

AGENCY OF NATURAL RESOURCES  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
WATERSHED MANAGEMENT DIVISION  
ONE NATIONAL LIFE DRIVE, DAVIS BUILDING, 3<sup>rd</sup> FLOOR  
MONTPELIER, VT

Permit Number: 3-1440

PIN: BR99-0104

NPDES Number: VT0101257

Facility Name: Cabot Wastewater Treatment Facility

Facility Address: 183 Sawmill Road, Cabot VT 05647

Facility Coordinates: Lat: 44.39087 Long: -72.32928

Expiration Date: September 30, 2025

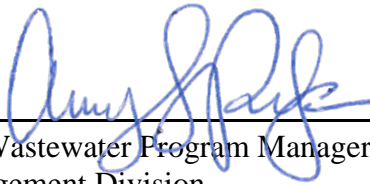
Reapplication Date: March 31, 2025

In compliance with the provisions of the Vermont Water Pollution Control Act as amended (10 V.S.A., Chapter 47), the Vermont Water Pollution Control Permit Regulations as amended (Environmental Protection Rules, Chapter 13), and the federal Clean Water Act as amended (33 U.S.C. § 1251 *et seq.*), and implementing federal regulations, the Town of Cabot (hereinafter referred to as the "Permittee") is authorized by the Secretary of the Agency of Natural Resources (hereinafter referred to as the "Secretary") to discharge from the Cabot Wastewater Treatment Facility (hereinafter referred to as the "WWTF") to the Winooski River in accordance with the following conditions.

This permit shall be effective on November 1, 2020

Peter Walke, Commissioner  
Department of Environmental Conservation

By:



Date:

10/26/2020

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Amy Polaczyk, Wastewater Program Manager  
Watershed Management Division

**I. PERMIT SPECIAL CONDITIONS****A. EFFLUENT LIMITS AND MONITORING REQUIREMENTS**

**1. Discharge Point S/N 001, Lat. 44.39043, Long. -72.33070:** During the term of this permit, the Permittee is authorized to discharge from outfall S/N 001 of the Cabot WWTF to the Winooski River, an effluent for which the characteristics shall not exceed the values listed below:

<b>FLOW</b>						
<b>Constituent; Sampling Point and Sample Type</b>	<b>Season and Sampling Frequency</b>	<b>Limit 1</b>	<b>Limit 2</b>	<b>Limit 3</b>	<b>Limit 4</b>	<b>Limit 5</b>
<b>Flow; Effluent; Continuous</b>	<b>Year Round Daily</b>	<b>Monitor MGD Monthly Avg</b>				
<b>Flow; Annual Average; Calculated</b>	<b>12/01 - 12/31 Annual</b>	<b>0.05 MGD Annual Avg</b>				
<b>CONVENTIONAL POLLUTANTS</b>						
<b>Constituent; Sampling Point and Sample Type</b>	<b>Season and Sampling Frequency</b>	<b>Limit 1</b>	<b>Limit 2</b>	<b>Limit 3</b>	<b>Limit 4</b>	<b>Limit 5</b>
<b>BOD, 5-Day; Effluent; 8 Hour Comp</b>	<b>Year Round Monthly</b>	<b>12.6 lbs/day Monthly Avg</b>	<b>18.8 lbs/day Weekly Avg</b>	<b>30 mg/l Monthly Avg</b>	<b>45 mg/l Weekly Avg</b>	<b>50 mg/l Daily Max</b>
<b>BOD, 5-Day; Influent; 8 Hour Comp</b>	<b>Year Round Monthly</b>			<b>Monitor mg/l Monthly Avg</b>		
<b>BOD, 5-Day (%R); Percent Removal; Calculated</b>	<b>Year Round Monthly</b>			<b>85 % Monthly Min</b>		
<b>E. Coli; Effluent; Grab</b>	<b>Year Round 2 per Month</b>					<b>77 #/100 ml Instant Max</b>
<b>pH; Effluent; Grab</b>	<b>Year Round Daily</b>			<b>6.5 s.u. Min</b>		<b>8.5 s.u. Max</b>
<b>Settleable Solids; Effluent; Grab</b>	<b>Year Round Daily</b>					<b>1 ml/l Instant Max</b>
<b>Suspended Solids, Total (%R); Percent Removal; Calculated</b>	<b>Year Round Monthly</b>			<b>85 % Monthly Min</b>		
<b>Suspended Solids, Total; Effluent; 8 Hour Comp</b>	<b>Year Round Monthly</b>	<b>12.6 lbs/day Monthly Avg</b>	<b>18.8 lbs/day Weekly Avg</b>	<b>30 mg/l Monthly Avg</b>	<b>45 mg/l Weekly Avg</b>	<b>50 mg/l Daily Max</b>
<b>Suspended Solids, Total; Influent; 8 Hour Comp</b>	<b>Year Round Monthly</b>			<b>Monitor mg/l Monthly Avg</b>		
<b>Ultimate Oxygen Demand; Effluent; Calculated</b>	<b>06/01 - 09/30 Monthly</b>		<b>40 lbs/day Daily Max</b>			

<b>NUTRIENTS</b>						
<b>Constituent; Sampling Point and Sample Type</b>	<b>Season and Sampling Frequency</b>	<b>Limit 1</b>	<b>Limit 2</b>	<b>Limit 3</b>	<b>Limit 4</b>	<b>Limit 5</b>
<b>Nitrite Plus Nitrate Total; Effluent; 8 Hour Comp</b>	<b>01/01 - 03/31 Quarterly</b>					<b>Monitor mg/l Daily Max</b>
<b>Nitrite Plus Nitrate Total; Effluent; 8 Hour Comp</b>	<b>04/01 - 06/30 Quarterly</b>					<b>Monitor mg/l Daily Max</b>
<b>Nitrite Plus Nitrate Total; Effluent; 8 Hour Comp</b>	<b>07/01 - 09/30 Quarterly</b>					<b>Monitor mg/l Daily Max</b>
<b>Nitrite Plus Nitrate Total; Effluent; 8 Hour Comp</b>	<b>10/01 - 12/31 Quarterly</b>					<b>Monitor mg/l Daily Max</b>
<b>Nitrogen, Kjeldahl Total; Effluent; 8 Hour Comp</b>	<b>01/01 - 03/31 Quarterly</b>		<b>Monitor lbs/day Daily Max</b>			<b>Monitor mg/l Daily Max</b>
<b>Nitrogen, Kjeldahl Total; Effluent; 8 Hour Comp</b>	<b>04/01 - 05/31 1 per 2 Months</b>		<b>Monitor lbs/day Daily Max</b>			<b>Monitor mg/l Daily Max</b>
<b>Nitrogen, Kjeldahl Total; Effluent; 8 Hour Comp</b>	<b>06/01 - 09/30 Monthly</b>		<b>Monitor lbs/day Daily Max</b>			<b>Monitor mg/l Daily Max</b>
<b>Nitrogen, Kjeldahl Total; Effluent; 8 Hour Comp</b>	<b>10/01 - 12/31 Quarterly</b>		<b>Monitor lbs/day Daily Max</b>			<b>Monitor mg/l Daily Max</b>
<b>Nitrogen, Total; Effluent; Calculated</b>	<b>01/01 - 03/31 Quarterly</b>		<b>Monitor lbs/day Daily Max</b>			<b>Monitor mg/l Daily Max</b>
<b>Nitrogen, Total; Effluent; Calculated</b>	<b>04/01 - 06/30 Quarterly</b>		<b>Monitor lbs/day Daily Max</b>			<b>Monitor mg/l Daily Max</b>
<b>Nitrogen, Total; Effluent; Calculated</b>	<b>07/01 - 09/30 Quarterly</b>		<b>Monitor lbs/day Daily Max</b>			<b>Monitor mg/l Daily Max</b>
<b>Nitrogen, Total; Effluent; Calculated</b>	<b>10/01 - 12/31 Quarterly</b>		<b>Monitor lbs/day Daily Max</b>			<b>Monitor mg/l Daily Max</b>
<b>Phosphorus, Total; Effluent; Calculated</b>	<b>Year Round Monthly</b>	<b>Monitor lbs Annual Total</b>	<b>Monitor lbs Monthly Total</b>	<b>Monitor % Monthly Total</b>		
<b>Phosphorus, Total; Effluent; 8 Hour Comp</b>	<b>Year Round Monthly</b>			<b>0.8 mg/l Monthly Avg</b>		
<b>Phosphorus, Total; Annual Average; Calculated</b>	<b>12/01 - 12/31 Annual</b>	<b>90 lbs/yr Annual Total</b>				

## 2. Discharge Sampling Points

- a. Effluent sampling: The Permittee shall collect samples from the effluent pipe after UV disinfection.
- b. Influent sampling: The Permittee shall collect samples at the sample shack prior to the septic tank.

## 3. Discharge Special Conditions

- a. Monthly average flow shall be calculated by summing the daily effluent flow for each day in the given month and dividing the sum by the number of days of discharge in that month.

**b.** The Permittee shall operate the facility to meet the concentration limitations or pounds limitation, whichever is more restrictive.

**c.** Total Phosphorus shall be reported as Total Monthly Pounds, Running Total Annual Pounds, and Percentage of Running Total Annual Pounds to Annual Permit Limitation.

**d.** Total Nitrogen (TN) shall be reported as pounds TN and calculated as:  $TN (mg/L) \times Total Daily Flow \times 8.34$ ; where  $TN (mg/L) = TKN (mg/L) + NO_x (mg/L)$ .

**e.** The Ultimate Oxygen Demand (UOD) limitation applies from June 1 through September 30 annually. The Permittee shall limit the BOD<sub>5</sub> and TKN in the discharge such that the discharge does not exceed the UOD limitation or the BOD<sub>5</sub> concentration and mass limitations, whichever is more restrictive.

UOD shall be reported in pounds and calculated with the following formula:

$$UOD (lbs/day) = [(BOD_5 (lbs/day) \times 1.43) + (TKN (lbs/day) \times 4.57)]$$

**f.** The Permittee shall analyze TKN and BOD<sub>5</sub> from the same composite sample when results are used in UOD calculations.

**g.** Settleable solids samples shall be collected between 5:00 AM and 6:00 PM or during the period of peak flow.

**h.** Composite samples for BOD<sub>5</sub>, TSS, TP, TKN, and NO<sub>x</sub> shall be taken during the hours 6:00 AM to 6:00 PM unless otherwise specified. Eight hours is the minimum period for the composite. 24 hours is the maximum for the composite.

**i.** The monthly average concentrations of BOD<sub>5</sub> and TSS in the effluent shall not exceed 15 percent of the monthly average concentrations of BOD<sub>5</sub> and TSS in the influent into the WWTF.

**j.** If the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the permitted flow limitation, the Permittee shall submit to the Secretary projected loadings and a program for maintaining satisfactory treatment levels.

**k.** The Permittee shall demonstrate the accuracy of the effluent flow measurement device weekly and report the results on the monthly report forms. The acceptable limit of error is  $\pm 10\%$ .

**l.** The discharge shall be free from substances in kind or quantity that settle to form harmful benthic deposits; float as foam, debris, scum or other visible substances; produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses; result in the dominance of nuisance species; or interfere with recreational activities; or which would cause a violation of the Vermont Water Quality Standards.

**m.** The effluent shall not cause visible discoloration of the receiving waters.

**n.** The discharge shall not result in toxic substances or chemical constituents in concentrations or combinations in the receiving water that injure or are inimical to plants, animals, humans or aquatic life; or persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in edible portions of fish, shellfish, other aquatic life, or wildlife that might consume aquatic life.

**o.** Any action on the part of the Secretary in reviewing, commenting upon or approving plans and specifications for the construction of WWTFs shall not relieve the Permittee from the responsibility to achieve

effluent limitations set forth in this permit and shall not constitute a waiver of, or act of estoppel against any remedy available to the Secretary, the State of Vermont or the federal government for failure to meet any requirement set forth in this permit or imposed by state or federal law.

## **B. WASTE MANAGEMENT ZONE**

In accordance with 10 V.S.A. § 1252, this permit hereby establishes a waste management zone that extends from the outfall of the WWTF in the Winooski River downstream one mile.

## **C. EMERGENCY POWER FAILURE PLAN**

The current Emergency Power Failure Plan for the facility was submitted on June 30, 2003 and it was approved by the Agency on January 12, 2005.

**1.** The Permittee shall revise the Emergency Power Failure Plan and indicate in writing to the Secretary that in the event the primary source of electric power to the WWTF (including pump stations) fails, the Permittee shall either provide an alternative source of power for the operation of its WWTF, or demonstrate that the treatment facility has the capacity to store the wastewater volume that would be generated over the duration of the longest power failure that would have affected the facility in the last five years, excluding catastrophic events.

The alternative power supply, whether from a generating unit located at the WWTF or purchased from an independent source of electricity, must be separate from the existing power source used to operate the WWTF. If a separate unit located at the WWTF is to be used, the Permittee shall certify in writing to the Secretary when the unit is completed and prepared to generate power.

**2.** The determination of treatment system storage capacity shall be submitted to the Secretary upon completion.

**3.** The Permittee shall report according to the following table:

Due Date	Event Description
2/1/2021	The Permittee shall submit a revised Emergency Action Power Failure Plan.

## D. ENGINEERING EVALUATION AND REPORT/ASSET MANAGEMENT PLAN

The current Engineering Evaluation was submitted on November 29, 2001 after the completion of facility upgrades.

1. The Permittee shall conduct an in-depth engineering inspection/evaluation of the wastewater treatment facility and shall submit a written report of the results to the Secretary. The evaluation can be combined with or part of an Asset Management Plan provided the Plan includes an inspection of the treatment facility and collection system. The engineering inspection and report shall be conducted and prepared in accordance with the following conditions:

a. A professional engineer with experience in the design of municipal wastewater treatment facilities shall be hired to perform an in-depth inspection of the wastewater treatment facility, pump stations, collection system, and manholes. At the treatment facility, all components which are critical to the treatment process or which could adversely affect effluent quality in the event of their failure shall be evaluated. In the pump stations, all components critical to the proper conveyance of sewage, the prevention of sewage bypass, and the supporting appurtenances shall be evaluated.

b. The inspection is to be comprised of visual observation of equipment operability and condition as well as a review of maintenance records to determine recurring equipment problems and to estimate future life. Calibration checks shall be performed on all flow meters.

c. The resulting written inspection report shall document the components inspected, their condition, and include recommendations for all currently needed repairs and replacements and the need for on-site spare parts. The projected date of replacement or major rehabilitation of each component and the anticipated cost shall be estimated. The Permittee shall determine how the future anticipated costs will be met and advise the Secretary in a letter transmitted with the written inspection report.

d. Should the Secretary determine that certain critical components are in need of repair or replacement due to the results of the inspection report, this permit may be reopened and amended to include an implementation schedule for repair or replacement of those components.

2. The Permittee shall report according to the following table:

Due Date	Event Description
12/31/2024	The Permittee shall submit an engineering evaluation prepared by a professional engineer.

## E. OPERATION MANAGEMENT AND EMERGENCY RESPONSE PLAN (OMERP)

The Permittee submitted a revised OMERP for the wastewater treatment facility, pump stations, and stream crossings as required by 10 V.S.A. § 1278(b) on August 11, 2008. The Agency approved the OMERP on August 18, 2008.

The Permittee submitted the Operation, Management, and Emergency Response Plan for the treatment system, sewage collection system, sewage pumping stations, and sewer line stream crossings on August 27, 2020. Through issuance of this permit the Secretary approves the inspection schedule for the plan. The Permittee shall implement the plan in accordance with that schedule.

The Permittee shall revise the plan upon the Secretary's request or on its own motion to reflect equipment or operational changes.

## **F. PHOSPHORUS OPTIMIZATION PLAN**

### **1. Wasteload Allocation for Phosphorus**

This permit includes a total phosphorus (TP) water quality based effluent limitation of consistent with the waste load allocation (WLA) for TP, established by the U.S. Environmental Protection Agency (U.S. EPA) in the 2016 “Phosphorus TMDLs for Vermont Segments of Lake Champlain” (LC TMDL). The Secretary reserves the right to reopen and amend this permit to include an alternate TP limitation or additional monitoring requirements based on the monitoring data, the results of phosphorus optimization activities, or a reallocation of phosphorus wasteload allocations between the Permittee and another WWTF pursuant to the requirements of TMDL and Vermont’s “Wasteload Allocation Process” Rule (Environmental Protection Rule, Chapter 17).

### **2. Total Phosphorus Calculations and Reporting**

Total Phosphorus shall be reported monthly, via electronic Discharge Monitoring Report, in the following ways:

- a.** Monthly Average Phosphorus Concentration = The average concentration of phosphorus discharged this monitoring period. (sum of all daily discharges (mg/l) measured during the month divided by the number of daily discharges measured during the month)
- b.** Total Monthly Pounds Phosphorus = The total pounds of phosphorus discharged this monitoring period. (Monthly Average Phosphorus Concentration) x (Total Monthly Flows) x 8.34)
- c.** Running Total Annual Pounds = The 12-month running annual TP load. (Sum the Total Monthly Pounds results for the immediately preceding 12 months)
- d.** Comparison (%) of Running Total Annual Pounds to Annual Permit Limitation = The percentage of the Running Total Annual Pounds to the Annual TP Limitation. The comparison shall be calculated as:  
$$\% = \text{Running Total Annual Pounds} / \text{Annual TP Permit Limit} \times 100$$

### **3. Phosphorus Optimization Plan (POP)**

**a.** The Permittee shall develop or update (as appropriate) and submit to the Secretary a Phosphorus Optimization Plan (POP) to increase the WWTF’s phosphorus removal efficiency by implementing optimization techniques that achieve phosphorus reductions using primarily existing facilities and equipment. The POP shall:

**(i)** Be developed by a qualified professional with experience in the operation and/or design of WWTFs in consultation with the WWTF;

**(ii)** Evaluate alternative methods of operating the existing WWTF, including operational, process, and equipment changes designed to enhance phosphorus removal. The techniques to be evaluated may include operational process changes to enhance biological and/or chemical phosphorous removal, incorporation of anoxic/anaerobic zones, septage receiving policies and procedures, and side stream management;

**(iii)** Determine which alternative methods of operating the existing WWTF, including operational, process, and equipment changes will be most effective at increasing phosphorus removal; and

**(iv)** Include a proposed implementation schedule for those methods of operating the WWTF determined to be

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most effective at increasing phosphorus removal.

**b.** The Secretary shall review the POP. The Permittee shall commence implementation of the POP 60 days after submittal to the Secretary, unless the Secretary rejects the POP prior to that date.

**c.** The Permittee shall annually submit a report to the Secretary as an attachment to the monthly electronic Discharge Monitoring Reporting (DMR) form WR-43 that documents:

**(i)** The optimization techniques implemented under the POP during the previous year.

**(ii)** Whether the techniques are performing as expected.

**(iii)** The phosphorus discharge trends relative to the previous year.

#### **4. Phosphorus Elimination and Reduction Plan (PERP)**

**a.** The WWTF shall have 12 months from the permit effective date to optimize removal of TP.

**b.** If, after the optimization period, the WWTF's actual, TP loads reach or exceed 80% of the annual mass limit for the WWTF, based on the WWTF's 12-month running annual load calculated using the Running Total Annual Pounds Calculation, the Permittee shall, within 90 days of reaching or exceeding 80% of the annual

mass limit for the WWTF, develop and submit to the Secretary a projection based on the WWTF's current operations and expected future loadings of whether it will exceed its annual mass limit during the permit term.

**c.** If the WWTF is not projected to exceed its annual mass limit within the permit term, the WWTF shall reassess when it is projected to reach its annual mass limit prior to permit renewal and submit that information with its next permit application.

**d.** If the WWTF is projected to exceed its annual mass limit during the permit term, the Permittee shall submit a Phosphorus Elimination/Reduction Plan (PERP) within 6 months from the date of submittal of the projection submitted under Part 2 of this Section. The PERP shall be submitted to the Secretary to ensure the WWTF continues to comply with its annual mass limit.

**e.** The PERP shall be treated as an application to amend the permit, and therefore, shall be subject to all public notice, hearing, and comment provisions, in place at the time the plan is submitted, that are applicable to permit amendments. The Permittee shall revise the PERP, if required by the Secretary.

**f.** The PERP shall be developed by qualified professionals in consultation with the WWTF operator. The PERP shall include:

**(i)** An evaluation of alternatives to ensure the WWTF's compliance with its annual mass limit;

**(ii)** An identification of the chosen alternative or alternatives to ensure the WWTF's compliance with its annual mass limit;

**(iii)** A proposed schedule, including an engineer approved design and construction schedule and, if the chosen alternative or alternatives require a pilot study, a schedule for testing, that shall ensure the WWTF's compliance with its annual mass limit as soon as possible; and

**(iv)** A financing plan that estimates the costs for implementing the PERP and describes a strategy for financing

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the project.

**g.** The Permittee shall report according to the following table:

Due Date	Event Description
3/1/2021	The Permittee shall submit a Phosphorus Optimization Plan (POP).
5/1/2021	The Permittee shall commence implementation of the POP 60 days after submittal.
1/31/2022	The Permittee shall submit an annual report that documents TP trends and optimization techniques for the previous year.
1/31/2023	The Permittee shall submit an annual report that documents TP trends and optimization techniques for the previous year.
1/31/2024	The Permittee shall submit an annual report that documents TP trends and optimization techniques for the previous year.
1/31/2025	The Permittee shall submit an annual report that documents TP trends and optimization techniques for the previous year.

### **G. QUALITY ASSURANCE REPORT/PROFICIENCY TESTING**

**1.** In accordance with 10 V.S.A. § 1263.d.2, the Secretary may require a laboratory quality assurance sample program to ensure qualification of laboratory analysts. For purposes of demonstrating compliance with the requirements of this permit regarding adequate laboratory controls and appropriate quality assurance procedures, the Permittee shall conduct and pass an annual laboratory proficiency test, via an accredited laboratory, for the analysis of all pollutant parameters performed within their facility laboratory and reported as required by this permit. This can be carried out as part of an EPA DMR-QA study.

**2.** In the event this permit is administratively continued pursuant to 3 V.S.A. § 814, the Permittee shall continue to complete annual proficiency tests and report by December 31 each year.

**3.** The Permittee shall report on quality assurance according to the following table:

Due Date	Event Description
12/31/2021	The Permittee shall submit passing proficiency test results.
12/31/2022	The Permittee shall submit passing proficiency test results.
12/31/2023	The Permittee shall submit passing proficiency test results.
12/31/2024	The Permittee shall submit passing proficiency test results.

### **H. WHOLE EFFLUENT TOXICITY TESTING (WET) ACUTE**

**1.** The Permittee shall conduct two-species (*Pimephales promelas* and *Ceriodaphnia dubia*) acute WET tests on a composite effluent sample collected from outfall serial number S/N 001. Total Ammonia shall be measured in the highest concentration of test solution at the beginning of the test. If chlorine is used in the WWTF's system, Total Residual Chlorine shall be measured in the highest concentration of test solution at the beginning of the test.

**2.** The WET tests shall be conducted according to the procedures and guidelines specified in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" and "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater

Organisms” (both documents U.S. EPA October 2002 or, if a newer edition is available, the most recent edition).

**3.** Based upon the results of these tests or any other toxicity tests conducted, the Secretary reserves the right to reopen and amend this permit to require additional WET testing or a Toxicity Reduction Evaluation.

**4.** The Permittee may request the use of lab water for controls and dilution if:

**a.** acquiring receiving water is hazardous due to weather or topography;

**b.** previous WET tests have shown that the receiving water has had poor performance in the lab controls or dilution; or

**c.** requested by the Permittee and approved by the Secretary.

**5.** The Permittee shall sample and report according to the following table:

Due Date	Event Description
12/31/2021	The Permittee shall submit the WET results for the sample taken during August-October 2021.
6/30/2023	The Permittee shall submit the WET results for the sample taken during January-February 2023.

## **II. GENERAL CONDITIONS**

### **A. GENERAL REQUIREMENTS**

#### **1. Authority**

This permit is issued under authority of 10 V.S.A. §§ 1258 and 1259 of the Vermont Water Pollution Control Act, the Vermont Water Pollution Control Permit Regulation (Environmental Protection Rule, Chapter 13), and § 402 of the Clean Water Act, as amended.

#### **2. Operating Fees**

This discharge is subject to operating fees as required by 3 V.S.A. § 2822.

#### **3. Duty to Comply**

The Permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Except as provided in Bypass (Condition II.B.5.) and “Emergency Pollution Permits” (Condition II.B.8.), nothing in this permit shall be construed to relieve the Permittee from civil or criminal penalties for noncompliance.

#### **4. Civil and Criminal Liability**

Civil and criminal penalties for non-compliance are provided for in 40 C.F.R. § 122.41(a)(2)-(3) and 10 V.S.A. Chapters 47, 201, and 211. As of the effective date of this permit, the Vermont statutory penalties, which are subject to change, are as follows:

**a.** Pursuant to 10 V.S.A. Chapter 47, a civil penalty not to exceed \$10,000.00 a day for each day of violation.

**b.** Pursuant to 10 V.S.A. Chapter 47, a fine not to exceed \$25,000.00 or imprisonment for not more than six months, or both.

**c.** Pursuant to 10 V.S.A. Chapter 47, any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained by this permit, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained by this permit, shall upon conviction, be punished by a fine of not more than \$10,000.00 or by imprisonment for not more than six months, or by both.

**d.** Pursuant to 10 V.S.A. Chapter 201, a penalty of not more than \$42,500.00 for each determination of a separate violation. In addition, if the Secretary determines that a violation is continuing, the Secretary may assess a penalty of not more than \$17,000.00 for each day the violation continues. The maximum amount of penalty assessed under this provision shall not exceed \$170,000.00.

**e.** Pursuant to 10 V.S.A. Chapter 211, a civil penalty of not more than \$85,000.00 for each violation. In addition, in the case of a continuing violation, a penalty of not more than \$42,500.00 may be imposed for each day the violation continues.

#### **5. Reopener Clause**

In accordance with 40 C.F.R. § 122.44(c), this permit may be reopened and modified during the life of the permit to incorporate any applicable standard for sewage sludge use or disposal promulgated under section 405(d) of the Clean Water Act. The Secretary may promptly modify or revoke and reissue this permit if the

standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or controls a pollutant or practice not limited in the permit.

## **6. Permit Modification, Suspension, and Revocation**

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
- c. Reallocation of WLA under the LC TMDL;
- d. Development of an integrated WWTF and stormwater runoff NPDES permit; or
- e. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.
- f. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance shall not stay any permit condition.

## **7. Toxic Effluent Standards**

If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under § 307(a) of the Clean Water Act for a toxic pollutant which is present in the Permittee's discharge and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, then this permit shall be modified or revoked and reissued, pursuant to Condition II.A.6. of this permit, in accordance with the toxic effluent standard or prohibition and the Permittee so notified.

## **8. Other Materials**

Other materials ordinarily produced or used in the operation of this facility, which have been specifically identified in the application, may be discharged at the maximum frequency and maximum level identified in the application, provided:

a. They are not:

(i) Designated as toxic or hazardous under provisions of Sections 307 and 311, respectively, of the Clean Water Act, or

(ii) Known to be hazardous or toxic by the Permittee, except that such materials indicated in (i) and (ii) above may be discharged in certain limited amounts with the written approval of, and under special conditions established by, the Secretary or their designated representative, if the substances will not pose any imminent hazard to the public health or safety;

b. The discharge of such materials will not violate the Vermont Water Quality Standards; and

c. The Permittee is not notified by the Secretary to eliminate or reduce the quantity of such materials entering the water.

## **9. Removed Substances**

Collected screenings, sludges, and other solids removed in the course of treatment and control of wastewaters shall be stored, treated, and disposed of in accordance with 10 V.S.A. Chapter 159 and with the terms and conditions of any certification, interim or final, transitional operation authorization, or order issued pursuant to 10 V.S.A. Chapter 159 that is in effect on the effective date of this permit or is issued during the term of this permit.

## **10. Severability**

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

## **11. Duty to Provide Information**

The Permittee shall provide to the Secretary, within a reasonable time, any information which the Secretary may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee shall also furnish to the Secretary upon request, copies of records required to be kept by this permit.

## **12. Other Information**

If the Permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Secretary, it shall promptly submit such facts or information.

## **13. Oil and Hazardous Substance Liability**

Nothing in this permit shall be construed to preclude the institution of legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject under 10 V.S.A. § 1281.

## **14. Confidentiality**

Pursuant to 10 V.S.A. § 1259(b):

Any records or information obtained under this permit program that constitutes trade secrets under 1 V.S.A. § 317(c)(9) shall be kept confidential, except that such records or information may be disclosed to authorized representatives of the State and the United States when relevant to any proceedings under 10 V.S.A. Chapter 47.

Claims for confidentiality for the following information will be denied:

- a. The name and address of any permit applicant or Permittee.
- b. Permit applications, permits, and effluent data.
- c. Information required by application forms, including information submitted on the forms themselves and any attachments used to supply information required by the forms.

## **15. Navigable Waters**

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

## **16. Property Rights**

Issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

## **17. Duty to Reapply**

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit unless permission for a later date has been granted by the Director. The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.

## **18. Other State Laws**

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Clean Water Act.

## **B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS**

### **1. Proper Operation and Maintenance**

All waste collection, control, treatment, and disposal facilities shall be operated in a manner consistent with the following:

- a.** The Permittee shall at all times properly operate and maintain in good working order all facilities and systems of treatment and control (and related appurtenances) installed or used by the Permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.
- b.** The Permittee shall provide an adequate operating staff, consistent with the Operator Rule (Environmental Protection Rule, Chapter 4), which is duly qualified to carry out the operation, maintenance, and testing functions required to ensure compliance with the conditions of this permit; and
- c.** The operation and maintenance of the WWTF shall be performed only by a person or persons holding a valid license to engage in the practice of pollution abatement facility operation.

### **2. Need to Halt or Reduce Activity not a Defense**

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the activity in order to maintain compliance with the conditions of this permit.

### **3. Duty to Mitigate**

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. The Permittee shall also take all reasonable steps to minimize or prevent any adverse impact to waters of the State, the environment, or human health resulting from non-compliance with any condition

specified in this permit, including accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

#### **4. Dry Weather Flows**

Dry weather flows of untreated municipal wastewater from any sanitary or combined sewers are not authorized by this permit and are specifically prohibited by state and federal laws and regulations. If for any reason there is a discharge to waters of the State of dry weather flows of untreated municipal wastewater from any sanitary or combined sewer, the operator of the WWTF or the operator's delegate shall comply with the notice requirements outlined in this permit.

#### **5. Bypass**

The bypass of facilities (including pump stations) is prohibited, except where authorized under the terms and conditions of an Emergency Pollution Permit issued pursuant to 10 V.S.A. § 1268.

In addition to § 1268 findings, such bypass must meet the following three conditions:

- a.** Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- b.** There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
- c.** The Permittee submitted notices as required under 40 C.F.R. § 122.41(m)(3):
  - (i)** Anticipated bypass. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice if possible, at least ten days before the date of the bypass.
  - (ii)** Unanticipated bypass. The Permittee shall submit notice of an unanticipated bypass as required in Condition II.D.3. (24-hour notice).

#### **6. Upset**

- a.** Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Condition II.B.6.b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- b.** Conditions necessary for a demonstration of upset. A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - (i)** An upset occurred, and that the Permittee can identify the cause(s) of the upset;
  - (ii)** The permitted facility was at the time being properly operated; and
  - (iii)** The Permittee submitted notice of the upset as required in Condition II.D.3. (24-hour notice).
  - (iv)** The Permittee complied with any remedial measures as required in Condition II.B.3.

c. Burden of proof. In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

## 7. Sewer Ordinance

The Permittee shall have in effect a sewer use ordinance acceptable to the Secretary which, at a minimum, shall:

a. prohibit the introduction by any person into the Permittee's sewerage system or WWTF of any pollutant which:

(i) Is a toxic pollutant in toxic amounts as defined in standards issued from time to time under § 307(a) of the Clean Water Act;

(ii) Creates a fire or explosion hazard in the Permittee's treatment works;

(iii) Causes corrosive structural damage to the Permittee's treatment works, including all wastes with a pH lower than 5.0;

(iv) Contains solid or viscous substances in amounts which would cause obstruction to the flow in sewers or other interference with proper operation of the Permittee's treatment works; or

(v) In the case of a major contributing industry, as defined in this permit, contains an incompatible pollutant, as defined in this permit, in an amount or concentration in excess of that allowed under standards or guidelines issued from time to time pursuant to Sections 304, 306, and/or 307 of the Clean Water Act.

b. Require 45 days prior notification to the Permittee by any person or persons of a:

(i) Proposed substantial change in volume or character of pollutants over that being discharged into the Permittee's treatment works at the time of issuance of this permit;

(ii) Proposed new discharge into the Permittee's treatment works of pollutants from any source which would be a new source as defined in § 306 of the Clean Water Act if such source were discharging pollutants; or

(iii) Proposed new discharge into the Permittee's treatment works of pollutants from any source which would be subject to § 301 of the Clean Water Act if it were discharging such pollutants.

c. Require any industry discharging into the Permittee's treatment works to perform such monitoring of its discharge as the Permittee may reasonably require, including the installation, use, and maintenance of monitoring equipment and monitoring methods, keeping records of the results of such monitoring, and reporting the results of such monitoring to the Permittee. Such records shall be made available by the Permittee to the Secretary upon request.

d. Authorize the Permittee's authorized representatives to enter into, upon, or through the premises of any industry discharging into the Permittee's treatment works to have access to and copy any records, to inspect any monitoring equipment or method required by this permit, and to sample any discharge into the Permittee's treatment works.

## 8. Emergency Pollution Permits

a. Maintenance activities, or emergencies resulting from equipment failure or malfunction, including power outages, which result in an effluent which exceeds the effluent limitations specified herein, shall be considered a violation of the conditions of this permit, unless the Permittee's discharge is covered under an emergency



pollution permit under the provisions of 10 V.S.A. § 1268. The Permittee shall notify the Secretary of the emergency situation by the next working day, unless notice is required sooner under Condition II.D.2.

10 V.S.A. § 1268 reads as follows:

When a discharge permit holder finds that pollution abatement facilities require repairs, replacement, or other corrective action in order for them to continue to meet standards specified in the permit, the holder may apply in the manner specified by the Secretary for an emergency pollution permit for a term sufficient to effect repairs, replacements or other corrective action. The Secretary shall proceed in accordance with Chapter 170 of this title. No emergency pollution permit shall be issued unless the applicant certifies and the Secretary finds that:

- (i) there is no present, reasonable alternative means of disposing of the waste other than by discharging it into the waters of the State during the limited period of time of the emergency;
- (ii) the denial of an emergency pollution permit would work an extreme hardship upon the applicant;
- (iii) the granting of an emergency pollution permit will result in some public benefit;
- (iv) the discharge will not be unreasonably harmful to the quality of the receiving waters; and
- (v) the cause or reason for the emergency is not due to willful or intended acts or omissions of the applicant.

**b.** Application shall be made to the Secretary at the following address: Agency of Natural Resources, Department of Environmental Conservation, One National Life Drive, Davis 3, Montpelier VT 05620-3522.

## **C. MONITORING REQUIREMENTS**

### **1. Monitoring and Records**

- a.** Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b.** Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period shall be extended during the course of unresolved litigation and may be extended by request of the Secretary at any time.
- c.** Records of monitoring information shall include:
  - (i) The date, exact place, and time of sampling or measurements;
  - (ii) The individual(s) who performed the sampling or measurements;
  - (iii) The date(s) analyses were performed;
  - (iv) The individual(s) who performed the analyses;
  - (v) The analytical techniques or methods used; and
  - (vi) The results of such analyses.

(vii) The records of monitoring activities and results, including all instrumentation and calibration and maintenance records;

(viii) The original calculation and data bench sheets of the operator who performed analysis of the influent or effluent pursuant to requirements of this permit; and

(ix) For analyses performed by contract laboratories:

(a) The detection level reported by the laboratory for each sample; and

(b) The laboratory analytical report including documentation of the QA/QC and analytical procedures.

(x) When “non-detects” are recorded, the method detection limit shall be reported and used in calculating any time-period averaging for reporting on DMRs.

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

## **2. Quality Control**

a. The Permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at regular intervals to ensure accuracy of measurements or shall ensure that both activities will be conducted.

b. The Permittee shall keep records of these activities and shall provide such records upon request of the Secretary.

## **3. Right of Entry**

The Permittee shall allow the Secretary, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. To enter upon the Permittee’s premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. To have access to and copy, at reasonable times, any records required to be kept under the terms and conditions of this permit;

c. To inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. To sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

## **D. REPORTING REQUIREMENTS**

### **1. Facility Modification / Change in Discharge**

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than, or at a level in excess of, that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit. Such a violation may result in the imposition of civil and/or criminal penalties pursuant to 10 V.S.A. Chapters 47, 201, and/or 211. Any

anticipated facility alterations or expansions or process modifications which will result in new, different, or increased discharges of any pollutants must be reported by submission of a new permit application or, if such changes will not violate the effluent limitations specified in this permit, by advance notice to the Secretary of such changes. This notification applies to pollutants which are subject neither to effluent limitations in this permit, nor to notification requirements for toxic pollutants under 40 C.F.R. § 122.42(a)(1). Following such notice, the permit may be modified, pursuant to Condition II.A.6. of this permit, to specify and limit any pollutants not previously limited.

## **2. Change in Introduction of Pollutants to WWTF**

**a.** The Permittee, within 30 days of the date on which the Permittee is notified of such discharge, shall provide notice to the Secretary of the following:

**(i)** Any new introduction of pollutants into the treatment works from a source which would be a new source as defined in § 306 of the Clean Water Act if such source were discharging pollutants;

**(ii)** Except for such categories and classes of point sources or discharges specified by the Secretary, any new introduction of pollutants into the treatment works from a source which would be subject to § 301 of the Clean Water Act if such source were discharging pollutants; and

**(iii)** Any substantial change in volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into such works at the time of issuance of the permit.

**b.** The notice shall include:

**(i)** The quality and quantity of the discharge to be introduced into the system, and

**(ii)** The anticipated impact of such change in the quality or quantity of the effluent to be discharged from the WWTF.

## **3. Noncompliance Notification**

**a.** The Permittee shall give advance notice to the Secretary of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

**b.** In the event the Permittee is unable to comply with any of the conditions of this permit due, among other reasons, to:

**(i)** Breakdown or maintenance of waste treatment equipment (biological and physical-chemical systems including all pipes, transfer pumps, compressors, collection ponds or tanks for the segregation of treated or untreated wastes, ion exchange columns, or carbon absorption units);

**(ii)** Accidents caused by human error or negligence;

**(iii)** Any unanticipated bypass or upset which exceeds any effluent limitation in the permit;

**(iv)** Violation of a maximum day discharge limitation for any of the pollutants listed by the Secretary in this permit; or

**(v)** Other causes such as acts of nature,

the Permittee shall provide notice as specified in subdivisions c and d of this subsection.

**c.** Pursuant to 10 V.S.A. § 1295, notice for “untreated discharges,” as defined in section III.

**(i) Public notice.** For “untreated discharges” an operator of the WWTF or the operator’s delegate shall as soon as possible, but no longer than one hour from discovery of an untreated discharge from the WWTF, post on a publicly accessible electronic network, mobile application, or other electronic media designated by the Secretary an alert informing the public of the untreated discharge and its location, except that if the operator or his or her delegate does not have telephone or Internet service at the location where he or she is working to control or stop the untreated discharge, the operator or his or her delegate may delay posting the alert until the time that the untreated discharge is controlled or stopped, provided that the alert shall be posted no later than four hours from discovery of the untreated discharge.

**(ii) Secretary notification.** For “untreated discharges” an operator of the WWTF shall within 12 hours from discovery of an untreated discharge from the WWTF notify the Secretary and the local health officer of the municipality where the facility is located of the untreated discharge. The operator shall notify the Secretary through use of the Department of Environmental Conservation’s online event reporting system. If, for any reason, the online event reporting system is not operable, the operator shall notify the Secretary via telephone or e-mail. The notification shall include:

**(a)** The specific location of each untreated discharge, including the body of water affected. For combined sewer overflows, the specific location of each untreated discharge means each outfall that has discharges during the wet weather storm event.

**(b)** Except for discharges from the WWTF to a separate storm sewer system, the date and approximate time the untreated discharge began.

**(c)** The date and approximate time the untreated discharge ended. If the untreated discharge is still ongoing at the time of reporting, the entity reporting the untreated discharge shall amend the report with the date and approximate time the untreated discharge ended within three business days of the untreated discharge ending.

**(d)** Except for discharges from the WWTF to a separate storm sewer system, the approximate total volume of sewage and, if applicable, stormwater that was released. If the approximate total volume is unknown at the time of reporting, the entity reporting the untreated discharge shall amend the report with the approximate total volume within three business days.

**(e)** The cause of the untreated discharge and a brief description of the noncompliance, including the type of event and the type of sewer structure involved.

**(f)** The person reporting the untreated discharge.

**d.** For any non-compliance not covered under Condition II.D.3.c. of this permit, an operator of the WWTF or the operator’s delegate shall notify the Secretary within 24 hours of becoming aware of such condition and shall provide the Secretary with the following information, in writing, within five days of becoming aware of such condition:

**(i)** Cause of non-compliance;

**(ii)** A description of the non-complying discharge including its impact upon the receiving water;

**(iii)** Anticipated time the condition of non-compliance is expected to continue or, if such condition has been corrected, the duration of the period of non-compliance;

**(iv)** Steps taken by the Permittee to reduce and eliminate the non-complying discharge; and

**(v)** Steps to be taken by the Permittee to prevent recurrence of the condition of non-compliance.

e. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather.

#### 4. Planned Changes

a. The Permittee shall give notice to the Secretary as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(i) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or

(ii) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).

(iii) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

#### 5. Transfer of Ownership or Control

This permit is not transferable without prior written approval of the Secretary. All application and operating fees must be paid in full prior to transfer of this permit. In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the Permittee shall provide a copy of this permit to the succeeding owner or controller and shall send written notification of the change in ownership or control to the Secretary **at least 30 days in advance of the proposed transfer date**. The notice to the Secretary shall include a written agreement between the existing and new Permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them. The Permittee shall also inform the prospective owner or operator of their responsibility to make an application for transfer of this permit.

This request for transfer application must include as a minimum:

a. A properly completed application form provided by the Secretary and the applicable processing fee.

b. A written statement from the prospective owner or operator certifying:

(i) The conditions of the operation that contribute to, or affect, the discharge will not be materially different under the new ownership;

(ii) The prospective owner or operator has read and is familiar with the terms of the permit and agrees to comply with all terms and conditions of the permit; and

(iii) The prospective owner or operator has adequate funding to operate and maintain the treatment system and remain in compliance with the terms and conditions of the permit.

c. The date of the sale or transfer.

The Secretary may require additional information dependent upon the current status of the facility operation, maintenance, and permit compliance.

## 6. Monthly Reporting

- a.** The Permittee is required to submit monthly reports of monitoring results and operational parameters on Discharge Monitoring Report (DMR) form WR-43 or through an electronic reporting system made available by the Secretary. Reports are due on the 15th day of each month, beginning with the month following the effective date of this permit.
- b.** Unless waived by the Secretary, the Permittee shall electronically submit its DMRs via Vermont's online electronic reporting system. The Permittee shall electronically submit additional compliance monitoring data and reports specified by the Secretary. When the Permittee submits DMRs using an electronic system designated by the Secretary, which requires attachment of scanned DMRs in PDF format, it is not required to submit hard copies of DMRs. The electronic submittals are submitted through the State of Vermont Agency of Natural Resources' Online Services Portal, or its replacement.
- c.** If, in any reporting period, there has been no discharge, the Permittee must submit that information by the report due date.

## 7. Signature Requirements

- a.** All reports shall be signed:

**(i)** For a corporation. By a responsible corporate officer or a duly authorized representative of that person. For the purpose of this section, a responsible corporate officer means: (1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or (2) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

**(ii)** For a partnership or sole proprietorship. By a general partner or the proprietor, respectively; or

**(iii)** For a municipality, state, or other public agency. By either a principal executive officer or ranking elected official, or a duly authorized representative of that person.

- b.** For the purposes of subdivision (d) of this subsection, a person is a duly authorized representative only if:

**(i)** The authorization is made in writing by a person described in subdivision (d) of this subsection;

**(ii)** The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, or an individual or position having overall responsibility for environmental matters for the company; and

**(iii)** The written authorization is submitted to the Secretary.

- c.** Changes to authorization. If an authorization under subdivision (e) of this subsection is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of subdivision (e) of this subsection must be submitted to the

Secretary prior to or together with any reports, information, or applications to be signed by an authorized representative.

**d. Certification.** Any person signing a document under subdivisions (d) or (e) of this subsection shall make the following certification:

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 gather and evaluate 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, 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.

## **8. Additional Monitoring**

If the Permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form WR-43. Such increased frequency shall also be indicated.

## **III. DEFINITIONS**

For purposes of this permit, the following definitions shall apply.

**Agency** – means the Vermont Agency of Natural Resources.

**Annual Average** – means the highest allowable average of daily discharges calculated as the sum of all daily discharges (mg/L, lbs or gallons) measured during a calendar year divided by the number of daily discharges measured during that year.

**Average** – means the arithmetic means of values taken at the frequency required for each parameter over the specified period.

**Bypass** – means the intentional diversion of waste streams from any portion of the treatment facility.

**The Clean Water Act** – means the federal Clean Water Act, as amended (33 U.S.C. § 1251, et seq.).

**Composite Sample** – means a sample consisting of a minimum of one grab sample per hour collected during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportionally to flow over that same time period.

**Daily Discharge** – means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling.

For pollutants with limitations expressed in pounds the daily discharge is calculated as the total pounds of pollutants discharged over the day.

For pollutants with limitations expressed in mg/L the daily discharge is calculated as the average measurement of the pollutant over the day.

**Discharge** – means the placing, depositing, or emission of any wastes, directly or indirectly, into an injection well or into the waters of the State.

**Grab Sample** – means an individual sample collected in a period of less than 15 minutes.

**Incompatible Substance** – means any waste being discharged into the treatment works which interferes with, passes through without treatment, or is otherwise incompatible with said works or would have a substantial adverse effect on the works or on water quality. This includes all pollutants required to be regulated under the Clean Water Act.

**Instantaneous Maximum** – means a value not to be exceeded in any grab sample.

**Major Contributing Industry** – means one that: (1) has a flow of 50,000 gallons or more per average work day; (2) has a flow greater than five percent of the flow carried by the municipal system receiving the waste; (3) has in its wastes a toxic pollutant in toxic amounts as defined in standards issued under § 307(a) of the Clean Water Act; or (4) has a significant impact, either singly or in combination with other contributing industries, on a treatment works or on the quality of effluent from that treatment works.

**Maximum Day or Maximum Daily Discharge Limitation** – means the highest allowable “daily discharge” (mg/L, lbs or gallons).

**Mean** – means the arithmetic mean.

**Monthly Average or Average Monthly Discharge Limitation** – means the highest allowable average of daily discharges (mg/L, lbs or gallons) over a calendar month, calculated as the sum of all daily discharges (mg/L, lbs or gallons) measured during a calendar month divided by the number of daily discharges measured during that month.

**NPDES** – means the National Pollutant Discharge Elimination System.

**Secretary** – means the Secretary of the Agency of Natural Resources or the Secretary’s duly authorized representative.

**Septage** – means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

**Untreated Discharge** – means (1) combined sewer overflows from a WWTF; (2) overflows from sanitary sewers and combined sewer systems that are part of a WWTF during dry weather flows, which result in a discharge to waters of the State; (3) upsets or bypasses around or within a WWTF during dry or wet weather conditions that are due to factors unrelated to a wet weather storm event and that result in a discharge of sewage that has not been fully treated to waters of the State; and (4) discharges from a WWTF to separate storm sewer systems.

**Waste** – means effluent, sewage or any substance or material, liquid, gaseous, solid, or radioactive, including heated liquids, whether or not harmful or deleterious to waters.

**Waste Management Zone** – means a specific reach of Class B waters designated by a permit to accept the discharge of properly treated wastes that prior to treatment contained organisms pathogenic to human beings. Throughout the receiving waters, water quality criteria must be achieved but increased health risks exist in a waste management zone due to the authorized discharge.

**Waters** – means all rivers, streams, creeks, brooks, reservoirs, ponds, lakes, springs, and all bodies of surface waters, artificial or natural, which are contained within, flow through, or border upon the State or any portion of it.

**Weekly Average or Average Weekly Discharge Limitation** – means the highest allowable average of daily discharges (mg/L, lbs or gallons) over a calendar week, calculated as the sum of all daily discharges (mg/L, lbs



or gallons) measured during a calendar week divided by the number of daily discharges measured during that week.

**Whole Effluent Toxicity (WET)** – means the aggregate toxic effect of an effluent measured directly by a toxicity test.

**Wastewater Treatment Facility (WWTF)** – means a treatment plant, collection system, pump station, and attendant facilities permitted by the Secretary for the purpose of treating domestic, commercial, or industrial wastewater.

**Attachment A.**

Discharge ID	Discharge Activity	Discharge Status	Receiving Water	Latitude	Longitude
001	Sanitary Waste Outfall	A	Winooski River	44.39043	-72.33070

AGENCY OF NATURAL RESOURCES  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
WATERSHED MANAGEMENT DIVISION  
ONE NATIONAL LIFE DRIVE, DAVIS BUILDING, 3<sup>rd</sup> FLOOR  
MONTPELIER, VT 05620-3522

**FACT SHEET FOR DRAFT PERMIT**  
**November 2020**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE STATE**

**PERMIT NO:** 3-1440  
**PIN:** BR99-0104  
**NPDES NO:** VT0101257

**NAME AND ADDRESS OF APPLICANT:**

Town of Cabot  
PO Box 36  
Cabot, VT 05647

**NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:**

Cabot Wastewater Treatment Facility  
183 Sawmill Road Cabot, VT 05647

**FACILITY COORDINATES:** Lat: 44.39087 Long: -72.32928

**RECEIVING WATER:** Winooski River

**CLASSIFICATION:** All uses Class B(2) with a waste management zone. Class B waters are suitable for swimming and other primary contact recreation; irrigation and agricultural uses; aquatic biota and aquatic habitat; good aesthetic value; boating, fishing, and other recreational uses; and suitable for public water source with filtration and disinfection or other required treatment. A waste management zone is a specific reach of Class B(1) or B(2) waters designated by a permit to accept the discharge of properly treated wastes that prior to treatment contained organisms pathogenic to human beings.

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

The Secretary of the Vermont Agency of Natural Resources (hereinafter referred to as “the Secretary”) received a renewal application for the permit to discharge into the designated receiving water from the above-named applicant on June 24, 2009. The facility’s previous permit was issued on October 18, 2004 with an effective date of January 1, 2005. The previous permit

(hereinafter referred to as the "current permit") has been administratively continued, pursuant to 3 V.S.A. § 814, as the applicant filed a complete application for permit reissuance within the prescribed time period as per the Vermont Water Pollution Control Permit Regulations Section 13.5(b). At this time, the Secretary has made a tentative decision to reissue the discharge permit.

The facility is engaged in the treatment of municipal wastewater and is classified as a Grade II Domestic Non-Major NPDES Wastewater Treatment Facility (WWTF).

A map showing the location of facility, outfalls, and the receiving water is provided in the Reasonable Potential Determination (Attachment A).

## **II. Description of Discharge**

The WWTF is engaged in the treatment of municipal wastewater with a majority of the waste stream consisting of residential wastewater and the remainder being comprised of minor commercial wastewaters. There are no pretreaters permitted under the NPDES program discharging to the collection system. The WWTF consists of a series of septic tanks, a filter system, two aerated EQ tanks, a Membrane Bioreactor (MBR) system, and ultraviolet (UV) disinfection. The design flow of the WWTF is 0.05 million gallons per day (MGD) and the design Biochemical Oxygen Demand (BOD<sub>5</sub>) loading is 154 lbs./day. The average flow to the facility over the last 5 years is approximately 0.019 MGD.

The WWTF maintains a continuous discharge to the Winooski River.

The WWTF has not reported any incidents or discharge permit limit violations within the last five years. Reconnaissance inspections were conducted on April 12, 2019 and September 26, 2014 and a Performance Audit and Facility inspection was conducted on January 4, 2008. The facility received an "Excellent" rating on all of the abovementioned inspections, which is the highest rating in the Wastewater Program's rating system.

## **III. Limitations and Conditions**

The draft permit contains limitations for effluent flow, Ultimate Oxygen Demand (UOD), Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), Total Phosphorus (TP), Settleable Solids, *Escherichia coli*, and pH. It also contains monitoring requirements for Total Nitrogen (TN), Total Kjeldahl Nitrogen (TKN), and Nitrate/Nitrite (NO<sub>x</sub>). The effluent limitations of the draft permit and the monitoring requirements may be found on the following pages of the draft permit:

Effluent Limitations:	Pages 2-3 of 26
Monitoring Requirements:	Pages 2-5 of 26

## **IV. Statutory and Regulatory Authority**

### **A. Clean Water Act and NPDES Background**

Congress enacted the Clean Water Act (CWA or Act), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this

objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specified permitting sections of the Act, one of which is Section 402. CWA §§ 301(a), 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System (NPDES). Under this section of the Act, the U.S. Environmental Protection Agency (EPA) may “issue a permit for the discharge of any pollutant, or combination of pollutants” in accordance with certain conditions. CWA § 402(a). The State of Vermont has been approved by the EPA to administer the NPDES Program in Vermont. NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. CWA § 402(a)(1) - (2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: “technology-based” limitations and “water quality-based” limitations. CWA §§ 301, 303, 304(b); 40 CFR Parts 122, 125, 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant-reducing technology available and economically achievable for the type of facility being permitted. CWA § 301(b). As a class, WWTFs must meet performance-based requirements based on available wastewater treatment technology. CWA § 301(b)(1)(B). The performance level for WWTFs is referred to as “secondary treatment.” Secondary treatment is comprised of technology-based requirements expressed in terms of BOD5, TSS and pH; 40 C.F.R. Part 133.

Water quality-based effluent limits, on the other hand, are designed to ensure that state water quality standards are achieved, irrespective of the technological or economic considerations that inform technology-based limits. Under the CWA, states must develop water quality standards for all water bodies within the state. CWA § 303. These standards have three parts: (1) one or more “designated uses” for each water body or water body segment in the state; (2) water quality “criteria,” consisting of numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. CWA § 303(c)(2)(A); 40 C.F.R. § 131.12. The applicable water quality standards for this permit are the 2017 Vermont Water Quality Standards (Environmental Protection Rule, Chapter 29a).

A permit must include limits for any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality standard, including narrative water quality criteria. See 40 CFR §122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. A NPDES permit must contain effluent limitations and conditions in order to ensure that the discharge does not cause or contribute to water quality standard violations.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the State's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable instream pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits and chronic aquatic life criteria are generally implemented through average monthly limits.

Where a state has not established a numeric water quality criterion for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a “calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use”; on a “case-by-case basis” using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an “indicator parameter.” 40 CFR §

122.44(d)(1)(vi)(A-C).

The state rules governing Vermont’s NPDES permit program are found in the Vermont Water Pollution Control Permit Regulations (Environmental Protection Rule, Chapter 13).

### **1. Reasonable Potential Determination**

In determining whether this permit has the reasonable potential to cause or contribute to an impairment, Vermont has considered:

- 1) Existing controls on point and non-point sources of pollution as evidenced by the Vermont surface water assessment database;
- 2) Pollutant concentration and variability in the effluent as determined from the permit application materials, monthly discharge monitoring reports (DMRs), or other facility reports;
- 3) Receiving water quality based on targeted water quality and biological assessments of receiving waters, as applicable, or other State or Federal water quality reports;
- 4) Toxicity testing results based on the Vermont Toxic Discharge Control Strategy, and compelled as a condition of prior permits;
- 5) Available dilution of the effluent in the receiving water, expressed as the instream waste concentration. In accordance with the applicable Vermont Water Quality Standards, available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health criteria for non-carcinogens, or at all flows for human health (carcinogens only) in the receiving water. For nutrients, available dilution for stream and river discharges is assessed using the low median monthly flow computed as the median flow of the month containing the lowest annual flow. Available dilution for lakes is based on mixing zones of no more than 200 feet in diameter, in any direction, from the effluent discharge point, including as applicable the length of a diffuser apparatus; and
- 6) All effluent limitations, monitoring requirements, and other conditions of the draft permit.

The Reasonable Potential Determination for this facility is attached to this Fact Sheet as Attachment A.

## **B. Anti-Backsliding**

Section 402(o) of the CWA provides that certain effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the current permit. EPA has also promulgated anti-backsliding regulations which are found at 40 C.F.R. § 122.44(l). Unless applicable anti-backsliding exemptions are met, the limits and conditions in the reissued permit must be at least as stringent as those in the current permit.

## **V. Description of Receiving Water**

The receiving water for this discharge is the Winooski River, a designated Cold-Water Fish Habitat. At the point of discharge, the river has a contributing drainage area of 21.5 square miles. The summer 7Q10 flow of the river is estimated to be 2.40 cubic feet per second (CFS) and the summer Low Median Monthly flow is estimated to be 9.35 CFS. The instream waste concentration at the summer 7Q10 flow is 0.0310 (3.1%) and the instream waste concentration at the summer Low Median Monthly flow is 0.0081 (0.81%).

In addition, the Winooski River drains into Lake Champlain, which is impaired for phosphorus and is subject to a Total Maximum Daily Load (TMDL) for phosphorus. This is discussed further in Section VIII.C. of this Fact Sheet.

## **VI. Waste Management and Mixing Zones**

A **Waste Management Zone (WMZ)** is a specific reach of Class B waters designated by a permit to accept the discharge of properly treated wastes that contained organisms pathogenic to human beings prior to treatment. Throughout the receiving waters, water quality criteria must be achieved but increased health risks exist in a WMZ due to the authorized discharge.

10 V.S.A. § 1252 describes the process by which the Secretary may establish a WMZ as part of the issuance of a discharge permit. The model used to determine the WMZ is based upon three precepts of domestic wastewater treatment facility discharges: 1) the use of coliform bacteria as an indicator of pathogenic organisms, 2) despite proper operation and maintenance disinfection failures may occur, and 3) a reasonably sized waste management segment provides a "buffer zone" downstream of the wastewater discharge in which contact recreation is not recommended. If a disinfection failure should occur at the WWTF, the time of travel through this zone will provide time during which some pathogen die-off will occur and may also allow time for public notification. A WMZ is not a Mixing Zone.

The draft permit retains the existing waste management zone (WMZ) that extends downstream from the outfall for approximately one mile in the Winooski River.

**Mixing Zone.** A Mixing Zone is a length or area within Class B waters required for the dispersion and dilution of waste discharges adequately treated to meet federal and state treatment requirements and within which it is recognized that specific water uses or water quality criteria

associated with the assigned classification for such waters may not be realized. A mixing zone shall not extend more than 200 feet from the point of discharge and must meet the terms of 10 V.S.A. § 29A-204. For a mixing zone to be applicable to a discharge it must be authorized within the discharge permit.

## **VII. Facility History and Background**

The WWTF discharges secondary treated, disinfected wastewater to the Winooski River. The WWTF was constructed in 2000 and consists of six septic tanks, a filter system, two aerated Equalization (EQ) Tanks, Zenon activated sludge with Membrane Bioreactor (MBR) system, and three trains of Ultraviolet (UV) light disinfection. The collection system was also constructed in 2000 and consists of four pump stations and six stream crossings.

Sodium Aluminate is added for enhanced phosphorus removal prior to entering the aeration tanks. A biofilter was installed to filter the air from the EQ tanks to control odors in 2001. A new electrical board and SCADA system was installed in December 2018.

## **VIII. Permit Basis and Explanation of Effluent Limitation Derivation**

**A. Flow** – The units of measurement for flow has changed from gallons per day to million gallons per day to maintain consistency within other permits issued by the Wastewater Management Program. The annual average flow limitation is 0.05 MGD. This facility maintains a constant discharge. Continuous flow monitoring is required.

### **B. Conventional Pollutants**

**1. Biochemical Oxygen Demand (BOD<sub>5</sub>)** – The effluent limitations for BOD<sub>5</sub> remain unchanged from the current permit. The monthly average (30 mg/L) and weekly average (45 mg/L) reflect the minimum level of effluent quality specified for secondary treatment in 40 C.F.R. Part 133.102. In addition, the draft permit contains a 50 mg/L, maximum day, BOD<sub>5</sub> limitation. This is applied to all such discharges pursuant to 13.4 c. of the Vermont Water Pollution Control Permit Regulations. The Secretary implements the limit to supplement the federal technology-based limitations to prevent a gross one-day permit effluent violation to be offset by multiple weekly and monthly sampling events which would enable a discharger to comply with the weekly average and monthly average permit limitations. Mass limits (12.6 lbs/day, monthly average and 18.8 lbs/day, weekly average) are calculated using the concentration limits outlined above. The BOD<sub>5</sub> monthly monitoring requirement is unchanged from the current permit.

The monthly “monitor only” monitoring requirement for influent BOD<sub>5</sub> is unchanged from the current permit.

**2. Total Suspended Solids (TSS)** – The effluent limitations for TSS remain unchanged from the current permit. The monthly average (30 mg/L) and weekly average (45 mg/L) reflect the minimum level of effluent quality specified for secondary treatment in 40 C.F.R. Part 133.102. In addition, the draft permit contains a 50 mg/L, maximum day, TSS limitation. This is applied to all such discharges pursuant to 13.4 c. of the Vermont Water Pollution Control Permit Regulations. The Secretary implements the limit to supplement the federal technology-based



limitations to prevent a gross one-day permit effluent violation to be offset by multiple weekly and monthly sampling events which would enable a discharger to comply with the weekly average and monthly average permit limitations. The mass limits (12.6 lbs/day, monthly average and 18.8 lbs/day, weekly average) are calculated using the concentration limits outlined above. The TSS monthly monitoring requirement is unchanged from the current permit.

The monthly “monitor only” monitoring requirement for influent TSS is unchanged from the current permit.

3. ***Escherichia coli*** – The *E. coli* limitation is 77 cfu/100ml, instantaneous maximum, based upon the limitation in the current permit and the anti-backsliding provisions of Section 402(o) of the CWA. As in the current permit, twice monthly monitoring is required.
4. **pH** – The pH limitation remains at 6.5 - 8.5 Standard Units as specified in Section 29A-303(6) in the Vermont Water Quality Standards. Monitoring remains at daily.

### C. **Non-Conventional and Toxics**

#### 1. **Total Phosphorus (TP)**

##### *Background:*

Excess phosphorus entering Lake Champlain from a variety of sources has impaired the water quality of the lake. The Lake Champlain Total Maximum Daily Load (LC TMDL), places a cap on the maximum amount of phosphorus from point and non-point sources that is allowed to flow into the lake while still meeting Vermont's water quality standards. The EPA developed phosphorus TMDLs for the twelve Vermont segments of Lake Champlain in collaboration with the Vermont Agency of Natural Resources, Department of Environmental Conservation and the Vermont Agency of Agriculture, Food, and Markets, and released the document titled “Phosphorus TMDLs for Vermont Segments of Lake Champlain” (June 2016). The 2016 LC TMDL specifies allowable phosphorus loads, or waste load allocations (WLA), expressed as metric tons per year (mt/yr), for each of the 59 WWTFs that discharge to the Lake’s watershed. Discharge (NPDES) permits will be issued by the Secretary in accordance with the permit issuance schedule in the Lake Champlain TMDL Phase 1 Implementation Plan (Chapter 3, page 46). The Secretary will follow this schedule unless special circumstances are raised by the facility that warrant the issuance of the permit sooner (e.g., planned facility upgrades), and the Program has sufficient staff capacity to handle the request.

Reductions in WLAs are targeted only to WWTFs in those lake segment watersheds where the currently permitted wastewater load represents a significant (defined as being 10% or greater) portion of the total phosphorus load to that segment from all sources (Main Lake, Shelburne Bay, Burlington Bay, St. Albans Bay) or where wastewater upgrades would meaningfully reduce the phosphorus reduction burden placed on non-wastewater (non-point) sources (Missisquoi Bay). Therefore, WWTFs discharging to the Port Henry, Otter Creek, Mallets Bay, Northeast Arm, Isle LaMotte, and the South Lake A/B lake segments were not assigned a new waste load allocation. The EPA also determined that wastewater facilities with a design

flow of < 0.1 MGD would be given the same allocations as in the 2002 TMDLs due their minor contribution of phosphorus loading.

The LC TMDL establishes new annual WLAs for WWTFs with a design flow capacity of above 0.1 million gallons per day (MGD) that discharge to the Main Lake, Shelburne Bay, Burlington Bay, St. Albans Bay, and Missisquoi Bay lake segments. Specifically, WWTFs with a design flow capacity of 0.1 to 0.2 MGD were assigned WLAs based on a 0.8 mg/L effluent phosphorus concentration at permitted flow while WWTFs with design capacity of > 0.2 MGD were assigned a WLA based on a 0.2 mg/L effluent phosphorus concentration at permitted flow.

In the LC TMDL, EPA acknowledged and supported the Secretary's commitment to employ flexible approaches to implementing the WWTF WLAs including "providing a period of time for optimization to be pursued and the corresponding load reduction results to be realized, and then commencement of the process to upgrade phosphorus treatment facilities will be required when actual phosphorus loads reach 80% of the LC TMDL limits." The Wastewater Management Program maintains a tracking system for phosphorus loading from Vermont WWTFs so facilities approaching or over the 80% threshold can be identified. The 80% phosphorus load threshold is calculated by comparing the individual WWTF phosphorus WLA established in the LC TMDL to the actual phosphorus discharge load from the WWTF over last 12 months:

#### **WWTF Annual TP Load / LC TMDL WLA x 100**

There are currently WWTFs in the Lake Champlain watershed with existing discharged loads of phosphorus already at, or above, 80% of allowable loads. To ensure facilities are operating as efficiently as possible, all reissued wastewater discharge (NPDES) permits under the LC TMDL will specify a period of 12-months for optimization to be pursued and the corresponding load reduction results to be realized, prior to evaluating where a facility ranks relative to the 80% trigger. Discharge permits will specify that after the optimization period, when an existing facility reaches 80% of its WLA for phosphorus (evaluated as a rolling, 12-month load), the Permittee will have to develop and submit a projection of whether the facility will exceed its WLA during the permit term and if it is projected to do so, then the facility will be required to develop a Phosphorus Elimination/Reduction Plan (PERP) that will ensure the facility continues to comply with its WLA.

Effluent TP limits in permits are expressed as:

- (1) total annual mass loads, and
- (2) for facilities that currently have an existing monthly effluent concentration limits for TP in their NPDES permit, as monthly effluent concentration limits.

#### *Phosphorus Limit in Draft Permit:*

The current discharge permit for this facility includes a mass-based, effluent limit of 90 pounds of TP per year. This annual mass limitation was based on an allocation of 0.041 metric tons established in the 2002 Lake Champlain Phosphorus TMDL.

This proposed draft permit contains a phosphorous effluent concentration limit of 0.8 mg/l, monthly average, and a mass effluent limit of 90 total pounds, annual limitation. The concentration effluent limitation is based on the requirements of 10 V.S.A. § 1266a and is unchanged from the current permit. The mass annual effluent limitation is based on the LC TMDLs. The LC TMDL allocated 0.041 metric tons per year or 90 pounds per year to the Cabot WWTF.

To convert units of the WLA from metric tons to pounds for the annual, mass-based TP permit limit, the following equation was used and the resulting WLA rounded down to the nearest pound:

$$(0.041 \text{ mt/yr}) (2204.62 \text{ lbs/mt}) = 90 \text{ lbs/yr}$$

The LC TMDL includes WLAs for WWTFs expressed as total annual mass loads. Compliance with the annual limit will be calculated each month using the Running Total Annual Pounds Calculation (Condition I.F.2.c. of the permit), rather than once at the end of the calendar year. The LC TMDL does not include monthly average concentration effluent limits for WWTFs. State law (10 V.S.A. 1266a) requires that, “No person directly discharging into the drainage basins of Lake Champlain or Lake Memphremagog shall discharge any waste that contains a phosphorus concentration in excess of 0.80 milligrams per liter on a monthly average basis.” Therefore, in addition to the annual mass load effluent limitation required by the TMDL, the permit must also include a monthly average concentration limit for phosphorus. While the WLA in the TMDL was calculated based on a TP effluent concentration of 0.20 mg/L, the permit does not include 0.20 mg/L as the concentration effluent limitation because a Permittee may not need to achieve 0.20 mg/L to ensure compliance with the WLA established in the TMDL. Rather the permit includes a monthly average concentration limit for phosphorus of 0.80 mg/L to ensure compliance with state law and to recognize seasonal variations in the facility’s discharge. It is important to note that because the annual mass load and average monthly concentration limits are not mathematically consistent in the permit, meeting a 0.8 mg/L concentration limit at design flows will not result in meeting the annual mass limit.

The Permittee must comply with both limitations and, as required by the permit, must operate the facility to meet the more restrictive limitation, which may vary depending upon discharge flows at the facility. If the facility is operating at design flows, the annual mass load limitation will be the more restrictive limitation. However, if the facility is operating at low flows, the monthly average concentration limit may be the more restrictive limitation.

Monthly sampling for total phosphorus is required.

Condition I.F.3.c. of this draft permit requires the submission of monitoring reports to the Secretary specific to tracking TP in the discharge. A report that documents the annual TP discharged from the facility, summarizes phosphorus removal optimization and efficiencies, and tracks trends relative to the previous year shall be attached to the December WR-43 form. The annual and monthly TP loads discharged from the facility shall also be reported electronically with other required parameters.

*Analysis in Support of Phosphorus Limit:*

The Secretary is using the WLA from the LC TMDL<sup>1</sup> as the water quality based effluent

limitation (WQBEL) for phosphorus for this permit. Because this is the first permit issued to this facility under the new LC TMDL and the TMDL is less than five years old<sup>2</sup>, an analysis of the assumptions underlying the TMDL is not required. *In re Montpelier WWTF Discharge Permit*, 2009 WL 4396740, 6, 9-10 (Vt. Env'tl. Ct. June 30, 2009) (stating that it “probably would have been meaningless to engage in further analysis” of the 2002 Lake Champlain TMDL a mere year and a half after its adoption, while also holding that when issuing a permit more than five years after the adoption of a TMDL, ANR must assess whether the past assumptions upon which the WLA was based upon “continue to have a basis of reliability”). Notwithstanding the fact that an analysis is not required, the Agency provides the following.

Using the WLA from the LC TMDL as the phosphorus WQBEL in the permit is appropriate because the State is making significant progress toward meeting the assumptions upon which the WLA is based.

First, the State has largely met the milestones in the LC TMDL Accountability Framework<sup>3</sup> and is actively working to meet those that are still outstanding. For 2016, EPA has already given Vermont an “excellent” report card for meeting milestones by December 30, 2016 (see below). For 2017, as outlined in the 2018 Vermont Lake Champlain Phosphorus Total Maximum Daily Loads Accountability Framework Report<sup>4</sup>, the State has completed a majority of the milestones in the LC TMDL Accountability Framework due by December 30, 2017 and is actively working to complete those that are still outstanding. While not every milestone was completed by December 30, 2017, this is not sufficient to undermine the assumption that reductions in other sectors will occur in the future. For example, while the “Developed Lands General Permit” has not yet been issued, the State is actively working to adopt the rules necessary to issue and implement this permit, and the date by which applicants must apply for coverage under the permit – October 1, 2023 – has not changed. Thus, despite a delay in issuance of this permit, it is still appropriate to assume that reductions will be achieved in this sector based upon the timeframe envisioned when the LC TMDL was issued.

Second, the EPA’s assessment of the State’s progress under the LC TMDL has found that the State is making satisfactory progress. EPA’s “overall assessment is that Vermont has made excellent progress in achieving the milestones in the [LC TMDL] Accountability Framework” through December 30, 2016.<sup>5</sup> EPA’s next “report card” is expected within a couple months. If EPA finds that the State’s progress is not satisfactory, EPA may, amongst other things, revise

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<sup>1</sup> Available at:

[https://ofmpub.epa.gov/waters10/attains\\_impaired\\_waters.show\\_tmdl\\_document?p\\_tmdl\\_doc\\_blobs\\_id=79000](https://ofmpub.epa.gov/waters10/attains_impaired_waters.show_tmdl_document?p_tmdl_doc_blobs_id=79000)

<sup>2</sup> The LC TMDL was issued June 17, 2016.

<sup>3</sup> For the Accountability Framework, see pages 54-59 of the LC TMDL.

<sup>4</sup> Submitted by the State to EPA on March 7, 2018; available at:

<http://dec.vermont.gov/sites/dec/files/wsm/erp/docs/2018VermontLakeChamplainPhosphorusTMDLAccountabilityFrameworkReport.pdf>

<sup>5</sup> Letter dated February 15, 2017 from EPA Acting Regional Administrator Deborah A. Szaro to Secretary of Natural Resources Julie Moore and Secretary of Agriculture, Food and Markets Anson Tebbetts.

the TMDLs to reallocate additional load reductions from nonpoint to point sources (i.e. create more stringent WLAs). EPA has taken no such actions, but rather, has thus far provided positive assessment of the State's compliance with the LC TMDL Accountability Framework. Therefore, the State has nothing from EPA indicating that the assumptions upon which the WLA was developed are no longer reliable.

With so little time having passed since adoption of the LC TMDL, with the State having completed or working to complete milestones, and with positive reports thus far from EPA, there is no reason to believe that the assumptions upon which the WLA was developed – including that discharges in other sectors will be reduced in the future – are no longer valid. Therefore, it is appropriate to establish the phosphorus WQBEL for this facility based upon its WLA in the LC TMDL.

*Phosphorus Elimination and Reduction Plan:*

To ensure the facility is operating as efficiently as possible for purposes of phosphorus removal, Condition I.F.3. of the permit requires that within 120 days of the permit effective date, the Permittee shall develop or update (as appropriate), and submit to the Secretary, a Phosphorus Optimization Plan (POP) to increase the WWTF's phosphorus removal efficiency by implementing optimization techniques that achieve phosphorus reductions using primarily existing facilities and equipment. The techniques to be evaluated may include operational process changes to enhance biological and/or chemical phosphorous removal, incorporation of anaerobic/anoxic zones, septage receiving policies and procedures, and side stream management.

The facility shall have 12 months from the permit effective date to optimize removal of total phosphorus. If, after the 12-month optimization period, the WWTF's actual TP loads reach or exceed 80% of the LC TMDL WLA for the WWTF, based on the WWTF's 12-month running annual load calculated using the Phosphorus Load Calculation (Condition I.F.2.d. of the permit) the Permittee shall, within 90 days of reaching or exceeding 80% of the LC TMDL WLA for the WWTF, develop and submit to the Secretary a projection based on the WWTF's current operations and expected future loadings of whether it will exceed its WLA during the permit term.

If the facility is not projected to exceed its WLA within the permit term, the WWTF shall reassess when it is projected to reach its WLA prior to permit renewal and submit that information with its next permit application. If the facility is projected to exceed its WLA during the permit term, the Permittee shall submit a Phosphorus Elimination/Reduction Plan (PERP) within 6 months to the Secretary to ensure the WWTF continues to comply with its WLA. The PERP shall be treated as an application to amend the permit, and therefore, shall be subject to all public notice, hearing, and comment provisions, in place at the time the plan is submitted, that are applicable to permit amendments. The WWTF shall revise the PERP, if required by the Secretary.

## 2. Total Nitrogen (TN)

TN is the sum of nitrate, nitrite, ammonia, soluble organic nitrogen, and particulate organic nitrogen. To gather data on the amount of Total Nitrogen (TN) in this discharge and its potential impact on the receiving water, a quarterly “monitor only” requirement has been included in this permit. TN is a calculated value based on the sum of NO<sub>x</sub> and TKN, and shall be reported as pounds, calculated as:

$$\text{Average TN (mg/L)} \times \text{Total Daily Flow} \times 8.34$$

$$\text{where, TN (mg/L)} = \text{TKN (mg/L)} + \text{NO}_x \text{ (mg/L)}$$

Per EPA excess nitrogen (N) and phosphorus (P) are the leading cause of water quality degradation in the United States. Historically nutrient management focused on limiting a single nutrient—phosphorus or nitrogen—based on assumptions that production is usually phosphorus limited in freshwater and nitrogen limited in marine waters. Scientific research demonstrates this is an overly simplistic model. The evidence clearly indicates management of both phosphorus and nitrogen is necessary to protect water quality. The literature shows that aquatic flora and fauna have differing nutrient needs, some are P dependent, others N dependent and others are co-dependent on these two nutrients.

Like P, N promotes noxious aquatic plant and algal growth. High concentrations of P and N together cause greater growth of algae than P alone. The relative abundance of these nutrients also influences the type of species within the community. Furthermore, a high N-to-P ratio may exacerbate the growth of cyanobacteria, while elevated levels of nitrogen increase toxicity in some cyanobacteria species. Given the dynamic nature of all aquatic ecosystems, for the State to fully understand the degradation to water quality it is necessary to limit P and monitor bioavailable N (including nitrate, ammonium, and certain dissolved organic nitrogen compounds).

Facilities with design flow greater than 1 MGD will complete monthly monitoring unless more frequent sampling is already required by the permit. Facilities with design flows less than 1 MGD will complete quarterly unless more frequent sampling is already required by the permit.

For more information, see:

<https://www.epa.gov/sites/production/files/documents/nandpfactsheet.pdf>.

3. **Ultimate Oxygen Demand (UOD)** – The limitation of 40 lbs/day, daily maximum during the period of June 1 through September 30 remains unchanged from the current permit. As in the current permit, UOD monitoring is required once per month during the period of June 1 through September 30.
4. **Total Kjeldahl Nitrogen (TKN)** – TKN is the sum of nitrogen in the forms of ammonia (un-ionized (NH<sub>3</sub>) and ionized (NH<sub>4</sub><sup>+</sup>)), soluble organic nitrogen, and particulate organic nitrogen. As in the current permit, TKN monitoring is required once per month during the period of June 1 through September 30. TKN sampling has been modified to include quarterly sampling each year from October to May. A quarterly sample will be required each year in the April-May

time period as well as a monthly sample in June to comply with monitoring frequency requirements.

5. **Nitrate/Nitrite (NO<sub>x</sub>)** – Nitrite and nitrate are oxygenated forms of nitrogen. A quarterly “monitor only” requirement has been included in the draft permit.
6. **Settleable Solids** – The limitation of 1.0 mL/L instantaneous maximum and daily monitoring remain unchanged from the current permit. This numeric limit was established in support of the narrative standard in Section 29A-303(2) of the Vermont Water Quality Standards.
7. **Toxicity Testing** – 40 C.F.R. Part 122.44(d)(1) requires the Secretary to assess whether the discharge causes or has the reasonable potential to cause or contribute to an excursion above any narrative or numeric water quality criteria. Per these federal requirements, the Permittee shall conduct WET testing and toxic pollutant analyses according to the schedule outlined in Condition I.H. of the draft permit. If the results of these tests indicate a reasonable potential to cause an instream toxic impact, the Secretary may require additional WET testing, establish a WET limit, or require a Toxicity Reduction Evaluation.

#### **D. Special Conditions**

1. **Laboratory Proficiency Testing** - To ensure there are adequate laboratory controls and appropriate quality assurance procedures, the Permittee shall conduct an annual laboratory proficiency test for the analysis of all pollutant parameters performed within their facility laboratory and reported as required by their NPDES permit. Proficiency Test samples must be obtained from an accredited laboratory or as part of an EPA DMR-QA study. Results shall be submitted to the Secretary by December 31, annually, beginning in **2021**.
2. **Operation, Management, and Emergency Response Plan (OMERP)** – The Permittee submitted a revised OMERP for the wastewater treatment facility, pump stations, and stream crossings as required by 10 V.S.A. § 1278(b) on August 11, 2008. The Agency approved the OMERP on August 18, 2008.

The Permittee submitted the Operation, Management, and Emergency Response Plan for the treatment facility, sewage collection system, sewage pumping stations, and sewer line stream crossings on August 27, 2020. Through issuance of this permit the Secretary approves the inspection schedule for the plan. The Permittee shall implement the plan in accordance with that schedule. The Permittee shall revise the plan upon the Secretary’s request or on its own motion to reflect equipment or operational changes.

3. **Engineering Evaluation** – An engineering evaluation condition is included in this permit. This condition requires the Permittee to conduct an in-depth inspection and report of the treatment facility to identify and repair equipment, processes, and other possible deficiencies which may adversely affect effluent quality or proper operation. This type of evaluation is required once every 20 years and per DEC records was last completed on November 29, 2001 after the completion of facility upgrades.

4. **Emergency Power Failure Plan** – The current Emergency Power Failure Plan for the facility was submitted on June 30, 2003 and it was approved by the Agency on January 12, 2005.

To ensure the facility can continue operations even during the event of a power failure, within **90 days** of the effective date of the permit, the Permittee must submit to the Secretary updated documentation addressing how the discharge will be handled in the event of an electric power outage.

5. **Electronic Reporting** - The EPA recently promulgated a final rule to modernize the Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. The final rule requires the inclusion of electronic reporting requirements in NPDES permits that become effective after December 21, 2015. The rule requires that NPDES regulated entities that are required to submit discharge monitoring reports (DMRs), including majors and nonmajors, individually permitted or covered by a general permit, must do so electronically after December 2016. The Secretary has created an electronic reporting system for DMRs and has recently trained facilities in its use. As of December 2020, these NPDES facilities will also be expected to submit additional information electronically as specified in Appendix A in 40 CFR part 127.
6. **Noncompliance Notification** - As required by the passage of 10 V.S.A. §1295, promulgated in the 2016 legislative session, Condition II.D.3. has been included in the proposed permit. Section 1295 requires the Permittee to provide public notification of untreated discharges from wastewater facilities. The Permittee is required to post a public alert within one hour of discovery and submit to the Secretary specified information regarding the discharge within 12 hours of discovery.
7. **Reopener** - This draft permit includes a reopener whereby the Secretary reserves the right to reopen and amend the permit to implement an integrated plan to address multiple Clean Water Act obligations.

#### **E. Reasonable Potential Analysis**

The Secretary has conducted a reasonable potential analysis, which is attached to this Fact Sheet as Attachment A. Based on this analysis, the Secretary has determined the available data indicate that this discharge does not cause, have a reasonable potential to cause, or contribute to an instream toxic impact or instream excursion above the water quality criteria. As such, the development of water quality based effluent limitations (WQBELs) will not be necessary.

### **IX. Procedures for Formulation of Final Decision**

The Public comment period for receiving comments on this draft permit was from May 8, 2020 to June 8, 2020. Comments were received and considered in the formulation of the final determination to issue, deny, or modify the draft permit. Those comments and the replies are included below as Attachment B.



# ATTACHMENT A

Agency of Natural Resources  
Department of Environmental Conservation

Watershed Management Division  
1 National Life Drive 2 Main  
802-828-1535

## MEMORANDUM

To: Kathleen Parrish, Wastewater Program (WWP)

From: Rick Levey, Monitoring and Assessment Program (MAP)  
Michelle Graziosi, Monitoring and Assessment Program (MAP)

Cc: Pete LaFlamme, Director, WSMD  
Amy Polaczyk, WWP  
Bethany Sargent, Manager, MAP

Date: June 22, 2020

Subject: MAP Reasonable Potential Determination for the Cabot Wastewater Treatment Facility (WWTF).

---

MAP has evaluated the draft permit limits for the Cabot WWTF in Cabot, Vermont pursuant to the 2012 procedure outlining WWM-WSMD roles and responsibilities. This memo provides MAP's concurrence with the permit limits set forth by the draft permit for Cabot WWTF prepared by the WWP.

***Facility:***

Cabot WWTF  
Permit No. 3-1440  
NPDES No. VT0101257

***Hydrology for Cabot WWTF used in this evaluation:***

Design Flow: 0.05 MGD = 0.077 CFS  
7Q10 = 2.40 CFS  
LMM = 9.35 CFS  
IWC-7Q10 = 0.0310 (IWC > 1%)  
IWC-LMM = 0.0081 (IWC < 1%)

***Receiving Water:***

Winooski River, Cabot, VT  
Facility Location: Lat. 44.39101 Long. -72.32687

The Winooski River downstream of the Cabot WWTF discharge is a Class B water and designated as Cold-Water Fish Habitat (see Appendix A, Vermont Water Quality Standards). A one-mile Waste Management Zone has been established in the river below the WWTF outfall pursuant to V.S.A., Section 1252. The Agri Mark Cabot Creamery WWTF is approximately 1.5 miles upstream. The Marshfield WWTF is approximately 4 miles downstream.

***General Assessment – VTDEC Assessment Database:***

MAP maintains the VTDEC assessment database, an EPA-required database which described the conditions of Vermont's surface waters with respect to their attainment of VWQS. The Winooski River segment to which this facility discharges, specifically from Molly's Brook upstream 6 miles is on the 2016 Stressed Waters List and has the problems of streambank erosion, lack of riparian vegetation, physical alterations and the pollutant sediment, all of which prohibit the waters from attaining a higher water quality.

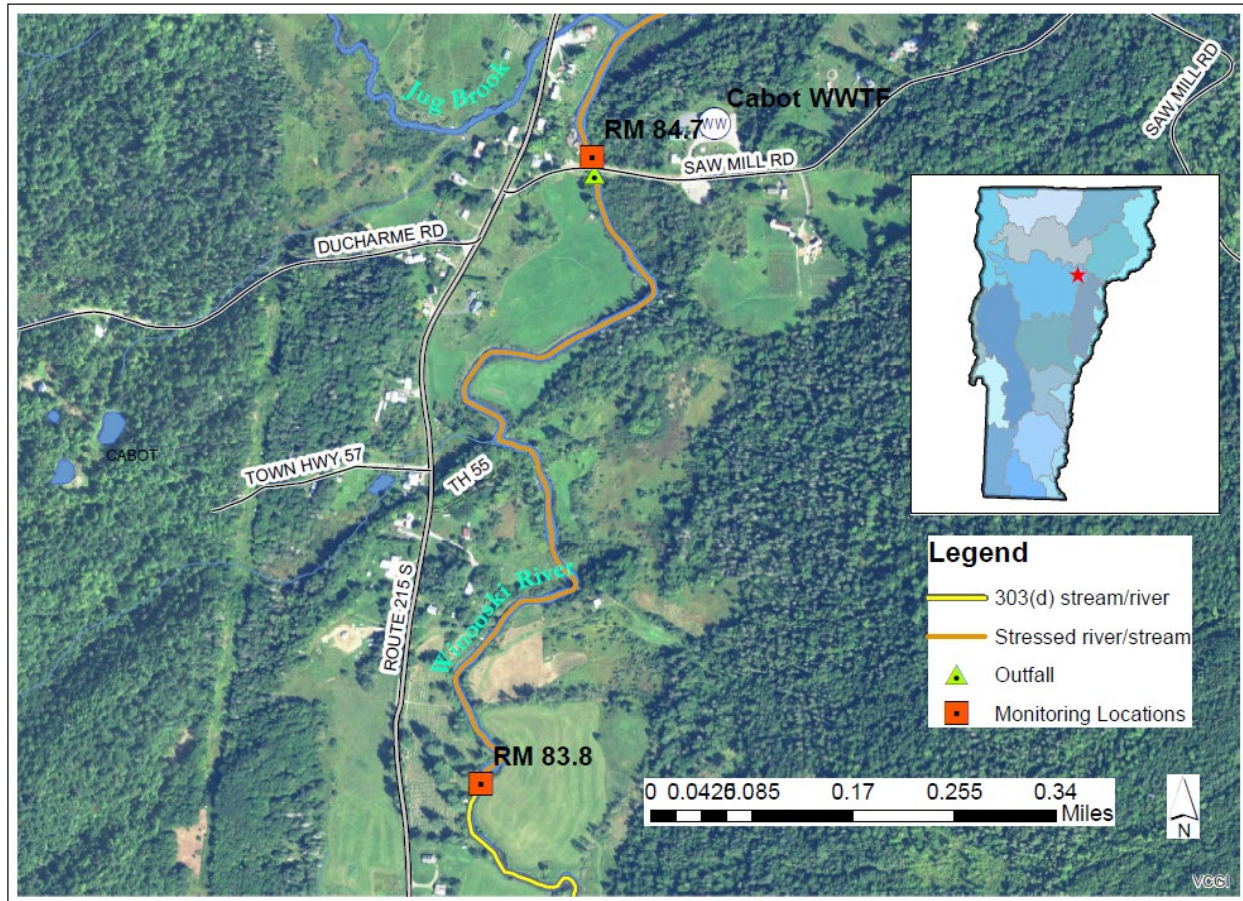
***Ambient Chemistry Data for the Winooski River below the Cabot WWTF:***

There is ambient chemistry data available from VTDEC sampling that occurred in 2010 and 2015 above and below the facility. The upstream site is located at River Mile (RM) 84.7 and the downstream site is located at RM 83.8.

Water chemistry measures for the following parameters are available and summarized in Table 1: water temperature, pH, alkalinity, conductivity, turbidity, dissolved oxygen and percent saturation, total phosphorus (TP), total ammonia nitrogen (TAN) and total nitrogen (TN). Priority metals were analyzed above and below the WWTF at RM 5.9 and RM 5.7 respectively and are summarized in Table 4.

Data representativeness was assessed by evaluating the flow conditions at which samples were collected from field sheets and from the most proximally-located USGS gauge for which data were available, and in consideration of possible downstream sensitive reaches. The location of the upstream and downstream sampling locations (RM 84.7 & 83.8) effectively brackets the WWTF outfall (Figure 1). The downstream sampling location is the most sensitive location.

**Figure 1.** Winooski River near the Cabot WWTF, showing upstream monitoring location (RM 84.7), downstream monitoring location (RM 83.8) and outfall location.



**Table 1.** Concentrations of surface water chemistry above (RM 84.7) and below (83.8) the Cabot WWTF.

Sample Date	Location	RM	Water Temp (deg C)	pH	Alkalinity (mg/l)	Conductivity (umho/cm)	DO (%)	DO (mg/l)	Turbidity (NTU)	Total Phosphorus (µg/l)	Total Nitrogen (mg/l)	Total Ammonia Nitrogen (mg/l)
9/21/2010	Above	84.7	9.5	8.09	131	325	99.4	11.1	1.32	8.0	0.2	-
	Below	83.8	10	8.17	132	328	93.6	10.27	0.84	9.8	0.44	-
8/25/2015	Above	84.7	18.7	8.01	-	340	86.4	7.79	1.94	14.2	0.4	<0.05
	Below	83.8	19	8.09	-	327	90.2	8.02	0.8	11.5	0.34	<0.05
9/21/2015	Above	84.7	14	8.04	122.8	292	95.8	9.59	1.24	9.4	0.23	<0.05
	Below	83.8	13.6	8.11	122.5	300	99.6	10.05	0.71	10.9	0.65	<0.05

Total Phosphorus (TP) above and below the outfall (RM 84.7 & 83.8) were about identical with only a 2 µg/L-TP increase observed at the below site. TP ranged from 8 – 14.2 µg/L-TP. In fact, the highest instream TP observed was 14.2 µg/L-TP at the upstream site (RM 84.7) on 8/25/2015. This coincided with higher turbidity measured at the upstream site than the downstream site for this sampling event.

Total Nitrogen (TN) above and below the outfall (RM 84.7 & 83.8) ranged from 0.2 – 0.65 mg/L-TN, the greatest increase observed from above to below was 0.42 mg/L-TN on 9/21/2015.

Total Ammonia Nitrogen (TAN) was below the detection limit both above and below the outfall in 2015.

***Turbidity, Dissolved Oxygen, pH:***

Turbidity values were “lower” at the downstream site (RM 83.8) and ranged from 0.71 – 0.84 Nephelometric Turbidity Units (NTU). The upstream (RM 84.7) turbidity ranged from 1.32 to 1.94 NTU. The lower turbidity values observed downstream may be due to the effluent being less turbid than the ambient surface water.

The pH measured ranged from 8.01 – 8.17 above and below the outfall. Dissolved oxygen and percent saturation were measured most recently on 9/21/2015, downstream DO and percent saturation were 10.05 mg/L and 99.6 % respectively. Upstream DO and percent saturation were 9.59 mg/L and 95.8% respectively.

***Biological Assessments:***

Biological assessments have been conducted above (RM 84.7) and below (RM 83.8) the outfall most recently in 2015, and below only in 2010. The bioassessments conducted met water quality standards for the Medium High Gradient Stream Type (MHG) (Table 2).

**Table 2.** Macroinvertebrate assessment results for monitoring stations above (RM 84.7) and below (RM 83.8) the Cabot WWTF. Scoring guidelines are for Stream Type MHG and WQ Class B (2).

Macroinvertebrate Assessment Summary											
Date	RM	Location	Density	Richness	EPT Richness	PMA O	B.I.	Oligo.	EPT/EPT + Chiro	PPCS -F	Community Assessment
9/21/2005	83.8	Below	1996	52.0	28.0	82.3	3.63	0.00	0.96	0.56	Meets VWQS
9/21/2010	83.8	Below	6748	80.0	41.0	79.8	3.72	0.24	0.89	0.48	Meets VWQS
9/21/2015	83.8	Below	4100	46.0	27.0	76.3	3.66	0.00	0.99	0.50	Meets VWQS
	84.7	Above	3756	63.0	36.0	89.8	3.40	0.11	0.92	0.59	Meets VWQS
<b>Full Support</b>			≥ 300	≥ 30	≥ 18	≥ 45	≤ 5	≤ 12	≥ 0.45	≥ 0.4	
<b>Indeterminate</b>			≥ 250	≥ 28	≥ 16	≥ 40	≤ 5.15	≤ 14.5	≥ 0.43	≥ 0.35	
<b>Non-Support</b>			< 250	< 28	< 16	< 40	> 5.15	> 14.5	< 0.43	< 0.35	

### ***Total Phosphorus:***

Instream Phosphorus concentrations were calculated using a Simple Steady State Receiving Water Concentration Model, such that Receiving Water Concentration (RWC) equals:

$$\text{RWC} = \text{QeCe} / (\text{Qe} + \text{Qs})$$

Qe = effluent flow (MGD or CFS)

Ce = Effluent concentration (mg/L)

Qs = Receiving Water flow (MGD or CFS)

Full design effluent flow (Qe) of 0.077 CFS was used, with effluent TP concentration (Ce) of 0.365 mg/L which is the average monthly effluent concentration measured during 2014-2018 (n=58) from facility monitoring records. The low median monthly flow of 9.35 CFS was used for receiving water flow (Qs) as this is the critical flow to use for nutrient criteria implementation.

At these conditions the calculated RWC of TP is 0.00298 mg/L-TP (2.98 µg/L-TP).  
(RWC = (0.077 CFS) (0.365 mg/L) / 0.077 CFS + 9.35 CFS = 0.00298 mg/L-TP)

Review of the Cabot WWTF flow records indicate that average facility flow for 2014-2018 is 0.012 MGD, which is 40 percent of the 0.05 MGD permit limit. Instream TP concentrations (RWC) attributable to discharge at these flow rates would be 1.19 µg/L-TP using the average effluent concentration.

Instream monitoring data from above and below the discharge indicate that the TP increase has not been greater than 2 µg/L-TP. These instream monitoring results are in alignment with the mass balance calculations above using the average effluent TP value at average facility flow.

The potential impacts of phosphorus discharges from this facility to the receiving water have been assessed in relation to the narrative criteria in §29A-302(2)(A) of the 2017 VWQS, which states:

*In all waters, total phosphorous loadings shall be limited so that they will not contribute to the acceleration of eutrophication or the stimulation of the growth of aquatic biota in a manner that prevents the full support of uses.*

To interpret this standard, MAP typically relies on a framework which examines TP concentrations in relation to existing numeric phosphorus criteria and response criteria in §29A-306(a)(3)(c) of the Water Quality Standards, for streams that can be assessed using macroinvertebrate biocriteria. Under this framework, MAP can make a positive finding of compliance with the narrative standard when nutrient criteria are attained, or when specific nutrient response variables; pH, Turbidity, Dissolved Oxygen, and aquatic life use, all display compliance with their respective criteria in the Water Quality Standards.

The total phosphorus concentrations in receiving waters are low, and this finding, coupled with the mass balance calculation presented above, indicated that increases in phosphorus attributable to the facility are very low. Further, aquatic life use is shown to be fully supported at high levels, and the stream complies with VWQS for all identified response variables. Therefore, the narrative standard presented in §3-01. B.2 of the VWQS is supported (Table 3) as are the combined numeric nutrient criteria in §29A-306(a)(3)(c).

As described below, for facilities where there are increases in phosphorus attributable to the discharge, and biological monitoring results do consistently indicate attainment of all thresholds, MAP recommends that monthly TP effluent monitoring be required to better assess compliance with the 2014 nutrient criteria at the next permit issuance.

**Table 3.** Assessment of phosphorus response variables for the Winooski River above (RM 84.7) and below (RM 83.8) the Cabot WWTF. The relevant target values are references to the appropriate section of the VWQS.

Response variable (VWQS reference)	Target Value	RM 84.7 (Upstream)	RM 83.8 (Downstream)
		9/21/2015	9/21/2015
pH (§3-01. B.9)	6.5-8.5 s.u.	8.04	8.11
Turbidity (§3-04. B.1)	< 10 NTU at low mean annual flow	1.24	0.71
Dissolved Oxygen (min) (§3-04. B.2)	>6 mg/L and 70% saturation	9.59 (95.8%)	10.05 (99.6%)
Aquatic biota based on macroinvertebrates.	Attaining an assessment of good, or better.	Meets WQS	Meets VWQS

**Whole Effluent Toxicity (WET) and Priority Pollutant Testing:**

40 CFR Part 122.44(d)(1) requires the Agency to assess whether the discharge causes or has the reasonable potential to cause or contribute to an excursion above any narrative or numeric water quality criteria. The goal of the Vermont Toxic Discharge Control Strategy is to assure that the state water quality standards and receiving water classification criteria are maintained.

It is recommended the 2020 draft permit require one summer (August-October 2021) and one winter (January/February 2023) 2-species acute WET test.

**Ammonia Monitoring:**

There is no effluent ammonia monitoring data available to review. Although the available dilution of the receiving water is moderate as evidenced by the Instream Waste Concentration (IWC) of only 3% at 7Q10 flow conditions there may be reasonable potential for the discharge to exceed VWQS. The EPA chronic criteria for ammonia at pH 8.0 and Temperature of 20C is 0.78 mg/L-TAN. Effluent TAN concentrations above 25 mg/L-TAN would exceed this chronic criterion at 7Q10 conditions, as such to assure compliance with VWQS, MAP recommends monthly effluent ammonia monitoring be included to represent summer and winter seasonal conditions as permit condition.

**Suspended Solids, Hardness, and Metals:**

Instream total suspended solids were calculated using the 7Q10 of 2.40 CFS at design flow of 0.077 CFS (0.05 MGD) assuming the maximum permitted daily concentration of 50 mg/L. The calculated suspended solids concentration at these conditions was 1.55 mg/L (7Q10-IWC 0.031 X 50 = 1.55 mg/L), indicating a very slight increase of instream ambient suspended solids concentrations in receiving waters.

The hardness of the Winooski River below the Cabot WWTF (RM 83.8) was recorded as 142.7 mg/l CaCO<sub>3</sub> on 9/21/2015 (Table 4). Hardness data is utilized to determine compliance with Vermont’s aquatic biota-based metals criteria as specified in § 29A-303(7) and Appendix C of the Vermont Water Quality Standards. Vermont DEC priority metal chemistry data below the outfall (Table 4) did not detect any exceedances of the VWQS. However, it should be noted that due to the use of an analysis method that has a detection limit greater than the VWQS there is still a potential that the receiving waters contain arsenic in excess of the VWQS. It is suggested the draft permit include a requirement for annual priority pollutant metals sampling (Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, and Zn) to allow for future RP assessments.

**Table 4.** Priority pollutant metals measured above (RM 84.7) and below (RM 83.8) the Cabot WWTF.

<b>Date</b>	<b>9/21/2015</b>	
<b>Site</b>	<b>Above</b>	<b>Below</b>
<b>RM</b>	<b>84.7</b>	<b>83.8</b>
Hardness (mg/l CaCO <sub>3</sub> )	143	142
Total Aluminum (ug/l)	<50	<50
Total Antimony (ug/l)	<10	<10
Total Arsenic (ug/l)	<1	<1
Total Beryllium (ug/l)	<1	<1
Total Cadmium (ug/l)	<1	<1
Total Chromium (ug/l)	<5	<5
Total Copper (ug/l)	<10	<10
Total Iron (ug/l)	137	112
Total Lead (ug/l)	<1	<1
Total Manganese (ug/l)	60.9	44.6
Total Molybdenum (ug/l)	<5	<5
Total Nickel (ug/l)	<5	<5
Total Selenium (ug/l)	<5	<5
Total Silver (ug/l)	<1	<1
Total Thallium (ug/l)	<1	<1
Total Zinc (ug/l)	<50	<50

***Recommended Biological and Water Quality Monitoring:***

In light of the fact that monitoring results consistently indicate attainment of all thresholds, and the stream complies with VWQS for all identified response variables, and that the narrative standard presented in §29A-302(2)(A) of the VWQS is supported (Table 3), MAP does not recommend biomonitoring be included in the permit. To better assess compliance with the 2014 nutrient criteria at the next permit issuance, MAP does support the effluent monitoring required by the permit which includes effluent monitoring for TP and TAN.

***Recommended Effluent Monitoring:***

In addition to the monitoring required in the current permit, the following monitoring is suggested for inclusion in the renewed permit to provide additional data to support future Reasonable Potential

Determinations:

- To provide additional data for future assessments of WET reasonable potential, it is recommended two 2-species acute tests be included in the draft permit, one during the summer (August-October 2021) and winter (January/February 2023).
- Due to a limited sample size additional sampling is needed to assess RP for ammonia. Therefore, it is suggested the draft permit include a requirement for quarterly ammonia sampling.
- Due to the lack of monitoring data for metals, it was not possible to assess RP for Priority Pollutant Metals (Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, and Zn). It is suggested the draft permit include a requirement for annual priority pollutant metals sampling.

***Conclusion:***

The available data indicate that this discharge does not cause, have a reasonable potential to cause, or contribute to an instream toxic impact or instream excursion above the water quality criteria. As such, the development of WQBELs will not be necessary.



## **ATTACHMENT B**

### **RESPONSIVENESS SUMMARY NPDES Discharge Permit # 3-1440 Town of Cabot Wastewater Treatment Facility**

The above referenced permit was placed on public notice for comment from a period of May 8, 2020 through June 8, 2020. This is a renewal permit.

Comments on the draft permit were received during the public notice period from Ethan Graham, on behalf of the Town of Cabot. The following is a summary of the comments and the Agency's responses to those comments. A copy of any or all comments received can be obtained by contacting the Agency's Watershed Management Division at (802) 828-1115. See letter dated June 4, 2020 from the Town of Cabot (attached).

#### **RESPONSE TO TOWN OF CABOT:**

##### **COMMENT:**

##### Fact Sheet Section II Page 2 of 15 "Description of Discharge"

The Town requests that this Section include an overview of the history of the wastewater treatment facility (WWTF). Specifically, this Section should reference the "1277 Order" issued by the Agency to the Town due to failed system and straight pipes identified in the Town and the necessity to construct a WWTF to eliminate a public health hazard since subsurface disposal was not feasible. It also should note that the WWTF location was based on assimilative capacity analysis of the receiving water determined by the Agency and include specific information detailing that the initial permit was appealed, the ruling, and the decision. Also, per 13.5b2 of the Vermont Water Pollution Control Permit Regulations, the performance and compliance of the WWTF with the current permit over past permitting period plus the details of any inspections should be noted and the current organic influent loading to the WWTF should be specifically documented.

##### **RESPONSE:**

Condition II. of the Fact Sheet has been revised as follows:

The WWTF has not reported any incidents or discharge permit limit violations within the last five years. Reconnaissance inspections were conducted on April 12, 2019 and September 26, 2014 and a Performance Audit and Facility inspection was conducted on January 4, 2008. The facility received an "Excellent" rating on all of the abovementioned inspections, which is the highest rating in the Wastewater Program's rating system.

The Wastewater Program is working to streamline permitting and disagrees with including a comprehensive history of the facility in the fact sheet. The purpose of this fact sheet is to document the decisions made during the current permit renewal. Adding detailed, individual histories for each WWTF is unduly time consuming and subject to inaccuracies. Moreover, the Vermont Water

Pollution Control Permit Regulations do not require a fact sheet for this facility, and one was drafted here with the main objective of supporting implementation of the Lake Champlain TMDL.

**COMMENT:**

Fact Sheet Section IV Page 2 of 15 “Statutory and Regulatory Authority”

The version of the Vermont Water Quality Standards used to review this application should be specifically referenced. Please refer to Subchapter 1 Section 29A-101(b) of the Water Quality Standards.

**RESPONSE:**

The current Vermont Water Quality Standards, effective January 15, 2017, apply to the permit. As an authorized state agency, the Agency is required to meet the minimum requirements of the Clean Water Act (Federal Act) and associated regulations. Any permit issued pursuant to this authority must include conditions “to provide for and ensure compliance with all applicable requirements of CWA and regulations.” 40 C.F.R. § 122.43(a). “For a State issued permit, an applicable requirement is a State statutory or regulatory requirement which takes effect prior to final administrative disposition of a permit.” 40 C.F.R. § 122.43(b)(1); 40 C.F.R. § 123.25(a)(14).

Under the Vermont Water Pollution Control Permit Regulations, Environmental Protection Rule Chapter 13 (VWPCPR), the Agency must apply the “applicable water quality standards” when issuing discharge permits. “Applicable water quality standards” is defined under VWPCPR § 13.1(u) as “all water quality standards to which a discharge is subject under the Federal Act or [10 V.S.A., Chapter 47] and which have been (1) approved or permitted to remain in effect by the Administrator pursuant to section 303(a) or 303(e) of the Federal Act, or (2) promulgated by the Administrator pursuant to section 303(b) or 303(c) of the Federal Act.” EPA approved the current Vermont Water Quality Standards, which became effective January 15, 2017. Moreover, pursuant to VWPCPR § 13.4(b)(1)(d), “[t]he terms and conditions of each permit shall apply and insure compliance with . . . [a]ny more stringent limitation [than those required by the Federal Act], including those . . . required to implement any *applicable water quality standards*.” (emphasis added).

In the review of previous discharge permits, EPA clarified its position that the Agency must satisfy these minimum elements of the Clean Water Act in order to maintain the Agency’s status as an authorized state (see attached letter). As a result, the Agency will continue to issue permits containing permit conditions that meet the mandatory requirements of the Clean Water Act and the current Vermont Water Quality Standards.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region 1  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912

October 12, 2017

Matthew Chapman  
General Counsel  
Office of General Counsel  
Vermont Department of Environmental Conservation  
One National Life Drive -- Davis 2  
Montpelier, VT 05620-3520

Re: Ammonia Limits in VTPDES Permits for the Town of Hinesburg and the Town of Shelburne (#2)

Dear Mr. Chapman:

I have reviewed comments from the Towns of Hinesburg and Shelburne related to which ammonia criteria should form the basis of the water quality-based ammonia limits contained in the Department of Environmental Conservation's (DEC) draft permits for the Towns, as well as DEC's response to those comments. DEC based the limits on the ammonia criteria that the State adopted in 2014, and EPA approved in 2015 pursuant to section 303 of the Clean Water Act (CWA). The criteria reflect the best available science regarding the instream levels of ammonia that will protect aquatic life in Vermont's waters. The Towns objected to the limits, asserting that they should have been based on the ammonia criteria that were in effect when they last filed their applications for permit renewal (2010 for Hinesburg and 2009 for Shelburne), based on a theory of "vested rights." For the reasons discussed below, as well as the explanations provided in DEC's response to comments, DEC was correct to base the ammonia limits in the Towns' permits on the criteria that EPA approved in 2015, rather than the criteria in effect in 2009/2010.

EPA's regulations require conditions to be included in National Pollutant Discharge Elimination System (NPDES) permits that assure compliance with all applicable requirements of the CWA and regulations. 40 C.F.R. § 122.43(a). For such permits issued by an authorized state, "applicable requirement" is defined as a state "statutory or regulatory requirement which takes effect prior to final administrative disposition of a permit." 40 C.F.R. § 122.43(b)(1). Further, pursuant to 40 C.F.R. § 122.43(b)(2), all new and reissued permits must incorporate the applicable requirements of 40 C.F.R. § 122.44. Forty C.F.R. § 122.44(d)(1)(vii), in turn, requires permits to include conditions necessary to achieve water quality standards and, when developing water quality-based effluent

limits, the permitting authority must ensure that the level of water quality to be achieved by such limits is derived from and complies with “all applicable” water quality standards.<sup>1</sup> A water quality standard (WQS) that is adopted under state law on or after May 30, 2000 becomes the “applicable” WQS for purposes of the CWA once EPA approves that WQS. 40 C.F.R. § 131.21(c). Consistent with these federal regulations, Vermont’s Water Pollution Control Permit Regulations at §§ 13.1(u) and 13.4(b)(1)(d) similarly require permits to include, where necessary, water quality-based effluent limits based on criteria approved by EPA under section 303 of the CWA.

Based on the regulations discussed above, Vermont’s 2014 ammonia criteria, approved by EPA in 2015, are the “applicable” criteria for development of water quality-based effluent limits in permits issued under Vermont’s authorized permit program, and DEC properly based the ammonia limits in the Towns’ permits on those criteria.

If you have any questions, please call me at 617-918-1097.

Sincerely,



Ann H. Williams  
Senior Assistant Regional Counsel

---

<sup>1</sup> The provisions of 40 C.F.R. §§ 122.43 and 122.44 are made applicable to authorized state NPDES permit programs at 40 C.F.R. §123.25(14) and (15).

**COMMENT:**

Fact Sheet Section IV.A.1. “Reasonable Potential Determination” and the Reasonable Potential Determination

To be comprehensive, all-inclusive, and have a solid scientific basis, this Section and Reasonable Potential Determination document must be expanded to include:

1. An assessment of potential sources of high pollutants within the collection system which could contribute high pollutant loadings to the WWTF;
2. An assessment of the influent to the WWTF for pollutants of concern and the treatment capacity of the WWTF;
3. An assessment of the design and operation of the WWTF with respect to the treatment technology and pollutant removal for pollutants of concern;
4. An assessment of the quality of the sludge removed from the WWTF; and
5. Specific and consistent references to WQBELs for the potential pollutants of concern identified in the Fact Sheet and Reasonable Potential Determination.

**RESPONSE:**

The intent of a Reasonable Potential Determination (RPD) is to determine if a discharge has reasonable potential (RP) to cause or contribute to an exceedance of VWQS. While it is important to consider the inputs, facility capacity/operation, and quality of the sludge removed, the discharge data is the key input to the calculation of an RPD that is comprehensive, all-inclusive, and has a solid scientific basis.

In the absence of discharge data, conclusive findings of RP are unachievable and Best Professional Judgement (BPJ) is used to assess the likelihood of RP. Previous permit issuance in the Wastewater Program has relied heavily on BPJ to reduce testing requirements on WWTFs, resulting in a lack of concrete information on many discharges. The Wastewater Program, in conjunction with the Monitoring and Assessment Program, developed decision trees for the most common pollutants of concern (TP, TAN, metals) to guide multiple permit writers to consistent assessments of the data needed to assess a discharge depending on the available dilution and the discharge data in hand. This approach centralizes DEC’s BPJ with regard to RPDs and allows sufficient data to be collected to conduct comprehensive RP findings in the future.

**COMMENT:**

Fact Sheet Page Section VI Page 5 of 15 “Description of Receiving Water”

The Town requests that this Section include a discussion of the history of the receiving water in the area of Cabot, the work done by the Agency to determine the location of the discharge, the dissolved oxygen issues in the receiving water during the summer causing to be a water quality limited segment, and its assimilative capacity.

**RESPONSE:**

The wastewater program is streamlining the permit writing process and adding in individual histories for each WWTF is unduly time consuming and subject to inaccuracies. The inclusion of the UOD limit in the draft permit is addressed in the Fact Sheet and speaks to this issue.

**COMMENT:**

Fact Sheet Page Section VII.C.2. Page 12 of 15 “Total Nitrogen (TN)” and Draft Discharge Permit Condition I.A.1.

The Draft Permit proposes to now include a monthly monitoring requirement for TN to gather data on possible eutrophication issues due to this pollutant. However, the Fact Sheet states that at WWTFs with a design flow greater than 1 MGD, TN monitoring will be required monthly and WWTFs with a design flow less than 1 MGD will required to conduct quarterly TN monitoring unless currently required to do more frequent monitoring. The Cabot WWTF is designed to discharge only 0.05 MGD (50,000 gpd) and is not currently required to monitor for TN. Therefore, the Town requests that the Agency explain the basis for monthly monitoring and requests the Agency to reduce the monitoring frequency to quarterly.

**RESPONSE:** The Agency agrees, and the draft permit and fact sheet have been modified to include quarterly TN sampling.

**COMMENT:**

Fact Sheet Page Section VII.C.3 Page 12 of 15 “Ultimate Oxygen Demand (UOD)”

In regard to UOD, other than E. coli, UOD is the greatest pollutant of concern that has the potential to be discharged from this WWTF. The Fact Sheet should clearly indicate that UOD is a water quality based effluent limitation (WQBEL), why this WQBEL is necessary, the specific basis of the effluent limitation, and how limitation was derived. Plus, the Fact Sheet specifically detail how this effluent limitation is calculated and discuss the quality of the WWTF’s discharge with respect to UOD over the past few years.

**RESPONSE:**

The Agency agrees, and the Fact Sheet has been modified in accordance with the available permit record. To comply with Federal anti-backsliding requirements, this limit remains in the permit.

**COMMENT:**

Fact Sheet Page Section VII.C.4 Page 12 of 15 “Total Ammonia Nitrogen (TAN)”, Draft Discharge Permit Condition I.A.1. and Reasonable Potential Determination (RPD) Page 6 and 8.

The Draft Permit proposes to now include a new monthly “monitor only” sampling requirement for TAN to ensure that this discharge does not have a TAN loading which could cause an exceedance of the TAN instream water quality criteria in the Vermont Water Quality Standards

(VTWQS).

The Town concurs that TAN can be a pollutant of concern during summer conditions (summer water temperatures and 7Q10 flows) from municipal WWTF discharges. However, the Town disagrees that the discharge from this WWTF is not adequately monitored for potential impacts of TAN during that time period and the Town disagrees that TAN is a pollutant of concern during winter conditions (winter water temperatures and 7Q10 flows) and believes that the Reasonable Potential Determination did not properly utilize all the available effluent data regarding potential TAN concentrations and overlooked the instream effects of TAN during winter conditions.

The RPD indicates that if the WWTF's effluent TAN concentration is above 25 mg/l and at the permitted flow, this discharge could cause an exceedance of the instream water quality criteria in the Vermont Water Quality Standards (VTWQS) for TAN in the receiving water during summer conditions and further states there is no data available to review to determine the quality of the WWTF effluent with respect to TAN and its potential impact on the receiving water. However, the Town notes that typical influent concentrations of TAN in domestic wastewater are ~25 mg/l – 30 mg/l, the WWTF's aeration treatment process is designed to facilitate the removal of ammonia, plus Total Kjeldahl Nitrogen (TKN) effluent sampling of this discharge has been required during the summer since this WWTF began operation. TKN is the combined sum of organic nitrogen, ammonia nitrogen, and ammonium. Therefore, since effluent data has been routinely gathered on the TKN in this discharge, extensive data is available to easily extrapolate the potential TAN impacts in the receiving water. During the past 5 years the effluent TKN has not exceeded 3 mg/l and is typically below 1 mg/l, consequently since TAN is included as part of a TKN sample analysis, under worst case conditions (ammonia being 100% of a TKN analysis) the effluent TAN has always been significantly less than 25 mg/l. Therefore, the Town believes that adequate monitoring of the discharge for potential TAN impacts is already in place and that additional sampling would serve no purpose and would unnecessarily increase the operating costs at the WWTF. However, the Town is willing to specifically sample the effluent for TAN if the effluent TKN increases and indicates that effluent TAN could be approaching a concentration of concern. For example, if a TKN sample exceeds 15 mg/l during the summer period, the Town could immediately sample and analyze the effluent for TAN.

With respect to winter conditions (winter water temperatures and 7Q10 flows), the Town does not believe that TAN is a pollutant of concern during this time period and does not believe that there is a reasonable potential for this discharge to cause an exceedance of the instream TAN criteria of the VTWQS during this time period and requests that the proposed winter TAN monitoring eliminated. Specifically, due to reduced impacts of TAN in a receiving water at winter temperatures and the higher winter 7Q10 flows, the WWTF's effluent TAN would need to exceed to exceed 90 mg/l at the permitted flow to cause an exceedance of the instream TAN water quality criteria in the receiving water during winter conditions (See Attachment A). Consequently it is not physically possible for the effluent TAN from this discharge to exceed 90 mg/l during the winter months since typical WWTF influent TAN concentrations are 25 – 30 mg/l, well below the instream criteria, and this WWTF is designed to facilitate the removal of TAN.

**RESPONSE:**

Based on the information presented above and internal review of the facility and receiving water, the Agency agrees the facility is low risk for discharge of TAN in excess of the VWQS. As requested, TKN data will be used as a screening value for TAN. If TKN values indicate there is a potential for exceedance of the VWQS for TAN, TAN monitoring will be included in subsequent permit renewals.

**COMMENT:**

Fact Sheet Page Section VII.C.5 Page 12 of 15 “Total Kjeldahl Nitrogen (TKN)”, Draft Discharge Permit Condition I.A.1. and Reasonable Potential Determination

The Draft Permit proposes to increase TKN monitoring from once per month for the period of June through September to once per month for the entire year. The Fact Sheet states this increase is necessary to determine the potential impact of the TKN in this discharge on the receiving water.

Based on the information presented in the Reasonable Potential Determination (RPD) and other studies on this reach of river, the Town disagrees with this increase and requests that the Agency either eliminate this increased monitoring or provide detailed and sufficient documentation to support this increased monitoring mandate. The information contained in the RPD indicates that 3 macroinvertebrate surveys have been conducted in the reach of river downstream of this discharge and all the studies clearly indicate that the receiving water is in “full support” of the biological community and there are no signs of any degradation. Also 3 instream chemical analysis studies have been conducted during summer conditions above and below the outfall and all these studies clearly indicate no measurable change in water chemistry above in below the discharge. Also, the RPD makes no reference of any new potential water quality impacts due to TKN in this discharge.

In addition, assimilative capacity analyses of the receiving water were conducted by the Agency as part of locating and building this WWTF. These analyses determined that TKN is only a pollutant of concern during the summer months (June through September) due to the assimilative capacity of the river and the potential impacts of the TKN in this discharge during that time period have been addressed via the UOD limitation.

Therefore, further information needs to be provided by the Agency regarding the need for increased TKN monitoring or the increase should be eliminated.

Also, the Fact Sheet should describe the relationship between UOD, TKN, and instream dissolved oxygen reduction and explain how TKN is a critical component of UOD but its effects are temperature dependent due to instream the bacteria which exert an oxygen demand to consume the TKN going dormant during cooler water temperatures.



**RESPONSE:**

TKN sampling has been modified to include quarterly sampling each year from October to May. The Permittee needs to be mindful that quarterly sampling will be required each year in the April-May time period and a monthly sample in June to comply with monitoring frequency requirements.

**COMMENT:**

Fact Sheet Page Section VII.C.8 Page 12 of 15 “Toxicity Testing”, Draft Discharge Permit Condition I.I

Condition I.I. of the Permit proposes to require 2 two species acute Whole Effluent Toxicity Tests to assess whether this discharge causes or has a reasonable potential to contribute to an excursion above water quality criteria. Whole Effluent Toxicity tests are very expensive (>\$2,500 per test). Due to low number of users of this system and the current high sewer use fees assessed to maintain the WWTF and monitor its discharge, the Town must be assured that expenditures associated with the WWTF are fiscally responsible and that these tests are clearly warranted.

The Town notes that this subject was explicitly addressed as part of the appeal of the initial permit issued for this WWTF and its discharge. During these appeal proceedings, the Agency assessed the potential toxicity of this discharge under 40 CFR Part 122.44(d)(1) and the Vermont Toxic Discharge Control Strategy and provided testimony that this discharge did not have a reasonable potential to cause or contribute to an excursion above water quality criteria. The Water Resources Board affirmed the Agency’s testimony and as part of its decision concluded that toxicity testing for this discharge was not necessary. This decision is now precedence. See Appeal of Town of Cabot, Docket No. WQ-2000-04 Findings of Fact, Conclusions of Law and Order (Sept 8, 2000).

Therefore, the Town disagrees with these sampling requirements and requests that they be eliminated.

The Town contends that if the Agency is now recanting its testimony and rendering its previous information presented during the appeal moot, the Agency must provide clear and compelling documentation that contradicts and overrides its previous assessment of the discharge, its testimony, and the Decision and that this discharge has a clear and quantifiable reasonable potential to cause or contribute to an excursion above water quality criteria.

The Town further notes that this WWTF was specifically constructed to specifically eliminate a public health hazard due to failed septic systems and illegal direct discharges of human sewage to the river. Therefore the WWTF only receives wastewater from domestic sources and the type of users in the collection system is unchanged from when the Agency made its initial assessment and presented its testimony which noted that the probability of toxics entering the WWTF from these users was very low and the WWTF is designed to remove toxics if any incidental discharges of these material from the households into the WWTF occurs.

In addition, since it began operation the WWTF has always produced an extremely high quality effluent, has never had a treatment process upset, and the sludge removed from the treatment process is very high quality with no evidence of abnormal toxics. Plus, the Agency's studies above and below the outfall shows no measurable instream biological or chemical instream changes due to this discharge. This information directly supports and appears to confirm the original testimony provided by the Agency during the appeal proceedings and Town believes that Agency must now provide detailed and compelling evidence to contradict these findings, previous testimony, and the Decision to warrant requiring this sampling.

Finally, the proposed permit is conditioned to expire on June 30, 2025 and the Town must apply for renewal of the permit by December 31, 2024. However Condition I.I.5 requires that the Town conduct additional toxicity effluent tests after the expiration of the permit (specifically in August, September or October 2025 and January or February 2027) and the results of this testing must be submitted in December 2025 and June 2027 and then Town must conduct additional testing routinely thereafter if the Agency fails to reissue this permit in a timely manner and the permit is administratively extended under 3 VSA Section 814. The Town questions the Agency's authority and ability to mandate that permittees implement specific permit conditions mandating actions by a permittee after a permit has expired and requests that a written statement from the Agency's legal staff be provided detailing the statutory and regulatory authority to implement these types of conditions.

**RESPONSE:**

The Agency must be able to evaluate a facility's reasonable potential of Whole Effluent Toxicity at permitting. 40 C.F.R. § 122.44(d)(1)(ii). The 20-year-old findings of fact referenced in the comment are not a reliable basis for this evaluation. Current testing is required to support the Town's position.

In response to the comment and to ensure consistency across pending permit renewals, continuation of WET testing during administrative continuance will only be required if the results of tests conducted during the permit term indicate any acute or chronic toxicity. The Permit has been revised to address this.

**COMMENT:**

Fact Sheet Page Section VII.C.1 Page 13 of 15 "Metals Analysis", Draft Discharge Permit Condition I.E

Condition I.E. of the Permit proposes to require the Town to sample the discharge annually beginning in December 2021 for dissolved organic carbon, hardness, aluminum, antimony, arsenic, cadmium, calcium, copper, iron, manganese, lead, nickel, selenium, silver, and zinc to determine if these pollutants cause or contribute to toxicity in the receiving water.

The Town believes that there is sufficient and overwhelming data exists which clearly indicates that these metals are not pollutants of concern and that this discharge does not contain concentrations of these metals that could cause or contribute to toxicity in the receiving water

and request that this monitoring requirement be removed. Specifically:

1. Excessive metals in WWTF effluent is directly correlated to high metals entering the collection system from industrial processes. This has been confirmed by previous work by the Agency in Northfield, Vergennes, Burlington etc. In Cabot, the collection system only receives wastewater from domestic household sources which have extremely low metals concentrations in their discharges and there are no commercial or industrial users connected to the WWTF which use metals or products such as dyes or chemical etching which could contain metals discharging to the WWTF.
2. The majority of metals entering a WWTF precipitate out of the water column and accumulate in the sludge. The removal rates for most metals from the WWTF treatment process into the sludge range from 75 – 90% depending on the metal and treatment process and excessive metals in sludge is the primary indicator that a WWTF is receiving excessive metals, and therefore potentially discharging, high concentrations of metals. This has also been confirmed by the Agency as noted above. In Cabot, due to the membrane filtration and the phosphorus removal treatment processes, it is highly probable that the metals removal rates into the sludge are very high. A review of the analyses of metals concentrations of the sludge removed from the WWTF indicates that the metals concentration in the sludge is very low, well below the acceptable concentrations mandated by the Vermont Solid Waste Rules. In fact, some metals in the sludge were below the limits of detection at times which clearly indicates that very low concentrations of metals are entering the WWTF. Consequently, it is not physically possible for this discharge to contain high concentrations of metals and cause or contribute to toxicity in the receiving water.
3. In addition to having excessive metals in its sludge, if a WWTF is receiving excessive metals it will often experience treatment process upsets due to the toxicity of the metals adversely impacting the WWTFs biological treatment process (aka Inhibition Criteria). The Agency has had direct experience with this issue at the Bethel WWTF. The Inhibition Criteria for some common metals is very low. For example, research indicates that treatment process inhibition can occur when concentrations of chromium, copper or lead exceed 0.1 mg/l in the wastewater. However, to date the Cabot WWTF has never had an upset.
4. The Reasonable Potential Determination did not address the metals necessary in the discharge to cause or contribute to toxicity in the receiving water nor did it determine if it was probable that these effluent limitations could be exceeded by this discharge. However, based on the instream criteria for these metals specified in the VTWQS, the QBEL for these metals to cause or contribute to toxicity in the receiving water are extremely high (see Attachment B) and are significantly higher than typical WWTF influent concentrations for these metals. For example, typical zinc WWTF influent concentration is <0.2 mg/l but to cause a violation of the QBEL for this discharge, the zinc concentration in the WWTF effluent would need to be >5 mg/l (5,000 ug/l). Therefore, it is not physically possible for this discharge to cause or contribute to toxicity in the receiving water.
5. Based on the QBELs necessary to cause or contribute to toxicity in the receiving water, the concentrations of these metals in WWTF would be so high in the treatment process that the Inhibition Criteria would be greatly exceeded and in all likelihood, the

biological treatment process at the WWTF would be dead and the sludge would contain extremely excessively high metals. For example, to cause a violation of the WQBEL for chromium the WWTF effluent chromium concentration would need to exceed 3.5 mg/l, however the Inhibition Criteria for chromium to adversely impact a WWTFs biological treatment process is estimated to be ~0.1 mg/l. To date, as previously stated, the WWTF has never experienced a process upset and the sludge has extremely low concentrations of metals.

6. Based on instream sampling conducted by the Agency for metals upstream and downstream of this discharge on September 21, 20015, there was no measurable change in the metals detected in the receiving water between these sample locations. Except for Total Iron and Total Manganese, all metals at both sampling locations were below the limits of detection. With respect to iron and manganese, the instream concentrations of these metals in the sample collected downstream of the WWTF discharge were actually lower than the instream sample concentrations collected upstream of the discharge.
7. From a general perspective, instream studies conducted in 2011 by the Agency in waters receiving discharges from 20 WWTFs in Vermont with a much higher potential to have elevated metals in their collection system and discharge and with higher instream waste concentrations much higher than the Cabot WWTF did not detect any instream toxicity or impacts due to metals in these discharges. In fact, except for the common "earth metals" - calcium iron, manganese, and aluminum - all the metals in all samples collected above and below the WWTFs were below the level of detection.
8. Finally, the Town notes that the Agency has been routinely receiving metals analysis of effluent from WWTFs with design flow of 1 MGD or greater as required by 40 CFR 122.21.j. for over a decade. These large WWTFs typically have numerous industrial and commercial users which have a high potential to discharge metals into their collection system and it is the Town's understanding that no exceedances of the instream water quality criteria have ever been detected from these analyses nor have metals been deemed a pollutant of concern and further regulation of metals needed at these WWTFs.

Consequently based on these facts, the Town does not believe that metals are a pollutant of concern at this WWTF nor is there are a reasonable potential for this discharge to contain metals that could cause or contribute to toxicity in the receiving water. In addition, if for some extremely strange unforeseen reason a discharge of excessive metals into the WWTF were to occur there are other environmental indicators that would quickly identify the type of problem before this discharge could cause or contribute to instream toxicity. Plus, this additional proposed sampling will unnecessarily increase the operating costs and user fees at the WWTF. Therefore, the Town requests that this proposed monitoring requirement be eliminated.

#### **RESPONSE:**

Metals are pollutants for concern in all WWTFs, including those with only residential connections. Copper, lead and zinc leaching from drinking water pipes is a common issue in Vermont and can be a concern at WWTFs with instream waste concentrations as low as 0.02 (50x dilution) at a hardness of 50 mg/l as CaCO<sub>3</sub>. This is evident from review of the data submitted as required by

40 C.F.R. § 122.21.j. The receiving water for this facility has a recorded hardness value of 142 mg/l as CaCO<sub>3</sub> which corresponds to an IWC of concern for Copper of approximately 0.075. Data indicates that Copper toxicity is the most likely concern at that hardness, while Lead is more of a concern in softer waters.

It should be noted the instream metal monitoring results bracketing these sites were below the limit of detection, which is higher than the VWQS for many metals. Additional monitoring will continue with improving limits of detection, but monitoring the effluent is a more reliable method of determining metals loading in the receiving waters. Values used to screen for metals will be updated as additional effluent data becomes available, and the IWCs of concern for metals will be revised accordingly. Due to the hardness of the receiving waters for this facility, and the fact that the IWC of 0.03 is lower than the current IWC of concern for Copper at this hardness, metals monitoring has been removed from the permit.

**COMMENT:**

Fact Sheet Page Section VII.D.3 Page 13 of 15 “Operation, Management, and Emergency Response Plan (OMERP); Draft Discharge Permit Condition I.E

The information in the Fact Sheet and Condition I.E of the proposed Permit regarding the OMERPs is insufficient and inaccurate and needs to be significantly revised. 10 VSA 1278(b) mandates that municipal WWTFs develop and implement an OMERP for the wastewater treatment facility, pump stations, and stream crossing. 10 VSA 1278(c) mandates that municipal WWTFs develop and implement an OMERP for the collection system.

On March 28, 2008, the Town submitted an OMERP for the wastewater treatment facility, pump stations, and stream crossing as required by 10 VSA 1278(b). The Agency approved this Plan on August 18, 2008. This information and the Agency approval of this Plan must be specifically referenced in the Fact Sheet and Condition I.E. The Town acknowledge the need to revise this Plan and is planning to submit a revised OMERP for the wastewater treatment facility, pump stations, and stream crossings by December 31, 2021 as proposed in Condition I.E and will implement this updated OMERP upon receiving written approval from the Agency.

With respect to an OMERP Plan for the collection system. On July 1, 2010, the Town submitted an OMERP for the collection system to the Agency as required by 10 VSA 1278(c). To date the Town has not received any review comments on this Plan from the Agency, nor has the Agency issued an approval of this Plan. Consequently, it is not possible for the Town to revise this Plan as mandated in Condition I.E. Therefore, Town requests that the Agency complete the review on this Plan and the Town will implement it upon approval by the Agency as required by 10 VSA 1278(c).

**RESPONSE:**

On March 28, 2008, the Town submitted an OMERP for the wastewater treatment facility, pump stations, and stream crossings as required by 10 V.S.A. § 1278(b). The Agency approved this Plan on August 18, 2008. This information and the Agency approval of this Plan is referenced in

the Fact Sheet and Condition I.E.

The Town acknowledged the need to revise this Plan and submitted a revised OMERP for the wastewater treatment facility, collection system, pump stations, and stream crossings on August 27, 2020. The Secretary approves the inspection schedule through issuance of the discharge permit and the plan shall be implemented in accordance with the schedule.

**COMMENT:**

Fact Sheet Page Section VII.D.3. Page 13 of 15 “Electrical Power Failure Plan; Draft Discharge Permit Condition I.C

The current permit required the Town to submit an Electrical Power Failure Plan. On January 12, 2005, the Agency approved this Plan and the Agency’s approval must be specifically referenced in the Fact Sheet and in Condition I.C. The Town acknowledges the requirement to revise this plan and is planning to submit a revised Electrical Power Failure Plan by October 1, 2020 as proposed in Condition IC.

**RESPONSE:**

The Agency agrees and the fact sheet and Condition I.C. have been amended accordingly.

**COMMENT:**

Other Agency Information

During the public comment period for this Permit, the Town received additional supporting information regarding this Permit from the Watershed Management Division “MAP” Program. This information included the following statement:

*“Impaired reach of Winooski River through Cabot Village has the problem of residential direct discharges and/or failed septic systems and the pollutants E.coli have made it a priority for management where aquatic habitat and/or other designated uses are not supported. The surface water is on the 2018 List of Priority Surface Waters, Part D (impaired with approved TMDL).”*

The Town is not aware of any residential direct discharges and failed septic systems remaining within the Village at this time. These types of discharges and failed systems are a public health hazard. The Cabot WWTF was specifically constructed under an order from the Agency to eliminate these types of discharges and protect human health and water quality. The Town request that the Agency provide a detailed explanation of these discharges and the failed systems so they can be eliminated as soon as possible.

**RESPONSE:**

Based on this comment the “General Assessment” section of the Cabot WWTF RPD was revised.

During the Cabot WWTF permit development, it was brought to the Agency's attention that the Winooski River through Cabot was listed as impaired for E. coli. The Agency is currently proposing to remove the impairment and is currently on public notice, with a November 4, 2020 deadline for submitting comments. Additional information regarding the proposed action as well as instructions for submission of public comments can be found at:

<https://dec.vermont.gov/watershed/permits/public-notices/mapp>

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June 4, 2020

Agency of Natural Resources  
Dept of Environmental Conservation  
Watershed Management Division  
One National Life Drive, Davis Building 3<sup>rd</sup> Floor  
Montpelier, VT 05620-3522

RE: Comments - Draft Discharge Permit No. 3-1440, Fact Sheet, and Reasonable Potential Determination.

Attached are comments regarding the proposed renewed Discharge Permit for the Town of Cabot Wastewater Treatment Facility and supporting information.



Comments: Town of Cabot Draft Discharge Permit No. 3-1440, Fact Sheet & Reasonable Potential Determination

Fact Sheet Section II Page 2 of 15 “Description of Discharge”

The Town requests that this Section include an overview of the history of the wastewater treatment facility (WWTF). Specifically, this Section should reference the “1277 Order” issued by the Agency to the Town due to failed system and straight pipes identified in the Town and the necessity to construct a WWTF to eliminate a public health hazard since subsurface disposal was not feasible. It also should note that the WWTF location was based on assimilative capacity analysis of the receiving water determined by the Agency and include specific information detailing that the initial permit was appealed, the ruling, and the decision. Also, per 13.5.b.2 of the Vermont Water Pollution Control Permit Regulations, the performance and compliance of the WWTF with the current permit over past permitting period plus the details of any inspections should be noted and the current organic influent loading to the WWTF should be specifically documented.

Fact Sheet Section IV Page 2 of 15 “Statutory and Regulatory Authority”

The version of the Vermont Water Quality Standards used to review this application should be specifically referenced. Please refer to Subchapter 1 Section 29A-101(b) of the Water Quality Standards.

Fact Sheet Section IV.A.1 “Reasonable Potential Determination” and the Reasonable Potential Determination

To be comprehensive, all-inclusive, and have a solid scientific basis, this Section and Reasonable Potential Determination document must be expanded to include:

1. An assessment of potential sources of high pollutants within the collection system which could contribute high pollutant loadings to the WWTF;
2. An assessment of the influent to the WWTF for pollutants of concern and the treatment capacity of the WWTF;
3. An assessment of the design and operation of the WWTF with respect to the treatment technology and pollutant removal for pollutants of concern;
4. An assessment of the quality of the sludge removed from the WWTF; and
5. Specific and consistent references to WQBELs for the potential pollutants of concern identified in the Fact Sheet and Reasonable Potential Determination.

Fact Sheet Page Section VI Page 5 of 15 “Description of Receiving Water”

The Town requests that this Section include a discussion of the history of the receiving water in the area of Cabot, the work done by the Agency to determine the location of the discharge, the dissolved oxygen issues in the receiving water during the summer causing to be a water quality limited segment, and its assimilative capacity.

Fact Sheet Page Section VII.C.2 Page 12 of 15 “Total Nitrogen (TN)” and Draft Discharge Permit Condition I.A.1.

The Draft Permit proposes to now include a monthly monitoring requirement for TN to gather data on possible eutrophication issues due to this pollutant. However, the Fact Sheet states that at WWTFs with a design flow greater than 1 MGD, TN monitoring will be required monthly and WWTFs with a design flow less than 1 MGD will be required to conduct quarterly TN monitoring unless currently required to do more frequent monitoring. The Cabot WWTF is designed to discharge only 0.05 MGD (50,000 gpd) and is not currently required to monitor for TN. Therefore, the Town requests that the Agency explain the basis for monthly monitoring and requests the Agency to reduce the monitoring frequency to quarterly.

Fact Sheet Page Section VII.C.3 Page 12 of 15 “Ultimate Oxygen Demand (UOD)”

In regard to UOD, other than E. coli, UOD is the greatest pollutant of concern that has the potential to be discharged from this WWTF. The Fact Sheet should clearly indicate that UOD is a water quality based effluent

Comments: Town of Cabot Draft Discharge Permit No. 3-1440, Fact Sheet & Reasonable Potential Determination

limitation (WQBEL), why this WQBEL is necessary, the specific basis of the effluent limitation, and how limitation was derived. Plus, the Fact Sheet specifically detail how this effluent limitation is calculated and discuss the quality of the WWTF's discharge with respect to UOD over the past few years.

Fact Sheet Page Section VII.C.4 Page 12 of 15 "Total Ammonia Nitrogen (TAN)", Draft Discharge Permit Condition I.A.1. and Reasonable Potential Determination (RPD) Page 6 and 8.

The Draft Permit proposes to now include a new monthly "monitor only" sampling requirement for TAN to ensure that this discharge does not have a TAN loading which could cause an exceedance of the TAN instream water quality criteria in the Vermont Water Quality Standards (VTWQS).

The Town concurs that TAN can be a pollutant of concern during summer conditions (summer water temperatures and 7Q10 flows) from municipal WWTF discharges. However, the Town disagrees that the discharge from this WWTF is not adequately monitored for potential impacts of TAN during that time period and the Town disagrees that TAN is a pollutant of concern during winter conditions (winter water temperatures and 7Q10 flows) and believes that the Reasonable Potential Determination did not properly utilize all the available effluent data regarding potential TAN concentrations and overlooked the instream effects of TAN during winter conditions.

The RPD indicates that if the WWTF's effluent TAN concentration is above 25 mg/l and at the permitted flow, this discharge could cause an exceedance of the instream water quality criteria in the Vermont Water Quality Standards (VTWQS) for TAN in the receiving water during summer conditions and further states there is no data available to review to determine the quality of the WWTF effluent with respect to TAN and its potential impact on the receiving water. However, the Town notes that typical influent concentrations of TAN in domestic wastewater are ~25 mg/l – 30 mg/l, the WWTF's aeration treatment process is designed to facilitate the removal of ammonia, plus Total Kjeldahl Nitrogen (TKN) effluent sampling of this discharge has been required during the summer since this WWTF began operation. TKN is the combined sum of organic nitrogen, ammonia nitrogen, and ammonium. Therefore, since effluent data has been routinely gathered on the TKN in this discharge, extensive data is available to easily extrapolate the potential TAN impacts in the receiving water. During the past 5 years the effluent TKN has not exceeded 3 mg/l and is typically below 1 mg/l, consequently since TAN is included as part of a TKN sample analysis, under worst case conditions (ammonia being 100% of a TKN analysis) the effluent TAN has always been significantly less than 25 mg/l. Therefore, the Town believes that adequate monitoring of the discharge for potential TAN impacts is already in place and that additional sampling would serve no purpose and would unnecessarily increase the operating costs at the WWTF. However, the Town is willing to specifically sample the effluent for TAN if the effluent TKN increases and indicates that effluent TAN could be approaching a concentration of concern. For example, if a TKN sample exceeds 15 mg/l during the summer period, the Town could immediately sample and analyze the effluent for TAN.

With respect to winter conditions (winter water temperatures and 7Q10 flows), the Town does not believe that TAN is a pollutant of concern during this time period and does not believe that there is a reasonable potential for this discharge to cause an exceedance of the instream TAN criteria of the VTWQS during this time period and requests that the proposed winter TAN monitoring eliminated. Specifically, due to reduced impacts of TAN in a receiving water at winter temperatures and the higher winter 7Q10 flows, the WWTF's effluent TAN would need to exceed to exceed 90 mg/l at the permitted flow to cause an exceedance of the instream TAN water quality criteria in the receiving water during winter conditions (See Attachment A). Consequently it is not physically possible for the effluent TAN from this discharge to exceed 90 mg/l during the winter months

Comments: Town of Cabot Draft Discharge Permit No. 3-1440, Fact Sheet & Reasonable Potential Determination

since typical WWTF influent TAN concentrations are 25 – 30 mg/l, well below the instream criteria, and this WWTF is designed to facilitate the removal of TAN.

Fact Sheet Page Section VII.C.5 Page 12 of 15 “Total Kjeldahl Nitrogen (TKN)”, Draft Discharge Permit Condition I.A.1. and Reasonable Potential Determination

The Draft Permit proposes to increase TKN monitoring from once per month for the period of June through September to once per month for the entire year. The Fact Sheet states this increase is necessary to determine the potential impact of the TKN in this discharge on the receiving water.

Based on the information presented in the Reasonable Potential Determination (RPD) and other studies on this reach of river, the Town disagrees with this increase and requests that the Agency either eliminate this increased monitoring or provide detailed and sufficient documentation to support this increased monitoring mandate. The information contained in the RPD indicates that 3 macroinvertebrate surveys have been conducted in the reach of river downstream of this discharge and all the studies clearly indicate that the receiving water is in “full support” of the biological community and there are no signs of any degradation. Also 3 instream chemical analysis studies have been conducted during summer conditions above and below the outfall and all these studies clearly indicate no measurable change in water chemistry above in below the discharge. Also, the RPD makes no reference of any new potential water quality impacts due to TKN in this discharge.

In addition, assimilative capacity analyses of the receiving water were conducted by the Agency as part of locating and building this WWTF. These analyses determined that TKN is only a pollutant of concern during the summer months (June through September) due to the assimilative capacity of the river and the potential impacts of the TKN in this discharge during that time period have been addressed via the UOD limitation

Therefore, further information needs to be provided by the Agency regarding the need for increased TKN monitoring or the increase should be eliminated.

Also, the Fact Sheet should describe the relationship between UOD, TKN, and instream dissolved oxygen reduction and explain how TKN is a critical component of UOD but its effects are temperature dependent due to instream the bacteria which exert an oxygen demand to consume the TKN going dormant during cooler water temperatures.

Fact Sheet Page Section VII.C.8 Page 12 of 15 “Toxicity Testing”, Draft Discharge Permit Condition I.I

Condition I.I. of the Permit proposes to require 2 two species acute Whole Effluent Toxicity Tests to assess whether this discharge causes or has a reasonable potential to contribute to an excursion above water quality criteria. Whole Effluent Toxicity tests are very expensive (>\$2,500 per test). Due to low number of users of this system and the current high sewer use fees assessed to maintain the WWTF and monitor its discharge, the Town must be assured that expenditures associated with the WWTF are fiscally responsible and that these tests are clearly warranted.

The Town notes that this subject was explicitly addressed as part of the appeal of the initial permit issued for this WWTF and its discharge. During these appeal proceedings, the Agency assessed the potential toxicity of this discharge under 40 CFR Part 122.44(d)(1) and the Vermont Toxic Discharge Control Strategy and provided testimony that this discharge did not have a reasonable potential to cause or contribute to an excursion above water quality criteria. The Water Resources Board affirmed the Agency’s testimony and as part of its decision

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concluded that toxicity testing for this discharge was not necessary. This decision is now precedence. See Appeal of Town of Cabot, Docket No. WQ-2000-04 Findings of Fact, Conclusions of Law and Order (Sept 8, 2000).

Therefore, the Town disagrees with these sampling requirements and requests that they be eliminated.

The Town contends that if the Agency is now recanting its testimony and rendering its previous information presented during the appeal moot, the Agency must provide clear and compelling documentation that contradicts and overrides its previous assessment of the discharge, its testimony, and the Decision and that this discharge has a clear and quantifiable reasonable potential to cause or contribute to an excursion above water quality criteria.

The Town further notes that this WWTF was specifically constructed to specifically eliminate a public health hazard due to failed septic systems and illegal direct discharges of human sewage to the river. Therefore the WWTF only receives wastewater from domestic sources and the type of users in the collection system is unchanged from when the Agency made its initial assessment and presented its testimony which noted that the probability of toxics entering the WWTF from these users was very low and the WWTF is designed to remove toxics if any incidental discharges of these material from the households into the WWTF occurs.

In addition, since it began operation the WWTF has always produced an extremely high quality effluent, has never had a treatment process upset, and the sludge removed from the treatment process is very high quality with no evidence of abnormal toxics. Plus, the Agency's studies above and below the outfall shows no measurable instream biological or chemical instream changes due to this discharge. This information directly supports and appears to confirms the original testimony provided by the Agency during the appeal proceedings and Town believes that Agency must now provide detailed and compelling evidence to contradict these findings, previous testimony, and the Decision to warrant requiring this sampling.

Finally, the proposed permit is conditioned to expire on June 30, 2025 and the Town must apply for renewal of the permit by December 31, 2024. However Condition I.I.5 requires that the Town conduct additional toxicity effluent tests after the expiration of the permit (specifically in August, September or October 2025 and January or February 2027) and the results of this testing must be submitted in December 2025 and June 2027 and then Town must conduct additional testing routinely thereafter if the Agency fails to reissue this permit in a timely manner and the permit is administratively extended under 3 VSA Section 814. The Town questions the Agency's authority and ability to mandate that permittees implement specific permit conditions mandating actions by a permittee after a permit has expired and requests that a written statement from the Agency's legal staff be provided detailing the statutory and regulatory authority to implement these types of conditions.

Fact Sheet Page Section VII.C.1 Page 13 of 15 "Metals Analysis", Draft Discharge Permit Condition I.E  
Condition I.E. of the Permit proposes to require the Town to sample the discharge annually beginning in December 2021 for dissolved organic carbon, hardness, aluminum, antimony, arsenic, cadmium, calcium, copper, iron, manganese, lead, nickel, selenium, silver, and zinc to determine if these pollutants cause or contribute to toxicity in the receiving water.

The Town believes that there is sufficient and overwhelming data exists which clearly indicates that these metals are not pollutants of concern and that this discharge does not contain concentrations of these metals

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that could cause or contribute to toxicity in the receiving water and request that this monitoring requirement be removed. Specifically:

1. Excessive metals in WWTF effluent is directly correlated to high metals entering the collection system from industrial processes. This has been confirmed by previous work by the Agency in Northfield, Vergennes, Burlington etc. In Cabot, the collection system only receives wastewater from domestic household sources which have extremely low metals concentrations in their discharges and there are no commercial or industrial users connected to the WWTF which use metals or products such as dyes or chemical etching which could contain metals discharging to the WWTF.
2. The majority of metals entering a WWTF precipitate out of the water column and accumulate in the sludge. The removal rates for most metals from the WWTF treatment process into the sludge range from 75 – 90% depending on the metal and treatment process and excessive metals in sludge is the primary indicator that a WWTF is receiving excessive metals, and therefore potentially discharging, high concentrations of metals. This has also been confirmed by the Agency as noted above. In Cabot, due to the membrane filtration and the phosphorus removal treatment processes, it is highly probable that the metals removal rates into the sludge are very high. A review of the analyses of metals concentrations of the sludge removed from the WWTF indicates that the metals concentration in the sludge is very low, well below the acceptable concentrations mandated by the Vermont Solid Waste Rules. In fact, some metals in the sludge were below the limits of detection at times which clearly indicates that very low concentrations of metals are entering the WWTF. Consequently, it is not physically possible for this discharge to contain high concentrations of metals and cause or contribute to toxicity in the receiving water.
3. In addition to having excessive metals in its sludge, if a WWTF is receiving excessive metals it will often experience treatment process upsets due to the toxicity of the metals adversely impacting the WWTFs biological treatment process (aka Inhibition Criteria). The Agency has had direct experience with this issue at the Bethel WWTF. The Inhibition Criteria for some common metals is very low. For example, research indicates that treatment process inhibition can occur when concentrations of chromium, copper or lead exceed 0.1 mg/l in the wastewater. However, to date the Cabot WWTF has never had an upset.
4. The Reasonable Potential Determination did not address the metals necessary in the discharge to cause or contribute to toxicity in the receiving water nor did it determine if it was probable that these effluent limitations could be exceeded by this discharge. However, based on the instream criteria for these metals specified in the VTWQS, the WQBEL for these metals to cause or contribute to toxicity in the receiving water are extremely high (see Attachment B) and are significantly higher than typical WWTF influent concentrations for these metals. For example, typical zinc WWTF influent concentration is <0.2 mg/l but to cause a violation of the WQBEL for this discharge, the zinc concentration in the WWTF effluent would need to be >5 mg/l (5,000 ug/l). Therefore, it is not physically possible for this discharge to cause or contribute to toxicity in the receiving water.
5. Based on the WQBELs necessary to cause or contribute to toxicity in the receiving water, the concentrations of these metals in WWTF would be so high in the treatment process that the Inhibition Criteria would be greatly exceeded and in all likelihood, the biological treatment process at the WWTF would be dead and the sludge would contain extremely excessively high metals. For example, to cause a violation of the WQBEL for chromium the WWTF effluent chromium concentration would need to exceed 3.5 mg/l, however the Inhibition Criteria for chromium to adversely impact a WWTFs biological treatment process is estimated to be ~0.1 mg/l. To date, as previously stated, the WWTF has never experienced a process upset and the sludge has extremely low concentrations of metals.

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6. Based on instream sampling conducted by the Agency for metals upstream and downstream of this discharge on September 21, 20015, there was no measurable change in the metals detected in the receiving water between these sample locations. Except for Total Iron and Total Manganese, all metals at both sampling locations were below the limits of detection. With respect to iron and manganese, the instream concentrations of these metals in the sample collected downstream of the WWTF discharge were actually lower than the instream sample concentrations collected upstream of the discharge.
7. From a general perspective, instream studies conducted in 2011 by the Agency in waters receiving discharges from 20 WWTFs in Vermont with a much higher potential to have elevated metals in their collection system and discharge and with higher instream waste concentrations much higher than the Cabot WWTF did not detect any instream toxicity or impacts due to metals in these discharges. In fact, except for the common "earth metals" - calcium iron, manganese, and aluminum - all the metals in all samples collected above and below the WWTFs were below the level of detection.
8. Finally, the Town notes that the Agency has been routinely receiving metals analysis of effluent from WWTFs with design flow of 1 MGD or greater as required by 40 CFR 122.21.j. for over a decade. These large WWTFs typically have numerous industrial and commercial users which have a high potential to discharge metals into their collection system and it is the Town's understanding that no exceedances of the instream water quality criteria have ever been detected from these analyses nor have metals been deemed a pollutant of concern and further regulation of metals needed at these WWTFs.

Consequently based on these facts, the Town does not believe that metals are a pollutant of concern at this WWTF nor is there are a reasonable potential for this discharge to contain metals that could cause or contribute to toxicity in the receiving water. In addition, if for some extremely strange unforeseen reason a discharge of excessive metals into the WWTF were to occur there are other environmental indicators that would quickly identify the type of problem before this discharge could cause or contribute to instream toxicity. Plus, this additional proposed sampling will unnecessarily increase the operating costs and user fees at the WWTF. Therefore, the Town requests that this proposed monitoring requirement be eliminated.

Fact Sheet Page Section VII.D.3 Page 13 of 15 "Operation, Management, and Emergency Response Plan (OMERP); Draft Discharge Permit Condition I.F

The information in the Fact Sheet and Condition I.F of the proposed Permit regarding the OMERPs is insufficient and inaccurate and needs to be significantly revised. 10 VSA 1278(b) mandates that municipal WWTFs develop and implement an OMERP for the wastewater treatment facility, pump stations, and stream crossing. 10 VSA 1278(c) mandates that municipal WWTFs develop and implement an OMERP for the collection system.

On March 28, 2008, the Town submitted an OMERP for the wastewater treatment facility, pump stations, and streaming crossing as required by 10 VSA 1278(b). The Agency approved this Plan on August 18, 2008. This information and the Agency approval of this Plan must be specifically referenced in the Fact Sheet and Condition I.F. The Town acknowledge the need to revise this Plan and is planning to submit a revised OMERP for the wastewater treatment facility, pump stations, and stream crossings by December 31, 2021 as proposed in Condition I.F and will implement this updated OMERP upon receiving written approval from the Agency.

With respect to an OMERP Plan for the collection system. On July 1, 2010, the Town submitted an OMERP for the collection system to the Agency as required by 10 VSA 1278(c). To date the Town has not received any review comments on this Plan from the Agency, nor has the Agency issued an approval of this Plan. Consequently, it is not possible for the Town to revise this Plan as mandated in Condition I.F. Therefore, Town

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requests that the Agency complete the review on this Plan and the Town will implement it upon approval by the Agency as required by 10 VSA 1278(c).

Fact Sheet Page Section VII.D.3 Page 13 of 15 "Electrical Power Failure Plan; Draft Discharge Permit Condition I.C

The current permit required the Town to submit an Electrical Power Failure Plan. On January 12, 2005, the Agency approved this Plan and the Agency's approval must be specifically referenced in the Fact Sheet and in Condition I.C. The Town acknowledges the requirement to revise this plan and is planning to submit a revised Electrical Power Failure Plan by October 1, 2020 as proposed in Condition IC.

Other Agency Information

During the public comment period for this Permit, the Town received additional supporting information regarding this Permit from the Watershed Management Division "MAP" Program. This information included the following statement:

*"Impaired reach of Winooski River through Cabot Village has the problem of residential direct discharges and/or failed septic systems and the pollutants E.coli have made it a priority for management where aquatic habitat and/or other designated uses are not supported. The surface water is on the 2018 List of Priority Surfaces Waters, Part D (impaired with approved TMDL)."*

The Town is not aware of any residential direct discharges and failed septic systems remaining within the Village at this time. These types of discharges and failed systems are a public health hazard. The Cabot WWTF was specifically constructed under an order from the Agency to eliminate these types of discharges and protect human health and water quality. The Town request that the Agency provide a detailed explanation of these discharges and the failed systems so they can be eliminated as soon as possible.

ATTACHMENT A

**AMMONIA ANALYSIS & EFFLUENT LIMITATIONS**

**2013 Updated EPA Ammonia Criteria**

*Oncorhynchus present*

Discharger: **Cabot WWTF**  
Receiving Water: **Winooski River**      **Winter Conditions**

Stream Flow CFS 7Q10	<b>4.800</b>	<i>Presumed 2x summer 7Q10</i>
WWTF Effluent Flow MGD (Design)	<b>0.050</b>	
Instream Waste Concentration	<b>0.016</b>	

**Instream Criteria: Acute - pH & Temperature Based**

pH	<b>8.1</b>
Temperature	<b>0-14</b>
CMC - Instream Criteria (mg/l)	<b>4.6 mg/l</b>

**Instream Criteria: Chronic - pH & Temperature Based**

pH	<b>8.1</b>
Temperature	<b>0-7</b>
CCC - Instream criteria (mg/l)	<b>1.5 mg/l</b>

**Effluent Ammonia Concentration (mg/l) necessary to meet Instream Criteria at Permitted flow**

<u>Max Day</u>	<u>Monthly Avg</u>	
<b><u>289.87</u></b>	<b><u>94.52</u></b>	mg/l

**\* Effluent Ammonia Mass Limitation (lbs/day) to meet Instream Criteria**

Max Day	Monthly Avg	
<b><u>120.88</u></b>	<b><u>39.42</u></b>	lbs/day



**ATTACHMENT B**

**Water Quality Metals Criteria Calculation for Protection of Aquatic Biota**

**Discharge:** *Cabot*  
**Receiving Water:** *Winooski*

**Instream Hardness** *143.0*

**Instream, Calculated, and Derived Instream Water Quality Criteria ug/l -TOTAL METALS**

	<b>Acute</b>	<b>Chronic</b>
Arsenic	340.00	150.00
Cadmium	2.70	1.05
Chromium (III)	2416.73	115.51
Chromium (VI)	15.71	10.58
Copper	24.93	12.66
Iron		1000.00
Lead	128.73	5.02
Nickel	634.96	70.60
Selenium		5.00
Silver	7.00	<i>na</i>
Zinc	162.23	162.23

**Stream Flow CFS 7Q10** *2.40*

**Effluent Flow MGD** (Design) *0.050*

**Instream Waste Concentration** *0.031*

**Water Quality Based Effluent Limitations (WQBELS)**

**Permitted Effluent Discharge Concentration (ug/l)  
 at Permitted Flow from WWTF**

	<b>Acute</b>	<b>Chronic</b>
Arsenic	10882.72	4801.20
Cadmium	86.32	33.64
Chromium III	77354.62	3697.29
Chromium VI	502.91	338.71
Copper	797.90	405.34
Iron	<i>na</i>	32008.00
Lead	4120.32	160.56
Nickel	20323.89	2259.62
Selenium		160.04
Silver	224.10	<i>na</i>
Zinc	5192.67	5192.67

Total Phosphorus WR-43-TPO4-LC

Agency of Natural Resources	Permittee:
Department of Environmental Conservation	NPDES Permit No.
Watershed Management Division	Preparer/Contact:
One National Life Drive, Main Building, 2nd Floor	Telephone:
Montpelier, VT 05620-3522	Email:
	Month/Year:

Total Phosphorus Waste Load Allocation from Lake Champlain Phosphorus TMDL:	metric tons/year lbs/year	Select your facility in the pulldown list next to Permittee above.
Monthly Average TP concentration	mg/L	Enter this value from WR-43.
Monthly Average Daily Flow Rate	MGD	Enter this value from WR-43.
Number of days with discharge	days	Enter the number of days with discharge.
Average TP Concentration * Average Flow Rate * Days of Discharge * 8.34	0.00 lbs	Pounds of Phosphorus discharged this month.
12 Month Running Total Pounds of Phosphorus	lbs/year	Enter the 12 Month Running Total Pounds of Phosphorus.
12 Month Running Total / Waste Load Allocation * 100	%	Percentage of Annual Phosphorus Load from TMDL

This form should be submitted monthly by facilities that have a Total Phosphorus Waste Load Allocation under the Lake Champlain Phosphorus TMDL. If you have a permit issued before 2017 DO NOT USE this form.

Notes: