AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the "CWA"),

City of Marlborough, Massachusetts

is authorized to discharge from the facility located at

Easterly Wastewater Treatment Facility
860 Boston Post Road
Marlborough, Massachusetts 01752

to receiving water named

Unnamed Tributary to Hager Pond
Concord Watershed

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit will become effective on the first day of the calendar month immediately following sixty days after signature.[1]

This permit expires at midnight, five years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on September 14, 2004 and the permit modification issued on October 19, 2006.

This permit consists of **Part I** including the cover page(s), **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011), **Attachment B** (Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013) and **Part II (**NPDES Part II Standard Conditions, April 2018).

Signed this day of

KENNETH MORAFF Digitally signed by KENNETH MORAFF Date: 2022.01.26 15:45:11 -05'00'

Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

[1] Procedures for appealing EPA's Final Permit decision may be found at 40 CFR § 124.19.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated effluent through Outfall Serial Number 001 to an unnamed tributary. The discharge shall be limited and monitored as specified below; the receiving water and the influent shall be monitored as specified below.

Effluent Characteristic	Effluent Limitation			Monitoring Requirements[1,2,3]	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
Effluent Flow[5]	5.5 MGD	---	Report MGD	Continuous	Recorder
$CBOD_5$ (April 1 – October 31)	6 mg/L 275 lb/day	9 mg/L 413 lb/day	15 mg/L	3/Week	Composite
$CBOD_5$ (November 1 - March 31)	17 mg/L 780 lb/day	22 mg/L 1,009 lb/day	30 mg/L	3/Week	Composite
BOD_5 Removal	≥ 85 %	---	---	1/Month	Calculation
TSS (April 1 – October 31)	15 mg/L 688 lb/day	20 mg/L 917 lb/day	30 mg/L	3/Week	Composite
TSS (November 1 - March 31)	20 mg/L 917 lb/day	25 mg/L 1,147 lb/day	30 mg/L	3/Week	Composite
TSS Removal	≥ 85 %	---	---	1/Month	Calculation
pH Range[6]	6.5 - 8.3 S.U.			1/Day	Grab
Total Residual Chlorine[7,8]	11 µg/L	---	19 µg/L	3/Day	Grab
Escherichia coli [7,8]	126 cfu/100 mL	---	409 cfu/100 mL	3/Week	Grab
Dissolved Oxygen	not less than 80% saturation			1/Day	Grab
Interim Limit[9] Total Phosphorus (April 1 – October 31)	0.10 mg/L	---	---	1/Week	Composite
Total Phosphorus[9] (April 1- October 31) (November 1 – March 31)	0.050 mg/L 0.20 mg/L	--- ---	--- ---	1/Week 1/Month	Composite Composite

Effluent Characteristic	Effluent Limitation			Monitoring Requirements[1,2,3]	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Ammonia Nitrogen (April 1 – October 31)	0.50 mg/L Report lb/day	0.75 mg/L Report lb/day	1.0 mg/L	1/Week	Composite
Ammonia Nitrogen (November 1 - March 31)	4.4 mg/L Report lb/day	4.4 mg/L Report lb/day	Report mg/L	1/Month	Composite
Total Kjeldahl Nitrogen[10] (April 1 - October 31) (November 1 – March 31)	 Report mg/L Report mg/L	 ---	 Report mg/L ---	 1/Week 1/Month	 Composite Composite
Nitrite + Nitrate[10] (April 1 – October 31) (November 1 – March 31)	 Report mg/L Report mg/L	 ---	 Report mg/L ---	 1/Week 1/Month	 Composite Composite
Total Nitrogen[10]	Report mg/L Report lb/day	 ---	 ---	1/Month 1/Month	Calculation Calculation
Total Copper[11]	16 µg/L	---	---	1/Month	Composite
Perfluorohexanesulfonic acid (PFHxS)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorononanoic acid (PFNA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanoic acid (PFOA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluoroheptanoic acid (PFHpA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorodecanoic acid (PFDA)[12]	---	---	Report ng/L	1/Quarter	Composite
Whole Effluent Toxicity (WET) Testing[13,14]					
LC_{50}	---	---	≥ 100 %	1/Quarter	Composite
C-NOEC	---	---	≥ 99 %	1/Quarter	Composite
Hardness	---	---	Report mg/L	1/Quarter	Composite
Ammonia Nitrogen	---	---	Report mg/L	1/Quarter	Composite
Total Aluminum	---	---	Report mg/L	1/Quarter	Composite
Total Cadmium	---	---	Report mg/L	1/Quarter	Composite
Total Copper	---	---	Report mg/L	1/Quarter	Composite
Total Nickel	---	---	Report mg/L	1/Quarter	Composite
Total Lead	---	---	Report mg/L	1/Quarter	Composite
Total Zinc	---	---	Report mg/L	1/Quarter	Composite
Total Organic Carbon	---	---	Report mg/L	1/Quarter	Composite

Ambient Characteristic[15]	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
Hardness	---	---	Report mg/L	1/Quarter	Grab
Ammonia Nitrogen	---	---	Report mg/L	1/Quarter	Grab
Total Aluminum	---	---	Report mg/L	1/Quarter	Grab
Total Cadmium	---	---	Report mg/L	1/Quarter	Grab
Total Copper	---	---	Report mg/L	1/Quarter	Grab
Total Nickel	---	---	Report mg/L	1/Quarter	Grab
Total Lead	---	---	Report mg/L	1/Quarter	Grab
Total Zinc	---	---	Report mg/L	1/Quarter	Grab
Dissolved Organic Carbon[16]	---	---	Report mg/L	1/Quarter	Grab
pH[17]	---	---	Report S.U.	1/Quarter	Grab
Temperature[17]	---	---	Report °C	1/Quarter	Grab

Influent Characteristic	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
$CBOD_5$	Report mg/L	---	---	2/Month	Composite
TSS	Report mg/L	---	---	2/Month	Composite
Perfluorohexanesulfonic acid (PFHxS)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorononanoic acid (PFNA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanoic acid (PFOA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluoroheptanoic acid (PFHpA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorodecanoic acid (PFDA)[12]	---	---	Report ng/L	1/Quarter	Composite

Sludge Characteristics	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
Perfluorohexanesulfonic acid (PFHxS)[18]	---	---	Report ng/g	1/Quarter	Composite[19]
Perfluorononanoic acid (PFNA)[18]	---	---	Report ng/g	1/Quarter	Composite[19]
Perfluorooctanesulfonic acid (PFOS)[18]	---	---	Report ng/g	1/Quarter	Composite[19]

Perfluorooctanoic acid (PFOA)[18]	---	---	Report ng/g	1/Quarter	Composite[19]
Perfluoroheptanoic acid (PFHpA)[18]	---	---	Report ng/g	1/Quarter	Composite[19]
Perfluorodecanoic acid (PFDA)[18]	---	---	Report ng/g	1/Quarter	Composite[19]

Footnotes:

1. All samples shall be collected in a manner to yield representative data. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented as an electronic attachment to the applicable discharge monitoring report. The Permittee shall report the results to the Environmental Protection Agency Region 1 (EPA) and the State of any additional testing above that required herein, if testing is in accordance with 40 CFR Part 136.

2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" to all non-detects for that reporting period and report the average of all the results.

4. A "grab sample" is an individual sample collected in a period of less than 15 minutes.

   A "composite sample" will consist of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.

5. The limit is a monthly average, reported in million gallons per day (MGD). Also report the maximum daily flow in MGD.

6. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.).

7. The Permittee shall minimize the use of chlorine while maintaining adequate bacterial control. Monitoring for total residual chlorine (TRC) is only required for discharges which have been previously chlorinated, or which contain residual chlorine. The compliance level for TRC is 20 µg/L.

   Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection, or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

8. The monthly average limit for Escherichia coli (*E. coli*) is expressed as a geometric mean. *E. coli* monitoring shall be conducted concurrently with TRC monitoring if TRC monitoring is required.

9. See Part I.G.1 for a compliance schedule and interim limit for total phosphorus from April through October.

10. Total Kjeldahl nitrogen and nitrate + nitrite samples shall be collected concurrently. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen as follows,

    Total Nitrogen (mg/L) = Total Kjeldahl Nitrogen (mg/L) + Nitrate + Nitrite (mg/L)

    Total Nitrogen (lb/day) = [(average monthly Total Nitrogen (mg/L) * total monthly effluent flow (Millions of Gallons (MG)) / # of days in the month] * 8.34.

11. See Part I.G.2 for a compliance schedule and interim monitoring requirement for total copper.

12. Report in nanograms per liter (ng/L). This reporting requirement for the listed per- and polyfluoroalkyl substances (PFAS) parameters takes effect

the first full calendar quarter following 6 months after EPA notifies the Permittee that an EPA multi-lab validated method for wastewater is available.

13. The Permittee shall conduct acute toxicity tests (LC_{50}) and chronic toxicity tests (C-NOEC) in accordance with test procedures and protocols specified in **Attachment A and B** of this permit. LC_{50} and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. Toxicity test samples shall be collected, and tests completed during the same weeks each time of calendar quarters ending March 31st, June 30th, September 30th, and December 31st. The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal which includes the results for that toxicity test.

14. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachment A and B**, Section IV., DILUTION WATER. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

15. For Part I.A.1., Ambient Characteristics, the Permittee shall conduct the analyses specified in **Attachment A and B,** Part VI. CHEMICAL ANALYAIS for the receiving water sample collected as part of the WET testing. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A and B**. Minimum levels and test methods are specified in **Attachment A and B,** Part VI. Chemical Analysis.

16. Monitoring and reporting for dissolved organic carbon (DOC) are not requirements of the Whole Effluent Toxicity (WET) tests but are additional requirements. The Permittee may analyze the WET samples for DOC or may collect separate samples for DOC concurrently with WET sampling.

17. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

18. Report in nanograms per gram (ng/g). This reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter

following 6 months after EPA notifies the permittee that an EPA multi-lab validated method for sludge is available.

19. Sludge sampling shall be as representative as possible based on guidance found at https://www.epa.gov/sites/production/files/2018-11/documents/potw-sludge-sampling-guidance-document.pdf.

Part I.A. continued.

2. The discharge shall not cause a violation of the water quality standards of the receiving water.

3. The discharge shall be free from pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

4. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical, chemical, or biological nature of the bottom.

5. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

6. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

8. The Permittee must provide adequate notice to EPA-Region 1 and the State of the following:

   a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to Part 301 or Part 306 of the Clean Water Act if it were directly discharging those pollutants or in a primary industry category (see 40 CFR Part 122 Appendix A as amended) discharging process water; and

   b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

   c. For purposes of this paragraph, adequate notice shall include information on:

      (1) The quantity and quality of effluent introduced into the POTW; and

      (2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

9. Pollutants introduced into the POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit in accordance with Part II.D.1.e.(1) (24-hour reporting). See Part I.H below for reporting requirements.

2. The Permittee must provide notification to the public within 24 hours of becoming aware of any unauthorized discharge, except SSOs that do not impact a surface water or the public, on a publicly available website, and it shall remain on the website for a minimum of 12 months. Such notification shall include the location and description of the discharge; estimated volume; the period of noncompliance, including exact dates and times; and, if the noncompliance has not been corrected, the anticipated time it is expected to continue.

3. Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at https://www.mass.gov/how-to/sanitary-sewer-overflowbypassbackup-notification.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance (O&M) of the sewer system shall be in compliance with the Standard Conditions of Part II and the following terms and conditions. The Permittee shall complete the following activities for the collection system which it owns:

1. Maintenance Staff

The Permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Provisions to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

2. Preventive Maintenance Program

The Permittee shall maintain an ongoing preventive maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges. Plans and programs to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

3. Infiltration/Inflow

The Permittee shall control infiltration and inflow (I/I) into the sewer system as necessary to prevent high flow related unauthorized discharges from their collection systems and high flow related violations of the wastewater treatment plant's effluent limitations. Plans and programs to

control I/I shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

4. Collection System Mapping

Within 30 months of the effective date of this permit, the Permittee shall prepare a map of the sewer collection system it owns. The map shall be on a street map of the community, with sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

a. All sanitary sewer lines and related manholes;

b. All combined sewer lines, related manholes, and catch basins;

c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combination manholes);

d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;

e. All pump stations and force mains;

f. The wastewater treatment facility(ies);

g. All surface waters (labeled);

h. Other major appurtenances such as inverted siphons and air release valves;

i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j. The scale and a north arrow; and

k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System O&M Plan

The Permittee shall develop and implement a Collection System O&M Plan.

a. within six (6) months of the effective date of the permit, the Permittee shall submit to EPA and the State

(1) A description of the collection system management goals, staffing, information management, and legal authorities;

(2) A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of recent studies and construction activities; and

(3) A schedule for the development and implementation of the full Collection System O&M Plan including the elements in paragraphs b.1. through b.8. below.

b. The full Collection System O&M Plan shall be completed, implemented and submitted to EPA and the State within twenty-four (24) months from the effective date of this permit. The Plan shall include:

(1) The required submittal from paragraph 5.a. above, updated to reflect current information;

(2) A preventive maintenance and monitoring program for the collection system;

(3) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;

(4) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;

(5) Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;

(6) A description of the Permittee's programs for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts;

(7) An educational public outreach program for all aspects of I/I control, particularly private inflow; and

(8) An Overflow Emergency Response Plan to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

6. Annual Reporting Requirement

The Permittee shall submit a summary report of activities related to the implementation of its Collection System O&M Plan during the previous calendar year. The report shall be submitted to EPA and the State annually by March 31. The first annual report is due the first March 31st following submittal of the collection system O&M Plan required by Part I.C.5.b. of this permit. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit; and

f. If the average annual flow in the previous calendar year exceeded 80 percent of the facility's 5.5 MGD design flow (4.4 MGD), or there have been capacity related overflows, the report shall include:

(1) Plans for further potential flow increases describing how the Permittee will maintain compliance with the flow limit and all other effluent limitations and conditions; and

(2) A calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year.

D. ALTERNATE POWER SOURCE

In order to maintain compliance with the terms and conditions of this permit, the Permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works it owns and operates, as defined in Part II.E.1 of this permit.

E. INDUSTRIAL USERS

1. The Permittee shall submit to EPA and the State the name of any Industrial User (IU) subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR chapter I, subchapter N (Parts 405-415, 417-430, 432, 447 449-451, 454, 455, 457-461, 463-469, and 471 as amended) who commences discharge to the facility after the effective date of this permit.

This reporting requirement also applies to any other IU who is classified as a Significant Industrial User which discharges an average of 25,000 gallons per day or more of process wastewater into the facility (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastewater which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the facility; or is designated as such by the Control Authority as defined in 40 CFR § 403.3(f) on the basis that the industrial user has a reasonable potential to adversely affect the wastewater treatment facility's operation, or for violating any pretreatment standard or requirement (in accordance with 40 CFR § 403.8(f)(6)).

2. In the event that the Permittee receives originals of reports (baseline monitoring reports, 90-day compliance reports, periodic reports on continued compliance, etc.) from industrial users subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR chapter I, subchapter N (Parts 405-415, 417-430, 432-447, 449-451, 454, 455, 457-461, 463-469, and 471 as amended),or from a Significant Industrial User, the Permittee shall forward the originals of these reports within ninety (90) days of their receipt to EPA and copy the State.

3. Beginning the first full calendar quarter following 6 months after EPA has notified the Permittee that a multi-lab validated method for wastewater is available, the Permittee shall commence annual sampling of the following types of industrial discharges into the POTW:

    - Commercial Car Washes
    - Platers/Metal Finishers
    - Paper and Packaging Manufacturer
    - Tanneries and Leather/Fabric/Carpet Treaters
    - Manufacturers of Parts with Polytetrafluroethlylene (PTFE), teflon type,coatings (i.e. bearings)
    - Landfill Leachate
    - Centralized Waste Treaters
    - Contaminated Sites
    - Fire Fighting Training Facilities
    - Airports
    - Any Other Known or Suspected Sources of PFAS

Sampling shall be for the following PFAS chemicals:

Industrial User Effluent Characteristic	Maximum Daily	Monitoring Requirements	
		Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	Report ng/L	1/year	Composite
Perfluoroheptanoic acid (PFHpA)	Report ng/L	1/year	Composite
Perfluorononanoic acid (PFNA)	Report ng/L	1/year	Composite
Perfluorooctanesulfonic acid (PFOS)	Report ng/L	1/year	Composite
Perfluorooctanoic acid (PFOA)	Report ng/L	1/year	Composite
Perfluorodecanoic acid (PFDA)	Report ng/L	1/year	Composite

The industrial discharges sampled and the sampling results shall be summarized and submitted to EPA and copy the state as an electronic attachment to the March discharge monitoring report due April 15 of the calendar year following the testing.

F. SLUDGE CONDITIONS

1. The Permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR Part 503, which prescribe "Standards for the Use or Disposal of Sewage Sludge" pursuant to § 405(d) of the CWA, 33 U.S.C. § 1345(d).

2. If both state and federal requirements apply to the Permittee's sludge use and/or disposal practices, the Permittee shall comply with the more stringent of the applicable requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge use or disposal practices:

   a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge only landfill

   c. Sewage sludge incineration in a sludge only incinerator

4. The requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g., lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The 40 CFR Part 503 requirements include the following elements:

   a. General requirements
   b. Pollutant limitations
   c. Operational Standards (pathogen reduction requirements and vector attraction reduction requirements
   d. Management practices
   e. Record keeping
   f. Monitoring
   g. Reporting

   Which of the 40 CFR Part 503 requirements apply to the Permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the Permittee to assist it in determining the applicable requirements.[2]

[2] This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year, as follows:

less than 290	1/ year
290 to less than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

   Sampling of the sewage sludge shall use the procedures detailed in 40 CFR § 503.8.

7. Under 40 CFR § 503.9(r), the Permittee is a "person who prepares sewage sludge" because it "is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the Permittee contracts with another "person who prepares sewage sludge" under 40 CFR § 503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the Permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the Permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR § 503.7. If the ultimate use or disposal method is land application, the Permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR § 503 Subpart B.

8. The Permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48 (incineration)) by **February 19** (*see also* "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted electronically using EPA's Electronic Reporting tool ("NeT") (see "Reporting Requirements" section below).

G. SPECIAL CONDITIONS

1. Phosphorus

   The Permittee shall achieve compliance with the total phosphorus limit of 0.05 mg/L (April 1 - October 31) within 24 months from the effective date of the permit. During the two-year period, an interim limit of 0.1 mg/L is in effect from April 1 – October 31.

2. Copper

   The Permittee shall achieve compliance with the total copper limit of 16 µg/L within 12 months of the effective date of the permit. During the 12-month period, an interim report requirement is in effect.

H. REPORTING REQUIREMENTS

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

   The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State electronically using NetDMR no later than the 15th day of the month. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

   Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. *See* Part I.H.6 for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the report due date specified in this permit.

3. Submittal of Biosolids/Sewage Sludge Reports

   By February 19 of each year, the Permittee must electronically report their annual Biosolids/Sewage Sludge Report for the previous calendar year using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

4. Submittal of Requests and Reports to EPA Water Division (WD)

   a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in EPA Water Division (WD):

      (1) Transfer of permit notice;

      (2) Request for changes in sampling location;

      (3) Report of new industrial user commencing discharge;

      (4) Report on unacceptable dilution water/request for alternative dilution water for WET testing;

      (5) Report received from existing industrial user.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov.

5. Submittal of Reports to EPA Enforcement and Compliance Assurance Division (ECAD) in Hard Copy Form

a. The following notifications and reports shall be signed and dated originals, submitted as hard copy, with a cover letter describing the submission:

(1) Written notifications required under Part II.B.4.c, for bypasses, and Part II.D.1.e, for sanitary sewer overflows (SSOs). Starting on 21 December 2020, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

b. This information shall be submitted to EPA ECAD at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912

6. State Reporting

Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Division of Watershed Management
8 New Bond Street
Worcester, Massachusetts 01606

An electronic copy of the QAPP described in Part I.G.1 shall be submitted to Suzanne Flint suzanne.flint@mass.gov) in the Massachusetts Department of Environmental Protection Watershed Planning Program.

7. Verbal Reports and Verbal Notifications

a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit shall be made to both EPA and to the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part II.B.4.c.(2), Part II.B.5.c.(3), and Part II.D.1.e).

b. Verbal reports and verbal notifications shall be made to:

EPA ECAD at 617-918-1510
and
MassDEP's Emergency Response at 888-304-1133

I. STATE 401 CERTIFICATION CONDITIONS

1. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, beginning 180 days after the effective date of the 2022 Federal NPDES permit, the permittee shall commence monitoring of the influent, effluent, and sludge for PFAS compounds as detailed in the tables below. The permittee shall contact MassDEP (massdep.npdes@mass.gov) 90 days prior to starting monitoring for guidance on the appropriate analytical method. The permittee shall use EPA's multi-lab validated method for wastewater once notified by EPA that the method is available. Notwithstanding any other provision of the 2022 Federal NPDES permit to the contrary, monitoring results shall be reported to MassDEP electronically at massdep.npdes@mass.gov, or as otherwise specified, within 30 days after they are received.

Influent and Effluent (Outfall 001)

Parameter	**Units**	**Measurement Frequency**	**Sample Type**
Perfluorohexanesulfonic acid (PFHxS)	ng/L	Quarterly[3]	24-hour Composite
Perfluoroheptanoic acid (PFHpA)	ng/L	Quarterly	24-hour Composite
Perfluorononanoic acid (PFNA)	ng/L	Quarterly	24-hour Composite
Perfluorooctanesulfonic acid (PFOS)	ng/L	Quarterly	24-hour Composite
Perfluorooctanoic acid (PFOA)	ng/L	Quarterly	24-hour Composite
Perfluorodecanoic acid (PFDA)	ng/L	Quarterly	24-hour Composite

3 Quarters are defined as January to March, April to June, July to September, and October to December. Samples shall be taken during the same month each quarter and shall be taken 3 months apart (e.g., an example sampling schedule could be February, May, August, and November).

Sludge

Parameter	Units	Measurement Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	ng/g	Quarterly	Grab/Composite[4]
Perfluoroheptanoic acid (PFHpA)	ng/g	Quarterly	Grab/Composite
Perfluorononanoic acid (PFNA)	ng/g	Quarterly	Grab/Composite
Perfluorooctanesulfonic acid (PFOS)	ng/g	Quarterly	Grab/Composite
Perfluorooctanoic acid (PFOA)	ng/g	Quarterly	Grab/Composite
Perfluorodecanoic acid (PFDA)	ng/g	Quarterly	Grab/Composite

2. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, beginning 1 year after the effective date of the 2022 Federal NPDES permit, the permittee shall commence annual PFAS monitoring of all Significant Industrial Users[5,6] discharging into the POTW. Monitoring shall be in accordance with the table below. The permittee shall contact MassDEP (massdep.npdes@mass.gov) 90 days prior to starting monitoring for guidance on the appropriate analytical method. The permittee shall use EPA's multi-lab validated method for wastewater once notified by EPA that the method is available. Notwithstanding any other provision of the 2022 Federal NPDES permit to the contrary, monitoring results shall be reported to MassDEP electronically at massdep.npdes@mass.gov, or as otherwise specified, within 30 days after they are received.

Parameter	Units	Measurement Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	ng/L	Annual	24-hour Composite
Perfluoroheptanoic acid (PFHpA)	ng/L	Annual	24-hour Composite
Perfluorononanoic acid (PFNA)	ng/L	Annual	24-hour Composite
Perfluorooctanesulfonic acid (PFOS)	ng/L	Annual	24-hour Composite
Perfluorooctanoic acid (PFOA)	ng/L	Annual	24-hour Composite
Perfluorodecanoic acid (PFDA)	ng/L	Annual	24-hour Composite

4 Sludge sampling shall be as representative as possible based on guidance found at https://www.epa.gov/sites/production/files/2018-11/documents/potw-sludge-sampling-guidance-document.pdf.
5 Significant Industrial User (SIU) is defined at 40 CFR part 403: All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subpart N; **and** any other industrial user that: discharges an average of 25,000 GPD or more of process wastewater to the POTW, contributes a process wastestream that makes up 5% or more of the average dry weather hydraulic or organic capacity of the POTW, or designated as such by the POTW on the basis that the industrial users has a reasonable potential for adversely affecting the POTW's operation or for violating any Pretreatment Standards or requirement.
6 This requirement applies to all Significant Industrial Users and not just those within the sectors identified by EPA in the NPDES permit.

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6^{o}C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcement/water/dmr.html *for further important details on alternate dilution water substitution requests.*

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS[1]

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1^{o}C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

		series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST[1]

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hr light, 8 hr dark
5.	Size of test vessels	250 mL minimum
6.	Volume of test solution	Minimum 200 mL/replicate
7.	Age of fish	1-14 days old and age within 24 hrs of each other
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration	40
11.	Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12.	Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13.	dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19.	Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3]	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL
USEPA Region 1

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic toxicity data shall be reported as outlined in Section VIII.

II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition. October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at http://www.epa.gov/waterscience/WET/ . Exceptions and clarification are stated herein.

III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6^{o} C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of an alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further important details on alternate dilution water substitution requests.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.1. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.1.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥3 standard deviations for IC25 values and ≥ two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1, 4]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3, 4]	x		0.02
Alkalinity[4]	x	x	2.0
pH[4]	x	x	--
Specific Conductance[4]	x	x	--
Total Solids[6]	x		--
Total Dissolved Solids[6]	x		--
Ammonia[4]	x	x	0.1
Total Organic Carbon[6]	x	x	0.5
Total Metals[5]			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 2340B (hardness by calculation)
  -Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 4500-CL E Low Level Amperometric Titration
  -Method 4500-CL G DPD Colorimetric Method
- USEPA 1983. Manual of Methods Analysis of Water and Wastes
  -Method 330.5

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
6. Analysis to be performed on initial samples only

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013. Guidance for this review can be found at http://water.epa.gov/scitech/methods/cwa/ . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value**,** for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.

- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater that the PMSD lower bound, then the treatment is considered statistically significant.

- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type and species
  - Test start date
  - Effluent concentrations tested (%) and permit limit concentration
  - Applicable reference toxicity test date and whether acceptable or not
  - Age, age range and source of test organisms used for testing
  - Results of TAC review for all applicable controls
  - Test sensitivity evaluation results (test PMSD for growth and reproduction)
  - Permit limit and toxicity test results
  - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s)
- Reference toxicity test control charts
- All sample chemical/physical data generated, including minimum limits (MLs) and analytical methods used
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis
- A discussion of any deviations from test conditions
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. 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 does not stay any permit

condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director 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 Director, upon request, copies of records required to be kept by this permit.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or Permittee;
(2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

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

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the 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 a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

a. *Definition*. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or

improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

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

C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

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

e. The Clean Water Act provides that any person who falsifies, tampers with, or

knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

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

a. 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. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

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

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

D. REPORTING REQUIREMENTS

1. Reporting Requirements

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

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

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

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

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

c. *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

d. *Monitoring reports*. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where 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 Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

"approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any

other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report ("DMR") means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

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

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program."

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants;"

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source;" and

(d) Which has never received a finally effective NPDES permit for discharges at that "site."

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System."

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq*.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary industry category means any industry which is not a "primary industry category."

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.

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does

not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Toxic pollutant means any pollutant listed as toxic under Section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Waste pile or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States or waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

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

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

RESPONSE TO COMMENTS
NPDES PERMIT NO. MA0100498
EASTERLY WASTEWATER TREATMENT FACILITY
MARLBOROUGH, MASSACHUSETTS

The U.S. Environmental Protection Agency's New England Region (EPA) is issuing a Final National Pollutant Discharge Elimination System (NPDES) Permit for the Easterly Wastewater Treatment Facility (WWTF) located in Marlborough, Massachusetts. This permit is being issued under the Federal Clean Water Act (CWA), 33 U.S.C., §§ 1251 *et seq.*

In accordance with the provisions of 40 Code of Federal Regulations (CFR) §124.17, this document presents EPA's responses to comments received on the Draft NPDES Permit # MA0100498 ("Draft Permit"). The Response to Comments explains and supports EPA's determinations that form the basis of the Final Permit. From November 23, 2021 through December 22, 2021, solicited public comments on the Draft Permit.

EPA received comments from:

- City of Marlborough, dated December 21, 2021

Although EPA's knowledge of the facility has benefited from the City's comments, the information and arguments presented did not raise any substantial new questions concerning the permit that warranted a reopening of the public comment period. EPA does, however, make certain clarifications in the response to comments.

A copy of the Final Permit and this response to comments document will be posted on the EPA Region 1 web site: http://www.epa.gov/region1/npdes/permits_listing_ma.html.

A copy of the Final Permit may be also obtained by writing or calling Betsy Davis, USEPA, 5 Post Office Square, Suite 100 (Mail Code: 06-1), Boston, MA 02109-3912; Telephone: (617) 918-1576; Email davis.betsy@epa.gov.

I. Responses to Comments

Comments are reproduced below as received; they have not been edited.

A. Comments from Sean M. Divoll, P.E., Commissioner, Department of Public Works, City of Marlborough:

Comment 1

Total Phosphorus
The existing NPDES permit specifies 60-day rolling average reporting for compliance with the Average Monthly discharge limits from April through October. This reporting approach provides the Permittee with flexibility to recover from short term treatment process upsets while still

maintaining the water quality goal of limiting phosphorus loadings to the receiving waters during the growing season. The Fact Sheet does not provide the specific basis to explain why the 60-day rolling average approach cannot be maintained in the Draft NPDES permit. Please explain if the 60-day rolling average reporting approach was consistent with federal guidelines in 2006 when it was issued, and whether these guidelines have been subsequently revised to disallow this approach currently. Alternatively, please elaborate on what changes have occurred relative to this permit that now makes the previous approach no longer viable. If the 60-day rolling average reporting approach is still allowable, then we request that the EPA reconsider this change and continue the 60-day rolling average reporting approach for total phosphorus compliance reporting.

Response 1

EPA acknowledges that a 60-day rolling average gives a Permittee more flexibility in meeting its permit limit, and a 60-day rolling average significantly reduces the effect of a single high data point while minimizing the potential for long term exceedances that could adversely impact aquatic life in the receiving water. The approach used in 2006 is inconsistent with federal regulations, and as such, was revised in the Draft Permit. Specifically, 40 CFR § 122.45(d)(2) requires limitations for POTWs be established as average weekly and average monthly limitations unless impracticable. In this case, EPA has determined that there are no circumstances to suggest that average monthly limitations are impracticable at the Facility. While weekly average limitations (noted in the regulation above) are also not impracticable, EPA does not typically (as well as in this case) include weekly average limits for phosphorus because impacts from elevated phosphorus are considered chronic impacts (*i.e.*, in contrast to acutely toxic pollutants) and, therefore, monthly average limits are considered adequate to protect Massachusetts water quality standards as described in Part 5.2 of the Fact Sheet.

In support of this determination, EPA notes that the City completed installation of a BioMag treatment system for phosphorus removal in 2014 and has not had any violations of the total phosphorus limits during the review period. The median of the rolling average during the warm weather period was 0.05 mg/L and the median monthly average during the cold weather period was 0.055 mg/L, both of which are at or below the proposed effluent limits (i.e., 0.05 mg/L and 0.2 mg/L, respectively) in the Draft Permit. While EPA acknowledges that additional efforts will be necessary to achieve the more stringent warm weather monthly average limit of 0.05 mg/L on a consistent basis, EPA does not agree that compliance with such a limit is impracticable. Rather, EPA has included a 24-month compliance schedule to further optimize phosphorus removal from the existing facility and expects that the Permittee will be able to achieve consistent compliance with the new warm weather limit by the time the new limit becomes effective. See also Response 3 below related to the compliance schedule.

This comment does not result in any change to the Final Permit.

Comment 2

Ammonia Nitrogen

The summer ammonia nitrogen limits are based on the 1981 WLA. We concur that the effluent limits for ammonia nitrogen are reasonable. To determine the applicable ammonia criteria, EPA assumed a warm weather temperature of 25° C and a cold weather temperature of 5° C. The Draft NPDES Permit revised the summer months for ammonia nitrogen limits to include April through October. However, it could be argued that the ambient water temperatures in the month of October are closer to the cold weather value of 5° C than the warm weather value of 25° C. Therefore, we request that the summer period for ammonia nitrogen discharge limits be revised to April 1st through September 30th.

Response 2

The ammonia nitrogen summer monitoring period in the Draft Permit is from April 1 through October 31 while the summer monitoring period in the 2004 Permit was from April 1 through November 31.

There is limited instream temperature data available for October, however EPA collected ambient samples on October 7, 2020. The limited data shown below indicates in early October the temperature remains warmer.

Site	Date	Latitude	Longitude	Temp. C
Downstream of Hager Pond	10/7/2020	42.351	-71.487	16.42
Upstream of Hager Pond	10/7/2020	42.351	-71.486	18.97
Upstream of discharge	10/7/2020	42.354	-71.493	13.71
Downstream of discharge	10/7/2020	42.354	-71.492	20.39

Based on this data (which EPA considers to be the best available data at the time of permit development), EPA does not agree with the commenters suggestion that ambient water temperatures in October are closer to 5° C instead of 25° C. Rather, EPA notes that the ammonia criteria are more stringent under higher temperatures so using a higher default temperature of 25° C in October that is somewhat higher than the limited data available (max of 20.39° C) ensures that water quality standards will be achieved even under reasonable worst-case conditions.

Finally, EPA notes that instream temperature data is a reporting requirement in the Final Permit. EPA intends to use this data during the permit development process of the next permit cycle to better characterize the ambient temperature of the receiving water. The Permittee may also submit instream temperature data for October (or any other month) with the next permit application for EPA to consider in applying the ammonia nitrogen criteria in the next permit reissuance.

This comment does not result in any change to the Final Permit.

Comment 3

G. SPECIAL CONDITIONS

Compliance with the lower winter total phosphorus discharge limit may require capital upgrades to the existing treatment facilities and/or operational changes and operational pilot testing may be necessary to determine the most feasible approach. We request that the 24-month compliance time frame be modified in order to accommodate the potential requirements that may require a substantial facility upgrade, including: engineering evaluations and pilot testing; and facility upgrades design, bidding, construction, and startup and commissioning. We request specific permit modifications as summarized below:

1. *During the first two-year period, an interim limit of 0.1 mg/l is in effect from April 1st – October 31st.*
2. *During the period of year-3 through year-5, an interim limit of 0.07 mg/l is in effect from April 1st – October 31st.*
3. *The Permittee shall achieve compliance with the total phosphorous limit of 0.05 mg/l (April 1st – October 31st) within 60 months (5 years) from the effective date of the permit.*

Response 3

The first sentence of the comment refers to the lower winter phosphorus limit. EPA assumes the commenter intended to reference the warm weather phosphorus limit as the remainder of the comment refers to the warm weather period. EPA has responded to the comment based on this assumption.

The data below shows the monthly average phosphorus levels provided in the State's Monthly Operating Reports (MORs) that are attached to the DMRs. As shown, the majority of the data shows the monthly average levels are at or below 0.05 mg/L, which is the newly established effluent limit in the Final Permit applicable from April through October.

	2019	**2020**	**2021**
April	0.04 mg/L	0.03 mg/L	0.03 mg/L
May	0.03 mg/L	0.03 mg/L	0.03 mg/L
June	0.04 mg/L	0.03 mg/L	0.03 mg/L
July	0.06 mg/L	0.07 mg/L	0.04 mg/L
August	0.04 mg/L	0.05 mg/L	0.05 mg/L
September	0.07 mg/L	0.08 mg/L	0.05 mg/L
October	0.07 mg/L	0.05 mg/L	0.07 mg/L

Based on this monthly average data, the Permittee would have achieved the more stringent limit 15 out of 21 warm weather months (*i.e.*, 71% of the time) over the past 3 years. EPA notes that this level of compliance with the proposed 0.05 mg/L limit was achieved with an effective permit limit of 0.1 mg/L, indicating that a greater level of

compliance is likely with efforts to further optimize phosphorus removal at the existing facility.

EPA finds that a lengthy compliance schedule as proposed by the City that incorporates a major facility upgrade is not warranted at this time as the data available from operation of the facility demonstrates that compliance with the more stringent permit limit may be achievable without any need for a substantial facility upgrade. EPA notes that even the comment does not indicate that such an upgrade is certainly necessary, but simply suggests that such an upgrade "may" be necessary. As such EPA cannot ensure that the compliance schedule proposed by the City is consistent with federal NPDES regulations that require compliance schedules with deadlines to be achieved "as soon as possible." *See* 40 CFR § 122.47(a)(1). Since it is possible that the phosphorus limit could be met through further system optimization of the existing facility, EPA has determined that the soonest possible compliance with the 0.05 mg/L limit is 24 months from the effective date of the permit.

If the Permittee is unable to comply with the limit after that time, they may contact EPA's Enforcement and Compliance Assurance Division (ECAD) to discuss a potential administrative order that may include additional time to achieve the new phosphorus limit.

This comment does not result in any change to the Final Permit.

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the "CWA"),

City of Marlborough, Massachusetts

is authorized to discharge from the facility located at

Easterly Wastewater Treatment Facility
860 Boston Post Road
Marlborough, Massachusetts 01752

to receiving water named

Unnamed Tributary to Hager Pond
Concord Watershed

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit will become effective on the first day of the calendar month immediately following sixty days after signature.[1]

This permit expires at midnight, five years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on September 14, 2004 and the permit modification issued on October 19, 2006.

This permit consists of **Part I** including the cover page(s), **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011), **Attachment B** Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013) and **Part II (**NPDES Part II Standard Conditions, April 2018).

Signed this day of

_____
Ken Moraff
Water Division
Environmental Protection Agency
Region 1
Boston, MA

[1] Pursuant to 40 Code of Federal Regulations (CFR) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the permit will become effective upon the date of signature. Procedures for appealing EPA's Final Permit decision may be found at 40 CFR § 124.19.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated effluent through Outfall Serial Number 001 to an unnamed tributary. The discharge shall be limited and monitored as specified below; the receiving water and the influent shall be monitored as specified below.

Effluent Characteristic	Effluent Limitation			Monitoring Requirements[1,2,3]	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Effluent Flow[5]	5.5 MGD	---	Report MGD	Continuous	Recorder
$CBOD_5$ (April 1 – October 31)	6 mg/L 275 lb/day	9 mg/L 413 lb/day	15 mg/L	3/Week	Composite
$CBOD_5$ (November 1 - March 31)	17 mg/L 780 lb/day	22 mg/L 1,009 lb/day	30 mg/L	3/Week	Composite
BOD_5 Removal	≥ 85 %	---	---	1/Month	Calculation
TSS (April 1 – October 31)	15 mg/L 688 lb/day	20 mg/L 917 lb/day	30 mg/L	3/Week	Composite
TSS (November 1 - March 31)	20 mg/L 917 lb/day	25 mg/L 1,147 lb/day	30 mg/L	3/Week	Composite
TSS Removal	≥ 85 %	---	---	1/Month	Calculation
pH Range[6]	6.5 - 8.3 S.U.			1/Day	Grab
Total Residual Chlorine[7,8]	11 µg/L	---	19 µg/L	3/Day	Grab
Escherichia coli [7,8]	126 cfu/100 mL	---	409 cfu/100 mL	3/Week	Grab
Dissolved Oxygen	not less than 80% saturation			1/Day	Grab
Interim Limit[9] Total Phosphorus (April 1 – October 31)	0.10 mg/L	---	---	1/Week	Composite
Total Phosphorus[9] (April 1- October 31) (November 1 – March 31)	0.050 mg/L 0.20 mg/L	--- ---	--- ---	1/Week 1/Month	Composite Composite

Effluent Characteristic	Effluent Limitation			Monitoring Requirements[1,2,3]	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Ammonia Nitrogen (April 1 – October 31)	0.50 mg/L Report lb/day	0.75 mg/L Report lb/day	1.0 mg/L	1/Week	Composite
Ammonia Nitrogen (November 1 - March 31)	4.4 mg/L Report lb/day	4.4 mg/L Report lb/day	Report mg/L	1/Month	Composite
Total Kjeldahl Nitrogen[10] (April 1 - October 31) (November 1 – March 31)	 Report mg/L Report mg/L	 ---	 Report mg/L ---	 1/Week 1/Month	 Composite Composite
Nitrite + Nitrate[10] (April 1 – October 31) (November 1 – March 31)	 Report mg/L Report mg/L	 ---	 Report mg/L ---	 1/Week 1/Month	 Composite Composite
Total Nitrogen[10]	Report mg/L Report lb/day	 ---	 ---	1/Month 1/Month	Calculation Calculation
Total Copper[11]	16 µg/L	---	---	1/Month	Composite
Perfluorohexanesulfonic acid (PFHxS)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorononanoic acid (PFNA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanoic acid (PFOA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluoroheptanoic acid (PFHpA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorodecanoic acid (PFDA)[12]	---	---	Report ng/L	1/Quarter	Composite
Whole Effluent Toxicity (WET) Testing[13,14]					
LC_{50}	---	---	≥ 100 %	1/Quarter	Composite
C-NOEC	---	---	≥ 99 %	1/Quarter	Composite
Hardness	---	---	Report mg/L	1/Quarter	Composite
Ammonia Nitrogen	---	---	Report mg/L	1/Quarter	Composite
Total Aluminum	---	---	Report mg/L	1/Quarter	Composite
Total Cadmium	---	---	Report mg/L	1/Quarter	Composite
Total Copper	---	---	Report mg/L	1/Quarter	Composite
Total Nickel	---	---	Report mg/L	1/Quarter	Composite
Total Lead	---	---	Report mg/L	1/Quarter	Composite
Total Zinc	---	---	Report mg/L	1/Quarter	Composite
Total Organic Carbon	---	---	Report mg/L	1/Quarter	Composite

Ambient Characteristic[15]	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
Hardness	---	---	Report mg/L	1/Quarter	Grab
Ammonia Nitrogen	---	---	Report mg/L	1/Quarter	Grab
Total Aluminum	---	---	Report mg/L	1/Quarter	Grab
Total Cadmium	---	---	Report mg/L	1/Quarter	Grab
Total Copper	---	---	Report mg/L	1/Quarter	Grab
Total Nickel	---	---	Report mg/L	1/Quarter	Grab
Total Lead	---	---	Report mg/L	1/Quarter	Grab
Total Zinc	---	---	Report mg/L	1/Quarter	Grab
Dissolved Organic Carbon[16]	---	---	Report mg/L	1/Quarter	Grab
pH[17]	---	---	Report S.U.	1/Quarter	Grab
Temperature[17]	---	---	Report °C	1/Quarter	Grab

Influent Characteristic	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
$CBOD_5$	Report mg/L	---	---	2/Month	Composite
TSS	Report mg/L	---	---	2/Month	Composite
Perfluorohexanesulfonic acid (PFHxS)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorononanoic acid (PFNA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanoic acid (PFOA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluoroheptanoic acid (PFHpA)[12]	---	---	Report ng/L	1/Quarter	Composite
Perfluorodecanoic acid (PFDA)[12]	---	---	Report ng/L	1/Quarter	Composite

Sludge Characteristics	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
Perfluorohexanesulfonic acid (PFHxS)[18]	---	---	Report ng/g	1/Quarter	Composite[19]
Perfluorononanoic acid (PFNA)[18]	---	---	Report ng/g	1/Quarter	Composite[19]
Perfluorooctanesulfonic acid (PFOS)[18]	---	---	Report ng/g	1/Quarter	Composite[19]

Perfluorooctanoic acid (PFOA)[18]	---	---	Report ng/g	1/Quarter	Composite[19]
Perfluoroheptanoic acid (PFHpA)[18]	---	---	Report ng/g	1/Quarter	Composite[19]
Perfluorodecanoic acid (PFDA)[18]	---	---	Report ng/g	1/Quarter	Composite[19]

Footnotes:

1. All samples shall be collected in a manner to yield representative data. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented as an electronic attachment to the applicable discharge monitoring report. The Permittee shall report the results to the Environmental Protection Agency Region 1 (EPA) and the State of any additional testing above that required herein, if testing is in accordance with 40 CFR Part 136.

2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" to all non-detects for that reporting period and report the average of all the results.

4. A "grab sample" is an individual sample collected in a period of less than 15 minutes.

   A "composite sample" will consist of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.

5. The limit is a monthly average, reported in million gallons per day (MGD). Also report the maximum daily flow in MGD.

6. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.).

7. The Permittee shall minimize the use of chlorine while maintaining adequate bacterial control. Monitoring for total residual chlorine (TRC) is only required for discharges which have been previously chlorinated, or which contain residual chlorine. The compliance level for TRC is 20 µg/L.

   Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection, or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

8. The monthly average limit for Escherichia coli (*E. coli*) is expressed as a geometric mean. *E. coli* monitoring shall be conducted concurrently with TRC monitoring if TRC monitoring is required.

9. See Part I.G.1 for a compliance schedule and interim limit for total phosphorus from April through October.

10. Total Kjeldahl nitrogen and nitrate + nitrite samples shall be collected concurrently. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen as follows,

    Total Nitrogen (mg/L) = Total Kjeldahl Nitrogen (mg/L) + Nitrate + Nitrite (mg/L)

    Total Nitrogen (lb/day) = [(average monthly Total Nitrogen (mg/L) * total monthly effluent flow (Millions of Gallons (MG)) / # of days in the month] * 8.34.

11. See Part I.G.2 for a compliance schedule and interim monitoring requirement for total copper.

12. Report in nanograms per liter (ng/L). This reporting requirement for the listed per- and polyfluoroalkyl substances (PFAS) parameters takes effect

the first full calendar quarter following 6 months after EPA notifies the Permittee that an EPA multi-lab validated method for wastewater is available.

13. The Permittee shall conduct acute toxicity tests (LC_{50}) and chronic toxicity tests (C-NOEC) in accordance with test procedures and protocols specified in **Attachment A and B** of this permit. LC_{50} and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. Toxicity test samples shall be collected, and tests completed during the same weeks each time of calendar quarters ending March 31st, June 30th, September 30th, and December 31st. The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal which includes the results for that toxicity test.

14. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachment A and B**, Section IV., DILUTION WATER. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

15. For Part I.A.1., Ambient Characteristics, the Permittee shall conduct the analyses specified in **Attachment A and B,** Part VI. CHEMICAL ANALYAIS for the receiving water sample collected as part of the WET testing. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A and B**. Minimum levels and test methods are specified in **Attachment A and B,** Part VI. Chemical Analysis.

16. Monitoring and reporting for dissolved organic carbon (DOC) are not requirements of the Whole Effluent Toxicity (WET) tests but are additional requirements. The Permittee may analyze the WET samples for DOC or may collect separate samples for DOC concurrently with WET sampling.

17. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

18. Report in nanograms per gram (ng/g). This reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter

following 6 months after EPA notifies the permittee that an EPA multi-lab validated method for sludge is available.

19. Sludge sampling shall be as representative as possible based on guidance found at https://www.epa.gov/sites/production/files/2018-11/documents/potw-sludge-sampling-guidance-document.pdf.

Part I.A. continued.

2. The discharge shall not cause a violation of the water quality standards of the receiving water.

3. The discharge shall be free from pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

4. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical, chemical, or biological nature of the bottom.

5. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

6. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

8. The Permittee must provide adequate notice to EPA-Region 1 and the State of the following:

   a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to Part 301 or Part 306 of the Clean Water Act if it were directly discharging those pollutants or in a primary industry category (see 40 CFR Part 122 Appendix A as amended) discharging process water; and

   b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

   c. For purposes of this paragraph, adequate notice shall include information on:

      (1) The quantity and quality of effluent introduced into the POTW; and

      (2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

9. Pollutants introduced into the POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit in accordance with Part II.D.1.e.(1) (24-hour reporting). See Part I.H below for reporting requirements.

2. The Permittee must provide notification to the public within 24 hours of becoming aware of any unauthorized discharge, except SSOs that do not impact a surface water or the public, on a publicly available website, and it shall remain on the website for a minimum of 12 months. Such notification shall include the location and description of the discharge; estimated volume; the period of noncompliance, including exact dates and times; and, if the noncompliance has not been corrected, the anticipated time it is expected to continue.

3. Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at https://www.mass.gov/how-to/sanitary-sewer-overflowbypassbackup-notification.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance (O&M) of the sewer system shall be in compliance with the Standard Conditions of Part II and the following terms and conditions. The Permittee shall complete the following activities for the collection system which it owns:

1. Maintenance Staff

The Permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Provisions to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

2. Preventive Maintenance Program

The Permittee shall maintain an ongoing preventive maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges. Plans and programs to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

3. Infiltration/Inflow

The Permittee shall control infiltration and inflow (I/I) into the sewer system as necessary to prevent high flow related unauthorized discharges from their collection systems and high flow related violations of the wastewater treatment plant's effluent limitations. Plans and programs to

control I/I shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

4. Collection System Mapping

Within 30 months of the effective date of this permit, the Permittee shall prepare a map of the sewer collection system it owns. The map shall be on a street map of the community, with sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

a. All sanitary sewer lines and related manholes;

b. All combined sewer lines, related manholes, and catch basins;

c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combination manholes);

d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;

e. All pump stations and force mains;

f. The wastewater treatment facility(ies);

g. All surface waters (labeled);

h. Other major appurtenances such as inverted siphons and air release valves;

i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j. The scale and a north arrow; and

k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System O&M Plan

The Permittee shall develop and implement a Collection System O&M Plan.

a. within six (6) months of the effective date of the permit, the Permittee shall submit to EPA and the State

(1) A description of the collection system management goals, staffing, information management, and legal authorities;

(2) A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of recent studies and construction activities; and

(3) A schedule for the development and implementation of the full Collection System O&M Plan including the elements in paragraphs b.1. through b.8. below.

b. The full Collection System O&M Plan shall be completed, implemented and submitted to EPA and the State within twenty-four (24) months from the effective date of this permit. The Plan shall include:

(1) The required submittal from paragraph 5.a. above, updated to reflect current information;

(2) A preventive maintenance and monitoring program for the collection system;

(3) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;

(4) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;

(5) Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;

(6) A description of the Permittee's programs for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts;

(7) An educational public outreach program for all aspects of I/I control, particularly private inflow; and

(8) An Overflow Emergency Response Plan to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

6. Annual Reporting Requirement

The Permittee shall submit a summary report of activities related to the implementation of its Collection System O&M Plan during the previous calendar year. The report shall be submitted to EPA and the State annually by March 31. The first annual report is due the first March 31st following submittal of the collection system O&M Plan required by Part I.C.5.b. of this permit. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit; and

f. If the average annual flow in the previous calendar year exceeded 80 percent of the facility's 5.5 MGD design flow (4.4 MGD), or there have been capacity related overflows, the report shall include:

(1) Plans for further potential flow increases describing how the Permittee will maintain compliance with the flow limit and all other effluent limitations and conditions; and

(2) A calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year.

D. ALTERNATE POWER SOURCE

In order to maintain compliance with the terms and conditions of this permit, the Permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works it owns and operates, as defined in Part II.E.1 of this permit.

E. INDUSTRIAL USERS

1. The Permittee shall submit to EPA and the State the name of any Industrial User (IU) subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR chapter I, subchapter N (Parts 405-415, 417-430, 432, 447 449-451, 454, 455, 457-461,

463-469, and 471 as amended) who commences discharge to the facility after the effective date of this permit.

This reporting requirement also applies to any other IU who is classified as a Significant Industrial User which discharges an average of 25,000 gallons per day or more of process wastewater into the facility (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastewater which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the facility; or is designated as such by the Control Authority as defined in 40 CFR § 403.3(f) on the basis that the industrial user has a reasonable potential to adversely affect the wastewater treatment facility's operation, or for violating any pretreatment standard or requirement (in accordance with 40 CFR § 403.8(f)(6)).

2. In the event that the Permittee receives originals of reports (baseline monitoring reports, 90-day compliance reports, periodic reports on continued compliance, etc.) from industrial users subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR chapter I, subchapter N (Parts 405-415, 417-430, 432-447, 449-451, 454, 455, 457-461, 463-469, and 471 as amended),or from a Significant Industrial User, the Permittee shall forward the originals of these reports within ninety (90) days of their receipt to EPA and copy the State.

3. Beginning the first full calendar quarter following 6 months after EPA has notified the Permittee that a multi-lab validated method for wastewater is available, the Permittee shall commence annual sampling of the following types of industrial discharges into the POTW:

- Commercial Car Washes
- Platers/Metal Finishers
- Paper and Packaging Manufacturer
- Tanneries and Leather/Fabric/Carpet Treaters
- Manufacturers of Parts with Polytetrafluroethlylene (PTFE), teflon type,coatings (i.e. bearings)
- Landfill Leachate
- Centralized Waste Treaters
- Contaminated Sites
- Fire Fighting Training Facilities
- Airports
- Any Other Known or Suspected Sources of PFAS

Sampling shall be for the following PFAS chemicals:

Industrial User Effluent Characteristic	Maximum Daily	Monitoring Requirements	
		Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	Report ng/L	1/year	Composite
Perfluoroheptanoic acid (PFHpA)	Report ng/L	1/year	Composite
Perfluorononanoic acid (PFNA)	Report ng/L	1/year	Composite
Perfluorooctanesulfonic acid (PFOS)	Report ng/L	1/year	Composite
Perfluorooctanoic acid (PFOA)	Report ng/L	1/year	Composite

Perfluorodecanoic acid (PFDA)	Report ng/L	1/year	Composite

The industrial discharges sampled and the sampling results shall be summarized and submitted to EPA and copy the state as an electronic attachment to the March discharge monitoring report due April 15 of the calendar year following the testing.

F. SLUDGE CONDITIONS

1. The Permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR Part 503, which prescribe "Standards for the Use or Disposal of Sewage Sludge" pursuant to § 405(d) of the CWA, 33 U.S.C. § 1345(d).

2. If both state and federal requirements apply to the Permittee's sludge use and/or disposal practices, the Permittee shall comply with the more stringent of the applicable requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge use or disposal practices:

   a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge only landfill

   c. Sewage sludge incineration in a sludge only incinerator

4. The requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g., lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The 40 CFR Part 503 requirements include the following elements:

   a. General requirements
   b. Pollutant limitations
   c. Operational Standards (pathogen reduction requirements and vector attraction reduction requirements
   d. Management practices
   e. Record keeping
   f. Monitoring
   g. Reporting

   Which of the 40 CFR Part 503 requirements apply to the Permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"

(November 4, 1999), may be used by the Permittee to assist it in determining the applicable requirements.[2]

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year, as follows:

less than 290	1/ year
290 to less than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

Sampling of the sewage sludge shall use the procedures detailed in 40 CFR § 503.8.

7. Under 40 CFR § 503.9(r), the Permittee is a "person who prepares sewage sludge" because it "is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the Permittee contracts with another "person who prepares sewage sludge" under 40 CFR § 503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the Permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the Permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR § 503.7. If the ultimate use or disposal method is land application, the Permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR § 503 Subpart B.

8. The Permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48 (incineration)) by **February 19** (*see also* "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted electronically using EPA's Electronic Reporting tool ("NeT") (see "Reporting Requirements" section below).

G. SPECIAL CONDITIONS

1. The Permittee shall achieve compliance with the total phosphorus limit of 0.05 mg/L (April 1 - October 31) within 24 months from the effective date of the permit. During the two-year period, an interim limit of 0.1 mg/L is in effect from April 1 – October 31.

2. Copper

[2] This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf

The Permittee shall achieve compliance with the total copper limit of 16 ug/L within 12 months of the effective date of the permit. During the 12-month period, an interim report requirement is in effect.

H. REPORTING REQUIREMENTS

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

   The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State electronically using NetDMR no later than the 15th day of the month. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

   Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. *See* Part I.H.6 for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the report due date specified in this permit.

3. Submittal of Biosolids/Sewage Sludge Reports

   By February 19 of each year, the Permittee must electronically report their annual Biosolids/Sewage Sludge Report for the previous calendar year using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

4. Submittal of Requests and Reports to EPA Water Division (WD)

   a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in EPA Water Division (WD):

      (1) Transfer of permit notice;

      (2) Request for changes in sampling location;

      (3) Report of new industrial user commencing discharge;

(4) Report on unacceptable dilution water/request for alternative dilution water for WET testing;

(5) Report received from existing industrial user.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov.

5. Submittal of Reports to EPA Enforcement and Compliance Assurance Division (ECAD) in Hard Copy Form

a. The following notifications and reports shall be signed and dated originals, submitted as hard copy, with a cover letter describing the submission:

(1) Written notifications required under Part II.B.4.c, for bypasses, and Part II.D.1.e, for sanitary sewer overflows (SSOs). Starting on 21 December 2020, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

b. This information shall be submitted to EPA ECAD at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912

6. State Reporting

Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

An electronic copy of the QAPP described in Part I.G.1 shall be submitted to Suzanne Flint suzanne.flint@mass.gov) in the Massachusetts Department of Environmental Protection Watershed Planning Program.

7. Verbal Reports and Verbal Notifications

a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit shall be made to both EPA and to the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part II.B.4.c.(2), Part II.B.5.c.(3), and Part II.D.1.e).

b. Verbal reports and verbal notifications shall be made to:

EPA ECAD at 617-918-1510
and
MassDEP's Emergency Response at 888-304-1133

I. STATE 401 CERTIFICATION CONDITIONS

This Permit is in the process of receiving state water quality certification issued by the State under§ 401(a) of the CWA and 40 CFR § 124.53. EPA will incorporate appropriate State water quality certification requirements (if any) into the Final Permit.

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6^{o}C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcement/water/dmr.html *for further important details on alternate dilution water substitution requests.*

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS[1]

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1^{o}C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

		series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST[1]

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hr light, 8 hr dark
5.	Size of test vessels	250 mL minimum
6.	Volume of test solution	Minimum 200 mL/replicate
7.	Age of fish	1-14 days old and age within 24 hrs of each other
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration	40
11.	Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12.	Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13.	dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19.	Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3]	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL
USEPA Region 1

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic toxicity data shall be reported as outlined in Section VIII.

II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition. October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at http://www.epa.gov/waterscience/WET/ . Exceptions and clarification are stated herein.

III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6^{o} C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of an alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further important details on alternate dilution water substitution requests.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.1. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.1.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥3 standard deviations for IC25 values and ≥ two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1, 4]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3, 4]	x		0.02
Alkalinity[4]	x	x	2.0
pH[4]	x	x	--
Specific Conductance[4]	x	x	--
Total Solids[6]	x		--
Total Dissolved Solids[6]	x		--
Ammonia[4]	x	x	0.1
Total Organic Carbon[6]	x	x	0.5
Total Metals[5]			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 2340B (hardness by calculation)
  -Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 4500-CL E Low Level Amperometric Titration
  -Method 4500-CL G DPD Colorimetric Method
- USEPA 1983. Manual of Methods Analysis of Water and Wastes
  -Method 330.5

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
6. Analysis to be performed on initial samples only

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013. Guidance for this review can be found at http://water.epa.gov/scitech/methods/cwa/ . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value**,** for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.

- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater that the PMSD lower bound, then the treatment is considered statistically significant.

- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type and species
  - Test start date
  - Effluent concentrations tested (%) and permit limit concentration
  - Applicable reference toxicity test date and whether acceptable or not
  - Age, age range and source of test organisms used for testing
  - Results of TAC review for all applicable controls
  - Test sensitivity evaluation results (test PMSD for growth and reproduction)
  - Permit limit and toxicity test results
  - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s)
- Reference toxicity test control charts
- All sample chemical/physical data generated, including minimum limits (MLs) and analytical methods used
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis
- A discussion of any deviations from test conditions
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. 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 does not stay any permit

condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director 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 Director, upon request, copies of records required to be kept by this permit.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or Permittee;
(2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

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

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the 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 a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

a. *Definition*. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or

improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

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

C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

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

e. The Clean Water Act provides that any person who falsifies, tampers with, or

knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

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

a. 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. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

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

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

D. REPORTING REQUIREMENTS

1. Reporting Requirements

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

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

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

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

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

c. *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

d. *Monitoring reports*. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where 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 Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

"approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any

other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report ("DMR") means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

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

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program."

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants;"

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source;" and

(d) Which has never received a finally effective NPDES permit for discharges at that "site."

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System."

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq*.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary industry category means any industry which is not a "primary industry category."

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.

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does

not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Toxic pollutant means any pollutant listed as toxic under Section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Waste pile or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States or waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

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

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT NUMBER: MA0100498

PUBLIC NOTICE START AND END DATES: November 23, 2021 – December 22, 2021

NAME AND MAILING ADDRESS OF APPLICANT:

City of Marlborough
Marlborough Public Works Department
135 Neil Street
Marlborough, MA 01752

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Easterly Wastewater Treatment Facility
860 Boston Post Road East
Marlborough, MA 01752

RECEIVING WATER AND CLASSIFICATION:

Unnamed Tributary (MA82A-15)
Concord Watershed
Class B-Warm Water Fishery

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Appendices

1.0 Proposed Action

The above-named applicant (the Permittee) has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge from the Easterly Wastewater Treatment Plant (the Facility) into the an unnamed tributary that flows to the inlet of Hager Pond.

The permit currently in effect was issued on September 14, 2004 with an effective date of November 12, 2004 and expired on December 18, 2009 (the 2004 Permit). The 2004 Permit was modified in 2006. The permit modification revised the total phosphorus compliance schedule in the 2004 Permit. The permit modification was signed on October 19, 2006, with an effective December 18, 2006. This permit modification extended the expiration date of the 2004 Permit to January 16, 2010.

The Permittee filed an application for permit reissuance with EPA dated May 29, 2009, as required by 40 Code of Federal Regulations (CFR) § 122.6. Since the permit application was deemed timely and complete by EPA on July 12, 2013, the Facility's 2004 Permit has been administratively continued pursuant to 40 CFR § 122.6 and § 122.21(d). EPA and the State conducted a site visit on August 8, 2017.

2.0 Statutory and Regulatory Authority

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. § 1251-1387 and commonly known as the Clean Water Act (CWA), "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 specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) established one of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA's NPDES permit program are generally found in 40 CFR §§ 122, 124, 125, and 136.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma,* 503 U.S. 91, 105 (1992). *See also* 40 CFR §§ 122.4(d), 122.44(d)(1), and 122.44(d)(5). CWA §§ 301 and 306 provide for two types of effluent limitations to be included in NPDES permits: "technology-based" effluent limitations (TBELs) and "water quality-based" effluent limitations (WQBELs). *See* CWA §§ 301, and 304(d); 40 CFR Parts 122, 125, 131.

2.1 Technology-Based Requirements

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. *See* CWA § 301(b). As a class, publicly owned treatment works (POTWs) must meet performance-based requirements based on available wastewater treatment technology. *See* CWA § 301(b)(1)(B). The performance level for POTWs is referred to as "secondary treatment." Secondary treatment is comprised of technology-based requirements expressed in terms of BOD_5, TSS and pH. *See* 40 CFR Part 133.

Under CWA § 301(b)(1), POTWs must have achieved effluent limits based upon secondary treatment technology by July 1, 1977. Since all statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired, when technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. *See* 40 CFR § 125.3(a)(1).

2.2 Water Quality Based Requirements

The CWA and federal regulations also require that permit effluent limits based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1), 122.44(d)(5).

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQS) for all water bodies within the State. *See* CWA § 303 and 40 CFR § 131.10-12. Generally, WQS consist of three parts: 1) the designated use or uses assigned for a water body or a segment of a water body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) antidegradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 CFR § 131.12. The applicable State WQS can be found in Title 314 of the Code of Massachusetts Regulations, Chapter 4 (314 CMR 4.00).

As a matter of state law, state WQS specify different water body classifications, each of which is associated with certain designated uses and numeric and narrative water quality criteria. When using chemical-specific numeric criteria to develop permit limitations, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and, therefore, are typically applicable to average monthly limits.

When permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) 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," 2) based on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 CFR § 122.44(d)(1)(vi)(A-C).

2.2.2 Antidegradation

Federal regulations found at 40 CFR § 131.12 require states to develop and adopt a statewide antidegradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the antidegradation policy ensures maintenance of high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water, unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

Massachusetts' statewide antidegradation policy, entitled "Antidegradation Provisions" is found in the State's WQS at 314 CMR 4.04. Massachusetts guidance for the implementation of this policy is in an associated document entitled "Implementation Procedure for the Anti-Degradation Provisions of the State Water Quality Standards," dated October 21, 2009. According to the policy, no lowering of water quality is allowed, except in accordance with the antidegradation policy, and all existing in-stream uses, and the level of water quality necessary to protect the existing uses of a receiving water body must be maintained and protected.

This permit is being reissued with effluent limitations sufficiently stringent to satisfy the State's antidegradation requirements, including the protection of the existing uses of the receiving water.

2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads.

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQS for the designated

uses, and allocates that load among to the various sources, including point source discharges, subject to NPDES permits. *See* 40 CFR § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 CFR § 122.44(d)(1)(vii)(B).

2.2.4 Reasonable Potential

Pursuant to CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. *See also* 33 U.S.C. § 1311(b)(1)(C). In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 CFR § 122.44(d)(1)(ii).

If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQS, the permit must contain WQBELs for that pollutant. *See* 40 CFR § 122.44(d)(1)(i).

2.2.5 State Certification

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQS, the State waives, or is deemed to have waived, its right to certify. *See* 33 U.S.C. § 1341(a)(1). Regulations governing state certification are set forth in 40 CFR § 124.53 and § 124.55. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the Draft Permit will be certified. Comments regarding the certification should be directed to: www.massdep.npdes@mass.gov.

If the State believes that conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307, or applicable requirements of State law, the State should include such conditions in its certification and, in each case, cite the CWA or State law provisions upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. EPA includes properly supported State certification conditions in the NPDES permit. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and

implementing CWA § 405(d) are not subject to the State certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through EPA's permit appeal procedures of 40 CFR Part 124.

In addition, the State should provide a statement of the extent to which any condition of the Draft Permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to final permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of State law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 CFR § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limitations based upon WQS and State requirements are contained in 40 CFR §§ 122.4(d) and 122.44(d).

2.3 Effluent Flow Requirements

Sewage treatment plant discharge is encompassed within the definition of "pollutant" and is subject to regulation under the CWA. The CWA defines "pollutant" to mean, *inter alia*, "municipal...waste" and "sewage…discharged into water." 33 U.S.C. § 1362(6).

Generally, EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations and to calculate the limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQS under § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced, and the calculated effluent limitations may not be sufficiently protective (i.e. might not meet WQS). Further, pollutants that do not have the reasonable potential to exceed WQS at the lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying EPA's reasonable potential analyses and permit effluent limitation derivations remain sound for the duration of the permit, EPA may ensure the validity of its "worst-case" wastewater effluent flow assumptions through imposition of permit conditions for effluent flow.[1] In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQS.

[1] EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id* 40 CFR §122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.,* 14 E.A.D. 577. 599 (EAB 2010). EPA guidance directs that this "reasonable potential: analysis be based on "worst-case" conditions. *See In re Washington Aquaduct Water Supply Sys. 11 E.A.D. 565, 584 (EAB 2004)*

The limitation on wastewater effluent flow is within EPA's authority to condition a permit to carry out the objectives of the Act. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 CFR §§ 122.4(a) and (d), 122.43 and 122.44(d). A condition on the discharge designed to ensure the WQBEL and reasonable potential calculations account for "worst case" conditions is encompassed by the references to "condition" and "limitations" in CWA §§ 402 and 301 and implementing regulations, as they are designed to assure compliance with applicable water quality regulations, including antidegradation. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of wastewater effluent is consistent with the overall structure and purposes of the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 CFR § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Operating the facilities wastewater treatment systems as designed includes operating within the facility's design wastewater effluent flow.

EPA has also included the effluent flow limit in the permit to minimize or prevent infiltration and inflow (I/I) that may result in unauthorized discharges and compromise proper operation and maintenance of the facility. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Infiltration is groundwater that enters the collection system though physical defects such as cracked pipes or deteriorated joints. Inflow is extraneous flow added to the collection system that enters the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity available for treatment and the operating efficiency of the treatment works and to properly operate and maintain the treatment works.

Furthermore, the extraneous flow due to significant I/I greatly increases the potential for sanitary sewer overflows (SSOs) in separate systems. Consequently, the effluent flow limit is a permit condition that relates to the permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 CFR §§ 122.41(d), (e).

2.4 Monitoring and Reporting Requirements

2.4.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 CFR Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in this permit have been established to yield data representative of the Facility's discharges in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 CFR §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the discharges. The monitoring program is needed to

enable EPA and the State to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits, and whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based standards under the CWA. EPA and/or the State may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), State water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 CFR Part 122.

NPDES permits require that the approved analytical procedures found in 40 CFR Part 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.[2] This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 CFR § 122.21(e)(3) (completeness), 40 CFR § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level[3] (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or

- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or

- The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

2.4.2 Reporting Requirements

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15th day of the month following the completed reporting period.

[2] Fed. Reg. 49,001 (Aug 19, 2014).
[3] The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL). Minimum levels may be obtained in several ways: They may be published in a method; they may be sample concentrations equivalent to the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a lab, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Fed. Reg. 49,001 (Aug. 19, 2014).

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to EPA under 40 CFR §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. Further information about NetDMR can be found on EPA's NetDMR support portal webpage.[4]

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit, such as for providing written notifications required under the Part II Standard Conditions.

2.5 Standard Conditions

The standard conditions, included as Part II of the Draft Permit, are based on applicable regulations found in the Code of Federal Regulations. *See generally* 40 CFR Part 122.

2.6 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued or modified to include with less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). Anti-backsliding provisions apply to effluent limits based on technology, water quality and/or state certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2004 Permit and 2006 Permit Modification unless specific conditions exist to justify relaxation in accordance with CWA § 402(o) or § 303(d)(4). Discussion of any less stringent limitations and corresponding exceptions to anti-backsliding provisions is provided in the sections that follow.

3.0 Description of Facility and Discharge

3.1 Location and Type of Facility

The location of the treatment plant and the outfall 001 to the unnamed tributary are shown in Figure 1. The latitude and longitude of the outfall is 42^0 21'13.64" N, 71^0 29' 34.9" W.

The Easterly Wastewater Treatment Facility (WWTF) is an advanced wastewater treatment facility that is engaged in the collection and treatment of municipal wastewater. Currently, the Facility serves approximately 31,000 residents from the easterly section in the City of Marlborough (about 78% of the town's population) with the collection system primarily focused

[4] https://netdmr.zendesk.com/hc/en-us/articles/209616266-EPA-Region-1-NetDMR-Information

east of Route 495. The Facility has a design flow of 5.5 MGD, the annual average daily flow reported in the City's 2009 NPDES Permit application was 4.98 MGD and the median average monthly flow during the review period was 3.12 MGD. The system is a separate system with no combined sewers. Wastewater is comprised of mostly domestic sewage with some commercial sewage and some septage.

There are no significant industrial users- contributing industrial wastewater to the WWTP, and thus not required to have a pretreatment program.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the permittee from June 2016 through May 2021 (the "review period") is provided in Appendix A of this Fact Sheet.

3.1.1 Treatment Process Description

The Facility is a two-stage aeration wastewater treatment plant with nitrification and phosphorus removal. In 2014, the City completed extensive upgrades at the Facility that included new headworks, new turbines in the aeration tanks, a Biomag system for phosphorus removal, and new centrifuges for sludge dewatering.

Unit operations include preliminary, primary and, biological treatments followed by disinfection and dechlorination before the final effluent is discharged to the receiving water. Preliminary treatment includes influent flowing through one of two fine screens. (In the event of high flows both automatic fine screens operate with a bypass channel between the screens.) Grit is removed, the influent is sampled, and flow is measured by a Parshall flume during primary treatment. Biological treatment consists of two-stage aeration for $CBOD_5$ and nitrification. Ferric chloride is added in the first and second aeration stages for chemical precipitation of phosphorus, and a Biomag system was added to second stage aeration to create a heavier floc to improve phosphorus removal during clarification. After biological treatment the effluent is disinfected with sodium hypochlorite then dechlorinated with sodium bisulfite. The effluent is re-aerated via cascade steps to increase dissolved oxygen concentration prior to final discharge into the unnamed tributary that drains to the inlet of Hager Pond. A flow diagram of the Treatment Facility is shown in Figure 4.

Waste sludge is pumped from the clarifiers' return sludge lines to an aerated sludge holding tank and then dewatered following chemical addition. The dried sludge is sent to Casella for landfill disposal. The total sludge shipped from January through October 31, 2021 was 1,181.7 dry metric tons.

3.1.2 Collection System Description

The Easterly WWTF is served by a separate sewer system. A separate sanitary sewer conveys domestic, industrial and commercial sewage, but not stormwater. It is part of a "two pipe system" consisting of separate sanitary sewers and stormwater. The two systems have no interconnections; the sanitary sewer leads to the wastewater treatment plant and the storm sewers discharge to a local water body.

4.0 Description of Receiving Water and Dilution

4.1 Receiving Water

The Facility discharges through Outfall 001 into Segment MA82A-15, a water body identified as an unnamed tributary, on the Massachusetts Year 2016 Integrated List of Waters ("303(d) List")[5]. It is 1.1 miles in length and travels from the Facility's outfall to the inlet of Hager Pond.

The U.S. Geological Survey published a report[6] in 1984 documenting the flow from the receiving water to the inlet of Hager Pond. The report describes Hager Pond as one of three ponds (including Grist Millpond and Carding Millpond) that lie in the headwaters of Hop Brook[7]. The ponds drain from one pond to the other, by way of the unnamed tributaries identified as Segments MA82A-16 and MA82A-17 by MassDEP. The unnamed tributary, MA82A-17, becomes the named stream, Hop Brook (Segment MA82A-5) at the outlet of Carding Millpond. This subwatershed is known as Hop Brook Watershed and it contributes freshwater to Sudbury River. The Sudbury River joins the Concord River in the Concord Watershed and eventually discharges to the Merrimack River Estuary in the Merrimack River Watershed.

"The only significant point source to the Hop Brook system is the Facility's discharge. Figure 1, The Facility and Hager Pond Inlet, shows[8] the Hop Brook System and the location of the Facility in relation to the receiving water. "Past investigations have determined that the flow from the Facility often is as much as 90% or more of the stream flow during the summer months (USGS 1984) and that without this discharge the unnamed tributary would be nearly dry during certain times of the year[9]."

[5] *Massachusetts Year 2016 Integrated Lists of Waters*, Massachusetts Department of Environmental Protection, Division of Watershed Management, Watershed Planning Program, Worcester, Massachusetts, December 2019, page 187.
[6] U.S. Geological Survey, 1984," Source, Movement, and Effects of Nitrogen and Phosphorus in Three Ponds in the Headwaters of Hop Brook, Marlborough, Massachusetts", Water-Resources Investigation Report 84-4017, pg 3.
[7] U.S. Geological Survey, 1984," Source, Movement, and Effects of Nitrogen and Phosphorus in Three Ponds in the Headwaters of Hop Brook, Marlborough, Massachusetts", Water-Resources Investigation Report 84-4017, pg 2.
[8] U.S. Geological Survey, 1984," Source, Movement, and Effects of Nitrogen and Phosphorus in Three Ponds in the Headwaters of Hop Brook, Marlborough, Massachusetts", Water-Resources Investigation Report 84-4017, pg 3.
[9] ENSR October 2000. Nutrient Impact Evaluation of Hop Brook in Marlborough and Sudbury, Massachusetts. Document Number 8726-686. ENSR International, Westford, Massachusetts, page 9.

Figure 1. The Facility and Hager Pond Inlet

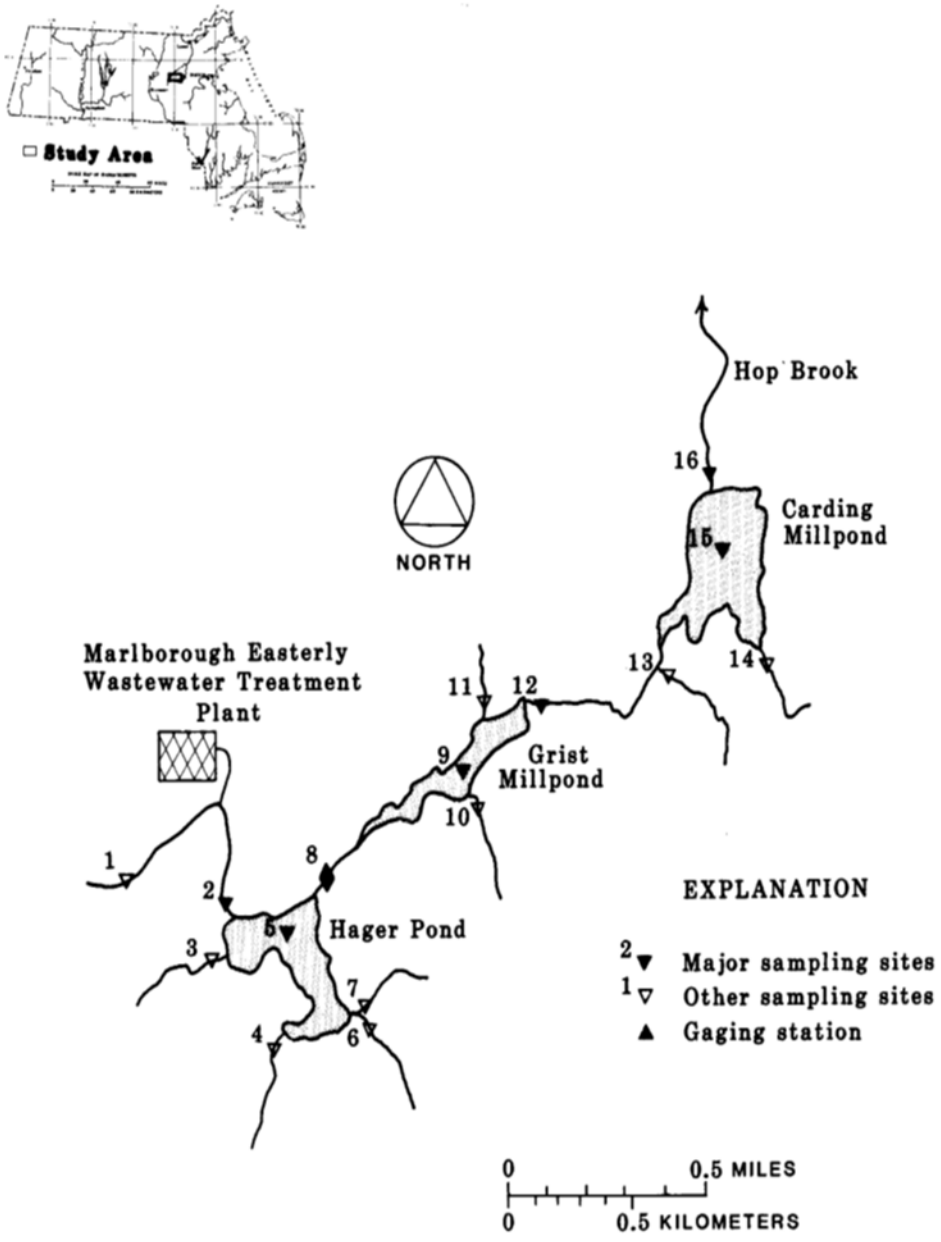


Figure 1.--Study area showing pond system, sampling sites, and wastewater treatment plant.

The unnamed tributary that receives the Facility's discharge is classified as a Class B warm water fishery in the Massachusetts WQS (MA WQS), 314 Code of Massachusetts Regulations (CMR) 4.05(4)(a). The MA WQS at 314 CMR 4.05(3)(b) state that Class B "waters are designated as habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. They shall be a source of public water supply (i.e., where designated and with appropriate treatment). They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. They shall also have consistently good aesthetic value."

The receiving water is listed in the 303(d) list as a Category 5 "Water Requiring a TMDL"[10]. To date, a TMDL has not been developed for any impairments listed for this segment. According to the 303(d) list, this water body segment is not attaining uses designated for aquatic life, primary recreation, secondary recreation, and aesthetics, while the designated uses for fish consumption have not been assessed. The status of each designated use for the receiving water is presented in Table 1.

Table 1:Summary of Designated Uses and Listing Status

Designated Use	Status
Aquatic Life	Impaired: algae, dissolved oxygen, total phosphorus and total suspended solids
Aesthetics	Impaired: dissolved oxygen, nutrient/eutrophication/biological indicators, total phosphorus
Primary Contact Recreation	Impaired: algae
Secondary Contact Recreation	Impaired: algae
Fish Consumption	Not Assessed

Hager Pond, Grist Millpond, Carding Millpond and Hop Brook downstream of the receiving water are each listed in Category 5, "Water Requiring a TMDL" in the 303(d) list and impaired for algae, aquatic plants, dissolved oxygen supersaturation and total phosphorus.

In 1982, the Massachusetts Department of Environmental Quality Engineering (DEQE) published a water quality management plan[11], that includes a wasteload allocation (WLA) for the parameters listed below for this Facility. Given the limited assimilative capacity of the receiving water, the plan included permit limits more stringent than secondary treatment requirements as

[10] *Massachusetts Year 2016 Integrated Lists of Waters*, Massachusetts Department of Environmental Protection, Division of Watershed Management, Watershed Planning Program, Worcester, Massachusetts, December 2019, page 187.
[11] The SUASCO River Basin Plan, Water Quality Management Plan-1981, Department of Environmental Quality Engineering, Westborough, January 1982, pg 23.

well as limits for ammonia and total phosphorus. The 1981 WLAs from the water quality management plan are shown in Table 2.

Table 2: **Limits in 1981 MA DEQE Wasteload Allocation**[12]

Flow (MGD)	BOD_5 (mg/L)	TSS (mg/L)	Ammonia Nitrogen* (mg/L)	Total Phosphorus* (mg/L)	Dissolved Oxygen (mg/L)
5.5	7	15	0.5	0.75	$\geq$ 80% saturation

*Permit includes phosphate as phosphorous (P04-P).

4.2 Ambient Data

A summary of the ambient data collected in the receiving water in the vicinity of the outfall that is referenced in this Fact Sheet can be found in Appendix A of this Fact Sheet.

4.3 Available Dilution

To ensure that discharges do not cause or contribute to violations of WQS under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water[13]. The critical flow in rivers and streams is some measure of the low flow of that river or stream. Massachusetts' WQS require that for rivers and streams, the lowest condition is the lowest mean flow for seven consecutive days, recorded once in 10 years, or 7-day 10-year low flow (7Q10). See 314 CMR 4.03(3)(a).

The data in Table 3 documents the historic instantaneous streamflow measurements collected from the unnamed tributary that flows to the inlet of Hager Pond from a U.S. Geological Survey Water-Resources Survey Investigation Report[14]. This report states that,

Table 3. Instantaneous streamflow data from unnamed tributary, cfs**.**

	1976	1977	1978
April		17	11
June		5.1	5.8
July			4.1
August		3.9	4.9
October		6.5	
November	4.9		4.1

"The wastewater treatment plant contributes significant amount of the inflow to the system. Figure 2. Percentage of the Facility's Effluent Measured at the Outlet of Hager Pond, shows that, the stream flow of 9 ft^3/s or less at the outlet of Hager Pond is effluent from the Facility and at streamflow

[12] Massachusetts Department of Environmental Quality Engineering, *The SuAsCo Small River Basin Water Quality Management Plan,* 1981, page 29.
[13] EPA Permit Writer's Manual, Section 6.2.4
[14] U.S. Geological Survey, 1984," Source, Movement, and Effects of Nitrogen and Phosphorus in Three Ponds in the Headwaters of Hop Brook, Marlborough, Massachusetts", Water-Resources Investigation Report 84-4017, pg 6.

as low as 2 to 3 ft^3/s 90 percent or more of the flow is contributed by the plant."[15]

The unnamed tributary that drains to the inlet of Hager Pond remains a low-flow effluent-dominated stream and no additional dilution for the effluent is provided. Therefore, the dilution factor of 1 remains (the same as in the 2004 Permit) and the 7Q10 is 0.1 cfs (0.06 MGD).

[15] U.S. Geological Survey, 1984," Source, Movement, and Effects of Nitrogen and Phosphorus in Three Ponds in the Headwaters of Hop Brook, Marlborough, Massachusetts", Water-Resources Investigation Report 84-4017, pg 6.

Figure 2. **Percentage of Facility's Effluent Measured at the Outlet of Hager Pond**

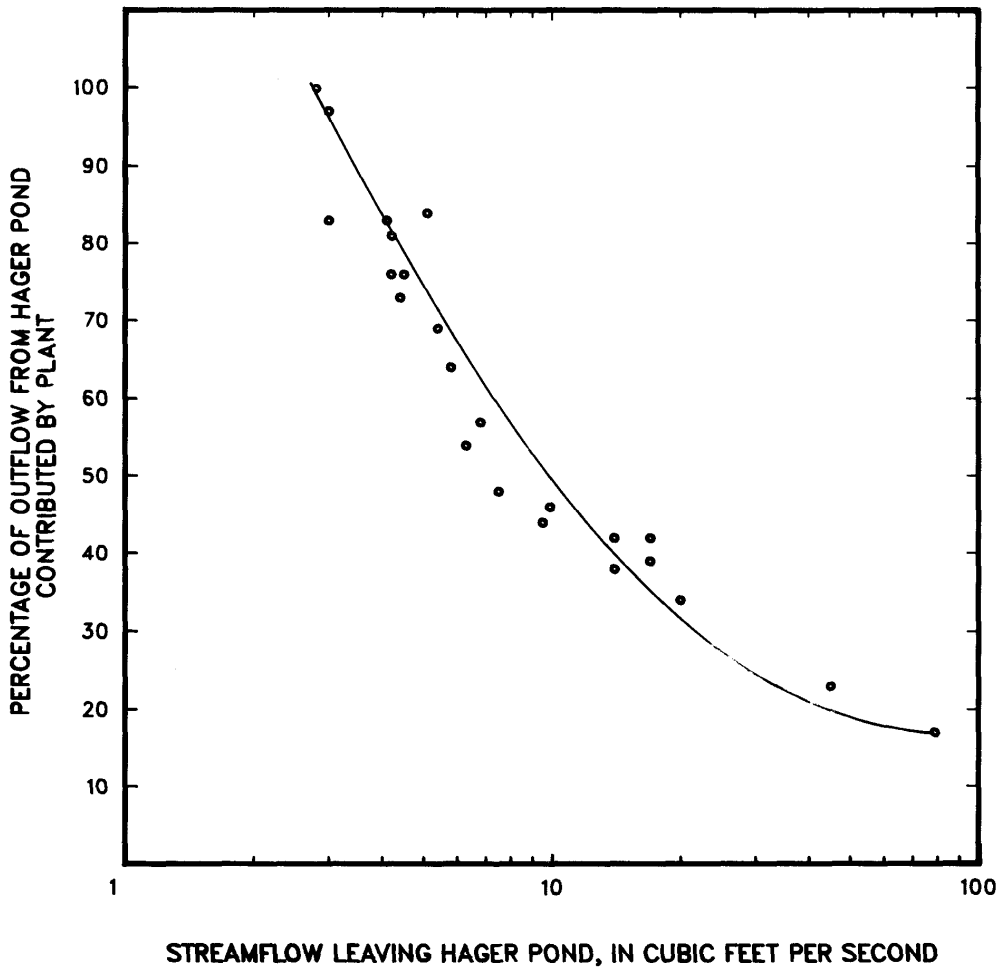


Figure 2.-- Percentage of contribution of wastewater treatment plant effluent to the flow from Hager Pond.

5.0 Proposed Effluent Limitations and Conditions

The proposed effluent limitations and conditions derived under the CWA and State WQS are described below. These proposed effluent limitations and conditions, the basis of which are discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit.

5.1 Effluent Limitations and Monitoring Requirements

In addition to the State and Federal regulations described in Section 2, data submitted by the permittee in its permit application, in monthly discharge monitoring reports (DMRs) and in WET test reports from June 2016 to May 2021 (the "review period") were used to identify the pollutants of concern and to evaluate the discharge during the effluent limitations development process (*See* **Appendix A)**.The reasonable potential analysis is included in Appendix B and results are discussed in the sections below.

5.1.1 Effluent Flow

The effluent flow limit in the 2004 Permit is 5.5 MGD, as an average monthly flow, based on the Facility's design flow. There were two exceedances of the flow limit during the review period, in April 2017 and November 2018. See Appendix A.

The Draft Permit continues the 5.5 MGD monthly average flow limit from the 2004 Permit and that the flow be measured continuously.

5.1.2 Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) Concentration Limits

The warm weather average monthly BOD_5 limit in the 2004 Draft Permit (effective April 1 through November 30) was established in the 1981 WLA[16]; the average monthly limit is 7 mg/L. The average weekly limit of 10 mg/L in the 2004 Draft Permit is based on requirements under Section 301(b)(1)(C) of the CWA. The maximum daily limit of 15 mg/L is based on State Certification requirements under Section 401(d) of the CWA, 40 CFR §§ 124.53 and 124.55 and water quality considerations.

The City requested EPA change the BOD_5 limits to $CBOD_5$ limits during the 2004 public comment period. The regulations at 40 CFR § 133.103(4), allow $CBOD_5$ to be substituted for BOD_5 at the discretion of NPDES Permitting authority. EPA agreed to the change the limits in the 2004 Final Permit due to nitrification at the Facility. Basing permit limits on $CBOD_5$ instead of BOD_5 minimizes false indications of poor facility performance as a result of nitrogenous oxygen demand and eliminates the impact of nitrification on discharge limits and compliance determinations.

The seasonal monitoring periods have changed for $CBOD_5$ in the Draft Permit to reflect the seasonal monitoring periods in recently issued EPA Region 1 NPDES permits and generally

[16] Massachusetts Department of Environmental Quality Engineering, *Small River Basin Water Quality Management Plan,* 1981, page 40.

coincide with growing season defined in the MassDEP Calm Guidance[17]. The warm weather season is April through October and the cold weather season is November through March.

The CBOD5 limits in the 2004 Permit were incorrect and have been corrected in the Draft Permit. The Draft Permit has an average monthly limit of 6 mg/L and an average weekly limit of 9 mg/L. The maximum daily limit of 15 mg/L will remain in the Draft Permit. See updated calculations below which ensure the $CBOD_5$ limits will be protective of the 1981 WLA for BOD_5.

Secondary Treatment Standards
BOD_5, 30 mg/L (average monthly), 45 mg/L (average weekly)
$CBOD_5$, 25 mg/L (average monthly), 40 mg/L (average weekly)

2004 Draft Permit average monthly BOD_5 limit is 7 mg/L
2004 Draft Permit average weekly $CBOD_5$ limit is 10 mg/L

$$\frac{\text{Draft Permit } CBOD_5 \text{ Limit}}{\text{2004 Draft } BOD_5 \text{ Permit Limit}} = \frac{CBOD_5 \text{ secondary standard}}{BOD_5 \text{ secondary standard}}$$

Average Monthly $CBOD_5$ Limit

$$\frac{x \text{ mg/L}}{7 \text{ mg/L}} = \frac{25 \text{ mg/L}}{30 \text{ mg/L}}$$

x mg/L = 5.8 mg/L
Average Monthly $CBOD_5$ limit is 6 mg/L

Average Weekly $CBOD_5$ Limit

$$\frac{x \text{ mg/L}}{10 \text{ mg/L}} = \frac{40 \text{ mg/L}}{45 \text{ mg/L}}$$

x mg/L = 8.8 mg/L
Average Weekly $CBOD_5$ limit is 9 mg/L

The cold weather BOD_5 limits in the 2004 Draft Permit (effective December 1 through March 31) are an average monthly limit of 20 mg/L, an average weekly limit of 25 mg/L, and a maximum daily limit of 30 mg/L. The average monthly and average weekly limits are based on requirements under Section 301(b)(1)(C) of the CWA. The maximum daily limit of 30 mg/L was based on State Certification requirements under Section 401(d) of the CWA, 40 CFR §§ 124.53 and 124.55 and water quality considerations.

However, the correct limits are an average monthly limit of 17 mg/L, an average weekly limit of 22 mg/L and a maximum daily limit of 30 mg/L. The DMR data from the review period shows that there have been no exceedances of $CBOD_5$ concentration limits. The DMR data indicates the revised $CBOD_5$ will be achieved. See updated calculations below which ensure the $CBOD_5$ limits will be protective of the 1981 WLA for BOD_5.

[17] Massachusetts Department of Environmental Protection, "Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual for the 2018 Reporting Cycle", May 2018. https://www.mass.gov/doc/2018-consolidated-assessment-and-listing-methodology-guidance/download

Secondary Standards
$CBOD_5$, 25 mg/L (average monthly), 40 mg/L (average weekly)
BOD_5, 30 mg/L (average monthly), 45 mg/L (average weekly)

2004 Draft Permit average monthly BOD_5, 20 mg/L
2004 Draft Permit average weekly BOD_5, 25 mg/L

Draft Permit $CBOD_5$ Limit = $CBOD_5$ secondary standard
2004 Draft BOD_5 Permit Limit BOD_5 secondary standard

Average Monthly $CBOD_5$ Limit	Average Weekly $CBOD_5$ Limit
x mg/L = 25 mg/L 20 mg/L 30 mg/L	x mg/L = 40 mg/L 25 mg/L 45 mg/L
x mg/L = 16.6 mg/L Average Monthly $CBOD_5$ limit is 17 mg/L	x mg/L = 22.2 mg/L Average Weekly $CBOD_5$ limit is 22 mg/L

5.1.2.1 $CBOD_5$ Mass Limits

The summer and winter mass-based $CBOD_5$ limits in the 2004 Permit are based on the concentration limits and the design flow of the Facility. The summer limits are 321 lb/day (average monthly) and 459 lb/day (average weekly) and the winter mass-based limits are 917 lb/day (average monthly) and 1,147 lb/day (average weekly).

The DMR data during the review period show that there have been no exceedances of $CBOD_5$ concentration limits.

Calculations of maximum allowable loads for average monthly and average weekly $CBOD_5$ are based on the following equation:

$$L = C_d * Q_d * 8.34$$

Where:
L = Maximum allowable load in lb/day
C_d = Maximum allowable effluent concentration for reporting period in mg/L (reporting periods are average monthly and average weekly)
Q_d = Annual average design flow of Facility
8.34 = Factor to convert effluent concentration in mg/L and design flow in MGD to lb/day

Summer Limits:
Average Monthly: 6 mg/L * 5.5 MGD * 8.34 = 275 lb/day
Average Weekly: 9 mg/L* 5.5 MGD * 8.34 = 413 lb/day

Winter Limits:
Average Monthly: 17 mg/L * 5.5 MGD * 8.34 = 780 lb/day
Average Weekly: 22 mg/L * 5.5 MGD * 8.34 = 1,009 lb/day

5.1.3 Total Suspended Solids (TSS)

5.1.3.1 TSS Concentration Limits

The warm weather average monthly TSS limits in the 2004 Draft Permit (effective April 1 through November 30) was established in the Massachusetts 1981 wasteload allocation (WLA)[18]; the average monthly limit is 15 mg/L. The average weekly limit of 29 mg/L in the 2004 Draft Permit is based on requirements under Section 301(b)(1)(C) of the CWA. The maximum daily limit of 30 mg/L is based on State Certification requirements under Section 401(d) of the CWA, 40 CFR §§ 124.53 and 124.55 and water quality.

The seasonal monitoring periods have changed for TSS in the Draft Permit to reflect the seasonal monitoring periods in recently issued EPA Region 1 NPDES permits. The warm weather season is April through October and the cold weather season is November through March.

The Draft Permit proposes the same TSS concentration limits as in the 2004 Permit as no new WLAs have been established, and there have been no changes to the secondary treatment standards. The monitoring frequency remains at three times per week.

5.1.3.2 TSS Mass Limits

The summer mass-based TSS limits in the 2004 Permit are 688 lb/day (average monthly) and 917 lb/day (average weekly) and are based on the concentration limits and the design flow of the Facility. The winter mass-based limits are 917 lb/day (average monthly) and 1,147 lb/day (average weekly) and are based on the concentration limits and the design flow of the Facility.

The DMR data during the review period shows that there have been no exceedances of TSS mass limits.

TSS Mass Loading Calculations:

Calculations of maximum allowable loads for average monthly and average weekly TSS are based on the following equation:

$$L = C_d * Q_d * 8.34$$

[18] Massachusetts Department of Environmental Quality Engineering, *Small River Basin Water Quality Management Plan,* 1981, page 40.

Where:

L = Maximum allowable load in lb/day
C_d = Maximum allowable effluent concentration for reporting period in mg/L (reporting periods are average monthly and average weekly)
Q_d =Annual Average Design flow of Facility
8.34 = Factor to convert effluent concentration in mg/L and design flow in MGD to lb/day

Summer Limits:
Average Monthly: 15 mg/L * 5.5 MGD * 8.34 = 688 lb/day
Average Weekly: 20 mg/L* 5.5 MGD * 8.34 = 917 lb/day

Winter Limits:
Average Monthly: 20 mg/L * 5.5 MGD * 8.34 = 917 lb/day
Average Weekly: 25 mg/L * 5.5 MGD * 8.34 = 1,147 lb/day

5.1.4 Eighty-Five Percent (85%) $CBOD_5$ and TSS Removal Requirement

In accordance with the provisions of 40 CFR § 133.102(a)(3) and (b)(3), the 2004 Permit requires that the 30-day average percent removal for BOD_5 and TSS is not less than 85%. The DMR data during the review period shows that the median BOD_5 and TSS removal percentages are both 99%, respectively. There were no exceedances of the 85% removal requirement for BOD_5 or TSS during that period.

The requirement to achieve 85% BOD_5 removal has been changed to 85% $CBOD_5$ removal in the Draft Permit to reflect the treatment at the Facility. The requirement to achieve 85% TSS removal has been carried forward into the Draft Permit.

5.1.5 pH

Consistent with the requirements of Massachusetts WQS at 314 CMR 4.05(3)(b)(3), the Permit requires that the pH of the effluent is not less than 6.5 or greater than 8.3 standard units at any time. The monitoring frequency is once per day. The DMR data during the review period show that there was one exceedances of the minimum pH limitation in November 2017.

The pH requirements in the 2004 Permit are carried forward into the Draft Permit as there has been no change in the WQS with regards to pH. The limitations are based on CWA 301(b)(1)(C) and 40 CFR § 122.44(d).

5.1.6 Bacteria

The 2004 Permit includes effluent limitations for bacteria using fecal coliform bacteria as the indicator bacteria with a monthly limit of 200 colony forming units (cfu)/100 ml and a weekly and daily maximum limit of 400 cfu/100 ml. These limits were based on the applicable WQS at

the time the permit was issued. The DMR data during the review period show that there have been no exceedances of the bacteria limitations.

Consistent with Massachusetts' bacteria criteria at 314 CMR 4.05(3)(b) 4.b. the bacteria limits proposed in the Draft Permit are 126 colonies *E. coli*/100 ml as a geometric mean and 409 colonies *E. coli*/100 ml maximum daily value (this is the 90% distribution of the geometric mean of 126 colonies/100 ml[19]). The bacteria limits apply year-round and the monitoring frequency is three per week. Due to the change in the Massachusetts bacteria criteria, there are no effluent limits or monitoring requirements for fecal coliform in the Draft Permit.

5.1.7 Dissolved Oxygen

The 2004 Permit includes a dissolved oxygen (DO) limit of not less than 80% saturation[20] with a once per day monitoring frequency. Review of the DMR monitoring data for the review period provided in Appendix A, show the median of the average monthly DO was 99% saturation. This limit and monitoring frequency have been continued in the Draft Permit.

A review of the "Water Quality Monitoring Program Final Report: 2018-2019 Field Seasons"[21], published by the Organization for the Assabet Rivers (OARS) in March 2020 includes the following ambient DO data for Hop Brook in Sudbury, downstream of the Facility's discharge.

Table 4. Hop Brook Dissolved Oxygen Data

	2018	2019
May	3.74	4.19
June	3.89	2.77
July	1.33	1.32
August	0.94	1.74
September	3.72	5.84

5.1.8 Total Residual Chlorine

The Permittee uses chlorine disinfection. The 2004 Permit includes effluent limitations for total residual chlorine (TRC) of 0.11 mg/L (average monthly) and 0.019 mg/L (maximum daily). The DMR data during the review period show that there have been no exceedances of the TRC limitations.

The TRC permit limits are based on the instream chlorine criteria defined in National Recommended Water Quality Criteria: 2002, EPA 822R-02-047 (November 2002), as adopted by the MassDEP into the state water quality standards at 314 CMR 4.05(5)(e). The freshwater instream criteria for chlorine are 11 µg/L (chronic) and 19 µg/L (acute). Because the upstream

[19]MassDEP, "Draft 6/25/2007 Guidance on Implementation of Proposed Primary Contact Recreation Bacteria in Massachusetts Surface Water Quality Standards, 314 CMR 4.00," 2007, p. 11, Table 2.
[20] Massachusetts Department of Environmental Quality Engineering, *Small River Basin Water Quality Management Plan,* 1981, page 29.
[21]OARS, Water Quality monitoring Program Final Report:2018-2019 Field Seasons", March 2020, page 31.

chlorine is assumed to be zero in this case, the water quality-based chlorine limits are calculated using the criteria and the dilution factor, as follows:

Chronic criteria * dilution factor = Chronic limit
11 µg/l * 1.0 = 11 µg/L (average monthly)

Acute criteria * dilution factor = Acute limit
19 µg/l * 1.0 = 19 µg/L (maximum daily)

These limits are included in the Draft Permit and are the same limits in the 2004 Permit.

5.1.9 Ammonia

The 2004 Permit includes ammonia effluent limitations of 0.5 mg/L (average monthly), 0.75 mg/L (average weekly) and 1.0 mg/L (maximum daily) for ammonia during warm weather (April 1 - November 30) and 4.4 mg/L (average monthly), 4.4 mg/L (average weekly) and a maximum daily reporting requirement during cold weather (December 1 - March 31). The DMR data during the review period show there were 18 exceedances of the warm weather ammonia limits (3 exceedances of the average monthly limit, 6 exceedances of the average weekly limit and 9 exceedances of the maximum daily limit) and no exceedances of the cold weather ammonia limits. See Appendix A of this fact sheet.

The warm weather average monthly effluent limit is based on a 1981 WLA[22] issued by MassDEP and has been carried forward in the Draft Permit. The average weekly and maximum daily limits during the warm weather season and the average monthly and average weekly limits during the cold weather are the same as in the 2004 Permit.

Ambient data, taken upstream of the Facility's outfall in the unnamed tributary, is presented in Appendix A and shows the median concentration for the warm weather period (April 1 through October 31) is 0.16 mg/L and for the cold weather period (November 1 through March 31) is 0.122 mg/L.

The ammonia criteria in EPA's *National Recommended Water Quality Criteria,* 2002 (EPA 822-R-02-047) document are included by reference in the Massachusetts WQS (*See* 314 CMR 4.05(5)(e)). The freshwater acute criterion is dependent on pH and the freshwater chronic criterion is dependent on pH, temperature and whether early life stages of fish are present in the receiving water.

In determining whether the discharge has the reasonable potential to cause or contribute to excursions above the instream water quality criteria for ammonia, EPA used the mass balance equation presented in Appendix B for both warm and cold weather conditions to project the ammonia concentration downstream of the discharge. If there is reasonable potential, this mass balance equation is also used to determine the limit that is required in the permit.

[22] Massachusetts Department of Environmental Quality Engineering, *Small River Basin Water Quality Management Plan,* 1981, page 29

EPA notes that since the 2004 Permit already contained limits for ammonia, the same mass balance equation is used to determine if a more stringent limit would be required to continue to meet WQS under current conditions. The limit is determined to be more stringent of either (1) the exiting limit or (2) the calculated effluent concentration ((C_d) allowable to meet WQS based on current conditions.

To determine the applicable ammonia criteria, EPA assumes a warm weather temperature of 25° C and a cold weather temperature of 5° C. EPA used the ambient pH monitoring shown in Appendix A, which indicates that the median pH is 7.1 S.U. Additionally, EPA has assumed that salmonids are not present in the receiving water. The acute and chronic criteria are 32.2 mg/L and 2.9 mg/L from April through November and 32.2 mg/L and 5.6 mg/L from December through March.

Based on the information and assumptions described above, Appendix B presents the applicable ammonia criteria, the details of the mass balance equation, the reasonable potential determination, and the limits required in the Draft Permit. As shown, the ammonia criteria show that the limits in the 2004 Permit are protective of the receiving water and the limits are carried forward in the Draft Permit. Effluent and ambient monitoring for ammonia will continue to be required in the quarterly WET tests.

The Draft Permit has an average monthly limit of 0.5 mg/L, an average weekly limit of 0.75 mg/L and a maximum daily limit of 1.0 mg/L from April 1 through October 31 with a once per week monitoring requirement. The Draft Permit also has an average monthly and average weekly limit of 4.4 mg/L, and a maximum daily reporting requirement from November 1 through March 31 with a once per month monitoring requirement.

5.1.10 Nutrients

Nutrients are compounds containing nitrogen and phosphorus. Although nitrogen and phosphorus are essential for plant growth, high concentrations of these nutrients can cause eutrophication, a condition in which aquatic plant and algal growth is excessive. Plant and algae respiration and decomposition reduces dissolved oxygen in the water, creating poor habitat for fish and other aquatic animals. Recent studies provide evidence that both phosphorus and nitrogen can play a role in the eutrophication of certain ecosystems. However, typically phosphorus is the limiting nutrient triggering eutrophication in freshwater ecosystems and nitrogen in marine or estuarine ecosystems. Thus, for this receiving water, this permit, phosphorus [or nitrogen or both] is the nutrient of concern evaluated for effluent limitations in the discussion below.

5.1.10.1 Total Nitrogen in the Merrimack Watershed

The Merrimack River watershed, which includes the Sudbury (the receiving water is a tributary of the Sudbury River) and Concord Rivers, is a largely and densely populated watershed including 40 POTW discharges in Massachusetts and New Hampshire. EPA estimates that approximately 15,000 lb/day of nitrogen is discharged by POTWs into the freshwater portion of the watershed and another 2,000 lb/day into the marine portion. Recent nitrogen data collected by CDM Smith in 2014 and 2016 in the estuarine portions of the Merrimack River indicates

elevated total nitrogen and chlorophyll 'a' levels. High nutrient concentrations can lead to increased levels of chlorophyll 'a', therefore chlorophyll 'a' can be an indicator of elevated nutrient concentrations. In samples with salinity greater than 10 ppt, total nitrogen ranged from 0.442 to 1.67 mg/L while chlorophyll 'a' ranged from 4 to 42 ppt. EPA collected samples on the outgoing tide in 2017 in this area and found total nitrogen levels in the range of 0.62 mg/L to 1.3 mg/L and chlorophyll 'a' ranging from 2 to 11 ppt in samples with salinity greater than 10 ppt. EPA is concerned about the impacts that these nitrogen levels may be having on aquatic life in the estuary as most of these results are outside the range typically found in healthy estuaries in Massachusetts. However, more data is necessary to determine whether there is reasonable potential for nitrogen discharges from the Facility to cause or contribute to a violation of the Massachusetts narrative nutrient criteria in the Merrimack River estuary, particularly data that characterizes aquatic life designated uses that may be affected in this area so that the narrative criteria can be interpreted numerically. In the meantime, EPA finds that quantifying the load of total nitrogen from this Facility and others in the Merrimack River watershed is an important first step to understanding the loading of nitrogen from point sources and their potential impact on the estuary.

The Draft Permit includes weekly monitoring for total nitrate plus total nitrite, total Kjeldahl nitrogen and total nitrogen from April through October and monthly monitoring from November through March. The monitoring data will provide additional information on the fate of nitrogen through the treatment process and its impact to the Merrimack River estuary. The Agencies recommend the City factor in treatment methods to reduce nitrogen in the effluent for any planned upgrades at the treatment plant, as nitrogen limits may be included in subsequent permits.

5.2 Total Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities.

The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: 1) increasing oxygen demand within the water body to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter; 2) causing an unpleasant appearance and odor; 3) interfering with navigation and recreation; 4) reducing water clarity; 5) reducing the quality and availability of suitable habitat for aquatic life; 6) producing toxic cyanobacteria during certain algal blooms. Cultural (or accelerated) eutrophication is the term used to describe dense and excessive plant growth in a water body that results from nutrients entering the system as a result of human activities. Discharges from municipal and industrial wastewater treatment plants, agriculture runoff, and stormwater are examples of human-derived (i.e. anthropogenic) sources of nutrients in surface waters. See generally, *Nutrient Criteria Technical Guidance Manual – Rivers and Streams*, EPA July 2000 [EPA-822-B-00-002], Chapters 1 and 3.

The MA WQS under 314 CMR 4.05(5)(c) requires that, unless naturally occurring, surface waters must be free from nutrients that cause or contribute to impairment of the existing or designated uses, and the concentration of phosphorus may not exceed site specific criteria

developed in a TMDL. Nutrients are also prohibited in concentrations that would cause or contribute to cultural eutrophication. Cultural eutrophication results in exceedances of other nutrient-related water quality standards such as low dissolved oxygen, decreased water clarity, objectionable odors, and surface scum. The MA WQS at 314 CMR 4.05(3)(b)(1) requires that dissolved oxygen not be less than 6.0 mg/L in cold water fisheries or 5.0 mg/L in warm water fisheries. Further, the MA WQS at 4.05(3)(b)(5), (6) and (8) state that waters must be free from "floating, suspended, and settleable solids," free from "color and turbidity in concentrations or combinations that are aesthetically objectionable…", and have no taste and odor "in such concentrations or combinations that are aesthetically objectionable, that would impair any use assigned to this Class, or that would cause tainting or undesirable flavors in the edible portions of aquatic life." To prevent cultural eutrophication, the MA WQS at 4.05(5)(c) states that "Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and Best Available Technology Economically Achievable (BAT) for non POTWs, to remove such nutrients to ensure protection of existing and designated uses." Also see Part 2.2.2 of this Fact Sheet above regarding antidegradation and existing uses which may be impacted by nutrient over-enrichment.

When permitting nutrient discharges, EPA analyzes available information from a reasonably conservative standpoint, as it regards one key function of a nutrient limit as preventative. This protective approach is appropriate because, once begun, the cycle of eutrophication can be difficult to reverse due to the tendency of nutrients to be retained in the sediments. For this reason, time is of the essence when permitting for nutrients, so EPA acts on the best information reasonably available when developing the draft permit and does not generally delay permit issuance pending collection of new data or development of new models. This approach is also consistent with the requirement for NPDES permits to be revisited and reissued at regular intervals, with permit terms not to exceed five years.

When translating narrative phosphorus criteria into numeric values (and establishing WQBELs, if necessary), EPA looks to a wide range of materials, including nationally recommended criteria and other relevant materials, such as EPA nutrient technical guidance and information published under Section 304(a) of the CWA, peer-reviewed scientific literature and site-specific surveys and data to determine instream targets that are protective of water quality. See 40 CFR § 122.44(d)(1)(vi)(A), (B).

EPA has produced several guidance documents, described below, that recommend a range of total ambient phosphorus concentrations that are sufficiently stringent to control cultural eutrophication and other adverse nutrient-related impacts, with 0.1 mg/L representing the upper end of this range. These guidance documents recommend protective in-stream phosphorus concentrations based on two different analytical approaches. An effects-based approach provides a threshold value above which adverse effects (*i.e.*, water quality impairments) are likely to occur. This approach applies empirical observations of a causal variable (*i.e.*, phosphorus) and a response variable (*i.e.*, chlorophyll-a as a measure of algal biomass) associated with designated use impairments. Alternatively, reference-based values are statistically derived from a

comparison within a population of rivers in the same ecoregion class. They are a quantitative set of river characteristics (physical, chemical and biological) that represent conditions in waters in that ecoregion that are minimally impacted by human activities (*i.e.*, reference conditions), and thus by definition are representative of water without cultural eutrophication. Dischargers in Massachusetts and New Hampshire are located within either Ecoregion VII, Nutrient-Poor, Largely Glaciated Upper Midwest and Northeast or Ecoregion XIV, Eastern Coastal Plains. The recommended total phosphorus criteria for these ecoregions are 10 µg/L and 31.25 µg/L, respectively. While reference conditions reflect in-stream phosphorus concentrations that are sufficiently low to meet the requirements necessary to support designated uses, they may also represent levels of water quality beyond what is necessary to support such uses.

EPA follows an effects-based approach. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") recommends maximum threshold concentrations that are designed to prevent or control adverse nutrient-related impacts from occurring. Specifically, the Gold Book recommends in-stream phosphorus concentrations of no greater than 0.05 mg/L in any stream entering a lake or reservoir, 0.1 mg/L for any stream not discharging directly to lakes or impoundments, and 0.025 mg/L within a lake or reservoir. In this case, the receiving water is directly upstream to the inlet of Hager Pond and is more susceptible to phosphorus loading than a free-flowing river. For Hop Brook to meet State Water Quality Standards in the future, the City must address the sediment phosphorous flux and eliminate sources of non-point source pollution.

The physical characteristics of Hager Pond may make it more susceptible to sediment loading from the tributary than if the unnamed tributary drained to a free-flowing river.

Table 5. Physical Characteristics of Hager Pond

	Volume	Surface Area	Average Depth	Maximum Depth	Avg. Width
Hager Pond	77 acre-ft	31 acres	2.5 feet	7.5 feet	980 feet

The Gold Book recommended value of 0.05 mg/L in any stream entering a lake or reservoir is coterminous with the range of published, peer-review values presented in a more recent EPA technical guidance manual, *Nutrient Criteria Technical Guidance Manual – Rivers and Streams*, EPA July 2000 [EPA-822-B-00-002], Chapter 7 Table 4 (a simplified version of this table is shown as Table 6 below), which contains recommended threshold ambient concentrations drawn from the scientific literature that are sufficiently stringent to control periphyton and plankton (two types of aquatic plant growth associated with eutrophication). This guidance indicates that in-stream phosphorus concentrations between 0.01 mg/L and 0.09 mg/L will be sufficient to control periphyton growth and concentrations between 0.035 mg/L and 0.070 mg/L will be sufficient to control plankton.

Table 6. Recommended Nutrient Levels to Prevent Eutrophic Impairment

PERIPHYTON Maximum			
TP (µg/L)	**Chlorophyll a (µg/L)**	**Impairment Risk**	**Source**
38-90	100-200	nuisance growth	Dodds et al. 1997
75	200	eutrophy	Dodds et al. 1998
20	150	nuisance growth	Clark Fork River Tri-State Council, MT
20		*Cladophora* nuisance growth	Chetelat et al. 1999
10-20		*Cladophora* nuisance growth	Stevenson unpubl. Data
PLANKTON Mean			
TP (µg/L)	**Chlorophyll a (µg/L)**	**Impairment Risk**	**Source**
42	8	eutrophy	Van Nieuwenhuyse and Jones 1996
70	15	chlorophyll action level	OAR 2000
35	8	eutrophy	OECD 1992 (for lakes)

Prior to a consideration of site-specific information and data relevant to the discharge, EPA observes that its overall approaches to establishing both phosphorus and nitrogen effluent limitations in NPDES permits have been extensively adjudicated over the past fifteen years, and they have been found to be reasonable and upheld by both the Environmental Appeals Board and the United States Court of Appeals for the First Circuit. Petitions for certiorari have twice been denied by the United States Supreme Court for Region 1 nutrient permitting (total phosphorus and total nitrogen) decisions under 40 CFR § 122.44(d)(1)(vi) in recent years. Should the public wish to review these decisions, they are available here:

City of Taunton v. EPA (EAB and First Circuit, Supreme Court cert. denied)

https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Case~Name/0A045314B61E682785257FA80054E600/$File/Denying%20Review%20Vol-17.pdf
https://yosemite.epa.gov/oa/eab_web_docket.nsf/A568248B44D1C63785258053005AEDD0/$File/Opinion%207.9.2018%20(46%20pages).pdf

Upper Blackstone Water Pollution Abatement Dist. v. EPA (EAB and First Circuit, Supreme Court cert. denied)

https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Case~Name/A44361EC4C211B0685257865006EA1EC/$File/Upper%20Blackstone.pdf
https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/2D0D249E441A18F185257B6600725F04/$File/October%2018%202017.pdf

In re City of Lowell, MA (2020)

https://yosemite.epa.gov/OA/EAB_WEB_Docket.nsf/Filings%20By%20Appeal%20Number/6D63DE203BB980D2852585960069906D/$File/City%20of%20Lowell.pdf

In re Town of Newmarket Wastewater Treatment Plant (2013)

https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Case~Name/97CCD304C9B7E58585257C3500799108/$File/Newmarket%20Decision%20Vol%2016.pdf

In re City of Attleboro MA Wastewater Treatment Plant (2009)

https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/D506EBEE22A1035E8525763300499A78/$File/Attleboro.pdf

EPA adheres to the overarching decision-making framework for nutrient permitting established by these precedents: administrative and judicial bodies have expressly found EPA's approach to be reasonable under the Act and, for its part, EPA has found the approach in its experience to be workable, expeditious, as well as demonstrably effective in addressing nutrient pollution, in a manner that is neither overly stringent, nor overly lax. While drawing on information from the scientific literature and national and regional EPA guidance, EPA also accounts for site-specific facts and circumstances surrounding the discharge and receiving waters in arriving at the permit result. EPA acknowledges that there are a range of alternative technical approaches and opinions when permitting for nutrients to ensure that uses for the waters designated by the state for its citizens are achieved; while some of these may have merit, EPA's existing approach has been proven to have merit and provides predictability for the regulated community.

EPA collected weekly samples downstream of the discharge, at the inlet and outlet of Hager Pond from the first week of September 2020 through the first week of October 2020. The total phosphorus and chlorophyll a data is summarized in Table 7.

Table 7. Instream total phosphorus and Chlorophyll a Concentrations (µg/L)

	Total Phosphorus			Chlorophyll a		
	Downstream of discharge	Inlet of Hager Pond	Outlet of Hager Pond	Downstream of discharge	Inlet of Hager Pond	Outlet of Hager Pond
9/1/2020	33	46	57	0.22	0.6	44
9/9/2020	55	51	48	0.22	0.65	36
9/14/2020	37	38	27	0.2	1	13
9/22/2020	150	120	30	0.4	0.4	1.8
9/29/2020	110	110	88	0.88	1.2	32
10/7/2020	49	48	38	0.28	0.53	17

The data shows the ambient concentrations downstream of the Facility's discharge exceeded the 100 µg/L Gold Book standard twice. Data collected at the inlet and outlet of Hager Pond exceeded the 50 µg/L Gold Book standard three and two times, respectively. The corresponding chlorophyll a data at the outlet of Hager Pond strongly indicates that the in-stream phosphorus levels far exceed the levels that control periphyton and plankton growth.

The 2004 Permit includes a 60-day rolling average effluent limit of 0.1 mg/L effective in the warm weather months (April 1 to November 30) and an average monthly effluent limit of 0.75 mg/L effective in the cold weather months (December 1 to March 31). The 2004 Permit included reporting requirements of the maximum daily value each month, a 30-day average value in April and May only, and average monthly and maximum daily ortho-phosphorus values each month from December through March. The 2006 Permit modification includes an interim 60 day rolling average total phosphorus limit of 0.5 mg/L from April through October that was in effect during completion of construction upgrades at the Facility. The City completed construction upgrades in 2014 that included installation of a Biomag treatment system for phosphorus removal. The interim limits ended with the start-up of the Biomag treatment system.

There were no exceedances of the April through October 60-day rolling average limit of 0.1 mg/L or the November through March average monthly limit of 0.75 mg/L from April 2015 through March 2020. See Appendix A for the data.

The 2006 Permit Modification fact sheet explains that the Permittee and other interested parties agreed to voluntarily participate in a feasibility study, funded by MassDEP and conducted by the U.S. Army Corps of Engineers.[23] The purpose of the feasibility study was to develop and evaluate effective and feasible solutions to reduce internal nutrient recycling in the impoundments and river system. The study's objective included potential aquatic restoration of habitats in different portions of the river that support both the typical warm-water species and fluvial dependents and improvements. It is noted in the study that initial discussions with regulatory, resource agencies and stakeholders targeted sediment and dam removal as alternatives for water quality improvement.[24]

The feasibility study provided 10 alternatives for reducing internal phosphorus recycling from the sediments in the Hop Brook system. The alternatives included sediment removal, and partial or complete dam, redirecting the effluent from the Facility's outfall to the Sudbury River and converting Hager Pond into a free water surface constructed wetland system.

EPA reached out to the City of Marlborough, the Town of Sudbury and the MassDEP to learn of the progress that was taken to reduce non-point sources of pollution downstream of the Facility's discharge since issuance of the 2006 Permit Modification. The City informed EPA that an MOU was never established to develop an action plan to reduce non-point sources of pollution associated with the approved options in the feasibility study.

The "*Water Quality Monitoring Program Final Report:2018-2019 Field Seasons"*[25]*,* published by the Organization for the Assabet Sudbury & Concord Rivers (OARS) includes the following data downstream of the Facility's discharge for Hop Brook in Sudbury:

[23] U.S. Army Corp of Engineers, Department of the Army, New England District 2008, Hop Brook Sediment and Dam Removal, Marlborough and Sudbury, Massachusetts, Draft Report.
[24] U.S. Army Corp of Engineers, Department of the Army, New England District 2008, Hop Brook Sediment and Dam Removal, Marlborough and Sudbury, Massachusetts, Draft Report, page 2.
[25] OARS, 2020, "Water Quality Monitoring Program Final Report:2018-2019 Field Season", OARS, Concord, MA, pages 78-81.

Table 8. Hop Brook Total Phosphorus data

	2018	2019
	TP, mg/L	TP, mg/L
May	0.05	0.005
June	0.16	0.15
July	0.06	0.18
August	0.21	0.18
September	0.04	0.05

The report states, "The year-on-year analysis also shows that there is still a TP issue downstream of the Marlborough Easterly WWTP. Hop Brook Sudbury has continuously shown mean summer TP concentrations well above the EPA Gold Book recommended level. Figure 33 shows the dramatic reduction in TP discharge from Marlborough Easterly as a result of the 2015 plant improvements, and current discharge amounts from Marlborough East are very low compared to other WWTPs (Figure 38). A comparison of TP concentrations in Hop Brook and in the Easterly WWTP effluent shows the effluent near the Gold Book recommended level but Hop Brook consistently much higher than the Gold Book level in June/July/August (Figure 34). The sampling event in July 2018 (the only month when levels were not high) was 6 days after a very large rainfall event that flushed the streams. It appears there is another source of phosphorus in Hop Brook, including perhaps phosphorus stored in the sediments that gets released to the water column in the summer."[26]

EPA used the effects-based Gold Book threshold as a general target of 0.1 mg/L that is applicable in free-flowing streams to determine the effluent limits in the 2006 Permit Modification. As the Gold Book notes, there are natural conditions of a water body that can result in either increased or reduced eutrophication response to phosphorus inputs; in some waters more stringent phosphorus reductions may be needed, while in some others a higher total phosphorus threshold could be assimilated without inducing a eutrophic response. Aquatic plant problems develop in reservoirs and other standing waters at phosphorus values lower than those critical in flowing streams: reservoirs and lakes collect phosphates from influent streams and store within consolidated sediments, thus serving as a phosphate sink. The Gold Book threshold for discharges to impoundments is 0.05 mg/L and applies in this case, where the Facility discharges less than 1 mile upstream of the inlet of Hager Pond. EPA also notes that the three ponds (Hager Pond, Grist Millpond, and Carding Millpond) that are part of the Hop Brook watershed, and downstream of the Facility's discharge, are also listed on the Massachusetts 2016 Integrated List of Water as impaired for aquatic plants (macrophyte), dissolved oxygen supersaturation and total phosphorus. Recent upgrades to the Facility have reduced the quantity of phosphorus entering the unnamed tributary to Hop Brook, however the receiving water, and the impoundments downstream of the discharge are not meeting State Water Quality Standards.

Based on this analysis, EPA conducted an updated calculation to determine what limit is necessary to protect WQS downstream of the discharge. Applying the phosphorus criterion

[26] Organization for the Assabet Rivers (OARS), 2020, "Water Quality Monitoring Program Fina Report: 2018-2019Field Season", OARS, Concord, MA, page 34.

described above, the upstream 7Q10 flow, and the design flow of the Facility, Appendix B presents the details of the mass balance equation and the limit proposed in the Draft Permit. As shown, it was determined that the projected downstream concentration is 0.1 mg/L (100 µg/L) based on the current limit of 0.1 mg/L, which exceeds the instream target of 0.05 mg/L (50 µg/L) to protect downstream uses. Therefore, there is reasonable potential to cause or contribute to an excursion of WQS, so the Draft Permit proposes a phosphorus limit of 0.05 mg/L mg/L applicable from April 1 through October 31.

Additionally, the Draft Permit includes an average monthly limit of 0.2 mg/L during the cold months (November 1 - March 31), which is consistent with the technology-based Highest and Best Practical Treatment requirement in the MA SWQS at 314 CMR 4.05(5)(c).[27] The seasonal monitoring periods have changed slightly from the periods in the 2006 Permit Modification to reflect the seasons EPA is using in in other Massachusetts NPDES permits based on the growing season in Massachusetts.

EPA has reviewed the Facility's state monthly operating reports for phosphorus (that attached to the DMR reports) from April 2017 through April 2020. Given that the maximum effluent concentration in the cold weather season was 0.15 mg/L, the data indicates that the effluent limit during cold weather season (0.2 mg/L) is achievable with the current treatment at the Facility. However, during the warm weather season EPA notes that the median concentration was 0.05 mg/L and the maximum was 0.09 mg/L, so the Facility may be unable to achieve the warm weather effluent limit of 0.05 mg/L without some adjustment to the treatment. EPA proposes a two-year schedule of compliance with an interim total phosphorus limit of 0.1 mg/L to allow time for any modifications or optimization in the treatment to achieve the revised limit. A schedule of compliance to achieve the limit of 0.05 mg/L is detailed in the Draft Permit, *See* Part I.G.2.

The ortho-phosphorus monitoring and reporting requirement is no longer required in the Draft Permit. EPA's intention in requiring winter ortho-phosphorus monitoring was to verify the assumption that the vast majority of the phosphorus discharges would be in the dissolved phase. It was EPA's determination at the time that the non-particulate ortho-phosphorus would pass through the river system and not accumulate in the sediments. Given that both dissolved and particulate phosphorus contribute to water quality impairments, EPA has determined that total phosphorus is the appropriate focus and cannot find reason to continue monitoring ortho-phosphorus in the winter or add such monitoring in the summertime. Therefore, EPA has removed the ortho-phosphorus monitoring requirement that was in the 2004 Permit.

5.2.1 Metals

5.2.1.1 Applicable Metals Criteria

State water quality criteria for cadmium, copper, lead, nickel and zinc are established in terms of dissolved metals. However, many inorganic components of domestic wastewater, including metals, are in particulate form, and differences in the chemical composition between the effluent and the receiving water affects the partitioning of metals between the particulate and dissolved

[27] 314 CMR 4.00, Massachusetts Surface Water Quality Standards.

fractions as the effluent mixes with the receiving water, often resulting in a transition from the particulate to dissolved form (*The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (USEPA 1996 [EPA-823-B96-007]). Consequently, quantifying only the dissolved fraction of metals in the effluent prior to discharge may not accurately reflect the biologically-available portion of metals in the receiving water. Regulations at 40 CFR § 122.45(c) require, with limited exceptions, that effluent limits for metals in NPDES permits be expressed as total recoverable metals.

The criteria for cadmium, copper, lead, nickel and zinc are hardness-dependent using the equations in EPA's National Recommended Water Quality Criteria: 2002, which are incorporated into the Massachusetts WQS by reference. The estimated hardness of unnamed tributary downstream of the treatment plant is calculated using the critical low flow (7Q10), the design flow of the treatment plant, and the median hardness for both the receiving water upstream of the discharge and the treatment plant effluent. Effluent and receiving water data are presented in Appendix A. Using the mass balance equation discussed in Appendix B, the resulting downstream hardness is 180 mg/L and the corresponding criteria are also presented in Appendix B.

Massachusetts aluminum criteria are not hardness-dependent and are expressed as total recoverable aluminum.

5.2.1.2 Reasonable Potential Analysis and Limit Derivation

To determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for each metal, EPA uses the mass balance equation presented in Appendix B to project the concentration downstream of the discharge and, if applicable, to determine the limit required in the permit.

Based on the information described above, the results of this analysis for each metal are presented in Appendix B.

As shown, there is no reasonable potential to cause or contribute to an excursion of WQS for aluminum, cadmium, lead, nickel and zinc, so the Draft Permit does not propose any new limits for these metals. However, EPA determined that there is reasonable potential to cause or contribute to an excursion of WQS for copper, so the Draft Permit proposes a new monthly average copper limit of 16 mg/L. The monthly average copper limit is established to meet WQS that is based on recent WET data.

5.2.2 Whole Effluent Toxicity

CWA §§ 402(a)(2) and 308(a) provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. Whole effluent toxicity (WET) testing is conducted to ensure that the additivity, antagonism, synergism and persistence of the pollutants in the discharge do not cause toxicity, even when the pollutants are present at low concentrations in the effluent. The inclusion of WET requirements in the Draft Permit will assure that the Facility does

not discharge combinations of pollutants into the receiving water in amounts that would be toxic to aquatic life or human health.

In addition, under CWA § 301(b)(1)(C), discharges are subject to effluent limitations based on WQS. Under CWA §§ 301, 303 and 402, EPA and the States may establish toxicity-based limitations to implement the narrative water quality criteria calling "for no toxics in toxic amounts". *See also* 40 CFR § 122.44(d)(1). The Massachusetts WQS at 314 CMR 4.05(5)(e) state, "All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife."

National studies conducted by EPA have demonstrated that domestic sources, as well as industrial sources, contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. Some of these constituents may cause synergistic effects, even if they are present in low concentrations. Because of the source variability and contribution of toxic constituents in domestic and industrial sources, reasonable potential may exist for this discharge to cause or contribute to an exceedance of the "no toxics in toxic amounts" narrative water quality standard.

In accordance with current EPA guidance and State policy[28], whole effluent chronic effects are regulated by limiting the highest measured continuous concentration of an effluent that causes no observed chronic effect on a representative standard test organism, known as the chronic No Observed Effect Concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50% of the test organisms, known as the $LC_{50.}$ This policy recommends that permits for discharges having a dilution factor less than 10 require acute and chronic toxicity testing four times per year for two species. Additionally, for discharges with dilution factors less than 10, the C-NOEC effluent limit should be greater than or equal to the receiving water concentration and the LC_{50} limit should be greater than or equal to 100%.

The chronic and acute WET limits in the 2004 Permit are C-NOEC greater than or equal to 99% and LC_{50} greater than or equal to 100%, respectively, using the daphnid (*Ceriodaphnia dubia*) and the fathead minnow (*Pimephales promelas*) as the test species. Results of the Facility's acute WET test met the limit of greater than or equal to 100% in all WET tests for the review period. Results of the Facility's chronic WET tests for the same period met the C-NOEC limit of greater than or equal to 99% in all WET tests except March and June 2019. The March and June 2019 chronic tests showed a significant effect in daphnid reproduction and growth at different effluent concentrations in each test. The WET test results are included in Appendix A.

Based on the potential for toxicity from domestic and industrial contributions, the state narrative water quality criterion, the dilution factor of 1.0, and in accordance with EPA national and regional policy and 40 CFR § 122.44(d), the Draft Permit continues the effluent limits from the 2004 Permit including the test organism and the testing frequency. Toxicity testing must be performed in accordance with the updated EPA Region 1 WET test procedures and protocols specified in Attachments A, *Freshwater Acute Toxicity Test Procedure and Protocol* (February

[28] *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters.* February 23, 1990.

2011) and Attachment B, *Freshwater Chronic Toxicity Test Procedure and Protocol* (March 2013) of the Draft Permit.

In addition, EPA's 2018 *National Recommended Water Quality Criteria* for aluminum are calculated based on water chemistry parameters that include dissolved organic carbon (DOC), hardness and pH. Since aluminum monitoring is required as part of each WET test, an accompanying new testing and reporting requirement for DOC, in conjunction with each WET test, is warranted in order to assess potential impacts of aluminum in the receiving water.

5.2.3 Per- and polyfluoroalkyl substances (PFAS)

As explained at https://www.epa.gov/pfas, PFAS are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products. PFAS manufacturing and processing facilities, facilities using PFAS in production of other products, airports, and military installations can be contributors of PFAS releases into the air, soil, and water. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. Exposure to some PFAS above certain levels may increase risk of adverse health effects.[29] EPA is collecting information to evaluate the potential impacts that discharges of PFAS from wastewater treatment plants may have on downstream drinking water, recreational and aquatic life uses.

On October 20, 2020, MassDEP published final regulations establishing a drinking water standard, or a Maximum Contaminant Level (MCL) of 20 parts per trillion (ppt) for the sum of the following six PFAS. *See* 310 CMR 22.00.

- Perfluorohexanesulfonic acid (PFHxS)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorononanoic acid (PFNA)
- Perfluorooctanesulfonic acid (PFOS)
- Perfluorooctanoic acid (PFOA)
- Perfluorodecanoic acid (PFDA)

Although the Massachusetts water quality standards do not include numeric criteria for PFAS, the Massachusetts narrative criterion for toxic substances at 314 CMR 4.05(5)(e) states:

> All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

The narrative criterion is further elaborated at 314 CMR 4.05(5)(e)2 which states:

> Human Health Risk Levels. Where EPA has not set human health risk levels for a toxic pollutant, the human health-based regulation of the toxic pollutant shall be in accordance with guidance issued by the Department of Environmental Protection's Office of

[29] EPA, *EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan,* EPA 823R18004, February 2019. Available at: https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf

> Research and Standards. The Department's goal is to prevent all adverse health effects which may result from the ingestion, inhalation or dermal absorption of toxins attributable to waters during their reasonable use as designated in 314 CMR 4.00.

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, the Draft Permit requires that the facility conduct quarterly influent, effluent and sludge sampling for PFAS chemicals and annual sampling of certain industrial users, the first full calendar quarter beginning six months after EPA has notified the Permittee that appropriate, multi-lab validated test methods are made available by EPA to the public.

The purpose of this monitoring and reporting requirement is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality based effluent limits on a facility- specific basis. EPA is authorized to require this monitoring and reporting by CWA § 308(a), which states:

> "SEC. 308. (a) Whenever required to carry out the objective of this Act, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this Act; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance; (3) any requirement established under this section; or (4) carrying out sections 305, 311, 402, 404 (relating to State permit programs), 405, and 504 of this Act—
>
> (A) the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require;".

Since an EPA method for sampling and analyzing PFAS in wastewater and sludge is not currently available, the PFAS sampling requirement in the Draft Permit includes a compliance schedule which delays the effective date of this requirement until the first full calendar quarter beginning 6 months after EPA has notified the Permittee that a multi-lab validated method for wastewater and biosolids is made available to the public on EPA's CWA methods program websites. For wastewater see https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical and https://www.epa.gov/cwa-methods. For biosolids, see https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-biosolids. EPA expects these methods will be available by the end of 2021. This approach is consistent with 40 CFR § 122.44(i)(1)(iv)(B) which states that in the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR Part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters.

5.3 Sludge Conditions

Section 405(d) of the Clean Water Act requires that EPA develop technical standards regarding the use and disposal of sewage sludge. On February 19, 1993, EPA promulgated technical standards. These standards are required to be implemented through permits. The conditions in the permit satisfy this requirement.

5.4 Infiltration/Inflow (I/I)

Infiltration is groundwater that enters the collection system though physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity and the efficiency of the treatment works and may cause bypasses to secondary treatment. It greatly increases the potential for sanitary sewer overflows (SSOs) in separate systems, and combined sewer overflows (CSOs) in combined systems.

The Draft Permit includes a requirement for the permittee to control infiltration and inflow (I/I) within the sewer collections system it owns and operates. The permittee shall develop an I/I removal program commensurate with the severity of I/I in the collection system. This program may be scaled down in sections of the collection system that have minimal I/I.

5.5 Operation and Maintenance of the Sewer System

The standard permit conditions for 'Proper Operation and Maintenance', found at 40 CFR § 122.41(e), require the proper operation and maintenance of permitted wastewater systems and related facilities to achieve compliance with permit conditions. The requirements at 40 CFR § 122.41(d) impose a 'duty to mitigate,' which requires the permittee to "take all reasonable steps to minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment. EPA maintains that an I/I removal program is an integral component of ensuring permit compliance with the requirements of the permit under the provisions at 40 CFR § 122.41(d) and (e).

General requirements for proper operation and maintenance, and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Part I.C. and I.D. of the Draft Permit. These requirements include mapping of the wastewater collection system, preparing and implementing a collection system operation and maintenance plan, reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to separate sewer collection systems (combined systems are not subject to I/I requirements) to the extent necessary to prevent SSOs and I/I related effluent exceedances at the Wastewater Treatment Facility, and maintaining alternate power where necessary. These requirements are included to minimize the occurrence of permit exceedances that have a reasonable likelihood of adversely affecting human health or the environment.

Several of the requirements in the Draft Permit are not included in the 2004 Permit, including collection system mapping, and preparation of a collection system operation and maintenance plan. EPA has determined that these additional requirements are necessary to ensure the proper operation and maintenance of the collection system and has included schedules in the Draft Permit for completing these requirements.

5.6 Compliance Schedule

Massachusetts regulations for schedules of compliance can be found at 314 CMR 3.11(10). Finally, the permitting authority must make a reasonable determination that a schedule of compliance is "appropriate" and that the schedule proposed requires compliance "as soon as possible." *See* 40 CFR § 122.47(a), (a)(1).

5.7 Standard Conditions

The standard conditions of the permit are based on 40 CFR §122, Subparts A, C, and D and 40 CFR § 124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

6.0 Federal Permitting Requirements

6.1 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and any habitat of such species that has been designated as critical under the ESA (a "critical habitat").

Section 7(a)(2) of the ESA requires every federal agency, in consultation with and with the assistance of the Secretary of Interior, to ensure that any action it authorizes, funds or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) administers Section 7 consultations for marine and anadromous species.

The Federal action being considered in this case is EPA's proposed NPDES permit for the Facility's discharges of pollutants. The Draft Permit is intended to replace the 2004 Permit in governing the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines potential impacts to federally listed species and initiates consultation with the Services when required under § 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife and plants in Marlborough, Massachusetts to determine if EPA's proposed NPDES permit could potentially impact any such listed species. No federally listed threatened or endangered species have been

identified for Marlborough.[30] However, on listed species, the northern long-eared bat (*Myotis septentrionalis*), was identified as "statewide". According to the USFWS, the northern long-eared bat is found in "winter – mines and caves, summer – wide variety of forested habitats." This species is not aquatic. Therefore, the proposed permit action will have no direct or indirect effect on this listed species.

The two endangered species of anadromous fish which occur in Massachusetts, shortnose sturgeon (*Acipenser brevirostrom*) and Atlantic sturgeon (*Acipenser oxyrinchus*), have not been identified in the unnamed tributary.[31] Moreover, based on the expected normal distribution of these species, it is highly unlikely that they would be present in the vicinity of this discharge and the action area of the outfall. In addition, Atlantic sturgeon are not thought to use the unnamed tributary to spawn.

EPA has structured the proposed limitations to be sufficiently stringent to assure that State WQS will be met, including for protection of aquatic life. The effluent limitations established in this permit ensure the protection of aquatic life and maintenance of the receiving water as an aquatic habitat.

Therefore, EPA finds that adoption of the proposed permit will have no effect on any threated or endangered species or its critical habitat and consultation with NOAA Fisheries or USFWS under Section 7 of the ESA is not required.

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 *et seq.*, 1998), EPA is required to consult with the NOAA Fisheries if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), or site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.
EFH is only designated for fish species for which federal Fisheries Management Plans exist. *See* 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

EPA has determined that the unnamed tributary is not covered by the EFH designation for riverine systems at latitude 42 21'13.64" N and longitude 71 29' 34.9"1" W, as determined by

[30] See listing for County in "Federally Listed Endangered and Threatened Species in Massachusetts." Massachusetts Natural Heritage and Endangered Species Program.
[31] See §7 resources for USFWS at https://ecos.fws.gov/ipac or NMFS at https://www.greateratlantic.fisheries.noaa.gov/protected/section7/index.html

the NOAA EFH Mapper.[32] EPA's review of available EFH information indicated that this water body is not designated EFH for any federally managed species. Therefore, consultation with NMFS under the Magnuson-Stevens Fishery Conservation and Management Act is not required.

7.0 Public Comments, Hearing Requests and Permit Appeals

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to:

Betsy Davis
EPA Region 1
5 Post Office Square, Suite 100 (06-01)
Boston, MA 02109-3912
Telephone: (617) 918-1576
Email: davis.betsy@epa.gov

Prior to the close of the public comment period, any person, may submit a written request to EPA for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a final decision on the Draft Permit, EPA will respond to all significant comments in a Response to Comments document attached to the Final Permit and make these responses available to the public at EPA's Boston office and on EPA's website.

Following the close of the comment period, and after any public hearings, if such hearings are held, EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA's Environmental Appeals Board in accordance with the procedures at 40 CFR § 124.19.

8.0 Administrative Record

Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices, EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston office. However, any documents relating to this draft can be requested from the individual listed above.

[32] NOAA EFH Mapper available at http://www.habitat.noaa.gov/protection/efh/efhmapper/

The administrative record on which this Draft Permit is based may be accessed at EPA's Boston office by appointment, Monday through Friday, excluding holidays from Betsy Davis, EPA Region1, 5 Post Office Square, Suite-100 (06-01), Boston, MA 02109-3912 or via email to davis.betsy@epa.gov.

Nov 2021
Date

Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

Figure 3 Location of Easterly WWTF

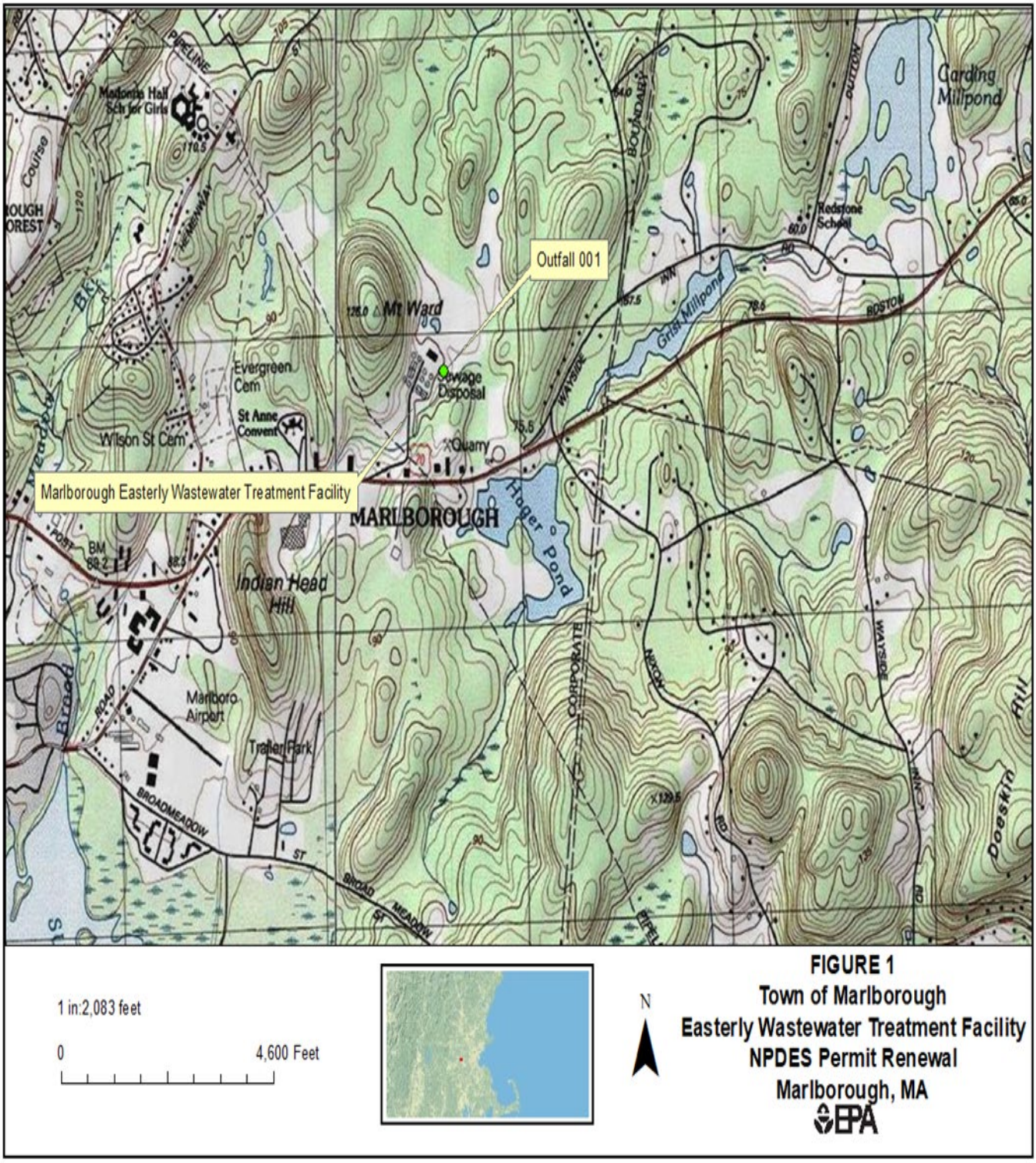
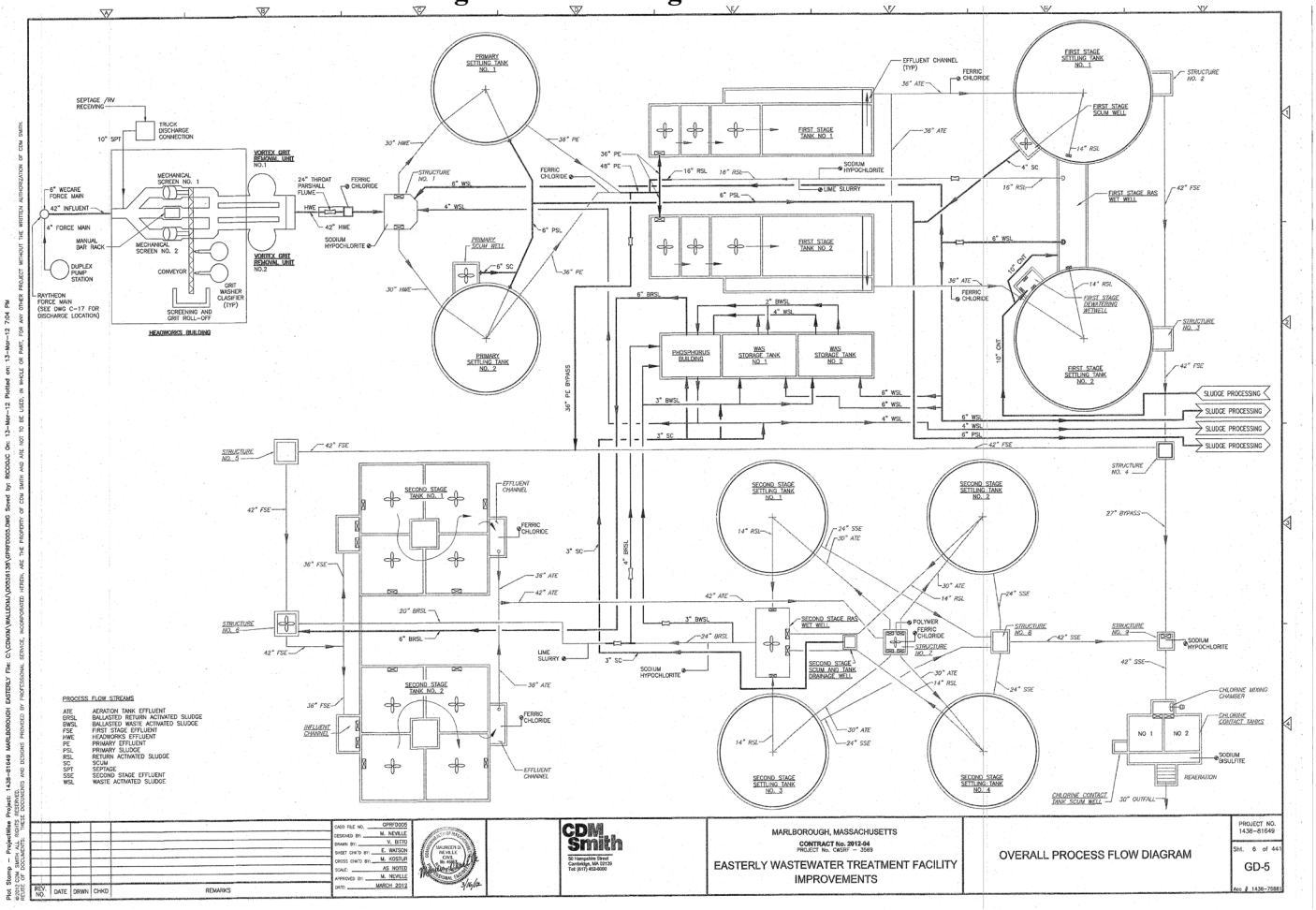


Figure 4: Flow Diagram



Outfall 001

Parameter	Flow	$CBOD_5$	$CBOD_5$	$CBOD_5$	$CBOD_5$	$CBOD_5$	$CBOD_5$
	Monthly Ave	Monthly Ave	Monthly Ave	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave
Units	MGD	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L
Effluent Limit	**5.5**	**917**	**20**	**321**	**7**	**1147**	**25**
Minimum	**1.83**	**45**	**0**	**31**	**0**	**46**	**0**
Maximum	**6.67**	**92**	**2.7**	**118**	**2.8**	**187**	**4.3**
Median	**3.12**	**69.5**	**2.05**	**46**	**2**	**81.5**	**2.25**
No. of Violatio	**2**	**0**	**0**	**0**	**0**	**0**	**0**
5/31/2016	3.26			57	2.1		
6/30/2016	2.36			40	2.1		
7/31/2016	1.96			33	< 2		
8/31/2016	1.93			32	< 2		
9/30/2016	1.94			33	<= 2		
10/31/2016	2.47			38	2		
11/30/2016	2.58			44	2		
12/31/2016	3.12	51	< 2			53	< 2
1/31/2017	4.3	74	2			81	2
2/28/2017	2.88	83	2.7			92	3.3
3/31/2017	3.63	67	2.1			79	2.4
4/30/2017	**5.84**			99	2		
5/31/2017	3.92			64	2		
6/30/2017	3.62			63	2		
7/31/2017	2.54			43	< 2		
8/31/2017	2.2			37	2		
9/30/2017	2.1			35	2		
10/31/2017	2.18			34	2		
11/30/2017	2.66			48	2.2		
12/31/2017	2.7	45	< 2			46	< 2
1/31/2018	3.49	65	2.4			69	2.6
2/28/2018	4.17	79	2.3			90	2.7
3/31/2018	5.1	82	2.1			95	2.4
4/30/2018	4.9			93	2.3		
5/31/2018	3.48			59	2		
6/30/2018	2.54			43	2.1		
7/31/2018	2.55			44	2.1		
8/31/2018	2.69			45	2		
9/30/2018	2.95			52	2		
10/31/2018	3.44			57	2		
11/30/2018	**6.67**			118	< 2		
12/31/2018	4.67	80	<= 2			94	<= 2
1/31/2019	3.99	92	2.5			187	4.3
2/28/2019	4.02	66	2			70	2
3/31/2019	4.16	86	2.6			119	3.5
4/30/2019	4.84			81	<= 2		
5/31/2019	4.02			71	2.1		
6/30/2019	2.87			49	2		
7/31/2019	2.74			46	<= 2		

Outfall 001

Parameter	Flow	$CBOD_5$	$CBOD_5$	$CBOD_5$	$CBOD_5$	$CBOD_5$	$CBOD_5$
	Monthly Ave	Monthly Ave	Monthly Ave	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave
Units	MGD	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L
Effluent Limit	**5.5**	**917**	**20**	**321**	**7**	**1147**	**25**
Minimum	**1.83**	**45**	**0**	**31**	**0**	**46**	**0**
Maximum	**6.67**	**92**	**2.7**	**118**	**2.8**	**187**	**4.3**
Median	**3.12**	**69.5**	**2.05**	**46**	**2**	**81.5**	**2.25**
No. of Violatio	**2**	**0**	**0**	**0**	**0**	**0**	**0**
8/31/2019	2.58			44	<= 2		
9/30/2019	2.29			46	2.4		
10/31/2019	2.42			41	2		
11/30/2019	2.9			48	< 2		
12/31/2019	4.2	72	< 2			89	< 2
1/31/2020	4.11	73	2.1			106	2.4
2/29/2020	3.72	61	<= 2			67	<= 2
3/31/2020	3.66	62	<= 2			82	<= 2
4/30/2020	5.16			83	2		
5/31/2020	3.99			63	2		
6/30/2020	2.45			41	< 2		
7/31/2020	2.08			35	2		
8/31/2020	1.9			31	2		
9/30/2020	1.83			31	2		
10/31/2020	2.05			34	2		
11/30/2020	2.51			59	2.8		
12/31/2020	4.52	72	2.1			91	2.46
1/31/2021	3.96	65	2			73	2
2/28/2021	3.11	52	2			57.66	2.1
3/31/2021	3.77	66	2.1			74.66	2.5
4/30/2021	3.56			60	2		
5/31/2021	3.47			57	2		

Outfall 001

Parameter	$CBOD_5$	$CBOD_5$	$CBOD_5$	$CBOD_5$	BOD_5	TSS	TSS
	Weekly Ave	Weekly Ave	Daily Max	Daily Max	Monthly Ave Min	Monthly Ave	Monthly Ave
Units	lb/d	mg/L	mg/L	mg/L	%	lb/d	mg/L
Effluent Limit	**459**	**10**	**30**	**15**	**85**	**917**	**20**
Minimum	**32**	**0**	**0**	**0**	**97.9**	**43**	**1.7**
Maximum	**142**	**5**	**8.7**	**7.2**	**99.4**	**156**	**4.6**
Median	**53**	**2**	**2.45**	**2**	**99**	**89.5**	**2.55**
No. of Violatio	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5/31/2016	64	2		2.7	98.5		
6/30/2016	53	2.5		2.7	99		
7/31/2016	34	2		2	99.4		
8/31/2016	33	2		2.1	99.4		
9/30/2016	34	<= 2		<= 2	99.4		
10/31/2016	47	2		2	99.2		
11/30/2016	45	2		2	99.1		
12/31/2016			< 2		99.2	43	1.7
1/31/2017			2.1		98.7	84	2.3
2/28/2017			3.8		97.9	109	3.3
3/31/2017			2.7		98.3	95	3.2
4/30/2017	99	2		2	98.1		
5/31/2017	76	2.1		2.4	98.5		
6/30/2017	89	2		2	98.5		
7/31/2017	44	< 2		< 2	99		
8/31/2017	41	2		2.1	99.1		
9/30/2017	38	2		2	99.2		
10/31/2017	42	2		2	99.3		
11/30/2017	61	2.4		3.2	99		
12/31/2017			< 2		99.1	53	2.4
1/31/2018			3.1		98.8	118	4.6
2/28/2018			3		98.3	126	3.6
3/31/2018			2.6		98.1	150	3.6
4/30/2018	122	3		3.8	97.8		
5/31/2018	74	2		2	98.9		
6/30/2018	46	2.2		2.6	99.2		
7/31/2018	47	2.1		2.7	99.1		
8/31/2018	52	2		2	99		
9/30/2018	70	2		2	98.7		
10/31/2018	68	2		2	98.7		
11/30/2018	142	< 2		< 2	95.6		
12/31/2018			<= 2		98.1	89	2.1
1/31/2019			8.7		97.8	92	2.7
2/28/2019			2.1		98.4	108	3.2
3/31/2019			4.1		97.7	127	3.6
4/30/2019	109	<= 2		<= 2	97.8		
5/31/2019	94	2.3		3.4	98.8		
6/30/2019	52	2		2.1	99		
7/31/2019	59	<= 2		<= 2	99.2		

Outfall 001

Parameter	$CBOD_5$	$CBOD_5$	$CBOD_5$	$CBOD_5$	BOD_5	TSS	TSS
	Weekly Ave	Weekly Ave	Daily Max	Daily Max	Monthly Ave Min	Monthly Ave	Monthly Ave
Units	lb/d	mg/L	mg/L	mg/L	%	lb/d	mg/L
Effluent Limit	**459**	**10**	**30**	**15**	**85**	**917**	**20**
Minimum	**32**	**0**	**0**	**0**	**97.9**	**43**	**1.7**
Maximum	**142**	**5**	**8.7**	**7.2**	**99.4**	**156**	**4.6**
Median	**53**	**2**	**2.45**	**2**	**99**	**89.5**	**2.55**
No. of Violatio	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8/31/2019	50	<= 2		<= 2	99.1		
9/30/2019	57	2.9		4.6	99		
10/31/2019	53	2.1		2.3	99.1		
11/30/2019	53	< 2		< 2	98.9		
12/31/2019			< 2		98.3	82	2.3
1/31/2020			3.2		98.1	90	2.4
2/29/2020			<= 2		98.5	87	2.8
3/31/2020			<= 2		98.1	66	2.1
4/30/2020	88	2		2	97.7		
5/31/2020	79	2		2	98.2		
6/30/2020	44.6	2		2	99		
7/31/2020	39.3	2		2	99		
8/31/2020	33	2		2	98.9		
9/30/2020	32	2		2	98.9		
10/31/2020	37	2		2	99		
11/30/2020	114.3	5		7.2	98.8		
12/31/2020			3		98.1	156	4.5
1/31/2021			2		97.6	56	1.7
2/28/2021			2.3		98.3	60	2.3
3/31/2021			2.8		98	56	1.8
4/30/2021	64	2.2		2.6	98.4		
5/31/2021	68.6	2.16		2.5	98.6		

Outfall 001

Parameter	TSS	TSS	TSS	TSS	TSS	TSS	TSS
	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave	Weekly Ave	Weekly Ave	Daily Max
Units	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L	mg/L
Effluent Limit	**688**	**15**	**1147**	**20**	**917**	**25**	**30**
Minimum	**6.4**	**0.9**	**50**	**0.9**	**15.8**	**2**	**1.3**
Maximum	**134**	**3.3**	**262.4**	**5.6**	**218**	**8**	**10.3**
Median	**36**	**1.5**	**138.5**	**2**	**46**	**3.85**	**3.6**
No. of Violatio	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5/31/2016	36	1.3		1.5	40		3
6/30/2016	39	1.9		2.9	63		5
7/31/2016	21	1.3		1.4	23		1.9
8/31/2016	24	1.5		2.1	28		3.5
9/30/2016	18	1.1		1.2	19		1.8
10/31/2016	36	1.8		2.8	40		3.2
11/30/2016	51	2.3		2.9	66		6.2
12/31/2016			50			2	4.3
1/31/2017			146			3.9	5.8
2/28/2017			157			3.5	4.7
3/31/2017			136			4.5	5.3
4/30/2017	100	1.9		2.7	161		3.1
5/31/2017	42	1.3		1.5	57		2.1
6/30/2017	34	1.1		1.3	39		2.1
7/31/2017	37	1.8		2.2	46		3
8/31/2017	20	1.1		2	41		2.5
9/30/2017	15	0.9		0.9	17		1.3
10/31/2017	20	1.1		1.5	36		2.2
11/30/2017	26	1.2		1.8	36		3.8
12/31/2017			72			2.4	4
1/31/2018			169			8	10.3
2/28/2018			185			4.4	6.1
3/31/2018			229			4.5	5.4
4/30/2018	134	3.3		5.6	218		6.6
5/31/2018	36	1.2		1.9	61		3.3
6/30/2018	37	1.8		2.1	37		4.5
7/31/2018	56	2.6		5.4	109		7.4
8/31/2018	43	2		4.4	95		6.8
9/30/2018	27	1.1		1.1	30		1.4
10/31/2018	48	1.7		2.2	63		3.1
11/30/2018	79	1.3		2	145		3.3
12/31/2018			133			2.5	3.6
1/31/2019			162			4.5	7.3
2/28/2019			117			3.8	4.8
3/31/2019			237			6.6	7.3
4/30/2019	63	1.6		1.7	81		3.7
5/31/2019	71	2.3		4.7	129		9.6
6/30/2019	38	1.6		2.6	63		6.7
7/31/2019	35	1.5		1.8	41		2.5

Outfall 001

Parameter	TSS	TSS	TSS	TSS	TSS	TSS	TSS
	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave	Weekly Ave	Weekly Ave	Daily Max
Units	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L	mg/L
Effluent Limit	**688**	**15**	**1147**	**20**	**917**	**25**	**30**
Minimum	**6.4**	**0.9**	**50**	**0.9**	**15.8**	**2**	**1.3**
Maximum	**134**	**3.3**	**262.4**	**5.6**	**218**	**8**	**10.3**
Median	**36**	**1.5**	**138.5**	**2**	**46**	**3.85**	**3.6**
No. of Violatio	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8/31/2019	26	1.2		1.8	42		1.9
9/30/2019	33	1.7		2.3	43		2.9
10/31/2019	40	2		2.8	53		4.6
11/30/2019	37	1.5		1.8	48		2.1
12/31/2019			117			2.5	3.5
1/31/2020			168			4	4.6
2/29/2020			141			4.3	5.4
3/31/2020			112			2.8	3.4
4/30/2020	6.4	1.5		2.9	118		4.1
5/31/2020	40	1.2		1.2	53		1.6
6/30/2020	33	1.6		2.3	49.6		3.9
7/31/2020	35	1.1		1.3	24		2.1
8/31/2020	14	0.9		1	15.8		1.5
9/30/2020	20	1.3		1.5	22.2		1.8
10/31/2020	16	1		1	18.2		2
11/30/2020	28	1.3		1.8	40.2		2.6
12/31/2020			262.4			7.48	10.3
1/31/2021			110.75			3	4.3
2/28/2021			96			3.42	5.2
3/31/2021			73.25			2.25	4
4/30/2021	54	1.8		2.45	84		3.3
5/31/2021	51	1.7		2.24	73.4		2.9

Outfall 001

Parameter	TSS	pH	pH	Oxygen, dissolved percent saturation	Fecal Coliform	Fecal Coliform	Fecal Coliform
	Monthly Ave Min	Minimum	Maximum	Daily Min	Monthly Ave	Weekly Ave	Daily Max
Units	%	SU	SU	%	#/100mL	#/100mL	#/100mL
Effluent Limit	**85**	**6.5**	**8.3**	**80**	**200**	**400**	**400**
Minimum	**93.7**	**6.4**	**7.1**	**80**	**1**	**1**	**1**
Maximum	**99.8**	**7.1**	**7.8**	**100**	**16**	**138**	**265**
Median	**99.3**	**6.9**	**7.4**	**89**	**3**	**7**	**23**
No. of Violatio	**0**	**1**	**0**	**0**	**0**	**0**	**0**
5/31/2016	99.5	6.9	7.5	86	2	3	6
6/30/2016	99.3	7	7.6	86	4	14	99
7/31/2016	99.7	7	7.4	90	11	35	70
8/31/2016	99.7	6.9	7.4	89	8	36	51
9/30/2016	99.8	7	7.4	85	16	40	155
10/31/2016	99.6	6.8	7.3	81	4	17	26
11/30/2016	99.3	6.7	7.5	82	2	4	22
12/31/2016	99.4	6.9	7.3	85	3	6	20
1/31/2017	98.6	6.8	7.2	87	2	11	63
2/28/2017	97.3	6.9	7.3	91	2	3	19
3/31/2017	97.8	6.9	7.2	84	1	1	2
4/30/2017	98.4	6.9	7.4	83	3	10	24
5/31/2017	99.3	6.9	7.4	90	3	17	37
6/30/2017	99.4	6.9	7.3	86	2	5	9
7/31/2017	99.3	6.9	7.5	87	9	20	58
8/31/2017	99.6	7	7.4	89	7	17	25
9/30/2017	99.7	7	7.3	84	3	7	67
10/31/2017	99.7	6.9	7.3	88	3	5	26
11/30/2017	99.6	**6.4**	7.3	84	3	8	40
12/31/2017	99.1	6.8	7.4	87	2	7	13
1/31/2018	98.3	6.6	7.2	86	5	17	78
2/28/2018	98.1	6.7	7.3	100	14	60	135
3/31/2018	97.4	7	7.3	91	7	59	90
4/30/2018	97.7	6.9	7.3	94	3	21	182
5/31/2018	99.4	6.9	7.3	83	2	7	12
6/30/2018	99.5	6.9	7.3	84	2	3	17
7/31/2018	99.1	6.9	7.4	89	2	8	14
8/31/2018	99.2	7	7.3	85	4	6	35
9/30/2018	99.5	6.8	7.1	89	4	13	24
10/31/2018	99.3	6.8	7.1	81	3	7	10
11/30/2018	98.3	6.9	7.8	80	3	9	51
12/31/2018	98.7	6.9	7.4	88	3	7	11
1/31/2019	98.7	6.9	7.2	95	5	138	265
2/28/2019	98.1	6.6	7.2	92	9	32	57
3/31/2019	97.6	6.8	7.2	94	4	22	44
4/30/2019	98.4	6.9	7.3	93	3	5	21
5/31/2019	99.2	6.9	7.4	93	1	2	5
6/30/2019	99.4	6.9	7.5	91	1	2	7
7/31/2019	99.7	7	7.5	85	3	4	12

Outfall 001

Parameter	TSS	pH	pH	Oxygen, dissolved percent saturation	Fecal Coliform	Fecal Coliform	Fecal Coliform
	Monthly Ave Min	Minimum	Maximum	Daily Min	Monthly Ave	Weekly Ave	Daily Max
Units	%	SU	SU	%	#/100mL	#/100mL	#/100mL
Effluent Limit	**85**	**6.5**	**8.3**	**80**	**200**	**400**	**400**
Minimum	**93.7**	**6.4**	**7.1**	**80**	**1**	**1**	**1**
Maximum	**99.8**	**7.1**	**7.8**	**100**	**16**	**138**	**265**
Median	**99.3**	**6.9**	**7.4**	**89**	**3**	**7**	**23**
No. of Violatio	**0**	**1**	**0**	**0**	**0**	**0**	**0**
8/31/2019	99.7	6.9	7.5	88	6	9	33
9/30/2019	99.6	6.7	7.3	80	2	8	33
10/31/2019	99.4	7	7.4	90	3	6	43
11/30/2019	99.4	7	7.5	93	6	38	41
12/31/2019	98.6	7	7.4	91	2	8	23
1/31/2020	98.3	7.1	7.6	93	2	5	19
2/29/2020	98.4	6.9	7.5	93	3	10	11
3/31/2020	98.7	7	7.7	95	3	28	56
4/30/2020	98.5	7	7.4	88	1	3	27
5/31/2020	99.2	6.8	7.4	91	1	1	2
6/30/2020	99.5	6.8	7.3	84	1	1	1
7/31/2020	99.5	6.9	7.7	90	2	3	7
8/31/2020	99.5	6.7	7.4	90	4	10	56
9/30/2020	99.2	6.9	7.3	87	3	4.3	13
10/31/2020	99.5	6.8	7.3	91	2	2.4	5
11/30/2020	99.5	6.8	7.5	89	1	1.6	4
12/31/2020	93.7	6.7	7.5	84	1	2.7	10
1/31/2021	97.9	6.8	7.5	94	1	1	1
2/28/2021	98.4	6.9	7.3	95	1	1.4	3
3/31/2021	99	6.9	7.2	97	1	1.6	2
4/30/2021	99.3	6.9	7.3	93.7	1	1	1
5/31/2021	99.4	6.9	7.4	91	2	1	4

Outfall 001

Parameter	TRC	TRC	Ammonia	Ammonia	Ammonia	Ammonia	Ammonia
	Monthly Ave	Daily Max	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave	Daily Max
Units	ug/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent Limit	**20**	**20**	**0.5**	**4.4**	**0.75**	**4.4**	**1**
Minimum	**0**	**0**	**0.01**	**0**	**0.01**	**0**	**0.01**
Maximum	**0.03**	**0.04**	**1.1**	**0.83**	**3.02**	**2.6**	**6.58**
Median	**0**	**0**	**0.04**	**0.09**	**0.071**	**0.185**	**0.16**
No. of Violatio	**0**	**0**	**3**	**0**	**6**	**0**	**9**
5/31/2016	0	0	0.01		0.013		0.02
6/30/2016	0	0	0.06		0.19		0.55
7/31/2016	0	0	0.01		0.02		0.04
8/31/2016	0	0	0.03		0.06		0.1
9/30/2016	0	0	0.02		0.02		0.03
10/31/2016	0	0	0.1		0.3		0.6
11/30/2016	0	0	**0.72**		**2.4**		**4**
12/31/2016	0	0		0.26		0.41	
1/31/2017	0	0		0.44		1.92	
2/28/2017	0	0		0.7		1.06	
3/31/2017	0	0		0.59		1.09	
4/30/2017	0	0	0.02		0.03		0.05
5/31/2017	0	0	0.02		0.05		0.06
6/30/2017	0	0	0.03		0.08		0.16
7/31/2017	0	0	0.02		0.06		0.06
8/31/2017	0	0	0.01		0.04		0.04
9/30/2017	0	0	0.01		0.02		0.04
10/31/2017	0	0	0.25		**0.99**		**1.96**
11/30/2017	0	0	0.17		0.56		**1.49**
12/31/2017	0.03	0.04		0.03		0.04	
1/31/2018	0	0		0.02		0.03	
2/28/2018	0	0		0.03		0.11	
3/31/2018	0	0		0.06		0.17	
4/30/2018	0	0	0.02		0.05		0.09
5/31/2018	0	0	0.03		0.05		0.14
6/30/2018	0	0	0.04		0.13		0.38
7/31/2018	0	0	0.08		0.07		0.8
8/31/2018	0	0	0.01		0.01		0.01
9/30/2018	0	0	0.24		0.73		**1.64**
10/31/2018	0	0	**0.79**		**3.02**		**6.58**
11/30/2018	0	0	0.11		0.22		0.68
12/31/2018	0	0		0.1		0.2	
1/31/2019	0	0		0.26		2.23	
2/28/2019	0	0		<= .01		<= .01	
3/31/2019	0	0		0.83		2.2	
4/30/2019	0	0	0.02		0.45		0.13
5/31/2019	0	0	0.02		0.06		0.1
6/30/2019	0	0	0.03		0.07		0.18
7/31/2019	0	0	0.02		0.071		**1.66**

Outfall 001

Parameter	TRC	TRC	Ammonia	Ammonia	Ammonia	Ammonia	Ammonia
	Monthly Ave	Daily Max	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave	Daily Max
Units	ug/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent Limit	**20**	**20**	**0.5**	**4.4**	**0.75**	**4.4**	**1**
Minimum	**0**	**0**	**0.01**	**0**	**0.01**	**0**	**0.01**
Maximum	**0.03**	**0.04**	**1.1**	**0.83**	**3.02**	**2.6**	**6.58**
Median	**0**	**0**	**0.04**	**0.09**	**0.071**	**0.185**	**0.16**
No. of Violatio	**0**	**0**	**3**	**0**	**6**	**0**	**9**
8/31/2019	0	0	0.07		0.19		0.54
9/30/2019	0	0	**1.1**		**2**		**3.9**
10/31/2019	0	0	0.4		**0.99**		**2.67**
11/30/2019	0	0	0.04		0.08		0.12
12/31/2019	0	0		0.7		2.6	
1/31/2020	0	0		0.02		0.04	
2/29/2020	0	0		<= .01		<= .01	
3/31/2020	0	0		<= .01		<= .01	
4/30/2020	0	0	0.03		0.07		0.11
5/31/2020	0	0	0.04		0.05		0.14
6/30/2020	0	0	0.13		0.2		0.5
7/31/2020	0	0	0.05		0.06		0.15
8/31/2020	0	0	0.06		0.23		0.51
9/30/2020	0	0	0.04		0.15		0.41
10/31/2020	0	0	0.31		**1.2**		**2.99**
11/30/2020	0	0	0.09		0.22		0.61
12/31/2020	0	0		0.5		1.09	
1/31/2021	0	0		0.1		0.2	
2/28/2021	0	0		0.08		0.15	
3/31/2021	0	0		0.02		0.02	
4/30/2021	0	0	0.02		0.02		0.04
5/31/2021	0	0	0.01		0.02		0.03

Outfall 001

Parameter	Ammonia	TP	TP	TP	Phosphate, dissolved/orthophosphate(as P)	Phosphate, dissolved/orthophosphate (as P)
	Daily Max	Monthly Ave	Annual Rolling Ave	Daily Max	Monthly Ave	Daily Max
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent Limit	Report	0.75	0.1	Report	Report	Report
Minimum	0	0.02	0.03	0.01	0.02	0.03
Maximum	5.18	0.15	0.09	0.25	0.12	0.22
Median	0.245	0.05	0.05	0.09	0.03	0.055
No. of Violatio	N/A	0	0	N/A	N/A	N/A
5/31/2016			0.09	0.12		
6/30/2016			0.07	0.15		
7/31/2016			0.06	0.04		
8/31/2016			0.05	0.1		
9/30/2016			0.04	0.07		
10/31/2016			0.04	0.1		
11/30/2016		0.05	0.05	0.08		
12/31/2016	0.76	0.03		0.04	0.02	0.03
1/31/2017	3.84	0.05		0.06	0.02	0.03
2/28/2017	1.59	0.09		0.13	0.05	0.1
3/31/2017	1.86	0.08		0.13	0.04	0.05
4/30/2017			0.05	0.09		
5/31/2017			0.06	0.08		
6/30/2017			0.04	0.06		
7/31/2017			0.04	0.14		
8/31/2017			0.04	0.09		
9/30/2017			0.05	0.13		
10/31/2017			0.05	0.11		
11/30/2017		0.05	0.04	0.09		
12/31/2017	0.07	0.04		0.06	0.03	0.04
1/31/2018	0.07	0.11		0.25	0.05	0.15
2/28/2018	0.12	0.08		0.18	0.04	0.07
3/31/2018	0.29	0.07		0.11	0.04	0.07
4/30/2018			0.06	0.11		
5/31/2018			0.09	0.04		
6/30/2018			0.06	0.1		
7/31/2018			0.05	0.09		
8/31/2018			0.05	0.08		
9/30/2018			0.05	0.05		
10/31/2018			0.05	0.05		
11/30/2018		0.02	0.04	0.06		
12/31/2018	0.34	0.04		0.06	0.02	0.04
1/31/2019	2.23	0.07		0.1	0.03	0.1
2/28/2019	<= .01	0.06		0.11	0.03	0.06
3/31/2019	2.2	0.08		0.15	0.04	0.05
4/30/2019			0.04	0.09		
5/31/2019			0.06	0.08		
6/30/2019			0.04	0.07		
7/31/2019			0.05	0.08		

Outfall 001

Parameter	Ammonia	TP	TP	TP	Phosphate, dissolved/orthophosphate(as P)	Phosphate, dissolved/orthophosphate (as P)
	Daily Max	Monthly Ave	Annual Rolling Ave	Daily Max	Monthly Ave	Daily Max
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent Limit	Report	0.75	0.1	Report	Report	Report
Minimum	0	0.02	0.03	0.01	0.02	0.03
Maximum	5.18	0.15	0.09	0.25	0.12	0.22
Median	0.245	0.05	0.05	0.09	0.03	0.055
No. of Violatio	N/A	0	0	N/A	N/A	N/A
8/31/2019			0.05	0.05		
9/30/2019			0.06	0.11		
10/31/2019			0.08	0.01		
11/30/2019		0.06	0.08	0.09		
12/31/2019	5.18	0.04		0.06	0.02	0.04
1/31/2020	0.04	0.04		0.06	0.02	0.03
2/29/2020	<= .01	0.05		0.1	0.02	0.03
3/31/2020	<= .01	0.05		0.08	0.02	0.03
4/30/2020			0.06	0.07		
5/31/2020			0.04	0.06		
6/30/2020			0.04	0.07		
7/31/2020			0.06	0.12		
8/31/2020			0.06	0.06		
9/30/2020			0.06	0.16		
10/31/2020			0.06	0.07		
11/30/2020		0.02	0.03	0.03		
12/31/2020	1.09	0.08		0.18	0.05	0.11
1/31/2021	0.2	0.09		0.16	0.07	0.13
2/28/2021	0.15	0.15		0.2	0.12	0.22
3/31/2021	0.08	0.05		0.12	0.03	0.08
4/30/2021			0.04	0.04		
5/31/2021			0.03	0.04		

Outfall 001

Parameter	Aluminum, total (as Al)
	Daily Max
Units	mg/L
Effluent Limit	Report
Minimum	0
Maximum	0.1
Median	0.01
No. of Violatio	N/A
5/31/2016	0
6/30/2016	0
7/31/2016	0
8/31/2016	0
9/30/2016	0.03
10/31/2016	0.03
11/30/2016	0.01
12/31/2016	0
1/31/2017	0.01
2/28/2017	0.1
3/31/2017	0.02
4/30/2017	< .01
5/31/2017	0.01
6/30/2017	0.01
7/31/2017	0.02
8/31/2017	0.01
9/30/2017	0.03
10/31/2017	< .01
11/30/2017	0.01
12/31/2017	0.02
1/31/2018	< .05
2/28/2018	< .05
3/31/2018	< .01
4/30/2018	0.01
5/31/2018	< .01
6/30/2018	< .05
7/31/2018	0.01
8/31/2018	< .01
9/30/2018	< .01
10/31/2018	< .05
11/30/2018	< .01
12/31/2018	<= .1
1/31/2019	<= .05
2/28/2019	0.01
3/31/2019	<= .01
4/30/2019	<= .01
5/31/2019	<= .01
6/30/2019	<= .02
7/31/2019	<= .05

Outfall 001

Parameter	Aluminum, total (as Al)
	Daily Max
Units	mg/L
Effluent Limit	Report
Minimum	0
Maximum	0.1
Median	0.01
No. of Violatio	N/A
8/31/2019	<= .05
9/30/2019	<= .05
10/31/2019	0.05
11/30/2019	< .05
12/31/2019	< .05
1/31/2020	< .05
2/29/2020	<= .05
3/31/2020	<= .05
4/30/2020	0.05
5/31/2020	0.05
6/30/2020	0.05
7/31/2020	0.05
8/31/2020	0.05
9/30/2020	0.05
10/31/2020	0.05
11/30/2020	0.05
12/31/2020	0.05
1/31/2021	0.05
2/28/2021	0.05
3/31/2021	0.05
4/30/2021	0.05
5/31/2021	0.05

WET Effluent Data

Parameter	LC50 Acute Ceriodaphnia	LC50 Acute Pimephales	C-NOEC Chronic Ceriodaphnia	Noel Statre 7Day Chronic Pimephales	Ammonia	pH	Hardeness
	Daily Min	Daily Min	Daily Min	Daily Min	Ammonia	pH	Hardness
Units	%	%	%	%	Daily Max	Max	Daily Max
Effluent Limit	100	100	99	99	mg/L	S.U.	mg/L
					Report	Report	Report
Minimum	100	100	6.25	100	0.12	7.0	96
Maximum	100	100	100	100	4.05	7.8	232
Median	100	100	100	100	0.8	7.3	180
No. of Violations	0	0	2	0	N/A	N/A	N/A
6/30/2016	100	100	100	100	1.42	7.7	232
9/30/2016	100	100	100	100	0.07	7.8	195
12/31/2016	100	100	100	100	0.12	7.5	190
3/31/2017	100	100	100	100	1.8	7.2	182
6/30/2017	100	100	100	100	0.12	7.4	230
9/30/2017	100	100	100	100	ND		210
12/31/2017	100	100	100	100	<0.1	7.3	180
3/31/2018	100	100	100	100	<0.1	7.2	190
6/30/2018	100	100	100	100	<0.01	7.4	230
9/30/2018	100	100	100	100	<0.01	7.3	170
12/31/2018	100	100	99	100	<0.01	7.4	160
3/31/2019	100	100	**6.25**	100	1.3	7.2	160
6/30/2019	100	100	**50**	100	<0.1	7.4	210
9/30/2019	100	100	100	100	0.83	7.3	170
12/31/2019	100	100	100	100	4.05	7.4	120
3/31/2020	100	100	100	100	0.14	7.4	180
6/30/2020	100	100	100	100	<0.1	7.3	150
9/30/2020	100	100	100	100	<0.1	7.3	110
12/31/2020	100	100	100	100	0.77	7.0	96
3/31/2021	100	100	100	100	<0.5		120

WET Effluent Data

Parameter	Aluminum	Cadmium	Copper	Lead	Nickel	Zinc
	Aluminum	Cadmium	Copper	Lead	Nickel	Zinc
Units	Daily Max	Daily Max	Max	Max	Max	Max
Effluent Limit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	Report	Report	Report	Report	Report	Report
Minimum	0.021	0	0.003	0	0.0038	0.0087
Maximum	0.147	0	0.047	0	0.007	0.027
Median	0.05	0	0.006	0	0.0052	0.0175
No. of Violations	N/A	N/A	N/A	N/A	N/A	N/A
6/30/2016	<0.010	<0.0001	0.007	<0.0003	0.007	0.017
9/30/2016	0.087	<0.0001	0.008	<0.0003	0.007	0.009
12/31/2016	<0.0001	<0.0001	0.006	<0.0003	0.005	0.018
3/31/2017	0.147	<0.0001	0.003	<0.0002	0.005	0.022
6/30/2017	<0.02	<0.0003	0.0053	<0.0003	0.0064	0.01
9/30/2017	<0.02	<0.0003	0.007	<0.0003	0.0056	0.0087
12/31/2017	<0.02	<0.0001	0.0051	<0.0003	0.005	0.014
3/31/2018	<0.02	<0.0003	0.0045	<0.0003	0.0052	0.02
6/30/2018	<0.02	<0.0003	0.0053	<0.0003	0.0064	0.01
9/30/2018	<0.02	<0.0001	0.0073	<0.0003	0.0056	0.013
12/31/2018	<0.02	<0.0001	0.0059	<0.0003	0.0041	0.02
3/31/2019	0.021	<0.0003	0.0042	<0.0003	0.0038	0.026
6/30/2019	<0.02	<0.0003	0.0042	<0.0003	0.0042	0.016
9/30/2019	<0.01	<0.0003	0.0061	<0.0003	0.0052	0.02
12/31/2019	<0.02	<0.0003	0.0053	<0.0003	0.0038	0.018
3/31/2020	<0.02	<0.0003	0.0073	<0.0003	0.0043	0.026
6/30/2020	<0.01	<0.0003	0.0069	<0.0003	0.0055	0.015
9/30/2020	<0.02	<0.0003	0.0095	<0.0003	0.0055	0.014
12/31/2020	0.022	<0.0003	0.047	<0.0003	0.0048	0.027
3/31/2021	0.05	<0.010	<0.010	<0.0050	<0.010	0.026

WET Ambient Data						
Parameter	**Ammonia**	**Ammonia**	**pH**	**Hardeness**	**Aluminum**	**Cadmium**
Units	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**
Effluent Limit	**mg/L**	**mg/L**	**S.U.**	**mg/L**	**mg/L**	**mg/L**
	Report	**Report**	**Report**	**Report**	**Report**	**Report**
Minimum	**0.08**	**0.002**	**6.8**	**67**	**0.02**	**0.0002**
Maximum	**0.18**	**0.18**	**7.6**	**202**	**0.101**	**0.001**
Median	**0.16**	**0.122**	**7.1**	**144**	**0.041**	**0.0003**
6/30/2015	0.18		7.4	137	<0.010	0.0003
9/30/2015	0.08		7.5	192	0.085	0.0002
12/31/2015		<0.05	6.9	202	0.021	0.001
3/31/2016		0.18	6.9	168	0.101	0.0003
6/30/2016	0.16		7.4	164	<0.010	0.0002
9/30/2016	<0.05		7.6	147	0.044	<0.0001
12/31/2016		0.002	7.3	130	0.061	0.0004
3/31/2017		0.18	7.2	152	0.08	0.0003
6/30/2017	0.18		7.1	124	0.08	0.0003
9/30/2017	<0.1		7.1	170	<0.02	0.0002
12/31/2017		<0.1	7.1	180	<0.02	0.0003
3/31/2018		0.15	7.0	140	0.021	0.0003
6/30/2018	<0.1		7.1	160	<0.02	<0.0003
9/30/2018	<0.02		7.2	170	<0.02	<0.0003
12/31/2018		0.094	6.8	67		<0.0003
3/31/2019		<0.1	6.8	100	0.04	<0.0003
6/30/2019	0.13		6.9	77	0.043	<0.0003
9/30/2019	<0.1		7.3	150	<0.01	<0.0003
12/31/2019		<0.1	6.9	110	0.041	<0.0003
3/31/2020		<0.1	7.1	120	0.021	<0.0003
6/30/2020	<0.1		7.2	99	0.023	<0.0003
9/30/2020	<0.1		7.3	150	0.02	<0.0003
12/31/2020			6.95	99	0.04	<0.0003
3/31/2021		0.035		100	<0.05	<0.0010

WET Ambient Data				
Parameter	**Copper**	**Lead**	**Nickel**	**Zinc**
Units	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**
Effluent Limit	**mg/L**	**mg/L**	**mg/L**	**mg/L**
	Report	**Report**	**Report**	**Report**
Minimum	**0.0005**	**0.0004**	**0.001**	**0.003**
Maximum	**0.008**	**0.002**	**0.013**	**0.064**
Median	**0.00135**	**0.00065**	**0.0022**	**0.018**
6/30/2015	0.008	<0.0003	0.003	0.018
9/30/2015	0.004	<0.0003	0.013	0.011
12/31/2015	<0.002	<0.0003	0.002	0.013
3/31/2016	<0.0002	<0.0003	0.003	0.025
6/30/2016	0.002	<0.0003	0.002	0.024
9/30/2016	<0.002	<0.0003	0.001	0.005
12/31/2016	<0.002	0.002	0.0012	0.038
3/31/2017	<0.002	<0.0002	0.003	0.031
6/30/2017	0.003	0.0018	0.003	0.064
9/30/2017	0.0006	<0.0002	0.0018	0.014
12/31/2017	0.0005	<0.0003	0.0025	0.025
3/31/2018	0.001	<0.0003	0.0031	0.034
6/30/2018	0.001	<0.0003	0.0029	0.013
9/30/2018	0.0009	<0.0003	0.0021	0.016
12/31/2018	0.002	<0.0003	0.0018	0.02
3/31/2019	0.0013	0.0005	0.002	0.018
6/30/2019	0.0021	0.0008	0.0017	0.016
9/30/2019	0.0011	<0.0003	0.0016	0.016
12/31/2019	0.0014	<0.0003	0.0022	0.027
3/31/2020	0.0014	<0.0003	0.0034	0.003
6/30/2020	0.0011	0.0004	0.0019	0.0098
9/30/2020	0.0007	<0.0003	0.012	0.0065
12/31/2020	0.0018	0.0004	0.0024	0.032
3/31/2021	<0.010	<0.0050	<0.010	0.035

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentration that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD)[1] to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory detection limits). For datasets of 10 or more samples, EPA uses the upper bound effluent concentration at the 95th percentile of the dataset. For datasets of less than 10 samples, EPA uses the maximum value of the dataset.

EPA uses the calculated upper bound of the effluent data, along with a concentration representative of the parameter in the receiving water, the critical effluent flow, and the critical upstream flow to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$C_s Q_s + C_e Q_e = C_d Q_d$$

Where:

C_s = upstream concentration (median value of available ambient data)
Q_s = upstream flow (7Q10 flow upstream of the outfall)
C_e = effluent concentration (95th percentile or maximum of effluent concentration)
Q_e = effluent flow of the facility (design flow)
C_d = downstream concentration
Q_d = downstream flow ($Q_s + Q_e$)

Solving for the downstream concentration results in:

$$C_d = \frac{C_s Q_s + C_e Q_e}{Q_d}$$

When both the downstream concentration (C_d) and the effluent concentration (C_e) exceed the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above the water quality standard. *See* 40 C.F.R. § 122.44(d). When EPA determines that a discharge causes, has the reasonable potential to cause, or contribute to such an excursion, the permit must

contain WQBELs for the parameter. *See* 40 C.F.R. § 122.44(d)(1)(iii). Limits are calculated by using the criterion as the downstream concentration (C_d) and rearranging the mass balance equation to solve for the effluent concentration (C_e).

For any pollutant(s) with an existing WQBEL, EPA notes that the analysis described in 40 CFR § 122.44(d)(1)(i) has already been conducted in a previous permitting action demonstrating that there is reasonable potential to cause or contribute to an excursion of WQS. Given that the permit already contains a WQBEL based on the prior analysis and the pollutant(s) continue to be discharged from the facility, EPA has determined that there is still reasonable potential for the discharge of this pollutant(s) to cause or contribute to an excursion of WQS. Therefore, the WQBEL will be carried forward unless it is determined that a more stringent WQBEL is necessary to continue to protect WQS or that a less stringent WQBEL is allowable based on anti-backsliding regulations at CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). For these pollutant(s), if any, the mass balance calculation is not used to determine whether there is reasonable potential to cause or contribute to an excursion of WQS, but rather is used to determine whether the existing limit needs to be more stringent in order to continue to protect WQS.

From a technical standpoint, when a pollutant is already being controlled as a result of a previously established WQBEL, EPA has determined that it is not appropriate to use new effluent data to reevaluate the need for the existing limit because the reasonable potential to cause or contribute to an excursion of WQS for the uncontrolled discharge was already established in a previous permit. If EPA were to conduct such an evaluation and find no reasonable potential for the controlled discharge to cause or contribute to an excursion of WQS, that finding could be interpreted to suggest that the effluent limit should be removed. However, the new permit without the effluent limit would imply that existing controls are unnecessary, that controls could be removed and then the pollutant concentration could rise to a level where there is, once again, reasonable potential for the discharge to cause or contribute to an excursion of WQS. This could result in an illogical cycle of applying and removing pollutant controls with each permit reissuance. EPA's technical approach on this issue is in keeping with the Act generally and the NPDES regulations specifically, which reflect a precautionary approach to controlling pollutant discharges.

The table below presents the reasonable potential calculations and, if applicable, the calculation of the limits required in the permit. Refer to the pollutant-specific section of the Fact Sheet for a detailed discussion of these calculations, any assumptions that were made and the resulting permit requirements.

Pollutant	Q_s	C_s [1]	Q_e	C_e [2]		Q_d	C_d		Criteria		Reasonable Potential		Limits	
	cfs	mg/L	cfs	Acute (mg/L)	Chronic (mg/L)	cfs	Acute (mg/L)	Chronic (mg/L)	Acute (mg/L)	Chronic (mg/L)	C_e & C_d > Acute Criteria	C_e & C_d > Chronic Criteria	Acute (mg/L)	Chronic (mg/L)
Ammonia (Warm)		0.0		1.0	0.5		1.0	0.5	32.2	2.9	**Y**	**Y**	**1.0**	**0.5**
Ammonia (Cold)		0.0		0.0	4.4		0.0	4.4	32.2	5.6	N	**Y**	N/A	**4.4**
Phosphorus		0.00		N/A	0.10		N/A	0.10	N/A	0.050	N/A	**Y**	N/A	**0.05**
		µg/L		**µg/L**	**µg/L**		**µg/L**	**µg/L**	**µg/L**	**µg/L**			**µg/L**	**µg/L**
Aluminum	0.09	21.0	8.51	73.1	73.1	8.61	72.6	72.6	750	87	N	N	N/A	N/A
Cadmium		0.0		0.0	0.0		0.0	0.0	3.9	0.4	N	N	N/A	N/A
Copper		1.1		15.8	15.8		15.6	15.6	24.3	15.4	N	**Y**	N/A	**16**
Lead		0.0		0.0	0.0		0.0	0.0	172.1	6.7	N	N	N/A	N/A
Nickel		2.2		7.0	7.0		6.9	6.9	770.0	85.6	N	N	N/A	N/A
Zinc		18.0		29.8	29.8		29.7	29.7	196.8	196.8	N	N	N/A	N/A

[1]Median concentration for the receiving water just upstream of the facility's discharge taken from the WET testing data during the review period (see Appendix A).

[2]Values represent the 95th percentile (for $n \geq 10$) or maximum (for $n < 10$) concentrations from the DMR data and/or WET testing data during the review period (see Appendix A). If the pollutant already has a WQBEL (for either acute or chronic conditions), the value represents the existing limit.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY – REGION 1 (EPA)
WATER DIVISION
5 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02109

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASSDEP)
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

EPA PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO WATERS OF THE UNITED STATES UNDER SECTION 402 OF THE CLEAN WATER ACT (CWA), AS AMENDED, AND MASSDEP PUBLIC NOTICE OF EPA REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE CWA.

PUBLIC NOTICE PERIOD: **November 23, 2021-December 22, 2021**

PERMIT NUMBER: **MA0100498**

NAME AND MAILING ADDRESS OF APPLICANT:

City of Marlborough
Marlborough Public Works Department
135 Neil Street
Marlborough, MA 01752

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Easterly Wastewater Treatment Facility
860 Boston Post Road East
Marlborough, MA 01752

RECEIVING WATER AND CLASSIFICATION:

Unnamed Tributary (MA 82A-15)
Concord River Watershed – USGS Code: 1070005
Class B - Warm Water Fishery

PREPARATION OF THE DRAFT PERMIT AND EPA REQUEST FOR CWA § 401 CERTIFICATION:

EPA is issuing for public notice and comment the Draft NPDES Permit for the Easterly Wastewater Treatment Plant, which discharges treated domestic and industrial wastewater. Sludge from this facility is pumped from to an aerated sludge holding tank and dewatered following chemical addition. The dried sludge is sent to Casella for landfill disposal. The effluent limits and permit conditions have been drafted pursuant to, and assure compliance with, the CWA, including EPA-approved State Surface Water Quality Standards at 314 CMR 4.00. MassDEP cooperated with EPA in the development of the Draft NPDES Permit. MassDEP retains independent authority under State law to publish for public notice and issue a separate Surface Water Discharge Permit for the discharge, not the subject of this notice, under the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53.

In addition, EPA has requested that MassDEP grant or deny certification of this Draft Permit pursuant to Section 401 of the CWA and implementing regulations. Under federal regulations governing the NPDES program at 40 Code of Federal Regulations (CFR) § 124.53(e), state certification shall contain conditions that are necessary to assure compliance with the applicable provisions of CWA sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law, including any conditions more stringent

than those in the Draft Permit that MassDEP finds necessary to meet these requirements. Furthermore, MassDEP may provide a statement of the extent to which each condition of the Draft Permit can be made less stringent without violating the requirements of State law.

INFORMATION ABOUT THE DRAFT PERMIT:

The Draft Permit and explanatory Fact Sheet may be obtained at no cost at https://www.epa.gov/npdes-permits/massachusetts-draft-individual-npdes-permits or by contacting:

Betsy Davis
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1576
Email: davis.betsy@epa.gov

Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices, EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston office. However, any electronically available documents that are part of the administrative record can be requested from the EPA contact above.

PUBLIC COMMENT AND REQUESTS FOR PUBLIC HEARINGS:

All persons, including applicants, who believe any condition of this Draft Permit is inappropriate must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by December 22, 2021 which is the close of the public comment period. Comments, including those pertaining to EPA's request for CWA § 401 certification, should be submitted to the EPA contact at the address or email listed above. Upon the close of the public comment period, EPA will make all comments available to MassDEP. All commenters who want MassDEP to consider their comments in the state decision-making processes (i.e., the separate state permit and the CWA § 401 certification) must submit such comments to MassDEP during the state comment period for the state Draft Permit and CWA § 401 certification. For information on submitting such comments to MassDEP, please follow the instructions found in the state public notice at: https://www.mass.gov/service-details/massdep-public-hearings-comment-opportunities.

Any person, prior to the close of the EPA public comment period, may submit a request in writing to EPA for a public hearing on the Draft Permit under 40 CFR § 124.10. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice if the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this Draft Permit, the Regional Administrator will respond to all significant comments and make the responses available to the public.

Due to the COVID-19 National Emergency, if comments are submitted in hard copy form, please also email a copy to the EPA contact above.

FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and notify the applicant and each person who has submitted written comments or requested notice.

KEN MORAFF, DIRECTOR
WATER DIVISION
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY – REGION 1

LEALDON LANGLEY, DIRECTOR
DIVISION OF WATERSHED MGMT
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION