A SIMPLIFIED GUIDE TO WRITING WATERSHED RESTORATION PLANS IN NORTH CAROLINA

And accompanying checklist for developing 9-Element Plans or documenting the status of existing watershed restoration plans

Prepared by
the
NC Division of Water Resources
and
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A SIMPLIFIED GUIDE TO WRITING WATERSHED RESTORATION PLANS

SUMMARY

In North Carolina, Watershed Restoration Plans or Ecosystem Enhancement Program (EEP) Local Watershed Plans (LWPs) can be used to provide the framework to restore an impaired waterbody and can provide guidance for future protection of that waterbody. Plans should be specific to a watershed, such as a 10-, 12- or 14-digit Hydrologic Unit Code, and should identify waterbody pollutants. The plan should recommend management strategies based on the sources and stressors identified that when implemented will work to restore water quality.

In accordance with the US Environmental Protection Agency's (EPA) Watershed Program there are 9 key elements which must be present within any given plan in order to qualify for 319 Grant funding (319 refers to Section 319 of the Clean Water Act). Section 319 of the Clean Water Act allows US EPA to provide money to states for projects that address nonpoint source pollution. Funding can be used for the implementation of watershed restoration plans.

The following guidance and checklist have been created to assist grantees in the writing and implementation of 9 Element plans. In addition, this guidance may also be used to evaluate the extent to which an existing EEP or other LWP qualifies as a 9 Element plan. In some instances, multiple planning efforts or plans have been developed for the same watershed and these plans may address some or all of the Elements required. Therefore, applicants are encouraged to use multiple plans, if applicable, for documenting where the criteria for Elements has been developed.

For a more detailed description of 9 Element plans, please visit the "US EPA's Quick Guide to Developing Watershed Plans to Restore and Protect Our Waters".

The EPA handbook referenced above is comprehensive but can be overwhelming for grantees preparing their first watershed plan, or for groups with few resources. NCDWR hopes grantees will find this simplified version easier to follow.

Grantees are encouraged to contact Heather.b.Jennings@ncdenr.gov, or Paul.Clark@ncdenr.gov for further guidance or assistance at any stage of plan development or evaluation of existing plans. 9 Element watershed plans should be viewed as working documents and require regular updates to keep watershed protection moving in the right direction.

EPA'S 9 ELEMENTS FOR WATERSHED PLANS

1. An identification of the causes and sources or groups of sources that will need to be controlled to achieve pollutant load reductions estimated in the watershed
2. A description of the NPS management measures that will need to be implemented to achieve load reductions as well as to achieve other watershed goals identified in the watershed management plan (protection measures, future impacts in the watershed)
3. An estimate of pollutant load reductions expected for the management measures
4. An estimate of the amount of technical and financial assistance needed, associated cost or sources, and authorities that will be relied upon to implement the plan

5. An information and education component that will be used to enhance public understanding of the project
6. A schedule for implementing the nonpoint source management measures identified in the plan that is reasonably expeditious
7. A description or interim, measurable milestones for determining whether nonpoint source management measures or other management control actions are being implemented
8. A set of criteria that can be used to determine whether pollutant load reductions are being achieved over time and substantial progress is being made towards attaining water quality standards
9. A monitoring component to evaluate the effectiveness of the implementation efforts over time measured against the criteria established to measure achieved pollutant load reductions

WATERSHED MANAGEMENT PLAN TEMPLATE

In any plan, the overview should include descriptive information about the watershed including location, size, watershed map, a brief statement of impairment, land use within watershed, and background of activities in the watershed. NCDWR Basinwide Plans should be used as reference for current watershed conditions and watershed areas of need. These plans can be accessed at http://portal.ncdenr.org/web/wq/ps/bpu/basin. In addition, EEP River Basin Restoration Plans can also be used. These plans can be accessed at http://portal.ncdenr.org/web/eep/rbrps.

(1) IDENTIFICATION OF THE CAUSES AND SOURCES OR GROUPS OF SIMILAR SOURCES THAT WILL NEED TO BE CONTROLLED TO ACHIEVE THE LOAD REDUCTIONS ESTIMATED IN THE WATERSHED;

In any watershed assessment (either simple or complex), stressors (causes), and sources need to be identified. The watershed assessment generally has greater value if the stressors and sources can be identified with as specific location(s) as possible (i.e., subwatershed, stream, stream segment). This association could help guide management measures. Your plan should also identify any water quality impairments and numeric water quality or biologic goals where applicable.

If feasible, water quality data should be compiled before, during, and after implementation of the watershed management plan in order to gain full understanding of the watershed system. In this section, please describe the general watershed characteristics, stressors, and sources. You may find using the EPA Watershed Plan Builder Tool beneficial.

The following section defines stressors, sources, and indicators and explains them and their relationship to one another in the effort to assist with their accurate identification. Examples are provided in Table 1. Please keep in mind that the table provides a small amount of examples. You are encouraged to think creatively about indicators based on the level of resources available and your technical capability.

- Stressor (Cause): Physical, chemical, or biological agent within watershed that has potential to change or degrade watershed functions either by acting alone or in conjunction with other stressors. Stressors can generate additional stressors. Watershed function changes

can occur to such a degree so as to render the water incapable of supporting some of its functions or uses

- Source: Origin of stressor that releases or imposes stressor into waterbody.
- Indicator: Used to measure the impacts associated with stressors. Indicators are quantifiable or subjectively rankable measures that provide a means of evaluating the health of watershed functions.

Table 1– Example sources, stressors, and indicators and associated impacted watershed functions

Source	Potential Stressor	Indicator	Watershed Benefits
Increased impervious surface	• Increased peak flow • Eroded stream-banks • Aggregated/degraded streambed • Increased deposition • Reduced deep-water habitat	• Flow/cross-section measurements • Visual survey of stream-banks/channel	• Fish/benthic habitat or community rating • Stream stability/floodplain connection
Contaminants on impervious surface	• Increased contaminants (metals, nutrients, fecal coliform) • Increased sediment • Increased algae and bacteria • Lowered dissolved oxygen (DO)	• Metals, Chlorophyll-a, DO, bacteriological, TSS and turbidity measurements • Number of beach closings • Number of fish kills	• Fish/benthic habitat or community rating • Water supply • Recreation
Riparian vegetation removal	• Increased temperature • Lowered DO • Increased nutrients and sediment • Weakened/eroded stream-banks	• Temperature, DO, nutrient, TSS and turbidity measurements • Flow and cross section measurements • Visual survey of stream-banks/channel	• Fish/benthic habitat or community rating
Land disturbing activity (construction, agriculture, forestry, mining, etc.)	• Increased sediment in water column	• TSS, Turbidity • Number of violations • Number of cattle in stream	• Fish/benthic habitat or community rating • Water supply • Recreation
Fertilized acreage or animal operation too close to water	• Excessive nutrients, algae, and bacteria • Lowered DO	• Chlorophyll-a, DO, and Bacteriological Measurements • Number of cattle in stream	• Fish/benthic habitat or community rating • Water supply • Recreation

(2) A DESCRIPTION OF THE NPS MANAGEMENT MEASURES THAT WILL NEED TO BE IMPLEMENTED TO ACHIEVE LOAD REDUCTIONS AS WELL AS TO ACHIEVE OTHER WATERSHED GOALS IDENTIFIED IN THE WATERSHED BASED PLAN;

Pollutant loads may vary within land use types, so the plans should also identify the critical areas in which those measures will be needed to implement the plan. This description should be detailed enough to guide implementation activities and should include a map of priority areas.

The plan should describe management measures already in place, or measures that can be implemented, that will help contribute to reductions in pollutant loadings, with the end goal of achieving watershed health and water quality or biologic standards. Measures can be implemented for a variety of purposes, such as:

- Protecting water resources and downstream areas from pollution and flood risk;
- Conserving, protecting, and restoring priority habitat areas;
- Preserving and establishing aquatic and terrestrial buffers;
- Reducing the availability of pollutants;
- Slowing the transport and delivery of pollutants to the waterbody; and
- Treating the pollutant before or after it is delivered to the waterbody.

Recommended management measures should target the stressors and sources identified in Element 1. Table format is acceptable for the description of non-point source management measures and Table 2 provides examples of possible management measures with their associated stressors, example target parameters and indicators that could potentially be used to determine if load reductions are being achieved. This table is meant to provide an example is not an exhaustive list of potential management strategies.

Table 2–Example management measures, stressors, parameters and evaluation measures

Stressor	Management Measure	Parameters Targeted	Indicators to determine if load reductions being achieved
• Increased peak flow • Eroded stream-banks • Aggregated/degraded streambed • Increased deposition • Reduced deep-water habitat	Stormwater Wetlands	• Total Suspended Sediment	• Flow, cross section, and streambed composition measurements, TSS • Visual survey of stream-banks/channel
• Increased contaminants (metals, nutrients, fecal coliform) • Increased sediment • Increased algae and bacteria • Lowered dissolved oxygen (DO)	Stormwater Wetlands	• Nitrogen and Phosphorous • Fecal Coliform • Biologic Community	• Metals, Chlorophyll-a, DO, bacteriological, TSS and turbidity measurements • Number of beach closings • Number of fish kills • Visual survey for algae • NC BMP Manual (% N/P Reductions)
• Increased temperature • Lowered DO	Planting Riparian Buffers	• Temperature/DO • TSS	• Temperature, DO, nutrient, TSS and turbidity measurements

• Increased nutrients and sediment • Weakened/eroded stream-banks		• Nitrogen and Phosphorous	• Flow and cross section measurements • Visual survey for algae • Visual survey of stream-banks/channel • NC BMP Manual (% N/P Reductions)
• Increased sediment in water column	Planting Riparian Buffers	• TSS	• TSS, Turbidity Measurements • Number of violations
• Excessive nutrients, algae, and bacteria • Lowered DO	Fencing Out Cattle	• TSS • Nitrogen	• TSS, Turbidity Measurements • Number of cattle in stream

(3) AN ESTIMATE OF THE LOAD REDUCTIONS EXPECTED FOR THE MANAGEMENT MEASURES;

The plans should identify various management measures that may help to reduce pollutant loads and should estimate the load reductions expected as a result of implementation of the suggested management measures. For waters for which EPA has approved or established TMDLs (such as Swift Creek), the plan should aim to incorporate the TMDL.

When the pollutant of concern has been identified, the watershed plan should describe the relationship between water quality and the identified pollutant sources. This cause and effect relationship should be used to determine the types of loading reductions that may be expected as a result of implementing management strategies identified in Element 2. Table format for pollution reduction estimates is acceptable. Furthermore, if a TMDL has been completed for a waterbody within the watershed, the plan should aim to incorporate it into the watershed plan to the maximum extent possible, and the loading target should be stated in the plan. If the pollutants of concern have not been identified, the goal of the watershed management plan should be to determine the pollutant and embark on a method to reduce the pollutant watershed-wide.

Table 3–Potential load reductions from management activities

Management Measure	Parameters Targeted	Potential Load Reductions
Stormwater Wetlands	• Total Suspended Sediment	• 85% Total Suspended Solids
Stormwater Wetlands	• Nitrogen/Phosphorous • Fecal Coliform • Biological Community	• 40% Total Nitrogen/40% Total Phosphorous • Number of beach closing reduced by 10% • Include literature review for biological comm.
Riparian Buffers	• Temperature/DO • Total Suspended Sediment • Nitrogen/Phosphorous	• Include literature review for temperature/DO • 60% Total Suspended Solids • 30% Total Nitrogen/35% Total Phosphorous

There are several reference materials that can assist with an estimation of load reductions. The NC Department of Natural Resources (DENR) Stormwater BMP Manual details the nutrient reduction potential for practices listed in the manual. These numbers can be used to determine the load reduction possible by implementing management measures outlined in any given plan. In addition, the Chesapeake Bay Program has been regularly releasing new research on potential load reductions on alternative mitigation measures that may not be listed in the DENR Stormwater BMP Manual (such as stream restoration as a nutrient reduction technique). This type of research can also be used to generate potential load reductions for activities recommended in the plans that don't have an associated percent reduction in the DENR Stormwater BMP Manual or in any quantitate load reduction tool. Additional literature reviews will provide insight on less technical implementation measures such as education and outreach.

Examples of available tools include, but are not limited to, the following:

- DENR Stormwater BMP Manual
- LID & Storm-EZ
- Site Evaluation Tool
- ChesapeakeStat Tools; Chesapeake Bay jurisdictions implement BMPs to achieve the goals set forth in the2010 TMDL. Through the Protocol for Development, Review and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls, newer practices and technologies are considered and evaluated for inclusion in the Chesapeake Bay Program partnership modeling tools. Existing practices are re-evaluated to ensure they reflect the best available scientific data and information.
- Spreadsheet Tool for the Estimation of Pollutant Load (STEPL) The tool calculates amount of nitrogen, phosphorus, biological oxygen demand (BOD), and sediment generated from watershed based on land use, activities, precipitation, soils and BMPs implemented. Tool calculates existing watershed loads as well as load reductions estimates for BMPs installed throughout the watershed.
- Revised Universal Soil Loss Equation 2 (RUSLE2) RUSLE2 is a model that predicts average annual erosion, or soil loss.
- Long Term Hydrologic Impact Assessment (L-THIA) Model This online tool allows users to assess water quality impacts of land use changes. Watershed specific climate data are built into the model which estimates changes in recharge, runoff, and nonpoint source pollution resulting from past or proposed development.
- Export Coefficient Model Export coefficients for different land uses are multiplied by the specific land use acreage to obtain a nutrient load for that land use.
- Nutrients: North Carolina Agricultural Nutrient Assessment Tool (NCANAT) Contains both the Nitrogen Loss Estimation Worksheet (NLEW) and the Phosphorus Loss Assessment Tool (PLAT).

(4) AN ESTIMATE OF THE AMOUNT OF TECHNICAL AND FINANCIAL ASSISTANCE NEEDED, ASSOCIATED COSTS AND/OR SOURCES AND AUTHORITIES THAT WILL BE RELIED UPON, TO IMPLEMENT THE PLAN;

Addressing technical and financial needs, and developing a schedule for implementation and measurable milestones, provide structure to the entire watershed effort and can help watershed coordinators ensure that watershed efforts are progressing on track. These details will make it easier to a) identify problem areas and b) prepare future watershed planning efforts. The plan should aim to pair potential management strategies with cost ranges. Tables of management strategies and their associated costs are an acceptable format (see Table 4 for an example of the potential costs associated with the installation of a wetland) and tables that include ranges of costs (Table 5) for services may help take into account the variable nature of site specific projects and the fact that funding mechanisms can change quickly. However, if specific projects have already been identified, please include as specific of a cost calculation as possible.

Table 4– Average Cost Breakdown for Wetlands in the Piedmont (*from "Stormwater BMP Costs; Division of Soil & Water Conservation Community Conservation Assistance Program"*)

Item	Unit	Cost ($)
Excavation	sf	0.25
Hauling	sf	0.25
Grading	sf	0.36
Plants	sf	2
Plant Installation	sf	0.3
Outlet Structure[1]	Per	50
Total[2]=	per	*varies*

[1] Made o[1] Pressure treated lumber

[2] Total is dependent on BMP size

Table 5-Range of costs and technical assistance needed for management measures

Management Measure	Cost	Technical Assistance
Stormwater Wetland	$/ac	Consultant/local government to provide technical assistance/construction
Landowner Agreements	$/hr	Local conservation groups with experience with conservation agreements
Stormwater Permitting	$/hr	Local government and regulatory agencies
Fence Out Cattle	$/ft	Local SWCD, consultant, and/or local conservation group
Plant Riparian Vegetation	$/ft	Local SWCD, consultant, local conservation group, and/or volunteers
Water Quality Monitoring	$	Consultant, local government, certified lab, and/or volunteers

Costs and Funding Sources

The plan should also include a list of possible funding sources, and should identify potential partners and provide discussion on potential partnership frameworks including expanding on existing, or creating new, partnerships. NCDWR has a good resource called "Financial Assistance for Watershed Water Quality Grants, Cost Shares, and Loans" that can be used to identify funding mechanisms.

Financial assistance to support management measures may be available from a variety of sources including: federal, state, local grants or loans, utility fees, or private assistance. Possible sources of funding in North Carolina include, but are not limited to, the following:

- NC Nonpoint Source 319 Grant Program
- North Carolina Agricultural Cost Share Program
- North Carolina Clean Water Management Trust Fund
- North Carolina State Revolving Fund

Technical Assistance

Technical assistance is vital throughout the watershed management planning process. Technical design is important for feasible and practical project design, BMP engineering design, site location, and project oversight. Design details do not need to be included in a watershed plan to be considered as a 9 Element plan; however, efforts should be made to identify and reach out to the appropriate technical partners in the watershed during the development of the plan.

Technical assistance is offered by many agencies and organizations, including local conservation districts, state resource agencies, universities, and federal agencies. Resources for BMP technical assistance or watershed plan implementation include, but are not limited to, the following:

- NC Division of Water Quality Stormwater Manual
- NC Division of Soil and Water Conservation, Nonpoint Source Program
- NC State Water Quality Group
- NC Watershed Stewardship Network
- Center for Watershed Protection

(5) AN INFORMATION/EDUCATION COMPONENT THAT WILL BE USED TO ENHANCE PUBLIC UNDERSTANDING OF THE PROJECT;

The education and outreach component should be present throughout the entire watershed planning process. Identifying key stakeholders is important in the development and implementation of watershed plans, and marketing is a great way to draw interested stakeholders to the planning process. Education and outreach is expected to raise awareness which can lead to behavioral changes within the watershed. It is important to build and develop relationships among the stakeholders to ensure that they are kept informed of the project's progress and that they have an understanding of the processes involved with the restoration. In North Carolina, water resource groups, including EEP, have engaged in robust watershed planning efforts and have aimed to develop local watershed plans that meet the priorities of a broad set of stakeholders. Many of the existing plans in North Carolina were developed in cooperation with a diverse set of stakeholders, and these efforts should be documented as part of meeting the requirement for this element.

Each watershed plan should also aim to integrate local, state, and federal programs and staff into the watershed planning process such as the NCDWR Basinwide Planning, EEP, the NC Cooperative Extension Service, the NC Division of Soil and Water Conservation, local government staff, local watershed advocacy groups, and interested citizens. A list of possible programs, staff resources, and planning activities includes, but is not limited to:

- NCDWR Basinwide Planning, Basinwide Planners have direct knowledge of conditions of all watershed throughout North Carolina's 17 river basins (http://portal.ncdenr.org/web/wq/ps/bpu)
- NC Cooperative Extension Service, Extension staff have established relationships throughout the counties they serve (http://www.ces.ncsu.edu)
- NC Division of Soil and Water Conservation, staff have established relationships in their districts with farmers and producers (http://portal.ncdenr.org/web/swc/findyourdistrict)
- Initiate contact with local government boards, groups, non-profit organizations and land trusts, and municipalities http://www.nclm.org/resource-center/municipalities/

There are many different information and education options that can be used as part of a watershed effort. Some examples are provided below.

- Website design, maintenance
- Newspaper
- Brochure/Announcement – General Mailing(s)
- TV announcement
- Radio announcement
- Letters to Targeted Sectors
- Workshops/Meetings within watershed (e.g., civic centers, schools, churches, etc.)
- School Programs
- Tours of watershed/management measures
- Stream Cleanups/Volunteer Monitoring
- Shared meals (e.g., cook-outs, potlucks, etc.)

(6) A SCHEDULE FOR IMPLEMENTING THE NPS MANAGEMENT MEASURES IDENTIFIED IN THIS PLAN THAT IS REASONABLY EXPEDITIOUS;

The schedule should identify when established tasks should be implemented and accomplished, and should identify which agencies or organizations can possibly pursue implementation. Schedules should cover the entire watershed recovery process, and should set both short, mid and long term goals to be achieved. Prioritization of projects identified is also suitable for this Element. Tasks outlined in the implementation schedule should be specific yet broad enough to allow for changes in the future implementation should a different organization take over the implementation work. An example of a table that can help meet this element is provided below (Table 6).

Table 6. Example Implementation Schedule for Management Recommendations

	Activities	Schedule*
Objectives and Key Planning Considerations	Identify sediment sources	Short Term
	Identify potential load reductions for management activities	Short Term
	Identify potential BMPs	Short Term
	Identify monitoring indicators to track improvements	Short Term
	Identify landowners and/or key stakeholders	Short Term
Implementation	Provide landowner workshops	Medium/Long Term
	Fence cattle out of stream	Medium/Long Term
	Plant riparian buffers	Medium/Long Term
Monitoring	Track indicators established above (e.g. how many acres of riparian buffer planted/number or workshops and participants)	Ongoing/Long-Term
Maintenance	Identify parties responsible for maintaining management measures and set up rough schedule	Long-Term

*Short Term-1-2 years
Medium-2-5 years
Long Term-5+ years

(7) A DESCRIPTION OF INTERIM, MEASURABLE MILESTONES FOR DETERMINING WHETHER NPS MANAGEMENT MEASURES OR OTHER CONTROL ACTIONS ARE BEING IMPLEMENTED;

Measureable milestone tasks should be organized by priorities, set out in the goals, and accompanied by time estimates and potential implementing parties. Management plans should aim to be forward thinking, and alternatives may be listed for milestones that have not been achieved, and advantages included for completing tasks in advance of the established timeframe.

Milestones are measures of what needs to be accomplished over time to fully implement the watershed management plan. As such, milestones should be seen as goals to measure watershed improvement by and it may help to establish a set of short (1-2 years), mid-term (2-5 years), and long-term goals (5+ years) that can be used as measurable milestones to determine whether NPS management measures, or other control measures, are being implemented.

Plan developers should identify goals that are consistent with the management strategies recommended in previous elements, and should identify if the goals are short, mid-term, or long-term in nature. In addition, it would be advantageous to include potential funding sources and groups who may be likely to implement the strategies in the future.

Implementation of strategies recommended in any of the proposed plans should be considered as measureable milestones and achievements in terms of the local watershed planning process. Examples of potential measurable milestones include:

- Implementation of pre-project monitoring;

- Installation or implementation of projects (e.g. establishing a conservation easement, fencing out cattle, or planting buffers);
- Five years of meeting identified success criteria;
- Implementation of long-term monitoring programs;
- Demonstration of load reductions;
- The study of recommended plan strategies by local governments or regulatory agencies;
- Implementation of a portion of any strategy recommended in a plan; and
- Implementation of ordinance and programmatic changes that support, enforce, or enhance recommendations made in a plan.

(8) A SET OF CRITERIA THAT CAN BE USED TO DETERMINE WHETHER LOADING REDUCTIONS ARE BEING ACHIEVED OVERTIME AND SUBSTANTIAL PROGRESS IS BEING MADE TOWARDS ATTAINING WATER QUALITY STANDARDS;

Developers of the plan should identify criteria that can be used to determine whether or not loading reductions are being achieved and progress is being made towards improving water quality. Criteria can be both qualitative and quantitative and should be consistent with the management activities identified in the previous elements. In addition to selecting water quality indicators as criteria, aim to develop criteria that are more programmatically focused, and that are achievable given the technical and/or financial capability of potential implementers. For example, potential criteria may be an account of how many projects have been implemented, what types of projects they are, and where they are being implemented. The table below demonstrates how the indicators of the selected criteria are meeting the pollutant targets set in the management plan.

Table 7. Example criteria/indicators that can be used to determine if reductions are being achieved

Pollutant Issue	Target Criteria/Indicators
Sedimentation	Total suspended solids concentration
	Riparian buffers planted
	BMPs installed
	Number of violations (reduction)
Pathogens Bacteria	Bacteria counts
	Fecal measurements
	Number of shellfish or beach closings
	Number of cattle fenced out
Algae Eutrophication	Phosphorous load
	Incidence of algal blooms
	BMPs installed

(9) MONITORING COMPONENT TO EVALUATE THE EFFECTIVENESS OF THE IMPLEMENTATION EFFORTS OVER TIME MEASURED AGAINST THE CRITERIA ESTABLISHED UNDER ITEM 8.

The monitoring components should be designed to track progress in meeting load reduction goals and making progress towards improving water quality. Measureable progress is critical to ensuring continuing support of all watershed projects, and progress is best demonstrated when monitoring accurately reflects conditions relevant to the identified problems.

This monitoring component can include water quality monitoring, but can also be satisfied by including a plan for monitoring the criteria and indicators identified in Element 8. For example, the EEP has standards for monitoring success that includes tracking the number, type, and location of projects that have been implemented. Other ideas might include tracking beach closures or violations (if they have been identified as criteria in Element 8).

If intensive water quality monitoring is beyond the technical or financial capability of your group, consider engaging volunteers or youth in using field kits to monitor water quality trends, or taking photos to monitor the survival of riparian plantings. Developers of plans are encouraged to be creative in developing indicators and monitoring plans for each plan.

NORTH CAROLINA 9 ELEMENT CHECKLIST

Watershed				
Applicant Name				
Contact Person/Title				
Address				
Phone Number/Email				
Date of Submittal				
What plans will you be using to document the 9 Elements required for 319 funding? Please provide a full reference.	**Name of Plan(s)**	**Author/Developer**	**Year**	**Link/Location**
Once completed, please submit your checklist to Heather Jennings at heather.b.jennings@ncdenr.gov. DWR will conduct an internal review and notify you when the plan has been determined to meet all of the 9 Elements and is eligible for Section 319 Grant implementation funding. As they are approved, they will be listed on DWR's list of 319 watershed plans at http://portal.ncdenr.org/web/wq/ps/nps/319program/nc-watershed-plans. If you are developing a plan that you are hoping to submit to 319 in the same year, please contact Heather Jennings by email or by phone at (919) 807-6437. Your plan will need to be submitted for approval at least 45 days prior to the 319 Grant application due date.				

1. Identification of the Causes and Sources Checklist	Yes	No	Notes	Identify location of information (include link or attach plan and identify section and page number)
REQUIRED (This box(es) below must be checked Yes in order to be eligible as a 9 Element plan)				
Does the plan(s) identify stressors and sources in the watershed?				
OPTIONAL (Supplemental and/or supporting information)				
Was a GIS desktop analysis performed?				
Has existing water quality or biological data been reviewed? • Ambient water quality data • USGS data • Other?				
Does the plan(s) identify any water quality impairments in this watershed (303(d) list)?				
Has a field assessment been conducted? • CWP (Center for Watershed Protection) Method • EEP (Ecosystem Enhancement Program) Manual • Other?				
Does the plan indicate if a TMDL has been developed for this watershed?				
Does the plan(s) include a map that shows where stressors and sources are concentrated?				

2. Description of the NPS Management Measures Checklist	**Yes**	**No**	**Notes**	**Identify location of information (include link or attach plan and identify section and page number**
REQUIRED (This box(es) below must be checked Yes in order to be eligible as a 9 Element plan)				
Does the plan(s) identify management measures that address the stressors and sources identified in Element 1? (*note: prioritization of projects would be considered to meet this element*)				
3. Estimate of the load reductions expected for the management measures	**Yes**	**No**	Notes	**Identify location of information (include link or attach plan and identify section and page number**
REQUIRED (This box(es) below must be checked Yes in order to be eligible as a 9 Element plan)				
Have potential indicators been identified for each management measure to determine success?				
Has it been roughly quantified how much each management measure will reduce one or more parameters identified in Element 1?				
OPTIONAL (Supplemental and/or supporting information)				
Has a water quality, watershed or lake response model been developed for this watershed?				
4. Estimate of the technical and financial assistance needed	Yes	No	Notes	**Identify location of information (include link or attach plan and identify section and page number**
REQUIRED (This box(es) below must be checked Yes in order to be eligible as a 9 Element plan)				
Have the potential costs associated with management activities listed in the plan(s) been identified?				
Has the technical assistance that may be required to help with design, construction, implementation and monitoring of management strategies				

listed in the plan(s) been identified?				
OPTIONAL (Supplemental and/or supporting information)				
Have potential partners and funding sources to assist with implementation of the watershed plan(s) been identified and/or contacted?				
Have potential partners/funding sources to assist with maintenance and/or monitoring (following completion) been identified?				
5. Information/Education component	Yes	No	Notes	**Identify location of information (include link or attach plan and identify section and page number**
REQUIRED (This box(es) below must be checked Yes in order to be eligible as a 9 Element plan)				
Have a range of information and education options been identified in the watershed plan?				
OPTIONAL (Supplemental and/or supporting information)				
Have resource agencies that can be integrated into the watershed planning process been identified and/or contacted?				
6. Schedule for implementing management measures	Yes	No	Notes	**Identify location of information (include link or attach plan and identify section and page number**
REQUIRED (This box(es) below must be checked Yes in order to be eligible as a 9 Element plan)				
Have the tasks and activities that are related to the implementation and monitoring of management recommendations been identified?				
Has it been determined if these tasks and activities are short-term, medium, or long-term in nature (*note: prioritization of projects is acceptable for meeting this element*)?				

7. Description of interim, measurable milestones	Yes	No	Notes	**Identify location of information (include link or attach plan and identify section and page number**
REQUIRED (This box(es) below must be checked Yes in order to be eligible as a 9 Element plan)				
Have interim, measurable milestones (things that you can track) that can help determine if management measures (in Element 2) are being implemented been identified?				
8. Criteria that can be used to determine if loading reductions are being achieved	Yes	No	Notes	**Identify location of information (include link or attach plan and identify section and page number**
REQUIRED (This box(es) below must be checked Yes in order to be eligible as a 9 Element plan)				
Have criteria and/or indicators that can be used to determine if management strategies and activities listed in the plan(s) are being effective been identified?				
9. Monitoring	Yes	No	Notes	**Identify location of information (include link or attach plan and identify section and page number**
REQUIRED (This box(es) below must be checked Yes in order to be eligible as a 9 Element plan)				
Has a monitoring plan that includes each of the criteria and/or indicators identified in Element 8 been developed?				
OPTIONAL (Supplemental and/or supporting information)				
Are there plans for conducting water quality monitoring? • Intensive/On-going? • Field kits?				
If water quality monitoring is expected to be conducted, have you contacted NCDWR?				