

Stormwater Upgrade Feasibility Analysis (SUFA)



southburlington
VERMONT



South Burlington
Stormwater Utility

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The Council of the City of South Burlington hereby ordains:

1. Background and Introduction

The City of South Burlington is subject to multiple stormwater Total Maximum Daily Load (TMDL) requirements established by the Vermont Agency of Natural Resources (ANR). Compliance with these TMDLs is required by the City's Municipal Separate Storm Sewer System (MS4) permit, which is also promulgated by ANR. The MS4 permit requires that the City develop a Flow Restoration Plan (FRP) for each of the five stormwater impaired watersheds located in the City. In addition, the City's MS4 permit requires that the City develop a plan to deal with properties covered by expired State of Vermont Stormwater permits. On top of these requirements, all of South Burlington ultimately drains to Lake Champlain. ANR and United States Environmental Protection Agency (EPA) are currently developing a phosphorus TMDL for Lake Champlain. The requirements for this regulation are not yet known, but when finalized the City will also be subject to additional requirements related to reduction of phosphorus loading to the Lake for both stormwater and wastewater discharges.

In order to meet the requirements of these State and Federal regulations it is necessary for the City of South Burlington, and the properties located within its boundaries, to install Stormwater Treatment Practices (STPs) capable of addressing the uncontrolled stormwater runoff that contributes to these water quality impairments. The City's "Ordinance Regulating the Use of Public and Private Sanitary Sewerage and Stormwater Systems" (Ordinance), which shall be incorporated by reference herein, provides the opportunity for properties with existing or expired State stormwater permits to obtain valid State stormwater permit coverage under the City's MS4 permit. The ability for the City to provide this permit coverage was clarified by the Vermont legislature in 2015 with the passage of Act 64.

In order for a property to obtain coverage under the City's MS4 permit, it must provide a level of stormwater treatment that will facilitate compliance with the State and Federal regulatory requirements (MS4 permit and TMDLs) that the City is subject to. The goal of this document is to establish a procedure by which an existing site can be evaluated for best practicable on-site treatment of stormwater runoff. The standard is intended to be met through installation of on-site STPs. Alternatively, a site may elect to pay a stormwater mitigation fee in lieu of installing STPs on their site. These funds will be utilized by the South Burlington Stormwater Utility (SBSU) to construct the STPs necessary for the City to implement the FRPs required by its MS4 permit. These funds may also be used to gain access to the land necessary for the construction of large scale or regional STPs.

2. Installation of Stormwater Treatment Practices

(A) The goal of the SUFA is: (1) to reduce the volume of stormwater runoff and associated pollutants leaving the site via pipe or overland flow, and (2) to ensure that a site complies with any FRP developed for the watershed in which it is located. At a minimum, the site must install STPs capable of infiltrating the volume of stormwater runoff generated on site during the Water Quality Volume (WQv) rain event as described in the Vermont Stormwater Management Manual, as amended from time to time by the Agency of Natural Resources, (VSMM), which shall be incorporated by reference herein. This volume of water must be infiltrated or reused on site using Low Impact Development (LID) practices detailed in the "South Burlington Low Impact Development Guidance Manual" and complying with the technical standards found in the VSMM.

(B) It is understood that some sites may contain constraints that make the site unsuitable for infiltration of stormwater runoff. A list of acceptable site constraints is included below (Table 1).

Table 1. Constraints on Use of Infiltration Practices

1. Seasonally high or shallow groundwater (as defined in the VSMM).
2. Shallow bedrock (as defined in the VSMM).
3. Soil infiltration rates of less than 0.2 inches per hour (as demonstrated by infiltration testing conducted in accordance with the procedure in Appendix A).
4. Contaminated soils subject to review and approval of the Stormwater Superintendent.
5. The presence of a “stormwater hotspot” (as defined in the VSMM).
6. Other site constraints subject to the review and approval of the Stormwater Superintendent.

(C) If it is not possible to infiltrate the volume of stormwater runoff generated by the site during WQv storm event due to one or more of the constraints listed above (Table 1), then this volume of water can be detained on-site using other LID strategies and practices such as those detailed in the “South Burlington Low Impact Development Guidance Manual”. STPs meeting the WQv treatment standard as described in the VSMM are also acceptable.

(D) A site with existing retention/detention based STPs is allowed to evaluate retrofitting/expanding these facilities in order to meet the detention requirement indicated above. Retrofit/expansion of these facilities may be considered prior to evaluation of infiltration practices.

(E) FRPs for the stormwater impaired watersheds located in the City contain a preliminary assessment of the stormwater treatment potential of some sites. If an FRP identifies an STP on a site, then the site must install either the specified STP or an STP that provides equivalent or greater treatment. In addition, final FRPs will contain a schedule indicating when various retrofits must occur. Properties that choose to construct STPs must do so before November 15, 2023, or the date specified in the FRP, whichever is sooner.

(F) All proposed STPs must be submitted to the Stormwater Superintendent for review. Standards for these submissions are included in Appendix B.

3. Payment of Stormwater Mitigation Fee

(A) In lieu of installation of STPs as described above, the property owner may elect to pay a stormwater mitigation fee. The mitigation fee for a property can be determined utilizing the following equation (where IA is the impervious area on the site in acres):

$$\text{Stormwater Mitigation Fee} = \text{IA} \times \$70,000$$

(B) Impervious Area (IA) is calculated by measuring the impervious surfaces located on the property at the time of application. Applicants shall not include any publicly owned impervious area (e.g. public roads within a City-owned ROW) in their calculation of IA.

(C) Payment of a stormwater mitigation fee does not prevent or exclude a site from being used for stormwater treatment. If the site contains a project identified in a FRP as a regional stormwater treatment facility then some of the land on the site may be used for stormwater treatment.

(F) Full payment of stormwater mitigation fees can occur at the time of application, but in any event no later than November 15, 2023. Alternatively, the property owner can elect to pay the fee over a 5- or

10-year term. If a 5-year term is selected, the total value will be assessed at 3.5% interest for over that period. If a 10-year term is selected, the total value will be assessed at 5.5% interest over that period. Fees paid over a 5- or 10-year term will be included in the property's stormwater fee for developed properties as established in the Ordinance.

4. Combination STP/Fee Method

(A) Some sites may install STPs for a portion of the site and pay a stormwater mitigation fee for the remaining portion of the site. When this method is used, impervious area flowing to a STP are removed from the IA value used in the stormwater mitigation fee equation.

(B) If the combination method is utilized, STPs shall provide treatment for the entire drainage area flowing to them. Credit will not be given if an STP is sized to only infiltrate a portion of the runoff associated with the WQv treatment standard. The STP must meet the full WQv for its upstream drainage area.

5. Penalties/Enforcement

(A) This ordinance shall constitute a civil ordinance within the meaning of 24 V.S.A. Chapter 59. Any Person who violates a provision of this Ordinance, including but not limited to failure to install a STP by November 15, 2023 or to pay the stormwater mitigation fee when due, shall be subject to a civil penalty of up to \$800 per day for each day that such violation continues. Any law enforcement officer or the Director of Public Works, City Engineer, Deputy Director of Public Works, or Stormwater Superintendent may act as an Issuing Municipal Official and issue and pursue before the Judicial Bureau a municipal complaint for any violation of any provision of this Ordinance.

(B) In addition to the enforcement procedures available before the Judicial Bureau, the City Manager is authorized to commence a civil action to obtain injunctive and other appropriate relief, or to pursue any other remedy authorized by law. Nothing herein shall be construed to limit other rights, remedies or penalties available by law.

(C) An Issuing Municipal Official is authorized to recover civil penalties in the following amounts for each violation:

First offense	\$160
Second offense	\$320
Third offense	\$480
Fourth offense	\$640
Fifth and subsequent offenses	\$800

(D) An Issuing Municipal Official is authorized to recover a waiver fee, in lieu of a civil penalty, in the following amounts, for any Person who declines to contest a municipal complaint and pays the waiver fee:

First offense	\$100
Second offense	\$250
Third offense	\$400
Fourth offense	\$550
Fifth and subsequent offenses	\$700

Each day the violation continues shall constitute a separate violation.

6. Severability

If any portion of this Ordinance is held to be invalid by a court of competent jurisdiction, such finding shall not invalidate any other part of this Ordinance.

Appendix A. Method for Infiltration Testing

(A) The following requirements apply to any required infiltration testing:

(1) Testing must be performed under the supervision of a qualified professional (i.e., registered engineer, site designer licensed in the State of Vermont, a qualified soil scientist, a qualified geologist, a qualified hydrogeologist, or other person approved in advance by the Stormwater Superintendent).

(2) Infiltration test methods must assess the saturated hydraulic conductivity under "field-saturated" conditions (see ASTM D5126-90 *Standard Guide for Comparison of Field Methods for Determining Hydraulic Conductivity in the Vadose Zone*).

(3) Infiltration test locations shall correspond to the proposed Stormwater Treatment Practice (STP) locations, and infiltration tests must be conducted at a minimum depth of the bottom of the proposed STP.

(4) Design infiltration rates shall be determined by using a factor of safety of 2 from the field-derived value.

(5) Percolation tests are not acceptable in place of testing for saturated hydraulic conductivity, as they overestimate saturated hydraulic conductivity values. Acceptable tests include:

- i. Guelph permeameter - ASTM D5126-90 Method
 - ii. Falling head permeameter – ASTM D5126-90 Method
 - iii. Double ring permeameter or infiltrometer - ASTM D3385-09, D5093-152, D5126-90 Methods
 - iv. Amoozemeter or Amoozegar permeameter – Amoozegar 1992
- (6) The following information must be documented for any infiltration testing:
- i. Date and time of testing.
 - ii. Name and qualifications of the person conducting the testing.

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- iii. Location of infiltration testing.
 - iv. Method utilized during testing.
 - v. Results of infiltration testing in inches / hour.
- (7) A qualified professional may establish seasonal high groundwater depth in test pits based on redoximorphic features.
- (8) Verify depth to bedrock (if within 4 feet of proposed STP bottom) via test pits or solid auger probes.

Appendix B. Submission Standards

- (A) The following information must be included with a submission:
- (1) Complete application form.
 - (2) A brief written narrative describing the proposed Stormwater Treatment Practice (STP) and how it meets the SUFA standard. This includes a description of how the proposed STP matches or differs from what is indicated in any approved Flow Restoration Plan (FRP).
 - (3) A written description of the ongoing maintenance needs for the drainage system and proposed STP.
 - (4) A map delineating the drainage area flowing to each STP. This must include any off-site areas flowing to the STP.
 - (5) Site plan and construction details for all proposed STPs. The site plan must include:
 - i. Location, type, and size of all impervious surfaces.
 - ii. Location, type, size, elevations, and specifications for all proposed STPs.
 - iii. Stormwater collection and conveyance systems including swales, culverts, and piping.
 - iv. Length, diameter, and material for all piping and culverts.
 - v. Topography.
 - vi. Soil type and/or hydrologic soil group.
 - vii. The location and results of any infiltration testing conducted.
 - viii. Tree canopy and changes to landscaping.
 - (6) Modeling results that show the existing and post-development hydrographs for the storm events indicated below. Any TR-55 based model shall be suitable for this purpose. Modeling methods utilized shall be in accordance with the best practices utilized by the State of Vermont Stormwater Management Section and described in the VSMM.

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- i. The Water Quality Volume (WQv) storm event as described in the VSMM.
 - ii. The one year, twenty-four hour rainfall event as described in the VSMM.
 - iii. The twenty-five year, twenty-four hour rainfall event (currently 4.0 inches) as described in the most recent version of the City's Land Development Regulations.
- (7) Applications submitted under the Combined Method must include a stormwater mitigation fee calculation. The site plan, listed under item 5 above, must indicate the portion of Impervious Area (IA) being utilized in the stormwater mitigation fee calculation.

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Adopted at South Burlington, Vermont this 17th day of OCTOBER, 2016, and to be effective upon adoption.

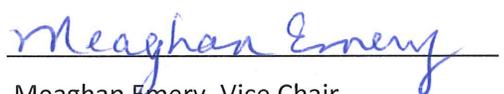
SOUTH BURLINGTON CITY COUNCIL



Helen Riehle, Chair



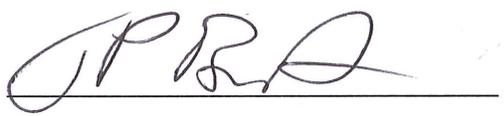
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Donna Kinville, City Clerk