

Alternative Treatment Practices Approval Under the 2017 Vermont Stormwater Management Manual

Purpose

To establish guidelines for Department review of alternative stormwater treatment practices seeking approval as an acceptable water quality treatment practice or pre-treatment practice in the 2017 VSMM. The guidelines are established to ensure that Department review of requests for approval are conducted in a consistent and objective manner, and to ensure that the practices meet the required treatment goals and required design elements of the 2017 VSMM based on field testing.

Scope/Objectives

These review guidelines will apply to Department review of both proprietary treatment devices and alternative designs not found in the 2017 VSMM, collectively referred to herein as alternative stormwater treatment practices (STPs). The evaluation will be based on review of field tested installations and the observed pollutant removal efficiencies as compared to the goals of the 2017 VSMM. This review will place each approved alternative STP in one of three accepted water quality practice tiers, or approve an alternative STP for pre-treatment use only. The review will also consider the required maintenance of a practice and the functionality of the practice in consideration of Vermont's climate and regulatory requirements.

Proprietary treatment devices and alternative designs are initially approved by the Department on a preliminary basis. They can be incorporated as treatment for an individual operational stormwater permit application but are not eligible to be used as treatment in a general permit application until they are formally incorporated into the 2017 VSMM. The VSMM will be revised every five years at which time alternative practices may be added to the available treatment options as formally approved practices available for general permit applications.

Required Treatment for Alternative STPs

Alternative STPs may request approval for use as a pre-treatment practice (Section 4.1.5) or as a water quality practice (Section 4.4) provided it can be demonstrated that the practice meets the required minimum pollutant removal (Table 1).

Table 1: Minimum Pollutant Removal for Alternate STPs

Type of Practice		TSS Removal	TP Removal
Pre-treatment Practice		50%	n/a
Water Quality Practice	Tier 1	98%	80%
	Tier 2	80%	60%
	Tier 3	80%	50%

Demonstration of Required Treatment

Evaluation of meeting the treatment requirements may either be done by monitoring the practice with a monitoring plan approved by the Agency for a newly-designed alternative system (Section 4.4.2) or through Agency evaluation of monitoring conducted in a manner consistent with the most current version of one of the protocols identified below, assuming approval is being sought for a similar application of the technology:

- Technology Acceptance Reciprocity Partnership (TARP)*
- U.S. EPA's Environmental Technology Verification (ETV)*
- Washington Department of Ecology's Technology Assessment Protocol (TAPE)
- Other protocol or program as approved by the Agency.
**These have been disbanded, however the protocol is still used by many states, and past evaluations would be considered*

Completion of a demonstration consistent with an aforementioned protocol may not be sufficient in all cases. The Agency reserves the right to evaluate applications on a case-by-case basis and request additional information, including evidence of long-term performance. A poor maintenance record or high failure rate is valid justification for the Agency's rejection of a STP.

Submittal Requirements

The following information must be included in the documentation supporting the performance claim.

General Information

- Description of the device or system to be verified
 - Description of treatment mechanism: Filtering/Settling/Adsorption/etc.
 - Any upstream pre-treatment practices or post-treatment requirements
- Treatment Standard(s) for which approval of alternative STP is sought, including Pre-treatment
- Written Description of the actual components of the alternative STP
 - Construction materials and dimensions
 - Physical siting requirements: minimum depth to seasonal high groundwater table, soil characteristics, required drop from influent to effluent, physical clearance needed or accessibility requirements
- General pollutant removal and performance claims of the alternative STP

Alternative STP Monitoring Information

- Complete and detailed monitoring report for the "existing" alternative STP (Section 4.4.1) including the following information on the tested facility.
 - Location of tested facility
 - Total practice drainage area
 - Impervious area, and types of land use contributing to practice
 - Site characteristics affecting flows and pollutant load in runoff
 - WQ_V or Q_{wq} for the tested practice drainage area, based on the 1.0" storm.
 - Plan view of test site
 - Location of the practice in stormwater conveyance on the site

- General long-term meteorological data for the site (rainfall, snowfall, seasonal temperatures, design storm depths for the location)
- Local water quality data, if available
- Range of storm depths tested
 - Number of qualifying rain events tested
- Sizing information
 - Storage volume (if applicable)
 - Deviation from vendor sizing recommendations for the testing site and reasoning if applicable
 - Design flow rate of the practice (if applicable)
 - Infiltration rate of the underlying soil (if designed to infiltrate)
- Any maintenance done on the practice or device during the testing period
- Was the testing done in conformance with another state protocol: TARP/TAPE/MASTEP/ETV/Other
- Party responsible for sampling and analysis
- In the case of a new design alternative system a monitoring program conforming to the requirements of Section 4.4.2 of the 2017 VSMM must be submitted with at the time of application, and the detailed monitoring report will be submitted for review after monitoring is complete.

Sizing Information

The applicant must provide information to appropriately size the practice based on either the WQ_v or the Q_{wq} (the peak runoff rate from the 1.0-inch storm) designed to drain to the practice. If the practice relies on infiltration, additional information may be needed to size the proposed practice based on the underlying soil infiltration rate.

- If a flow splitter or diversion is used, how will treatment of the full WQ_v be demonstrated?
- How is by-pass water routed around the system?

Maintenance Information

The applicant must provide the following information on the maintenance needed in support of the performance of the practice.

- Maintenance access requirements
- Maintenance triggers and corrective actions
- Expected maintenance practices and schedule, in consideration of various site conditions
- Procedure for removal and disposal of any waste or filter media if applicable
- Estimate of costs associated with annual maintenance and media replacement
- Availability of replacement parts
 - Suppliers of filter media if applicable

DEC Review

The Department will review the submitted materials and decide if field testing adequately supports the performance claims. Request for any additional information from the manufacturer or designer will be made after initial review of the submittal package. If no more information is needed the DEC

stormwater program will send a letter stating whether the alternative STP will be an acceptable practice, whether it is approved as a pre-treatment practice or a tier of water quality treatment practice, and any conditions for its use. A list of approved alternative practices will be made available to the public for consideration in stormwater system design.