Stormwater Management Program

City of South Burlington, Vermont October 17, 2019

(Approved by VTDEC on November 19, 2019)

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Introduction

This Stormwater Management Program (SWMP) documents the City of South Burlington's strategy to address and reduce the impacts of stormwater runoff. Preparation of this plan is required by the Vermont Municipal Separate Storm Sewer System (MS4) permit number 3-9014 issued by the Vermont Department of Environmental Conservation (DEC) last issued on July 27, 2018. This plan contains all the required elements described in the 2018 Vermont MS4 permit and is intended to minimize the adverse impact that unmanaged stormwater runoff from the City of South Burlington can have on water quality.

Municipal Background

The City of South Burlington is located in the northwest corner of Vermont along the shores of Lake Champlain (Figure 1). The City covers 29.6 square miles and includes numerous commercial enterprises that are critical to Vermont and the region, including the Burlington International Airport. During the 1960's South Burlington was the fastest growing municipality in the State of Vermont. The City has continued to grow since that time, to a population of 18,017 (2010 census data) and is one of Vermont's largest municipalities.

Impacts of Stormwater

The impervious surfaces created by the buildings and pavement that make up South Burlington's developed areas cause rainwater and snowmelt to flow quickly over the landscape rather than soak naturally into the soil. This can lead to: changes in stream flow, increased flooding, damage to private and public property, eroded stream banks, and destruction of aquatic habitat. As runoff flows over impervious surfaces it can collect pollutants such as sediment, petroleum products from automobiles, nutrients from lawn fertilizer, trash, bacteria from pet waste, soaps, detergents, and other chemicals. These pollutants are then carried by runoff to lakes and streams. The combined impacts of hydrologic change in streams and water pollution can have serious negative impacts for water bodies.

Stormwater Utility Description

The City of South Burlington was the first municipality in Vermont to create a Stormwater Utility. The Utility was created in order to address increasing environmental problems and regulatory requirements associated with stormwater runoff. The South Burlington Stormwater Utility (SBSU) is a division of the Department of Public Works (DPW) and its operation is overseen by the Deputy Director of Public Works, who is also designated as the Stormwater Superintendent. The SBSU collects fees from all developed property in the City. This funding is used to manage the City's stormwater program. Additional information on the SBSU can be found on line at www.sburlstormwater.com or by calling (802) 658-7961.

Figure 1 – City of South Burlington Vermont Location Map

Watershed Descriptions

All of South Burlington drains to Lake Champlain (Figure 2). Runoff from the City reaches the lake via the Winooski River and its tributaries, or small streams that drain directly to the Lake (Figure 3).

Watershed	Total Watershed Drainage Area (Acres)	Drainage Area in South Burlington (Acres)	Watershed Impervious Area in South Burlington (Acres)	Total Number of Stormwater Outfalls in the Watershed	Number of South Burlington owned Stormwater Outfalls in the Watershed	303(d) Part D Listed Pollutants	303(d) Part A Listed Pollutants
Bartlett Brook	704	667	147	55	19	Stormwater	
Centennial Brook	884	587	150	36	19	Stormwater	
Englesby Brook	609	91	28	0	0	Stormwater, E. Coli	
Lake Champlain	5,269,760	10,640	75	13	5		
Shelburne Bay						Phosphorous	PCBs
Burlington Bay						Phosphorous	PCBs
Main Lake						Phosphorous	
Muddy Brook	13,594	2,384	269	35	22		
Munroe Brook	3,540	327	26	4	4	Stormwater	
North Brook	218	218	91	0	0		
Potash Brook	4,673	4,511	918	326	113	Stormwater, E. Coli	
Winooski River	691,200	4,436	314	36	26		

Figure 2 - South Burlington Watershed Summary Information

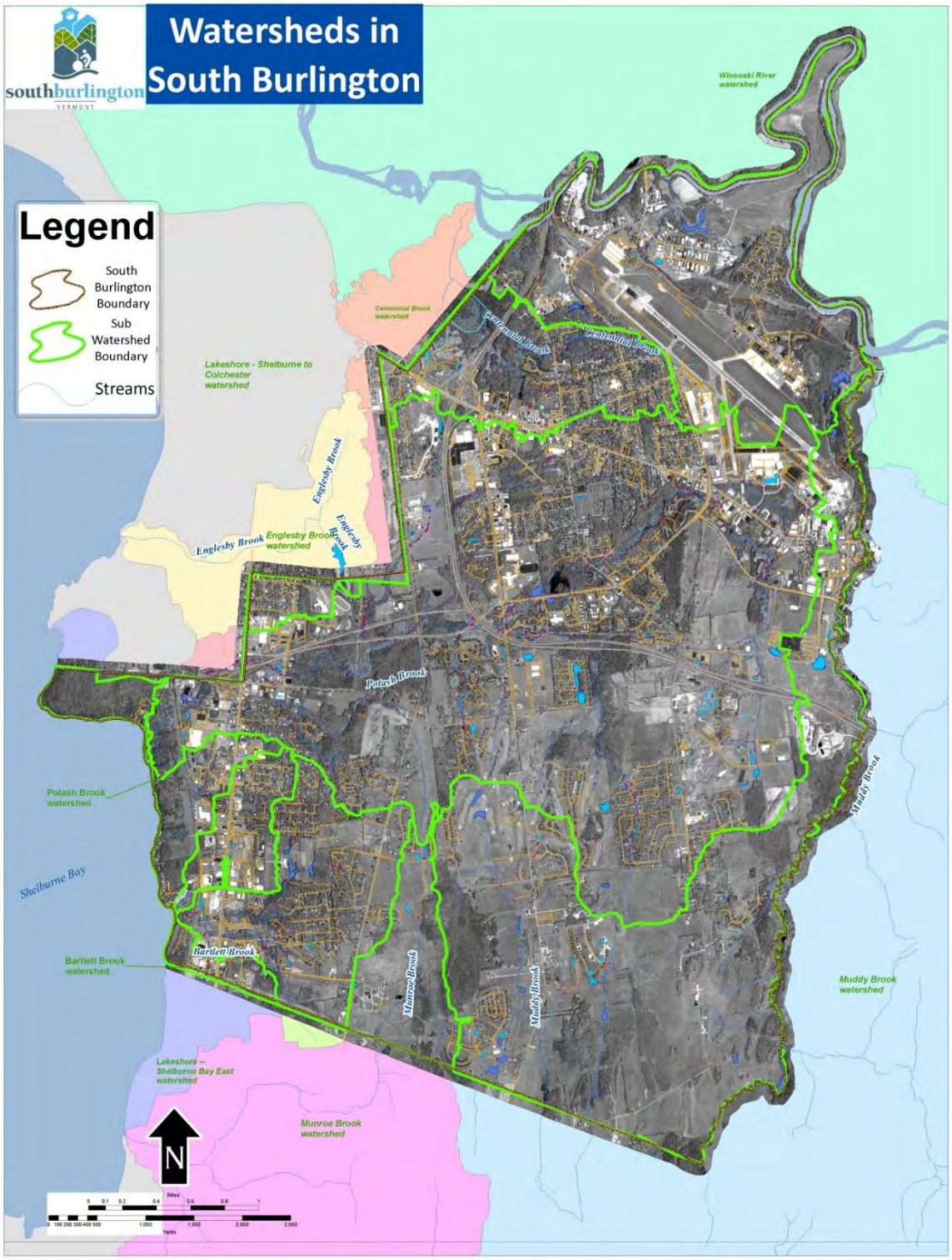

Figure 3 - Map of South Burlington Watersheds

Stormwater Management Program

The MS4 permit is a federally mandated stormwater permit under the National Pollutant Discharge Elimination Systems (NPDES) program. In Vermont, the MS4 permit program is administered by the DEC), which is a division of the Agency of Natural Resources (ANR). The MS4 permit is issued by DEC for a five-year period. The primary mechanism by which the City of South Burlington meets requirements of the MS4 permit is through the activities of the South Burlington Stormwater Utility.

Stormwater Eligible Discharges

The MS4 permit authorizes discharges of stormwater to enter waters of the State and waters of the United States. The following non-stormwater discharges are allowed to co-mingle with discharges of stormwater provided they are not substantial contributors of pollution to the MS4:

- Water line flushing
- Landscape irrigation and lawn watering, provided all pesticides, herbicides and fertilizers have been applied in accordance with the approved label
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Foundation drains or footing drains where flows are not contaminated with process materials, and to which there are no floor drain, septic wastewater, or grey water connections
- Uncontaminated condensate from air conditioners, coolers/ chillers, and other compressors and from the outside storage of refrigerated gases or liquids
- Irrigation water
- Spring water
- Uncontaminated water from crawl spaces
- Flows from riparian habitats and wetlands
- Discharges from emergency/ unplanned fire-fighting activities
- Fire hydrant flushing
- Incidental windblown mist
- De-chlorinated swimming pool discharges

Any discharge to the City's MS4 that is not contained in the above list, or covered under a separate NPDES permit, will be treated as illicit discharges and dealt with according to requirements of the MS4 permit and regulations established in City ordinance.

Six Minimum Control Measures

Much of the SBSU's time is spent complying with the MS4 permit requirements called the "Six Minimum Control Measures". These measures include:

1. Public Education and Outreach
2. Public Participation/Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Runoff Control
6. Pollution Prevention/Good Housekeeping.

The MS4 permit requires that the City identify Best Management Practices (BMPs) by which it will achieve the goals of each Minimum Control Measure (MCM). The City must also provide a rationale regarding why each BMP was selected and a measurable goal for each BMP.

MCM 1: Public Education and Outreach on Stormwater Impacts

In order to comply with MCM 1, Public Education and Outreach, the City must implement a public education program that distributes educational materials to the community. In order to meet this requirement, the City will take the following steps:

A. Maintain a website dedicated to stormwater management – The City previously created a website (www.sburlstormwater.com) dedicated to stormwater management in South Burlington. Use of the web site will be continued.
    1. Responsible Parties: SBSU
    2. Rationale: Public education is a key component to any effective stormwater management program. The site has proven to be an excellent way for the City to communicate directly with the public on topics related to stormwater, including updates on stormwater improvement projects. The website provides links to valuable resources for residents, staff, and consultants.
    3. Measurable Goals:
        a. The City's annual report will contain information on the annual number of website visitors and other web statistics.
        b. The website provides stormwater project information and updates

B. Participate in Rethink Runoff – In order to provide education and outreach to the public on stormwater impacts, the City of South Burlington will continue to partner with other area MS4 communities in Rethink Runoff, managed by the Chittenden County Regional Planning Commission (CCRPC). Rethink Runoff is responsible for advertising focused on regional residential stormwater impacts and solutions to mitigate those impacts on water quality. The partnered MS4 communities additionally formed the Chittenden County Stream Team (CCST) in 2011 to act as the outreach and hands-on event arm of the regional education program. CCST educates the

public and gets them involved in hands-on activities through hands-on events within the community. For more information: http://rethinkrunoff.org/get-involved/get-involved-stream-team. For further information on the partnership, see the Chittenden County MS4 Stormwater Program Agreement (Appendix A).

1. Responsible Parties: SBSU, CCRPC
2. Rationale: The intent of Rethink Runoff is to combine the resources of multiple MS4 communities to create and distribute educational materials related to stormwater and reach a more diverse audience than any municipality could reasonably achieve on its own. Support of the campaign will educate the general public in the MS4 area about key storm water quality issues by using TV, radio, online media placements/advertising to drive viewers to the www.rethinkrunoff.org website. Working together also provides a consistent message to the public.
3. Measurable Goals:
    a. The City will participate in and provide financial support for operation of the regional Rethink Runoff campaign consisting generally of periodic advertising throughout each year supplemented by a survey of residents every 5 years to track reported behavior with regards to residential stormwater BMPs.
    b. The City will provide a summary of steering committee activities, website statistics (http://rethinkrunoff.org/), and a total of the City's cash contributions to the CCRPC MS4 program on an annual basis.

C. Provide Technical Assistance for Low Impact BMPs – The City developed a program to identify opportunities for and provide technical assistance related to low impact BMPs to landowners in South Burlington. In May 2009, the City created a Low Impact Development Guidance Manual to support requirements in the Land Development Regulations (LDRs). South Burlington's LDRs require the use of infiltration or LID practices on a City-wide basis. The revised language includes reference to LID and the existing Guidance Manual (available for download at: http://www.sburlstormwater.com/download-material/. In addition, Rethink Runoff provides on-going education and technical support related to LID practices. The City participates in these programs and makes financial contributions to support this work. Additional information on these programs can be found at http://rethinkrunoff.org/.

1. Responsible Parties: SBSU, CCRPC
2. Rationale: By identifying opportunities for Low Impact BMPs the SBSU can help to maximize infiltration of stormwater runoff, prevent and eliminate soil erosion and minimize the delivery of pollutants to surface waters. There are several organizations and agencies operating in the Chittenden County MS4 region. By providing such links, the visitor can figure out which entity is best suited to provide technical assistance.
3. Measurable Goals:

a. Enforce requirements in the City LDRs that require development to use infiltration practices and LID strategies.
b. Participate in the CCST and RSEP programs.

MCM 2: Public Involvement and Participation

In order to comply with MCM 2, Public Involvement and Participation, the City must implement a public involvement/participation program designed to engage the public in stormwater issues. In order to meet this requirement, the City will take the following steps:

A. Participate in the Rethink Runoff program - The Rethink Runoff program leverages the resources of multiple communities to create a more engaging public participation program than any single municipality could reasonably achieve on its own. The City will continue to participate on the MS4 steering committee and make payments in accordance with the terms of the Chittenden County MS4 Stormwater Program Agreement (Appendix A). For more information: http://rethinkrunoff.org/the-stream-team/.
    1. Responsible Parties: SBSU, CCRPC
    2. Rationale: The Rethink Runoff program offers volunteer opportunities, educational workshops and events in cities, and provides community engagement. These learning opportunities increase public awareness of issues related to stormwater management and build a community of stakeholders. This approach to public involvement is capable of reaching a greater percentage of the public than alternatives such as coordination of public meetings that may be difficult for individuals to attend.
    3. Measurable Goal: The City will report annually on Rethink Runoff activities including the number of volunteers that participated in stormwater related events and a total of the City's cash contributions to the Rethink Runoff program.

B. Storm drain stenciling program - The City previously established a storm drain stenciling program. As part of this program, metal markers that contain a "No Dumping" or similar water quality message are affixed to the storm drain grates. In some cases, the asphalt adjacent to the storm drain is painted with a similar message. These "stencils" will be installed/painted by SBSU staff and public volunteers whenever possible.
    1. Responsible Parties: SBSU
    2. Rationale: Storm drain stenciling sends a clear message to keep trash and debris, leaf litter, and pollutants out of the storm drain system, and may deter illegal dumping and discharges. Stenciling will increase watershed awareness and stewardship and can be used in any neighborhood with enclosed closed drainage system.
    3. Measurable Goal: The City will continue its storm drain stenciling program and report the number of new "no dumping" labels put in place on an annual basis.

MCM 3: Illicit Discharge Detection and Elimination

In order to comply with MCM 3, Illicit Discharge Detection and Elimination (IDDE), the City must develop, implement, and enforce a program to detect and eliminate non-stormwater discharges that may be entering the MS4. Effective IDDE programs are dynamic and flexible to respond to an ever-changing set of discharge problems, program obstacles, and emerging technologies. At a minimum, the City will maintain and evaluate the IDDE tracking system annually, and modify program components as needed. The results of the efforts will be compiled in the MS4 Annual report. In order to meet this requirement, the City will take the following steps:

A. Maintain a storm sewer systems map – Knowing the location and type of structures that make up the City's storm sewer system is critical to its maintenance. The City has developed a Geographic Information System (GIS) based map of stormwater infrastructure located in South Burlington. Included in the database is information pertaining to: storm drains, stormwater piping, stormwater outfalls, and stormwater treatment practices (STPs). The SBSU will continue to maintain and improve this information and make it available upon request.
    1. Responsible Parties: SBSU
    2. Rationale: Knowing the location and type of structures that make up the City's stormwater system is critical to system maintenance. Having these systems mapped enhances the City's ability to locate and eliminate illicit connections and discharges.
    3. Measurable Goal: The City's annual report will contain information on the number of stormwater drainage structures, miles of stormwater conveyance, and stormwater outfalls that are located in South Burlington. Digital versions of the map will be made available upon request.

B. Enforce existing ordinances regulating non-stormwater discharges to the MS4 – The City's "Ordinance Regulating the Use of Public and Private Sanitary Sewerage and Stormwater Systems" was last amended on October 18, 2016. The ordinance makes it clear that illicit discharges are not allowed to enter the stormwater system (see Article V Section 5).
    1. Responsible Parties: SBSU
    2. Rationale: The Ordinance provides a framework for inspection and enforcement of illicit discharges to the stormwater system. The Ordinance describes the power and authority of inspectors and enforcement regarding violations, judicial enforcement, and fines that may be recovered by the City (see Appendix J: Stormwater Management Ordinance).
    3. Measurable Goals:
        a. The City will track the number of illicit discharges encountered and eliminated each year. The information will be made available upon request.
        b. The City will continue to enforce it existing stormwater ordinance.
        c. The City will review its existing ordinance and make any updates required by the new permit within 3 years of authorization under the 2018 MS4 permit.

C. Conduct video inspections of the storm sewer system – The DPW owns equipment that enables us to conduct video inspections of our underground pipe systems. The use of video inspection will assist the City in locating areas likely to have illicit discharges (e.g. areas with older sewer lines) and prioritizing the necessary repairs to alleviate the situation.
    1. Responsible Parties: SBSU
    2. Rationale: While above ground inspections are still a valuable tool, a proactive underground pipe inspection program will allow the City to find maintenance issues or illicit connections that may otherwise have gone unnoticed until they resulted in a serious problem.
    3. Measurable Goal: The City will continue its video inspection program and report the linear feet of stormwater pipe inspected each year.

D. Conduct stormwater outfall inspections – Evaluating the water at stormwater outfalls allows the City to identify potential locations where illicit discharges may be entering the MS4. The City has developed a program to inspect City owned stormwater outfalls and will continue this program. These inspections are conducted in accordance with procedures outlined in the EPA's Illicit Discharge Detection and Elimination Guidance Manual (October 2004). An Outfall Inspection summary is completed for each outfall and this information is kept in a GIS database. Should the City determine that there are significant water quality concerns at an outfall it will take proactive steps to identify the source of the problem. This may include video inspection of the upstream system or water sample collection and analysis.
    1. Responsible Parties: SBSU
    2. Rationale: Regular inspection of stormwater outfalls allows the City to monitor areas of concern. These inspections can target dry weather flows and note potential cold climate indicators of an illicit discharge. Additionally, the City will be able to coordinate management activities to remove illicit connections and track storm drain system maintenance.
    3. Measurable Goals:
        a. The City will inspect no less than 50% of City-owned stormwater outfalls each year and report the number of inspections completed annually.
        b. Measurable Goals: The City will report the number of outfall samples collected annually. Sample results will be made available upon request.

E. Inform public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste – The City's stormwater web site has a section dedicated to detection and elimination of illicit discharges. Information on the site indicates how illicit discharges were successfully eliminated and describes the resulting benefits to water quality.
    1. Responsible Parties: SBSU
    2. Rationale: Learning about illicit discharges and its effects on our rivers, streams and lakes is an important step in minimizing the pollutants in stormwater. Educating the public on

the impacts of illicit discharges will foster a sense of responsibility and ultimately result in a collaborative approach in the detection and elimination of occurrences.

3. Measurable Goal: The City will dedicate a section on its stormwater website (http://www.sburlstormwater.com/stormwater-projects/) to illicit discharge detection and elimination success stories.

F. Coordination with drinking water suppliers – The Champlain Water District (CWD) operates the potable water system within the City of South Burlington MS4 area. As part of their normal preventative maintenance procedures, the district must annually flush the lines and fire hydrants in the water system. Regular flushing helps ensure the reliability of water system components and that customers receive high quality, sanitary, potable water at their tap. The CWD has BMPs in place to ensure that their maintenance activities will not result in discharges to the MS4 that could contribute to water quality issues. Example BMPs include the use of a hydrant diffuser, dechlorinator and positioning diffusers to prevent erosion when flushing hydrants.

1. Responsible Parties: SBSU
2. Rationale: Flushing the water lines is necessary to keep the pipes clean and prevent accumulation of silt and tuberculation in the pipes that would be stirred up during a hard use (e.g. firefighting) of the system. This activity ensures reliability of the water system and helps to deliver a quality product. The CWD has BMPs in place to ensure that their maintenance activities will not result in discharges to the MS4 that could contribute to water quality issues.
3. Measurable Goal: The CWD will continue to use BMPs to prevent pollutants from entering the MS4. Before the end of the permit cycle the City will meet with CWD to review their BMPs relating to discharges of drinking water to the MS4. If necessary, improvements will be made to CWD BMPs.

MCM 4: Construction Site Stormwater Runoff Control

In order to comply with MCM 4, Construction Site Stormwater Runoff Control, the City must develop and enforce a program to reduce pollutants originating at construction sites from entering the MS4. The City recognizes construction site runoff control as a key means of protecting and improving surface water quality in South Burlington. Therefore, the City will assist the ANR in implementing requirements of the Construction General Permit (3-9020) and maintain its own standards related to construction site erosion control. In order to meet this requirement, the City will take the following steps:

A. Implement local regulations related to erosion control – The City has established standards that address erosion from all construction sites. These requirements are codified in Article 16 (Construction and Erosion Control Standards) of the LDRs. Through this provision in the LDRs, the

City has the authority to issue zoning violations and to pursue enforcement of construction and erosion control non-compliance on sites of all sizes in Vermont Environmental Court.

1. Responsible Parties: SBSU
2. Rationale: Small construction sites have been shown to contribute as much sediment as large sites on a per acre basis. Determining erosion and sediment control practices in advance of construction is an important step in preventing sediment from entering the MS4. Ensuring that construction contractors working in the City implement and maintain these BMPs is critical to establishing construction practices that include understanding and implementation of erosion prevention and sediment control practices.
3. Measurable Goal: Enforce the existing LDRs pertaining to Construction and Erosion Control Standards.

B. Conduct construction site inspections – SBSU staff will be trained in the appropriate use of construction site BMPs and conduct inspections to ensure that construction contractors working in the City are implementing BMPs in compliance with local regulations and any State permits that their project may be subject to.
   a. Responsible Parties: SBSU
   b. Rationale: Educating contractors and staff about the proper selection, installation, inspection, and maintenance of BMPs will help to ensure compliance with Erosion Prevention and Sediment Control (EPSC) requirements.
   c. Measurable Goal: The City will report the number of construction site inspections it conducts each year.

C. Distribute construction BMP handout – The City developed a simple brochure that summarizes local regulations regarding stormwater runoff from construction sites. The brochure also provides information on BMPs for construction sites and identify sources of additional information. See Erosion and Sediment Control South Burlington (Appendix B).
   1. Responsible Parties: SBSU
   2. Rationale: Educating contractors about the proper selection, installation, inspection, and maintenance of BMPs will help to ensure compliance with EPSC requirements.
   3. Measurable Goals:
      a. Measurable Goal: The City will report the number of construction site BMP brochures it distributes each year.

D. Employee Training –City public works staff shall receive annual training associated with the proper installation and uses of EPSC measures. Employees will additionally receive training pertaining to proper disposal of wastes and invasive species.
   a. Responsible Parties: SBSU
   b. Rationale: Trainings will help to educate employees in the use and inspection of EPSC requirements.

c. Measurable Goal: Trainings will be provided on an annual basis. A list of attendees and the number of hours will be documented at the training.

E. Assist the ANR with implementation of its Construction General Permit (CGP) 3-9020 – The Vermont ANR has issued General Permit 3-9020 for stormwater runoff from construction activities which result in land disturbance of greater than 1 acre. The City will assist ANR with its implementation of this program.
   1. Responsible Parties: SBSU
   2. Rationale: Through plan review and site inspection, SBSU staff will be aware of the intended outcome of a project and can support the ANR with achieving the goals of the CGP 3-9020.
   3. Measurable Goal: When a project will disturb greater than 1 acre of land the City will include in its findings of fact a note that we believe the project requires a State of Vermont Construction General Permit (3-9020). A summary of the projects in South Burlington that will exceed 1 acre of disturbance will be reported each year.

MCM 5: Post Construction Stormwater Management for New Development and Redevelopment

In order to comply with MCM 5, Post Construction Stormwater Management, the City must develop and enforce a program to control stormwater runoff from new and re-development projects. This goal is primarily achieved through the actions of the SBSU and its staff. One of the SBSU's primary functions is to maintain STPs that were installed to manage post-construction stormwater runoff. In order to meet this requirement, the City will take the following steps:

A. Maintain an updated list of the STPs covered by the City's MS4 permit authorization - The SBSU maintains numerous STPs located throughout the City. All STPs that receive permit coverage under the City's MS4 permit authorization are included in Figure 4. The list included in Figure 4 will be updated as the City assumes responsibility for additional stormwater systems.
   1. Responsible Parties: SBSU
   2. Rationale: Regular inspection of STPs allows the municipality to better maintain the systems by quickly identifying any concerns such as damage to fences, evidence of burrowing animals, woody growth detrimental to function, erosion, plugged outlet structures, and vegetative maintenance needs.
   3. Measurable Goals: The City will report on an annual basis all new STPs for which it has assumed responsibility.

Stormwater Treatment Practice Name	Street	State Stormwater Permit	SBStrmID	Year SWU Began Maintenance
Butler Farms Pond	Marcy Street	2-0312	PD0134	2012
Cider Mill Pond 2	Winesap Lane	3144-9010.2	PD0090	2018
Cider Mill Pond 3	Royal Drive	3144-9010.2	PD0064	2018
Cider Mill Pond 4	Crispin Drive	3144-9010.2	PD0062	2018
Cider Mill Pond 5	Braeburn Street	3144-9010.2	PD0066	2018
Cider Mill Pond 6	Crispin Drive	3144-9010.2	PD0061	2018
City Hall Bio-Retention Area	Dorset St	2-0909	BR0002	2014
City Hall Underground Infiltration	Dorset St	2-0909	ST0026	2014
Commerce Shopping Center Stormwater	Hinesburg Rd	7294-INDS, 7294-INDO	PD0006	2019
Dorset Farms Basin A	Midland Ave	3049-9010.RT	PD0058	2018
Dorset Farms Basin B	Floral Dr	3049-9010.RT	PD0057	2018
Dorset Farms Basin C	Catkin Dr	3049-9010.RT	PD0056	2018
Dorset Park Pond	Swift St	1-1033	PD0032	2007
Farrel Street Swirl Separator	Farrell St	5080-INDO.R	SW0001	2008
Farrell Street Bio-Retention	Farrell St	5080-INDO.R	PD0030	2007
Farrell Street Pond	Farrell St	5080-INDO.R	PD0029	2007
Gregory Drive Swirl Separator	Gregory Dr	3351-9010	SW0002	2007
Harbor Heights Swirl Separator	Harbor View Road	6294-9030	SW0005	2010
Harbor Heights Underground Storage	Harbor Heights	6294-9030	ST0021	2010
Hayes Avenue Stormwater Detention Basin	Kinsington Street	6553-INDO	PD0072	2013
Heatherfield Pond 1	Songbird Rd	3658-INDS.A1RT	PD0065	2018
Heatherfield Pond 2	Songbird Rd	3658-INDS.A1RT	PD0011	2018
Heatherfield Pond 3	Mockingbird Lane	3658-INDS.A1RT	PD0098	2018
Heatherfield Offset Pond	Songbird Rd	3864-INDO.R1T	PD0009	2018
Kennedy Drive Pond 1	Kennedy Dr	1-1582	PD0042	2007
Kennedy Drive Pond 2	Kennedy Dr	1-1582	PD0043	2007
Kennedy Drive Pond 3	Kennedy Dr	1-1582	PD0044	2007
Kennedy Drive Pond 4	Kennedy Dr	1-1582	PD0045	2007
Kennedy Drive Pond 5	Kennedy Dr	1-1582	PD0046	2007
Kennedy Drive Pond 6	Kennedy Dr	1-1582	PD0047	2007
Kennedy Drive Pond 7	Kennedy Dr	1-1582	PD0048	2007
Mayfair Park Swirl Seperator	Mayfair Street	7226-INDO	SW0008	2014
National Guard Avenue	National Guard Avenue	6627-9015	PD0143	2013
Oak Creek Village Micropool (Pond 1)	Hinesburg Rd	1-0464	PD0111	2009
Oak Creek Detention Pond 2	Mill Pond Lane	1-0464	PD0054	2012
Oak Creek Detention Pond 3	Moss Glen Lane	1-0464	PD0055	2012
Pinnacle at Spear- Pond A	Pinnacle Dr	1-1155	PD0023	2019
Pinnacle at Spear- Pond B	Pinnacle Dr	1-1155	PD0010	2019
Pinnacle at Spear- M05	Pinnacle Dr	1-1155	PD0068	2019
Pinnacle at Spear- M07	Pinnacle Dr	1-1155	PD0024	2019
Quarry Ridge Pond	Juniper Drive	1-1257	PD0025	2009
Route 2 Widening STP5200(18)	Williston Road	6676-INDS	IA0025	2015
South Pointe Pond 1	Parkside Road	3443-INDS.R1A	PD0063	2018
South Pointe Pond 2	Upswept Lane	3443-INDS.R1A	PD0026	2018
South Pointe Dry Swale 1	Upswept Lane	3443-INDS.1T	SWAL009	2018
South Pointe Dry Swale 2	Upswept Lane	3443-INDS.1T	SWAL010	2018
Valley Ridge	Valley Ridge Dr	3301-9010	SWAL001	2009
Village at Dorset Park Pond 1	Brand Farm Road	1-0647	PD0172	2018
Village at Dorset Park Pond 2	Brand Farm Road	1-0647	PD0173	2018
Village at Dorset Park Pond 3	Brand Farm Road	1-0647	PD0174	2018
White Rocks Pond	Country Club Drive	4124-9010.R	PD0050	2012
Winding Brook Pond	Winding Brook Dr	6391-INDS	PD0041	2010

Figure 4 – Stormwater Treatment Practices Maintained by the City of South Burlington and Covered Under the MS4 Permit

B. Inspect and ensure the proper maintenance of all STPs covered under the City's MS4 permit authorization –The SBSU will inspect and ensure proper maintenance of all STPs included in Figure 4.
    1. Responsible Parties: SBSU
    2. Rationale: Regular inspection of STPs allows the municipality to better maintain the systems by quickly identifying any concerns such as damage to fences, evidence of burrowing animals, woody growth detrimental to function, erosion, plugged outlet structures, and vegetative maintenance needs.
    3. Measurable Goals:
        a. The City will ensure proper maintenance of all STPs included in Figure 4. These STPs will be inspected at least twice per year. The City will report the number of inspections conducted on an annual basis. The results of these inspections will be made available upon request.
        b. The City will track the number of new STPs constructed by the City and the existing STPs that were transferred to the City and report this information annually.

C. Implement local regulations related to post-construction stormwater management - The City's Land Development Regulations (LDRs) include requirements for stormwater controls to minimize water quality impacts from runoff on projects of any impervious acreage, irrespective of the area disturbed. The City addresses these needs through the following requirements in the LDRs: Article 12 (surface water protection, including stream buffers), Article 14 (site plan review; includes trash management, snow storage areas, and landscaping standards), and Article 16 (construction and erosion control standards). These regulations apply City-wide to all new development, redevelopment and are enforceable in Vermont Environmental Court.
    1. Responsible Parties: SBSU
    2. Rationale: Through regular plan review, the SBSU will better serve the needs of the community by noting any concerns prior to construction.
    3. Measurable Goals:
        a. Continue to enforce the stormwater management regulations contained in the LDRs.
        b. The City will evaluate the existing stormwater management requirements included in the LDRs and determine if any changes could be made to improve these regulations. Progress towards this goal will be reported annually.
        c. City staff will ensure that stormwater management related regulations found in the City's LDRs are properly interpreted and implemented during the City's project approval process.

D. Assist the ANR with implementation of its stormwater permitting program (3-9015) – The Vermont ANR has issued General Permit 3-9015 that regulates post-construction stormwater

runoff. All projects that create greater than 1 acre of impervious area must obtain permit coverage from the ANR. The City will assist ANR with its implementation of this program.

1. Responsible Parties: SBSU
2. Rationale: Through plan review and site inspection, the SBSU will become more aware of the intended outcome of a project and can support the ANR with achieving the goals of the 3-9015 permit.
3. Measurable Goal: When a project will create greater than 1 acre of impervious area the City will include in its findings of fact a note that we believe the project requires a State of Vermont General Stormwater Permit (3-9015). A summary of projects in South Burlington that will create 1 acre or more of impervious area will be reported each year.

MCM 6: Pollution Prevention / Good Housekeeping for Municipal Operations

In order to comply with MCM6, Pollution Prevention / Good Housekeeping for Municipal Operations, the City must evaluate the systems it has in place to prevent and reduce polluted runoff occurring as a result of municipal operations. The City must also develop and enforce a program to control stormwater runoff from new and re-development projects. In order to meet this requirement, the City will take the following steps:

A. Proper disposal of animal waste - The City is responsible for cleaning up animal wastes left on City property, when they are not appropriately taken care of by residents. In order to facilitate residential assistance, the City hands out pet waste bags when dog licenses are purchased from City Hall. In addition, City parks and other recreation areas have permanent pet waste bag dispensers and signage reminding residents to pick up after their pets.
    1. Responsible Parties: SBSU
    2. Rationale: Pet waste is one of the many contributors of stormwater pollution that can degrade water quality. During rainfall, pet waste left on lawns, beaches, trails, and sidewalks washes into storm drains or into water bodies. The waste and the pathogens it contains (nutrients, bacteria, parasites, and viruses) can flow directly into streams, lakes and ponds where they can be harmful to human health and the environment. By providing pet waste bags, the City allows pet owners easy access to the materials needed to clean up after their pet. This increases the likelihood of the waste removal before a storm event.
    3. Measurable Goal: The City will report the number of pet waste bags distributed on an annual basis.

B. Participate in the Municipal Compliance Assistance Program (MCAP) – Municipal facilities are subject to many different state and federal environmental regulations. In order to ensure continued compliance with these regulations the City works with ANR staff in the Environmental Assistance Office to identify shortfalls in current practices and design solutions to address any issues that could result in non-compliance with environmental regulations.

1. Responsible Parties: SBSU
2. Rationale: By identify shortfalls in existing operations, the overall accomplishments and goals will be strengthened.
3. Measurable Goal: The City will work with ANR staff and complete an MCAP inspection before the end of the 5-year permit cycle.

C. Inspection of City Maintained STPs – The SBSU maintains numerous STPs located throughout the City. As part of normal maintenance activities, the City conducts inspections of these STPs to ensure that they are functioning properly. Some of these STPs are subject to State permits that also require inspections. In order to minimize efforts related to duplicative inspection and reporting requirements, inspection information for all City maintained STPs will be relayed to DEC as part of the MS4 annual report.
    1. Responsible Parties: SBSU
    2. Rationale: Regular inspection of STPs allows the municipality to better maintain these systems by quickly identifying any concerns such as damage to fences, evidence of burrowing animals or trash, woody growth detrimental to function, erosion, plugged outlet structures, and vegetative maintenance needs.
    3. Measurable Goal: The City will inspect all STPs for which it has maintenance responsibility at least twice a year. The City will report the number of inspections conducted on an annual basis. The results of these inspections will be available upon request

D. Street sweeping - The Department of Public Works and SBSU are responsible for the maintenance of streets, bike paths, and municipal parking lots within the City. Maintenance of these facilities includes sweeping on a regular basis. The City's current practice is to sweep all curbed roads, curbed paths, and parking lots with curb twice per year. The first sweeping occurs as soon as practicable following snowmelt in the spring. The second occurs as late in the fall as possible to allow for the collection of leaves. Main roads are swept more frequently, as staff time allows or as needed.
    1. Responsible Parties: SBSU
    2. Rationale: The debris collected by street sweepers includes many materials that can be hazardous to the environment or our health, such as petroleum products, rubbish, sediment, and green waste. Sweeping the streets on a regular basis reduces the likelihood that these pollutants will enter the City's stormwater systems. Keeping the drains and gutters clear will also reduce the chance of flooding during heavy rain.
    3. Measurable Goal: Sweep all curbed streets, curbed bike paths, and parking lots with curb that the City owns at least twice per year. The total volume of material collected will be reported annually.

E. Storm drain cleaning – The SBSU is responsible for maintenance of the publicly owned stormwater drainage system in South Burlington. The municipality owns over 3,164 storm drains and 94 miles

of pipe, ditch, or other stormwater conveyance. If the system is not properly maintained it can result in increased pollution and flooding issues.

1. Responsible Parties: SBSU
2. Rationale: A clean storm drain will more effectively collect stormwater and remove sediment. This minimizes the amount of pollution reaching water bodies and the instances of flooding.
3. Measurable Goal: The SBSU will clean a minimum of 250 storm drains and the associated piping each year. The total volume of material removed will be reported annually.

F. Storm drain inspections - The SBSU is responsible for maintenance of the publicly owned stormwater drainage system in South Burlington. Part of the SBSU's established maintenance program includes regular inspection of drainage structures to ensure their proper operation and condition.
    1. Responsible Parties: SBSU
    2. Rationale: Properly maintained storm drains can prevent pollution from reaching the waterways by collecting the sediment and debris that washes off the road. When the storm drains sump fills with sediment, any new pollutants entering the drain will continue through the stormwater system and into waterways. Debris may also clog storm drain grates and prevent water from entering the drainage system. Regular inspection allows SBSU to determine which portions of the system require maintenance prior to a storm event.
    3. Measurable Goal: Inspect a minimum of 350 storm drains each year. The total number of storm drains inspected will be reported annually.

G. Properly dispose of materials collected from street sweeping, pond maintenance, and the stormwater drainage system – The City has developed and implemented procedures for disposing of materials collected from street sweeping, maintenance of STPs, and cleaning of the stormwater drainage system (Appendix C).
    1. Responsible Parties: SBSU
    2. Rationale: The sediment collected from storm drains is tested for pollution and hazardous materials before being used as construction fill or treated as hazardous waste. The effort allows the clean material to be reused as opposed to being sent to the landfill.
    3. Measurable Goal: Continue to implement the City's approved procedure for handling of materials collected during street sweeping, maintenance of STPs, and cleaning of the stormwater drainage system.

H. Employee Training – Municipal operations in the department of public works typically utilize materials that can be harmful to the environment if not properly managed. Public works staff shall receive annual training associated with the correct procedures to prevent the discharge of

sediment, nutrients (e.g. phosphorus) and other harmful contaminates that may be caused through municipal operations.

1. Responsible Parties: SBSU
2. Rationale: Regular trainings will help to educate public works employees and make them aware of how their various job activities can affect stormwater quality.
3. Measurable Goal: Trainings will be provided on an annual basis. A list of attendees and the number of hours will be documented at the training.

I. Minimize winter sand and salt usage – The DPW's current practice is to manage winter snow and ice with the application of salt products and normal plowing practices. All of the City's salt trucks have calibrated systems on board to regulate the flow of salt from the trucks. In the winter of 2008, the City began purchasing equipment that allows the use of a liquid chloride salt product. The use of the liquid chloride has been expanded to the entire fleet.

1. Responsible Parties: DPW
2. Rationale: Treating road salt with liquid chloride mixture prior to spreading on the road reduces the amount of salt lost to scatter (i.e. salt that bounces off the road). In addition, application of liquid chloride reduces the operating temperature of the salt allowing it to work more effectively at lower temperatures. These practices will reduce the total amount of salt needed to achieve similar results. Proper calibration of the equipment is necessary to know how much material is being applied to a roadway, benefiting both the environment and the budget. Calibration of the trucks will subsequently reduce the amount of salt reaching surface waters.
3. Measurable Goal: The salt delivery systems on plow trucks will be calibrated at the beginning of each winter to ensure proper application rate of salt products.

J. Phosphorus Fertilizer Use: The city will prohibit the use of any phosphorus containing fertilizer on municipally controlled parks and recreational fields unless warranted by a current (within previous 18 months prior to application) soil test. If P-fertilizer is used to supplement turf that is shown to be deficient in phosphorous, a copy of the soil test will be submitted with the annual reports. If the City is establishing grass or turf via seed or sod procedures, a phosphorous fertilizer that is labeled as starter fertilizer and is intended for application to turf may be utilized. This application will be limited to the first growing season.

1. Responsible Parties: DPW
2. Rationale: Simple management practices will help to reduce the amount of phosphorous runoff from municipal properties and reduce the discharge of phosphorous to our waterways.
3. Measurable Goal: Soil tests will be submitted with the annual report as applicable.

Municipally Operated Industrial Facilities

Multi-Sector General Permit (MSGP) is a federally mandated National Pollutant Discharge Elimination System (NPDES) permit that covers new and existing discharges of stormwater from industrial facilities. Industrial facilities conduct activities and use materials that have the potential to impact the quality of Vermont's waters. The permit requires facilities to examine potential sources of pollution, implement measures to reduce the risk of stormwater contamination, and test stormwater discharges for sources of pollution. The City owns two facilities that are subject to the MSGP:

- Bartlett Bay Wastewater Treatment Plant (4889-9003.R)
- Airport Parkway Wastewater Treatment Plant (4888-9003.R)

These facilities have obtained coverage under the MSGP. Management of these facilities is the responsibility of the City's Wastewater Superintendent. Stormwater Utility staff provides assistance as appropriate.

Discharges to Impaired Waters

Lake Champlain- Burlington Bay and Shelburne Bay

Both of the above-mentioned Bays have documentation and data indicating impairment and do not meet VT Water Quality Standards according to the methodology described in the VT Surface Water Assessment and Listing Methodology. Burlington and Shelburne Bay are recognized as having elevated levels of polychlorinated biphenyl (PCB), impacting allowable fish consumption. Establishing a TMDL is listed as "low" on the state's schedule. The Response Plan to this impairment includes implementing the Phosphorous Control Plan for Lake Champlain and implementing the municipal road standard.

TMDL Implementation

Impaired waters are those waters that the Secretary of ANR has identified as not meeting Vermont Water Quality Standards. Once a waterbody is designated as impaired, the State of Vermont lists it on the Vermont "303(d) Part A list" and submits this information to the U.S. Environmental Protection Agency (EPA). In some cases, ANR will prepare a Total Maximum Daily Load (TMDL) for an impaired waterbody. A TMDL is a calculation of the maximum amount of a particular pollutant that a waterbody can receive and still meet water quality standards. These waterbodies are then moved to the "303(d) Part D list".

Flow Restoration Plan (FRP)

The City of South Burlington has developed FRPs for the following stormwater impaired watersheds: Bartlett Brook, Centennial Brook, Englesby Brook, Munroe Brook, and Potash Brook. FRPs are included in this Stormwater Management Plan as follows:

- Bartlett Brook Flow Restoration Plan – Appendix D
- Centennial Brook Flow Restoration Plan – Appendix E
- Englesby Brook Flow Restoration Plan – Appendix F
- Munroe Brook Flow Restoration Plan – Appendix G
- Potash Brook Flow Restoration Plan – Appendix H

Schedule of Compliance

Part 8.1.C of the 2018 MS4 permit requires that the City shall implement all measures necessary to achieve the flow restoration targets in the TMDLs no later than December 5, 2032. Each FRP contains an implementation schedule that ends before this date.

Annual Reporting

The City will submit an annual report to the Vermont ANR on or before April 1 of each year. The report will detail the City's efforts over the previous calendar year and include the following information:

- The status of the City's compliance with MS4 permit conditions
- An assessment of the appropriateness of the BMPs identified in the SWMP
- A report on progress towards implementation of the BMPs identified in the SWMP
- A report on the progress of FRP development and implementation
- A summary of stream flow monitoring data in the stormwater impaired watersheds
- A summary of stormwater activities that the City plans to undertake during the next reporting cycle (i.e. calendar year)
- Proposed changes to the City's approved SWMP
- Notice that the City if relying on another entity to satisfy permit obligations.

Flow Monitoring

Part 8.1.D of the 2018 MS4 permit requires that the City prepare a plan for flow monitoring in stormwater impaired streams. The City currently is under contract with Vermont DEC to monitor 9 stormwater impaired watersheds in Chittenden County and St. Albans. There are 16 individual sites

monitoring precipitation, stream flows or both, three of which are within South Burlington's borders. In the 2018 MS4 permit cycle, the City will:

- Continue working with the consultant selected by DEC to conduct stream flow monitoring.
- Sign an MOU with Vermont DEC related to paying for stream flow monitoring services.
- Continue to make payments to Vermont DEC as outlined in the signed MOU.
- The City, in collaboration with DEC stormwater section staff, will continue to evaluate the data collected as part of the stream flow monitoring MOU.

Stream Corridor Protection

South Burlington protects stream buffers through regulations included in the City's LDRs. Section 12.01 of the South Burlington Land Use Regulations lists buffer requirements for surface waters. These requirements vary depending upon the surface water affected and are enforced by the Department of Planning & Zoning. Individuals must keep a certain distance away from streams and are not allowed to remove trees, or disturb the buffer area during development of their property. The following is a summary of the conditions:

Surface Water	**Distance (feet) from centerline**
Muddy Brook	100
Potash Brook (except Queen City Park zone)	100
Winooski River	100
Minor streams	50
Drainage way	10
Lake Champlain	150
Queen City Park	See Article 12.01 (D) in LDRs

In addition to regulations limiting the activities allowed in stream buffers, the SBSU offers credits for individuals who maintain a buffer around streams. All properties in the City pay a monthly fee to the Stormwater Utility. This fee is based on the amount of impervious surface area found on the property. The Stormwater Utility offers a 10% fee reduction if a property meets the Stream Buffer Credit requirements.

Lake Champlain Phosphorus Control Plan

All of South Burlington drains to Lake Champlain. Vermont's 303(d) Part D list of impaired waters indicates that Lake Champlain is impaired due to excessive Phosphorus (P). On June 17, 2016, the state of Vermont established a P TMDL for Lake Champlain. This TMDL requires a 20.2% reduction in P discharged to Shelburne Bay and the Main Lake. It requires a reduction of 24.2% for discharges to the Burlington Bay Lake segment.

During this MS4 permit cycle, South Burlington will develop a Phosphorous Control Plan (PCP) for City owned properties. At a minimum, the PCP will be designed to achieve a level of phosphorus reduction equivalent to the percent reduction target for developed land in the associated TMDL lake segment.

The PCP will adhere to the following schedule:

April 1, 2019	- Submit the first Annual PCP Report
April 1, 2020	- Submit the Annual PCP Report and the Implementation Table with results of the Road Erosion Inventory (REI)
April 1, 2021	- Complete the Phosphorus Control Plan (PCP) and submit it to the Secretary - Submit the Annual PCP Report
April 1, 2022 and every year thereafter	- Submit Annual PCP Report
No later than June 17, 2036	- Complete full implementation of the approved PCP

Figure 5 – PCP Implementation Table

An annual PCP report will be submitted to DEC on April 1 of each year. The reports shall address actions taken by the City to implement all PCP components, including:

- Extent of implementation of the Municipal Roads Standards and any necessary updates to the PCP Implementation Table,
- Extent of street sweeping and catch basin cleaning,
- Extent of stormwater BMP implementation,
- An estimate of the extent of remaining items requiring completion,
- An assessment of the ability to meet outstanding schedule items, and
- A written statement, signed by a designer acceptable to the Secretary, that any structural BMP built or implemented within the preceding six-month period was constructed in compliance with the approved plans.

Municipal Road Requirement

The Municipal Roads General Permit is intended to achieve significant reductions in stormwater-related erosion from municipal roads, both paved and unpaved. The City of South Burlington will implement a customized, multi-year plan to stabilize the road drainage system. The plan will include bringing road drainage systems up to basic maintenance standards, and additional corrective measures to reduce erosion as necessary to meet a TMDL or other water quality restoration effort.

Road Erosion Inventory (REI)

The City of South Burlington has initiated a Road Erosion Inventory (REI) of all hydrologically-connected road segments within the municipality. The REI is intended to verify which municipal road segments are hydrologically connected, and identify which of those segments meet the operational standards

required under this permit. The municipal road segments are broken down into the following categories: Gravel and Paved Roads with Ditches, Paved Roads with Catch Basins, and Class 4 Roads. Beginning in 2019, an Annual MRGP compliance update will be submitted by April 1st. The Initial Road Erosion Inventory and Implementation Table will be submitted by April 1, 2019. A minimum of 15% of non-compliant segments will be upgraded to meet the standards by 2021 and 2022.

Implementation Table

The City will record the REI scoring information in the Implementation Table and prioritize road segments for upgrades to meet the standards of the 2018 MS4 Permit Subpart 8.3.C. The municipality shall submit the MRGP Implementation Table on April 1, 2020. The Table shall include:

- The planned road upgrades for the first permit term.
- Updates pertaining to the segments brought up to standards.
- Itemization of the segments to be brought up to standard within the next year.

Road Stormwater Management Standards

The City will utilize the minimum required BMPs applicable to all hydrologically-connected municipal roads. The City will be responsible to maintain all practices after installation. If the feasibility affects the implementation of the standards, the City will document the instance in the MRGP Implementation.

Monitoring, Record Keeping, and Reporting

Monitoring

When the SBSU conducts monitoring of illicit discharges pursuant to subpart 6.2.3 of the 2018 MS4 permit, all records of monitoring information shall include:

- The date, exact place, and time of sampling or measurements;
- The names(s) of the individual(s) who performed the sampling or measurements;
- The date(s) analyses were performed;
- The names of the individuals who performed the analyses;
- The analytical techniques or methods used; and
- The results of such analyses.

Record Keeping

The SBSU shall retain all records required by this permit, including records of all monitoring information, copies of all reports required by this permit, a copy of its authorization and amended authorizations under this permit, and records of all data used to complete the application (Notice of Intent) for this permit, for a period of at least three years from the date of the sample, measurement, report, or application. The City will submit its records to the Secretary when specifically asked to do so. The City will retain a copy of the SWMP required by this permit, and a copy of the permit language, at a location

accessible to the Secretary. All records, including the Notice of Intent and SWMP, will be available to the public on the City website, or in writing if requested.

Annual Report

The permittee shall submit an annual report that evaluates the permittee's compliance with the minimum control measures. The permittee shall submit its annual reports to the DEC, Watershed Management Division, Stormwater Management Program by April 1st each year, and upon receipt, the DEC shall post each annual report on its website. FRP and PCP reports shall be included with the annual report. In addition to any FRP and PCP reporting requirements, the annual report shall include all annual reporting requirements under Parts 4, 5, and 6 of this permit as well as:

- The status of the progress, compliance and assessment towards achieving TMDL requirements;
- Results of information collected and analyzed, if any, during the reporting period,
- A summary of the stormwater activities to be undertaken during the next reporting cycle,
- A change in any identified BMPs or measurable goals for any of the minimum measures, and
- Notice that the City is relying on another entity to satisfy some of its permit obligations, if applicable.

Amendments

Amendments or changes to the City's SWMP will be made in writing to ANR and contain the signatures of appropriate SBSU staff. These changes may occur at any time, but efforts will be made to coordinate these requests with scheduled reporting activities. Appendix I contains a summary of amendments made to the City's 2019 SWMP.

Individual Responsible for Implementation

The South Burlington City Manager is ultimately responsible for implementation of the City's SWMP. The Stormwater Superintendent, Deputy Director of Public Works, Director of Public Works, City Health Officer, Director of Planning and Zoning, and Wastewater Superintendent are responsible for various subcomponents of the plan, but through the City Manager's overall authority.

Signatures

"I 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 gathered and evaluated 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 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 fine and imprisonment for knowing violations."

Kevin Dorn
City Manager

1/22/19
Date

Thomas J. DiPietro Jr.
Deputy Director of Public Works / Stormwater Superintendent

January 22, 2019
Date