



CITY OF
**VIRGINIA
BEACH**

Chesapeake Bay TMDL Action Plan



Public Works Department
MS4 Permit # VA0088676

July 2026

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Acronyms and Abbreviations

BMP	Best Management Practice
City	City of Virginia Beach
DEQ	Virginia Department of Environmental Quality
HRSD	Hampton Roads Sanitation District
lb/ac/yr	pound per acre per year
lbs/year	pounds per year
MOA	Memorandum of Agreement
MS4	Municipal Separate Storm System
MTD	Manufactured Treatment Device
POC	Pollutant of Concern
SWMF	Stormwater Management Facility
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus

1. Introduction

The City of Virginia Beach (City), by the terms of its municipal separate storm system (MS4) permit, is required to develop and submit a Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan to the Virginia Department of Environmental Quality (DEQ). The Chesapeake Bay TMDL, established by the U.S. Environmental Protection Agency, is a comprehensive “pollution diet” that holds the Commonwealth of Virginia accountable for implementing actions to restore clean water in the Chesapeake Bay and its rivers, creeks, and streams. There are many resources about the Chesapeake Bay TMDL for additional information about actions being taken to restore the bay and how compliance with federal regulations is being met.

- US EPA Chesapeake Bay TMDL website <https://www.epa.gov/chesapeake-bay-tmdl>
- Virginia Department of Environmental Quality Chesapeake Bay TMDL website <https://www.deq.virginia.gov/our-programs/water/chesapeake-bay/chesapeake-bay-tmdls>
- Chesapeake Bay Program website <https://www.chesapeakebay.net>.

The Chesapeake Bay TMDL watershed encompasses six states and the District of Columbia. The 2014 Chesapeake Bay Watershed Agreement is the driving force in advancing the water quality goals throughout the Chesapeake Bay including the City of Virginia Beach, which is located at the southeasternmost point of the watershed. The Virginia DEQ is responsible for enacting the terms of the Agreement for the state of Virginia, and DEQ enforces certain responsibilities for localities through their respective MS4 permits. This TMDL Action Plan document shows how the City of Virginia Beach will achieve compliance with the TMDL responsibilities outlined in its MS4 permit.

City of Virginia Beach MS4 Permit

Permit Number: VA0088676

Date Issued: January 26, 2024

Expiration Date: January 25, 2029

This MS4 permit requires the development of the Second and Third Phase Chesapeake Bay TMDL Action Plan which requires the City to meet 40% and 100% of their pollutant reductions by June 30, 2026 and June 30, 2028, respectively for each phase. The City has elected to submit one combined plan that addresses both the 40% and 100% nutrient reductions to meet the requirements of Part II.D.i of the MS4 Permit. This 2026 Chesapeake Bay TMDL Action Plan (2026 Plan) demonstrates how the City will meet 100% of the nutrient reduction requirements through projects and nutrient trading by June 30, 2028. The previous MS4 permit required reductions for total suspended solids which has been removed from the 2024 permit. Previous versions of the City’s Chesapeake Bay TMDL Action Plans are available upon request to vbstormwater@vbgov.com.



The portion of the Chesapeake Bay Watershed in the City of Virginia Beach contains three small sub-watersheds. Legislation to include the Lynnhaven River and Little Creek watersheds in the James River Basin was passed by the Virginia General Assembly in 2019. This legislation also allows for nutrient and sediment trading through the Hampton Roads Water Quality Credit Agreement between the Hampton Roads Sanitation District (HRSD) and the City, to meet the pollutant load reduction requirements of the 2026 Chesapeake Bay TMDL Action Plan. The City's Elizabeth River, Little Creek, and Lynnhaven River watersheds, located within the Chesapeake Bay watershed, are shown in Figure 1. This figure demonstrates the extent of the Chesapeake watershed in blue and the portion of the watershed located within the City of Virginia Beach is expanded on the right-hand side and outlined in red. The Chesapeake Bay watershed consists of about 64,000 square miles while about 43 square miles lies within the City.

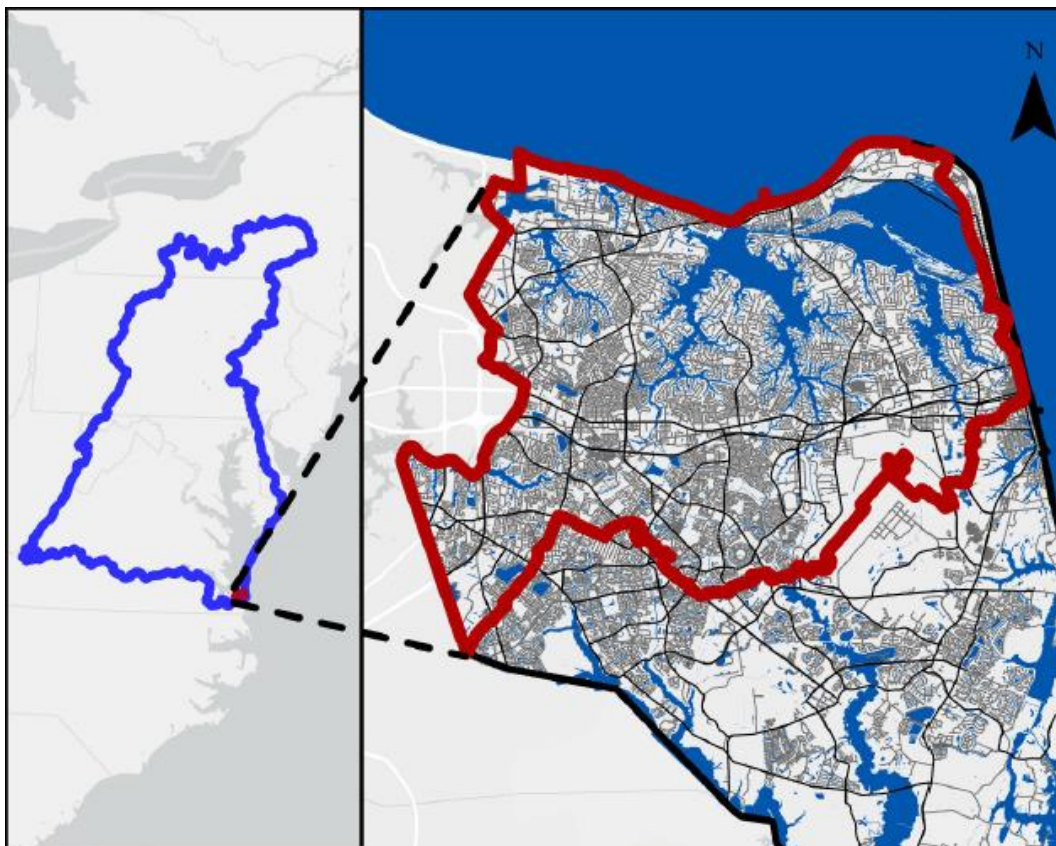


Figure 1. Map of Chesapeake Bay Watershed located within the City of Virginia Beach

This 2026 Plan meets the permit requirements by including the following information.

- Calculations supporting the required pollutant load reductions for phosphorus and nitrogen for both the 40% and 100% reductions required,
- Legal Authority that is needed to meet the required reductions,
- Summary of the total reductions achieved to date for phosphorus and nitrogen,
- Summary of the BMPs implemented to date to achieve the reductions, including date of implementation and reductions achieved,
- Summary of the BMPs planned to be implemented to meet both the 40% and 100% reduction requirements, including the type of BMP, project name, location, percent removal efficiency for each pollutant of concern, calculation of the reduction expected to be achieved, and estimated cost,
- Summary of public comments received as a result of public participation; shown in Appendix B.

2. Pollutant Reductions Required

The City's MS4 Permit requires annual load reductions for the pollutants of concern (POC), phosphorus and nitrogen, from existing sources to be reduced by 40 percent by June 30, 2026, and 100 percent by June 30, 2028. The required pollutant reductions are based on the land cover conditions that existed in 2009 to address development that impacted the water quality in the Chesapeake Bay prior to the date of the Chesapeake Bay TMDL. There are additional requirements to address development that occurred between 2009 and 2014. This development occurred after the development of the Chesapeake Bay TMDL and DEQ implementing new regulations to ensure that new development had no further nutrient impacts on waterways. Since the projects implemented during 2009-2014 were not considered nutrient neutral these are also included in the required pollutant reductions. New development that occurred after 2014 was required to meet more stringent stormwater requirements, which have been determined by DEQ to be nutrient neutral and additional pollutant reductions are not required.

A summary of the 40% and 100% required reductions for the 2009 existing sources is shown in Table 1. The reduction requirements are calculated in accordance with the City's MS4 Permit Part 1.D.d)5)(b)(1). The 2009 Area Served by MS4 referenced in Table 1 is the drainage area within the City's boundary that flows through the publicly maintained stormwater system and publicly owned property that is used to calculate the impervious and pervious areas. This area doesn't include open water, forest, wetlands, or surface runoff that flows directly into the local waterways. The MS4 service area values are based on the City's most recent update to the delineation in 2022. The map is available on the City's Open Data Portal at data.virginiabeach.gov.

Table 1. 40% and 100% Existing Sources Required Reductions

POC	Land Cover	2009 Area Served by MS4 (acres)	Loading Rate (lbs/ac/yr)	Percentage of load reduction	Required 40% Reduction (lbs/year)	Required 100% Reduction (lbs/year)
TN	Impervious	13,838	9.39	9%	6,955	17,387
	Pervious	13,573	6.99	6%		
TP	Impervious	13,838	1.76	16%	1,756	4,389
	Pervious	13,573	0.50	7.25%		

The MS4 service area acreages are provided in Table 2 for each local watershed within the Chesapeake Bay Watershed. This area includes all lands that discharge through the City's stormwater drainage system and include all City owned properties. Private properties that do not discharge to the City's stormwater system are excluded.

Table 2. City MS4 service area acres in the Chesapeake Bay watershed

Local Watershed	Acres Served by MS4
Elizabeth River	5,963
Little Creek	3,660
Lynnhaven River	17,788
Total	27,411

In addition to the required pollutant reductions for existing development before 2009, the City has accounted for increased pollutant loads from new sources that initiated construction after July 1, 2009, and grandfathered projects that disturb one acre or greater with an average land cover condition greater than 16 percent post-development impervious. Grandfathered projects are those that were originally designed under old development and stormwater quality criteria and are allowed to continue construction under the former regulations. New sources and grandfathered projects that initiated construction after July 1, 2009, and before July 1, 2014, were offset in the First Phase Chesapeake Bay TMDL Action Plan by removing an additional 15 percent of the pollutant load reductions required for the first phase. This is equivalent to an extra 0.75 percent of all existing sources.

Grandfathered projects that initiated construction after July 1, 2014, have been reported to DEQ and are summarized in Table 3. The additional reductions required to offset 100% of the increased loads from these projects are calculated for new impervious areas above 0.41 lbs/ac/yr for phosphorus using the Virginia Runoff Reduction Method. The required reductions for nitrogen are calculated using the ratio of the phosphorus loading rate to the nitrogen loading rate as required in the City's MS4 Permit. Three of the projects in Table 3 below did not increase the impervious cover over existing conditions and therefore do not require additional reductions.

Table 3 Grandfathered Project Summary

Project Name	Existing Land Cover Impervious/ Pervious (acres)	Proposed Land Cover Impervious/ Pervious (acres)	Total TP Required Reduction (lbs/year)	Total TN Required Reduction (lbs/year)
Shipp's Corner Soccer Complex	0 / 14.90	2.20 / 12.70	3.86	20
Crescent Square Virginia Supportive Housing	0.78 / 1.62	1.15 / 1.25	0.65	3.38
Coral Height Condominiums	0 / 1.64	0.90 / 0.74	1.58	8.22
Bayville at Lake Joyce	1.04 / 5.14	3.28 / 2.90	3.93	20
Amstel Square Section I and II	0 / 8.73	6.36 / 2.37	11	58
Godfrey Farm Subdivision	0.17 / 7.87	0.76 / 7.28	1.04	5.41

Project Name	Existing Land Cover Impervious/ Pervious (acres)	Proposed Land Cover Impervious/ Pervious (acres)	Total TP Required Reduction (lbs/year)	Total TN Required Reduction (lbs/year)
Witchduck Road Phase II	17.24 / 4.55	19.64 / 2.15	4.22	22
Wegmans	11.98 / 0.36	10.80 / 1.54	0	0
Burton Station Infrastructure Phase I and III A	36.66 / 76.65	44.70 / 68.61	14	73
Indian River Road and Kempsville Road Intersection	2.49 / 0.12	2.31 / 0.30	0	0
Virginia Beach Sports Center	11.31 / 11.69	7.77 / 15.23	0	0
Total			40	210

The results of each of these reduction requirements from the previous calculations are summarized in Table 4 below. These include both the total pollutant reductions for the 40% and 100% requirements.

Table 4. 40% and 100% total required reductions

Type of Reduction Requirement	TN (lbs/yr)	TP (lbs/yr)
Existing Sources 40% Reduction	6,955	1,756
Existing Sources 100% Reduction	17,387	4,389
Additional 0.75% for New Sources	130	33
Required for Grandfathered Projects	210	40
Total Required 40% Reduction	7,296	1,830
Total Required 100% Reduction	17,727	4,462

3. Projects and Programs Implemented

The pollutant load reductions from completed projects in the Chesapeake Bay watershed are summarized in Table 5. These have been reported to DEQ in the First Phase Chesapeake Bay TMDL Action Plan and in subsequent MS4 Permit Annual Reports. A detailed explanation of each of the sources of reductions is included in this section.

Table 5. Pollutant Load Reductions from Completed Projects

Source of Credit	Count (each)	TN (lbs/year)	TP (lbs/year)
2006–2009 SWMFs	163	1,301	1,089
2014–2017 SWMFs	52	205	53
Wet Ponds	1	68	30
Stream Restoration	1	235	80
Manufactured Treatment Devices	6	3.7	27
Septic-to-Sewer Conversions	245	2,293	0
Shoreline Restoration	1	505	31
Oyster Reef Restoration	1	1,407	29
Constructed Wetlands	1	45	12
Total Reduction Achieved		6,063	1,351

3.1 Projects

Stormwater Management Facilities January 1, 2006 and June 30, 2009

The City evaluated the SWMFs installed between January 1, 2006, through June 30, 2009, and determined the pollutant load reductions achieved by these facilities. The pollutant removals achieved for TN, TP, and total suspended solids were summed by major watershed and submitted to the Virginia DEQ on September 1, 2015, as part of a complete list of a total of 163 historical best management practices (BMPs) and supporting calculations. These SWMFs are further described in the Draft First Phase Action Plan (City 2018) available upon request to vbstormwater@vbgov.com.

Stormwater Management Facilities July 1, 2014 and July 17, 2017

The City evaluated 52 new and redevelopment projects with SWMF construction completed between July 1, 2014, and July 17, 2017, for credits towards achieving the first permit term pollutant reduction requirements. The City may continue to evaluate SWMFs installed during this period for any facilities that were not accounted for during the first permit term. These SWMFs are further described in the Draft First Phase Action Plan (City 2018) available upon request to vbstormwater@vbgov.com.

Stream Restoration Projects

Mill Dam Creek Stream Restoration

In 2016, the City restored 1,177 linear feet of eroded streambank of Mill Dam Creek between First Colonial Road and Bayne Drive in the Lynnhaven River watershed. The project site is located adjacent to high-

density residential land use and a large undeveloped area and receives runoff from parking lots and grass fields.

Wet Pond Projects

Southern Boulevard Pond Water Quality Improvements

The City completed the construction of the Southern Boulevard Pond in 2020. The project is a new wet pond located in the Elizabeth River watershed. The wet pond improves water quality by allowing pollutants to settle out from collected stormwater, and through the absorption of excess nutrients by aquatic vegetation. The pond captures runoff from approximately 59 acres of existing and redeveloped urban area that consists of industrial and dense residential land use. The project was a cost-participation project between the City and the developer of an adjacent site that was redeveloped into an apartment complex. In addition to meeting the stormwater management needs of the adjacent redevelopment, the wet pond provides additional pollutant removal to help meet the Chesapeake Bay TMDL pollutant reduction requirements.



Manufactured Treatment Device Projects

Aragona Water Quality Improvements

The Aragona Water Quality Improvements project included the installation of an offline hydrodynamic separator MTD to improve stormwater water quality in the Lynnhaven River watershed. The hydrodynamic separator treats 214 acres of previously untreated stormwater runoff. This project also included stormwater quantity enhancements to improve drainage in the Aragona neighborhood.

Drake Court Manufactured Treatment Device

The Drake Court Manufactured Treatment Device (MTD) project installed a hydrodynamic separator device on a 24-inch stormwater pipe that discharges to London Bridge Creek, which is a tributary of the Lynnhaven River. The MTD treats stormwater runoff from a 15-acre residential drainage area, 6 acres of which are impervious cover.

Kemps River Crossing Water Quality Improvements

Kemps River Crossing Water Quality Improvements project is an underground, hydrodynamic separator MTD on a 48-inch stormwater pipe at the Kemps River Crossing Shopping Plaza to treat runoff from roadways before it reaches Lake James and the Elizabeth River. The MTD treats stormwater from approximately 14 acres.

Laurel Cove Park Water Quality Improvements

The City park at 1325 Parkside Place is in a residential subdivision in the Lynnhaven River watershed. The project included the installation of two hydrodynamic separator MTDs on 24-inch and 42-inch stormwater pipes and improves water quality by removing trash, nutrients, and sediments from stormwater runoff.



Shoreline Restoration

Lynnhaven River Basin Ecosystem Restoration Phase 1 Wetland

This project restored 5.5 acres of tidal wetland shoreline management along Thalia Creek at Princess Anne High School as part of the total 38-acre goal of wetlands restoration within the Lynnhaven River. The project was implemented through a partnership between the US Army Corps of Engineers and the City of Virginia Beach.



Constructed Wetlands

Lynnhaven Park Constructed Wetland

The public park at 1246 Bayne Drive is within the Lynnhaven River watershed. A level 1 constructed wetland was installed to improve water quality. The constructed wetland includes pretreatment forebays and a variety of native flowering wetland plant species to treat stormwater runoff from Bayne Drive, Lynnhaven Middle School, and other adjacent areas.

Oyster Reef Restoration Projects

Lynnhaven River Basin Ecosystem Restoration Phase 1 Reef

This project provides 8 acres of oyster reef restoration between Keeling Cove and Dix Creek as part of the total 31-acre goal of reef habitat restoration within the Lynnhaven River. The project is implemented through a partnership between the US Army Corps of Engineers and the City. It is implemented through a cost participation agreement where the City is responsible for 35 percent of the project cost. The project was installed in February 2024 and initial monitoring has been completed.



3.2 Programs

Septic-to-Sewer Conversions

Virginia DEQ allows the use of pollutant reduction credits from septic-to-sewer conversions to help meet required pollutant reduction requirements. In 2007, the City completed the construction of a vacuum sanitary sewer collection system and pump station as part of a capital improvement project in the Little Neck neighborhood located in the Lynnhaven River watershed. As a result, 234 homes were converted from septic systems and connected to the City's sanitary sewer system. In 2017, the City completed a septic-to-sewer conversion project in the Green Hill Farm neighborhood located in the Lynnhaven River watershed. Eleven households were converted from septic systems to connect to the City's sanitary sewer system.

4. Planned Projects and Programs

The City will achieve the required reductions through the implementation of a variety of projects, programs, and nutrient trading. Projects and programs may include shoreline restoration, oyster reef restoration, stream restorations, retrofits of existing SWMFs on public and private lands, the installation of new SWMFs, land use change, and street sweeping. These will be implemented to reduce the credit needs through nutrient trading. Nutrient trading credits will be used to fulfill the remaining pollutant reduction requirements not covered by these projects and programs. Other approved pollutant reduction methods not discussed in this 2026 Plan may also be used to meet pollutant load reduction requirements. Excess credits from projects that provide local water quality improvements may be used toward compliance in accordance with the Chesapeake Bay TMDL Special Condition Guidance.

The City has identified projects and programs that are planned to be implemented by the 100% target date of June 30, 2028. The implementation of these may be adjusted dependent on available funding and contractor availability. A list of control measures implemented during the reporting period and the cumulative progress toward the compliance targets will be reported annually in the City's MS4 Permit Annual Reports. If greater or fewer reductions are achieved through projects and programs, the nutrient trading will be adjusted to achieve compliance.

A summary of the pollutant reductions achieved and the proposed reductions for both the 40% and 100% reduction requirements are included in Table 6. A list of detailed information for each project or program including the type of BMP, project name, percent removal efficiency for each pollutant of concern, calculation of the reduction expected to be achieved by the BMP, and the estimated cost to implement are provided in Appendix A. The 40% reductions will be completed by June 30, 2026, and the 100% reductions will be completed by June 30, 2028.

Table 6. Planned Chesapeake Bay TMDL Reductions 2006-2028

Source of Reduction Credit	40% TN (lbs/year)	40% TP (lbs/year)	100% TN (lbs/year)	100% TP (lbs/year)
2006–2009 SWMFs	1,301	1,089	1,301	1,089
2014–2028 SWMFs	205	53	205	53
Wet Ponds	68	30	1,616	423
Street Sweeping	0	0	112	62
Stormwater Drain Cleaning	TBD	TBD	TBD	TBD
Stream Restoration	235	80	235	80
Shoreline Restoration	505	31	4,027	286
Manufactured Treatment Devices	4	27	4	31
Constructed Wetlands	0	0	118	35
Septic-to-Sewer Conversions	2,293	0	2,293	0
Oyster Reef Restoration	1,407	29	3,669	33
Nutrient/Sediment Trading	1,278	491	4,147	2,370
Total Cumulative Reduction	7,296	1,830	17,727	4,462
Achieving Reduction Requirements	✓	✓	✓	✓
40% Required Reductions	7,296	1,830	-	-
100% Required Reductions	-	-	17,727	4,462

4.1 Projects

The following sections describe the projects that the City plans to use to towards the 40% and 100% nutrient reduction requirements.

Stormwater Management Facilities July 1, 2014 and June 30, 2028

The City will continue to evaluate new and redevelopment projects with SWMFs completed after July 1, 2014, for possible TMDL pollutant reduction credits. TMDL credits from the evaluated projects may be used towards achieving the pollutant reduction requirements.

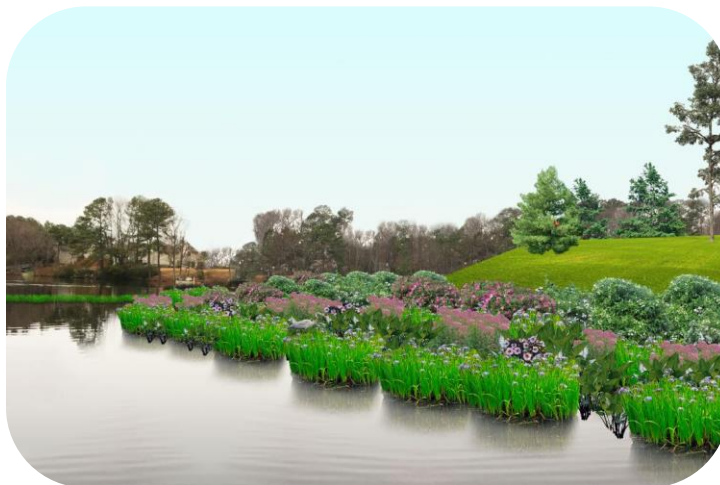
Wet Pond Projects

Bayville Park Lake Water Quality Improvements

The Bayville Park Lake Water Quality Improvements project is in the Lynnhaven River watershed and will modify an existing wet pond to improve treatment efficiency to meet the requirements for a level 2 wet pond. The project is located at 4132 First Court Road near Shore Drive upstream of Lake Joyce at Bayville Farms Park. The design includes the addition of an aeration system to the lake, the creation of pretreatment forebays, and the incorporation of wetland areas.

Chatham Hall Lake Water Quality Improvements

The Chatham Hall Lake Water Quality Improvements project is in the Elizabeth River watershed. The lake receives stormwater runoff from 253 acres and is located adjacent Chatham Hall Park at 5364 Chatham Hall Drive. The project will improve treatment efficiency of the existing lake through the installation of pretreatment forebays within the lake, wetland creation along portions of the shoreline, and an aeration system to retrofit the lake to a level 2 wet pond.



Kemps Lake Water Quality Improvements

The Kemps Lake Water Quality Improvements project includes modification of a 40-acre constructed lake located to the southwest of the I-264 off ramp to Witchduck Road within the Elizabeth River watershed to improve pollutant reduction capacity. The lake treats stormwater runoff from a drainage area of 876 acres, including 564 acres of impervious surfaces. The project will include the installation of pretreatment forebays within the lake, wetland creation, and an aeration system to meet the requirements for a level 2 wet pond.

Providence Park Water Quality Improvement Project

This project includes water quality improvements at Providence Park located at 952 Reon Drive to construct a stormwater wet pond and drainage improvements. These water quality improvements will

reduce pollutants from stormwater discharging to the Elizabeth River and the Chesapeake Bay. Drainage improvements included with the project will reduce flooding at the VDOT Traffic Operations Center and surrounding area. The project will also incorporate public education aspects and amenities for residents visiting the park.



Shoreline Restoration Projects

Bow Creek Stormwater Park Section 1

This project includes converting the 124-acre Bow Creek Golf Course in the Princess Anne Plaza neighborhood into a stormwater park. The project includes shoreline restoration and the creation of tidal wetlands, as well as the creation of stormwater storage area for flood protection. The project is the first section of a multi-phased project.

Eastern Branch Elizabeth River Wetland Restoration

This project is part of the Stormwater Green Infrastructure Master Project. The project includes shoreline restoration of tidal wetlands, floodplain restoration, and drainage improvements along the Elizabeth River adjacent Carolanne Farms Neighborhood Park and Arrowhead Elementary School. The proposed design features work together to restore the wetlands and natural channel sinuosity, promote healthy sediment distribution, improve water quality, and provide improved storage capacity during existing and future flood events. These natural interventions will also provide tangible benefits to the surrounding residential properties beyond flood risk reduction, offering increased wildlife habitats, additional recreational opportunities, and educational partnerships and hands-on learning experiences with Arrowhead Elementary School and the various amenities distributed throughout the park.

Lynnhaven River Basin Ecosystem Restoration Phase 2 Wetland

This project will restore 22 acres of tidal wetland shoreline management in Great Neck Creek between I-264 and Virginia Beach Boulevard as part of the total 38 acres of wetlands restoration within the Lynnhaven River. The project is implemented through a partnership between the US Army Corps of Engineers and the City of Virginia Beach. The project is planned to contribute towards the 40% reduction requirements.

Saw Pen Point Shoreline Restoration

This project will restore the shoreline at Saw Pen Point Park located at 1051 Saw Pen Point Trail to prevent erosion and create wetlands. The project will reduce stormwater pollutants entering the western branch of the Lynnhaven River. Some minor park improvements will be installed with this project.

Manufactured Treatment Device Projects

Jackson Street Water Quality Improvement Project

This project includes the construction of a hydrodynamic separator MTD near the outfall at the Jackson Street cul-de-sac to remove trash and pollutants flowing into Linkhorn Bay. It also includes approximately 800 linear feet of 48-inch storm sewer pipe along South Birdneck Road, between Jackson Street and Sea Street to mitigate existing flooding conditions in the Seatack Neighborhood. The project is planned to contribute towards the 40% reduction requirements.

Constructed Wetland Projects

Historic Kempsville Water Quality Improvement

The project includes the installation of constructed wetlands and a hydrodynamic separator MTD to reduce pollutants from stormwater draining from the surrounding area of the Princess Anne Road and Parliament Drive intersection. The project is in front of the Kempsville Plaza Shopping Center and adjacent to the creek. These BMPs will reduce trash and pollutants flowing into the Elizabeth River. In addition, a kayak launch, dock, shelter, and parking lot will be constructed. The project is planned to contribute towards the 40% reduction requirements.

Oceana Gardens

The project will install a constructed wetlands stormwater management facility. It's located in the Oceana Gardens neighborhood adjacent to Sykes Avenue. The constructed wetlands will treat stormwater from the commercial area west of Sykes Avenue. The project includes a pretreatment forebay and two wetland cells with native plants to remove sediment and nutrients.



Oyster Reef Restoration Projects

Lynnhaven River Basin Ecosystem Restoration Phase 2 Reef

This project will provide 23 acres of reef habitat in Broad Bay to the south of Bay Island as part of the total 31 acres of reef habitat restoration within the Lynnhaven River. The project is implemented through a

partnership between the US Army Corps of Engineers and the City of Virginia Beach. It is implemented through a cost participation agreement where the City is responsible for 35 percent of the project cost.

Additional Projects

The City has partnered with the U.S. Army Corps of Engineers to implement the Lynnhaven River Basin Ecosystem Restoration Project. The City has committed \$13.2 million towards the implementation of this project which will restore approximately 94 acres of submerged aquatic vegetation, 31 acres of reef habitat, and 38 acres of wetlands within the Lynnhaven River in several phases over the coming years. Potential pollutant reductions may be achieved by the wetland and oyster reef restoration and are included in this action plan. The project's long-term benefits of restored habitat in the Chesapeake Bay will encourage the recovery of populations of fish, shellfish, and other aquatic life; lead to better water quality in important recreational areas; and increase Chesapeake Bay resiliency to climate change.

The City is considering potential projects for development within the Chesapeake Bay watershed and continues to evaluate additional potential projects for implementation. These projects may be used towards the required pollutant reductions. All potential projects under consideration for implementation are listed in the City's most recent MS4 Permit Annual Report located on the City's stormwater management website at virginiabeach.gov/stormwater-program.

4.2 Programs

Street Sweeping Program

The City's Street Sweeping Program provides street sweeping operations for publicly maintained streets using regenerative air sweepers. The City has a goal to sweep all public streets six times per year on a bimonthly basis primarily using contracted services. Per the guidelines established in the *Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices* (Schueler et al. 2015) and based on the technology and frequencies, the load-reduction efficiencies for street sweeping practice AST-1 P8W (advanced sweeping technology with one pass every 8 weeks) may be applied for street sweeping operations. Areas identified to be swept at a higher frequency may also be used with the corresponding street cleaning practice and load reduction efficiencies.

Catch Basin and Stormwater Pipe Cleaning Program

The City's Catch Basin and Stormwater Pipe Cleaning Program provides regular inspection and cleaning of the City's storm sewer system. This program also includes testing of the sediment collected. Per the guidelines established in the *Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices* (Schueler et al. 2015) a reduction may be applied for storm drain cleaning operations within the Chesapeake Bay watershed.

Nutrient and Sediment Trading

The City will use nutrient reduction credits transferred from the Hampton Roads Sanitation District (HRSD) in accordance with the Hampton Roads Water Quality Credit Agreement for Chesapeake Bay Restoration. Virginia regulatory restrictions on nutrient and sediment trading between watersheds required that the Little Creek and Lynnhaven River watersheds be returned to the James River Basin for the City to be eligible to receive nutrient credits from HRSD in those watersheds. This modification was accomplished through legislation passed by the Virginia General Assembly in 2019.

The Memorandum of Agreement (MOA) signed between the City and HRSD in 2017, describes the conditions for the transfer of pollutant reduction credits. The City plans to use nutrient trading to meet the pollutant reduction requirements that cannot be met through its projects and programs. The terms of the MOA allow for all the pollutant reduction credits needed for the City to meet both the 40% and 100% reduction requirements to be provided. The City plans to continue implementing projects and programs to reduce the amount of nutrient trading needed based on funding appropriations.

5. Legal Authority

The City has legal authority to implement the requirements of the 2026 Plan through enacted ordinances that address pollutant discharge control, and water quality and quantity treatment of stormwater runoff to meet state and federal regulations.

The City's MS4 Program Plan is located on the "Stormwater Regulations" page of the stormwater program website at viriniabeach.gov/stormwater-program. A list of relevant existing legal authorities for controlling stormwater discharged to the Chesapeake Bay is provided in Appendix A of the MS4 Program Plan. The City has reviewed its MS4 Program Plan in accordance with the MS4 permit requirements and has determined that the current legal authority is sufficient for compliance with the Chesapeake Bay TMDL Special Condition.

Appendix A

Project Details

BMPs Implemented To-Date

Project Name	Substantial Completion Date	Type of SWMF	TN Reduced (lbs/yr)	TP Reduced (lbs/yr)	Location (Latitude, Longitude)
Mill Dam Creek Stream Restoration	March 2017	Stream Restoration	235	80	36.866430,
		MTD	3.7	0.20	-76.033105
Drake Court	March 2018	MTD	0	3.1	36.820626, -76.079373
Southern Boulevard Pond	June 2020	Wet Pond	68	30	36.838190, -76.154687
Aragona Drainage Improvements	July 2020	MTD	0	10	36.864919, -76.144175
Lynnhaven River Basin Ecosystem Restoration Project: Phase 1 Wetlands Restoration	February 2024	Vegetated Shoreline Management	505	31	36.845697, -76.123391
Laurel Cove Park	April 2024	2 MTDs	0	8.9	36.874400, -76.044307
Kemps River Crossing	July 2024	MTD	0	5	36.799173, -76.176870
Lynnhaven Park	August 2025	Constructed Wetland	45	12	36.866138, -76.033403
Lynnhaven River Basin Ecosystem Restoration Project: Phase 1 Oyster Reef Restoration	June 2025	Oyster Reef	1407	29	36.889839, -76.087718

Planned BMPs To Be Implemented Using Virginia Stormwater Handbook Practices

Project Name	Type of SWMF	Total Area (ac)	Impervious Area (ac)	TN Removal Efficiency	TP Removal Efficiency	TN Reduced (lbs/yr)	TP Reduced (lbs/yr)	Location (Latitude, Longitude)
Bayville Park Lake Improvements	Wet Pond Retrofit	155	39	30%	65%	198	29	36.904835, -76.121291
Chatham Hall Lake Improvements	Wet Pond Retrofit	253	135	30%	65%	292	81	36.810597, -76.172818
Kemps Lake Improvements	Wet Pond Retrofit	876	564	30%	65%	911	236	36.837764, -76.162778
Providence Park	Wet Pond	130	39	20%	45%	147	47	36.812726, -76.196311
Jackson Street Water Quality Improvement Project	MTD	15	6.1	0%	20%	0	3.7	36.836813, -76.001480
Historic Kempsville Wetland and Kayak Launch	Constructed Wetland & MTD	13	9.8	20%	45%	22	10	36.827418, -76.165978
Oceana Gardens	Constructed Wetland	22	14	25%	50%	51	13	36.842465, -76.008673

Note: Credits for SWMFs are calculated using James River Loading Rates of 0.50 lbs/acre/year for TN and 1.76 lbs/acre/year for TP and uses the Removal Efficiencies noted in the table above.

Total estimated cost to implement the above reductions = \$41,000,000

Planned BMPs To Be Implemented Using Vegetated Shoreline Management Practices

Project Name	Length of Shoreline Restored (ft)	Area of Vegetated Wetland Restoration (ac)	TN Reduced (lbs/yr)	TP Reduced (lbs/yr)	Location (Latitude, Longitude)
Bow Creek Stormwater Park Section 1	0	12	1,098	67	36.823826, -76.092513
Eastern Branch Elizabeth River Wetland and Floodplain Restoration	6,375	2.5	344	54	36.830059, -76.187505
Lynnhaven River Basin Ecosystem Restoration Project: Phase 2 Wetlands Restoration	0	23	2,020	123	36.844787, -76.002692
Saw Pen Point Shoreline Improvements	400	0.31	60	11	36.868022, -76.120298

Note: Credit for Vegetated Shoreline Management Practices calculated from the Chesapeake Bay Program Expert Panel Report for Shoreline Management Projects

Total estimated cost to implement the above reductions = \$27,000,000

Planned BMPs To Be Implemented Using Oyster Reef Restoration Practices

Project Name	Oyster Tissue Mean Dry Mass (g/m ²)	Data Methodology	TN Reduced (lbs/yr)	TP Reduced (lbs/yr)	Location (Latitude, Longitude)
Lynnhaven River Basin Ecosystem Restoration Project: Phase 2 Oyster Reef Restoration	50	Project Goals	2,262	3.6	36.903337, -76.036474

Note: Credit for Oyster Reef Restoration Practices calculated from the Chesapeake Bay Program Oyster BMP Expert Panel Second Incremental Report for Assimilation and Denitrification

Total estimated cost to implement the above reductions = \$5,000,000

Appendix B

Public Comments

Public Comment Process

Solicitation of public input was announced at the start of a 2-week comment period via social media, blog post, and distributed to over 12,500 subscribers of the City’s “Be In The Know” email newsletter. This 2026 Plan will be updated after completion of the public input process.

As each project identified in this plan progresses, additional opportunities for public comment will be provided. Each project will be included in the City Capital Improvement Project (CIP) budget review process for public to comment on the funding allocations proposed.