Final Stormwater Management Plan
City of Henderson
NCS000542

November 15, 2023

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PART 1: INTRODUCTION

The purpose of this Stormwater Management Plan (SWMP) is to establish and define the means by which the City of Henderson will comply with its National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit and the applicable provisions of the Clean Water Act to meet the federal standard of reducing pollutants in stormwater runoff to the maximum extent practicable.

This SWMP identifies the specific elements and minimum measures that the City of Henderson will develop, implement, enforce, evaluate and report to the North Carolina Department of Environmental Quality (NCDEQ) Division of Energy, Minerals and Land Resources (DEMLR) in order to comply with the MS4 Permit number NCS000542, as issued by NCDEQ. This permit covers activities associated with the discharge of stormwater from the MS4 as owned and operated by the City of Henderson and located within the corporate limits of the City of Henderson.

In preparing this SWMP, the City of Henderson has evaluated its MS4 and the permit requirements to develop a comprehensive 5-year SWMP that will meet the community's needs, address local water quality issues and provide the minimum measures necessary to comply with the permit. The SWMP will be evaluated and updated annually to ensure that the elements and minimum measures it contains continue to adequately provide for permit compliance and the community's needs.

Once the SWMP is approved by NCDEQ, all provisions contained and referenced in this SWMP, along with any approved modifications of the SWMP, are incorporated by reference into the permit and become enforceable parts of the permit. Any major changes to the approved SWMP will require resubmittal, review, and approval by NCDEQ, any may require a new public comment period depending on the nature of the changes.

PART 2: CERTIFICATION

By my signature below I hereby certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

I am also aware that the contents of this document shall become an enforceable part of the NPDES MS4 Permit, and that both the Division and the Environmental Protection Agency have NPDES MS4 Permit compliance and enforcement authority.

☐ I am a ranking elected official.

☒ I am a principal executive officer for the permitted MS4.

☐ I am a duly authorized representative for the permitted MS4 and have attached the authorization made in writing by a principal executive officer or ranking elected official which specifies me as (*check one*):

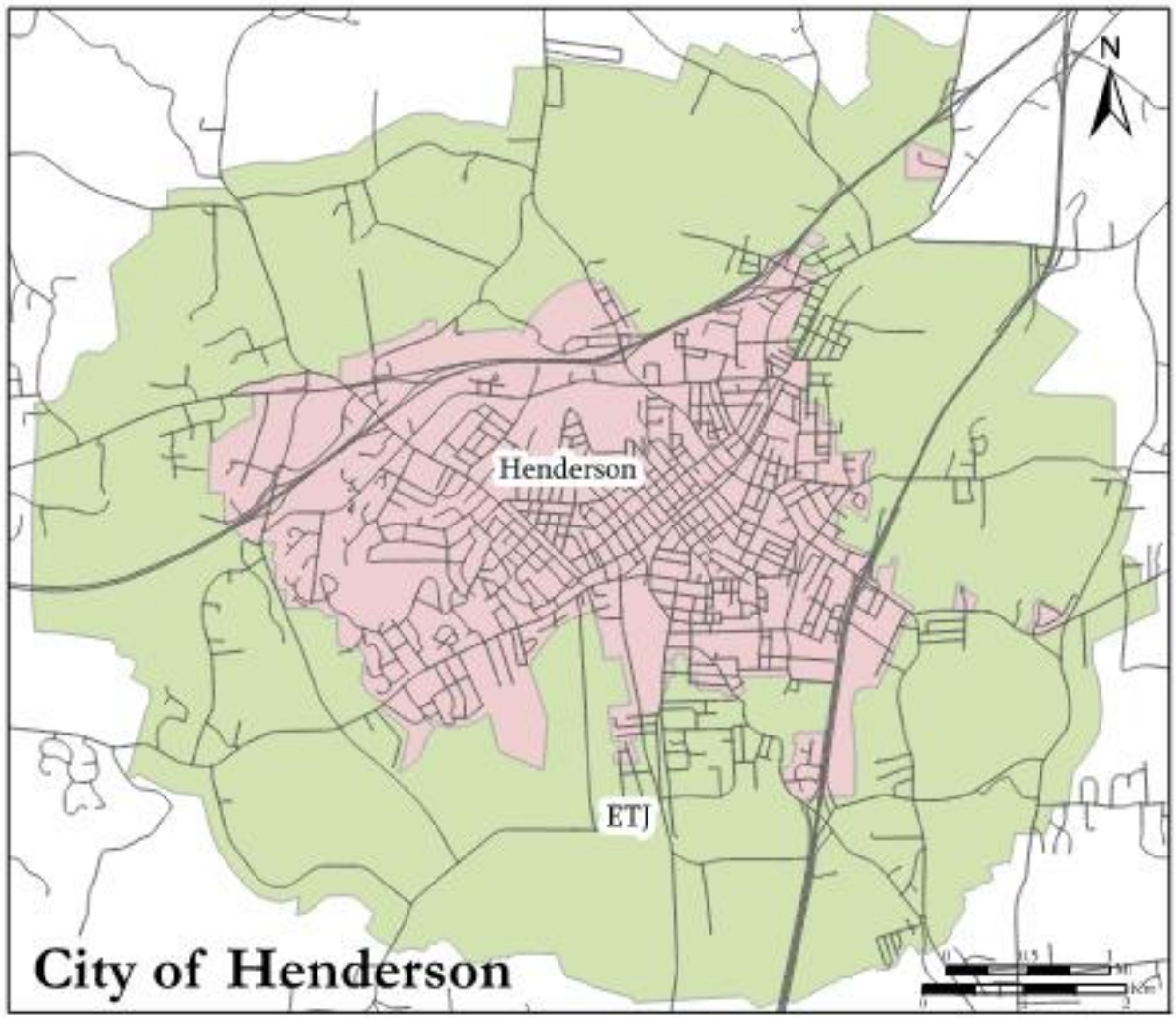
- ☐ A specific individual having overall responsibility for stormwater matters.
- ☐ A specific position having overall responsibility for stormwater matters.

Signature:	Terrell Blackmon
Print Name:	*Terrell Blackmon*
Title:	*City Manager*
Signed this __15th _ day of November 2023.	

PART 3: MS4 INFORMATION

3.1 Permitted MS4 Area

This SWMP applies throughout the corporate limits of the City of Henderson, including all regulated activities associated with the discharge of stormwater from the MS4. The map below shows the corporate limits of City of Henderson as of the date of this document. Please note that the corporate city limits are defined per ordinance but sometimes the city limit line splits parcel lines, these splits occur due to plat subdivision or recombination. The extra-territorial jurisdiction (ETJ), depicted in green, is an arbitrary boundary defined as 1 mile from the city limits line, and this boundary has been plagued with split parcels. However, City of Henderson staff have worked hard to reduce the number of splits to provide consistent protections for county residents, while trying to limit the negative impacts of city regulations where a small split may create a burden.



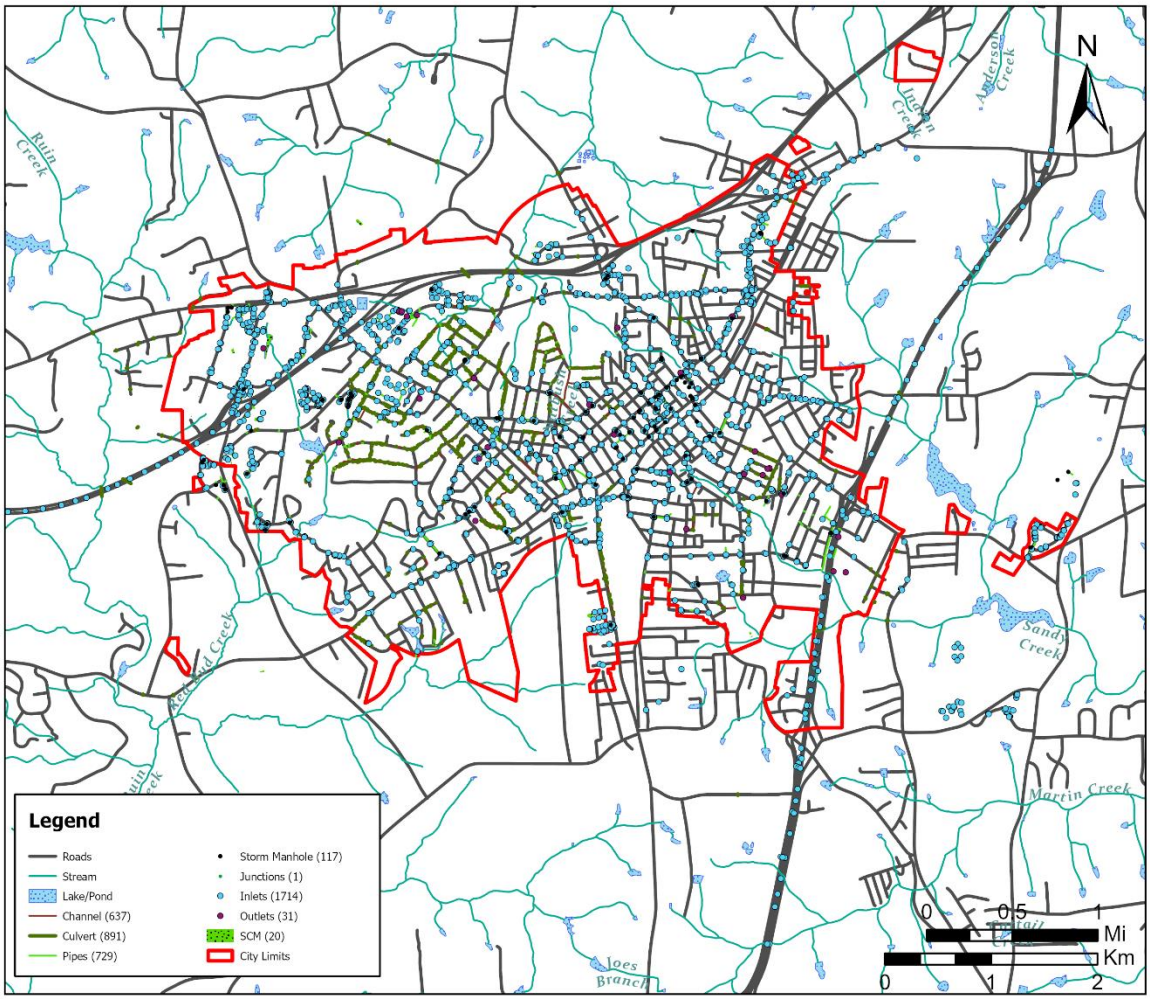
3.2 Existing MS4 Mapping

The City of Henderson's Engineering Department is in the process of updating the current MS4 map, which will include the location of stormwater inlets, pipes, junction boxes, stormwater control measures (SCMs) and Outfalls. Henderson's mapping to date has not included ditches from an asset inventory standpoint but, they are delineated on our base maps by knowing how to interpret contour lines. As the city of Henderson's MS4 program matures we will map the streams and ditches to include the condition (physical and water quality) and morphology.

The City of Raleigh's stormwater department supported the City of Henderson stormwater system mapping effort by sharing their knowledge, experiences and nomenclature. While this collaboration was fantastic in getting our mapping program up and going, it was overwhelming due to the limited staff we had and the extent of work Raleigh had put into their system. Therefore, the City of Henderson had to limit the scope of what Raleigh has done but with the intent of collecting the majority of the pertinent data. The City of Henderson hired 2 part-time interns over the last two years to collect the data Our interns were trained to use GPS equipment (Arrow Gold) and ESRI Collector on an Apple iPad. Initially, the data collected was labor-intensive due to the amount of post processing and the re-training that was required due to the GIS technician attrition. The current GIS Technician was able to develop a script to batch process the points and significantly reduce the amount of post processing, eventually in late 2019 the GPS software was improved and the point data was processed/corrected during collection. The GPS equipment on the market today is attainable at a price point and the accuracy has significantly improved so that most of our data has a 1-cm accuracy.

The City of Henderson's Engineering department has collected the stormwater data in GIS and then pushed this data over to an asset inventory system (Cartegraph) so our Public Works (PW) Department can perform work against these assets. The PW crews are currently working with the Engineering Department to correct the stormwater maps. During the collection of data, the GIS interns were instructed NOT to remove inlet covers or physically enter these structures due to safety issues and confined space concerns. These restraints on the data collection hampered the intern's ability to determine pipe size, invert depth, condition assessment and flow direction. While the stormwater system map is approximately 90% mapped there are inaccuracies in the data which are being improved on an on-going basis. One of the more difficult legal issues to address with respect to mapping is distinguishing where private and public system start and stop (i.e. a strip mall may build and attach to Henderson's public collection system route the upstream flow through their private collection system then discharge back into a public collection system). This brings up questions of construction standards, beneficial use, maintenance and operations and future improvements.

Please note that the City of Henderson does not have a public facing map to any of our systems (water, sewer, roads and stormwater). The City of Henderson does not want developers making engineering decisions based on a map that may contain errors. We require all developers to contact engineering about their plans then the City of Henderson reviews these plans and ground truths to verify if the system can accommodate the additional capacity.



City of Henderson – Storm Water Map (*Redline is the City Limits*)

Table 1: Summary of Current MS4 Mapping

Percent of MS4 Area Mapped	90	%
No. of Major Outfalls* Mapped	9	9

**An outfall is a point where the MS4 discharges from a pipe or other conveyance (e.g. a ditch) directly into surface waters. Major outfalls are required to be mapped to meet permit requirements. A major outfall is a 36-inch diameter pipe or discharge from a drainage area > 50-acres; and for industrial zoned areas a 12-inch diameter pipe or a drainage area ≥ 2-acres.*

*** Receiving streams and their tributaries have been identified as well as the sub-basins. The City of Henderson needs to evaluate the drainage basin with respect to NCDEQ guidance to identify and classify the outfalls. In many cases, a stream may receive multiple discharges within a short reach and if this meets the acreage requirement then the City of Henderson has noted this as an Outfall.*

3.3 Receiving Waters

The City of Henderson MS4 is located within the Tar-Pamilco and Roanoke River Basins and discharges directly into receiving waters as listed in Table 2A and 2B below. Applicable water quality standards listed below are compiled from the following NCDEQ sources:

- Waterbody Classification Map
- Impaired Waters and TMDL Map
- Most recent NCDEQ Final 303(d) List

Table 2A: Summary MS4 Receiving Waters – Roanoke River Basin

Receiving Water Name	Stream Segment	Stream Index / AU Number	Water Quality Classification	303(d) Listed Parameter(s)
Nutbush Creek	From source to Crooked Run	**23-8-(1)**	C	Benthos (Nar, AL, FW) Fish Community (Nar, AL, FW)
UT to Crooked Run	From source to Crooked Run	**23-8-3**	B	N/A
Crooked Run	From source to Nutbush Creek Arm of John B. Kerr Reservoir	**23-8-3**	B	N/A
Indian Creek	From source to Carolina Power & Light Company Power Line	**23-8-4-(1)**	C	N/A

Table 2B: Summary MS4 Receiving Waters – Tar-Pamlico River Basin

Receiving Stream Name	Stream Segment	Index AU Number	Water Quality Classification	303(d) Listed Parameter
Ruin Creek	From dam to Tabbs Creek	**28-17-2-(2)**	C; NSW	N/A
Red Bud Creek	From source to Ruin Creek	**28-17-2-3**	C: NSW	N/A
UT to Ruin Creek	From source to Ruin Creek	**28-17-2-(2)**	C: NSW	N/A

Joes Branch	From source to Ruin Creek	**28-17-2-4**	C; NSW	N/A
Sandy Creek	From source to dam at Southerlands Pond	**28-78-1-(1)**	C; NSW; +	N/A
Martin Creek	From source to Sandy Creek	**28-78-1-3**	C; NSW; +	N/A

3.4 MS4 Interconnection

The City of Henderson MS4 is not interconnected with another regulated MS4 and directly discharges to the receiving waters as listed in Tables 2A and 2B above.

The MS4 does not interconnect with the statewide NCDOT MS4.

3.5 Total Maximum Daily Loads (TMDLs)

The TMDL(s) listed in Table 3 below have been approved within the MS4 area, as determined by the map and list provided on the NCDEQ Modeling & Assessment Unit web page. The table also indicates whether the approved TMDL has a specific stormwater Waste Load Allocation (WLA) for any watershed directly receiving discharges from the permitted MS4, and whether a Water Quality Recovery Program has been implemented to address the WLA.

Table 3: Summary of Approved TMDLs

Water Body Name	TMDL Pollutant(s) of Concern	Stormwater Waste Load Allocation (Y/N)	Water Quality Recovery Program (Y/N)
Tar River	Total Nitrogen (1.361_e6 Kg/Yr)	N	N
	Total Phosphorus (0.18_e6 Kg/Yr)	N	N

The City of Henderson recognizes that the Environmental Protection Agency in conjunction with the North Carolina Department of Environmental Quality has done tremendous work with respect to hypoxia problems in the lower water column of Pamlico Estuary as well as a thorough review of the factors leading to this oxygen depletion. The promulgation of the Nutrient Sensitive Waters and the associated Best Management Practices (BMPs) now known as Stormwater Control Measures (SCMs) have made positive strides towards reducing the negative impacts of development on downstream water bodies. But even with these positive steps forward there is so much more that can be done and NCDEQ has recognized and identified 6 measures to improve stormwater quality which includes; education, citizen participation, illicit discharge enforcement, construction runoff, post construction runoff and pollution prevention and good house-keeping at municipal operations.
EPA/DEQ's report identified Total Nitrogen (TN) and Total Phosphorus (TP) as primary constituents of interest to reduce the oxygen depletion. The NSW regulations have placed discharge limits from SCMs on both these constituents as well as providing the efficiencies of removal for these constituents by the

SCMs. Currently the TN discharge limit is set at 4.0 lbs/acre/year and TP is set at 0.4 lbs/acre/year from a new development site and a 30% reduction in TN from existing sites. Henderson's City Engineer or a designee reviews all plans and calculations for compliance to the NSW regulations. New developments and their associated SCMs work closely with the City and Morgensen Mitigation Bank so the developer can purchase nutrient credits and come into compliance with the tools provided by NCDEQ.

Henderson's City Council has received the stormwater Notice of Violation in June 2020 and adopted a Resolution (No. 20-50) in August 2020 to not only implement the measure outlined in NCDEQ's MS4 Stormwater Program but also to fund the implementation of this program. Engineering Staff has worked tirelessly to map all the impervious surfaces in the City with the exception of single-family dwellings. Staff presented a recommendation to council to hire a consultant to assist us in the development and implementation of a stormwater utility. Council awarded the Stormwater Utility setup to a consultant and they have developed the documents necessary to implement a stormwater utility. As of the writing of this report, council action has not moved forward with respect to a Stormwater Utility but, the new City Manager has slated this important funding stream on his agenda matrix. Stormwater quality and MS4 compliance for the City of Henderson requires funding of two full time positions, collaboration with Public Works and the hiring of part-time staff to assist in field data collection and reconciliation by GIS staff.

Henderson's Engineering Staff includes an engineering inspector that is certified for BMP construction and maintenance and this individual has mapped and commented on the condition of existing SCMs (BMPs) within the City Limits. The engineering inspector is also involved in the inspection and construction of sedimentation and erosion control measure for which he generates weekly reports during construction as well as the conversion of sedimentation devices to SCMs once the ground is stabilized. The engineering inspector and city engineer talk throughout the project to make sure everything is working smoothly so, by the time the final inspection takes place the revisions are very small. At the final walk through the contractor, engineer of record, city engineer and engineering inspector draw up a final punch list to get the site and all its components into compliance. This is a critical step in how the SCM will perform and any additional modifications prior to the final approval.

Funding is a critical component in Henderson's stormwater program because it not only allows us to hire staff but provides training, tools, money for capital improvement projects, hiring consultants with the expertise to help Henderson develop and hone specific aspects of the program.

3.6 Endangered and Threatened Species and Critical Habitat

Significant populations of threatened or endangered species and/or critical habitat are not identified within the regulated MS4 urbanized area. Based upon a review of the Endangered and Threatened Species and Species of Concern by County for North Carolina Map and Listed species believe to or known to occur in North Carolina map as provided by the U.S. Fish and Wildlife Service, the species listed in Table 4 have the potential to occur within the regulated MS4 urbanized area. Of those species listed, Table 4 summarizes the species that may be significantly impacted by the quality of surface waters within their habitat.

Table 4: Potential Federally Listed Species/Habitat Impacted by Surface Water Quality

Scientific Name	Common name	Species Group	Federal Listing Status
Haliaeetus leucocephalus	Bald Eagle	Vertebrate	BGPA
Noturus furiosus	Carolina Madtom	Vertebrate	ARS
Necturus lewisi	Neuse River Waterdog	Vertebrate	ARS
Fusconaia masoni	Alantic Pigtoe	Invertebrate	ARS
Alasmidonta heterodon	Dwarf Wedgemussel	Invertebrate	E
Parvaspina steinstansana	Tar River spinymussel	Invertebrate	E
Elliptio lanceolata	Yellow Lance	Invertebrate	T

3.7 Industrial Facility Discharges

The City of Henderson MS4 jurisdictional area includes the following industrial facilities which hold NPDES Industrial Stormwater Permits, as determined from the NCDEQ Maps & Permit Data web page.

Table 5: NPDES Stormwater Permitted Industrial Facilities

Permit Number	Facility Name
NCGNE0460	Timberline Acquisition, LLC
NCG050393	Vescom
NCG210331	Idaho Timber of North Carolina LLC
NCG080713	Henderson Operations & Service Center

3.8 Non-Stormwater Discharges

The water quality impacts of non-stormwater discharges have been evaluated by the City of Henderson as summarized in Table 6 below. The unpermitted non-stormwater flows listed as incidental do not significantly impact water quality. The City of Henderson has evaluated residential car washing for possible significant water quality impacts.

Street washing discharges are addressed under the Pavement Management Program in Part 10 of this SWMP. The Division has not required that other non-stormwater flows be specifically controlled by the City of Henderson. The City performs street sweeping on curb and gutter streets; however, no street washing is conducted. A small amount of water is used in the street sweeping activity on the order of 150 gallons per mile or 0.027 gallons/foot. The vast majority of the water used in the street sweeping operation is bound to the refuse and vacuumed up into the dump bed on the sweeper truck. Approximately 1,000 pounds of refuse is collected per mile and discharged at the landfill.

Wash water associated with car washing that does not contain detergents or does not discharge directly into the MS4 is considered incidental. However, these types of non-stormwater discharges that do contain detergents have been evaluated by the City of Henderson to determine whether they may significantly impact water quality. The City has an unusually high number of commercial car washes compared to the population for most municipalities therefore, it is unusual to see residential car washing occurring and rarely does it spill into the street or stormwater system. The discharges directly from residential home and car washing into the MS4 is considered a possible source of impact to water quality. The City of Henderson shall make a concerted effort via public education about the use of detergents and cleaners used in the washing of cars and homes as well as their possible water quality impacts.

Table 6: Non-Stormwater Discharges

Non-Stormwater Discharge	Water Quality Impacts
Water line and fire hydrant flushing	Incidental
Landscape irrigation	Incidental
Diverted stream flows	Incidental
Rising groundwater	Incidental
Uncontaminated groundwater infiltration	Incidental
Uncontaminated pumped groundwater	Incidental
Uncontaminated potable water sources	Incidental
Foundation drains	Incidental
Air conditioning condensate	Incidental
Irrigation waters	Incidental
Springs	Incidental
Water from crawl space pumps	Incidental
Footing drains	Incidental
Lawn watering	Incidental
Residential and charity car washing	**Possible**
Flows from riparian habitats and wetlands	Incidental
Dechlorinated swimming pool discharges	Incidental
Street wash water	Incidental
Flows from firefighting activities	Incidental

3.9 Target Pollutants and Sources

In addition to those target pollutants identified above, the City of Henderson is aware of other significant water quality issues within the permitted MS4 area.

The City needs to perform an environmental assessment on all water bodies within the City limits but the most ubiquitous issues from a quick visual inspection is sediment and litter. The City monitors and maintains certain thoroughfares in the City that accumulate litter, then dispatch crews to pick up the litter before it migrates to our water bodies. Even with monthly or twice a month litter sweeps by Public Works the crews cannot stay keep up with the litter. City Council and the City Manager have discussed this problem at length in break-out committee meetings and at the City Council Strategic Retreat. Council have requested fast food businesses to put in trash receptacles at the end of their drive-throughs and to assist in the litter sweeps. The attempts by business are short lived and have very little impact. The Police Chief has stated that no citizen throws out litter while an officer is behind them hence issuing citations has not occurred and does not appear to be a viable solution to this problem.

Sediment accumulation in the streams appears from historical development of commercial enterprises and single-family housing. The City of Henderson does not issue erosion control permits for residential areas unless the disturbance is in excess of 1 acre. While the City does not issue these residential permits, we do monitor the measures in place and request certain maintenance items be performed to keep sediment on-site. January 2015 to date the City Inspector has done an excellent job in notifying home builders of the expectations and the City achieves complete compliance 95% of the time. The builders understand the City's request for measures like silt fence, check dams and concrete washout pits therefore putting the contractor on notice once we are award of the disturbance tends to lead to compliance because they know we have them on our radar.

Table 7 below summarizes the water quality pollutants identified throughout Part 3 of this SWMP, the likely activities/sources/targeted audiences attributed to each pollutant, and identifies the associated SWMP program(s) that address each. In addition, the City of Henderson has evaluated schools, homeowners and businesses as target audiences that are likely to have significant stormwater impacts.

Table 7: Summary of Target Pollutants and Sources

Target Pollutant(s)	Likely Source(s)/Target Audience(s)	SWMP Program Addressing Target Pollutant(s)/Audience(s)
Litter	Citizens on daily commute	Public Education & Outreach
Sediment	Historical Developers lacked attention to sediment transport. Current Residential and Commercial Construction	**Sediment & Erosion Control Delegated Authority**: Henderson's Engineering Department addresses this issue from a delegated authority and permit compliance approach for larger developments. Single family homes are discovered via planning or site drive-bys. **Collaboration with the County building inspection department** Notification of new building permits. The certificate of occupancy is an ultimate compliance trigger that we use for commercial compliance.

Fecal coliform	Sewer overflows, failing septic systems, wildlife, illicit discharges	Public Education & Outreach, Illicit Discharge Detection & Elimination
Illicit discharges	Residential, commercial, industrial, municipal staff	Public Education & Outreach, Illicit Discharge Detection & Elimination
Illegal dumping	Residential, commercial, industrial, municipal staff	Public Education & Outreach, Illicit Discharge Detection & Elimination
General non-point source pollution	Residential, commercial, schools, municipal staff	Public Education & Outreach
Nitrogen and phosphorus	Residential, commercial, industrial, municipal staff	Public Education & Outreach

PART 4: STORMWATER MANAGEMENT PROGRAM ADMINISTRATION

4.1 Organizational Structure

The City of Henderson is governed as a City Council – Manager form of government where City Council has 3 employees: City Manager, City Clerk and City Attorney. All City Staff fall under the administrative responsibility of the City Manager. The City's organizational structure is shown below where key department heads and their assistant department heads are noted:

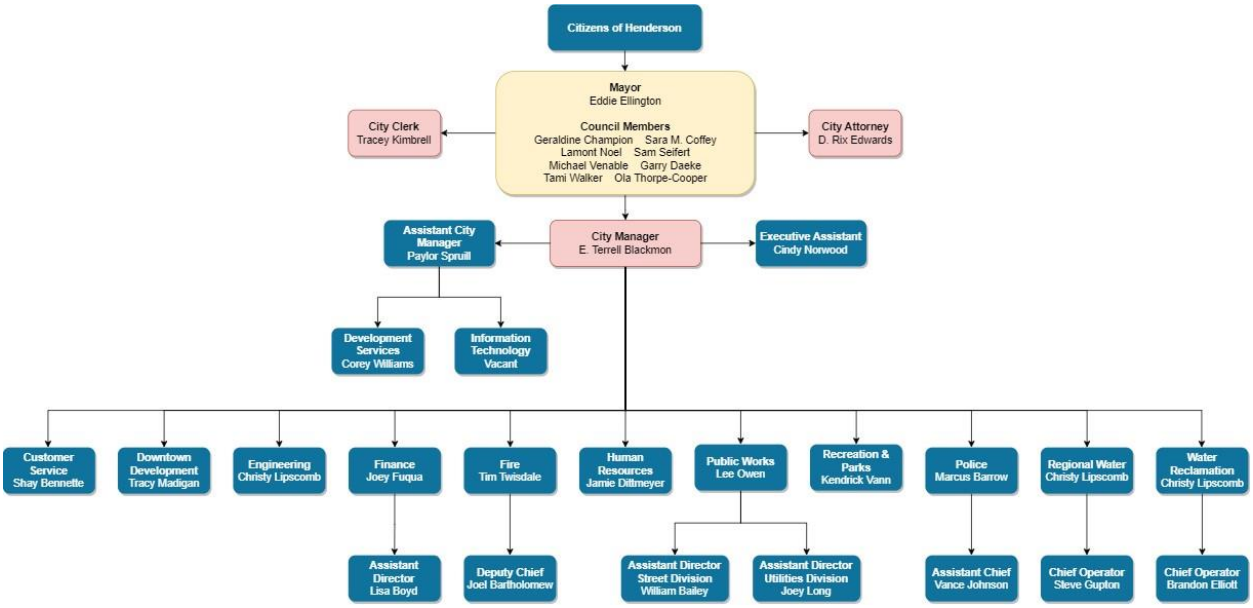


Table 8: Summary of Responsible Parties

SWMP Component	Responsible Position	Staff Name	Department
Stormwater Program Administration	City Engineer (Vacant). Director of Engineering (Interim) or Designee.	Ms. Clarissa (Christy) Lipscomb	Engineering
SWMP Management	City Engineer (Vacant). Director of Engineering (Interim) or Designee.	Ms. Clarissa (Christy) Lipscomb	Engineering
Public Education & Outreach	City Engineer (Vacant). Director of Engineering (Interim) or Designee.	Ms. Clarissa (Christy) Lipscomb	Engineering
Public Involvement & Participation	City Engineer (Vacant). Director of Engineering (Interim) or Designee.	Ms. Clarissa (Christy) Lipscomb	Engineering

Illicit Discharge Detection & Elimination	City Engineer (Vacant). Director of Engineering (Interim) or Designee.	Ms. Clarissa (Christy) Lipscomb	Engineering
Construction Site Runoff Control	City Engineer (Vacant). Director of Engineering (Interim) Engineering Inspector	Ms. Clarissa (Christy) Lipscomb Mr. Logan Tyndall	Engineering Engineering
Post-Construction Stormwater Management	City Engineer (Vacant). Director of Engineering (Interim) or Designee.	Ms. Clarissa (Christy) Lipscomb	Engineering
Pollution Prevention/Good Housekeeping for Municipal Operations	Public Works Director	Mr. Lee Owens	Public Works Dept.
Municipal Facilities Operation & Maintenance Program	Public Works Director	Mr. Lee Owens	Public Works Dept.
Spill Response Program	City Engineer (Vacant). Director of Engineering (Interim) or Designee.	Ms. Clarissa (Christy) Lipscomb	Engineering
MS4 Operation & Maintenance Program	City Engineer (Vacant). Director of Engineering (Interim) or Designee.	Ms. Clarissa (Christy) Lipscomb	Engineering
Municipal SCM Operation & Maintenance Program	City Engineer (Vacant). Director of Engineering (Interim) or Designee.	Ms. Clarissa (Christy) Lipscomb	Engineering
Pesticide, Herbicide & Fertilizer Management Program	Public Works Director Asst. Public Works Director	Mr. Lee Owens Mr. William Bailey	Public Works Dept.
Vehicle & Equipment Cleaning Program	Public Works Director Fleet Maintenance Supervisor	Mr. Lee Owens Mr. Charles Poteat	Public Works Dept.
Pavement Management Program	Public Works Director	Mr. Lee Owens	Public Works Dept.
Total Maximum Daily Load (TMDL) Requirements	N/A	N/A	N/A

4.2 Program Funding and Budget

In accordance with the issued permit, the City of Henderson is required to maintain adequate funding and staffing to implement and manage the provisions of the SWMP and comply with the requirements of the NPDES MS4 Permit. The budget includes the permit administering and compliance fee, which is billed by the Division annually. However, the program is underfunded with respect to compliance with the six program elements, also referred to as minimum control measures.

The stormwater program currently receives funding of approximately $25,000 per year for emergency repairs and is funded primarily through the General Funds (Street Division). The street division has a street sweeper and a jet-vac to clean the streets and stormwater pipes when they get clogged. The City utilizes a work order system to help department heads schedule their work and assess the quality and costs of each repair. Cartegraph is the name of the work order/asset management system and it has a component to assign preventative maintenance for specific assets. The City's public works departments plans to implement a program to clean at least 10% of the storm drains each year. The stormwater program will be developed in the next year to mirror the existing sanitary sewer preventative maintenance program. Currently public works dedicates 35 manhours a week to addressing the stormwater infrastructure. As the stormwater program expands; the duties, responsibilities and manhours in the street department will increase accordingly.

The administration of the city's stormwater regulatory side is performed by the City Engineer or a designee, Construction Inspector and Engineering Technician which are funded through the Water Fund. In total the stormwater program receives 5-6 hours a week from the engineering staff. The City of Henderson has experienced an uptick in development over the last 2-3 years. Therefore, stormwater SCM review and inspection demands have somewhat increased in addition to the department's other workload.

Through the gap analysis, self-evaluation process and NCDEQ audit; it is evident that the City of Henderson needs to fund a minimum of two full time position equivalents (FTE) which includes at least two part-time positions for the stormwater program. The key position is a stormwater engineer to head-up the program along with an administrative assistant (30%) and the City Engineer (20%) to guide and promote the program with the community and City Council. The part-time positions are critical in data collection, mapping and assessment. Currently, City is using an on-call consultant to provide these services.

The City has performed an analysis to create a stormwater utility. The funding arm proposed for this utility is based on a flat rate for residential (single and duplex occupancies) units. Fees for multi-family, industrial and commercial zoning is based on acreage of impervious area. Due to the nature of several large businesses, the analysis showed that 13 businesses in the city would carry 65% of the Utility's fee. Henderson is an old textile town that is still reeling from the economic downturn created by NAFTA and to impose a large monthly fee on these legacy businesses has become untenable to several members of the City Council. Staff has gone back and revised Stormwater Utility Fee structure to impose a minimum and maximum monthly fee where the maximum charge to an individual business would be $300 and a $20/month minimum on every business. This minimum and maximum structure reduces the burden to the large businesses and redistributes these costs on smaller businesses while providing the same revenue stream as the initial impervious acreage fee to the City.

Additional staff via the stormwater utility will address the fundamental tenants of the stormwater program. The self-audit that was composed by a consultant in conjunction with Henderson's engineering

staff indicated there are many deficiencies and work to be performed over the coming years. Current market trends place a trained stormwater engineer in great demand by large and small municipalities as well as large and small consultants. Henderson along with many other small municipalities without stormwater utilities can barely afford an Engineering Intern much less a seasoned midlevel engineer with 5-10 years that would not require any training. The City Engineer has for the third year put a stormwater engineer in the budget along with an administrative assistant and more money for part-time interns. The City Manager understands the gravity of the stormwater engineer position. The manager also understands the funding mechanism to make this position a reality. In the interim, City is using an on-call consultant to provide these services.

4.3 Shared Responsibility

The City of Henderson does not share the responsibility to implement any minimum control measures of the NPDES MS4 Permit requirement. The City of Henderson is solely responsible for compliance.

Table 9: Shared Responsibilities

SWMP BMP or Permit Requirement	Implementing Entity & Program Name	Legal Agreement (Y/N)
N/A	N/A	N

4.4 Co-Permittees

There are no other entities applying for co-permittee status under the NPDES MS4 permit number NCS000542 for the City of Henderson.

Table 10: Co-Permittee Contact Information

Co-Permittee MS4 Name	Contact Person	Phone & E-Mail	Interlocal Agreement (Y/N)
N/A	N/A	N/A	N

4.5 Measurable Goals for Program Administration

The City of Henderson will manage and report the following Best Management Practices (BMPs) for the administration of the Stormwater Management Program.

Table 11: Program Administration BMPs				
Permit Ref.	**2.1.1, 2.1.2: Program Implementation and 2.2.2: Minimum Control Measures** Measures to evaluate the performance and effectiveness of the SWMP program components at least annually. Results shall be used by the permittee to modify the program components as necessary to accomplish the intent of the Stormwater Program.			
	A	**B**	**C**	**D**

Table 11: Program Administration BMPs				
BMP No.	**Description of BMP**	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
1.	**Annual Self-Assessment**			
	Evaluate the performance and effectiveness of the program components at least annually. Results shall be used to modify the program components as necessary to accomplish the intent of the Stormwater Program.	1. Prepare, conduct and document an annual evaluation of the program components.	1. Annually, Permit Years 1 – 5	1. Y/N
	Conduct an analysis to confirm that the program is adequately funded and staffed to implement the permit requirements.	2. Prepare a documented analysis with findings	2. Permit Year 1	2. Adequate/Inadequate
	Create and maintain written procedures for implementing the six minimum control measures (MCMs).	3. Create written procedures for MCM implementation 4. Review all written programs and update as needed	3. Permit Year 1 4. Annually, Permit Years 2-5	3. Y/N 4. Y/N
Permit Ref.	**1.6: Permit Renewal Application** Measures to submit a permit renewal application no later than 180 days prior to the expiration date of the NPDES MS4 permit.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
2.	**Permit Renewal Application**			
	Submit a permit renewal application and Draft SWMP no later than 180 days prior to permit expiration.	1. Draft SWMP applicable to the proceeding 5 years following permit re-issuance.	1. Permit Year 5	1. Yes/No
		2. Certify the stormwater permit renewal application (Permit renewal application form, Self-Audit, and Draft SWMP for the next 5-year permit cycle) and submit to NCDEQ at least 180 days prior to permit expiration.	2. Permit Year 5	2. Date of permit renewal application submittal

PART 5: PUBLIC EDUCATION AND OUTREACH PROGRAM

The City of Henderson will implement a Public Education and Outreach Program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and steps the public can take to reduce pollutants in storm water runoff.

The target audiences and identified pollutants listed in Part 3.9 of this SWMP, which will be addressed by the Public Education and Outreach Program, are summarized in Table 12 below. In addition, the City of Henderson is required to inform businesses and the general public of the hazards associated with illicit discharges, illegal dumping and improper disposal of waste.

Table 12: Summary of Target Pollutants & Audiences

Target Pollutants/Sources	Target Audience(s)
Litter	General Public
Illicit Discharges	General Public, Businesses, Municipal Employees
Illegal Dumping	General Public, Businesses, Municipal Employees
Improper Disposal of Waste	General Public, Businesses, Municipal Employees

The City of Henderson will manage, implement and report the following public education and outreach BMPs.

Table 13: Public Education and Outreach BMPs

Permit Ref.	**3.2.2 and 3.2.4: Outreach to Targeted Audiences** Measures to identify the specific elements and implementation of a Public Education and Outreach Program to share educational materials to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and how the public can reduce pollutants in stormwater runoff. The permittee shall provide educational information to identified target audiences on pollutants/sources identified in table 12 above, and shall document the extent of exposure of each media, event or activity, including those elements implemented locally or through a cooperative agreement.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
3.	**Public Education and Outreach Plan**			
	The City will develop a Public Education and Outreach Plan (PEOP) to identify goals and objectives of the Public Education and Outreach Program based on community wide issues. The PEOP will identify the target pollutants likely to have significant stormwater	1. Identify goals and objectives of the public education and outreach program.	1. Permit Year 1	1. Y/N/Partial;
		2. Identify target pollutants likely to have significant stormwater impacts.	2. Permit Year 1	2. Y/N/Partial;

Table 13: Public Education and Outreach BMPs				
	impacts, likely sources, associated target audiences, and why they were selected. Schools, homeowners, and businesses will be evaluated as target audiences. The PEOP will further identify the strategies that the City will use to reach target audiences, such as types of media, events, and activities.	3. Identify potential sources of target pollutants and the audiences that impact those sources.	3. Permit Year 1	3. Y/N/Partial;
		4. Identify strategies to reach target audiences.	4. Permit Year 1	4. Y/N/Partial;
		5. Develop Public Education and Outreach Plan.	5. Permit Year 1	5. Y/N/Partial;
4.	**Distribute Public Education Materials to Target Audiences**			
	The City currently distributes stormwater educational outreach materials to the Leadership Vance Program for Business Leaders, as well as the local Science, Technology, Engineering, and Mathematics (STEM) school program. The City will continue to distribute educational materials to the existing audience listed previously but will seek to expand its target audience to include the appropriate target groups identified in BMP #3. The City will implement the strategies and mediums identified in the PEOP that will most effectively reach the target audiences and may seek out partnerships to fund any public outreach using the mediums identified in the PEOP.	1. Provide public stormwater education outreach materials to the Leadership Vance program for business leaders.	1. Permit Year 1	1. Y/N/Partial
		2. Provide outreach materials to the STEM school program.	2. Permit Year 1	2. Y/N/Partial
Permit Ref.	**2.1.7, 3.2.3 and 3.6.5(c): Web Site** Measures to provide a web site designed to convey the program's message(s) and provide online materials including ordinances, or other regulatory mechanisms, or a list identifying the ordinances or other regulatory mechanisms, providing the legal authority necessary to implement and enforce the requirements of the permit and SWMP. The web page shall also provide developers with all relevant post-construction requirements, design standards, checklists and/or other materials.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
5.	**Stormwater Web Site**			

Table 13: Public Education and Outreach BMPs				
	The City currently operates and maintains a stormwater program website that is located at: City of Henderson, NC. This website includes relevant background information regarding the City's stormwater standards.	1. Maintain the web site with the ordinances or other regulatory mechanisms providing the legal authority necessary to implement and enforce the requirements of the permit and SWMP.	1. Permit Year 1	1. Y/N/Partial
		2. Maintain the website with relevant post-construction requirements, design standards, checklists and/or other materials for developers.	2. Permit Year 1	2. Y/N/Partial
Permit Ref.	**3.2.5: Stormwater Hotline** Measures for a stormwater hotline/helpline for the purpose of public education and outreach.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
6.	**Publish Stormwater Helpline and Email Information**			
	The City will select and advertise an existing City of Henderson office number as the stormwater helpline, create a stormwater program general email address, and ensure that any inquiries are directed to Engineering staff for response/follow-up.	1. Identify an appropriate existing City phone number to be utilized as the stormwater helpline.	1. Permit Year 1	1. Y/N/Partial
		2. Post the helpline phone number and stormwater program email address on the Stormwater Web Site with a note explaining that any inquiries and public input on the stormwater program should be directed to the helpline.	2. Permit Year 1	2. Y/N/Partial
		3. Test hotline annually	3. Starting Permit Year 2	3. Y/N
7.	**Public Education on IDDE**			
	The City will update public education and outreach materials identified in BMP #6 with information to inform public employees, businesses, and the general	1. Identify methods to distribute outreach materials to public employees, business, and the general public.	1. Permit Year 1	1. Y/N.

Table 13: Public Education and Outreach BMPs				
	public of hazards associated with illegal discharges and improper disposal of waste.	2. Update existing public education materials to include illicit discharges and illegal dumping.	2. Permit Year 1	2. Y/N/Partial
		3. Conduct two public outreach events annually	3. Annually, Starting Permit Year 2	3.: Y/N; Date of Events and Attendance
		4. Distribute materials to public employees, business, and the general public at the events	4. Annually, Starting Permit Year 2	4. Y/N; Number of materials distributed.

PART 6: PUBLIC INVOLVEMENT AND PARTICIPATION PROGRAM

This SWMP identifies the minimum elements and implementation of a Public Involvement and Participation Program that complies with applicable State, Tribal and local public notice requirements. The City of Henderson will manage, implement and report the following public involvement and participation BMPs.

Table 14: Public Involvement and Participation BMPs

Permit Ref.	**3.3.1: Public Input** Mechanisms for public involvement that provide for input on stormwater issues and the stormwater program.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
8.	**Solicit Public Input on Stormwater Web Site**			
	The City will solicit public input on stormwater issues and the City stormwater program at the City Council Meeting twice a year.	1. Put Stormwater Program Status and Updates on the City Council Agenda twice a year.	1. Annually	1. Y/N
Permit Ref.	**3.3.2: Volunteer Opportunities** Measures to provide volunteer opportunities designed to promote ongoing citizen participation.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
9.	**Stormwater Volunteer Community Involvement Program**			
	The City will conduct and promote volunteer opportunities designed to encourage ongoing citizen participation. Types of events will be identified in the PEOP and may include community litter pick-up, Citizen Scientist projects, and Adopt-a-Stream programs. The City will continue to promote the Stormwater helpline identified in BMP #9.	1. Identify examples of volunteer opportunities in the PEOP	1. Permit Year 1	1. Y/N/Partial
		2. Promote volunteer opportunities	2. Annually, Permit Years 2-5	2. Y/N/Partial; Promotion Method.
		3. Conduct at least two volunteer events	3. Annually, Permit Years 2-5	3. Y/N/Partial. Date of event. Attendance. Quantity of trash removed.

PART 7: ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

The City of Henderson will develop, manage, implement, document, report and enforce an Illicit Discharge Detection and Elimination Program which shall, at a minimum, include the following illicit discharge detection and elimination BMPs.

Table 15: Illicit Discharge Detection and Elimination BMPs

Permit Ref.	**3.4.1: MS4 Map** Measures to develop, update and maintain a municipal storm sewer system map including stormwater conveyances, flow direction, major outfalls and waters of the United States receiving stormwater discharges.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
10.	**Maintain Storm Sewer System Map of Major Outfalls**			
	The City has mapped stormwater conveyances, flow direction, inlets, culverts, receiving streams, and stormwater major outfalls. Existing stormwater data has been collected in GIS and then maintained in the City's asset inventory system, Cartegraph.	1. Update and maintain map in GIS and Cartegraph when there are changes to the system..	1. Continuously, Permit Years 1-5	1. Y/N/ /Number of new outfalls
Permit Ref.	**3.4.2: Regulatory Mechanism** Measures to provide an IDDE ordinance or other regulatory mechanism that provides legal authority to prohibit, detect, and eliminate illicit connections and discharges, illegal dumping and spills into the MS4, including enforcement procedures and actions.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
11.	**Illicit Discharge Detection and Elimination (IDDE) Ordinance**			
	The City maintains an Illicit Discharge Detection and Elimination (IDDE) ordinance that provides the legal authority to prohibit illicit connections and discharges. The IDDE Ordinance is available under Subtitle C, Chapter 16, Division 3, Section 16-37.8.	1. Annual review of IDDE ordinance to ensure permit compliance.	1. Annually, Permit Years 1-5.	1. Y/N
12.	**Enforcement of IDDE Ordinance**			
	The City maintains enforcement procedures in the IDDE Ordinance. Illegal dumping and illicit discharges that are reported to the City result in issuance of a notice of violation	1. Maintain NOV tracking inventory in Cartegraph.	1. Continuously, Permit Years 1-5	1. Y/N/Partial; Number of NOVs issued.
		2. Identify chronic violators.	2. Annually, Permit Years 1-5	2. Y/N Identify number of chronic violators.

Table 15: Illicit Discharge Detection and Elimination BMPs				
	(NOV) to the discharger. The City currently maintains a GIS-based inventory in Cartegraph used to track each NOV issued, including the address of the violation. During an annual review, the inventory will be sorted by address to identify repeat offenders.	3. Implement additional enforcement actions against chronic violators.	3. Continuously, Permit Years 1-5	3. Y/N; Number of NOVs to chronic violators.
Permit Ref.	**3.4.3: IDDE Plan** Measures to maintain and implement a written IDDE Plan to detect and address illicit discharges, illegal dumping and any non-stormwater discharges identified as significant contributors of pollutants to the MS4. The plan shall provide standard procedures and documentation to: a) Locate priority areas likely to have illicit discharges, b) Conduct routine dry weather outfall inspections, c) Identify illicit discharges and trace sources, d) Eliminate the source(s) of an illicit discharge, and e) Evaluate and assess the IDDE Program.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
13.	**Written IDDE Plan**			
	The City has a written IDDE Plan.	1. Identify and update priority areas likely to have illicit discharges.	1. Annually, starting Permit Year 1	1. Y/N
14.	**Dry Weather Outfall Screening and Source Tracing**			
	The City has not yet conducted dry weather screening. the City has identified its major outfalls (BMP #10) and develops its written IDDE Plan (BMP #13) with dry weather screening schedule, frequency, and forms, the City will commence annual dry weather screening of major outfalls. Outfall inspections and field observations will be conducted during dry weather conditions to identify dry weather flow in accordance with procedures in the IDDE plan. If dry weather flow is observed at a major outfall, the flow will be traced upstream to identify the source, as specified in the IDDE Plan.	1. Complete dry weather outfall screening of all mapped outfalls.	1. Annually, Permit Years 2-5	1. Y/N/Date(s) of screening; Number of outfalls screened.
		2. Investigate sources of flowing outfalls during dry weather.	2. Continuously, Permit Years 2-5	2. Y/N/Partial; Number of outfalls with dry weather flow; Source investigation findings.

Table 15: Illicit Discharge Detection and Elimination BMPs				
Permit Ref.	**3.4.4: IDDE Tracking** Measures for tracking and documenting the date(s) an illicit discharge, illicit connection or illegal dumping was observed, the results of the investigation, any follow-up of the investigation, the date the investigation was closed, the issuance of enforcement actions, and the ability to identify chronic violators.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
15.	**IDDE Investigation Tracking and Documentation**			
	The City has not yet conducted dry weather screening nor tracking or documentation of suspected illicit discharges or illegal dumping. The City will begin to track enforcement actions for confirmed illicit discharge and illegal dumping, as specified in BMP #14. Following the commencement of major outfall dry weather screening and source tracking (BMP #14), the City will develop an IDDE investigation tracking spreadsheet to track and document 1) the date(s) the illicit discharge was observed; 2) the results of the investigation; 3) any follow-up of the investigation; and 4) the date the investigation was closed.	1. Develop IDDE investigation tracking spreadsheet.	1. Permit Year 1	1. Tracking Spreadsheet Developed: Y/N/Partial.
		2. Update tracking spreadsheet following the identification of a suspected illicit discharge, connection, or illegal dumping and throughout the investigation process through closure.	2. Continuously, Permit Years 1-5.	2. Tracking Spreadsheet Updated: Y/N/Partial; Number of investigations, verified illicit discharges.
Permit Ref.	**3.4.5: Staff IDDE Training** Measures to provide training for municipal staff and contractors who, as part of their normal job responsibilities, may observe an illicit discharge, illicit connection, illegal dumping or spills. Training shall include how to identify and report illicit discharges, illicit connections, illegal dumping and spills. Each staff training event shall be documented, including the agenda/materials, date, and number of staff participating.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
16.	**Employee and Contractor Training**			
	Employees and contractors are not currently trained on the identification and reporting of illicit discharges, illicit connections, or illegal	1. Acquire illicit discharge and illicit connection training materials.	1. Permit Year 2	1. Training Materials Acquired: Y/N/Partial

Table 15: Illicit Discharge Detection and Elimination BMPs				
	dumping. The City plans to begin conducting annual staff training events. The City will then begin to implement and document a training program for appropriate municipal staff, who as part of their normal job responsibilities, may come into contact with or otherwise observe an illicit discharge or illicit connection.	2. Conduct training.	2. Annually, Permit Years 2-5	2. Y/N; Training date and number trained.
Permit Ref.	**3.4.6: IDDE Reporting** Measures for the public and staff to report illicit discharges, illegal dumping and spills. The mechanism shall be publicized to facilitate reporting and shall be managed to provide rapid response by appropriately trained personnel.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
17.	**Public Reporting Mechanism**			
	The City recently provided a public reporting mechanism for illicit discharges, illegal dumping and spills on the Stormwater website (City of Henderson, NC). The City has also begun to solicit public and staff reporting illicit discharges, illegal dumping and spills through a statement on the City stormwater web siteThe City will investigate reports as specified in the IDDE Plan and will document the suspected illicit discharge, illegal dumping, or spill in the IDDE tracking excel spreadsheet developed in BMP #15 with the date it was reported, findings of the investigation, source, enforcement actions, and closure.	1. Capture and collect the IDDE reports received via the website or other means.	1. Permit Year 1	1. Y/N; Number of reported illicit discharges, illegal dumping and spills.
		2. Update the IDDE tracking excel spreadsheet.	2. Continuously, Permit Years 1-5.	2. Y/N/Partial

PART 8: CONSTRUCTION SITE RUNOFF CONTROL PROGRAM

In accordance with 15A NCAC 02H .0153, the City of Henderson relies upon the North Carolina Sedimentation Pollution Control Act (SPCA) of 1973 as a qualifying alternative program to meet a portion of the NPDES MS4 Permit requirements for construction site runoff control measures. The SPCA requirements include reducing pollutants in stormwater runoff from construction activities that result in land disturbance of greater than or equal to one acre, and any construction activity that is part of a larger common plan of development that would disturb one acre or more. The state SPCA Program is either delegated to a city/town, delegated to a county, or implemented by NCDEQ in non-delegated areas.

Table 16: Qualifying Alternative Program Components for Construction Site Runoff Control Program

Permit Reference	State or Local Program Name	Legal Authority	Implementing Entity
3.5.1 - 3.5.4	City of Henderson Delegated SEC Program*	15A NCAC Chapter 04, Title V, Chapter 23A of the City Code of Ordinances.	City of Henderson

* The local delegated Soil and Erosion Control (SEC) Program ordinance can be found at: https://library.municode.com/nc/henderson/codes/code_of_ordinances?nodeId=TITVINPL_CH23ASOERSECO.

The City of Henderson also implements the following BMPs to meet NPDES MS4 Permit requirements.

Table 17: Construction Site Runoff Control BMPs				
Permit Ref.	**3.5.6: Public Input** Measures to provide and promote a means for the public to notify the appropriate authorities of observed erosion and sedimentation problems.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
18.	**Municipal Staff Training**			
	The City will train municipal staff who receive calls from the public on the protocols for referral and tracking of construction site runoff control complaints.	1. Train municipal staff on proper handling of construction site runoff control complaints.	1. Annually, Permit Years 1-5	1. Y/N. Number of staff trained
19.	**Notification System for Public Reporting of SEC Problems**			

Table 17: Construction Site Runoff Control BMPs				
	The City has a dedicated notification system for the public to use for reporting any SEC problems or concerns. The City also solicits public reporting of SEC problems observed at construction sites to the City through a form on the City stormwater web site, erosion control page, located at City of Henderson, NC	1. Continue to maintain the webpage that informs public on how to report concerns related to sediment and erosion control at construction sites to the City of Henderson Stormwater Program and include the helpline number and stormwater program email address.	1. Continuously	1. Y/N. Report number of complaints received.
Permit Ref.	**3.5.5: Waste Management** Measures to require construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impact to water quality.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
20.	**Control Construction Site Waste**			
	The City is currently implementing the delegated SEC program as published in Chapter 23A of the City ordinance, as well as complying with NCG010000 permit requirements to control construction site waste that may adversely impact water quality.	1.Require construction sites to meet NCG010000 permit requirements through City ordinance.	1. Continuously, Permit Years 1-5.	1. Y/N/Partial
21.	**SEC Ordinance**			

Table 17: Construction Site Runoff Control BMPs				
	The City maintains a Soil Erosion and Sedimentation Control ordinance that provides the legal authority to approve SEC plans submitted to the City, conduct inspections to ensure compliance, and enforcement powers. The SEC Ordinance is available under Title V, Chapter 23A. The current ordinance requires construction site operators to implement appropriate erosion and sediment control BMPs while proving procedures for site plan review which incorporate the consideration of adverse water quality impacts. The current ordinance also provides procedures for site inspection and the enforcement of control measures.	1. Annual review of SEC ordinance to ensure permit compliance.	1. Annually, Permit Years 1-5.	1. Y/N/Partial;

PART 9: POST-CONSTRUCTION SITE RUNOFF CONTROL PROGRAM

This SWMP identifies the minimum elements to develop, implement and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that are located within the City of Henderson and discharge into the MS4. These elements are designed to minimize water quality impacts utilizing a combination of structural Stormwater Control Measures (SCMs) and/or non-structural BMPs appropriate for the community, and ensure adequate long-term operation and maintenance of SCMs.

In accordance with 15A NCAC 02H .0153 and .1017, the City of Henderson implements the following State post-construction program requirements, which satisfy the NPDES Phase II MS4 post-construction site runoff control requirements as Qualifying Alternative Programs (QAPs) in the MS4 area(s) where they are implemented.

Table 18: Qualifying Alternative Program(s) for Post-Construction Site Runoff Control Program

State QAP Name	State Requirements	Local Ordinance / Regulatory Mechanism Reference
Tar-Pamlico River Basin Nutrient Sensitive (NSW) Management Strategy	15A NCAC 2B .0258	City Ordinance-Title IV- Public Utilities; Subtitle C- Public Works, Chapter 16-Streets and Sidewalks, Article II-Excavations cuts and repairs, Division 3-Stormwater Management

Table 19: Summary of Existing Post-Construction Program Elements

Permit Requirements for **Plan Review and Approval**	Municipal Ordinance/Code Reference(s) and/or Document Title(s)	Date Adopted
3.6.2(a) Authority	Sec 16.-37.1	Rev 1-27-12
3.6.3(a) & 15A NCAC 02H.0153(c) Federal, State & Local Projects		
3.6.3(b) Plan Review	Sec 16-37.6	Rev 1-27-12
3.6.3(c) O&M Agreement	Sec 16-37.4.d.2.b.iv	Rev 1-27-12
3.6.3(d) O&M Plan	Sec 16-37.4.d.2.b.v	Rev 1-27-12
3.6.3(e) Deed Restrictions/Covenants	Sec 16-37.4.d.2.b.v	Rev 1-27-12
3.6.3(f) Access Easements	Sec 16-37.4.d.2.b.v	Rev 1-27-12
Permit Requirements for **Inspections and Enforcement**	Municipal Ordinance/Code Reference(s) and/or Document Title(s)	Date Adopted
3.6.2(b) Documentation	Sec 16-37.5	Rev 1-27-12
3.6.2(c) Right of Entry	Sec 16-37.7	Rev 1-27-12
3.6.4(a) Pre-CO Inspections	Sec 16-37.7	Rev 1-27-12
3.6.4(b) Compliance with Plans	Sec 16-37.6	Rev 1-27-12
3.6.4(c) Annual SCM Inspections	Sec 16-37.7.b	Rev 1-27-12
3.6.4(d) Low Density Inspections	N/A	N/A
3.6.4(e) Qualified Professional	Sec 16-37.7.b.1	Rev 1-27-12
Permit Requirements for **Fecal Coliform Reduction**	Municipal Ordinance/Code Reference(s) and/or Document Title(s)	Date Adopted
3.6.6(a) Pet Waste	N/A	N/A
3.6.6(b) On-Site Domestic Wastewater Treatment	N/A	N/A

The annual reporting metrics for the post construction program are provided in Table 20: Post Construction Site Runoff Control BMPs below.

Table 20: Post Construction Site Runoff Control BMPs				
Permit Ref.	**3.6.5(a), 3.6.5(b), and 4.1.3: Minimum Post-Construction Reporting Requirements** Measures to document activities over the course of the fiscal year (July 1 – June 30) including appropriate information to accurately describe progress, status, and results.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
22.	**Standard Reporting**			
	Implement standardized tracking, documentation, inspections and reporting mechanisms to compile appropriate data for the annual self-	1. Track number of low density and high-density plan reviews performed.	1. Continuously, Permit Years 1-5	1. Number of plan reviews performed for low density and high density.

Table 20: Post Construction Site Runoff Control BMPs				
	assessment process. Data shall be provided for each Post-Construction/ Qualifying Alternative Program being implemented as listed in Tables 18 and 19.	2. Track number of low density and high density plans approved.	2. Continuously, Permit Years 1-5	2. Number of plan approvals issued for low density and high density.
		3. Maintain a current inventory of low density projects and constructed SCMs including SCM type or low density acreage, location and last inspection date.	3. Continuously, Permit Years 1-5	3. Summary of number and type of SCMs added to the inventory; and number and acreage of low density projects constructed.
		4. Track number of SCM inspections performed.	4. Continuously, Permit Years 1-5	4. Number of SCM inspections.
		5. Track number of low density inspections performed.	5. Continuously, Permit Years 1-5	5. Number of low-density projects inspected.
		6. Track number and type of enforcement actions taken.	6. Continuously, Permit Years 1-5	6. Number of enforcement actions issued.
Permit Ref.	**2.3 and 3.6: Qualifying Alternative Program(s)** Measures to develop, implement and enforce additional BMPs in order to comply with the QAP state program requirements.			
BMP No.	**A** **Description of BMP**	**B** **Measurable Goal(s)**	**C** **Schedule for Implementation**	**D** **Annual Reporting Metric**
The QAP requirements are fully met by the existing QAP for post-construction, see references provided in Table 18.				
Permit Ref.	**3.6.2: Legal Authority** Measures to maintain adequate legal authorities through ordinance or other regulatory mechanism to: (a) review designs and proposals for new development and redevelopment to determine whether adequate stormwater control measures will be installed, implemented, and maintained, (b) request information such as stormwater plans, inspection reports, monitoring results, and other information deemed necessary to evaluate compliance with the Post-Construction Stormwater Management Program, and (c) enter private property for the purpose of inspecting at reasonable times any facilities, equipment, practices, or operations related to stormwater discharges to determine whether there is compliance with the Post-Construction Stormwater Management Program.			
BMP No.	**A** **Description of BMP**	**B** **Measurable Goal(s)**	**C** **Schedule for Implementation**	**D** **Annual Reporting Metric**
This permit requirement is fully met by the existing post-construction program, see references provided in Table 19.				

Table 20: Post Construction Site Runoff Control BMPs				
Permit Ref.	**3.6.3: Plan Review and Approval** Measures to maintain plan review and approval authority, standards and procedures to: (a) Require Federal, State, and local government projects to comply with Post-Construction Program requirements throughout the entire MS4 permitted area, unless the entity is subject to its own NPDES MS4 permit or a qualifying alternative program, (b) Conduct site plan reviews of all new development and redeveloped sites that disturb greater than or equal to one acre, and sites that disturb less than one acre that are part of a larger common plan of development or sale for compliance with 15A NCAC 02H .1017 and the qualifying alternative programs that apply within your jurisdiction, (c) Ensure that each project has an Operation and Maintenance Agreement that complies with 15A NCAC 02H .1050(12), (d) Ensure that each project has an Operation and Maintenance Plan that complies with 15A NCAC 02H .1050(13), (e) Ensure that each project has recorded deed restrictions and protective covenants, that require the project to be maintained consistent with approved plans, and (f) Ensure that each SCM and associated maintenance accesses be protected in a permanent recorded easement per 15A NCAC 02H 1050 (9) and (10).			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
This permit requirement is fully met by the existing post-construction program, see references provided in Table 19.				
Permit Ref.	**3.6.4: Inspections and Enforcement** Measures to maintain inspection and enforcement authority, standards and procedures to: (a) Conduct post-construction inspections prior to issuing a Certificate of Occupancy or a Temporary Certificate of Occupancy. Alternatively, the project owner may provide a surety bond to guarantee compliance with the approved plan(s), (b) Ensure that the project has been constructed in accordance with the approved plan(s), (c) Ensure annual inspection of each permitted SCM to ensure compliance with the approved Operation and Maintenance Agreement, (d) Ensure inspection of low density projects at least once during the permit term, and (e) Require that inspections be conducted by a qualified professional			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
This permit requirement is fully met by the existing post-construction program, see references provided in Table 19.				
Permit Ref.	**3.6.6: Fecal Coliform Reduction** Measures to control, to the maximum extent practicable, sources of fecal coliform per 15A NCAC 02H .1017(7). At a minimum, the program shall include: (a) A pet waste management component, which may be achieved by revising an existing litter ordinance, and (b) An on-site domestic wastewater treatment system component, if applicable, which may be coordinated with local county health department, to ensure proper operation and maintenance of such systems.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
23.	**Pet Waste Management at Dog Parks**			
	Conduct pet waste management practices at the two City-owned dog	1. Pet waste bag dispensing.	1. Continuously, Permit Years 1-5	1. Y/N/Partial

Table 20: Post Construction Site Runoff Control BMPs				
	parks: “Pawsome Park” and “Scentral Bark”.	2. Waste receptacles.	2. Continuously, Permit Years 1-5	2. Y/N/Partial
24.	**Pet Waste Ordinance**			
	Develop a pet waste ordinance or amend an existing ordinance with a pet waste management component.	1. Develop or amend existing ordinance with pet waste management component.	1. Permit Year 3	1. Y/N/Partial; Date adopted; Ordinance reference.

PART 10: POLLUTION PREVENTION AND GOOD HOUSEKEEPING PROGRAMS

This SWMP provides a comprehensive pollution prevention and good housekeeping strategy for the City of Henderson municipal facilities and operations. Pollution prevention and good housekeeping is accomplished through the implementation of seven required programs, which collectively address the ultimate goal of preventing or reducing pollutant runoff from municipal operations such as parks and open space maintenance, fleet and building maintenance, new construction and land disturbances, and municipal storm sewer system maintenance.

Pollution prevention and good housekeeping for municipal operations includes the following programs:

1. Municipal Facilities Operation and Maintenance Program
2. Spill Response Program
3. MS4 Operation and Maintenance Program
4. Municipal SCM Operation and Maintenance Program
5. Pesticide, Herbicide and Fertilizer Management Program
6. Vehicle and Equipment Maintenance Program
7. Pavement Management Program

The City of Henderson will manage, implement and report the pollution prevention and good housekeeping BMPs as specified in Table 21 below for each required program.

Table 21: Pollution Prevention and Good Housekeeping BMPs

Permit Ref.	**3.7.1: Municipal Facilities Operation and Maintenance Program** Measures to manage facilities that are owned and operated by the permittee and have the potential for generating polluted stormwater runoff. The permittee shall maintain a current inventory of municipal facilities; perform facility inspections and routine maintenance; establish specific frequencies, schedules, and standard documentation; provide staff training on general stormwater awareness and implementing pollution prevention and good housekeeping practices. *[Please note that at a minimum, NCDEQ will require that all inventoried municipal facilities be inspected once per permit term to determine pollution potential, and facilities with potential be inspected at least annually]*			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
25.	**Inventory and Inspect Municipally Owned or Operated facilities**			
	The City maintains a current inventory of facilities and operations owned and operated by the City with the potential for generating polluted stormwater runoff. The City will inspect all inventoried municipal facilities once per permit term (Permit Year 2) to determine if each	1. Maintain an inventory of facilities and operations owned and operated by the City.	1. Continuously, Permit Years 1-5.	1. Y/N/Number of facilities
		2. Inspect all inventoried municipal facilities to determine pollution potential.	2. Permit Year 2	2. Y/N/

Table 21: Pollution Prevention and Good Housekeeping BMPs				
	facility has the potential for pollutants to come in contact with stormwater and enter the storm sewer system. The City will identify which facilities have that pollution potential, and inspect those facilities on an annual basis.	3. Inspect municipal facilities with stormwater pollution potential.	3. Annually, Permit Years 2-5	3. Y/N/Number of Inspections
26.	**Operation and Maintenance (O&M) for Municipally Owned or Operated Facilities**			
	Maintain, implement, and annually evaluate and update as necessary an O&M program for municipally owned and operated facilities with the potential for generating polluted stormwater runoff. The O&M program shall specify and establish the frequency of inspections, routine maintenance requirements, and standard documentation.	1. Develop and implement Stormwater Plan with O&M specifications for sand filters and other SCMs at the Operations Center.	1. Permit Year 1	1. Y/N/Date
27.	**Staff Training on Pollution Prevention and Good Housekeeping**			
	Implement an employee training program for employees involved in implementing pollution prevention and good housekeeping practices.	1. Acquire pollution prevention and good housekeeping training materials.	1. Permit Year 2	1. Y/N/Partial
		2. Conduct training.	2. Annually, Permit Years 2-5	2. Y/N/Partial; Training date and number trained.
Permit Ref.	**3.7.2: Spill Response Program** Measures for facilities and operations that store and/or use materials that have the potential to contaminate stormwater runoff if spilled. The permittee shall maintain written spill response procedures and train staff on spill response procedures.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
28.	**Written Spill Response Procedures**			
	Maintain written spill response procedures for municipally owned or operated facilities.	1. Develop written spill response procedures.	1. Permit Year 1	1. Y/N/Date
Permit Ref.	**3.7.3: MS4 Operation and Maintenance Program** Measures to minimize pollutants in the stormwater collection system. The permittee shall provide operation and maintenance staff training on stormwater awareness and pollution prevention, perform MS4 inspections, maintain the collection system including catch basins and conveyances; and establish specific frequencies, schedules, and standard documentation.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
29.	**O&M for Catch Basins and Storm Sewer Conveyance Systems**			

Table 21: Pollution Prevention and Good Housekeeping BMPs				
	Maintain and implement an O&M program for the storm sewer system including catch basins and stormwater conveyance systems that the City owns and maintains. The O&M program shall specify and establish the frequency of inspections, routine maintenance requirements, and standard documentation.	1. Establish an MS4 O&M program.	1. Permit Year 1	1. Y/N/Partial
		2. Implement O&M Program.	2. Continuously, Permit Years 2-5	2. Y/N/Partial
Permit Ref.	**3.7.4: Municipal SCM Operation and Maintenance Program** Measures to manage municipally-owned, operated, and/or maintained structural stormwater control measures (SCMs) that are installed for compliance with the permittee's post-construction program. The permittee shall maintain a current inventory of SCMs, perform SCM inspections and maintenance, and shall establish specific frequencies, schedules, and documentation.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
30.	**Identify Structural Stormwater Controls**			
	The City is currently gathering data on the City's stormwater system. The City will update and maintain a current inventory of municipally-owned or operated structural stormwater control measures (SCMs) installed for compliance with the City's post-construction ordinance.	1. Update inventory.	1. Continuously, Permit Years 1-5.	1. Y/N/Date Updated; Number/type (summary).
31.	**O&M for Structural SCMs**			
	Maintain and implement an O&M program for municipally-owned or maintained structural SCMs. The O&M program shall specify and establish the frequency of inspections, routine maintenance requirements, and standard documentation.	1. Establish structural SCM O&M written procedures.	1. Permit Year 1	1. Y/N/Partial
		2. Implement the structural SCM O&M program.	2. Continuously, Permit Years 2-5	2. Y/N/Partial
Permit Ref.	**3.7.5: Pesticide, Herbicide and Fertilizer Management Program** Measures to minimize water quality impacts from the use of landscape chemicals. The permittee shall provide routine pollution prevention and chemical use, storage and handling training, and shall ensure compliance with permits and applicator certifications.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
32.	**Pesticide, Herbicide and Fertilizer Application Management**			

Table 21: Pollution Prevention and Good Housekeeping BMPs				
	The City employees are currently licensed. Ensure municipal employees and contractors are properly trained and all permits, certifications, and other measures for applicators are followed.	1. Ensure municipal employees are licensed and trained.	1. Continuously, Permit Years 1-5.	1. Y/N/Number of licensed staff
		2. Ensure contractors are licensed and trained	2. Continuously, Permit Years 1-5.	2. Y/N/Number licensed and trained
Permit Ref.	**3.7.6: Vehicle and Equipment Maintenance Program** Measures to prevent and minimize contamination of stormwater runoff from areas used for municipal vehicle and equipment maintenance and/or cleaning. The permittee shall ensure that municipal industrial facilities subject to NPDES industrial permitting comply with those permit requirements, provide routine pollution prevention training to staff, perform routine inspections, and establish specific frequencies, schedules, and documentation.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
33.	**Minimize Contamination of Stormwater Runoff from Vehicle and Equipment Cleaning Areas**			
	The City will describe and implement control measures to prevent or minimize contamination of the stormwater runoff from all areas used for vehicle and equipment maintenance and cleaning. The City will ensure municipal industrial facilities subject to NPDES industrial permitting comply with permit requirements, perform routine inspections, and establish frequencies, schedules, and standard documentation.	1. Repair wash pad that discharges to sanitary sewer system.	1. Permit Year 2	1. Y/N/Partial
		2. Wash vehicles and equipment at wash pad or other location discharging to sanitary sewer.	2. Continuously, Permit Years 1-5	2. Y/N/Partial
Permit Ref.	**3.7.7: Pavement Management Program** Measures to reduce pollutants in stormwater runoff from municipally-owned streets, roads, and parking lots within the permittee's corporate limits. The permittee shall implement measures to control litter, leaves, debris, particulate and fluid pollutants associated with vehicles, and establish specific frequencies, schedules, and documentation.			
BMP No.	**A**	**B**	**C**	**D**
	Description of BMP	**Measurable Goal(s)**	**Schedule for Implementation**	**Annual Reporting Metric**
34.	**Maintenance of Streets, Roads, and Public Parking Lots**			
	Evaluate existing and new BMPs annually that reduce polluted	1. Conduct street sweeping.	2. Continuously, Permit Years 1-5	2. Y/N/Street Miles swept

Table 21: Pollution Prevention and Good Housekeeping BMPs				
	stormwater runoff from municipally-owned streets, roads and public parking lots within their corporate limits. The City will evaluate the effectiveness of these BMPs based on cost and the estimated quantity of pollutants removed. The City will implement new BMPs where necessary to control litter and other pollutants associated with vehicles, as well as establish frequencies, schedules, and standard documentation.	2. Evaluate existing and new best practices.	3. Annually, Permit Years 1-5	3. Y/N/Partial