

AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
ONE NATIONAL LIFE DRIVE, MAIN BUILDING, 2nd FLOOR
MONTPELIER, VT 05620-3522

DRAFT FACT SHEET
(SEPTEMBER 2016)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

PERMIT NO: 3-1293
PROJECT ID NO: NS88-0012
NPDES NO: VT0020915

NAME AND ADDRESS OF APPLICANT:

Town of Brattleboro
211 Fairground Road
Brattleboro, VT 05301

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Pleasant Valley Water Treatment Facility
Brattleboro Water Department
416 Pleasant Valley Road
Brattleboro, Vermont

RECEIVING WATER: Unnamed tributary to Whetstone Brook

CLASSIFICATION: Class B. Class B waters are suitable for swimming and other forms of water-based recreation, and irrigation of crops and other agricultural uses without treatment; good aesthetic value; aquatic biota and wildlife sustained by high quality aquatic habitat; suitable for boating, fishing, and other recreational uses; acceptable for public water supply with filtration and disinfection.

I. Proposed Action, Type of Facility, and Discharge Location

The above named applicant applied on July 1, 2015 to the Vermont Department of Environmental Conservation for a renewal of the permit to discharge into the designated receiving water. At this time the Department has made a tentative decision to renew the discharge permit. The facility is engaged in the treatment of municipal drinking water. The discharge is from the outfall of the Town of Brattleboro water treatment facility to an unnamed tributary to Whetstone Brook.

II. Description of Discharge

This permit authorizes the discharge of filter backwash effluent produced during the treatment of raw surface water via coagulation, filtration and chlorination. A quantitative description of the discharge in terms of significant effluent parameters is based on state and federal laws and regulations, the discharge permit application, and the recent self-monitoring data.

III. Limitations and Conditions

The effluent limitations of the permit, the monitoring requirements, and any implementation schedule (if required), may be found on the following pages of the permit:

Effluent Limitations and Monitoring Requirements: Pages 2 of 14

IV. Permit Basis and Explanation of Effluent Limitation Derivation

The Pleasant Valley Water Treatment Facility was constructed in 1989 to process surface water for the Town of Brattleboro's drinking water supply. The Town has been issued a series of discharge permits since 1990 for water treatment filter backwash and rinse water from two settling lagoons to an unnamed tributary of Whetstone Brook (S/N 001).

Discharge occurs during filter rinsing, following filter backwash and when the filter comes on line after being shut down. This rinsing process functions to provide a higher potable water quality to the consumers by removing possible *Giardia* and *Cryptosporidium* oocysts on the filters. The filter rinse/ backwash water is supplied from the storage tank and flows by gravity to the filters. The filter rinse/backwash water is then discharged to two settling lagoons, operating in parallel. Overflow from the two lagoons is conveyed via pipe to a swale before reaching the unnamed tributary. The outfall of the pipe, prior to the swale, is the point of compliance location for S/N 001.

Floor Drains - discharge to a 6000-gallon double-walled fiberglass tank located adjacent to the lagoons. Although there is an overflow to the lagoons for venting purposes only, a high water alarm is present to alert the operator such that an overflow will not occur (as prohibited in the existing permit).

Flow - At the request of the Permittee, the draft permit is proposing to increase the effluent flow limitation for S/N 001 (filter backwash and filter rinse water) from 0.105 to 0.160 million gallons per day (MGD), monthly average, and from 0.160 to 0.265 MGD, daily maximum. The request for flow limit increase is based on: 1) snow melt and precipitation events can result in heavy flow into the reservoir and degrade source water quality, resulting in an increased need for flushing of filters and in an increase in discharge volume; 2) expected increase in customer demand and, therefore, discharges from backflow; and 3) plans to upgrade the facility in the next five years that would require implementation of 'filtered water to waste' (wasting of unchlorinated filtered water after the filters return to service after a backwash) component of their operation.

The discharge flow to the settling lagoons is comprised of raw water from clarifier flushes and treated water from filter backflush. The flow rate through each clarifier flush is directly proportional to the raw water flow rate. When the clarifier is flushed, either directed by a time

interval or pressure limit, the flow is calculated by the programmable logic controller (PLC) using the duration and number of flushes and the flow rate into the specific unit being cleaned. The mixed media filter is backwashed using treated water flowing in the reverse direction to expand the filter bed and wash out the removed material. The backwash water flows through a metering device, and the PLC derives a backwash volume based on the flow rate and the actual backwash time. Backwash flow rate changes over time based on water temperature. The flow volumes from clarifier flush and filter backwash are totaled by the PLC and linked to SCADA (supervisory control and data acquisition) system for monitoring. The operators record total flow as well as the number of clarifier flushes and backwash flushes, daily.

Total Suspended Solids (TSS) - TSS monitoring at S/N 001 was eliminated from previous permits as sufficient data has been collected and the effluent is consistently below 10 mg/l. The addition of filter rinse water should not cause an increase of TSS.

pH - The pH limitation for S/N 001 is 6.5 - 8.5 Standard Units (S.U.). Monitoring is required once per day via a grab sample.

Total Phosphorus (TP) – The treatment facility has used a poly/orthophosphate (blended 60/40) corrosion inhibitor, Aquadene SK-7641, at a dosage of 0.6 mg/L. The corrosion inhibitor was injected into the water main to the 3 million-gallon storage tank at a location between the treatment facility and the storage tank. It was injected after treatment and prior to storage. The treated water, containing phosphate, was used for filter backwash and discharged. The Brattleboro WTP monitored TP in the discharge over three months (May-July) in 2016, revealing that TP averaged 0.05 to 0.17 mg/L, with a maximum of 0.45 mg/L. The facility committed, via a letter dated August 8, 2016, to relocating this polyphosphate injection point by December 1, 2016, thereby reducing phosphate in the discharge to background levels occurring in the raw water source. Therefore, no phosphorus limits or monitoring requirements will be included with the 2016 permit.

Records and decisions relating to phosphorus discharge limits included an April 24, 1989 letter from Brian Kookier of the Permits and Compliance Section of ANR-DEC states that “Personnel from the Agency WQD reviewed the draft permit and have determined that no phosphorus limits are necessary. This is based on the use of alum for water treatment; the alum floc is expected to help with phosphorus removal in the lagoons. We will require this parameter be monitored during discharges and concentrations reported monthly”.

The 1990 discharge permit included weekly monitoring requirements for total phosphorus and the 1990 Fact Sheet states “The WQD reviewed the potential phosphorus discharge, determining that phosphorus levels should be monitored but that it is not necessary to limit the discharge of phosphorus to the receiving stream”. By the time the 1996 discharge permit was issued, it did not include phosphorus monitoring or limits.

At some time after the 2000 discharge permit, the Town proposed rerouting the backwash discharge to the Pleasant Valley Reservoir, where source water is supplied to the treatment system, thereby recycling water. After review by ANR, the plan was not approved due to concerns over impacts to source water quality and to treatment ability of the water system, as well as to the potential discharge load of chlorine and phosphorus, out of compliance with Vermont Water Quality Standards. A memorandum from the WQD dated October 15, 2003

estimated that at a daily discharge rate of .063 MGD and phosphate concentrations of 0.3 mg/L in the filter backwash discharge would result in a TP load of 26 kg/yr to receiving water.

Previous fact sheets have discussed how the potential upgrade to the plant included plans to relocate the injecting point for poly-orthophosphate (needed for adequate corrosion control) so that the chemical does not enter the storage tank and therefore would not be present in filter backwash discharge to the receiving water.

Total Residual Chlorine (TRC) – The total residual chlorine (TRC) discharge limit of 0.020 mg/L and daily monitoring requirement for discharge point S/N 001 remain unchanged from the current permit.

Sodium hypochlorite (chlorine) is added to finished water at the storage tank and residual chlorine is therefore present in the filter backwash/rinse water that is discharged to the lagoons. During warmer weather, more chlorine is added to the potable water to maintain a free chlorine residual in distribution and this means the more potential for TRC exceedances in the lagoon outfall. The 1989 Fact Sheet indicated that due to possible near-zero instream flows, the max effluent limit for TRC would be 0.011 mg/L, which is the chronic criteria to protect aquatic biota. However, discharge permits issued in 1990, 1996, 2000 and 2005 set a TRC limit of 0.10 mg/L. The TRC limit was reduced to 0.020 mg/L in the 2010 discharge permit, which is the minimum level of detection for chlorine found in currently approved methods for determining TRC.

The 1990 Fact Sheet states that the Town “incorporated a dechlorinating system into the design”, however, dechlorinating was discontinued by the WTP at some point (date unknown). Due to regular exceedances of the TRC limit in the discharge point S/N 001 and to prompting by the Department, the WTP implemented a dechlorinating practice in June 2016 that uses sodium bisulfite to eliminate free chlorine in the backwash water as it passes to the lagoons. The WTP will operate the dechlorinating system going forward.

Turbidity – A limit of 10 Nephelometric Turbidity Units (NTU) and monthly monitoring for S/N 001 is required.

V. Procedures for Formulation of Final Determinations

The public comment period for receiving comments on this draft permit is from **September 26, 2016 through October 25, 2016** during which time interested persons may submit their written views on the draft permit. All written comments received by 4:30 PM on **October 25, 2016** will be retained by the Department and considered in the formulation of the final determination to issue, deny or modify the draft permit. The period of comment may be extended at the discretion of the Department.

Written comments should be sent to:

Agency of Natural Resources
Department of Environmental Conservation
Watershed Management Division
One National Life Drive, Main Building, 2nd Floor
Montpelier VT 05620-3522

Comments may also be faxed to 802-828-1544 or submitted by e-mail using the e-mail comment provisions included at <http://dec.vermont.gov/watershed>

Any interested person or groups of persons may request or petition for a public hearing with respect to this draft permit. Any such request or petition for a public hearing shall be filed within the public comment period described above and shall indicate the interest of the party filing such request and the reasons why a hearing is warranted.

The Department will hold a hearing if there is significant public interest in holding such a hearing. Any public hearing brought in response to such a request or petition will be held in the geographical area of the proposed discharge or other appropriate area, at the discretion of the Department and may, as appropriate, consider related groups of draft permits. Any person may submit oral or written statements and data concerning the draft permit at the public hearing. The Department may establish reasonable limits on the time allowed for oral statements and may require the submission of statements in writing. All statements, comments, and data presented at the public hearing will be retained by the Department and considered in the formulation of the final determination to issue, deny, or modify the draft permit.

The complete application, draft permit, and other information are on file and may be inspected by appointment on the 2nd floor of the Main Building at One National Life Drive, Montpelier, Vermont. Copies may be obtained by calling 802-828-1535 from 7:45 AM to 4:30 PM Monday through Friday, and will be made at a cost based upon the current Secretary of State Official Fee Schedule for Copying Public Records. The draft permit and fact sheet may also be viewed on the Division's website at <http://dec.vermont.gov/watershed>