providing support out of 319 Grant NPS Program funds for staff located in the DSWC strengthens the link between that agency and DWR, serving to coordinate the flow of water quality information generated by the implementation of programs like Ag Cost Share. Because of close working ties between DSWC and the local soil and water conservation district offices across the state, staff is aware of resource needs and can foster the development and implementation of watershed restoration projects funded by the 319 program as well as other funding sources. The 319 program supports staff who works with local districts to identify needs and target funding to alleviate water quality concerns for both impaired streams and streams that are not on the 303(d) list but have locally recognized impacts from agriculture.

Some of the ongoing activities to protect state waters from agricultural sources of NPS pollution include:

- Prioritize watersheds to expand the Impaired and Impacted Streams Initiative statewide to address waters on the 303(d) list as impaired or impacted by agriculture. Coordinate federal, state, and local decision making on the selection of priority watersheds. This will include the delivery of financial and technical assistance programs to manage workload and resource issues.
- Utilize basin assessments and stream impairment data to the extent possible to help identify priority water quality areas within NC for use in ranking CRP General signup applications.
- Encourage development of local NPS implementation strategies specific to local watersheds and basins. These strategies will include a work plan to address water quality problems that are priorities in each district or that are identified in Basin plans.
- Develop intra and inter-agency strategies that rely on non-regulatory programs to encourage adoption of BMPs for implementation of farm plans. Demonstrate and verify the effectiveness of new or revised BMP designs/systems.

- Provide technical assistance to landowners to achieve compliance with nutrient sensitive waters or other water quality improvement strategies.
- Cooperate with Resource Conservation and Development (RC&D) programs in a coordinated effort between federal, state, local, governments and other entities to accomplish projects to address local water quality and other natural resource concerns.
- Implement the Agricultural Water Resources Assistance Program (AgWRAP): conduct competitive state allocations for new agricultural water supply ponds or other BMPs, conduct training for districts, and obtain recurring funding for AgWRAP.
- Encourage SWCDs and local agricultural community to cooperate with DWR and local public water supply operators on developing and implementing local source water protection programs.
- Continue the implementation of the Conservation Reserve Enhancement Program (CREP) and other efforts to restore and protect (through conservation easement) riparian buffers where needed.

B. Construction and Mining

1. NC Sediment and Erosion Control Programs and Initiatives

a. Introduction

The Division of Energy, Mineral and Land Resources (DEMLR) within the Department of Environmental Quality (DEQ) is the lead agency over erosion and sedimentation control as well as mining. The DEMLR enforces the state's 1973 Sediment Pollution Control Act (SPCA) under the guidance of the [Sedimentation Control Commission \(SCC\)](#). The SPCA, in effect for forty years, has two primary premises: (1) KDMS sediment from entering natural watercourses e.g. streams, rivers, lakes, swamps, marshes, etc. and (2) KDMS sediment from washing onto adjacent property. In line with the SPCA, the mission of the Division is to allow development while preventing pollution by sedimentation. The following narrative provides history, displays statistics, and outlines the Division's initiatives.

b. Division of Energy, Mineral and Land Resources: Mandates

The SPCA authorizes the establishment of a sediment control program to prevent accelerated erosion and off-site sedimentation caused by land-disturbing activities. There are four exemptions and four mandatory standards. In general, agricultural lands used for the production of plants and animals useful to man are exempt from the Act. As long as best management practices (BMPs) in the Forest Practice Guidelines Related to Water Quality are followed, activities undertaken on forestland for the production and harvesting of timber are exempt. Lands used for mining are also exempt as they are subject to the Mining Act regulations. In emergency situations that threaten human lives, land may be disturbed without an immediate erosion and sedimentation control plan approval.

The first mandatory standard deals with buffers. Visible siltation should be retained in the first 25% of the buffer zone nearest the land disturbing activity. There are slope stabilization requirements too. Any slope generated or disturbed may not be so steep that it is impossible to stabilize with groundcover or other adequate erosion control devices. Under the SPCA, permanent groundcover, commonly grass, must be in place within 15 working days or 90 calendar days. However, approved erosion and sedimentation control plans specify a maximum time limit of 14 days to provide ground cover to qualify for coverage under the NCG 01000 NPDES General Stormwater Permit for Construction Activities. And lastly, approved erosion and sedimentation control plans are required for land disturbing activities greater than one acre in size.

When an erosion and sedimentation control plan is required, field inspections are conducted to determine compliance with the approved erosion and sedimentation control plan and to evaluate the effectiveness of the BMPs being used. The Division of Energy, Mineral and Land Resources has produced the [Erosion and Sediment Control Planning and Design Manual](#) to assist with all construction projects in North Carolina. If voluntary compliance with the approved plan is not achieved and violations occur, the Land Quality Section can pursue enforcement through civil penalties, injunctive relief, restoration, and/or criminal convictions. Fines of up to \$5,000 per day may accrue per violation per day for noncompliance conditions.

2. NC Sediment and Erosion Control Program Staffing

The NPS program has identified minimal staffing needs to help implement the sediment and erosion control education program to minimize nonpoint source pollution impacts across the state. The 319 program has identified the need to support staff out of 319 Grant NPS Program funds in the Division of Energy, Mineral, and Land Resources, which is charged with enforcing the State Sedimentation Pollution Control Act. The Act mandates an education and training program to educate the regulated community and general public about erosion and sedimentation control. This very important task is carried out by staff funded by the 319 program.

Staff provides training related to the state sedimentation and erosion control program and design materials for professional engineers, architects, surveyors, contractors and regulated community. Through education and training, staff facilitates the control of erosion and sedimentation, thus positively affecting water quality throughout the state. Technical assistance is offered through the Sedimentation and Erosion Control Planning and Design Manual, the companion Field Manual, and annual workshops for design professionals and local government. Another objective of the program is to provide education on erosion and sedimentation control to the general public. Technical expertise has been and will continue to be provided to education professionals to help implement sedimentation pollution awareness in public schools and colleges.

Some of the ongoing activities to protect state waters from NPS pollution due to sedimentation and erosion include:

- Educate and encourage county and municipal governments to adopt local erosion control ordinances.
- Revise all documentation to reflect the new stormwater regulations. Provide staff training to increase their efficiency in administration of the stormwater regulations. Support DWR in their efforts to enforce stormwater permits.
- Identify and implement erosion and sedimentation control measures that will comply with Construction Stormwater Effluent Limit Guidelines.
- Implement Riparian Buffer Requirements of Nutrient Sensitive River Basins and Watersheds.
- Continue to evaluate and refine best methods for surface dewatering of sedimentation basins.
- Publish revisions to Erosion and Sedimentation Control Planning and Design Manual.

More specific time-sensitive activities include:

- In 2014, the Sedimentation Control Commission and local programs will enter into Memorandum of Agreements that require reporting of erosion control plan approvals and notices of violation to Division of Water Resources.
- In 2014-2015, develop paperless erosion control plan review and permitting, and remote mobile entry of compliance inspections.

3. NC Mining Program and Initiatives

a. Introduction

In 1971 the North Carolina General Assembly passed the [Mining Act](#) to ensure that the usefulness, productivity, and scenic values of all land and waters involved in mining will receive the greatest practical degree of protection and restoration. The [Mining Committee](#) of the Mining and Energy Commission is the rule-making body for the Act and has designated authority to administer and enforce the rules and regulations of the Act to the Mining Program within the Land Quality Section of the DEQ Division of Energy, Mineral and Land Resources.

b. Mining Mandates

The Mining Program has four major areas of responsibility. First, the Program requires submission and approval of a mining permit application prior to initiating land disturbing activity if the mining operation is one (1) or more acres in surface area. The mining permit application must have a reclamation plan for these operations. Second, the Program conducts on-site inspections to determine compliance with the approved application and whether or not the plan is effectively protecting land and water quality. Third, the Program pursues enforcement action through civil penalties, injunctive relief, and/or bond forfeiture to gain compliance when voluntary compliance is not achieved. Finally, the Program conducts educational efforts for mine operators. The Program's *Surface Mining Manual* contains, among other things, a chapter on erosion and sedimentation control. The Program has also conducted several workshops across the State to introduce the manual and to answer mine operators' questions regarding compliance with the Act. North Carolina Administrative Rules governing all aspects of mining practices including exploration and extraction of natural resources including oil and gas were amended August 2012, [Title 15A, Chapter 5: Mining: Mineral Resources](#).

[North Carolina Session Law 2012-143](#), or the Clean Energy and Economic Security Act, was ratified in July 2012. This law reconstitutes the state's Mining Commission as the North Carolina Mining and Energy Commission, and charges the Commission with developing a modern regulatory program for the management of oil and gas exploration and development activities in North Carolina, including the use of horizontal drilling and hydraulic fracturing.

Some of the ongoing activities to protect state waters from NPS pollution due to mining include:

- Meet with mine operator on every newly permitted mine at the mine site to explain the specific permit requirements to discuss the compliance status of the mine and answer questions.
- Review in-stream mining policy and revise as necessary.

C. Forestry

1. NC Forestry Nonpoint Source Pollution Management Program

a. Introduction

The Forestry Nonpoint Source Program of the N.C. Forest Service (NCFS) is the lead work unit that coordinates the fulfillment of North Carolina's obligations to address nonpoint source water pollution originating from silvicultural activities and forestlands. These obligations are being met through a series of projects related to education, training, outreach, technical assistance, water resource restoration, monitoring studies, watershed protection and resource analyses, and field investigations. Program staff serves in the overall capacity as subject matter experts on [forestry best management practices](#) (BMPs) for both NCFS field personnel and customer support. The implementation of BMPs is recognized as a proven and preferred approach to prevent NPS pollution from occurring where forest management or forest protection operations occur on the landscape.

A concise, photo-illustrated four-page annual report entitled "Year in Review" summarizes the Forestry NPS Program's accomplishments and success stories. This annual report has been produced since 2004 and copies from each year are available from the NCFS website at the following link:

http://www.ncforestsservice.gov/water_quality/year_in_review.htm. A more detailed review of over a decade of forestry NPS program accomplishments can be found by reviewing completed and ongoing projects, and associated reports found on the NCFS water quality web site: http://www.ncforestsservice.gov/water_quality/water_quality.htm.

A new, supplemental area of emphasis for the NCFS and its federal partners at the USDA-Forest Service is to investigate, identify, and synthesize the relationship nexus between healthy, well-managed forests and the protection, production, or sustainability of high-quality and reliable sources of water to sustain both human use and ecological services. The Forestry NPS Program is taking this lead on behalf of the NCFS through the implementation of several forest watershed projects, in cooperation with a diversity of new partners which historically have not considered "forestry" as a meaningful contribution to the holistic perspective of watershed management and water resource protection. These projects will allow the NCFS to reach out to a new audience of customers and stakeholders, while continuing to promote the sustainable management of forestlands as an ecologically and economically viable long-term land-use option.

b. Regulatory Oversight of Silvicultural Activities in North Carolina for NPS Pollution

b.1. State Oversight

In recent decades, the State of North Carolina has aggressively enacted regulatory protections of water resources to address ongoing and potential future contaminants from a diversity of sources, including NPS pollution. Forestry (silviculture) activities are governed by a multitude of state laws and regulations. The NCFS assists with regulatory governance by inspecting silvicultural activities to determine if the activity complies with appropriate environmentally-based rules/laws. While the NCFS has limited enforcement authority, there is a long history of working cooperatively with other state agencies when needed to bring enforcement action on a forestry site. To provide a relative historical context, from 2002 to 2012, field personnel in the NCFS inspected more than 40,500 sites across the state; with 1,830 notices of non-compliance issued (amounting to ~5% of the total); and only 79 referrals issued for enforcement action (two-tenths of 1% of the total).

The Forestry NPS Program assists NCFS personnel with regulatory governance through field investigations, site evaluations, providing specialized training, and assisting with inter-agency procedural matters intended to streamline field work associated with NCFS compliance inspections.

Listed below are the primary NPS pollution-driven state regulations which govern silviculture, and for which the NCFS serves as the initial point-of-contact regarding site inspections, identification of potential violations, and communication with the responsible party(ies). More information is available in the ‘[Water Quality](#)’ section of the NCFS website (www.ncforestservice.gov); and from [Chapter 2 of the NC Forestry BMP Manual](#).

Table 12. Primary NC Laws and Rules Governing Silvicultural Activities

State Rules	State Laws
Catawba River riparian buffer rule	Coastal Area Management Act
Forest Practices Guidelines Related to Water Quality (FPGs)	Dredge & Fill (in coastal waters)
Goose Creek Watershed riparian buffer rule	Obstructions in Streams and Drainage Ditches
Jordan Lake Watershed riparian buffer rule	Obstructing Streams a Misdemeanor
Neuse River basin riparian buffer rule	Petroleum Spill Notification
Randleman Lake Watershed riparian buffer rule	Sedimentation Pollution Control Act
Tar-Pamlico River basin riparian buffer rule	

b.2. Federal Oversight

The NCFS provides technical assistance regarding federal rules, laws, and/or guidance which govern silvicultural activities that are conducted in wetlands. Staff works cooperatively with the U.S. Army Corps of Engineers’ Wilmington District to address forestry concerns or evaluate options as needed. Specifically, the NCFS and Forestry NPS Program staff assists with matters relating to:

- Silvicultural exemptions defined under Section 404 of the Clean Water Act;
- Forest roads in wetlands, specifically the 15 federally-mandated BMPs related to such work and the 2004 guidance document prepared jointly between NCFS and USACE;
- Mechanical site preparation for certain forest re-establishment activities, specifically the six federally-mandated BMPs related to such work.

In addition, the NCFS assists customers with understanding the USEPA-delegated, state-issued NPDES permit for aerial applications of pesticides under NCDWR Pesticide General Permit NCG560000.

The Forestry NPS Program staff also takes the lead with staying abreast of, and understanding the potential ramifications from, the continued un-resolved issue in the federal court system regarding whether or not NPS stormwater runoff from forestry roads must be regulated through the NPDES process; or, instead, can continue to be managed through state-issued regulations and/or the implementation of BMPs. Regardless of how this issue is resolved, it is expected that the Forestry NPS Program will play an integral role in coordinating North Carolina’s response action as may be required by federal directive.

2. Program Correlation

The Forestry NPS Program supports, and is supported by multiple goals, strategies, objectives and initiatives that are correlated with long-term plans adopted by the NCFS in recent years:

a) [North Carolina Forest Action Plan of 2010: A 5-Year Road Map for Forestry in North Carolina](#)

Chapter 2e: Conserving Working Forests - Management Practices for Forestry and Wildlife:
Soil and Water Quality Protection Measures

Chapter 2f: Conserving Working Forests - Emerging Markets in Ecosystem Services

Chapter 4f: Enhancing the Benefits of North Carolina's Forests - Water Quality and Quantity

Chapter 5, Goal 6: Manage, conserve, restore, and enhance forestlands important to current and future supplies of clean water for economic, social and ecological value.

Objective 6.1 – Increase implementation of forestry BMPs and compliance with water quality regulations.

6.1.1. – Evaluate forestry operations for implementation of forestry BMPs and compliance with water quality regulations

6.1.2. – Develop threshold criteria for determining when a noncompliant forestry operation directly contributes to a degradation or loss of in-stream aquatic habitat sufficient to warrant restoration or remediation of the affected water resource.

6.1.3. – Increase the use of portable temporary bridging for crossings streams or ditches during forestry operations.

Objective 6.2 – Retain or increase the area of forestland within priority watersheds.

6.2.1 – Conserve and acquire forestlands in priority watersheds for the purposes of protecting or restoring water quality, water supply and aquatic habitat.

Objective 6.3 – Conduct education and outreach on the relationship between forests and water resources.

6.3.1 – Educate natural resources professionals and landowners on how to protect water quality from nonpoint source pollution that may result from forestry operations.

6.3.2. – Raise awareness of landowners, the general public, policy-makers, and K-12 schoolchildren on the relationship between forests, water quality and nonpoint source pollution prevention.

Objective 6.4 – Offer landowners technical assistance that incorporates water-resource management with forest management

6.4.1 – Assist landowners with assessing and managing their forests to protect watersheds or restore degraded aquatic conditions.

6.4.2 – Evaluate and promote the utilization of forestry practices to manage nonpoint source runoff from non-forested lands in transition areas between rural, suburban, and urban environments.

b) **NCDA&CS-North Carolina Forest Service: Five Year Strategic Plan for 2012-2016**

Goal 2: Manage the Forest

- Increase the effectiveness of the NCFS Water Quality Program.
- Retain or increase forestland within watersheds and riparian areas and educate the public on the values of these forested watersheds and riparian areas.
- Implement recommendations within the most current version of the BMP Survey.
- Increase field staff and associated funding to implement and improve the water quality program, especially in the mountain counties.

The Forestry NPS Program staff, in cooperation with its current financial and technical partners, will play a large role in completing the actions required to fulfill the Action Plan and Strategic Plan targets identified above. In order to deliver on future planned NPS pollution prevention products and services, staff continues to aggressively seek out new technical partnerships, diversify and increase sources of

funding, and expand information transfer methods to meet the needs of current and future customers. Specific Forestry NPS Program actions targeted for delivery over the next five years are presented below.

3. NC Forestry NPS Program Staffing

The 319 program has identified notable staffing needs to help improve the implementation of the forestry NPS program across the state. Water Quality Foresters provide enhanced technical support to NCFS county personnel and one-on-one customer support on BMPs, regulatory compliance matters, and overall NPS management measures. They also often serve as the subject matter expert and point-of-contact on matters related to timber harvesting practices, and act as a senior forest management expert in their district. The NCFS annually conducts between three to four thousand forestry site inspections to both monitor and document forest operator compliance with the statewide regulations called the “Forest Practices Guidelines Related to Water Quality,” otherwise known as the FPGs. A diversified Forestry NPS Pollution Management Program supports a sustained high level of compliance with North Carolina’s nine FPG performance standards.

The core Forestry NPS Program staff provides customers with the most current, technologically feasible, and economically practical Best Management Practice (BMP) resources to conduct forest management actions on North Carolina’s 18.0+ million acres of forestlands while ensuring the State’s surface and ground water resources are adequately protected. Specific products and services provided to forest operators and forestland owners include BMP Manuals, specialized BMP-related literature and videos, and on-site BMP technical assists. The existing FTEs/PTEs of the Forestry NPS Program supported by 319 Grant NPS Program funds are anticipated to be sufficient to successfully implement the action plan, with funding authorized within [North Carolina Session Law 2011-394 \(21\)](#).

D. Groundwater

1. NC Groundwater Nonpoint Source Pollution Control Programs and Initiatives

The Division of Water Resources is the lead state agency for groundwater protection and enhancement. Responsibilities of the Division of Water Resources include groundwater pollution prevention, groundwater quality classification and standards, review of permits for wastes discharged to groundwater or the land surface, developing and implementing groundwater cleanup requirements, promoting resource restoration, well construction rules, underground injection control, and groundwater quality monitoring.

Although groundwater resources in North Carolina are generally of good quality, nonpoint sources of pollution can contaminate groundwater, impacting both well users and surface water. Approximately 50 percent of the citizens of North Carolina rely on groundwater as a source of drinking water; in some counties, this number exceeds 90 percent. Many of these residents are dependent on individual, easily contaminated, shallow wells for their water.

NPS pollution of groundwater is also a concern for surface waters in North Carolina. Half to two-thirds of annual streamflow in North Carolina is baseflow – natural groundwater discharge to surface water. Dissolved nonpoint source pollutants can be transported through the surficial aquifer, and if not attenuated, will also be discharged to a stream.

The Division of Water Resources implements several programs which protect groundwater from nonpoint source pollution or help to restore waters impacted by nonpoint source pollution of groundwater:

- Land Application: DWR regulates the land application of wastewater, wastewater treatment residuals (biosolids), and animal waste, and regulates the use of reclaimed water. This program also protects surface water by providing alternatives to discharge, establishes setbacks and other control tools to ensure wastes do not reach surface water through runoff pathways.
- Contamination incident response: DWR responds to contamination incidents from non-point source pollution, such as agricultural pesticides and fertilizers, and works with the NC Department of Agriculture to control ongoing application of agricultural chemicals when they are contaminating groundwater.
- Groundwater Monitoring and Planning: DWR monitors groundwater quality to determine the health of the resource and develops tools to assess groundwater contamination risks and to assess the success of protection and restoration efforts.
- Groundwater Classifications and Standards: DWR oversees the establishment of groundwater classifications and standards aimed at ensuring that groundwaters of the state are protected for designated uses.
- Watershed Restoration Program: DWR coordinates with local partners to implement watershed restoration projects that are tailored to address the impacts to each watershed's groundwater and surface water resources and each watershed's unique mix of point and nonpoint sources of pollution.

More information on the programs administered by the Division of Water Resources to protect and enhance the groundwater quality of the State to the benefit of all citizens can be found at <http://portal.ncDEQ.org/web/wq/aps>.

North Carolina also protects groundwater from nonpoint source pollution through a comprehensive regulatory program for well construction. Well construction standards are established by the

Environmental Management Commission. The Division of Water Resources enforces well construction standards for certain types of monitoring wells and large capacity supply wells. Private drinking water wells are permitted, inspected, and tested by local health departments with coordination by the Division of Public Health. All well drillers are required to be certified under rules enforced by the Division of Public Health. More information about well construction programs implemented or coordinated by the Division of Public Health can be found at <http://ehs.ncpublichealth.com/oswp/>.

2. NC Groundwater Nonpoint Source Program Staffing

The NPS program has identified staffing needs in order to implement the groundwater NPS program to minimize nonpoint source pollution impacts across the state. The 319 program has identified the need to support staff in the Aquifer Protection Section of DWR out of 319 Grant NPS Program funds. The 319 funded staff support the implementation of a more robust and effective NPS program in North Carolina through several major efforts which have a specific geographic focus, providing strong science and data on which to base action, and provide knowledge and data necessary to set priorities and develop integrated solutions.

319-funded staff compiles nutrient loading estimates for selected watersheds, including watersheds selected by DWR regional offices for intensive watershed restoration projects, so that DWR and its partners can develop effective strategies for restoration in nutrient-sensitive watersheds. 319-funded staff characterizes ambient groundwater quality by watershed in order to identify the degree to which groundwater may contribute to watershed impairments and therefore to select appropriate integrated strategies for restoration. Additionally, 319-funded staff improves DWR spatial data for land-applied wastewaters and residuals in order to identify contributors to NPS pollution within a given watershed. In addition to these activities of the 319-funded staff, state-funded staff of the groundwater program provides substantial support to the state's overall Groundwater Nonpoint Source Program efforts.

Some of the ongoing activities to protect state groundwater from NPS pollution include:

- Condition non-discharge permits to protect groundwater.
- Inspect permitted non-discharge facilities to assure permit compliance.
- Issue notices of violation for facilities determined not in compliance.
- Respond to incidents of groundwater contamination from agricultural operations and DWR-permitted activities.
- Certify all well drillers in state. Enforce well construction standards and inspect permitted wells to assure permit compliance.
- Regulate construction and use of injection wells.
- Develop and implement groundwater monitoring strategies to characterize ambient groundwater quality and its role in supporting unimpaired surface waters or to characterize NPS groundwater pollution and its contributions to impaired surface waters.
- Work with the NPS Planning program to identify groundwater-oriented strategies to protect groundwater and surface waters from NPS pollution and to restore groundwater and surface waters impacted by groundwater discharge of NPS pollution.
- Assist local watershed stakeholders with watershed restoration plan development and implementation.
- Develop a multi-program statewide groundwater database to facilitate data sharing and intra-agency coordination of groundwater protection.

E. Marinas and Recreational Boating

1. NC Marinas and Recreational Boating Nonpoint Source Pollution Control Programs and Initiatives

a. Introduction

North Carolina has over 12,000 miles of estuarine shoreline, 35,000 miles of rivers and streams, and 1,000 lakes/reservoirs/ponds – many of which are used for recreational boating. There are also over 400 coastal and inland marinas that provide access to the water, as well as offer boating services and supplies. Both marinas and recreational boats can be sources of nonpoint source pollutants, ranging from petroleum products to sediment, making their proximity to the water a nonpoint source concern.

The activities in the action plan are influenced by three factors. First, North Carolina, like other states, does not have the quantitative data to provide a clear delineation of the nonpoint source impacts from coastal or inland marinas. Without having a complete understanding of these impacts, devising specific actions to address them is very challenging. Secondly, the regulations affecting coastal marinas, their associated activities, and resources they may impact have evolved to meet different and not necessarily complementary, federal and state mandates, which are administered by different agencies. Finally, the state recognizes the potential resource protection gains that could be realized from comprehensively examining the marina and recreational boating programs/regulations and taking actions to address shortcomings.

There are currently four programs in the state that either directly or indirectly address nonpoint source pollution from marinas and recreational boating. These programs are discussed below. Most of these programs are applicable only on the coast; however, the state does recognize that inland marinas may also contribute to water quality degradation. The Division of Parks and Recreation manages the three largest inland marinas in the state, which are located in the central and upper Piedmont.

b. Marine Sewage Pump-out and Dump Station Grant Program

The Division of Coastal Management (DCM) continues to make pumpout and dump stations readily available through the Marine Sewage Pump-out Station Grant Program. The program, established as a result of the federal Clean Vessel Act of 1992, provides financial assistance to marinas and other boat-docking facilities for the installation and renovation of pumpout and dump stations in North Carolina.

Using funding from the US Fish & Wildlife Service, DCM has made grants of up to \$15,000 available on a yearly basis to private and commercial marinas, gas/service docks, fish houses/seafood dealers and other boat docking facilities in the 20 coastal counties. A 25 percent match is required of the marinas. A 25 percent match also is required of local governments installing pumpouts at public docks.

Since its establishment in 1995, the program has awarded more than \$634,000 in grants for pumpout projects, bringing the total number of pumpout facilities available on the coast to 96. There are also numerous pumpouts on inland lakes including many Duke Energy lakes like Lake James, Lake Hickory, Lake Norman, Mountain Island Lake, Lake Wylie, and Belews Lake, most of which are water supplies.

c. Clean Marina Program

Clean Marina is a nationwide program developed by the National Marine Environmental Education Foundation, a nonprofit organization that works to clean up waterways for better recreational boating. The program is voluntary and began in the summer of 2000. The foundation encourages states to adopt Clean Marina principles to fit their own needs. North Carolina is one of 26 states with Clean Marina Programs in place.

The Clean Marina Program (CMP) is designed to show that marina operators can help safeguard the environment by using management and operations techniques that go above and beyond regulatory requirements. To earn the certification, the marina's owners have prepared Spill Prevention Plans, Safety and Emergency Planning, and strongly control boat maintenance activities to protect water quality by addressing nonpoint sources of pollution. The N.C. CMP is a partnership between N.C. Boating Industry Services, the N.C. Marine Trade Association, the Division of Coastal Management, the Albemarle-Pamlico National Estuary Program, N.C. Sea Grant, the U.S. Power Squadron, U.S. Coast Guard Auxiliary and N.C. Big SwDMS.

If a marina meets the criteria of the program it is designated as a Clean Marina. Such marinas are eligible to fly the Clean Marina flag and use the program logo in their advertising. The flags signal to boaters that a marina cares about the cleanliness of area waterways. Marinas must complete the recertification process every two years in order to remain classified as a NC Clean Marina. Marinas that do not meet the standards will be able to learn about improvements needed for Clean Marina designation and can reapply to the program after making the necessary changes. To date, 29 marinas have qualified and maintained certification under the program.

a. NC Clean Boater Program

The N.C. Clean Boater Program was launched in May 2011 as an extension of the NC Clean Marina program. It is a voluntary program to show that boaters can be active stewards of our waterways. In order to become a NC Clean Boater, a boater must read "A Boaters' Guide to Protecting North Carolina's Coastal Resources," commit to clean boating by signing a pledge card and mailing it to the Program office. Participating boaters then receive a NC Clean Boater decal to display on their vessel and pledge to use the services of NC Clean Marinas when possible. By adopting pollution prevention measures and using best management practices, NC Clean Boaters help preserve the state's waterways for future generations, and learn and teach clean and safe boating habits. To date, 122 vessels display the NC Clean Boater decal.

e. CAMA Major Permits

Facilities with 10 or more slips, moorings, or boat docks, meet the EPA definition of a marina subject to the requirements of the federal Coastal NPS Program. Most of these facilities are concentrated in five North Carolina counties: Brunswick, Craven, Beaufort, Carteret and New Hanover.

Any marina, defined as a docking facility with greater than 10 slips or moorings, must receive a CAMA major development permit if it is located within CAMA public trust waters. Boat maintenance and repair yards and dry stack marinas must also be permitted under CAMA if they are located within 75 feet of estuarine waters or 575 feet of Outstanding Resource Waters. CAMA permits are issued by DCM. Marina operations are regulated through permit conditions that require marinas to operate in compliance with CAMA use standards as well as the administrative rules of the Coastal Resources Commission and regulations of other state and federal agencies (i.e., Army Corps of Engineers and U.S. Coast Guard) with regulatory authority for certain aspects of marina siting, design, and operations.

CAMA major development permits are reviewed by DWR to determine if the project threatens to violate applicable water quality standards and designated uses. Before a CAMA permit can be issued for

construction of the marina, DWR must issue a 401 Certification indicating the project will not result in violations of state water quality standards. A 401 Certification may contain conditions to ensure compliance with water quality standards.

Some of the ongoing activities to protect state waters from NPS pollution due to marinas and recreational boating include:

- Improve adoption of the Clean Marina Program (CMP). Increase technical assistance provided to marina operators, including conducting workshops.
- Increasing monofilament recycling efforts. The NC Clean Marina Program will partner with NC Big SwDMS to provide technical and outreach assistance to enhance the monofilament recycling BMPs associated with the Clean Marina designation. The Clean Marina coordinator will work with both entities in tracking the amounts of recycled material. Bins will also be provided for the newly designated Clean Marinas as well as any other marinas that may request them.
- Increase participation in Clean Boater Program by partnering with the Coast Guard Auxiliary to provide Clean Boater flyers and booklets. Education and outreach provided by meeting with Auxiliary members in order to explain the program and provide materials for them to distribute during inspections.
- Coordinate with Division of Marine Fisheries and BIG (Boating Infrastructure Grant) Program to target marinas for participation in the Clean Marina Program.
- Investigate the need to more directly address nonpoint source pollution contributions from boat washing activities, and respond accordingly. Promote “clean” methods of boat cleaning techniques and products to marina owners and boater groups. Increase the number of marinas covered by closed loop recycle systems to manage wastes from washing activities.
- Increase participation in the Pumpout Grant Program. Develop incentives for marina operators to install, use, and properly maintain pumpouts.

F. Onsite Wastewater

1. NC Onsite Wastewater Nonpoint Source Pollution Control Programs and Initiatives

a. Introduction

Effluent dispersed through onsite wastewater systems (also known as ‘septic systems’) is a potential non-point source (NPS) of pollution because of the possibility for constituents to reach ground and surface water. Domestic wastewater contains microbes (bacteria and viruses) as well as nutrients. Some of the microbes may cause disease if humans ingest or come into contact with contaminated ground or surface waters. The nutrients (nitrogen and phosphorus) may enrich surface waters and result in excess algal growth in streams, rivers and lakes. Notably, contamination is most likely to occur from improperly managed septic systems. That is, when issues related to siting, design, installation, operation and maintenance are not adequately addressed; septic systems can be a source of NPS pollution.

A conventional septic system consists of a septic tank, a distribution box or header pipe and a series of subsurface effluent dispersal lines consisting of perforated pipes installed in a bed of gravel. North Carolina also has regulatory provisions for permitting modified systems that include alternative trench media, aerobic treatment components and disinfection methods. Further, the practice of using ‘clustered’ systems that treat wastewater from multiple sources has prompted the use of the term ‘decentralized systems’. All wastewater collection and treatment systems in North Carolina that use subsurface dispersal are under the jurisdiction of the Commission for Public Health (CPH) of the Department of Health and Human Services. The CPH establishes the rules for on-site wastewater systems which are administered by the Environmental Health Section Onsite Water Protection (OSWP) Branch in the Division of Public Health. There are 85 Local Health Departments (LHD) serving 100 counties with approximately 780 local environmental health specialists (EHS) authorized as agents of the state to enforce the laws and rules for the design, siting, permitting, compliance and repair of subsurface onsite wastewater treatment systems. Local boards of health have typically adopted the state rules by reference. Some local boards have chosen to append those rules with even more stringent laws and local criteria.

The Division of Public Health (DPH) Environmental Health Section encompasses the Environmental Health Services Branch, the Food Protection and Facilities Branch, Health Hazard Control and Children’s Environmental Health Branch and the OSWP Branch. The OSWP Branch within the Section oversees on-site waste treatment strategies and technologies as well as certification of well contractors.

b. Onsite Water Protection Branch: Mandates

In accordance with Article 11, Chapter 130A of the NC General Statutes, [(GS 130A-335(e) and (f))], the rules of the CPH and those of any local board of health shall address at least the following:

- wastewater characteristics;
- design unit;
- design capacity;
- design volume;
- criteria for the design, installation, operation, maintenance and performance of wastewater collection, treatment, and disposal systems;
- soil morphology and drainage;
- topography and landscape position;
- depth to seasonally high water table, rock, and water impeding formations;
- proximity to water supply wells, shellfish waters, estuaries, marshes, wetlands, areas subject to frequent flooding, streams, lakes, swamps, and other bodies of surface or groundwater;

- density of wastewater collection, treatment, and disposal systems in a geographical area;
- requirements for issuance, suspension, and revocation of permits; and
- other factors which affect the effective operation in the performance of sanitary sewage collection treatment and disposal systems.

The rules also must provide construction requirements, standards for operation, and ownership requirements for each classification of sanitary systems of sewage collection, treatment, and disposal in order to prevent, as far as reasonably possible, any contamination of the land, groundwater, and surface waters. Further information, rules and laws, ongoing programs, and septic system data can be found at: <http://ehs.ncpublichealth.com/oswp/>.

The OSWP Branch provides technical support, quality assurance, and technology transfer through a professional staff of soil scientists, environmental engineers, program auditors and the NPS coordinator. The staff also conducts workshops, reviews technology and conducts or participates in classes for citizens, state and local governments, practitioners and other professionals throughout the state. The staff conducts Centralized Intern Training (CIT) which leads to authorization of Environmental Health Specialists that implement the Laws and Rules on the local level. Staff periodically audits the efficacy of local environmental health programs. The NPS Coordinator serves as a liaison among the OSWP Branch professionals, local health department personnel, other state agencies and the general public. The NPS Coordinator position in the OSWP Branch was established through FY1996 Section 319(h) funding, and the NPS Coordinator implements the activities of the on-site program as part of North Carolina's basin water quality management plans described at: <http://portal.ncDEQ.org/web/wq/ps/bpu/about>.

2. NC OnSite Wastewater NPS Program Staffing

The NPS program has identified minimal staffing needs to help implement the onsite wastewater NPS program to minimize nonpoint source pollution impacts across the state. The 319 program has identified the need to support staff out of 319 Grant NPS Program funds in the OSWP Branch of the Department of Health and Human Services. Staff funded by the 319 program provides a critical link between OSWP Branch staff, local health department personnel, other state agencies, private sector professionals and the general public.

Staff is engaged in educational and research activities that promote improved onsite system management to control NPS pollution and aid in the restoration of ground and surface waters. Protection and restoration of water quality is also supported through effective implementation of BMPs and collection of data. Staff participates in workshops and classes for citizens, state and local governments, practitioners and other professionals. Staff also provides training which leads to authorization of Environmental Health Specialists who implement laws and rules at the local level.

Some of the ongoing activities to protect state waters from NPS pollution due to onsite wastewater include:

- Evaluate and document appropriate innovative and alternative systems from both a public health and water quality perspective.
- Evaluate and document the extent of water quality impacts from high-density on-site wastewater systems and by designing measures to mitigate water quality impacts.
- Evaluate existing and potential state and local programs (rules) for improved life cycle management of on-site wastewater systems, advanced wastewater treatment and disposal systems.
- Coordinate and facilitate education and technology transfer to government agencies and to the public.

- Encourage local governments, interstate or intrastate agencies, public and private non-profit organizations and institutions to participate in the 319 grant and other funding programs.
- Evaluate and provide literature on potential contributions of known and emerging contaminants from onsite wastewater systems.
- Evaluate and disseminate information on potential human health effects from pollutants from wastewater systems.
- Issue Notices Of Violation, and permit and report failing septic systems.

G. Urban Stormwater

1. NC Urban Stormwater Nonpoint Source Pollution Control Programs and Initiatives

a. Introduction

It has been said that stormwater is pure rainwater plus anything the rain carries along with it. Applying this definition to an urban setting means that urban stormwater carries urban pollutants like oil, grease, litter, fertilizer, and pet waste. Controlling urban stormwater means applying two different sets of laws: one set focusing on urban point sources and the other focusing on urban nonpoint sources.

The National Pollution Discharge Elimination System (NPDES) permit program of the Clean Water Act, which regulates stormwater discharges, addresses urban point source pollution. Urban nonpoint source pollution is covered by nonpoint source management programs developed by states, territories, and tribes under the Clean Water Act. The following section focuses on how North Carolina addresses urban NPS. Information about the state's NPDES program can be found at <http://h2o.enr.state.nc.us/su/stormwater.html>.

b. State Stormwater Management Program

The North Carolina State Stormwater Management Program was established in the late 1980's under the authority of the North Carolina Environmental Management Commission (EMC) and North Carolina General Statute 143-214.7. This program, codified in 15A NCAC 2H .1000, affects development activities that require either Erosion and Sediment Control Plan approval (for disturbances of one or more acres) or a CAMA major permit within one of the following areas:

- [The twenty coastal counties](#), and/or
- Development draining to [Outstanding Resource Waters \(ORW\) or High Quality Waters \(HQW\)](#)

The State Stormwater Management Program requires developments to protect these sensitive waters by maintaining a low density of impervious surfaces and vegetative buffers, and transporting runoff through vegetative conveyances. Low-density development thresholds vary from 12-30% built upon area (impervious surface) depending on the classification of the receiving stream. If low-density design criteria cannot be met, then high-density development requires the installation of structural best management practices (BMPs) to collect and treat stormwater runoff from the project. High density BMPs must control the runoff from the 1.0-inch, 1.5-inch or a 1-year, pre/post storm event depending on the receiving stream classification. The controls must also remove 85% of the total suspended solids and provide for long term operation and maintenance of the BMPs.

c. Stormwater Management Component of Nutrient Sensitive Waters Management Strategy

North Carolina has been implementing point and nonpoint source nutrient control programs since the late 1970's. The first programs placed requirements on point sources and gave incentives for nonpoint source controls. In 1997, the Environmental Management Commission adopted rules that mandated programs for agriculture, buffers and urban stormwater in the Neuse River Basin and three years later in the Tar-Pamlico River Basin.

North Carolina currently has four large-scale, long-term watershed restoration efforts underway in the form of comprehensive nutrient reduction strategies. Each restoration strategy is unique in that it has distinct nutrient reduction goals aimed at achieving nutrient related water quality standards in the targeted waterbody, and is driven by a watershed-specific set of rules designed to achieve those goals. The four areas where intensive urban stormwater rules and programs apply are:

- Jordan Watershed
- Falls Watershed
- Neuse Basin NSW
- Tar-Pamlico NSW

d. Water Supply Watershed Program

The Water Supply Watershed Protection Rules adopted in 1992 require that local governments having land use jurisdiction within water supply watersheds adopt and implement water supply watershed protection ordinances and maps that meet or exceed minimum requirements of the Environmental Management Commission’s rules. These rules, codified in 15A NCAC 2B .0100 and 15A NCAC 2B.0200, are designed to protect the quality of source water, primarily through the management of non-point source pollution from new development. Depending on the classification of the Water Supply (WS I through WS-IV), Water Supply Watershed Protection rules and standards apply either throughout the entire drainage area of a surface water intake or within the “protected area.” The protected area, which is particular to the WS-IV classification, is the area within 10 miles upstream and draining to the water intake. In general, the most stringent requirements are applied in the “critical area,” which is the area within ½ mile upstream and draining to the water intake. In addition to the new development requirements, the Water Supply Watershed Protection rules have restrictions for new land application sites, landfills, and new industrial wastewater discharges. The State administers permitting programs for these particular activities.

The State is also responsible for providing oversight and enforcement to the 287 local governments who administer watershed protection programs. Local governments (counties and municipalities) are responsible for regulating new development activities via local ordinance in compliance with the Water Supply rules. In some watersheds, these programs have been in effect for nearly 20 years. New development that is subject to the Water Supply rules must meet requirements for building density, built-upon area (percent of land covered by impervious surfaces), stormwater treatment, and vegetated setbacks. The Water Supply rules require low-density development projects to use vegetated conveyances to transport stormwater runoff. Structural best management practices that remove 85% total suspended solids are required for high-density development projects.

e. Phase-II / MS4 Stormwater Program

In 2007, [Session Law 2006-246](#) expanded stormwater post-construction control requirements into designated Phase II areas, beyond those cities with NPDES Phase II MS4 permits. These areas include certain "tipped counties" and unincorporated areas that fall within urbanizing areas and "municipal spheres of influence" (MSI) around Phase II cities and towns. This law significantly expanded the area in which NC DWR must issue State Stormwater permits for development. In 2012, this program was codified in 15A NCAC 2H .1000.

Some of the ongoing activities to protect state waters from NPS pollution due to urban stormwater include:

- Enhance urban stormwater control through monitoring and modeling in order to develop TMDLs, identify causes and sources of pollution, target BMP implementation, and determine the effectiveness of control actions through rule-making and 319 grant funding.
- Implement state stormwater management programs including the nutrient sensitive water management strategies, the water supply watershed program, outstanding resource water, and high quality water programs. For the water supply watershed program, provide oversight and technical assistance to local programs; review local ordinances; conduct site-visits and inspect all 287 local water supply watershed programs.
- Assist in the development and seek implementation of urban stormwater management recommendations of the Basin Management Plans.
- Work with municipalities to develop projects to protect waters via the Division of Mitigation Services's Local Watershed Planning initiatives.
- Promote nonstructural BMPs such as buffers and low-impact development (LID) through revisions to the NC Stormwater BMP Manual.
- Promote the demonstration of innovative and "promising" stormwater treatment technology.
- Leverage sources like the Farm Bill to protect green space and target urban NPS pollution.

H. Waste Management

1. NC Waste Management Programs and Initiatives

The Division of Waste Management (DWM) regulates solid waste disposal, hazardous waste management, underground storage tanks and Superfund cleanups. The primary purpose of the DWM is to protect public health and the environment by assuring that wastes, petroleum releases and underground storage tanks are managed properly, and that existing contamination is cleaned up. DWM provides technical assistance to businesses, industries, local governments and citizens to help them reduce and better manage wastes. DWM also oversees the assessment and cleanup of contaminated soil and ground-water at sites subject to the Division's regulations.

The Division of Waste Management houses four sections which deal with specific wastes or products. These sections are the Solid Waste Section, Underground Storage Tank Section, Hazardous Waste Section, and the Superfund Section. In addition, the Brownfields Program promotes redevelopment of abandoned, idle and/or under-utilized properties. Brief descriptions of all sections and the Brownfields program are provided below. Future efforts of the NPS program will be to reduce NPS pollution from sites overseen by these programs.

a. Solid Waste Section

The Solid Waste Section regulates safe management of solid waste through guidance, technical assistance, regulations, permitting, environmental monitoring, compliance evaluation and enforcement. The General Statutes direct the Solid Waste Section to make long-range plans and initiate actions for the most effective reduction and management of solid waste in North Carolina. The statutes also direct the Section to make reports and recommendations to the General Assembly regarding the management of solid waste and to make grants to local governments totaling nearly \$3.5 million per year for the management of problematic waste. Waste types handled at solid waste facilities include municipal solid waste, industrial waste, construction and demolition waste, land-clearing waste, scrap tires, medical waste, compost, and septage. More information about the Solid Waste Section can be found at <http://portal.ncDEQ.org/web/wm/sw>.

b. Superfund Section

The Superfund Section operates under a cooperative agreement with the US EPA to assess uncontrolled and unregulated hazardous waste sites in NC, prioritize these sites for federal Superfund response action and oversee any clean-up activities that may be required by EPA. Some sites that do not warrant clean-up under the federal Superfund program may be handled under state authority by the inactive hazardous waste site program within the Superfund Section. The Superfund Section also houses the dry cleaning solvent program and the manufactured gas plant program. The inactive hazardous sites, dry cleaning solvent and manufactured gas plant programs oversee the assessment and remediation of contaminated soil and ground-water at their respective sites. More information about the Superfund Section can be found at <http://portal.ncDEQ.org/web/wm/sf>.

c. Underground Storage Tank Section

The UST Section regulates the installation, operation and decommissioning of underground storage tanks that contain a product. They also provide technical assistance, education and training to tank owners to insure the proper maintenance and operation of those tank systems. The section issues permits, collects annual fees and handles requests for information for regulated and /or commercial underground storage tanks. The section ensures compliance with all relevant state and federal laws, policies, rules and regulations by assisting owners and operators in complying with operational standards (leak detection,

spill and overfill detection, etc.). The UST Section also oversees the assessment and remediation of sites where releases of petroleum products have occurred and oversees the administration of several trust funds for the reimbursement of cleanup costs associated with UST releases. More information about the Underground Storage Tank Section can be found at <http://portal.ncDEQ.org/web/wm/ust>.

d. Hazardous Waste Section

The Hazardous Waste Section ensures the safe management of hazardous waste in North Carolina. The section issues permits for companies to treat, store and dispose of hazardous wastes, offers technical assistance and education regarding hazardous waste issues and tracks the transportation of hazardous waste across the state. The section inspects hazardous waste handling practices, issues enforcement actions on violators and oversees the assessment and clean-up of sites where hazardous waste has been released to the environment. More information about the Hazardous Waste Section can be found at <http://portal.ncDEQ.org/web/wm/hw>.

e. Brownfields Program

The North Carolina Brownfields Program encourages the safe reuse of abandoned properties that have some measure of environmental impairment. Under a "brownfields agreement" with a prospective developer, the Division of Waste Management defines the necessary cleanup and land management actions, and the prospective developer receives liability protection that allows him/her to obtain previously unobtainable loans for the project. In doing so, the program serves as a tool to turn these abandoned properties into productive use rather than building in greenspaces. More information about the Brownfields Program can be found at <http://portal.ncDEQ.org/web/wm/bf>.

Some of the ongoing activities to protect state waters from NPS pollution due to waste management include:

- Concentrate Solid Waste Section compliance efforts with local enforcement officers towards illegal disposal activity in an effort to reduce related ground-water and surface water contamination.
- Implement the DEQ-wide Tiered Enforcement Strategy for fair, strong and effective compliance penalties that provide serious consequences for serious compliance violations and that encourage consistent environmental responsibility.
- Continue work with DWR to address and properly permit stormwater and process wastewater discharges that leave compost sites.
- Evaluate the need for and the mechanism to establish agency coordination on sites with contamination from separate sources regulated by both DWM and DWR.

I. Wetland and Hydrologic Modification

1. NC Wetland Nonpoint Source Pollution Control Programs and Initiatives

a. Introduction

There are many agencies and programs implementing and funding stream, wetland, and buffer restoration, conservation and mitigation efforts across the state. The major programs and initiatives are described below.

b. [Section 10 of the Rivers and Harbors Act of 1899](#)

This act, administered by the US Army Corps of Engineers, provides the basis for regulating dredge and fill activities in navigable waters of the United States, including wetlands. Originally, this Act was administered to protect navigation and the navigation capacity of the nation's waters. In 1968, due to growing environmental concerns, the review of permit applications was changed to include factors other than navigation including fish and wildlife conservation, pollution, aesthetics, ecology, and general public interest. Activities, which may be covered under the Act, include dredging and filling, piers, dams, dikes, marinas, bulkheads, bank stabilization and others.

c. [Section 404 of the Clean Water Act](#)

The U.S. Army Corps of Engineers administers a national regulatory program under Section 404 of the Clean Water Act aimed at controlling the discharge of dredged or fill material into waters of the United States. Waters of the United States refers to navigable waters, their tributaries, and adjacent wetlands. Activities covered under Section 404 include dams, dikes, marinas, bulkheads, utility and power transmission lines and bank stabilization. Although the 404 program does not fully protect wetlands, it is nonetheless the only federal tool at this time for regulating wetland development statewide.

d. [CWA 401 Water Quality Certification](#)

The Division of Water Resources (DWR) is responsible for the issuance of 401 Water Quality Certifications (as mandated under Section 401 of the Clean Water Act). A 401 certification is required for any federally permitted or licensed activity that may result in a discharge to waters of the U.S. The 401 certification indicates that the discharge activity will not violate state water quality standards. A federal permit or license cannot be issued if a 401 certification is denied. The 401 certification process is coordinated with the 404 federal permit and CAMA (Coastal Area Management Act) processes in the 20 counties of CAMA jurisdiction. While coastal wetlands in NC are afforded protection through CAMA requirements beyond that given by the 401 process, State legislation has not been adopted to similarly protect inland freshwater wetlands.

The EMC passed rules, effective October 1, 1996, that upgraded and formalized wetland protection in NC. The rules provided for wetland classifications, a wetland definition, designated uses for wetlands, wetland water quality standards, and a formalized 401 Water Quality Certification process for wetlands and surface waters, including mitigation requirements. Two classes of wetlands were recognized, freshwater (WL) and coastal (SWL), and one supplemental classification, unique wetlands (UWL), was created for systems with exceptional state or national ecological significance. The Corps of Engineers wetland definition was adopted. The adopted wetland uses reflected wetland functional areas of water storage, water quality, erosion protection, and habitat. Narrative wetland water quality standards were adopted that were designed to protect the newly specified designated uses. Section 401 Water Quality Certification criteria were structured based on wetland impact size and distance from surface waters: any proposed impacts of less than one-third acre typically require no notification to DWR nor DWR review;

proposed impacts of one-third to one acre require notification and a review for minimization of impacts; all proposed impacts of above 1 acre require notification and mitigation.

e. Isolated Wetland Permitting Program

The State of North Carolina's [Isolated Wetlands Permitting Program \(15A NCAC 02H .1300\)](#) was developed in response to the Solid Waste Agency of Northern Cook County (SWANCC) decision by the US Supreme Court in January 2001, in which the U.S. Army Corps of Engineers lost jurisdiction over isolated wetlands. The North Carolina Environmental Management Commission approved permanent Isolated Wetlands Rules, which became effective April 1, 2003. The goal of this program is to retain wetland permitting process and protection of isolated wetlands previously in place in 1996 before the SWANCC decision. This program follows the same general permitting process as the 401 Water Quality Certification Rules, except that in North Carolina only DWR has authority over isolated wetlands.

f. Ditching and Draining of Wetlands

DWR in consultation with the N.C. Attorney General's Office has determined that wetland water quality standards set forth at [15A NCAC 02B .0231](#) (see attachment) may be violated by activities that result in the draining of wetlands such as ditching and groundwater pumping. Federal court decisions have prevented the Corps of Engineers from requiring 404 permits for draining of wetlands unless spoil is side cast from the ditch into wetlands. As a result, thousands of acres of wetlands were drained in the coastal plain of North Carolina. This situation forced DWR to reexamine whether the unregulated draining of wetlands is violating the state's wetland standards. DWR intends to examine wetland drainage activities for compliance with the state's wetland water quality standards, particularly those for hydrologic conditions necessary to support wetlands function ([15A NCAC 02B .0231\(b\) \(5\)](#) and [biological integrity \(15A NCAC 02B .0231\(b\) \(6\)\)](#)).

g. Division of Mitigation Services

In July 2003, North Carolina committed its resources to an innovative program to restore, enhance, preserve and protect its wetlands and waterways. The N.C. Division of Mitigation Services (DMS) offers four In-Lieu Fee mitigation programs designed to assist private and public entities comply with state and federal compensatory mitigation for streams, wetlands, riparian buffers, and nutrients. DMS utilizes receipts from the programs to restore streams and wetlands where the need is greatest by working with state and local partners, including willing landowners. DMS also provides advance mitigation to offset unavoidable impacts from transportation improvement projects. DMS's mission is to restore and protect North Carolina's natural resources for future generations while supporting responsible economic development

Some of the ongoing activities to protect state waters from NPS pollution include:

- Encourage the use of the Secondary and Cumulative Impacts Guidance Manual through the 401 Water Quality Certification review process.
- Develop BMPs that can be used to reduce NPS pollution associated with hydrologic modifications or incorporated into the design of hydrologic modification projects.
- Refine the NC Wetland Program Plan: Monitoring and Assessment 2013-2017 document.
- Establish statewide priorities related to Wetland Regulations and Water Quality Standards for Wetlands.
- Complete activities as outlined in the NC Wetland Program Plan (Monitoring and Assessment, Regulation, and Water Quality Standard).
- Encourage flexible buffer mitigation strategies in addition to traditional buffer mitigation methods provided for in the consolidated Buffer Mitigation Rule adopted in 2015.

- Cooperate with partners and mitigation providers (Interagency Review Team, Division of Mitigation Services, mitigation bankers) to improve wetland and stream mitigation plans.
- Establish statewide priorities related to Voluntary Wetland Restoration and Protection.

Section IV

Appendices



Appendix A

Eight Key Components for an Effective NPS Management Program

In 2013, EPA headquarters updated the guidance to states for developing an effective state NPS management program. The revised guidance issued in April 2013 identifies eight key components that characterize an effective NPS management program. North Carolina's 2013 NPS Update includes these key components, as listed below.

1. **The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.**

Protection and restoration of waters are the two long-term goals of the North Carolina Nonpoint Source Management Program. This is also consistent with and supported by the Division of Water Resource's mission of protecting and restoring the water quality of North Carolina and the mission of the of the North Carolina Department of Environmental Quality (DEQ), "to protect and preserve the natural resources of the state."

More specific objectives, actions, and strategies in support of the long-term goals are enumerated throughout this document for thirteen nonpoint source-related categories. Five-year Action Plans have been developed for each NPS category and resource type containing objectives and specific actions supporting these goals. Action Plans are reviewed annually, through the NPS Annual Report to EPA, to reflect progress and changes in focus.

2. **The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.**

DWR solicits input from the state NPS Workgroup during the annual review and ranking process in order to select NPS restoration projects to receive 319 grant funding. The NPS Workgroup is an interagency and interdisciplinary group representing a broad array of state and federal agencies with a stake in NPS issues (Section II.D.).

The NC Basin water quality planning process raises public awareness of water quality issues and provides for public and agency input into the direction of water quality management in the state, including NPS management. Under the Basin approach, plans are developed and adopted for each of the state's 17 major river basins and all plans are revisited through public workshops and meetings on a continuous cycle. DWR staff invites participation from all relevant federal, state, regional, and local agencies and governmental jurisdictions, as well as any interest groups with a stake in basin NPS issues (Section II.A.).

3. **The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.**

The State NPS program exists as a group of individual agency programs coordinated by DWR's NPS Planning Branch. The unit works closely with and relies on other programs to forward the

NPS Management Program's objectives both at the statewide and watershed level. In implementing on-the-ground management, the NPS program balances state-wide perspectives with watershed-specific, local input through the Basin process, Clean Water Management Trust Fund (CWMTF) projects, Wetland Restoration Program (WRP), state Ag Cost Share (NCACSP) program, NRCS funding initiatives (EQIP and others), and the 319 grant application process. Within the Basin process, a main goal is to identify and prioritize specific problem waterbodies for NPS management based on pooled knowledge and water quality data and other information gathered by DWR staff. Agencies such as CWMTF, WRP, NCASCP, NRCS and 319 rely, in part, on basin- and watershed-specific information found in the Basin plans to prioritize their statewide funding allocations and identify specific projects for funding.

4. **The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.**

The Basin process, aided by NPS Planning staff, identifies and prioritizes waters impaired or threatened due to nonpoint sources, and recommends actions to address those impairments and threats. To forward the protection of currently unimpaired waters that may be threatened now or in the future, the cumulative actions of the NPS Workgroup members, as presented in the action plans, are relied upon. This includes actions such as enforcing erosion and sediment control laws, implementing forest practice guidelines, working cooperatively with farmers to meet nutrient reduction requirements, etc. The action plans address all major sources of NPS pollution in North Carolina.

5. **The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.**

The state NPS program has historically relied heavily on the Basin and 305(b)/303(d) programs to help identify and prioritize waters impaired or threatened due to nonpoint sources. Through the process of updating the state's NPS Management Program, a collaborative approach has been utilized to develop a comprehensive protection and restoration prioritization framework and modeling tool, which is further discussed in Section I.C.5., Voluntary Restoration and Protection Framework.

6. **The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed.**

Measures used in North Carolina to control nonpoint sources of pollution have been reviewed and updated in this document. North Carolina's numerous programs and initiatives are discussed in Sections II and III. The programs are iterative in the sense that periodic revisions to the basin plans are designed to provide for reevaluation of the efficacy of current approaches and for potential programmatic changes to achieve NPS objectives. NPS programs cover a broad mix of largely voluntary approaches, with a few exceptions in the form of regulatory programs.

The state also has four large-scale, long-term watershed restoration projects underway in the form of comprehensive nutrient reduction strategies that cover both point and nonpoint sources. Each restoration strategy is unique in that it has distinct nutrient reduction goals to be met within specified timeframes, and is aimed at achieving nutrient related water quality standards in the

targeted waterbody. Each strategy is driven by a watershed-specific set of rules designed to achieve those goals, to be reevaluated if the goals are not met within the specified timeframe.

7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.

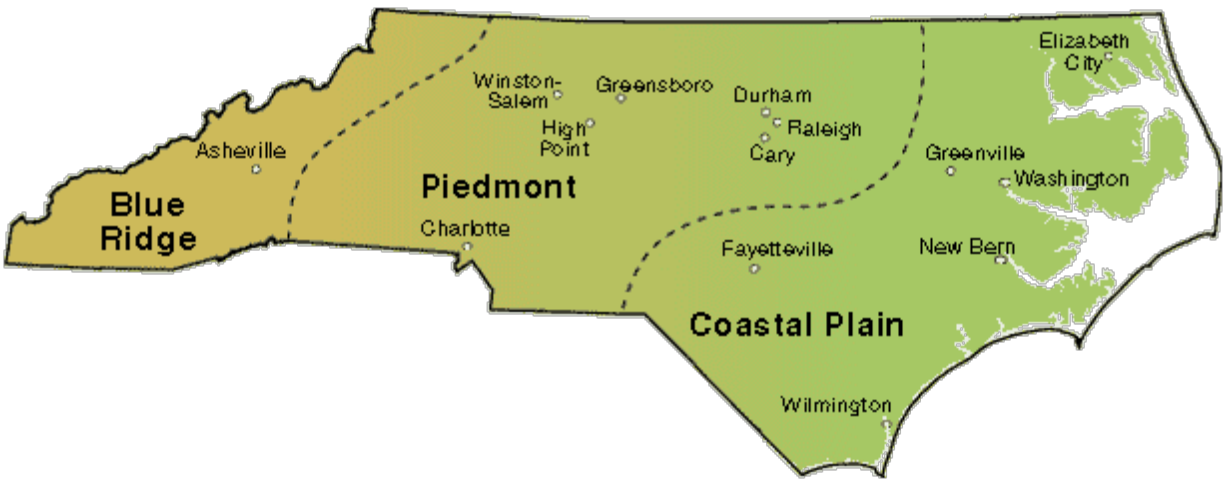
North Carolina has three full-time positions dedicated to overseeing contracts, monitoring project progress and expenditure of funds, and meeting EPA reporting deadlines. The state continues to work with EPA in utilizing the GRTS system as effectively as possible. Contracts awarded under the 319 program are typically for three years or less, and funds are paid out on a reimbursement basis. DWR employs EPA-approved programmatic and financial accounting systems to ensure that federal and state funds are effectively managed. Section II.D. provides more discussion about the administration and financial management of the 319 grant.

8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.

DWR makes continual efforts to review and improve its NPS management program through a variety of methods. It reports annually on programmatic achievements and actions to EPA through its annual 319 reports. North Carolina uses its combined 305(b) and 303(d) document to periodically update EPA on use-support status of both point and nonpoint source-impaired waters. The Basin planning program provides a vehicle for reviewing and evaluating the NPS program, taking into account both environmental and functional measures. And through development of this document, North Carolina will have updated its NPS program management plan for the third time, including the development of goals consistent with updated federal guidance and interest in setting measurable outcomes for restoration and protection.

Appendix B

State of North Carolina – Physiographic Regions



Appendix C

State of North Carolina – River Basins

North Carolina River Basins

