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

Permit No.: 3-1185
PIN: NS97-0316
NPDES No.: VT0100978

Name of Applicant: Town of Hartford
173 Airport Road
White River Junction, VT 05001

Expiration Date: **September 30, 2024**

DISCHARGE PERMIT

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 Hartford, Vermont (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 Hartford-Quechee Wastewater Treatment Facility (hereinafter referred to as the "WWTF") to the Ottauquechee River in accordance with the following conditions.

This permit shall become effective on **December 1, 2019**.

Emily Boedecker, Commissioner
Department of Environmental Conservation

By: _____ Date: 11/26/19

Chris Gianfagna, Wastewater Program Manager
Watershed Management Division

I. SPECIAL CONDITIONS

A. EFFLUENT LIMITS

1. During the term of this permit, the Permittee is authorized to discharge from outfall S/N 001(Latitude: 43.64544, Longitude -72.41569) of the Hartford-Quechee Wastewater Treatment Facility (WWTF) to the Ottauquechee River, an effluent for which the characteristics shall not exceed the values listed below:

EFFLUENT CHARACTERISTICS	Annual Average	Monthly Average	Weekly Average	Monthly Average	Weekly Average	Maximum Day	Instantaneous Maximum
		Mass (**lbs/day**)		Concentration (**mg/L**)			
Flow[1]	0.475 MGD	Monitor Only					
Biochemical Oxygen Demand (5-day, 20° C) (BOD_5)[2]							
June 1 through September 30:		25	37.5	10	15	20	
October 1 through May 31:		75	113	30	45	50	
Total Suspended Solids (TSS)[2]							
June 1 through September 30:		25	37.5	10	15	20	
October 1 through May 31:		75	113	30	45	50	
Total Phosphorus (TP)[2]		2.5		1.0			
Total Nitrogen (TN)[3]	See Condition I.B.	Monitor Only				Monitor only	
Total Kjeldahl Nitrogen (TKN)						Monitor only	
Nitrate/Nitrite Nitrogen (NO_x)						Monitor only	
Settleable Solids							1 ml/L
Escherichia coli							77cfu/100mL
pH						Between 6.5-8.5 Standard Units	

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

[2] The Permittee shall operate the facility to meet the concentration limitations or pounds limitation, whichever is more restrictive.

[3]Total nitrogen (TN) shall be reported as pounds using the Nitrogen Form WR-43-TN and calculated as: *Average TN (mg/L) x Total Daily Flow x 8.34*; where, *TN (mg/L) = TKN (mg/L) + NO_x (mg/L).*

2. The effluent shall not have concentrations or combinations of contaminants including oil, grease, scum, foam, or floating solids which would cause a violation of the Vermont Water Quality Standards.

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

4. The monthly average concentrations of Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS) in the effluent shall not exceed 15 percent of the monthly average concentrations of BOD_5 and TSS in the influent into the Permittee's WWTF. For the purposes of determining whether the Permittee is in compliance with this condition, samples from the effluent and the influent shall be taken with appropriate allowance for detention times.

5. 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 consistent with approved water quality management plans.

6. 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. TOTAL NITROGEN

1. Optimization Plan

The Permittee shall continue to implement the Nitrogen Optimization Plan approved by the Secretary on January 2, 2018. The Permittee shall implement these recommended operational changes to maintain a mass discharge of total nitrogen (TN) lower than the existing mass loading of TN. The baseline annual average daily TN load discharge from this facility is estimated to be approximately **22.5 lbs/day**.

2. Reporting

Annually, the Permittee shall submit a report to the Secretary as an attachment to the **December** Discharge Monitoring Report (DMR) form WR-43 that documents the annual average TN discharged (in pounds per day) from the facility, summarizes nitrogen removal optimization and efficiencies, and tracks trends relative to the previous year.

TN (mg/L) = Total Kjeldahl Nitrogen (TKN) (mg/L) + Nitrite/Nitrate (NO_x) (mg/L).

TN pounds per day, annual average, shall be calculated as follows:

1. Calculate the pounds of TN discharged on each sample date:

TN (lbs/day) = TN (mg/L) × volume discharged (million gallons) on day of sample × 8.34

2. Calculate the TN, pounds per day, annual average:

TN (lbs/day, annual average = (Sum of all TN [lbs/day])/(count of TN samples)

3. Wasteload Allocation

This permit does not establish a formal Wasteload Allocation for the facility, nor does it convey any right to ownership of the facility's estimated baseline annual average TN load.

The Secretary reserves the right to reopen and amend this permit, pursuant to Condition II.B.4. of this permit, to include an alternate TN limitation and/or additional monitoring requirements based on the monitoring data, the results of nitrogen optimization activities, or a formal Wasteload Allocation promulgated under Vermont's Wasteload Allocation Rule for Total Nitrogen in the Connecticut River Watershed based on the Long Island Sound Total Nitrogen Total Maximum Daily Load.

C. 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 Hartford-Quechee Wastewater Treatment Facility in the Ottauquechee River downstream 1 mile.

D. REAPPLICATION

If the Permittee desires to continue to discharge after the expiration of this permit, the Permittee shall reapply on the application forms then in use at least 180 days before this permit expires.

Reapply for a Discharge Permit by: **March 31, 2024**

E. OPERATING FEES

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

F. TOXICITY TESTING

1. WHOLE EFFLUENT TOXICITY (WET) TESTING

a) During **August or September 2020**, the Permittee shall conduct a two-species (*Pimephales promelas* and *Ceriodaphnia dubia*) modified acute/chronic WET tests (48-hour acute endpoints within a 7-day chronic test) on a composite effluent sample collected from S/N 001. Total Ammonia should be measured in the highest concentration of test solution at the beginning of the test. The results shall be submitted to the Secretary by **December 31, 2020**.

b) During **January or February 2022**, the Permittee shall conduct a two-species (*Pimephales promelas* and *Ceriodaphnia dubia*) modified acute/chronic WET tests (48-hour acute endpoints within a 7-day chronic test) on a composite effluent sample collected from S/N 001. Total Ammonia should be measured in the highest concentration of test solution at the beginning of the test. The results shall be submitted to the Secretary by **June 30, 2022.**

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).

2. The Permittee shall conduct a toxic pollutant scan on the same effluent sample as the winter 2022 WET test. The results shall be submitted by June 30, 2022. Toxic pollutants are listed in Appendix J, Table 2 of 40 CFR Part 122 (see Attachment A).

Based upon the results of these tests or any other toxicity tests conducted, the Secretary reserves the right to reopen and amend this permit, pursuant to Condition II.B.4. of this permit, to require additional WET testing or a Toxicity Reduction Evaluation.

G. MONITORING AND REPORTING

1. Sampling and Analysis

The sampling, preservation, handling, and analytical methods used shall conform to the test procedures published in Title 40 of the Code of Federal Regulations (C.F.R.) Part 136. The Permittee shall use sufficiently sensitive test procedures (i.e., methods) approved under 40 C.F.R. Part 136 for the analysis of the pollutants or pollutant parameters required under this Section.

Samples shall be representative of the volume and quality of effluent discharged over the sampling and reporting period. All samples are to be taken during normal operating hours. The Permittee shall identify the effluent sampling location used for each discharge. A description of the effluent sample location is included in Condition I.G.2.

2. Effluent Monitoring

During the term of this permit, the Permittee shall monitor and record the quality and quantity of discharge(s) at outfall serial number S/N 001 of the Hartford-Quechee WWTF, according to the following schedule and other provisions:

PARAMETER	MINIMUM FREQUENCY OF ANALYSIS	SAMPLE TYPE
Flow	Continuous	Daily Total, Max., Min.
Biochemical Oxygen Demand (BOD_5) June 1 – September 30	2 × month	24-hour composite[1]
Biochemical Oxygen Demand (BOD_5) October 1- May 31	1 × month	24-hour composite[1]
Total Suspended Solids (TSS) June 1 – September 30	2 × month	24-hour composite[1]
Total Suspended Solids (TSS) October 1- May 31	1 × month	24-hour composite[1]
Total Phosphorus (TP) June 1 – September 30	2 × month	24-hour composite[1]
Total Phosphorus (TP) October 1- May 31	1 × month	24-hour composite[1]
Total Nitrogen (TN)	1 × month	[calculated[2,3]]
Total Kjeldahl Nitrogen (TKN)	1 × month	24-hour composite[1,3]
Nitrate/Nitrite Nitrogen (NO_x)	1 × month	24-hour composite[1,3]
Settleable Solids	1 × day	grab[4,5]
Escherichia coli	2 × month	grab[5]
pH	1 × day	grab[5]
Temperature	1 x year	grab[5,6]
Dissolved Oxygen	1 x year	grab[5,6]
Total Ammonia	1 x year	grab[5,6]
Oil & Grease	1 x year	grab[5,6]
Total Dissolved Solids (TDS)	1 x year	composite[1,6]

Samples collected in compliance with the monitoring requirements specified above shall be collected at the point the treated wastewater leaves the UV channel.

[1] 24-hour **Flow-proportioned** composite samples are required for BOD_5, TSS, TP, TKN, TDS, and NO_x
[2] TN = TKN + NO_x
[3] Submit results each month on Total Nitrogen Monitoring Report Form WR-43-TN.
[4] Settleable Solids samples shall be collected between 10:00 AM and 2:00 PM or during the period of peak flow.
[5] Grab samples shall be collected in an alternating manner to be representative of each SBR cell discharge (for example, on Monday, the sample shall be collected as Cell #1 discharges; on Tuesday, the sample shall be collected as Cell #2 discharges; etc.).
[6] Annual Constituent monitoring see Condition I.G.3.

3. Annual Constituent Monitoring

Annually, by December 31, the Permittee shall monitor S/N 001 and submit the results, including units of measurement, as an attachment to the DMR form WR-43 for the month in which the samples were taken for the following parameters:

Temperature
Ammonia (as N)
Dissolved Oxygen
Oil & Grease
Total Dissolved Solids

Grab samples shall be used for Temperature, Ammonia, Dissolved Oxygen, and Oil & Grease; all other parameters shall be composite samples. Samples shall be representative of the seasonal variation in the discharge.

Collect annual constituent monitoring samples once per year. The season in which samples are collected shall change chronologically from year to year to represent the seasonal variation of effluent constituents. The sampling seasons are as follows: winter (January 1 – March 31), spring (April 1 – June 30), summer (July 1 – September 30), and fall (October 1 – December 31). The first samples under this permit should be taken in **2020** during the **winter** season. For easy reference regarding the season in which sampling is recommended, please refer to the "Guidance for Annual Constituent Monitoring."

4. Influent Monitoring

During the term of this permit, the Permittee shall monitor the quality of the influent according to the following schedule and provisions:

PARAMETER	MINIMUM FREQUENCY OF ANALYSIS	SAMPLE TYPE
Biochemical Oxygen Demand (BOD_5)	1 × month	24-hour composite[1]
Total Suspended Solids (TSS)	1 × month	24-hour composite[1]
Total Nitrogen (TN)	1 × quarter	[calculated[2,3]]
Total Kjeldahl Nitrogen (TKN)	1 × quarter	24-hour composite[1,3,4]
Nitrate/Nitrite Nitrogen (NO_x)	1 × quarter	24-hour composite[1,3,4]

Samples collected in compliance with the monitoring requirements specified above shall be collected in the headworks prior to the fine screen and grit removal.

[1] 24-hour **Flow-proportioned** composite samples are required for BOD_5, TSS, TKN, and NO_x
[2] TN = TKN + NO_x
[3] Submit results each quarter on Total Nitrogen Monitoring Report Form WR-43-TN.
[4] The influent TKN and NO_x samples shall be collected on the same day as the effluent TKN and NO_x samples.

5. Reporting

The Permittee is required to submit monthly reports of monitoring results as required in Condition I.G. and operational parameters on Discharge Monitoring Report (DMR) form WR-43 and WR-43-TN 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.

Unless waived by the Secretary, the Permittee shall electronically submit its DMRs via Vermont's on-line 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 link below shall be used for electronic submittals:

https://anronline.vermont.gov/

If, in any reporting period, there has been no discharge, the Permittee must submit that information by the report due date.

All reports shall be signed:

a. In the case of corporations, by a principal executive officer of at least the level of vice president, or his/her duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge described in the permit form originates and the authorization is made in writing and submitted to the Secretary;

b. In the case of a partnership, by a general partner;

c. In the case of a sole proprietorship, by the proprietor; or

d. In the case of a municipal, State, or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

6. Recording of Results

The Permittee shall maintain records of all information resulting from any monitoring activities required, including:

a) The exact place, date, and time of sampling or measurement;

b) The individual(s) who performed the sampling or measurements;

c) The dates and times the analyses were performed;

d) The individual(s) who performed the analyses;

e) The analytical techniques and methods used, including sample collection handling and preservation techniques;

f) The results of such analyses;

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

h) 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

i) 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.

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

7. 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.

H. 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 Condition II.A.2. of this permit.

I. OPERATION, MANAGEMENT, AND EMERGENCY RESPONSE PLANS

1. The Permittee shall implement the Operation, Management, and Emergency Response Plan for the treatment facility, sewage pumping stations, and sewer line stream crossings as approved by the Secretary on February 1, 2010.

2. The Permittee shall implement the Operation, Management, and Emergency Response Plan for the sewage collection system as approved by the Secretary on September 24, 2010.

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

J. EMERGENCY ACTION - ELECTRIC POWER FAILURE

The Permittee shall indicate in writing to the Secretary **within 90 days after the effective date of this permit** 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.

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

K. SEWER ORDINANCE

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

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

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

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

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

d) 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

e) 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.

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

a) 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;

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

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

3. 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.

4. 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 under subsection 3 above, and to sample any discharge into the Permittee's treatment works.

II. GENERAL CONDITIONS

A. MANAGEMENT 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 notice to the Secretary of such changes. Following such notice, the permit may be modified, pursuant to Condition II.B.4. of this permit, to specify and limit any pollutants not previously limited.

In addition, the Permittee, within 30 days of the of the date on which the Permittee is notified of such discharge, shall provide notice to the Secretary of the following:

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

b) 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 Section 301 of the Clean Water Act if such source were discharging pollutants; and

c) 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.

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.

2. 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.

i. Public notice. For "untreated discharges" an operator of a 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 a 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:

(1) 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.

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

(3) 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.

(4) Except for discharges from a 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.

(5) 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.

(6) The person reporting the untreated discharge.

d) For any non-compliance not covered under Condition II.A.2.c. of this permit, an operator of a 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:

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.

3. 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, maintain in good working order and operate as efficiently as possible all treatment and control facilities and systems (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 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 this facility shall be performed only by qualified personnel who are licensed as required by the Secretary and the Director of the Vermont Office of Professional Regulation.

4. Quality Control

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.

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

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 ± 10%.

For purposes of demonstrating compliance with the requirements of Condition II.A.3.a. 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. Results shall be submitted to the Secretary by **December 31, annually**. The first proficiency test results are due by **December 31, 2020.**

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. 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.

6. Duty to Mitigate

The Permittee shall 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.

7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed, all calibration and maintenance of instrumentation records and all original 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 shall be retained for a minimum of three years, and shall be submitted to the Secretary upon request. This period shall be extended during the course of unresolved litigation regarding the discharge of pollutants or when requested by the Secretary.

8. Solids Management

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 issuance date of this permit or is issued during the term of this permit.

9. Emergency Pollution Permits

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.A.2.

10 V.S.A. § Section 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, he 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:

(1) 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;

(2) the denial of an emergency pollution permit would work an extreme hardship upon the applicant;

(3) the granting of an emergency pollution permit will result in some public benefit;

(4) the discharge will not be unreasonably harmful to the quality of the receiving waters;

(5) the cause or reason for the emergency is not due to willful or intended acts or omissions of the applicant.

Application shall be made to the Secretary at the following address: Agency of Natural Resources, Department of Environmental Conservation, One National Life Drive, Main Building, 2nd Floor, Montpelier VT 05620-3522.

B. RESPONSIBILITIES

1. Right of Entry

The Permittee shall allow the Secretary or authorized representative, upon the presentation of proper credentials:

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.

2. 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.

3. 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 this chapter.

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.

4. 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 LIS 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.

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.

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.

5. 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 section 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.B.4. of this permit, in accordance with the toxic effluent standard or prohibition and the Permittee so notified.

6. 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.

7. Other Materials

Other materials ordinarily produced or used in the operation of the WWTF, 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,

iii. 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 his/her 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.

8. 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.

9. Civil and Criminal Liability

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.A.5.) and “Emergency Pollution Permits” (Condition II.A.9.), nothing in this permit shall be construed to relieve the Permittee from civil or criminal penalties for noncompliance. Civil and criminal penalties for non-compliance are provided for in 10 V.S.A. Chapters 47, 201, and 211.

10. 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.

11. 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.

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. 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.

14. 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, and Section 402 of the Clean Water Act, as amended.

15. 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 – for the purposes of this permit means a sample consisting of a minimum of four aliquots for non-stormwater discharges lasting four or more hours 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 Section 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

Hardness (of receiving water, upstream of outfall)

Metals (total recoverable), cyanide and total phenols:
Antimony
Arsenic
Beryllium
Cadmium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc
Cyanide
Total phenolic compounds

Volatile organic compounds:
acrolein
acrylonitrile
benzene
bromoform
carbon tetrachloride
chlorobenzene
chlorodibromomethane
chloroethane
2-chloroethylvinyl ether
chloroform
dichlorobromomethane
1,1-dichloroethane
1,2-dichloroethane
Trans-1,2-dichloroethylene
1,1-dichloroethylene
1,2-dichloropropane
1,3-dichloropropylene
ethylbenzene
methyl bromide
methyl chloride
methylene chloride
1,1,2,2-tetrachloroethane
tetrachloroethylene
toluene
1,1,1-trichloroethane
1,1,2-trichloroethane
trichloroethylene
vinyl chloride

Acid-extractable compounds:
p-chloro-m-cresol
2-chlorophenol2,4-dichlorophenol
2,4-dimethylphenol
4,6-dinitro-o-cresol
2,4-dinitrophenol
2-nitrophenol
4-nitrophenol
pentachlorophenol
phenol
2,4,6-trichlorophenol

Base-neutral compounds:
acenaphthene
acenaphthylene
anthracene
benzidine
benzo(a)anthracene
benzo(a)pyrene
3,4-benzofluoranthene
benzo(ghi)perylene
benzo(k)fluoranthene
bis(2-chloroethoxy)methane
bis(2-chloroethyl)ether
bis(2-chloroisopropyl)ether
bis(2-ethylhexyl)phthalate
4-bromophenyl phenyl ether
butyl benzyl phthalate
2-chloronaphthalene
4-chlorophenyl phenyl ether
chrysene
di-n-butyl phthalate
di-n-octyl phthalate
dibenzo(a,h)anthracene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
3,3'-dichlorobenzidine
diethyl phthalate
dimethyl phthalate
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
flurоranthene
fluorene
hexachlorobenzene
hexachlorobutadiene
hexachlorocyclo-pentadiene
hexachloroethane
indeno(1,2,3-cd)pyrene
isophorone
naphthalene nitrobenzene
N-nitrosodi-n-propylamine
N-nitrosodimethylamine
N-nitrosodiphenylamine
phenanthrene
pyrene
1,2,4-trichlorobenzene

[65 FR 42469, August 4, 1999]

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

FACT SHEET FOR DRAFT PERMIT
(September 2019)
Revised November 2019

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

PERMIT NO: 3-1185
PIN: NS97-0316
NPDES NO: VT0100978

NAME AND ADDRESS OF APPLICANT:

Town of Hartford
173 Airport Road
White River Junction, VT 05001

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Hartford-Quechee Wastewater Treatment Facility
142 Izzo Place
Quechee, Vermont

RECEIVING WATER: Ottauquechee 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 (Secretary) received a renewal application for the permit to discharge into the designated receiving water from the above-named applicant on **October 1, 2018**. The facility's previous permit was issued on **April 17, 2014**. The previous permit (hereafter 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 (VWPCPR) § 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.

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

II. Description of Discharge

The facility is engaged in the treatment of municipal wastewater including domestic commercial, and industrial wastewaters. There are no pretreaters permitted under the NPDES program discharging to the collection system. The wastewater treatment facility is a sequencing batch reactor (SBR). The design flow of the facility is 0.475 million gallons per day (MGD) and design BOD loading is 209 mg/l (380 lbs/day). The average flow from the facility over the last 5 years is about 0.22 MGD.

The WWTF discharges *in batches* to the Ottauquechee River.

III. Limitations and Conditions

The draft permit contains limitations for effluent flow, biochemical oxygen demand, total suspended solids, total phosphorus, settleable solids, Escherichia coli, and pH. It also contains monitoring requirements for total nitrogen, Total Kjeldahl Nitrogen, and nitrate/nitrite. 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 23
Monitoring Requirements:	Pages 4-8 of 23

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 in stream 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.

6) All effluent limitations, monitoring requirements, and other conditions of the proposed 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 Ottauquechee River, a designated Cold Water Fish Habitat. At the point of discharge, the river has a contributing drainage area of 207 square miles. The summer 7Q10 flow of the river is estimated to be 28.86 cubic feet per second (CFS) and the summer Low Median Monthly flow is estimated to be 82.8 CFS. The instream waste concentration at the summer 7Q10 flow is 0.025 (2.5%) and the instream waste concentration at the summer Low Median Monthly flow is 0.009 (0.9%).

VI. Facility History and Background

The Town of Hartford owns and operates the Hartford-Quechee WWTF. The facility serves the Village of Quechee and the Quechee Lakes community bordered by the White River to the north, Pomfret to the west, Hartland to the south, and White River Junction to the east. The forty miles of collection system includes ten lift stations which connect to the Main Pump Station. Most of the system is comprised of asbestos cement pipe; newer sections are PVC. *Due to the cyclic nature of the pump station prior to the facility and the SBR, the facility receives influent and discharges effluent in batches. This results in periods of the day when no flow is coming into the facility as well as times when the facility is not discharging.*

The Ottauquechee River downstream of the discharge is water quality limited for dissolved oxygen during the summer months due to the impoundment created by the Dewey's Mills Dam. As a result, a tertiary treatment facility was constructed in the early 1970's to meet tertiary permit limitations for Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), and Total Phosphorus (TP) during the 'summertime' period. That facility consisted of a facultative lagoon system, clarifier, polishing filter, and chlorine disinfection. An upgraded and expanded facility - completed in 2010 - consists of sequential batch reactors (SBR) for secondary treatment, filtration, and an ultraviolet light disinfection system. The upgrade to UV disinfection eliminated the chlorine disinfection system; as a result, the Total Residual Chlorine limit and monitoring requirement was removed from the permit currently in effect.

VII. Permit Basis and Explanation of Effluent Limitation Derivation

A. Flow – The draft permit maintains the annual average flow limitation of 0.475 MGD. This facility maintains a constant discharge, *though the discharge occurs in approximately 10 batches in a 24-hour period*. Continuous flow monitoring is required.

B. Conventional Pollutants

1. Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)– The 'summertime' (June through September) effluent concentration limits for BOD_5 and TSS are 10 mg/L (monthly average) and 15 mg/L (weekly average). These limitations are based on the original tertiary treatment facility that was constructed to address the water quality limitation of dissolved oxygen in the summer months and remain unchanged. The 'wintertime' (October through May) BOD_5 and TSS effluent concentration limits of 30 mg/L (monthly average) and 45 mg/L (weekly average) reflect the minimum level of effluent quality specified for secondary treatment in 40 CFR Part 133.102. In addition, the draft permit contains a 20 mg/L maximum day 'summertime' BOD_5 and TSS limitation and a 50 mg/L maximum day 'wintertime' BOD_5 and TSS limitation. The ‘wintertime’ limit is the Agency standard 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. These maximum day limitations are unchanged from the previous permit.

The 'summertime' BOD_5 and TSS mass limitations are 25 lbs/day (monthly average) and 37.5 lbs/day (weekly average). The 'wintertime' BOD5 and TSS mass limitations are 75 lbs/day (monthly average) and 113 lbs/day. These limits are calculated using the concentration limits outlined above, and the permitted flow *prior* to the facility upgrade and expansion in 2010 (0.30 MGD). The permitted mass limits are being held to prevent degradation of the receiving water body that may occur based on a larger volume of permitted flow from this facility.

The 'summertime' sampling frequency for BOD_5 and TSS is twice per month; sampling frequency for the 'wintertime' is once per month. These frequencies are unchanged from the previous permit.

2. ***Escherichia coli*** – The *E. coli* limitation is 77 CFU/100 ml, 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.

3. **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)

Because of potential dissolved oxygen water quality violations in the Dewey's Mills impoundment, a tertiary treatment facility was constructed (1970s) to meet permit limitations of 1.0 mg TP/L (monthly average) and 2.5 lbs TP/day (monthly average). The upgraded facility is also a tertiary facility (secondary treatment followed by filtration). These limits are unchanged from the previous permit. Monitoring remains twice monthly June through September and monthly October through May.

2. Total Nitrogen (TN)

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 for Nitrate/Nitrite (NOx) and Total Kjeldahl Nitrogen (TKN) has been included in this permit. TN is a calculated value based on the sum of NOx and TKN, and, shall be reported as pounds, calculated as:

Average TN (mg/L) x Total Daily Flow x 8.34

where, TN (mg/L) = TKN (mg/L) + NO_x (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.

Total Nitrogen monitoring remains at a monthly frequency for this facility.

For more information, see:
https://www.epa.gov/sites/production/files/documents/nandpfactsheet.pdf.

3. **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.

4. **Toxicity Testing** – 40 CFR 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 Section I.F 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.

   As in the previous permit, analysis of the pollutants listed in Table 2 of Appendix J, 40 CFR Part 122 (Error! Reference source not found. to permit) is required concurrently with the 2022 WET test. These results shall be submitted to the Agency with the 2022 WET test results.

5. **Annual Monitoring -** For all facilities with a design flow of greater than 0.1 MGD, 40 CFR § 122.21(j) requires the submittal of effluent monitoring dat cda for those parameters identified in Section I.G.3 of the draft permit. Samples must be collected once annually such that by the

end of the term of the permit, all quarters have been sampled at least once, and the results will be submitted by December 31 of each year. Sampling in 2020 should be completed in **winter (January 1 – March 31).** For subsequent sampling, the "Guidance for Annual Constituent Monitoring" document should be referred to determine the season in which samples should be taken each year.

D. Special Conditions

1. **Waste Management Zone (WMZ)** – As defined under 10 V.S.A. §1251(16), a WMZ is "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 due to the authorized discharge".

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

2. **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.

3. **Operation, Management, and Emergency Response Plans** – As required by the revisions to 10 V.S.A. Section 1278, promulgated in the 2006 legislative session, Section I.I has been included in the draft permit. This condition requires that the Permittee implement the Operation, Management, and Emergency Response Plans for the WWTF, sewage pump/ejector stations, and stream crossings as approved by the Agency on February 1, 2008; and for the collection system as approved by the Agency on September 24, 2010.

4. **Electric Power Failure Plan** – 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.A.2 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.

A. 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 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.

As such, other than the effluent limitation for phosphorus, the development of WQBELs will not be necessary.

VIII. Procedures for Formulation of Final Determinations

The public comment period for receiving comments on this draft permit was from September 19, 2019 and ending on October 21, 2019.

*The Town of Hartford submitted comments and the permit and fact sheet were amended to respond to these comments per the attached Responsiveness Summary (*ATTACHMENT B).

ATTACHMENT B

RESPONSIVENESS SUMMARY
for
NPDES Discharge Permit #3-1185
Town of Hartford - Quechee Wastewater Treatment Facility

The above referenced permit was placed on public notice for comment from a period of September 19, 2019 through October 21, 2019. This is a renewal permit.

Comments on the draft permit were received during the public notice period. The following is a summary of the comments and the Agency's responses to those comments. Similar comments were grouped together. A copy of any or all comments received can be obtained by contacting the Agency's Watershed Management Division at (802) 828-1535.

Comments regarding the composite sampling at Quechee. From Jeff Lord, Operator at Quechee WWTF.

COMMENT
The influent and effluent at the treatment plant are not a constant flow. The fact sheet states "The WWTF maintains a constant discharge to the Ottauquechee River". Should this be changed? We actually decant effluent in "batches" to the river about 10 times in a 24 hour period.

Influent to the plant is not constant. We get cycles from the main pump station. We have been following the old permit requirement of one grab sample per hour for influent and effluent, but that is not really "representative of the volume and quality of effluent discharged"

The point I am trying to make is that if the sampler is idle in our discharge channel, it will take the hourly sample of whatever the last flow was, since nothing has been added since the last decant cycle. At the influent sampling location, the sample tube will be sitting in the bottom of an almost empty channel and will pull a sample from the wastewater that has been sitting there for the past hour (or more).

When we look at the sample history, we can tell when there is no flow when the are samples taken every hour on the hour.

Because of this condition, my recommendation would be to eliminate every hour mandate, and take samples based entirely on flow (strictly proportional) for a 24 hour period. This would be the most representative of our flow. Influent and effluent.

RESPONSE
The Permit and Fact Sheet were edited to address this concern. The following changes were made to the permit:

- Influent and Effluent monitoring tables and the footnotes to them that refer to composite sampling were edited to require 24-hour flow-proportioned sampling.
- The definition of composite sampling was updated to read:

> **Composite Sample** - means a sample consisting of a minimum of four aliquots for non-stormwater discharges lasting four or more hours and combined proportionally to flow over that same time period.

This reflects the specifications in 40 C.F.R. 122.21(g)(7)(i). The 24-hour flow-proportioned sample requirement and the definition of composite sample requiring a minimum of four aliquots should provide adequate upper and lower bounds on composite sampling to assure compliance with permit limits and accurate characterization of the influent and discharge.

Changes made to the fact sheet to more accurately describe the facility's discharge and incorporate this comment are in *italics* in the revised fact sheet.

COMMENT

We also have the problem with our effluent sampling tube freezing during extremely cold weather. We currently sample in the old chlorine contact channel, approximately 1m back from the V-notch weir. There are no further processes in the wastewater after it leaves the UV disinfectant channel in the heated UV building. During the winter months (or year round), could we take our samples at the point the treated wastewater leaves the UV channel? If our effluent sampler tube freezes up at 2:00 am, we don't really get a complete (representative) composite sample. The other option is to find a way to heat the suction tubing, but that has it's own challenges.

RESPONSE

The effluent sampling point specified as a footnote to the effluent monitoring table has been updated to read "*Samples collected in compliance with the monitoring requirements specified above shall be collected at the point the treated wastewater leaves the UV channel."* This addresses the freezing concerns. It should be noted this will also be the compliance point for effluent grab samples.

COMMENT

And on a final note.....I can't find Condition I.G.2, which is the description of the effluent sample location, in the draft permit. What page is that on? Could just be me.
Thanks for your consideration.

RESPONSE

This is on Page 6; it is the footnote to the effluent monitoring table.

Agency of Natural Resources
Department of Environmental Conservation

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

MEMORANDUM

To: Amy Polaczyk, Wastewater Program (WWP)

From: Rick Levey, Monitoring, Assessment and Planning Program (MAPP) Rick Levey 07/12/2019

Cc: Pete LaFlamme, Director, WSMD
Chris Gianfagna, Manager, WWP
Ethan Swift, Manager, MAPP

Date: July 12, 2019

Subject: MAPP Reasonable Potential Determination for the Hartford-Quechee Wastewater Treatment Facility (WWTF).

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

Facility:
Hartford-Quechee WWTF
Permit No. 3-1185
NPDES No. VT0100978

Hydrology for the Hartford-Quechee WWTF used in this evaluation:
Design Flow: 0.475 MGD = 0.736 CFS
7Q10 = 28.86 CFS
LMM = 82.8 CFS
IWC-7Q10 = 0.025 (IWC > 1%)
IWC-LMM= 0.009 (IWC <1%)

Receiving Water:
Ottauquechee River, Quechee, VT
Outfall Location: Lat. 43.64552 Long. -72.41573

The Ottauquechee River downstream of the Hartford-Quechee WWTF discharge is a Class B2 water and designated as a Cold Water Fish Habitat (see Appendix A, Vermont Water Quality Standards). At the point of discharge, the river has a contributing drainage area of 207 square miles. A one mile Waste Management Zone has been established in the river below the WWTF outfall pursuant to 10

V.S.A., Section 1252. The Woodstock/Taftsville WWTF is approximately 5 miles upstream, and the Town of Woodstock WWTF an additional 3 miles upstream.

General Assessment – VTDEC Assessment Database:
MAPP maintains the VTDEC assessment database, an EPA-required database which describes the conditions of Vermont's surface waters with respect to their attainment of VWQS. For the Ottauquechee River segment to which this facility discharges, the database indicates the receiving water is stressed. While stressed waters are in compliance with VWQS, stressors are present that impede the water from attaining the highest water quality. The Ottauquechee River, from Kedron Brook downstream to North Hartland Reservoir has the problems of nutrients, organic enrichment, temperature, sediment, and E. coli. These pollutants affect aquatic life support, primary and secondary contact recreation, and aesthetics. Potential sources include but are not limited to golf course, road, and developed land runoff; septic systems; and fertilized turf.

Ambient Chemistry Data for the Ottauquechee River below the Hartford-Quechee WWTF:
There is ambient chemistry data available from VTDEC sampling that occurred in 2010 and 2014 above and below the facility. The above site is located at River Mile (RM) 5.9, the below site is at RM 5.7. 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) 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 3.

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 5.9 & 5.7) effectively brackets the WWTF outfall (Figure 1). The downstream sampling location is the most sensitive location.

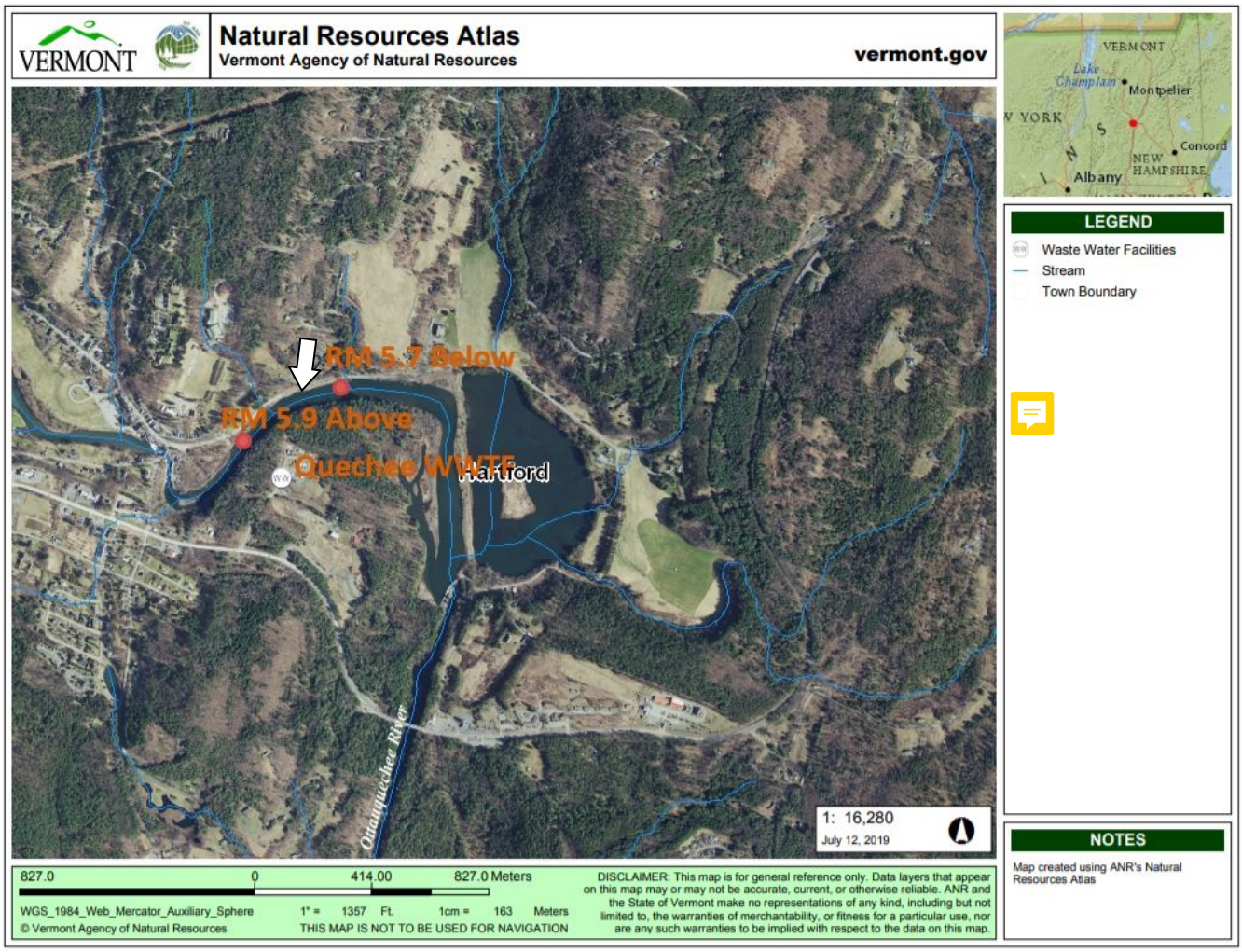

Figure 1. Ottauquechee River near the Hartford-Quechee WWTF, showing upstream (RM 5.9) and downstream (RM 5.7). Outfall location shown by arrow.
Figure taken from the Vermont Integrated Watershed Assessment System on the VTANR Atlas (https://anrweb.vt.gov/DEC/IWIS/).

Table 1: Concentrations of surface-water chemistry above (RM 5.9) and below (RM 5.7) the Hartford-Quechee Wastewater Treatment Facility.

Sample Date	River Mile	Water Temp (° C)	pH	Alkalinity (mg/l)	Conductivity (umho/cm)	Turbidity (NTU)	DO (%)	DO (mg/l)	Total Phosphorus (ug/l)	Total Nitrogen (mg/l)	Total Ammonia Nitrogen (mg/l)
8/20/2010	5.9	20.9	7.8	72.7	219	1.8	87	7.63	13.8	0.24	<0.05
	5.7	21.1	7.9	72.9	221	1.7	69	5.96	13.8	0.26	<0.05
9/16/2010	5.9	14.2	7.4	75.1	198	0.8	-	-	14.1	0.30	<0.05
	5.7	15.1	7.9	72.9	198	1.1	-	-	14.2	0.31	<0.05
11/16/2010	5.9	6.9	8.0	53.2	146	0.4	65	7.72	8.5	0.18	<0.05
	5.7	6.9	8.0	53.3	147	0.5	65	7.72	8.3	0.2	<0.05
9/10/2014	5.7	16.0	7.9	78.0	235	0.8	78	7.68	7.6	0.28	<0.05

Total Phosphorus (TP) above and below the outfall (RM 5.9 & 5.7) were about identical with only a 2 µg/L-TP increase observed at the below site. TP values ranged from 7.6 – 14.2 µg/L, the lowest TP of 7.6 µg/L was recorded at the below site (RM 5.7) on 9/10/2014.

Total Nitrogen (TN) above and below the outfall (RM 5.9 & 5.7) were also about identical, the maximum increase observed at the below site (RM 5.7) was 0.2 mg/L-TN.

Turbidity, Dissolved Oxygen, pH:
Turbidity above the outfall ranged from 0.4 – 1.8 Nephelometric Turbidity (NTU) and below the outfall ranged from 0.5 – 1.7 NTU. The pH ranged from 7.4 – 8.0 s.u.above and below the outfall. Dissolved oxygen and percent saturation were measured most recently below (RM 5.7) on 9/10/2014 and were 7.68 mg/L and 78 percent saturation.

Biological Assessments:
Biological assessments have not been conducted below the Hartford-Quechee WWTF as this section of river is non-wadeable. The downstream site is deep and slow-moving, there is a dam approximately 0.7 miles downstream creating an impoundment.

Total Phosphorus:
Instream Phosphorus concentrations were calculated using the low monthly median flow (LMM) of 82.8 CFS at design flow of 0.736 CFS (0.475 MGD) and using an effluent phosphorus concentration of 0.36 mg/L which is the average monthly effluent concentration observed during 2014 – 2018 (n=58), from facility monitoring records. The calculated phosphorus concentration (LMM-IWC 0.009 X 0.36 mg/L = 0.00324 mg/L) at these conditions attributable to discharge is 0.00324 mg/L (3.24 µg/L), a minor addition.

Review of the Hartford-Quechee WWTF flow records indicate that average facility flow for 2014-2018 is 0.21 MGD, which is 44 percent of the 0.475 MGD permit limit. Instream TP concentrations at these flow rates would be 1.42 µg/L-TP using the average effluent concentration observed.

Instream monitoring data from above and below the discharge indicate that the TP increase has not been greater than 2 µg/L. 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, MAPP 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, MAPP 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.

However, as the receiving water is non-wadeable and thus not amenable to assessment using the VTDEC biocriteria for macroinvertebrates, the standard assessment framework should not be used, and with respect to phosphorus discharge, this Determination relies instead on calculated instream concentrations.

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, less than 2 µg/L-TP. The program considers that the reach will be protected from the effects of phosphorus-driven eutrophication at these low phosphorus concentrations.

Additionally, although aquatic life use has not been assessed (non-wadeable) below the facility, the stream complies with VWQS for the balance of identified response variables. Therefore, the narrative standard presented in the VWQS is supported (Table 2), 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 monitoring results consistently indicate attainment of all thresholds, MAPP supports the effluent monitoring, which includes TP, required by the permit; this will help to better assess compliance with the 2014 nutrient criteria at the next permit issuance.

Table 2. Assessment of phosphorus response variables for the Hartford-Quechee WWTF. The relevant target values are referenced to the appropriate section of the VWQS.

Response variable (VWQS reference)	Target Value	River-mile 5.7 (Downstream) 9/10/2014
pH (§3-01.B.9), range	<8.5 s.u.	7.9
Turbidity (§3-04.B.1), range	< 10 NTU at low mean annual flow	0.77
Dissolved Oxygen (§3-04.B.2), min	>6 mg/L and 70% saturation	7.68 (77.7%)
Aquatic biota, based on macroinvertebrates, (§3-04-B.4), also see Table 2.	Attaining an assessment of good, or better.	N/A Impounded, not sampled

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.
The 2019 draft permit requires a two-species (Pimephales promelas and Ceriodaphnia dubia) modified acute/chronic WET tests (48-hour acute endpoints within a 7-day chronic test) on a composite effluent sample be conducted in August or September 2020 and in January or February 2022.
If the results of this test indicate a reasonable potential to cause an instream toxic impact, the Department may require additional WET testing, establish a WET limit, or require a Toxicity Reduction Evaluation.

Ammonia Monitoring:
Annual effluent ammonia monitoring from 2014 – 2018 indicate ammonia concentrations ranged from <0.5 mg/L-TAN to a high of 15 mg/L-TAN on 2/7/2018. Using the highest concentration observed, the instream ammonia concentrations at critical 7Q10 flows would be 0.375 mg/L-TAN (15 mg/L-TAN X 0.025 7Q10- IWC). The concentration of 0.375 mg/L-TAN is below the most stringent VWQS Ammonia chronic criteria of 2.1 mg/L-TAN at pH of 7.9 and temperatures of 0-7C which would be representative of instream conditions for this period. These computations indicate that due to the significant dilution available even at the critical 7Q10 low flow conditions there is no Reasonable Potential for ammonia to exceed VWQS. MAPP does support continued ammonia effluent monitoring as reported in annual constituent monitoring.

Sediment, Hardness, and Metals:
Instream total suspended solids were calculated using the 7Q10 of 28.8 CFS at design flow of 0.735 CFS (0.475 MGD), assuming the maximum permitted daily concentration of 50 mg/L. The calculated suspended sediment concentration (7Q10-IWC 0.025 X 50 =1.25 mg/L) at these conditions was 1.25 mg/l, indicating a very slight increase of instream ambient suspended sediment concentrations in receiving waters.

The hardness of the Ottauquechee River below the Hartford-Quechee WWTF (RM 5.7) was recorded to be 87.3 mg/l CaCO3 on 9/10/2014 (Table 3). 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 3) did not detect any exceedances of the VWQS.

Table 3. Ottauquechee River Metals (Total) Water Chemistry – below the Hartford-Quechee WWTF outfall at RM 5.7 on September 10, 2014.

Date	9/10/2014
Site	RM 5.7
Hardness	87.3
Aluminum (µg/l)	<50
Antimony (µg/l)	<10
Arsenic (µg/l)	<1
Beryllium (µg/l)	<1
Cadmium (µg/l)	<1
Chromium (µg/l)	<5
Copper (µg/l)	<10
Iron (µg/l)	71
Lead (µg/l)	<1
Manganese (µg/l)	25.9
Molybdenum (ug/l)	<5
Nickel (µg/l)	<5
Potassium (mg/l)	1.37
Selenium (µg/l)	<5
Silver (µg/l)	<1
Thallium (µg/l)	<1
Zinc (µg/l)	<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 2), MAPP does not recommend biomonitoring be included in the permit. To better assess compliance with the 2014 nutrient criteria at the next permit issuance, MAPP does support the effluent monitoring required by the permit which includes effluent monitoring for TP and TAN.

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.