Stormwater Management Program Report Narrative for NPDES Phase II

Regulated Public Entity:
Town of Zebulon, North Carolina

Date: March 2, 2011

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1. Storm Sewer System Information

1.1. Population Served

The permanent population is 5,545 (North Carolina State Demographics Office, July 1, 2009). The Town of Zebulon does not experience a seasonal population change.

1.2. Growth Rate

Per U.S. Census data, Zebulon's 1990 population was 3,173 and its 2000 population grew to 4,046. The growth rate for Zebulon from 1990 to 2000 was 2.75% per year annualized by dividing the percent change over the time period by ten.

1.3. Jurisdictional and MS4 Service Areas

The Town of Zebulon's jurisdictional area including its extra-territorial jurisdiction is 13.63 square miles. The Town's MS4 service area is equal to its jurisdictional area, which includes NCDOT rights-of-way.

1.4. MS4 Conveyance System

The Town of Zebulon currently owns and operates stormwater conveyances in the form of pipes and ditches. In some cases the stormwater conveyances empty into level spreaders which distribute the water as sheet flow over open land. Two detention systems are part of the Zebulon stormwater conveyance system including a dry detention basin at our community center and a sedimentation basin at the public works office.

1.5. Land Use Composition Estimates

Land Use Type	Area (sq. mi.)	Percentage
Commercial	1.64	12.0
Industrial	1.91	14.0
Mixed Use	0.35	2.6
Open Space	1.25	9.2
Residential	8.48	62.2
Total	13.63	100.0

*Information provided by Town of Zebulon Planning Department.

1.6. TMDL Identification

No known Total Maximum Daily Load (TMDL) allocations have been established for any bodies of water or receiving streams receiving discharges from the Town. In Section 2, there is a table of receiving streams which provides: 1) Stream Name, 2) Stream Segment, 3) Water Quality Classification, 4) Use Support Rating, 5) Water Quality Issues and 6) 303d list applicability.

2. Receiving Streams

Below is a table of the receiving streams in the Town of Zebulon's jurisdictional area.

Neuse River Basin: Receiving Streams in Zebulon's Jurisdictional Area					
Receiving Stream Name	**Stream Segment or Intersection**	**Water Quality Classification**	**Use Support Rating**	**Water Quality Issues**	**303(d) List**
Beaverdam Creek	27-86-2-3	C NSW	ST	NP	N/A
	Moving Downstream				
Unnamed Tributary (1) to Beaverdam Creek	Pippin Rd.	C NSW	N/A	N/A	N/A
Unnamed Tributary (2) to Beaverdam Creek	North Side, Between Pippin Rd. and Pearces Rd.	C NSW	N/A	N/A	N/A
Unnamed Tributary (3) to Beaverdam Creek	South Side, Watsona Dr.	C NSW	N/A	N/A	N/A
Unnamed Tributary (4) to Beaverdam Creek	Tippett Rd.	C NSW	N/A	N/A	N/A
Unnamed Tributary (5) to Beaverdam Creek	South Side, Downstream of Shepard School Rd.	C NSW	N/A	N/A	N/A
Unnamed Tributary (6) to Beaverdam Creek	South Side, Downstream of Shepard School Rd.	C NSW	N/A	N/A	N/A
Unnamed Tributary (7) to Beaverdam Creek	South Side, Downstream of Shepard School Rd.	C NSW	N/A	N/A	N/A
Little Creek (West Side)	27-86-2-4	C NSW	NS	NP	27-43-12
	Moving Downstream				
Unnamed Tributary (1) to Little Creek (West Side)	At US-64	C NSW	N/A	N/A	N/A
Unnamed Tributary (2) to Little Creek (West Side)	North Side, South of US-64	C NSW	N/A	N/A	N/A
Unnamed Tributary (3) to Little Creek (West Side)	North Side, South of NMC Dr.	C NSW	N/A	N/A	N/A
Unnamed Tributary (4) to Little Creek (West Side)	South Side, East of Horton St.	C NSW	N/A	N/A	N/A
Unnamed Tributary (5) to Little Creek (West Side)	South Side, North of Horton St.	C NSW	N/A	N/A	N/A
Unnamed Tributary (6) to Little Creek (West Side)	North Side, South of Old US-264	C NSW	N/A	N/A	N/A
Unnamed Tributary (7) to Little Creek (West Side)	South Side, North of Horton St.	C NSW	N/A	N/A	N/A
Unnamed Tributary (8) to Little Creek (West Side)	North Side, South of Old US-264	C NSW	N/A	N/A	N/A
Unnamed Tributary (9) to Little Creek (West Side)	North Side, South of Old US-265	C NSW	N/A	N/A	N/A
Unnamed Tributary (10) to Little Creek (West Side)	North Side, South of Old US-266	C NSW	N/A	N/A	N/A
Unnamed Tributary (11) to Little Creek (West Side)	North Side, South of Old US-267	C NSW	N/A	N/A	N/A
Unnamed Tributary (12) to Little Creek (West Side)	South Side, NC-39	C NSW	N/A	N/A	N/A
Unnamed Tributary (13) to Little Creek (West Side)	North Side, Downstream of NC-39	C NSW	N/A	N/A	N/A
Moccasin Creek (Bunn Lake)	27-86-2	C NSW	ST	NP	N/A
Unnamed Tributary to Moccasin Creek (Bunn Lake)	East of Old Bunn Rd. and NC-39	C NSW	N/A	N/A	N/A
Little River (Tarpleys Pond)	27-57-(8.5)	WS-V NSW	ST	NP	N/A
	Moving Downstream				
Unnamed Tributary (1) to Little River (Tarpleys Pond)	East Side, North of US-64	WS-V NSW	N/A	N/A	N/A
Unnamed Tributary (2) to Little River (Tarpleys Pond)	East Side, Green Pace Rd.	WS-V NSW	N/A	N/A	N/A
Unnamed Tributary (3) to Little River (Tarpleys Pond)	East Side, South of Riverview Dr.	WS-V NSW	N/A	N/A	N/A
Unnamed Tributary (4) to Little River (Tarpleys Pond)	East Side, South of Southland Dr.	WS-V NSW	N/A	N/A	N/A
Unnamed Tributary (5) to Little River (Tarpleys Pond)	East Side, West of Mack Todd Rd.	WS-V NSW	N/A	N/A	N/A
Unnamed Tributary (6) to Little River (Tarpleys Pond)	East Side, East of Mack Todd Rd.	WS-V NSW	N/A	N/A	N/A
Unnamed Tributary (7) to Little River (Tarpleys Pond)	East Side, Moss Rd.	WS-V NSW	N/A	N/A	N/A
Little River	27-57-(7.5)	WS-II; HQW, NSW, CA	ST	NP	N/A

3. Existing Water Quality Programs

3.1. Local Programs

The following are existing water quality programs that have been implemented within the Town of Zebulon's MS4 service area.

3.1.1. Stormwater Ordinance. On January 4, 2010 the Town of Zebulon adopted a Stormwater Ordinance modeled after the Wake County Stormwater Ordinance; therefore, requirements for the reduction of Nitrogen and attenuation of the 1-yr 24-hr storm are included pursuant to the Neuse Nutrient Sensitive Waters (NSW) Urban Stormwater Rule as Wake County is covered under the Rule. Through an interlocal agreement, Wake County enforces the Town's ordinance.

3.1.2. Erosion and Sedimentation Control Ordinance. Since 1985, Zebulon has referenced Wake County's Erosion and Sedimentation Control ordinance as

their own. Wake County enforces Zebulon's Erosion and Sedimentation Control Ordinance through an interlocal agreement.

3.2. State Programs

- The Town of Zebulon is required by the State to adhere to Neuse River Riparian Area Protection and Maintenance Rule (15A NCAC 2B .0233) due to it being located within the Neuse River Basin.

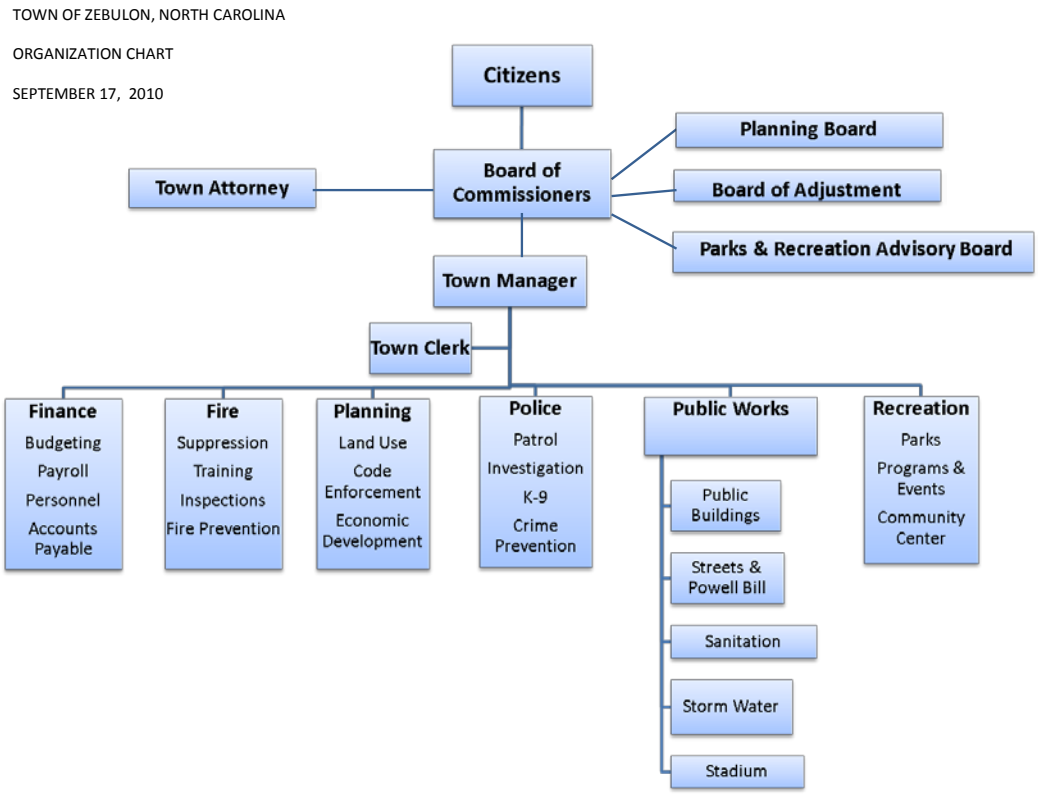
- The Town of Zebulon lies alongside the Little River Watershed, which is classified as a WS-II watershed by the State of North Carolina. The Town of Zebulon, Wake County, and other municipalities participate in the Little River Reservoir Water Supply Watershed Protection Interlocal Agreement to control development density (See Appendix C, Maps A & B).

4. Permitting Information

4.1. Responsible Party Contact List

Measure	Contact Name/Position	Phone	Fax	e-mail
1. Public Education and Outreach	Chris D. Ray, Zebulon Public Works Director	919-269-5285	919-269-2617	cray@TownofZebulon.org
2. Public Involvement and Participation	Chris D. Ray, Zebulon Public Works Director	919-269-5285	919-269-2617	cray@TownofZebulon.org
3. Illicit Discharge Detection and Elimination	Britt Stoddard, Wake County Stormwater Administrator	919-856-2641	919-743-4772	bstoddard@wakegov.com
4. Construction Site Stormwater Runoff Control	Britt Stoddard, Wake County Stormwater Administrator	919-856-2641	919-743-4772	bstoddard@wakegov.com
5. Post Construction Stormwater Management	Britt Stoddard, Wake County Stormwater Administrator	919-856-2641	919-743-4772	bstoddard@wakegov.com
6. Pollution Prevention/Good Housekeeping	Chris D. Ray, Zebulon Public Works Director	919-269-5285	919-269-2617	cray@TownofZebulon.org

4.2. Organizational Chart



4.3. Signing Official

Richard D. Hardin, Town Manager is the authorized signing official of the NPDES Phase II Stormwater Permit Application. The manager oversees all personnel responsible for implementing the program. As the Town Manager, Mr. Hardin is the principle executive officer of the municipality.

4.4. Duly Authorized Representative

The Town of Zebulon will not be delegating permit application responsibility to someone other than the signing official.

5. Co-Permitting Information

The Town of Zebulon will not be co-permitting with another entity in order to fulfill the requirements of this permit.

6. Reliance on Another Government Entity

6.1. Name of the Entity: Wake County

6.2. Element to be Implemented

Wake County is currently administering and enforcing the Town of Zebulon's Erosion and Sedimentation Control and Stormwater Ordinances. As a part of the NPDES Phase II Stormwater Permit Requirements, Wake County will be responsible for enforcement of the following program areas: Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control, and Post-Construction Stormwater Management in New Development and Redevelopment. If illicit discharge is reported or detected during maintenance operations, Town of Zebulon will report the violation to Wake County for enforcement of the ordinances.

6.3. Contact Information for the Responsible Party

Mr. Britt Stoddard
Wake County Stormwater Administrator
P.O. Box 550
Raleigh, NC 27602
919-856-2641

6.4. Legal Agreement

The Town of Zebulon and Wake County have an interlocal agreement which provides the legal mechanism for Wake County to both administer and enforce the Town of Zebulon's Erosion and Sedimentation Control and Stormwater Ordinances. A copy of the interlocal agreement is included in Appendix A.

7. Stormwater Management Program

7.1. Public Education and Outreach on Stormwater Impacts

The Town of Zebulon will implement a public education program to distribute educational materials to the community and/or conduct equivalent outreach activities

about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollution in stormwater runoff.

7.1.1. BMP Summary Table. See Appendix B.

7.1.2. Target Audience. Our public education program will target homeowners, students and business owners because Zebulon is primarily a residential community with supporting commercial businesses. The Town believes if you can educate the students, the message will be taken home to the parents.

7.1.3. Target Pollutant Sources. Given the fact that sediment and nitrogen are the predominant pollutants in the Neuse River Basin, these are the pollutants which we will concentrate on in our public education and outreach efforts. The public education program will address household hazardous waste, pet waste, lawn and gardening activities, vehicle washing and illicit discharges.

7.1.4. Outreach Program. The stormwater education outreach program which the Town plans to implement will be developed to address water resources degradation in the Town of Zebulon jurisdictional area. The Town will partner with Wake County, the Wake County Center of the NC Cooperative Extension, Clean Water Education Partnership and the Wake County Department of Environmental Services (DES) to deliver a targeted public education program promoting environmental stewardship to conserve natural resources and to foster an environmental ethic among citizens of Zebulon through environmental education and science-based information. The education objectives planned to be implemented include:

- Printing fliers on examples of how home and business owners impact water quality and include them in utilities billing annually.

- Adding a page to the Town website which provides links to the Wake County Stormwater website, NC Cooperative Extension website for Phase II Stormwater and the website for the Clean Water Education Partnership. The website will include the contact information for the Town of Zebulon Stormwater Administrator for the Phase II Program for answering specific questions and for notifying the Town of potential illicit discharges and ordinance violations. It will also direct after hours emergency calls to Zebulon Public Works' after-hours emergency number.

- Placing brochures in government facilities promoting best management practices to handle household hazardous waste and pet waste using resources from the NCDENR Stormwater and Runoff Pollution Tool Kit and NC Cooperative Extension.

- Holding presentations annually at schools in the jurisdiction to educate students on stormwater and its impact on water quality.

- Including articles in our periodic newsletter to residents and businesses promoting best management practices for vehicle washing, handling pet

waste, lawn and gardening activities, and proper disposal of household hazardous waste.

- Running television announcements on Eastern Wake TV giving tips on how to be an effective steward of the environment.

- Setting up a stormwater information booth at community-sponsored festivals to inform citizens about how they can contribute to improving water quality in the area.

The Town of Zebulon will join the Clean Water Education Partnership giving the Town access to the education opportunities provided by them. The Town will also appoint a representative to attend partnership meetings and bring back ideas on how to further educate our citizens.

All of the above mentioned activities will be implemented on the schedule shown in Appendix B and will be continued throughout the extent of this permit. It is anticipated that each of these activities will contribute to the Town's ultimate goal of implementing a successful education and outreach program to inform the public about the benefits of improving water quality in their community.

7.1.5. Evaluation.

Informational Website:
- Record data from calls to the Zebulon Stormwater Administrator and act on suggestions for improvement.
- Record the number of "hits" on the stormwater website.

Educational Fliers, Newsletters and Brochures:
- Record number of educational materials created and distributed through billing to homeowners and businesses.
- Record the number of brochures distributed.
- Record number of newsletters sent out with stormwater information in them.

Using the Media:
- Record the number of announcements made on TV.
- Record the number of stormwater related articles/advertisements published.

Classroom Education and Information Booth:
- Record number of educational materials distributed.
- Record number of schools, classes and students that participate in Town sponsored presentations or activities.
- Try to record the number of visitors to the Zebulon Night Out information booth.

7.2. Public Involvement and Participation

To meet the minimum requirement for public involvement, this permit will be available for public review on our website. Additionally, there will be an advertised Public Meeting at a regularly scheduled Town Meeting for the purposes of taking public comments on the proposed stormwater program.

An outreach program will be developed within the first two years of the permit in order to reach out and engage all economic and ethnic groups and provide opportunities for the public to participate in program development and implementation as well as forming a citizen's volunteer action group for participating in stormwater improvement activities.

7.2.1. BMP Summary Table. See Appendix B.

7.2.2. Target Audience. The Town of Zebulon's target audiences for its public involvement program will actively involve all potentially affected stakeholder groups, including, but not limited to commercial and industrial businesses, trade organizations, environmental groups, homeowner associations, developers/builders and educational organizations.

7.2.3. Participation Program. The Town of Zebulon will provide activities for public participation in stormwater management and opportunities for public involvement/review of the stormwater program, including the following:

Activities/Public Participation:

- Storm drain stenciling of storm drains within the jurisdiction.
- Establish an ongoing advisory committee (stakeholder group)

Involvement/public Opinion:

- Hold public hearings on stormwater issues including approval of the Phase II Permit Application and ordinance revisions (if needed).
- Facilitate public meetings as needed on specific stormwater related topics.
- Survey citizens as needed for research and targeted education programs.

The core of the public involvement program will be volunteer groups participating in a storm drain stenciling program. This program will begin during the first year of implementation with an annual goal of stenciling 10% of all drains in the system. The Town's website will include postings of volunteer opportunities for storm drain stenciling, provide information on how to join the Stormwater Advisory Committee and provide the schedule for Public Meetings where stormwater issues will be discussed.

7.2.4. Evaluation

Storm Drain Stenciling:

- The number or proportion of drains stenciled.
- The number of stenciling volunteers.

Public Meetings:

- The number of meetings held.
- The number of attendees.
- Actions taken as a result of stakeholder meetings.
- Number of write ups detailing stormwater related discussions during public meetings.
- The number of stakeholder groups represented.

7.3. Illicit Discharge Detection and Elimination

The Town of Zebulon will adopt, implement and enforce a program to detect and eliminate illicit discharges.

7.3.1. BMP Summary Table. See Appendix B.

7.3.2. Storm Sewer System Map. The Town of Zebulon is currently in the process of mapping its stormwater infrastructure including outfalls, discharge points and BMPs. This work will be completed by June 30, 2011. Mapping of stormwater infrastructure will be updated as more infrastructure is added to the system.

7.3.3. Regulatory Mechanism. The Town of Zebulon already has legal authority to investigate illicit discharges as established in its stormwater ordinance. Wake County is now and will continue enforcing Zebulon's illicit discharge ordinance, although the Town will assist the County with inspecting, identifying, and correcting illicit discharges. The Town will have its stormwater ordinance reviewed by the Town Attorney, and if additional authority is needed, it will be established through ordinance amendments with collaboration with Wake County.

7.3.4. Enforcement. Town staff will be cross-trained to recognize, report, investigate and correct illegal discharges. Staff to be trained includes the maintenance staff of the Public Works Department. Initially, the current staff of the Town will be responsible for identifying illicit discharges. If the need is found for further personnel to investigate illicit discharges and administer the program, Wake County will be contacted for support.

7.3.5. Detection and Elimination.

7.3.5.1. Locating Problem Areas. Illicit discharges and connections to the Town's storm sewer system will be identified using the following techniques:

- Water sampling data, water quality information and/or location of the oldest sanitary sewer lines in the Town will be reviewed to identify potential problem areas and to prioritize the need for visual screening.
- Town employees will be trained to conduct proper inspections, screen, and test outfalls. All members of the maintenance staff

for the Public Works Department will be trained annually on how to identify illicit discharges during their daily operations.

- Visual screening of 10% of the outfalls in the storm sewer system that are under the control of the Town will be completed annually.
- Dry weather field screening of outfalls will be conducted as needed. Dry weather is defined as periods where there has not been precipitation or snow melt for 2 days. The location screened will be marked on the Town's stormwater infrastructure map.
- Locations identified by visual screening, complaints, and water quality data as requiring follow up will be prioritized and revisited during dry weather periods. Outfalls potentially discharging polluting material during dry weather periods will be tested based on water quality problems found in the stream, screening tests, odor, color and/or visual observations. Assistance in sample collection and testing will be requested of NCDWQ when a significantly unusual pollutant or complex problem is found.
- The Town of Zebulon will establish a complaint system to log complaints, assign them for follow-up and document results of investigations. A procedure to coordinate complaint response and follow up will be developed in cooperation with Wake County.

7.3.5.2. Finding the Source. The location and prioritization of the sources that are illicitly discharging polluting materials into receiving streams in the jurisdiction will be as follows:

- Water quality problems that have been identified from past sampling and inspections by the Town or NCDWQ will be reviewed. A plan will be developed for further investigation and correction.
- Complaints related to the discharge of polluting materials will be investigated as they are reported. Staff resources will be allocated as needed in order to respond in a timely manner. A system will be developed for follow up distribution of public education materials regarding improper disposal into storm sewer system for those associated with the illicit discharges.
- Water sampling and testing will be conducted as necessary to locate the source of the illicit discharge.
- Suspicious discharges will be prioritized based on the estimate of their impact on the watershed.
- Investigation of suspicious discharges will be made by visual inspection and/or testing of discharges within the storm drainage system upstream and downstream of the suspicious discharge.

Other options that will be considered in locating illicit connections or discharges include televising the storm sewer or dye testing premises in the area where there is a discharge. Notification will be placed on the doors of residents and businesses alerting them to the problem that is under investigation and to solicit their assistance in finding the source. A building-by-building evaluation may also be used in areas where a problem has been isolated to a small area.

7.3.5.3. Removing/Correcting Illicit Connections.

- The Town of Zebulon will include the location of outfalls to waters of the State on their stormwater infrastructure map. Suspicious discharges identified from available water sampling data, complaints and visual inspections will then be prioritized for sampling. Investigations will be made to find the sources of pollutants. Those responsible for discharges will be notified for correction and followed up with to assure correction is satisfactorily completed.
- Existing ordinances will be used to address illicit discharges and connections. Assistance may be requested from NCDWQ to obtain correction. If current ordinances are not adequate to result in correction of illicit discharges, amendments to the ordinance will be prepared. If an ordinance change is needed to correct illicit discharges, the changes will be presented to the Town Commissioners within 9 months after it is determined that existing ordinances are inadequate to require correction of the illicit discharge.
- Per Interlocal Agreement, Wake County will be in charge of enforcing the illicit discharge ordinance for the Town of Zebulon. The Town will assist the County by completing the annual visual inspections, identifying illicit discharges, and taking appropriate actions to have illicit discharges removed.

7.3.5.4. Non-Stormwater Discharges. The following categories of non-stormwater discharges or flows (i.e., illicit discharges) will only be investigated if found in an area that has been identified as having polluted water:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharges from potable water sources

- Foundation drains
- Air conditioning condensation
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car washing
- Flows from riparian habitats and wetlands
- De-chlorinated swimming pool discharges
- Street wash water

7.3.6. General Prevention.

- Through coordination with Wake County, the Town of Zebulon will monitor the installation of all new storm and sanitary sewers. Before the County issues a certificate of occupancy for new facilities, the Town will require a certification that no illicit connections will be made by the new facility owner.
- The Town of Zebulon will send formal notification to the NCDWQ of new proposed industrial facilities for follow-up to ensure compliance with the NPDES program.

7.3.7. Outreach Program. The Town of Zebulon will be providing Stormwater Public Education Programs for residents, businesses and schools. These programs will include specific information about illicit discharges and connections. Discharges from potable water sources, irrigation water, lawn watering and individual residential car washing will be managed via the public education program to reduce the number of potential illicit discharges.

7.3.8. Decision Process. The stormwater Illicit Discharge Detection and Elimination Program will emphasize prevention of illegal discharges through regulation and education. The ordinance will be enforced as needed, but the emphasis when a discharge is found will be education and elimination of the discharge. The inventory of previous complaints and location of old sanitary sewer lines will be the initial priority areas for visual inspection. Efforts will be made at cross-training Town staff in recognition of illegal discharges.

7.3.9. Evaluation. All activities related to this Illicit Discharge Elimination Program will be tracked and documented by the Town of Zebulon.

In years 1 to 5 following the issuance of the NPDES stormwater permit, the following will be accomplished on an annual basis:

- A summary report detailing complaints received, investigated and the results of the investigation will be prepared.
- Suspicious outfalls that had a dry weather flow during visual screening will be tested for suspected pollutants.
- A summary report of premises found to be improperly connected to the storm sewer or sanitary sewer will be prepared.
- A list of outfalls, manholes tested (as appropriate), and test results will be prepared.

7.4. Construction Site Stormwater Runoff Control

Per Interlocal Agreement, The Town of Zebulon will rely on the Wake County Erosion and Sedimentation Control Program to meet the requirements of this component of the Phase II Program. The Town recognizes that sedimentation is a major pollutant of stormwater in North Carolina and has designated it as one of the primary pollutants for the public education programs and local initiatives for water quality along our major streams.

The Town maintains a strong working relationship with Wake County Erosion and Sedimentation Control Officials and keeps them informed of potential violations on building sites.

See Appendix B for BMP Summary Table.

7.5. Post-Construction Stormwater Management in New Development and Redevelopment

The Town of Zebulon currently has a stormwater ordinance in place which is generally consistent with Wake County's stormwater ordinance. Wake County's stormwater program complies with the State's Watershed Water Supply Protection requirements, the Neuse NSW requirements for urban stormwater and the State's Phase II rules for post-construction. The Town of Zebulon's current stormwater program addresses stormwater runoff from new development and re-development projects that disturb an area greater than or equal to 20,000 square feet, which is more restrictive than Wake County's stormwater program. All subject projects must control peak flow and meet designated nitrogen targets.

7.5.1. Regulatory Mechanism. The Town's stormwater ordinance addresses post-construction runoff from new developments and redevelopments. Below is a general outline of the Town's requirements which are generally more stringent than minimum requirements of the NPDES Phase II program.

General Development and Redevelopment Standards:

- No development within 50 feet of any perennial or intermittent stream.
- No development within the FEMA designated 100-year floodplain.
- No development shall contribute a nitrogen load of more than 3.6 pounds per acre per year.

Low Density Projects Only (between 15 and 24% built upon area):

- No net increase in the peak flow leaving the site from pre-development conditions for the 1-year, 24-hour storm.
- Drawdown time for all flow reduction structural BMPs shall be between 48 and 120 hours.

High Density Projects Only (more than 24% built upon area):

- Control and treat runoff from the first inch of rain with a drawdown time of between 48 and 120 hours.
- All structural stormwater treatment systems shall provide a Total Suspended Solids (TSS) removal of 85%.
- No net increase in the peak flow leaving the site from the pre-development conditions for the 1-year, 24-hour storm.
- Runoff volume drawdown time shall be between 48 and 120 hours.

The Town has an interlocal agreement with Wake County to administer and enforce the Town's stormwater ordinance.

7.5.2. BMP Operation and Maintenance. Zebulon's program includes an operation and maintenance component that ensures the adequate long-term operation of the structural BMPs required by the program. As a part of the interlocal agreement, Wake County is responsible for annually reviewing and approving maintenance inspection reports of all structural BMPs from appropriate, qualified licensed design professionals and those certified by the NC Cooperative Extension Service for stormwater BMP inspection and maintenance. Property owners must submit documentation to Wake County for review. Wake County staff will communicate directly with the BMP owners to facilitate needed maintenance or corrective actions.

7.5.3. On-Site Wastewater Systems. There are some existing on-site septic systems located within Zebulon's jurisdiction. As a part of the minimum control measures for this permit, Zebulon will incorporate all of the known locations of on-site septic systems in its jurisdiction from the Wake County Environmental Services database into its stormwater mapping to use for prioritizing visual inspections of its MS4. On-site septic systems found to be experiencing problems or failing, will be referred to the Wake County Environmental Services Department. If public sanitary sewers are not available, short and long term solutions for sewage disposal must then be devised. All new construction is required to connect to municipal sewer. The entire municipal sewer in the Town of Zebulon's jurisdictional area is owned and operated by the City of Raleigh. If overflows of sanitary sewer manholes or cross connections to a storm sewer are detected, the City of Raleigh will be notified so the problem can be corrected.

7.5.4. Nutrient Sensitive Waters. The Town of Zebulon service area drains to Nutrient Sensitive Waters in the Neuse River Basin. Although not required by the State of North Carolina, the Town of Zebulon's stormwater ordinance limits new development and redevelopment contribution to nitrogen export

load to a maximum of 3.6 pounds per acre per year, which shall fulfill the Phase II requirement for reducing nutrient loading. Additionally, the Town is subject to 15A NCAC 02B.0233 Neuse River Basin: Nutrient Sensitive Waters Management Strategy: Protection and Maintenance of Existing Riparian Buffers which establishes 50 foot wide buffers directly adjacent to surface waters.

7.5.5. Comprehensive Watershed Protection Plans. The Town of Zebulon has an interlocal agreement with other local municipalities and Wake County to protect water supply watersheds in the area. (See Appendix C, Maps A&B)

7.5.6. BMP Summary Table. See Appendix B.

7.5.7. Non-Structural BMPs. The Town of Zebulon attempts to direct high density growth to identified areas, protects sensitive areas such as wetlands and riparian areas, maintains and/or increases open space, provides buffers along sensitive water bodies, and minimizes disturbance of soils and vegetation through adopted land use plans and by policy or ordinance.

- Land Use Plans – Growth is directed to specific areas through land use plans that are developed with public input and adopted by Zebulon. These plans provide guidance for the development community.
- Minimize soil and vegetation loss through the erosion and sedimentation control program.
- Local Riparian Buffer requirements as provided in the stormwater ordinance
- Open space program
- Tree preservation program

7.5.8. Structural BMPs. The Town of Zebulon allows the use of structural BMPs as approved by the State of North Carolina in accordance with the BMP manual.

7.5.8.1. Wet ponds and extended detention outlet structures are approved structural BMPs for stormwater use.

7.5.8.2. Filtration practices such as grassed swales, bioretention cells, sand filters and filter strips are approved structural BMPs for stormwater treatment.

7.5.8.3. Infiltration practices such as infiltration basins and infiltration trenches are not commonly used due to the predominance of clay soils in Wake County; however they have been used where appropriate soils exist.

7.5.9. Regulatory Mechanism. Post-construction runoff is addressed through local ordinance.

7.5.10. Operation and Maintenance. Long-term operation and maintenance (O&M) of on-site BMPs is ensured through legal documentation filed with the Wake County Register of Deeds and through financial bonds or sureties, which must

be posted with Wake County for each project. These sureties usually originate with the developer and financial responsibilities are passed on to the landowners through the homeowner's association in residential developments. Given our low density of residential development, we have not encountered a subdivision, which had to provide BMPs, bonds or sureties to date. For commercial developments we generally deal only with the landowner. Maintenance manuals and inspection manuals are also required.

7.5.11. Decision Process. The Town of Zebulon's current programs and ordinances appear to meet or exceed the post-construction stormwater management requirements of NPDES Phase II. The Town of Zebulon's stormwater ordinance is consistent with Wake County's stormwater ordinance. Wake County will be administering and enforcing the Town's post-construction stormwater management requirements. The Town will amend its ordinance as necessary to be consistent with the County's requirements and to satisfy Phase II requirements.

7.5.12. Evaluation. Wake County will maintain data for each construction project, which includes pre- and post-loading conditions. An annual report will be submitted to the Division of Water Quality each year by Wake County summarizing new development including nitrogen loading.

7.6. Pollution Prevention/Good Housekeeping for Municipal Operations

The Town of Zebulon will develop and implement an operations and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations including any Town owned or operated portion of the stormwater conveyance system.

Using training materials that are available from EPA, other federal, state and non-profit organizations, Zebulon will train employees to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance.

7.6.1. BMP Summary Table. See Appendix B.

7.6.2. Affected Operations. The following Town of Zebulon facilities and operations are impacted by this operation and maintenance program. These programs will be evaluated and revised to ensure that the programs minimize pollutant loading. Facilities will be inspected to identify and eliminate exposure to stormwater. Corrective actions will be taken or BMPs put in place as needed.

Facilities/operations/new construction and land disturbances:

- Parks and open space maintenance
- Buildings and grounds maintenance
- Fleet maintenance and vehicle washing
- Stormwater system maintenance

- New construction and land disturbances
- Parking lot maintenance
- Yard waste processing facility
- Materials and chemicals storage
- Street sweeping
- Bulk fueling station (has an Industrial Stormwater Permit)

7.6.3. Training. Employee training programs will be developed for preventing and reducing stormwater pollution from activities including:

- Park and open space maintenance
- Buildings and grounds maintenance
- Fleet maintenance and vehicle washing
- Materials and chemicals handling
- Stormwater system maintenance
- Solid waste collection procedures
- New construction and land disturbances
- Parking lot maintenance practices
- Yard waste collection and processing practices
- Street sweeping
- Bulk fueling operation

7.6.4. Maintenance and Inspection. Maintenance of stormwater structures within the road right-of-way (ROW) is conducted as needed by NCDOT for State maintained roadways. There is no regular inspection program. Problems are found usually due to flooding problems and/or citizen complaints. The Town regularly maintains streets and other facilities within the MS4 through regularly scheduled street sweeping and maintenance. The Town will establish a goal of inspecting and cleaning 10% of infrastructure annually. Condition of devices will be recorded and deficiencies will be addressed in a timely manner. Illicit discharge inspections and stenciling may be completed at the same time.

7.6.5. Vehicle Operations. Zebulon will review its personally owned and maintained facilities with the intent of implementing controls for reducing or eliminating the discharge of pollutants from Town owned and maintained parking lots, maintenance and storage yards, yard waste processing centers, bulk fueling station and fleet or maintenance shops with outdoor storage areas. The majority of our fleet and maintenance facilities are already covered to prevent exposure to rainfall. All vehicle washing activities will be reviewed as to their effects on water quality.

7.6.6. Waste Disposal.

MS4 Conveyance System and Municipal Operations

All leaves and yard debris removed from Zebulon owned and maintained MS4s and municipal operations is properly collected and disposed of at the Town's yard waste facility. All sediment collected from storm sewer cleaning is also taken to the yard waste facility and placed in an erosion protected area to be dried and subsequently added to the Town's soil stock pile. Litter removed from storm sewer cleaning activities is disposed of in the litter collection area at the yard waste facility and subsequently disposed of in the County landfill. All water collected during vacuuming of the storm sewer system is filtered to collect sediment and returned back to the storm sewer.

Yard Waste Processing Facility

The yard waste facility is outdoors but is completely fenced to prevent leaves and debris from being blown into a nearby stream. A double silt fence and check dams are in place to prevent sediment transfer from the processing area and are inspected and maintained on a regular schedule. The site has a maintained minimum 60' grassy buffer to control stormwater runoff of the facility. Yard waste is collected in the Town of Zebulon year round. The grinding of yard waste into mulch is performed bi-annually to minimize the amount of collected yard waste at the facility.

Street/ Parking Lot Sweeping

Street/parking lot sweeping is performed throughout the year in the Town. Main thoroughfares (Gannon Avenue, Arendell Avenue, Shepard School) will be swept 26 times per year. Collector and all residential streets will be swept at least once month. The downtown business district is swept weekly. Parking lots located at the Zebulon Municipal Complex, Zebulon Community Center and Zebulon Public Works are swept weekly during mowing season. All material is disposed of properly at the County landfill.

7.6.7. Decision Process. The development of a pollution prevention/good housekeeping program for municipal operations is required to minimize pollutant loading from Town operations or facilities. By training staff and evaluating programs and facilities, the Town of Zebulon can minimize pollutant loading to the maximum extent practical.

7.6.8. Evaluation.

Fleet Maintenance and Vehicle Washing

- The number of employees trained in preventing pollution from fleet maintenance and vehicle washing activities.
- The number of spills reported and the resultant actions/solutions.

Materials Management

- The number of facilities storing hazardous materials.
- The frequency of inspection and maintenance visits to storage facilities.

- The number of personnel trained in hazardous material handling and storage.
- The amount of waste generated by Town operations.
- Whether or not an inventory of hazardous materials was created for each storage facility.

Parking Lot and Street Sweeping

- Whether or not roads and parking lots were inventoried and prioritized for sweeping.
- The number of scheduled road sweepings.
- The pounds of debris collected from street sweeping.

Storm Drain System Cleaning

- Whether or not areas with high pollutant loadings were inventoried and prioritized for cleaning.
- The length of open channels cleaned annually.
- The number of catch basins and culverts cleaned annually.
- The amount of litter, sediment, and other pollutants removed during cleaning.

Bulk Fueling Facility

- Number of employees trained in preventing pollution from fueling activity.
- The number of spills reported and the resultant action/solutions.

Road Salt Application and Storage

- The number of employees trained in road salt application.
- The quantity of salt applied to roadways.
- The quantity of alternative products used.

Spill Response and Prevention

- Whether or not an inventory of municipal facilities at risk for spills was created.
- The number of leak detection devices installed at Town facilities.
- The number of preventative maintenance procedures performed on tanks, valves pumps, pipes and other equipment.
- Whether or not a spill response plan was developed for municipal facilities.
- The number of personnel trained in spill response.
- The number of regularly inspected high-risk facilities.