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"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§ 26-53),

City of Leominster
Department of Public Works

is authorized to discharge from the facility located at

Leominster Water Pollution Control Facility
436 Mechanic Street
Leominster, MA 01453

to receiving water named

North Nashua River (MA81-04)

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

The Towns of Lunenburg and Lancaster are a co-permittees for Part I.B. Unauthorized Discharges and Part I.C., Operation and Maintenance and which include conditions regarding the operation and maintenance of the collection systems, owned and operated by the Towns. The responsible Town Department is:

Town of Lunenburg
Department of Public Works
520 Chase Road
Lunenburg, MA 01462

Town of Lancaster
Office of the Town Administrator
695 Main Street, Suite 1
Lancaster. MA 01523

This permit will become effective on the date of signature.

This permit expires at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on September 28, 2006.

This permit consists of Part I (19 pages including effluent limitations and monitoring requirements); Attachment A (USEPA Region 1 Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013, 7 pages); Attachment B (USEPA Region I Freshwater Acute Toxicity Test Procedure and Protocol, February 2011, 8 pages): Attachment C (USEPA Region 1Reassessment of Technically Based Industrial Discharge Limits, 9 pages); Attachment D (USEPA Region 1 NPDES Permit Requirement for Industrial Pretreatment Annual Report, 2 pages) and Part II (25 pages including NPDES Part II Standard Conditions).

Signed this 6th day of June, 2014

__/S/SIGNATURE ON FILE _____ _ _____

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A.1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001 to the North Nashua River. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS							MONITORING REQUIREMENTS[3]
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
FLOW[2]	*********	*********	*********	9.3 MGD	*********	Report MGD	CONTINUOUS	RECORDER
FLOW[2]	*********	*********	*********	Report MGD	*********	*********	CONTINUOUS	RECORDER
BOD_5 [4] (Nov 1 – Apr 30)	2327 lbs/Day	3490 lbs/Day	Report lbs/day	30 mg/l	45 mg/l	Report mg/l	2/WEEK	24-HOUR COMPOSITE[5]
$CBOD_5$ [4] (May 1-Oct 31)	1163 lbs/Day	1163 lbs/Day	Report lbs/day	15 mg/l	15 mg/l	Report mg/l	2/WEEK	24-HOUR COMPOSITE[5]
TSS [4] (Nov 1 – Apr 30)	2327 lbs/Day	3490 lbs/Day	Report lbs/day	30 mg/l	45 mg/l	Report mg/l	2/WEEK	24-HOUR COMPOSITE[5]
TSS [4] (May 1-Oct 31)	1551 lbs/Day	1551 lbs/Day	Report lbs/day	20 mg/l	20 mg/l	Report mg/l	2/WEEK	24-HOUR COMPOSITE[5]
pH RANGE[1]	6.0 - 8.3 SU (November 1 – April 30) 6.5 – 8.3 SU (May 1 – October 31) (SEE PERMIT PARAGRAPH I.A.1.b.)						1/DAY	GRAB
DISSOLVED OXYGEN[1] (April 1st-October 31st)	NOT LESS THAN 6.0 mg/l						2/DAY	GRAB
ESCHERICHIA COLI [1,6]	*********	**********	**********	126 cfu/100 ml	*********	409 cfu/100 ml	2/WEEK	GRAB
TOTAL RESIDUAL CHLORINE[1,7]	*********	**********	**********	25 ug/l	*********	44 ug/l	2/DAY	GRAB

CONTINUED FROM PREVIOUS PAGE

PART I

A.1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001 to the North Nashua River. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTIC	**EFFLUENT LIMITS**							**MONITORING REQUIREMENTS[3]**
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
TOTAL PHOSPHORUS (April 1 – October 31)	*********	*********	*********	0.2 mg/l	*********	Report mg/l	2/WEEK	24-HOUR COMPOSITE[5]
TOTAL PHOSPHORUS (November 1- March 31)	*********	*********	*********	1.0 mg/l	*********	Report mg/l	2/WEEK	24-HOUR COMPOSITE[5]
ORTHO PHOSPHORUS[8] (November 1 – March 31)	*********	*********	*********	Report mg/l	*********	Report mg/l	1/WEEK	24-HOUR COMPOSITE[5]
TOTAL AMMONIA, AS N (May 1-May 31)	*********	*********	*********	Report mg/l	*********	Report mg/l	2/WEEK	24-HOUR COMPOSITE[5]
TOTAL AMMONIA, AS N (June 1- October 31)	101 lbs/day	*********	154 lbs/day	1.3 mg/l		2.0 mg/l	2/WEEK	24-HOUR COMPOSITE [5]
TOTAL AMMONIA, AS N (November 1-April 30)	*********	*********	*********	Report mg/l	*********	Report mg/l	1/WEEK	24-HOUR COMPOSITE[5]
TOTAL COPPER[9]	*********	*********	*********	32.3 ug/l	*********	50.3 ug/l	1/MONTH	GRAB
WHOLE EFFLUENT TOXICITY [10, 11, 12, 13, 14]	Acute $LC_{50} \geq 100\%$ Chronic C-NOEC $\geq 43.5\%$						4/YEAR	24-HOUR COMPOSITE[5]

CONTINUED FROM PREVIOUS PAGE

A.1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001 to the North Nashua River. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS							MONITORING REQUIREMENTS[3]
PARAMETER	AVERAGE MONTHLY	AVERAGE WEEKLY	MAXIMUM DAILY	AVERAGE MONTHLY	AVERAGE WEEKLY	MAXIMUM DAILY	MEASUREMENT FREQUENCY	SAMPLE TYPE
Hardness[15]	*********	*********	*********	*********	*********	Report mg/l	4/YEAR	24-HOUR COMPOSITE[5]
Ammonia Nitrogen, as N[15]	*********	*********	*********	*********	*********	Report mg/l	4/YEAR	24-HOUR COMPOSITE[5]
Total Recoverable Aluminum[15]	*********	*********	*********	*********	*********	Report mg/l	4/YEAR	24-HOUR COMPOSITE[5]
Total Recoverable Cadmium[15]	*********	*********	*********	*********	*********	Report mg/l	4/YEAR	24-HOUR COMPOSITE[5]
Total Recoverable Copper[15]	*********	*********	*********	*********	*********	Report mg/l	4/YEAR	24-HOUR COMPOSITE[5]
Total Recoverable Nickel[15]	*********	*********	*********	*********	*********	Report mg/l	4/YEAR	24-HOUR COMPOSITE[5]
Total Recoverable Lead[15]	*********	*********	*********	*********	*********	Report mg/l	4/YEAR	24-HOUR COMPOSITE[5]
Total Recoverable Zinc[15]	*********	*********	*********	*********	*********	Report mg/l	4/YEAR	24-HOUR COMPOSITE[5]

Sampling Location: The effluent composite sample is taken downstream from the re-aeration steps and prior to discharge and the grabs samples are taken at the Chlorine Effluent Chamber.

Footnotes:

1. Required for State Certification.

2. Report annual average, monthly average, and the maximum daily flow. The limit is an annual average, which shall be reported as a rolling average. The value will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months.

3. Effluent sampling shall be of the discharge and shall be collected at the point specified on page 4. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

   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 in correspondence appended to the applicable discharge monitoring report.

   All samples shall be tested using the analytical methods found in 40 CFR § 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR § 136.

4. Sampling required for influent and effluent.

5. 24-hour composite samples 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 proportionally to flow.

6. The monthly average limit for E. coli is expressed as a geometric mean. E. coli monitoring shall be conducted concurrently with a total residual chlorine sample.

7. Total residual chlorine monitoring is required whenever chlorine is added to the treatment process (i.e. TRC sampling is not required if chlorine is not added for disinfection or other purpose). The limitations are in effect year-round.

   The minimum level (ML) for total residual chlorine is defined as 20 ug/l. This value is the minimum level for chlorine using EPA approved methods found in the most currently approved version of Standard Methods for the Examination of Water and Wastewater, Method 4500 CL-E and G. One of these methods must be used to determine total residual chlorine. For effluent limitations less than 20 ug/l, compliance/non-compliance will be determined based on the ML. Sample results of 20 ug/l or less shall be reported as zero on the discharge monitoring report.

   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 maximum daily concentration and loading values reports for dissolved orthophosphorus shall be the values from the same day that the maximum daily total phosphorus concentration and loading values are measured.

9. The minimum level (ML) for copper is defined as 3 ug/l. This value is the minimum level for copper using the Furnace Atomic Absorption analytical method (EPA Method 220.2). This method or other EPA-approved method with an equivalent or lower ML shall be used for effluent limitations less than 3 ug/l. Compliance/non-compliance will be determined based on the ML. Sampling results of 3 ug/l or less shall be reported as zero on the Discharge Monitoring Report.

10. The permittee shall conduct acute and chronic toxicity tests four (4) times per year. The permittee shall test the daphnid, Ceriodaphnia dubia, only. Toxicity test samples shall be collected during the second week of the months of March, June, September and December. The test results shall be submitted by the last day of the month following the completion of the test. The test results are due April 30, July 31, October 31 and January 31, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** and **Attachment B** of this permit.

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**	**Chronic Limit C-NOEC**
March June September December	April 30 July 31 October 31 January 31	Ceriodaphnia dubia (daphnid)	≥ 100%	≥ 43.5%

After submitting **one year** and a **minimum** of four consecutive sets of WET test results, all of which demonstrate compliance with the WET permit limits, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the WET testing requirement has been changed.

11. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution)

shall cause no more than a 50% mortality rate.

12. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction, based on a statistically significant difference from dilution control, at a specific time of observation as determined from hypothesis testing. As described in the EPA WET Method Manual EPA 821-R-02-013, Section 10.2.6.2, all test results are to be reviewed and reported in accordance with EPA guidance on the evaluation of the concentration-response relationship. The "43.5% or greater" limit is defined as a sample which is composed of 43.5% (or greater) effluent, the remainder being dilution water.

13. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in **Attachment A (Toxicity Test Procedure and Protocol**) **Section IV., DILUTION WATER** in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the Self-Implementing Alternative Dilution Water Guidance, which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, which may be found on the EPA Region I web site at http://www.epa.gov/Region1/enforcementandassistance/dmr.html. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachment A**. Any modification or revocation to this guidance will be transmitted to the permittees. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

14. The permittee must run the required set of controls including chemistry (e.g. site water controls and lab water controls) when utilizing alternative dilution water as detailed in **Attachment A**.

15. For each whole effluent toxicity test, the permittee shall report on the appropriate discharge monitoring report, (DMR), the concentrations of the hardness, ammonia nitrogen as nitrogen, total recoverable aluminum, cadmium, copper, lead, nickel, and zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the minimum quantification level shown in **Attachment A**. Also the permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report.

Part I.A.1. (Continued)

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

b. The pH of the effluent shall not be less than 6.5 or greater than 8.3 during the summer months (May 1 through October 31) and shall not be less than 6.0 or greater than 8.3 during the winter months (November 1 through April 30).

c. The discharge shall not cause objectionable discoloration of the receiving waters.

d. The effluent shall not contain a visible oil sheen, foam, or floating solids at any time.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand/carbonaceous biochemical oxygen demand. The percent removal shall be based on monthly average values.

f. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control.

g. The results of sampling for any parameter done in accordance with EPA approved methods above its required frequency must also be reported.

h. If the average annual flow in any calendar year exceeds 80 percent of the facility's design flow, the permittee shall submit a report to MassDEP by March 31 of the following calendar year describing its plans for further flow increases and describing how it will maintain compliance with the flow limit and all other effluent limitations and conditions.

2. All POTWs must provide adequate notice to the Director of the following:

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to Section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; 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.

3. Prohibitions Concerning Interference and Pass Through:

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

4. Toxics Control

   a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

   b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

5. Numerical Effluent Limitations for Toxicants

   EPA or MassDEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), 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.

B. UNAUTHORIZED DISCHARGES

The permittee is authorizes discharges only from the outfall(s) 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 and shall be reported to EPA and MassDEP in accordance with Section D.1.e.(1) of the General Requirements of this permit (Twenty-four hour reporting).

Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes DEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at http://www.mass.gov/eea/agencies/massdep/service/approvals/sanitary-sewer-overflow-bypass-backup-notification.html.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions. The permittee is required to 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 (see page 1 of this permit for the effective date). 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 Operation and Maintenance Plan

The permittee shall develop and implement a Collection System Operation and Maintenance Plan.

a. Within six (6) months of the effective date of the permit, the permittee shall submit to EPA and MassDEP

(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 MassDEP 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; and

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

(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 MassDEP annually by March 31. 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. If treatment plant flow has reached 80% of its design flow, 7.44 MGD, based on the annual average flow during the reporting year, or there have been capacity related overflows, submit a calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year; and
f. 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.

7. 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[1] it owns and operates.

[1] As defined at 40 CFR §122.2, which references the definition at 40 CFR §403.3

D. 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 Section 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 including the following elements:

   - General requirements
   - Pollutant limitations
   - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
   - Management practices
   - Record keeping
   - Monitoring
   - Reporting

   Which of the 40 C.F.R. 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

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 Part 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 to the address contained in the reporting section of the permit. If the permittee engages a contractor or contractors for sludge preparation and ultimate use or disposal, the annual report need contain only the following information:

   a. Name and address of contractor(s) responsible for sludge preparation, use or disposal
   b. Quantity of sludge (in dry metric tons) from the POTW that is transferred to the sludge contractor(s), and the method(s) by which the contractor will prepare and use or dispose of the sewage sludge.

---

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

E. INDUSTRIAL USERS AND PRETREATMENT PROGRAM

1. The permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within (120 days of the effective date of this permit), the permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the permittee shall assess how the POTW performs with respect to influent and effluent of pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety and collection system concerns. In preparing this evaluation, the permittee shall complete and submit the attached form (Attachment B) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004).

2. The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program, and the General Pretreatment Regulations, 40 CFR 403. At a minimum, the permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):

    a. Carry out inspection, surveillance, and monitoring procedures which will determine independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP but in no case less than once per year and maintain adequate records.

    b. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.

    c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.

    d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.

3. The permittee shall provide the EPA and MassDEP with an annual report describing the permittee's pretreatment program activities for the twelve (12) month period ending 60 days prior to the due date in accordance with 403.12(i). The annual report shall be consistent with the format described in **Attachment C** of this permit and shall be submitted no later than March 1 of each year.

4. The permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR 403.18(c).

5. The permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 CFR 405 et. seq.

6. The permittee must modify its pretreatment program, if necessary, to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the industrial pretreatment program. The permittee must provide EPA, in writing, within 180 days of this permit's effective date proposed changes, if applicable, to the permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the permittee must address in its written submission the following areas: (1) Enforcement response plan; (2) revised sewer use ordinances; and (3) slug control evaluations. The permittee will implement these proposed changes pending EPA Region I's approval under 40 CFR 403.18. This submission is separate and distinct from any local limits analysis submission described in Part I.E.1.

F. MONITORING AND REPORTING

1. **For a period of one year from the effective date of the permit**, the permittee may either submit monitoring data and other reports to EPA in hard copy form or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit**, the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

   a. Submittal of Reports Using NetDMR

      NetDMR is accessed from: http://www.epa.gov/netdmr. **Within one year of the effective date of this permit**, the permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt-out request").

      DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA, including the MassDEP Monthly Operations and Maintenance Report, as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees shall

continue to send hard copies of reports other than DMRs (including Monthly Operation and Maintenance Reports) to MassDEP until further notice from MassDEP.

b. Submittal of NetDMR Opt-Out Requests

Opt-out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under this permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the permittee submits a renewed opt-out request and such request be approved by EPA. All opt-out requests should be sent to the following addresses:

Attn: NetDMR Coordinator
U.S. Environmental Protection Agency, Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912

And

Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

c. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. All reports required under this permit, including MassDEP Monthly Operation and Maintenance Reports, shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports or notifications required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (OES04-SMR)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

All sludge monitoring reports required herein shall be submitted to the following address:

U.S. Environmental Protection Agency, Region 7

Biosolids Center
Water Enforcement Branch
11201 Renner Boulevard
Lenexa, Kansas 66219

Duplicate signed copies of all reports or notifications required above shall be submitted to the State at the following addresses:

MassDEP – Central Region
Bureau of Resource Protection (Municipal)
627 Main Street
Worcester, MA 01608

Copies of toxicity tests only to:

Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

Any verbal reports, if required in **Parts I** and/or **II** of this permit, shall be made to both EPA-New England and to MassDEP.

G. STATE PERMIT CONDITIONS

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are (i) a federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§1251 et seq.; and (ii) an identical state surface water discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection (MassDEP) pursuant to the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53, and 314 C.M.R. 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 CMR 3.19, are hereby incorporated by reference into this state surface water discharge permit.

2. This authorization also incorporates the state water quality certification issued by MassDEP under § 401(a) of the Federal Clean Water Act, 40 C.F.R. 124.53, M.G.L. c. 21, § 27 and 314 CMR 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this state surface water discharge permit as special conditions pursuant to 314 CMR 3.11.

3. Each agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as a NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

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

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.

Attachment B

EPA - New England

Reassessment of Technically Based Industrial Discharge Limits

Under 40 CFR §122.21(j)(4), all Publicly Owned Treatment Works (POTWs) with approved Industrial Pretreatment Programs (IPPs) shall provide the following information to the Director: a written evaluation of the need to revise local industrial discharge limits under 40 CFR §403.5(c)(1).

Below is a form designed by the U.S. Environmental Protection Agency (EPA - New England) to assist POTWs with approved IPPs in evaluating whether their existing Technically Based Local Limits (TBLLs) need to be recalculated. The form allows the permittee and EPA to evaluate and compare pertinent information used in previous TBLLs calculations against present conditions at the POTW.

Please read direction below before filling out form.

ITEM I.

* In Column (1), list what your POTW's influent flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present influent flow rate. Your current flow rate should be calculated using the POTW's average daily flow rate from the previous 12 months.

* In Column (1) list what your POTW's SIU flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present SIU flow rate.

* In Column (1), list what dilution ratio and/or 7Q10 value was used in your old/expired NPDES permit. In Column (2), list what dilution ration and/or 7Q10 value is presently being used in your new/reissued NPDES permit.

  The 7Q10 value is the lowest seven day average flow rate, in the river, over a ten year period. The 7Q10 value and/or dilution ratio used by EPA in your new NPDES permit can be found in your NPDES permit "Fact Sheet."

* In Column (1), list the safety factor, if any, that was used when your existing TBLLs were calculated.

* In Column (1), note how your bio-solids were managed when your existing TBLLs were calculated. In Column (2), note how your POTW is presently disposing of its biosolids and how your POTW will be disposing of its biosolids in the future.

ITEM II.

* List what your existing TBLLs are - as they appear in your current Sewer Use Ordinance (SUO).

ITEM III.

* Identify how your existing TBLLs are allocated out to your industrial community. Some pollutants may be allocated differently than others, if so please explain.

ITEM IV.

* Since your existing TBLLs were calculated, identify the following in detail:

  (1) if your POTW has experienced any upsets, inhibition, interference or pass-through as a result of an industrial discharge.

  (2) if your POTW is presently violating any of its current NPDES permit limitations - include toxicity.

ITEM V.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in pounds per day) received in the POTW's influent. Current sampling data is defined as data obtained over the last 24 month period.

  All influent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* Based on your existing TBLLs, as presented in Item II., list in Column (2), for each pollutant the Maximum Allowable Headwork Loading (MAHL) values derived from an applicable environmental criteria or standard, e.g. water quality, sludge, NPDES, inhibition, etc. For more information, please see EPA's Local Limit Guidance Document (July 2004).

Item VI.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in micrograms per liter) present your POTW's effluent. Current sampling data is defined as data obtained during the last 24 month period.

(Item VI. continued)

All effluent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* List in Column (2A) what the Water Quality Standards (WQS) were (in micrograms per liter) when your TBLLs were calculated, please note what hardness value was used at that time. Hardness should be expressed in milligram per liter of Calcium Carbonate.

  List in Column (2B) the current WQSs or "Chronic Gold Book" values for each pollutant multiplied by the dilution ratio used in your new/reissued NPDES permit. For example, with a dilution ratio of 25:1 at a hardness of 25 mg/l - Calcium Carbonate (copper's chronic WQS equals 6.54 ug/l) the chronic NPDES permit limit for copper would equal 156.25 ug/l.

ITEM VII.

* In Column (1), list all pollutants (in micrograms per liter) limited in your new/reissued NPDES permit. In Column (2), list all pollutants limited in your old/expired NPDES permit.

ITEM VIII.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants in your POTW's biosolids. Current data is defined as data obtained during the last 24 month period. Results are to be expressed as total dry weight.

  All biosolids data collected and analyzed must be in accordance with 40 CFR §136.

  In Column (2A), list current State and/or Federal sludge standards that your facility's biosolids must comply with. Also note how your POTW currently manages the disposal of its biosolids. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria will be and method of disposal.

In general, please be sure the units reported are correct and all pertinent information is included in your evaluation. If you have any questions, please contact your pretreatment representative at EPA - New England.

REASSESSMENT OF TECHNICALLY BASED LOCAL LIMITS (TBLLs)

POTW Name & Address : _____

NPDES PERMIT # : _____

Date EPA approved current TBLLs : _____

Date EPA approved current Sewer Use Ordinance : _____

ITEM I.

In Column (1) list the conditions that existed when your current TBLLs were calculated. In Column (2), list current conditions or expected conditions at your POTW.		
	Column (1) EXISTING TBLLs	Column (2) PRESENT CONDITIONS
POTW Flow (MGD)		
Dilution Ratio or 7Q10 (from NPDES Permit)		
SIU Flow (MGD)		
Safety Factor		N/A
Biosolids Disposal Method(s)		

ITEM II.

EXISTING TBLLs			
POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)	POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)

ITEM III.

Note how your existing TBLLs, listed in Item II., are allocated to your Significant Industrial Users (SIUs), i.e. uniform concentration, contributory flow, mass proportioning, other. Please specify by circling.

ITEM IV.

Has your POTW experienced any upsets, inhibition, interference or pass-through from industrial sources since your existing TBLLs were calculated?
If yes, explain.

_____
_____

Has your POTW violated any of its NPDES permit limits and/or toxicity test requirements?

If yes, explain.
_____
_____

ITEM V.

Using current POTW influent sampling data fill in Column (1). In Column (2), list your Maximum Allowable Headwork Loading (MAHL) values used to derive your TBLLs listed in Item II. In addition, please note the Environmental Criteria for which each MAHL value was established, i.e. water quality, sludge, NPDES etc.				
Pollutant	Column (1) Influent Data Analyses Maximum (lb/day)	Average (lb/day)	Column (2) MAHL Values (lb/day)	Criteria
Arsenic				
Cadmium				
Chromium				
Copper				
Cyanide				
Lead				
Mercury				
Nickel				
Silver				
Zinc				
Other (List)				

ITEM VI.

Using current POTW effluent sampling data, fill in Column (1). In Column (2A) list what the Water Quality Standards (Gold Book Criteria) were at the time your existing TBLLs were developed. List in Column (2B) current Gold Book values multiplied by the dilution ratio used in your new/reissued NPDES permit.

Pollutant	Column (1) Effluent Data Analyses		Columns (2A) (2B) Water Quality Criteria (Gold Book) From TBLLs Today	
	Maximum (ug/l)	Average (ug/l)	(ug/l)	(ug/l)
Arsenic				
*Cadmium				
*Chromium				
*Copper				
Cyanide				
*Lead				
Mercury				
*Nickel				
Silver				
*Zinc				
Other (List)				

*Hardness Dependent (mg/l - CaCO3)

ITEM VII.

In Column (1), identify all pollutants limited in your new/reissued NPDES permit. In Column (2), identify all pollutants that were limited in your old/expired NPDES permit.			
Column (1) NEW PERMIT Pollutants Limitations (ug/l)		Column (2) OLD PERMIT Pollutants (ug/l)	Limitations

ITEM VIII.

Using current POTW biosolids data, fill in Column (1). In Column (2A), list the biosolids criteria that was used at the time your existing TBLLs were calculated. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria would be and method of disposal.

Pollutant	Column (1) Biosolids Data Analyses Average (mg/kg)	Columns (2A) (2B) Biosolids Criteria From TBLLs New (mg/kg)	(mg/kg)
Arsenic			
Cadmium			
Chromium			
Copper			
Cyanide			
Lead			
Mercury			
Nickel			
Silver			
Zinc			
Molybdenum			
Selenium			
Other (List)			

NPDES PERMIT REQUIREMENT
FOR
INDUSTRIAL PRETREATMENT ANNUAL REPORT

The information described below shall be included in the pretreatment program annual reports:

1. An updated list of all industrial users by category, as set forth in 40 C.F.R. 403.8(f)(2)(i), indicating compliance or noncompliance with the following:
   - baseline monitoring reporting requirements for newly promulgated industries
   - compliance status reporting requirements for newly promulgated industries
   - periodic (semi-annual) monitoring reporting requirements,
   - categorical standards, and
   - local limits;

2. A summary of compliance and enforcement activities during the preceding year, including the number of:
   - significant industrial users inspected by POTW (include inspection dates for each industrial user),
   - significant industrial users sampled by POTW (include sampling dates for each industrial user),
   - compliance schedules issued (include list of subject users),
   - written notices of violations issued (include list of subject users),
   - administrative orders issued (include list of subject users),
   - criminal or civil suits filed (include list of subject users) and,
   - penalties obtained (include list of subject users and penalty amounts);

3. A list of significantly violating industries required to be published in a local newspaper in accordance with 40 C.F.R. 403.8(f)(2)(vii);

4. A narrative description of program effectiveness including present and proposed changes to the program, such as funding, staffing, ordinances, regulations, rules and/or statutory authority;

5. A summary of all pollutant analytical results for influent, effluent, sludge and any toxicity or bioassay data from the wastewater treatment facility. The summary shall include a comparison of influent sampling results versus threshold inhibitory concentrations for the Wastewater Treatment System and effluent sampling results versus water quality standards. Such a comparison shall be based on the sampling program described in the paragraph below or any similar sampling program described in this Permit.

At a minimum, annual sampling and analysis of the influent and effluent of the Wastewater Treatment Plant shall be conducted for the following pollutants:

a.) Total Cadmium	f.) Total Nickel
b.) Total Chromium	g.) Total Silver
c.) Total Copper	h.) Total Zinc
d.) Total Lead	i.) Total Cyanide
e.) Total Mercury	j.) Total Arsenic

The sampling program shall consist of one 24-hour flow-proportioned composite and at least one grab sample that is representative of the flows received by the POTW. The composite shall consist of hourly flow-proportioned grab samples taken over a 24-hour period if the sample is collected manually or shall consist of a minimum of 48 samples collected at 30 minute intervals if an automated sampler is used. Cyanide shall be taken as a grab sample during the same period as the composite sample. Sampling and preservation shall be consistent with 40 CFR Part 136.

6. A detailed description of all interference and pass-through that occurred during the past year;

7. A thorough description of all investigations into interference and pass-through during the past year;

8. A description of monitoring, sewer inspections and evaluations which were done during the past year to detect interference and pass-through, specifying parameters and frequencies;

9. A description of actions being taken to reduce the incidence of significant violations by significant industrial users; and,

10. The date of the latest adoption of local limits and an indication as to whether or not the permittee is under a State or Federal compliance schedule that includes steps to be taken to revise local limits.

NPDES PART II STANDARD CONDITIONS
(January, 2007)

TABLE OF CONTENTS

PART II. 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) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the 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, even if the permit has not yet been modified to incorporate the requirements.

b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed $25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements 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.

c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

Note: See 40 CFR §122.41(a)(2) for complete "Duty to Comply" regulations.

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 notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

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

4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including "sludge-only facilities"), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. 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).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

a. In accordance with 40 CFR 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 CFR 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 as defined in 40 CFR §2.302(a)(2).

c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §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.

8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, 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 Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. 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 and with the requirements of storm water pollution prevention plans. 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 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 be reasonably 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 provision of Paragraphs B.4.c. and 4.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.
(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
(2) 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
(3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator 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;
(3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
(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.

PART II. 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 for 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 five years (or longer as required by 40 CFR Part 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 except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator 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 results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.

e. 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.

2. Inspection and Entry

The permittee shall allow the Regional Administrator 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 CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. Planned Changes. The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required 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 CFR§122.29(b); or
(2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§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 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 Regional Administrator 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 Regional Administrator. The Regional Administrator 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 CWA. (See 40 CFR Part 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.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the 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 submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission 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.

(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 CFR §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 Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)

(3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

f. Compliance Schedules. Reports of compliance or noncompliance with, 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.

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 Regional Administrator, it shall promptly submit such facts or information.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §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 noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. 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 Regional Administrator. 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.

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

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 to, 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 and 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.

Average means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

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" measured during the calendar week divided by the number of "daily discharges" measured during the 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.

Best Professional Judgment (BPJ) means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

Coal Pile Runoff means the rainfall runoff from or through any coal storage pile.

Composite Sample means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

Construction Activities - The following definitions apply to construction activities:

(a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

(b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.

(c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

(d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

(e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

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) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

Daily Discharge means the discharge of a pollutant measured during the 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.

Director normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

Discharge Monitoring Report Form (DMR) means the EPA standard 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 (See "Point Source" definition).

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 Regional Administrator 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".

EPA means the United States "Environmental Protection Agency".

Flow-weighted composite sample means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

Grab Sample – An individual sample collected in a period of less than 15 minutes.

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Indirect Discharger means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

Interference means a discharge 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 (CWA), 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 which is not a land application unit, surface impoundment, injection well, or waste pile.

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

Large and Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

Maximum daily discharge limitation means the highest allowable "daily discharge" concentration that occurs only during a normal day (24-hour duration).

Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) is defined as "maximum concentration" or "Instantaneous Maximum Concentration" during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean "a value that shall not be exceeded" during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of "Maximum Daily Discharge" and "Average Daily Discharge" concentrations are specifically limited to the daily (24-hour duration) values.

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 tribe organization, or a designated and approved management agency under Section 208 of the CWA.

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 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 rig 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 Regional Administrator 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 Regional Administrator shall consider the factors specified in 40 CFR §§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 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).

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved" State.

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

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 CFR §122.2).

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 CFR Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (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 any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a "State" or "municipality".

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

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

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

Section 313 water priority chemical means a chemical or chemical category which:

(1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);

(2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and

(3) satisfies at least one of the following criteria:

(i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
(ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
(iii) are pollutants for which EPA has published acute or chronic water quality criteria.

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, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR 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 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, 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 EPCRA Section 313, 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 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 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 CFR §122.1(b)(3).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

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 which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

Time-weighted composite means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Toxic pollutants 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 wastewater 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 wastewater 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 Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR 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 CFR Part 503.

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

Waters of the United States 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 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 the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration 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. (See Abbreviations Section, following, for additional information.)

2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

Active sewage sludge unit is a sewage sludge unit that has not closed.

Aerobic Digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

Agricultural Land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

Agronomic rate is the whole sludge application rate (dry weight basis) designed:

(1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and

(2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

Annual whole sludge application rate is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

Aquifer is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

Base flood is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

Bulk sewage sludge is sewage sludge that is not sold or given away in a bag or other container for application to the land.

Contaminate an aquifer means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 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 sewage sludge use or disposal practice to affect public health and the environment adversely.

Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

Cover is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

Cumulative pollutant loading rate is the maximum amount of inorganic pollutant that can be applied to an area of land.

Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

Displacement is the relative movement of any two sides of a fault measured in any direction.

Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

Fault is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

Final cover is the last layer of soil or other material placed on a sewage sludge unit at closure.

Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

Forest is a tract of land thick with trees and underbrush.

Ground water is water below the land surface in the saturated zone.

Holocene time is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

Hourly average is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

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

Industrial wastewater is wastewater generated in a commercial or industrial process.

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 with a high potential for public exposure is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

Land with low potential for public exposure is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

Leachate collection system is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

Liner is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.

Lower explosive limit for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

Monthly average (Incineration) is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

Monthly average (Land Application) is the arithmetic mean of all measurements taken during the month.

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.

Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

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

Permitting authority is either EPA or a State with an EPA-approved sludge management program.

Person is 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; a measure of the acidity or alkalinity of a liquid or solid material.

Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

Pollutant (as defined in sludge disposal requirements) is an organic substance, an inorganic substance, a combination or organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis on information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

Pollutant limit (for sludge disposal requirements) is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

Public contact site is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

Qualified ground water scientist is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

Range land is open land with indigenous vegetation.

Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

Runoff is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

Seismic impact zone is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to:, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

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 CFR §122.2.

Sewage sludge unit boundary is the outermost perimeter of an active sewage sludge unit.

Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

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.

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

Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

Unstable area is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

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

Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. 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)	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
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
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)
ug/l	Microgram(s) per liter
WET	"Whole effluent toxicity" is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	"Chronic (Long-term Exposure Test) – No Observed Effect Concentration". 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.
A-NOEC	"Acute (Short-term Exposure Test) – No Observed Effect Concentration" (see C-NOEC definition).
LC_{50}	LC_{50} is 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.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

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: **MA0100617**

PUBLIC NOTICE START AND END DATES: **March 14, 2014 thru April 12, 2014**

NAME AND MAILING ADDRESS OF APPLICANT:

City of Leominster
Department of Public Works
109 Graham Street
Leominster, MA 01453

The Massachusetts municipalities of Lunenburg and Lancaster are co-permittees for specific activities required by the permit. See Sections 8 and 12 of this fact sheet and Sections: I.B., I.C., I.E. and I.F. of the draft permit. The responsible municipal departments are:

Town of Lunenburg
Department of Public Works
520 Chase Road
Lunenburg, MA 01462

Town of Lancaster
Office of the Town Administrator
695 Main Street, Suite 1
Lancaster, MA 01523

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Leominster Water Pollution Control Facility
436 Mechanic Street
Leominster, MA 01453

RECEIVING WATER: **North Nashua River (Nashua River Watershed)**
MA-81-04; USGS Hydrologic Code #01070004

RECEIVING WATER CLASSIFICATION: **Class B – Warm Water Fishery**

(This page is intentionally blank)

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

LIST OF APPENDICES

LIST OF ATTACHMENTS

1. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for the re-issuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water. The current permit was issued on September 28, 2006, and was to become effective on December 1, 2006; however, the City of Leominster (the City) filed a Petition for Review with the Environmental Appeals Board (EAB) on November 3, 2006 to contest the total phosphorus limits. EPA sent a Notice of Uncontested and Severable Conditions on December 11, 2006, making all uncontested limits and conditions effective on February 1, 2007. On August 24, 2007, the City withdrew its Petition for Review. EPA issued an Administrative Order that established a schedule for the City to attain compliance with the total phosphorus limitations no later than November 30, 2011, the expiration date for the current permit. The facility upgrade was completed on time and the discharge has since been in compliance with the total phosphorus limits. A timely re-application was received on April 27, 2011, and in accordance with the regulations at 40 CFR 122.6, the current permit will be in effect until the permit is re-issued. The draft permit is conditioned to expire five (5) years from its effective date.

2. TYPE OF FACILITY AND DISCHARGE LOCATION

The City of Leominster owns the Leominster Water Pollution Control Facility (Leominster WPCF), a 9.3 million gallon per day (mgd) advanced wastewater treatment plant with year-round sodium hypochlorite disinfection, which discharges to the North Nashua River in Leominster, MA (See Figure 1). The facility is operated by a contract operator.

Currently, the facility serves a population of 42,250 in the City of Leominster, and 1,000 in the Town of Lunenburg. The City of Leominster has also recently completed construction of a connection with the Town of Lancaster that will convey wastewater from a commercial/industrial zoned area of Lancaster to the Leominster WPCF for treatment. The City of Leominster and the Town of Lancaster signed a 25-year intermunicipal agreement beginning on November 1, 2006 for up to 50,000 gpd. Flows from Lancaster into the WPCF began in November 2012.

The Town of Lunenburg is a co-permittee in the current permit since it owns and operates a collection system that discharges wastewater to the treatment plant owned and operated by the applicant, the City of Leominster. Given that the Town of Lancaster owns and operates a collection system that has a connection to the Leominster WPCF, Lancaster is also included as a co-permittee in the draft permit.

The City of Leominster's collection system consists entirely of separate sanitary sewers. The City completed the separation of the identified combined manholes in 2011[1].

[1] Letter from Amanda Kleschinsky, EIT, Project Engineer, Wright-Pierce to Roger Brooks, Business Manager, City of Leominster, dated February 22, 2012.

The Towns of Lunenburg and Lancaster also have entirely separate sanitary sewer collection systems.

The facility also receives wastewater from four (4) non-categorical significant industrial users (SIUs) and is required to operate an industrial pretreatment program (See Section 10 of this Fact Sheet and Section E of the draft permit for requirements).

The wastewater treatment plant also accepts domestic septage from numerous communities. Based on the years 2007-2011, the annual average volume of septage from Leominster is 151,791 gallons per year and the annual average from out-of-town sources is 43,890 gallons per year[2]. Septage is delivered to a septage holding tank, and then pumped into the grit chamber.

The facility's discharge outfall is listed below:

Outfall	Description of Discharge	Receiving Water
001	Treated Effluent	North Nashua River

3. DESCRIPTION OF DISCHARGE

Quantitative descriptions of the discharge in terms of significant effluent parameters, based on discharge monitoring reports (DMRs) submitted for May 2010 through October 2013, and the April 2011 application, are shown in Appendices A and B of this fact sheet, respectively. Effluent and ambient metals data from Whole Effluent Toxicity (WET) testing is found in Appendix C.

4. RECEIVING WATER DESCRIPTION

The North Nashua River, in the vicinity of the discharge, is classified in the Massachusetts Surface Water Quality Standards (314 CMR 4.00) as a Class B, warm water fishery.

> *These waters are designated as a 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. Where designated in 314 CMR 4.06, they shall be suitable as a source of public water supply with appropriate treatment ("Treated Water Supply"). Class B waters shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value.*

A warm water fishery is defined in the Massachusetts Surface Water Quality Standards (314 CMR 4.02) as "waters in which the maximum mean monthly temperature generally exceeds 68° F (20° C) during the summer months and are not capable of sustaining a

[2] Chalifoux, Robert, July 31, 2012, personal communications (email).

year-round population of cold water stenothermal aquatic life."

Section 303(d) of the CWA requires states to identify those waterbodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and, as such, require the development of total maximum daily loads (TMDL).

The Leominster WPCF discharges to segment MA81-04 of the North Nashua River. The segment begins at the Leominster WPCF outfall and continues 10.4 miles downstream to the confluence with the Nashua River in Lancaster. The segment is classified as impaired and requiring the development of a TMDL. The listed impairments in the Massachusetts Year 2012 Integrated List of Waters[3] for this segment are: Taste and Odor; and Escherichia coli.

Since the last permit issuance, the MassDEP prepared an updated assessment report, Nashua River Watershed, 2003 Water Quality Assessment Report[4] which was released in 2008 (Table 1). MassDEP water quality assessment reports summarize the current state of waterbodies in a watershed and include the results of water quality sampling, which provide a basis for assessing the status of designated uses as defined in the Massachusetts Surface Water Quality Standards (310 CMR 4.00) and ultimately support the compilation of the Integrated Waters List.

Table 1:Summary of Use Assessment for MA81-04 – North Nashua River

Designated Use	Use Assessment	Alert
Aquatic Use	Support	Yes (elevated total phosphorus concentrations and low RBP III metrics)
Fish Consumption	Not Assessed	No
Primary Contact	Impaired	
Secondary Contact	Impaired	
Aesthetics	Impaired	

From MassDEP, 2008, Nashua River Watershed 2003 Water Quality Assessment Report, pp. 59-60.

The impairments of segment MA81-04 are primarily related to *Escherichia coli* (E. coli) levels. Data were collected by MassDEP and the Nashua River Watershed Association. Geometric means ranged from 155 to 339 CFU/100 m, which violates the primary contact standard of 126 CFU/100 ml. MassDEP also made aesthetic field observations between 2001 and 2004 that noted septic or effluent odors at nearly every visit. These odors were determined by MassDEP to impair the aesthetic use, primary use and the secondary use[5].

A review of bacterial data from the 2003 Assessment Report shows that the source of the

[3]Division of Watershed Management, MassDEP, 2012, Massachusetts Year 2012 Integrated List of Waters, Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b) and 303(d) of the Clean Water Act, p. 161.
[4] MassDEP, Division of Watershed Management, 2008, Nashua River Watershed, 2003 Water Quality Assessment Report, Report Number 81-AC-4.
[5] Ibid, p.60.

contamination is somewhere downstream of the West Fitchburg WWTF and upstream of the East Fitchburg WPCF (Table 2). A comparison of fecal coliform bacteria data from DMRs submitted by the Leominster WPCF with fecal bacteria concentrations reported in the 2003 Assessment Report show that concentrations from the Leominster WPCF are significantly lower than those measured in the river, upstream. Fecal coliform data was reviewed because the NPDES permit in effect at the time required Leominster to monitor fecal coliform, not e.coli. This data clearly shows that the Leominster WPCF is not the cause of the impairments, which are most likely caused by combined sewer overflows from the Fitchburg sewer system or other illegal discharges.

Table 2: Fecal Coliform data from the 2003 Nashua River Watershed Assessment Report and 2003 Fecal Coliform bacteria DMR data from the Leominster WPCF.

	NN03 (downstream of West Fitchburg WWTF)	NN09 (upstream of the East Fitchburg WWTF)	NN10A (upstream of Leominster WWTP)	NN12 (downstream of Leominster WWTP)	Leominster WWTP Monthly Average	Leominster WWTP Daily Maximum
January 2003	***	***	***	***	8	16
February 2003	***	***	***	***	5	12
March 2003	***	***	***	***	8	22
April 2003	***	***	***	***	6	16
May 2003	13	4800	140	210	8	78
June 2003	77	630	280/270	350	11	44
July 2003	39/26	560	470	380	7	40
August 2003	1800	9200	7600/9800	5200	11	153
September 2003	84	9200	4400	690	9	16
October 2003	***	***	***	***	9	25
November 2003	***	***	***	***	6	12
December 2003	***	***	***	***	10	174

River segments MA81-05, MA81-06 (including the Pepperell Pond Impoundment) and MA81-07 are located downstream of the Leominster WPCF discharge and are categorized in the 2012 Integrated List of Waters as impaired waters requiring a TMDL. The impairments are nutrient enrichment, organic enrichment, and low dissolved oxygen. The excess nutrient is phosphorus. In 2007, MassDEP submitted the Draft Nashua River, Massachusetts, Total Maximum Daily Load for the Nutrient Phosphorus[6] for EPA approval. The TMDL recommended control measures that included phosphorus limits in NPDES permits and WWTP operational improvements. EPA recommended that MassDEP address numerous issues before submitting a final TMDL for EPA approval. A final TMDL was submitted in December 2013[7]. The document includes a limit of 0.2 mg/l total phosphorus for the period May 1 through October 31 and a limit of 1.0 mg/l total phosphorus for the period November 1 through April 30. A final TMDL has yet to be approved but EPA believes that the phosphorus limit included in the draft permit (and

[6] MassDEP, 2007, Draft Nashua River, Massachusetts, Total Maximum Daily Load for the Nutrient Phosphorus, MassDEP DWM TMDL, Report # 81-TMDL-2007-2.
[7] MassDEP, 2013, Final Nashua River, Massachusetts, Total Maximum Daily Load for Nutrient Phosphorus, MassDEP DWM TMDL, Report #81-TMDL-4, CN 305.2

described in Section 7.3.3.2) is sufficiently stringent to achieve water quality standards in this segment.

4.1. Available Dilution

Water quality based limits are established with the use of a calculated available dilution. 314 CMR 4.03(3)(a) requires that effluent dilution be calculated based on the receiving water 7Q10. The 7Q10 is the lowest observed mean river flow for seven (7) consecutive days, occurring over a 10-year recurrence interval. Additionally, the facility design flow is used to calculate available effluent dilution.

The closest United States Geological Survey (USGS) streamflow gaging station is USGS Gage 01094500, North Nashua River near Leominster. The gage is located downstream of the West Fitchburg, East Fitchburg and Leominster WWTF discharges (Note: The West Fitchburg WWTF ceased discharging in May 2010 and all flows were diverted to the East Fitchburg WWTF). Together, the East Fitchburg and Leominster plants represent a high percentage of the receiving water low flow under 7Q10 conditions.

In order to determine the 7Q10 flow just upstream of the Leominster discharge, EPA first determined the 7Q10 at the USGS gage. EPA then subtracted the upstream dry weather wastewater flows from the estimated 7Q10 in order to determine the non-wastewater baseflow of the river. Using this value, a flow factor was calculated for the upstream drainage area by dividing the non-wastewater flow by the drainage area at the gage. The non-wastewater flow upstream of Leominster was then estimated by multiplying the flow factor by the drainage area upstream of Leominster. Finally, the 7Q10 flow upstream of Leominster was calculated by adding the calculated non-wastewater flow and the dry weather East Fitchburg WWTF discharge flow. The calculations for the 7Q10 and the treatment plant dilution factor are shown below.

EPA updated the streamflow data from the USGS gage, using the period of 1991-2012, and updated dry weather flow dated from the upstream treatment facilities, using the period 2010-2012.

The 7Q10 flow, as calculated using EPA's DFLOW tool, at the Leominster gage is 25.3 cfs, based on records for 1991-2012 (the previous permit used the period 1986-2006 and 7Q10 was 27.1). As was done in the previous permit, the most recent twenty year period of record was used, rather than the entire period of record, which began in 1935, because of the need to use relatively current dry weather treatment plant flows in the calculations. According to the USGS, the drainage area for the gage is 110 square miles. The estimated drainage area upstream of the Leominster discharge is 100 square miles.

Baseflow (i.e., the non-WWTP flow) at the Leominster gage can be calculated by subtracting the upstream dry weather WWTF discharges from the gage flow:

7Q10 at the USGS Gage 01094500 (1991-2012) = 25.3 cfs

Lowest average dry weather effluent flows from the WWTFs upstream of the USGS gage from June to September, 2010-2012:

Fitchburg East:	5.6 MGD	8.66 cfs
Leominster:	3.83 MGD	5.93 cfs
Total	9.43 MGD	14.59 cfs

Therefore, baseflow at the USGS Gage in Leominster
= [7Q10] – [contributing flows]
= 25.3 cfs – 14.59 cfs = 10.71 cfs

Baseflow per square mile of gage drainage area:

10.71 cfs/110 square miles = 0.097 cfs/sq mi

Baseflow at Leominster:

[100 sq mi] * [0.097 cfs/sq mi] = 9.7 cfs

7Q10 at Leominster (Baseflow at Leominster WPCF + Fitchburg East flow)

7Q10 = 9.7 cfs + 8.66 cfs = 18.36 cfs

Dilution factor:

$$DF = \frac{7Q10 + \text{design flow}}{\text{design flow}} = \frac{18.36 \text{ cfs} + 14.4 \text{ cfs}}{14.4 \text{ cfs}} = 2.275 = 2.3$$

Because of a lower 7Q10, this dilution factor, 2.3, is slightly lower than the dilution factor of 2.4 used in the 2006 permit.

5. LIMITATIONS AND CONDITIONS

The effluent limitations of the draft permit, the monitoring requirements may be found in the draft permit.

6. PERMIT BASIS: STATUTORY AND REGULATORY AUTHORITY

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301 (b) of the Clean Water Act. For publicly owned treatment works (POTWs), technology based requirements are effluent limitations based on secondary treatment requirements of Section 301(b)(1)(B) of the Clean Water Act (CWA) as defined in 40 CFR 133.102.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve federal or state water quality standards.

Under Section 301(b)(1)(c) of the CWA, discharges are subject to effluent limitations

based on water quality standards. The Massachusetts Surface Water Quality Standards (314 CMR 4.00) require regulation and control of toxic constituents and also require that EPA criteria, established pursuant to Section 304 (a) of the CWA, shall be used unless a site specific criteria is established. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained, or attained.

6.1. ANTI-BACKSLIDING

Anti-backsliding as described in Section 402 (o) of the CWA and 40 CFR §122.44(l)(1), requires reissued permits to contain limitations as stringent than those of the previous permit. There are limited exceptions to this requirement.

The draft permit does not include any less stringent effluent limitations, with the exception of the copper limit, which has been recalculated in accordance with the updated Massachusetts site specific criteria and is consistent with anti-backsliding.

6.2. ANTIDEGRADATION

MassDEP's Antidegradation Policy is found at 314 CMR 4.04. MassDEP has also developed implementation procedures[8]. All existing uses of the North Nashua River must be protected. EPA believes that the antidegradation policy has been met because the draft permit is being reissued with allowable discharge limits as or more stringent than the current permit with the same parameter coverage with the exception of the copper limit, which is in accordance with the updated Massachusetts Surface Water Quality Standards (MA SWQS).

7. EXPLANATION OF THE PERMIT'S EFFLUENT LIMITATIONS

7.1. Facility Information

The upgraded facility is an advanced wastewater treatment facility with phosphorus removal, seasonal nitrification and year-round sodium hypochlorite disinfection, which discharges to the North Nashua River (See Figure 1).

The following is a brief description of the flow pattern through the upgraded plant under normal operating conditions (See Figure 2): Wastewater enters the plant through two aerated grit chambers, followed by two communitors and then is discharged to an intermediate pumping station, where three screw pumps lift the wastewater so it will flow by gravity through the remainder of the facility.

From the intermediate pumping station, wastewater flows through a channel that bypasses the two rapid mix chambers and the two flocculation chambers. The rapid mix and flocculation chambers were taken out of service in the late 1980s and are not typically used. In this channel, lime slurry and ferrous chloride are added, which provide

[8] Haas, Glenn, MassDEP, 2009, "Implementation Procedures for the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00".

pH control, alkalinity, and aid phosphorus removal in downstream treatment units. Polymer can also be introduced directly to this bypass channel if necessary to aid floc development. Next, wastewater flows to two circular primary settling tanks, where solids settle and are removed as sludge.

From the primary settling tanks, wastewater flows to the activated sludge process units, consisting of three aeration tanks and three final settling tanks. In the aeration tanks wastewater mixes with microorganisms that provide biological treatment. This mixture (called mixed liquor suspended solids) then flows to final settling tanks where the biological solids are separated and most recycled back to the aeration tanks. Following biological treatment, wastewater can be directed to an ACTIFLO system for further phosphorus removal. The ACTIFLO system is a ballasted microsand flocculation treatment system, which uses ferric chloride, polymer and microsand as a seed to improve floc formation. The ACTIFLO system is only used during the summer months (April 1- October 31) when the current Total Phosphorus limit of 0.2 mg/l is in effect.

Effluent from the ACTIFLO system is dosed with sodium hypochlorite and flows through the two chlorine contact tanks, whereupon it is dechlorinated with sodium bisulfate. The final effluent then cascades over several steps where the turbulence created allows the wastewater to capture air and increase its dissolved oxygen content, and is finally discharged through an outfall pipe to the North Nashua River.

Sludge and other residuals are removed from various treatment processes. Sludge from the secondary settling tanks and the ACTIFLO system are discharged to the primary settling tank inlet channel and co-settled with primary sludge in the primary settling tanks. Sludge removed from the primary settling tanks is pumped to a sludge holding truck and hauled offsite for ultimate disposal.

7.2. Co-permitting

As discussed previously, the Leominster WPCF treats wastewater from the Towns of Lunenberg and Lancaster. EPA Region 1 has included municipalities that own and operate a collection system but do not own or operate the treatment facility as limited co-permittees to assure that the collection systems owned by the municipalities are properly operated and maintained (See Attachment A). The Town of Lunenberg was included as a co-permittee in the current permit and will be maintained as co-permittee in the proposed permit. The Town of Lancaster has recently completed a connection with the City of Leominster and is now included as a co-permittee.

7.3. Derivation of Effluent Limits under the Federal CWA and/ or the Commonwealth of Massachusetts' Surface Water Quality Standards

7.3.1. Flow

The proposed flow limit is based on the average daily design flow of the treatment plant, which is 9.3 mgd. Flow is to be measured continuously. The permittee shall report the annual average monthly flow using the annual rolling average method (See Permit Footnote 2). The average monthly and maximum daily flow for each month shall also be

reported.

A review of DMR data shows that the reported annual average monthly flows have ranged between 4.67 – 6.37 MGD with an average of 5.55 MGD.

7.3.2. Conventional Pollutants

7.3.2.1. Biochemical Oxygen Demand (BOD_5)/Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)

Under Section 301(b)(1)(B) of the CWA, POTWs must have achieved effluent limitations based on secondary treatment by June 1, 1977. The secondary treatment requirements are set forth in 40 CFR Part 133. The secondary treatment limitations for Biological Oxygen Demand (BOD_5) are a monthly average BOD_5 concentration of 30 mg/l and a weekly average concentration of 45 mg/l. Section 133.102(a)(4) allows for the substitution of the parameter, $CBOD_5$ (Carbonaceous Biochemical Oxygen Demand), in lieu of BOD_5, if the following minimum limits are imposed: a monthly average concentration of 25 mg/l, and a weekly average concentration of 40 mg/l and the monthly average percent removal of 85%.

The current permit includes water quality-based limits for $CBOD_5$ for the months of May through October which are based on a wasteload allocation developed by the MassDEP and published in the Nashua River Water Quality Management Plan 1981[9]. The $CBOD_5$ average monthly limit is 15 mg/l and the average weekly limit is 15 mg/l. These limits have been continued in the draft permit. The draft permit also requires the permittee to continue to report maximum daily $CBOD_5$ values each month.

During the months of November through April, the average monthly and average weekly limits in the draft permit are based on the secondary treatment limitations for BOD_5, with an average monthly limit of 30 mg/l and an average weekly limit of 45 mg/l. These are the same limits included in the current permit. The draft permit also requires the permittee to continue to report the maximum daily BOD values each month.

The sampling frequency for $CBOD_5$ and BOD_5 remains twice per week.

The mass-based limits for both $CBOD_5$ and BOD_5 are based on the 9.3 MGD design flow.

The calculation of the allowable mass loads for average monthly and average weekly BOD_5 and the average monthly/average weekly $CBOD_5$ is based on the following equation:

$$L = C * DF * 8.34$$

C = Maximum allowable effluent concentration for reporting period in mg/l. (Reporting periods are average monthly and weekly and daily maximum)
L = Maximum allowable load in lbs/day.

[9] MassDEP, 1981, Nashua River Water Quality Management Plan

DF = Annual average design flow of facility (9.3 mgd).
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

Concentration limit [30] * Design Flow [9.3] * Constant [8.34] = 2327 lbs/day

Concentration limit [45] * Design Flow [9.3] * Constant [8.34] = 3490 lbs/day

Concentration limit [15] * Design Flow [9.3] * Constant [8.34] = 1163 lbs/day

A review of DMR data for November through April shows that there have been no permit violations of BOD_5 concentration limits. Based on the DMR data, the average values for BOD_5 monthly average, weekly average and maximum daily were 2.06 mg/l (range 1-4 mg/l; n=18), 3.22 mg/l (2-11 mg/l; n=18) and 3.94 (2-19 mg/l; n=18), respectively.

Based on the DMR data, the average mass discharge values, in pounds per day (lbs/day), reported for BOD_5 monthly average and weekly average were 100.61 lbs/day (range 45-278 lbs/day; n=18), and 249.78 lbs/day (79-1463 lbs/day; n=18), respectively, also in compliance with permit limits.

A review of DMR data for May through October shows that there have been no permit violations of $CBOD_5$ concentration limits. Based on the DMR data, the average values for $CBOD_5$ monthly average, weekly average and maximum daily were 1.5 mg/l (range 1-3 mg/l; n=24), 2.29 mg/l (1-5 mg/l; n=24) and 2.54 (1-5 mg/l; n=24), respectively.

Based on the DMR data, the average mass discharge values for $CBOD_5$ monthly average and weekly average were 65.04 lbs/day (range 34-98 lbs/day; n=24), and 122.17 lbs/day (38-225 lbs/day; n=24), respectively, also in compliance with the permit limits.

7.3.2.2. Total Suspended Solids (TSS)

Under Section 301(b)(1)(B) of the CWA, POTWs must have achieved effluent limitations based on secondary treatment by June 1, 1977. The secondary treatment requirements are set forth in 40 CFR Part 133. The secondary treatment limitations for Total Suspended Solids (TSS) are a monthly average TSS concentration of 30 mg/l and a weekly average concentration of 45 mg/l.

The current permit includes water quality-based TSS limits for the months of May through October that are based on a wasteload allocation developed by the MassDEP[10]. The average monthly limit is 20 mg/l and the average weekly limit is 20 mg/l. These limits have been continued in the draft permit. The draft permit also continues to require the permittee to report the maximum daily TSS values each month.

During the months of November 1 through April, the average monthly and average weekly limits in the draft permit are based on the secondary treatment limitations for TSS with an average monthly limit of 30 mg/l and an average weekly limit of 45 mg/l. These limits are continued from the current permit. The draft permit also continues to require

[10] Ibid.

the permittee to report the maximum daily TSS values each month.

The sampling frequency for TSS remains twice per week.

The mass-based limits for TSS are based on the 9.3 MGD design flow.

The calculation of the allowable mass loads for average monthly and average weekly TSS is based on the following equation:

L = C * DF *8.34

C = Maximum allowable effluent concentration for reporting period in mg/l. (Reporting periods are average monthly and weekly and daily maximum)
L = Maximum allowable load in lbs/day.
DF = Annual average design flow of facility (9.3 mgd).
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

Concentration limit [30] * Design Flow [9.3] * Constant [8.34] = 2327 lbs/day

Concentration limit [45] * Design Flow [9.3] * Constant [8.34] = 3490 lbs/day

Concentration limit [20] * Design Flow [9.3] * Constant [8.34] = 1551 lbs/day

A review of DMR data for the months of November through shows that there has been no permit violation of TSS concentration limits. Based on the DMR data, the average values for TSS monthly average, weekly average and maximum daily were 2.39 mg/l (range 1-8 mg/l; n=18), 4.33 mg/l (2-29 mg/l; n=18) and 5.94 (2-56 mg/l; n=18), respectively.

Based on the DMR data for the month November through April, the average mass-based values for TSS monthly average and weekly average were 129.11 lbs/day (range 49-606 lbs/day; n=18), and 415.28 lbs/day (72-4311 lbs/day; n=18), respectively. There was one violation (4311 lbs/day) of the maximum average weekly limit in November 2011.

A review of DMR data for May through October shows that there have been no permit violations of the TSS concentration limits. Based on the DMR data, the average values for TSS monthly average, weekly average and maximum daily were 2.04 mg/l (range 1-4 mg/l; n=24), 3.08 mg/l (1-7 mg/l; n=24) and 3.29 (1-8 mg/l; n=24), respectively. There have been no violations of the TSS limits.

Based on the DMR data for the months May through October, the average mass-based values for TSS monthly average and weekly average were 89.04 lbs/day (range 38-200 lbs/day; n=24), and 163.21 lbs/day (58-398 lbs/day; n=24), respectively. There have been no violations for the months May through October over that last 24 months.

7.3.2.3. Eighty-Five Percent (85%) BOD_5 and TSS Removal Requirement

The provisions of 40 CFR §133.102(a)(3), (4) and (b)(3) requires that the 30-day average percent removal for BOD_5 and TSS be not less than 85%. This requirement was included

in the current permit and is maintained in the proposed permit.

A review of DMR data shows that BOD_5/$CBOD_5$ and TSS removal percentages average 99% and 98%, respectively. There have been no violations of the percent removal requirements over the last 42 months.

7.3.2.4. pH

The draft permit includes pH limitations that are more stringent than the technology-based pH limitations set forth at 40 CFR §133.102(c). During the summer months (May 1 through October 31), the pH of the effluent shall not be less than 6.5 or greater than 8.3 standard units at any time. These limits are the same as the water quality criteria for the receiving water. During the winter months (November 1-April 30), the pH of the effluent shall not be less than 6.0 or greater than 8.3 standard units at any time. The monitoring frequency is daily.

The lower effluent pH limit of 6.0 SU for the winter months was formally approved in a permit modification that became effective on November 19, 2003 and was included as part of the 2006 permit as well.

The cause of the depressed pH in the winter months is an effect of the nitrification of ammonia, which breaks down alkalinity and lowers pH. During the months of June to October, when effluent ammonia limits are in effect, lime is added to raise the influent alkalinity to support nitrification and maintain effluent pH in the range of 6.5 to 8.3. During the winter months, when ammonia limits are not in effect, the facility may still nitrify, causing pH to drop to less than 6.5 if supplemental alkalinity is not added. In granting the permittee's request to establish the lower limit, EPA and MassDEP determined that the lower effluent pH would not have an adverse impact on stream pH during the winter months due to higher receiving water flows.

A review of DMR data submitted over the last 42 months shows that there have been no violations of the pH limits. Based on the DMR data, the pH values have ranged from 6.5-7.7 standard units.

7.3.2.5. Dissolved Oxygen

The current permit includes a limitation of not less than 6.0 mg/l dissolved oxygen (DO). This limit is the same as in the previous permit and has been maintained in consistency with the anti-backsliding provisions of the CWA § 402(o). The sampling frequency remains as twice per day.

A review of DMR data shows that the minimum daily DO values range from 7.0 to 10.8 mg/l. There have been no violations of the dissolved oxygen requirement over the past 42 months.

7.3.2.6. Bacteria

MA SWQS revisions were approved by EPA in 2007. These revisions included a change to the Class B bacteria water quality criteria from fecal coliform to E. coli. The current permit includes fecal coliform bacteria effluent limitations that were established using the criteria in the MA SWQS at 314 CMR 4.05(3)(b) that were in effect at the time the

current permit was issued in 2006.

7.3.2.6.1. E. coli

The draft permit includes year-round E. coli limitations that are based on the E. coli criteria in the revisions to the MA SWQS (314 CMR 4.05(3)(b). The monthly average limitation proposed in the draft permit is 126 colony forming units (cfu) per 100 ml, and is expressed as a monthly geometric mean. The daily maximum limitation proposed in the draft permit is 409 cfu/100 ml. The E. coli monitoring frequency proposed in the draft permit is two times per week. The limits are in effect year-round due to downstream water supply withdrawals. The draft permit also requires that the E. coli samples be collected concurrently with a total residual chlorine (TRC) sample. As this is a new requirement, the limits will become effective one (1) year following the effective date of this permit.

7.3.2.6.2. Fecal Coliform

The current permit includes fecal coliform bacteria limitations that are in accordance with the MA SWQS, 314 CMR 4.05 (3)(b)(4) that were in effect at the time of the permit issuance. These limits are an average monthly geometric mean of 200 cfu per 100 ml and a maximum daily limit of 400 cfu/100 ml. The monitoring requirement and limits will be in effect for the first year of this permit until the E. coli limits become effective. The sampling frequency remains two times per week and the limits are in effect year round due to downstream water supply withdrawals.

A review of DMR data shows that the monthly geometric mean fecal coliform bacteria discharge ranges from 1 to 10 cfu/100 ml. The maximum daily value reported over the last 42 months was 57 cfu/100 ml. There have been no violations of the fecal coliform requirements over the past 42 months.

7.3.3. Non-conventional pollutants

7.3.3.1. Total Residual Chlorine (TRC)

Chlorine is a toxic chemical. The draft permit includes proposed TRC limitations that are calculated using national recommended water quality criteria. Chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life.

The acute and chronic water quality criteria for chlorine defined in the 2002 EPA National Recommended Water Quality Criteria for freshwater are 19 ug/l and 11 ug/l, respectively. Given the dilution factor of 2.3, the total residual chlorine limits have been calculated as 0.044 mg/l for maximum daily and 0.025 mg/l monthly average. These limits are slightly lower than those in the previous permit due to the lower dilution factor. Sampling frequency is continued as twice per day and shall be collected concurrent with the bi-weekly e.coli samples.

Total Residual Chlorine Limitations:

(acute criteria * dilution factor) = Acute (Maximum Daily)
(19 ug/l * 2.3)= 43.7 ug/l = 0.044 mg/l

(chronic criteria * dilution factor) = Chronic (Monthly Average)
(11 ug/l * 2.3) = 25.3 ug/l = 0.025 mg/l

A review of DMR data submitted over the last 42 months shows that there have been no permit violations of TRC limits. Based on the DMR data, the average values for TRC monthly average and maximum daily were 0.01 mg/l (range 0.01-0.02 mg/l; n=42), and 0.02 (0.02 – 0.02 mg/l; n=42), respectively.

7.3.3.2. Total Phosphorus

The MA SWQS, 314 CMR 4.00, do not contain numerical criteria for total phosphorus. The narrative criteria for nutrients is found at 314 CMR 4.05(5)(c), which states that "all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00." The standards also require 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 BAT for non POTWs, to remove such nutrients to ensure protection of existing and designated uses. MassDEP has established that a monthly average total phosphorus limit of 0.2 mg/l represents the highest and best practical treatment for POTWs.

EPA has produced several guidance documents that contain recommended total phosphorus criteria for receiving waters. The "Gold Book"[11] recommends in-stream phosphorus concentrations of 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 impounds, and 0.025 mg/l within a lake or reservoir.

More recently, EPA has released "Ecoregional Nutrient Criteria", established as part of an effort to reduce problems associated with excess nutrient in water bodies in specific areas of the country. The published criteria represent conditions in waters in each specific ecoregion which are minimally impacted by human activities and thus representative of waters without cultural eutrophication. The Leominster WPCF is within Ecoregion XIV, Eastern Coastal Plain. The recommended total phosphorus criteria for this ecoregion is 24 ug/l (0.024 mg/l) and can be found in Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV[12], published in December 2000.

As previously discussed, MassDEP has included the segment of the Nashua River immediately downstream of the confluence with the North Nashua River on the 2012 Integrated Waters List for nutrients. Furthermore, the State has also documented the

[11] EPA, 1986, "1986 Quality Criteria of Water
[12] EPA, 2000, "Ambient Water Quality Criteria Recommendations, information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV",

eutrophication of the Pepperell Pond Impoundment, located downstream of the Leominster WPCF. The impoundment is the downstream point of accumulation for any biomass produced upstream as the result of the phosphorus inputs.

In 2007, MassDEP submitted a Draft TMDL for phosphorus in the Nashua River. The TMDL was developed to address nutrient-related impairments in the Nashua River. Segments MA81-05, MA81-06 (including Pepperell Pond Impoundment) and MA81-07 are included on the MassDEP Category 5 list of impaired waters for nutrient enrichment, organic enrichment and low dissolved oxygen. The draft TMDL recommends that discharge limits be established for wastewater treatment facilities (WWTFs) based on model results indicating that point sources have a greater effect than non-point sources during summer low-flow conditions[13]. MassDEP included a phosphorus limit of 0.2 mg/l for Leominster in the draft TMDL. In December 2013, MassDEP submitted a TMDL for approval, which has not yet been approved by EPA. The recently-submitted TMDL includes the same total phosphorus limits for the Leominster WWTF that are included in the current permit and in the draft permit.

The major discharges upstream of the confluence of the North Nashua River and the Nashua River (locally known as the "South Branch") are the POTWs in West Fitchburg, East Fitchburg and Leominster, which discharge to the North Nashua, and the MWRA Clinton POTW which discharges to the South Branch. The West Fitchburg plant ceased discharging in 2010 and its flows were re-routed to the East Fitchburg plant. Prior to the re-routing, the West Fitchburg plant was not a significant source of phosphorus given that its flow consisted of nutrient deficient paper making waste, and the flow was consistent at 2.8 MGD or 4.4 cfs. Together, the East Fitchburg and Leominster treatment plants represent a high percentage of the receiving water flow in this segment under 7Q10 conditions. As previously described in Section 4.1, the combined low summer flow from these facilities is about 15 cfs and the receiving water 7Q10 is about 18 cfs.

The current permit includes the following effluent limitations for total phosphorus: an average monthly total phosphorus limit of 0.2 mg/l for the period of April 1 to October 31, an average monthly total phosphorus limit of 1.0 mg/l for the period November 1 to March 31. It also includes reporting requirements for the maximum daily total phosphorus concentrations and average monthly and maximum daily concentrations for orthophosphorus for the period November 1 to March 31.

An Administrative Order (AO) was issued to the City of Leominster on September 26, 2007 with a schedule for achieving the total phosphorus limits in the current permit by April 2012 and included interim limits requiring the permittee to achieve an effluent limit of 1.0 mg/l of total phosphorus between April 1 through October 31 and monitor twice per week. During the months of November 1 through March 31, the permittee was required to monitor total phosphorus once per week but a limit was not established.

DMRs submitted by the permittee reported total phosphorus monthly average concentrations during the growing season (April 1- October 31) between 0.06 and 0.96

13 MassDEP, 2007, p. 6.

mg/l with an average concentration of 0.28 mg/l. During the winter period (November 1-March 31), the permittee has reported concentrations ranging between 0.08 and 0.57 with an average concentration of 0.33 mg/l. There were no violations of the AO limit for total phosphorus. The permittee completed construction of the upgraded facility in October 2011 and has been achieving the 0.2 mg/l limit since it went into effect in April 2012.

An NPDES permit was issued to the East Fitchburg WWTF on July 22, 2010 that included total phosphorus effluent limits of 0.2 mg/l (April 1-October 31) and 1.0 mg/l (November 1-March 31). The facility has not yet completed an upgrade to meet this limit. A draft permit was public noticed (September 29, 2010-October 28, 2010 and then re-noticed September 18, 2013 to October 17, 2013 and then extended to November 27, 2013) for the MWRA Clinton WWTF which included total phosphorus effluent limits of 0.15 mg/l (April 1-October 31) and 1.0 mg/l (November 1-March 31). A final permit has not yet been issued.

Given that the Leominster has recently begun meeting its total phosphorus limit of 0.2, and the other WWTFs have yet to achieve their limits and there have been minimal changes in the information previously considered in establishing these limits, EPA has determined that the effluent limits included in the current permit are sufficiently stringent to attain water quality standards. Specifically, the draft permit includes a monthly average limit of 0.2 mg/l for the months of April through October to ensure that phosphorus discharges do not result in excessive plant and algae growth during the active growing season, and also includes a monthly average limit of 1 mg/l for the months of November through March to ensure that particulate phosphorus is not discharged in significant quantities during this period. Sampling frequency for both seasons is twice per week.

Particulate phosphorus discharged during the winter months could settle in the downstream impoundments and be available to support plant growth during the growing season. A weekly orthophosphorus reporting requirement has also been maintained, to determine the proportion of dissolved phosphorus in the winter months. Orthophosphorus monitoring results submitted for the months of November through March over the past 42 months show an average values of 0.24 mg/l (range 0.04-0.49 mg/l; n=15), and a range of maximum daily values from 0.09 – 0.69 mg/l; n=15).

7.3.3.3. Ammonia Nitrogen

The current permit carried forward seasonal effluent limits for ammonia nitrogen. For the months of June through October, the current permit includes an average monthly limit of 1.3 mg/l and a maximum daily limit of 2.0 mg/l, and the monitoring frequency is two times per week. The maximum daily limit is from the 1981 Wasteload Allocation for the Nashua River[14].

For the month of May, the monitoring frequency is twice per month but there is no limit. For the months of November through April, there is no limit and the monitoring frequency is once per month.

[14] MassDEP, 1981, p. 33.

A review of DMR data submitted over the last 42 months shows that there has been one permit violation of ammonia nitrogen limits in July 2010, with a reported maximum daily value of 3.10 mg/l. DMR data submitted by the permittee for the months of June through October has an average of 0.22 mg/l (0.10 – 0.86 mg/l) as a monthly average value and a average of 0.54 mg/l (0.14 – 3.10 mg/l) as a maximum daily value. For the months of November through May, the average of the monthly average value was 0.21 mg/l (0.09 – 0.57 mg/l) and the average of the maximum daily value was 0.33 mg/l (0.10 – 1.20 mg/l).

7.3.3.4. Metals

Certain metals in water can be toxic to aquatic life. There is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. An evaluation of the concentration of metals in the facility's effluent (from Whole Effluent Toxicity reports submitted between December 2006 and June 2013) was used to determine reasonable potential for effluent discharges to cause exceedances of the water quality criteria for aluminum, cadmium, chromium, copper, lead, nickel and zinc (See Attachment C).

Metals may be present in both dissolved and particulate forms in the water column. Extensive studies suggest that it is the dissolved fraction that is biologically available, and therefore, presents the greatest risk of toxicity to aquatic life inhabiting the water column. (Water Quality Standards Handbook: Second Edition, Chapter 3.6 and Appendix J, EPA 1994 [EPA 823-B-94-05a], http://www.epa.gov/waterscience/standards/ handbook/chapter03.html#section6). As a result, water quality criteria are established in terms of dissolved metals. However, regulations at 40 CFR 122.45(c) require, with limited exceptions, that metals limits in NPDES permits be expressed as total recoverable metals. This accounts for the potential for a transition from the particulate to dissolved form as the effluent mixes with the receiving water (*The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (USEPA 1996 [EPA-823-B96-007]).

The facility's effluent concentrations (from Appendix C) were characterized assuming a lognormal distribution in order to determine the estimated 95th percentile of the daily maximum. For metals with hardness-based water quality criteria, the criteria were determined using the equations in EPA's *National Recommended Water Quality Criteria: 2002*, using the appropriate factors for the individual metals (see table below). The downstream hardness was calculated to be 54 mg/l as $CaCO_3$, using a mass balance equation with the design flow (9.3 mgd), receiving water 7Q10, an upstream median hardness of 30 mg/l as $CaCO_3$ and an effluent median hardness of 84 mg/l as $CaCO_3$ (Attachment C). The calculated value of 54 mg/l was used to determine the total recoverable metals criteria below. The following table presents these acute and chronic total recoverable criteria, including the factors and equations used for each metal.

MassDEP has adopted site-specific copper criteria for the receiving water and EPA has approved the criteria, so the derivation of the copper limits in the draft permit is described in Sections 7.3.3.4.1

Table 3: EPA's *National Recommended Water Quality Criteria: 2002*

Metal	Parameters				Total Recoverable Criteria	
	ma	ba	mc	bc	Acute Criteria (CMC) (ug/L)	Chronic Criteria (CCC) (ug/L)
Aluminum	—	—	—	—	750	87
Cadmium	1.0166	-3.9240	0.7409	-4.7190	1.14	0.17
Chromium III	0.819	3.7256	0.819	0.6848	1088.52	52.03
Lead	1.273	-1.46	1.273	-4.705	37.26	1.45
Nickel	0.846	2.255	0.846	0.0584	278.57	30.97
Zinc	0.8473	0.884	0.8473	0.884	71.08	71.08

* Acute Criteria (CMC) = $\exp\{m_a*\ln(\text{hardness})+b_a\}$

** Chronic Criteria (CCC) = $\exp\{m_c*\ln(\text{hardness})+b_c\}$

In order 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, the following mass balance is used to project in-stream metal concentrations downstream from the discharge.

$$Q_d C_d + Q_S C_S = Q_r C_r$$

rewritten as:

$$C_r = \frac{Q_d C_d + Q_S C_S}{Q_r}$$

where:

Q_d = effluent flow (design flow = 9.3 mgd)
C_d = effluent metals concentration in ug/L (95^{th} percentile)
Q_S = stream flow upstream (7Q10 upstream = 18.36 cfs = 11.87 mgd
C_S = background in-stream metals concentration in ug/L (median)
Q_r = stream flow downstream, after discharge (Qd+Qs = 21.17 mgd)
C_r = downstream pollutant concentration in ug/L

Reasonable potential is then determined by comparing this resultant in-stream concentration (for both acute and chronic conditions) with the criteria for each metal. EPA's Technical Support Document for Water Quality Based Toxics Control, EPA/505/2-90-001, March 1991, commonly known as the "TSD" describes the statistical approach used here in analyzing the effluent data (See Appendix E). If there is reasonable potential (for either acute or chronic conditions), the appropriate limit is then calculated by rearranging the above mass balance to solve for the effluent concentration (C_d) using the criterion as the resultant in-stream concentration (C_r). See the table below for the results of this analysis with respect to aluminum, cadmium, chromium, lead, nickel and zinc.

Table 4: Reasonable Potential Evaluation with Applicable Criteria

Metal	Qd	Cd[1] (95th Percentile)	Qs	Cs[2] (Median)	Qr	Cr = (QdCd+QsCs)/Qr	Total Recoverable Criteria		Reasonable Potential	Limit = (Qr*Criteria-Qs*Cs)/Qd	
	cfs	ug/l	cfs	ug/l	cfs	ug/l	Acute (ug/l)	Chronic (ug/l)	Cr > Criteria	Acute (ug/l)	Chronic (ug/l)
Aluminum	9.3	95.69	11.86	149	21.16	125.6	750	87	Chronic	N/A	87
Cadmium		0		0		0	1.14	0.17	N	N/A	N/A
Chromium		0		0		0	1088.52	52.03	N	N/A	N/A
Lead		0		0		0	37.26	1.45	N	N/A	N/A
Nickel		4.69		1.7		3.01	278.57	30.97	N	N/A	N/A
Zinc		47.32		1.4		21.6	71.08	71.08	N	N/A	N/A

[1] Values calculated using the four annual measured concentrations from the 2006-2013 WET testing collected upstream from the Leominster discharge in segment MA81-03 (see Attachment C).

[2] Median ambient data taken from the WET testing results (see Attachment C).

As indicated in the table above, based on the maximum measured effluent concentrations and median upstream concentrations there is no reasonable potential (for either acute or chronic conditions) that the discharge of cadmium, chromium, nickel, lead or zinc will cause or contribute to an exceedance of the applicable water quality criteria. However, there is reasonable potential for aluminum (chronic) and copper (acute and chronic) to cause or contribute to an exceedance. Hence, the draft permit includes a monthly average aluminum limit of 87 ug/l. Additionally, monitoring and reporting for all metals will continue to be required as part of the WET tests.

7.3.3.4.1. Copper

The current permit includes monthly average and daily maximum copper limits of 12.4 ug/l and 17.5 ug/l, respectively. These limits were established using the 1998 National Recommended Water Quality criteria for copper calculated at a hardness of 50 mg/l as CaCO3 and a dilution factor of 2.4.

Analytical data submitted with toxicity test results and past DMRs (See Appendix A) indicates that the facility has not consistently achieved the limitations in the previous permit. The effluent concentrations of copper from May 2010 through October 2013 ranged from 5 – 50 ug/l with an average of 14.68 ug/l.

The 2007 revision to the MA SWQS includes a site specific criteria for copper in the Nashua River in Table 28 (314 CMR 4.05(5)(e). These criteria have been developed in instances where national criteria are invalid due to site-specific physical, chemical or biological considerations, and do not exceed the safe exposure levels determined by toxicity testing. MassDEP has adopted an acute site specific criterion of 25.7 ug/l and a chronic criterion of 18.1 ug/l for dissolved copper in the North Branch of the Nashua River. The conversion factor to convert total recoverable metal to dissolved metal is 0.960.

MassDEP prepared *PROTOCOL FOR AND DETERMINATION OF SITE SPECIFIC COPPER CRITERIA FOR AMBIENT WATERS IN MASSACHUSETTS* (the Site Specific Copper Protocol) in conjunction with the new criteria. In this document MassDEP states that "While site specific copper criteria are being established, prudence dictates that loads of copper and other metals be minimized. This, in part, is because possible impacts on sediment quality and toxicity remain an open question. Therefore, as part of the site-specific criteria, all reasonable efforts to minimize the loads of metals, and copper in this case, are part of the criteria revision protocol. So, the Department on a case by case basis will develop permit copper limits. Each determination will be based not only on the adjusted concentration resulting from the adjusted concentration resulting from the appropriate multiplier but will reflect the demonstrated level of copper reduction routinely available at the facility in order to minimize the copper loads and thereby reduce its accumulation in the sediment."

Anti-backsliding requirements found at CWA § 402(o) and 40 CFR 122.44(l) generally prohibit the relaxation of effluent limits. Water quality-based limits can only be relaxed if one of the exceptions found at CWA § 402(o)(2) is met or if the requirements of CWA § 303(d)(4) are met. In this case, none of the exceptions listed in 402(o)(2) apply[15].

CWA § 303(d)(4) requires that a determination be made whether the receiving water is attaining the applicable water quality standard. If the water is in attainment of the standard, a relaxation of the limit would be allowed subject to the state antidegradation policy. If the receiving water is not in attainment of the applicable standard, the existing limit must be based on a wasteload allocation or a TMDL and the relaxed limit is only allowed if attainment of the water quality standards in ensured.

[15] It may appear that the exception found at 402(o)(2)(B)(i) would apply. This except is for a situation where "information is available which was not available at the time of permit issuance (other than revised regulations, guidance or test methods) and which would have justified the application of a less stringent effluent limitations at the time of permit issuance". However, new water quality criteria are "revised regulations" and are therefore specifically excluded as "new information".

The effluent limits for copper were re-calculated based on the new criteria. When calculating the effluent limits using the site-specific criteria, the concentration of copper in the receiving water upstream of the discharge is considered. This value, 8 ug/l, is based on the average ambient concentration from water samples collected for toxicity tests just upstream of the discharge point during the low-flow months of June and September 2010-2013.

Table 5: Ambient and effluent copper concentrations as reported in WET reports for June and September 2010 -2011.

Date	Ambient Copper (ug/l)	Effluent Copper (ug/l)
6/9/2010	7.0	18.0
9/15/2010	18.0	45.0
6/8/2011	8.0	16.0
9/7/2011	7.2	18.6
6/13/2012	6	16.9
9/12/2012	5.4	6.6
6/12/2013	4.4	4
Average	**8**	**17.9**
Median	**7**	**16.9**

Basic mass balance water quality equation:

$$Q_r C_r = Q_d C_d + Q_s C_s$$

Where:

Q_s = 7Q10 river flow upstream of plant = 18.36 cfs = 11.86 MGD
Q_d = Discharge flow from plant = 9.3 MGD
Q_r = Combined river flow (7Q10 + plant flow) = 21.16 MGD
C_s = Upstream copper concentration = 8 ug/l
C_d = Plant discharge copper effluent limit
C_r = Allowable receiving water copper concentration based on water quality criteria

To calculate an effluent limitation:

Acute criteria for dissolved copper = 25.7 ug/l

$$C_d = \frac{Q_r C_r - Q_s C_s}{Q_d} = \frac{(21.16 \text{ MGD})(25.7 \text{ ug/l}) - (11.86 \text{ MGD})(8 \text{ ug/l})}{(9.3 \text{ MGD})}$$

C_d = 48.27 ug/l

Maximum daily effluent limitation for total recoverable copper:

C_d = 48.27/0.96 = 50.3 ug/l

Chronic criteria for dissolved copper = 18.1 ug/l

$$C_d = \frac{Q_r C_r - Q_s C_s}{Q_d} = \frac{(21.16 \text{ MGD})(18.1 \text{ ug/l}) - (11.86 \text{ MGD})(8 \text{ ug/l})}{(9.3 \text{ MGD})}$$

C_d = 30.98 ug/l

Monthly average effluent limitation for total recoverable copper:
C_d = 30.98/0.96 = 32.3 ug/l

In each case, the calculated limit was greater than the limit in the current permit. However, pursuant to the MassDEP's antidegradation policy and the Site Specific Protocol, the new limit is not based entirely on these calculations if the demonstrated level of copper reduction routinely achievable at the facility is greater than would be required to achieve the re-calculated limits. Therefore, the effluent copper data from the facility for the years 2010-2013 was reviewed to characterize the performance of the facility. The effluent copper concentrations for the past 28 months are shown in Appendix D. In order to capture the statistical variation in the data, the 99th percentile for maximum daily data and the 95th percentile for the average monthly concentration were calculated (see Appendix D). Based on these calculations, the monthly average limit would be 40.3 ug/l and the maximum daily limit would be 59.5 ug/l.

Accordingly, the limitations in the draft permit are established at the more stringent of the limits calculated to achieve the new water quality criteria and those based on demonstrated performance at the facility. In this case, the limits calculated using the site specific water quality criteria (monthly average =32.3 ug/l, daily maximum = 50.3 ug/l) are more stringent and are included in the draft permit.

7.3.4. Whole Effluent Toxicity (WET)

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The MA SWQS include the following narrative statement and requires that EPA criteria established pursuant to Section 304(a)(1) of the CWA be used as guidance for interpretation of the following narrative criteria:

All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife [314 CMR 4.05(5)(e)].

National studies conducted by the EPA have demonstrated that domestic sources contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. Based on the potential for toxicity from domestic and industrial sources, the state narrative water quality criterion, the limited dilution at the discharge location, and in accordance with EPA national and regional policy and 40 CFR §122.44(d), the draft permit includes a whole effluent chronic and acute toxicity limitations (C-NOEC = 43.5% and LC_{50} =100%). (See also "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 49 Fed. Reg. 9016 March 9, 1984, and EPA's "Technical Support Document for Water Quality-Based Toxics Control", September, 1991.)

The MassDEP's Division of Watershed Management's toxics policy requires toxicity testing for all major dischargers, such as the Leominster WPCF. In addition, EPA recognizes that toxicity testing is required to assure that the synergetic effect of the pollutants in the discharge do not cause toxicity, even though the pollutants may be at low concentration in the effluent. Thus, the draft permit includes a whole effluent toxicity limitation requirement for the 001 outfall, to assure that the facility does not discharge combinations of toxic compounds into the North Nashua River in amounts which would affect aquatic or human life.

The draft permit carries forward a requirement for quarterly chronic and acute toxicity tests using the species Ceriodaphnia dubia. The tests must be performed in accordance with the test procedures and protocols specified in **Permit Attachments A** and **B** (the chronic and modified acute test allowed in previous permit is no longer allowed, so separate chronic and acute tests must be performed). The tests will be conducted four times per year during the second week of the months of March, June, September and December.

A review of 2 years of WET results shows consistent compliance with the acute limit. There was one violation of the chronic limit of 41.6% with a result of 6.26% in June 2010.

The LC50 limit of 100% is established by EPA/MassDEP policy for facilities with less than 10:1 dilution (See MassDEP's "Implementation Policy for the Control of Toxic Pollutants in Surface Waters, February 23, 1990.) The C-NOEC is established at the receiving water concentration (1/Dilution Factor = 1/2.3), which is 43.5%.

The permit shall be modified or alternatively revoked and reissued, to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the toxicity tests indicate the discharge causes an exceedance of any state water quality criterion. Results from these toxicity tests are considered "New Information" and the permit may be modified pursuant to 40 CFR 122.62(a)(2).

8. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

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 infiltration and inflow ("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 permit standard conditions for 'Proper Operation and Maintenance' are found at 40 CFR §122.41(e). These conditions require proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. Similarly, the co-permittees have a 'duty to mitigate' as stated in 40 CFR §122.41 (d). This requires the co-permittees to take all

reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment. EPA and MassDEP maintain that an I/I removal program is an integral component of ensuring permit compliance under both of these provisions.

The proposed permit includes additional new Operation and Maintenance requirements. The permittee and co-permittees are required to prepare a map of the sewer collection systems each owns within 30 months of the effective of the permit. Details of the mapping requirements can be found in the permit in Section C.4.

Because Lunenburg and Lancaster own and operate collection systems that discharge to the Leominster treatment works, they have been included as co-permittees for the specific permit requirements discussed in the paragraph above. The historical background and legal framework underlying this co-permittee approach is set forth in Attachment 1 to this Fact Sheet, EPA Region 1 NPDES Permitting Approach for Publicly Owned Treatment Works that Include Municipal Satellite Sewage Collection Systems.

9. SLUDGE INFORMATION AND REQUIREMENTS

The draft permit requires that the permittee comply with all existing federal and state laws that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards (see 40 CFR Section 503) and that it submit an annual reports describing its sludge disposal practices. Sludge from the Leominster WWTF is currently sent to an off-site facility for incineration; because the final disposal is done by others, the permittee is not subject to the requirements of 40 CFR Section 503. However, if the ultimate sludge disposal method changes, the permittee is responsible for complying with the applicable state and federal requirements.

The draft permit requires the permittee to submit an annual report by February 19th of each year for the previous calendar year, addressing the various sludge reporting requirements as specified in the guidance document for the chosen method of sludge disposal.

10. INDUSTRIAL USERS

The permittee is required to administer a pretreatment program based on authority granted under 40 CFR Part 403 and Section 307 of the CWA. The permittee's pretreatment program received EPA approval on September 28, 1990 and, as a result, appropriate pretreatment program requirements were incorporated into the existing permit that were consistent with the approval and federal pretreatment regulations in effect when the permit was issued.

Periodically, the Federal Pretreatment Regulations in 40 CFR Part 403 are amended. Those amendments establish new requirements for implementation of the pretreatment program. Upon reissuance of this NPDES permit, the permittee is obligated to modify its pretreatment program to be consistent with the current Federal regulations. Those activities that the permittee must address include, but are not limited to, the following: (1) develop and enforce EPA approved specific effluent limits (technically-based local limits); (2) revise the local sewer use ordinance

or regulation, as appropriate, to be consistent with Federal regulations; (3) develop an enforcement response plan; (4) implement a slug control evaluation program; (5) track significant noncompliance for industrial users; and (6) establish a definition of and track significant industrial users. These requirements are necessary to ensure continued compliance with the NPDES permit.

In addition to the requirements described above, the draft permit requires the permittee to submit to EPA in writing, within 180 days of the effective date of the permit, a description of proposed changes to the permittee's pretreatment program deemed necessary to assure conformity with current federal pretreatment regulations. These requirements are included in the draft permit to ensure that the pretreatment program is consistent and up to date with all pretreatment requirements in effect. Lastly, the permittee must continue to submit, annually on **November 1st** a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

11. ESSENTIAL FISH HABITAT

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) 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 which 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), site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

Essential fish habitat is only designated for fish species for which federal Fisheries Management Plans exist. 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.

Only Atlantic Salmon is believed to be present during one or more life stage within the EFH Area, which encompasses the existing discharge site. No "habitat area or particular concern" as defined under § 600.815(a)(9) of the Magnuson-Stevens Act, has been designated for this site. Although EFH has been designated for this general location, EPA has concluded that this activity is not likely to affect EFH or its associated species for the following reasons:

- This is a reissuance of an existing permit with the same or stricter effluent limits.
- The quantity of the discharge from the WPCF is 9.3 MGD monthly average and receives advanced tertiary treatment.
- Limits specifically protective of aquatic organisms have been established for chlorine based on EPA water quality criteria and copper based on MassDEP site specific criteria.
- Acute and chronic toxicity testing on *Ceriodaphnia dubia* is required four (4) times per year and the recent toxicity results are in compliance with permit limits.
- The permit prohibits any violation of state water quality standards.

Accordingly, EPA has determined that a formal consultation with NMFS is not required.

12. UNAUTHORIZED DISCHARGES

This permit only authorizes discharges from the outfall listed in Part I.A.1 of the draft permit. Discharges not authorized by an NPDES permit, including pump station emergency overflows must be reported in accordance with reporting requirements found in Section D.1.e. of Part II of the permit (24-hour reporting), including notification to EPA, MassDEP, and others, as appropriate (e.g. local Public Health Department), both orally and in writing as specified in the draft permit.

13. MONITORING AND REPORTING

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of Section 308 (a) of the CWA in accordance with 40 CFR §§122.41(j), 122.44(l), and 122.48.

The draft permit includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. The draft permit requires that, no later than one year after the effective date of the permit, the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR unless the permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports that precludes the use of NetDMR from submitting DMRs and reports ("opt-out request"). In the interim (until one year from the effective date of the permit), the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

NetDMR is a national web-based tool for regulated CWA permittees to submit discharge monitoring reports (DMRs) electronically via a secure Internet application to EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 CFR § 122.41 and § 403.12. NetDMR s accessed from the following url: http://www.epa.gov/netdmr. Further information about NetDMR, including contacts for EPA Region 1 is provided on this website.

EPA currently conducts free training on the use of NetDMR and anticipates that the ability of this training will continue to assist permittees with the transition to use of NetDMR. To participate in upcoming trainings, visit http://www.epa.gov/netdmr for contact information for Massachusetts.

The draft permit requires the permittee to report monitoring results obtained during each calendar month using Net DMR, no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be

required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

The draft permit also includes an "opt-out" request process. Permittees, who believe they cannot use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing, to EPA at least sixty (60) days prior to the date the facility would otherwise be required to begin using NetDMR. Opt-outs become effective upon the date of written approval by EPA and are valid for twelve (12) months from the date of EPA approval. The opt-outs expire at the end of this twelve (12) month period. Upon expiration, the permittee must submit DMRs and reports to EPA using NetDMR, unless the permittee submits a renewed opt-out request sixty (60) days prior to expiration of its opt-out, and such a request is approve by EPA.

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the draft permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format. Hard copies of DMRs must be postmarked no later than the 15th day of the month following the completed reporting period.

14. STATE PERMIT CONDITIONS

The NPDES Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of the permit are, therefore, incorporated into and constitute a discharge permit issued by the MassDEP Commissioner.

15. GENERAL CONDITIONS

The general conditions of the permit are based on 40 CFR Parts 122, Subparts A and D and 40 CFR 124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

16. STATE CERTIFICATION REQUIREMENTS

The staff of MassDEP has reviewed the draft permit. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the draft permit will be certified.

17. COMMENT PERIOD, HEARING REQUESTS AND PROCEDURES FOR FINAL DECISION

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 the U.S. EPA, Office of Ecosystem Protection, Attn: Michele Cobban Barden, 5 Post Office Square, Suite-100, (OEP06-1), Boston, Massachusetts 02109-3912 or via email to barden.michele@epa.gov. The comments should reference the name and permit number of the facility for which they are being provided.

Any person, prior to such date, may submit a request in writing to EPA and the State's Agency 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 after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates a significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period and after a public hearing, if such a hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within thirty (30) days following the notice of final permit decision, permit may be appealed to the Environmental Appeals Board in the manner described at 40 CFR § 124.19.

18. EPA AND MassDEP CONTACTS

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Michele Cobban Barden
EPA New England, Region1
5 Post Office Square, Suite-100 (OEP06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1539, FAX: (617) 918-0539
Email: barden.michele@epa.gov

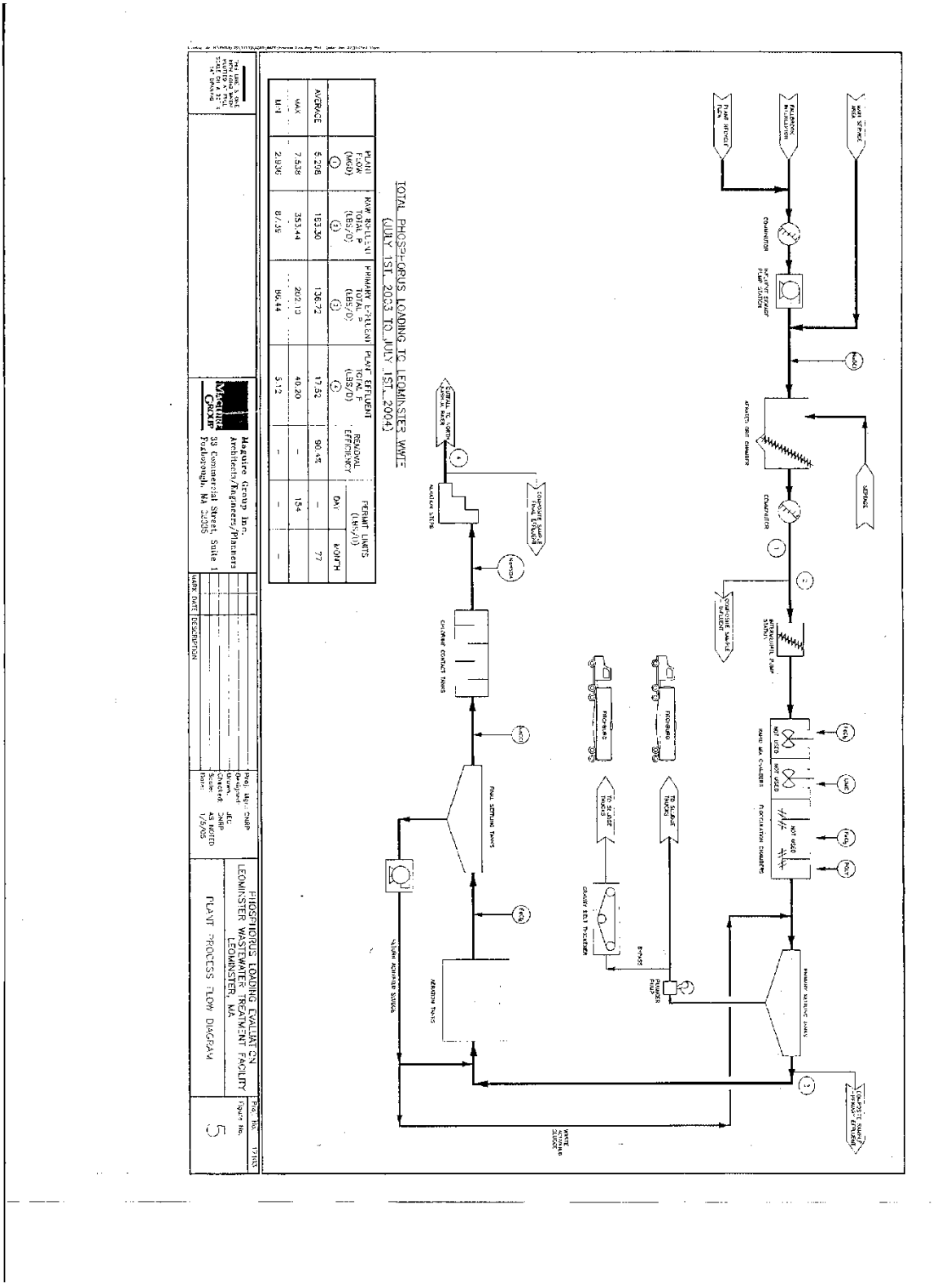
Claire Golden
Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
205B Lowell Street
Wilmington, Massachusetts 01887
Telephone: (978) 694-3244, FAX: (978) 694-3499
Email: claire.golden@state.ma.us

March 13, 2014
Date

Kenneth Moraff, Acting Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

Figure 1: Location of the Leominster WPCF

Figure 2: Flow Diagram for upgrade Leominster WPCF



	Flow			BOD_5 (November 1-April 30)					$CBOD_5$ (May 1-October 31)					BOD/CBOD % Removal
	(MGD)			(mg/l)			lbs/day		(mg/l)			lbs/day		%
	Monthly Average	Annual Average (12 month Rolling)	Daily Max	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Minimum
Effluent Limit	9.3	Report	Report	30	45	Report	2327	3490	15	15	Report	1163	1163	85%
Oct-13	4.45	5.77	4.82	***	***	***	***	***	1	1	1	41	54	99%
Sep-13	4.6	5.72	5.15	***	***	***	***	***	1	2	2	44	79	99%
Aug-13	4.97	5.66	6.16	***	***	***	***	***	1	1	1	45	50	99%
Jul-13	6.33	5.61	10.06	***	***	***	***	***	1	1	1	60	74	99%
Jun-13	9.94	5.43	17.7	***	***	***	***	***	1	2	2	93	175	99%
May-13	5.83	5.05	8.7	***	***	***	***	***	1	2	2	62	85	99%
Apr-13	6.99	5.03	10.01	1	2	2	81	128	***	***	***	***	***	99%
Mar-13	7.67	4.86	11.76	2	5	7	173	640	***	***	***	***	***	98%
Feb-13	4.99	4.67	9.92	3	4	4	142	281	***	***	***	***	***	98%
Jan-13	4.87	4.68	6.18	2	3	3	81	141	***	***	***	***	***	99%
Dec-12	4.19	4.73	6.61	2	2	2	55	87	***	***	***	***	***	99%
Nov-12	4.43	4.99	6.77	2	2	3	74	99	***	***	***	***	***	99%
Oct-12	3.84	5.22	9.61	***	***	***	***	***	1	2	2	46	152	99%
Sep-12	3.83	5.48	4.51	***	***	***	***	***	2	2	3	52	117	99%
Aug-12	4.42	5.74	5.37	***	***	***	***	***	2	3	3	70	121	99%
Jul-12	4.2	5.76	4.55	***	***	***	***	***	2	3	4	56	134	99%
Jun-12	5.38	5.75	7.76	***	***	***	***	***	1	2	2	49	66	99%
May-12	5.54	5.79	6.89	***	***	***	***	***	1	1	1	46	55	99%
Apr-12	4.98	5.84	6.85	1	2	2	45	79	***	***	***	***	***	99%
Mar-12	5.32	6.02	6.86	2	3	3	69	141	***	***	***	***	***	98%
Feb-12	5.13	6.37	6.33	2	3	4	74	178	***	***	***	***	***	98%
Jan-12	5.49	6.33	8.26	2	3	3	97	128	***	***	***	***	***	99%
Dec-11	7.32	6.25	12.11	2	3	3	137	303	***	***	***	***	***	98%
Nov-11	7.16	6.06	9.34	4	11	19	278	1463	***	***	***	***	***	97%
Oct-11	7.01	5.87	10.08	***	***	***	***	***	1	3	3	80	154	99%
Sep-11	6.97	5.65	15.27	***	***	***	***	***	2	2	3	94	210	98%
Aug-11	4.59	5.44	12.7	***	***	***	***	***	2	3	3	78	158	99%
Jul-11	4.16	5.43	6.89	***	***	***	***	***	2	2	2	56	92	99%
Jun-11	5.81	5.44	7.75	***	***	***	***	***	1	2	3	71	182	99%
May-11	6.09	5.29	7.51	***	***	***	***	***	1	2	2	69	125	99%
Apr-11	7.19	5.17	10.46	2	2	2	88	118	***	***	***	***	***	98%
Mar-11	9.46	5.23	19.35	2	3	4	127	281	***	***	***	***	***	99%
Feb-11	4.7	5.48	7.55	2	2	2	53	81	***	***	***	***	***	99%
Jan-11	4.52	5.56	5.39	2	3	3	85	112	***	***	***	***	***	99%
Dec-10	5.11	5.56	7.96	2	3	3	77	140	***	***	***	***	***	99%
Nov-10	4.82	5.63	5.76	2	2	2	75	96	***	***	***	***	***	99%
Oct-10	4.37	5.62	5.39	***	***	***	***	***	2	2	2	67	90	99%
Sep-10	4.41	5.58	6.25	***	***	***	***	***	3	5	5	98	180	98%

	Flow			BOD_5 (November 1-April 30)					$CBOD_5$ (May 1-October 31)					BOD/CBOD % Removal
	(MGD)			(mg/l)			lbs/day		(mg/l)			lbs/day		%
	Monthly Average	Annual Average (12 month Rolling)	Daily Max	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Minimum
Effluent Limit	9.3	Report	Report	30	45	Report	2327	3490	15	15	Report	1163	1163	85%
Aug-10	4.48	5.54	5.12	***	***	***	***	***	2	3	3	82	123	99%
Jul-10	4.26	5.63	5.79	***	***	***	***	***	2	4	5	92	225	99%
Jun-10	4.1	5.99	4.55	***	***	***	***	***	1	1	1	34	38	99%
May-10	4.59	6.14	6.81	***	***	***	***	***	2	4	5	76	193	99%
Min	3.83	4.67	4.51	1	2	2	45	79	1	1	1	34	38	97%
Max	9.94	6.37	19.35	4	11	19	278	1463	3	5	5	98	225	99%
Avg	5.44	5.55	8.16	2	3	4	101	250	2	2	3	65	122	99%
N=	42	42	42	18	18	18	18	18	24	24	24	24	24	42

	TSS (November 1-April 30)					TSS (May 1- October 31)					TSS % Removal
	(mg/l)			lbs/day	lbs/day	(mg/l)			lbs/day	lbs/day	%
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Minimum
Effluent Limit	30	45	Report	2327	3490	20	20	Report	1551	1551	85%
Oct-13	***	***	***	***	***	2	3	3	84	116	99%
Sep-13	***	***	***	***	***	2	2	2	70	86	99%
Aug-13	***	***	***	***	***	2	3	3	93	125	99%
Jul-13	***	***	***	***	***	3	4	4	148	295	98%
Jun-13	***	***	***	***	***	2	3	3	200	398	98%
May-13	***	***	***	***	***	3	3	3	127	197	99%
Apr-13	3	3	3	175	214	***	***	***	***	***	98%
Mar-13	3	4	5	196	438	***	***	***	***	***	98%
Feb-13	3	3	3	121	201	***	***	***	***	***	99%
Jan-13	1	2	2	55	96	***	***	***	***	***	94%
Dec-12	2	2	2	49	72	***	***	***	***	***	99%
Nov-12	2	3	3	89	169	***	***	***	***	***	99%
Oct-12	***	***	***	***	***	2	3	3	73	190	99%
Sep-12	***	***	***	***	***	3	4	4	85	150	99%
Aug-12	***	***	***	***	***	2	3	3	70	114	99%
Jul-12	***	***	***	***	***	2	3	3	74	106	99%
Jun-12	***	***	***	***	***	2	2	2	83	107	99%
May-12	***	***	***	***	***	2	2	2	73	110	99%
Apr-12	2	3	3	80	118	***	***	***	***	***	99%
Mar-12	2	3	3	75	155	***	***	***	***	***	99%
Feb-12	1	2	2	49	99	***	***	***	***	***	99%
Jan-12	2	3	3	85	123	***	***	***	***	***	99%
Dec-11	3	4	4	191	404	***	***	***	***	***	97%
Nov-11	8	29	56	606	4311	***	***	***	***	***	92%
Oct-11	***	***	***	***	***	1	1	1	61	84	99%
Sep-11	***	***	***	***	***	1	2	3	81	141	99%
Aug-11	***	***	***	***	***	3	4	4	111	211	98%
Jul-11	***	***	***	***	***	1	2	2	40	58	99%
Jun-11	***	***	***	***	***	1	2	2	62	121	99%
May-11	***	***	***	***	***	1	2	2	67	124	99%
Apr-11	2	2	2	119	149	***	***	***	***	***	99%
Mar-11	1	3	4	104	375	***	***	***	***	***	98%
Feb-11	1	2	2	49	81	***	***	***	***	***	99%
Jan-11	2	3	3	72	132	***	***	***	***	***	99%
Dec-10	3	4	4	115	194	***	***	***	***	***	98%
Nov-10	2	3	3	94	144	***	***	***	***	***	99%
Oct-10	***	***	***	***	***	3	5	5	123	191	99%
Sep-10	***	***	***	***	***	4	7	8	142	288	98%
Aug-10	***	***	***	***	***	2	4	4	95	164	99%

	TSS (November 1-April 30)					TSS (May 1- October 31)					TSS % Removal
	(mg/l)			lbs/day	lbs/day	(mg/l)			lbs/day	lbs/day	%
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Minimum
Effluent Limit	30	45	Report	2327	3490	20	20	Report	1551	1551	85%
Jul-10	***	***	***	***	***	2	5	7	76	315	99%
Jun-10	***	***	***	***	***	1	2	2	38	72	99%
May-10	***	***	***	***	***	2	3	4	61	154	99%
Min	1.00	2.00	2.00	49.00	72.00	1.00	1.00	1.00	38.00	58.00	0.92
Max	8.00	29.00	56.00	606.00	4311.00	4.00	7.00	8.00	200.00	398.00	0.99
Avg	2.39	4.33	5.94	129.11	415.28	2.04	3.08	3.29	89.04	163.21	0.98
N=	18	18	18	18	18	24	24	24	24	24	42

	pH		Dissolved Oxygen	Fecal Coliform Bacteria		Total Residual Chlorine		Total Phosphorus		Total Phosphorus		Dissolved Orthophosphorus (November 1- March 31)	
	(S.U)		mg/l	cfu/100 ml		mg/l		mg/l		mg/l		mg/l	
	Minimum	Maximum	Minimum Daily	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily	(April 1- October 31)	Maximum Daily	(November 1- March 31))	Maximum Daily	Average Monthly (November 1- March 31)	Maximum Daily (November 1- March 31)
Effluent Limit	6	8.3	6	200	400	0.026	0.047	0.2	Report	1	Report	Report	Report
Oct-13	6.7	7.2	7.8	1	3	0.012	0.020	0.12	0.18	***	***	***	***
Sep-13	6.9	7.4	7.4	1	2	0.011	0.020	0.12	0.2	***	***	***	***
Aug-13	6.8	7.4	7.7	2	6	0.012	0.020	0.14	0.19	***	***	***	***
Jul-13	6.8	7.2	8	1	2	0.011	0.020	0.11	0.32	***	***	***	***
Jun-13	6.6	7.1	8.6	1	1	0.011	0.015	0.06	0.07	***	***	***	***
May-13	6.6	7.2	9	1	2	0.011	0.020	0.09	0.22	***	***	***	***
Apr-13	6.6	7.1	10.4	2	3	0.011	0.020	0.08	0.16	***	***	***	***
Mar-13	6.7	7.2	10.8	3	7	0.011	0.020	***	***	0.15	0.22	0.07	0.14
Feb-13	6.8	7.3	10.7	1	2	0.012	0.020	***	***	0.52	0.63	0.38	0.47
Jan-13	6.7	7.2	9.9	1	2	0.011	0.020	***	***	0.55	0.84	0.37	0.52
Dec-12	6.7	7.3	9.9	3	9	0.011	0.020	***	***	0.57	0.78	0.49	0.64
Nov-12	6.7	7.5	8.8	2	7	0.011	0.015	***	***	0.37	0.87	0.26	0.69
Oct-12	6.8	7.4	8.3	1	3	0.012	0.020	0.1	0.28	***	***	***	***
Sep-12	6.7	7.3	7.9	1	2	0.014	0.020	0.08	0.21	***	***	***	***
Aug-12	6.6	7.4	7.7	2	4	0.013	0.020	0.12	0.24	***	***	***	***
Jul-12	6.7	7.5	7.8	2	3	0.013	0.020	0.18	0.66	***	***	***	***
Jun-12	6.6	7.3	7.4	1	2	0.012	0.020	0.1	0.14	***	***	***	***
May-12	6.9	7.6	8.8	2	3	0.011	0.020	0.13	0.32	***	***	***	***
Apr-12	6.5	7.5	9.6	1	2	0.013	0.020	0.13	0.35	***	***	***	***
Mar-12	6.7	7	10	2	3	0.011	0.020	***	***	0.28	0.38	0.17	0.28
Feb-12	6.6	7	10.3	2	3	0.012	0.020	***	***	0.19	0.22	0.13	0.16
Jan-12	6.7	7.1	10.2	2	3	0.011	0.020	***	***	0.3	0.4	0.18	0.26
Dec-11	6.7	7.1	9.3	9	54	.01`3	0.020	***	***	0.27	0.42	0.15	0.26
Nov-11	6.8	7.2	9.3	9	57	0.013	0.020	***	***	0.29		0.18	0.41
Oct-11	6.7	7.1	8.5	3	4	0.013	0.020	0.25		***	***	***	***
Sep-11	6.5	7.3	8.1	4	12	0.011	0.020	0.28		***	***	***	***
Aug-11	6.8	7.2	7.6	6	12	0.011	0.020	0.85		***	***	***	***
Jul-11	6.7	7.5	7.8	4	11	0.012	0.020	0.2		***	***	***	***
Jun-11	6.7	7.1	8.6	3	10	0.012	0.020	0.37		***	***	***	***
May-11	6.8	7.1	9.4	2	3	0.009	0.020	0.38		***	***	***	***
Apr-11	6.7	7.5	9.7	2	4	0.012	0.020	0.14		***	***	***	***
Mar-11	6.7	7.4	10.7	1	2	0.016	0.020	***	***	0.08		0.04	0.09
Feb-11	6.7	7.3	10.8	1	2	0.014	0.020	***	***	0.33		0.27	0.41
Jan-11	6.9	7.3	9.5	4	6	0.015	0.020	***	***	0.48		0.42	0.51
Dec-10	7.2	7.7	10	2	4	0.012	0.020	***	***	0.27		0.21	0.33
Nov-10	7.1	7.4	9.3	1	3	0.012	0.020	***	***	0.36		0.31	0.4
Oct-10	6.8	7.1	8	2	4	0.013	0.020	0.56		***	***	***	***
Sep-10	6.5	7.1	7.8	10	28	0.012	0.020	0.79		***	***	***	***

	pH		Dissolved Oxygen	Fecal Coliform Bacteria		Total Residual Chlorine		Total Phosphorus		Total Phosphorus		Dissolved Orthophosphorus (November 1- March 31)	
	(S.U)		mg/l	cfu/100 ml		mg/l		mg/l		mg/l		mg/l	
	Minimum	Maximum	Minimum Daily	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily	(April 1- October 31)	Maximum Daily	(November 1- March 31))	Maximum Daily	Average Monthly (November 1- March 31)	Maximum Daily (November 1- March 31)
Effluent Limit	6	8.3	6	200	400	0.026	0.047	0.2	Report	1	Report	Report	Report
Aug-10	6.6	7	7.6	2	4	0.013	0.020	0.96		***	***	***	***
Jul-10	6.7	7.3	7	1	2	0.013	0.020	0.73		***	***	***	***
Jun-10	6.8	7.2	8	3	19	0.012	0.020	0.39		***	***	***	***
May-10	6.9	7.4	10.2	1	1	0.011	0.020	0.22		***	***	***	***
Min	6.50	7.00	7.00	1.00	1.00	0.01	0.02	0.06	0.07	0.08	0.22	0.04	0.09
Max	7.20	7.70	10.80	10.00	57.00	0.02	0.02	0.96	0.66	0.57	0.87	0.49	0.69
Avg	6.73	7.27	8.91	2.50	7.52	0.01	0.02	0.28	0.25	0.33	0.53	0.24	0.37
N=	42	42	42	42	42	41	42	27	14	15	9	15	15

	Ammonia Nitrogen as N						Total Copper		LC50- Ceriodaphnia	NOEC - Ceriodaphnia
	mg/l		lbs/day				mg/l		%	%
	Average Monthly (June 1- October 31)	Maximum Daily (June 1- October 31)	Average Monthly (June 1- October 31)	Maximum Daily (June 1- October 31)	Average Monthly (November 1- May 31)	Maximum Daily (November 1- May 31)	Average Monthly	Maximum Daily	Maximum Daily	Maximum Daily
Effluent Limit	1.3	2	101	154	Report	Report	12.4	17.5	100	41.6
Oct-13	0.14	0.19	5	7	***	***	11	11		
Sep-13	0.13	0.4	5	15	***	***	11.5	11.9	100	100
Aug-13	0.11	0.14	5	6	***	***	10	10		
Jul-13	0.14	0.38	7	17	***	***	5	5		
Jun-13	0.4	0.92	35	107	***	***	5	5	100	50
May-13	***	***	***	***			19	19		
Apr-13	***	***	***	***	0.28	0.5	6	6		
Mar-13	***	***	***	***	0.27	0.46	11	15	100	100
Feb-13	***	***	***	***	0.25	0.4	35	35		
Jan-13	***	***	***	***	0.26	0.52	9	9		
Dec-12	***	***	***	***	0.17	0.17	15	17	100	100
Nov-12	***	***	***	***	0.13	0.15	18	18		
Oct-12	0.17	0.65	6	23	***	***	18	18		
Sep-12	0.34	0.83	11	26	***	***	12.8	19	100	100
Aug-12	0.11	0.14	4	5	***	***	17	17		
Jul-12	0.13	0.23	5	8	***	***	12	12		
Jun-12	0.1	0.14	5	7	***	***	13	17	100	100
May-12	***	***	***	***			16	16		
Apr-12	***	***	***	***	0.15	0.52	14	14		
Mar-12	***	***	***	***	0.15	0.24	13	20	100	100
Feb-12	***	***	***	***	0.19	0.24	14	14		
Jan-12	***	***	***	***	0.19	0.35	13	13		
Dec-11	***	***	***	***	0.26	0.4	9.6	12.1	100	100
Nov-11	***	***	***	***	0.57	1.2	6	6		
Oct-11	0.24	0.57	14	30	***	***	9	9		
Sep-11	0.26	0.4	14	20	***	***	18.6	18.6	100	100
Aug-11	0.17	0.24	6	12	***	***	27	27		
Jul-11	0.12	0.16	4	7	***	***	11	11		
Jun-11	0.24	0.31	12	15	***	***	19	22	100	100
May-11	***	***	***	***	0.24	0.28	12	12		
Apr-11	***	***	***	***	0.17	0.29	14	14		
Mar-11	***	***	***	***	0.21	0.21	6	8	100	100
Feb-11	***	***	***	***	0.12	0.12	13	13		
Jan-11	***	***	***	***	0.12	0.12	10	14		
Dec-10	***	***	***	***	0.22	0.22	13	14	100	100
Nov-10	***	***	***	***	0.09	0.1	16	21		
Oct-10	0.16	0.31	6	12	***	***	26	26		
Sep-10	0.16	0.23	6	9	***	***	50	55	100	100
Aug-10	0.15	0.28	6	11	***	***	15	15		

	Ammonia Nitrogen as N						Total Copper		LC50- Ceriodaphnia	NOEC - Ceriodaphnia
	mg/l		lbs/day				mg/l		%	%
	Average Monthly (June 1- October 31)	Maximum Daily (June 1- October 31)	Average Monthly (June 1- October 31)	Maximum Daily (June 1- October 31)	Average Monthly (November 1- May 31)	Maximum Daily (November 1- May 31)	Average Monthly	Maximum Daily	Maximum Daily	Maximum Daily
Effluent Limit	1.3	2	101	154	Report	Report	12.4	17.5	100	41.6
Jul-10	0.86	3.1	34	139	***	***	17	17		
Jun-10	0.34	1.1	11	34	***	***	12	18	100	6.25
May-10	***	***	***	***	0.11	0.15	14	14		
Min	0.10	0.14	4.00	5.00	0.09	0.10	5.00	5.00	100.00	6.25
Max	0.86	3.10	35.00	139.00	0.57	1.20	50.00	55.00	100.00	100.00
Avg	0.22	0.54	10.05	25.50	0.21	0.33	14.68	15.92	100.00	89.73
N=	20	20	20	20	20	20	42	42	14	14

Leominster WPCF 2011 Application Data

Parameter	Maximum Daily Value	Average Daily Value	Units	Number of Samples
pH (minimum)	6.56	***	Standard Units	***
pH (maximum)	7.70	***	Standard Units	***
Flow Rate	19.35	5.23	MGD	365
Temperature (Winter)	56	55	Fahrenheit	3
Temperature (Summer)	76	75	Fahrenheit	3
BOD	5	1.88	mg/l	104
CBOD	5	1.30	mg/l	104
Fecal Coliform Bacteria	28	2.66	cfu/100 mg	105
Total Suspended Solids	8	2.10	mg/l	105
Ammonia	3.10	0.28	mg/l	58
Total Residual Chlorine	0.03	0.01	mg/l	365
Dissolved Oxygen	12.7	7.0	mg/l	730
Total Kjeldahl Nitrogen	2.0	1.7	mg/l	3
Nitrate Nitrogen	24	7.9	mg/l	3
Oil and Grease	1.8	1.6	mg/l	3
Phosphorus (Total)	1.28	0.5	mg/l	82
Total Dissolved Solids	350	310	mg/l	3

Whole Effluent Toxicity Test Metals Data

Date	Aluminum		Cadmium		Chromium		Copper		Lead		Nickel		Zinc	
	Effluent (ug/)	Ambient (ug/l)	Effluent (ug/)	Ambient (ug/l)	Effluent (ug/l)	Ambient (ug/l)	Effluent (ug/l)	Ambient (ug/l)	Effluent (ug/l)	Ambient (ug/l)	Effluent (ug/l)	Ambient (ug/l)	Effluent (ug/l)	Ambient (ug/l)
12/13/2006	26		<1		<1		17		<1		2		36	
3/7/2007	29		<1		2		11		<1		8		34	
6/13/2007	17		<1		<1		25		<1		3		41	
9/12/2007	53		<1		<1		18		<1		4		23	
12/12/2007	31		<1		ND		33		<1		5		43	
3/12/2008	78		<0.2		ND		13.6		<0.5		2.3		18	
6/11/2008	82		<1		ND		15		<1		2		36	
7/16/2008	76		<1		ND		16		<1		2		36	
9/10/2008	23		<1		ND		8		<1		3		20	
12/10/2008	78		<1		ND		28		<1		1		21	
3/11/2009	40		<1		ND		20		<1		2		30	
6/10/2009	<10		<1		ND		28		<2		3		40	
9/9/2009	<10		<1		ND		25		<2		3		38	
12/9/2009	<10		<1		ND		11		<1		2		23	
3/10/2010	<10		<1		ND		28		<2		2		34	
6/9/2010	20	61	<1	<1	ND	ND	18	7	<2	3	2	2	22	
9/15/2010	<10	149	<1	<1	ND	ND	45	18	<2	<2	1	1	28	
12/8/2010	<10	61	<1	<1	ND	ND	12	4	<2	<2	1	<1	22	
3/9/2011	32	259	<0.2	<0.2	ND	ND	38	3.2	<0.5	2.7	1.5	1.7	13.1	
6/8/2011	33	89	<0.2	<0.2	ND	ND	16	8	<1	<1	3	2	33	
9/7/2011	11	506	<0.2	0.2	ND	ND	18.6	7.2	<0.5	8	2.1	1.8	14.4	
12/14/2011	47	133	<0.2	<0.2	ND	ND	12.1	2.2	<0.5	<0.5	2.1	1.7	13.8	
3/14/2012	49	1706	<0.2	<0.2	ND	ND	6.8	9.6	<0.5	13.8	1.6	3.6	29.8	
6/13/2012	73	196	<0.2	<0.2	ND	ND	16.9	6	<0.5	2.7	2.4	1.7	21.8	
9/12/2012	<5	40	<0.1	<0.1	ND	ND	6.6	5.4	<0.5	0.8	2.2	2	17.1	
12/12/2012	35	91	<0.2	<0.2	ND	ND	12.3	1.6	<0.5	0.6	1.7	1.1	30.1	
3/13/2013	<5	398	<0.2	<0.2	ND	ND	7.3	3.5	<0.3	1.7	1.6	1.3	20.6	
6/12/2013	96	314	<0.2	<0.2	ND	ND	4	4.4	<0.5	2.7	2.8	1.6	10	
Average	46	308		0.2	2		18.2	6.2		4	2.5	1.8	26.7	
Median	38	149		0.2	2		16.5	5.4		2.7	2.1	1.7	25.5	
Max	96	1706	0	0.2	2	0	45	18	0	13.8	8	3.6	43	
Min	11	40	0	0.2	2	0	4	1.6	0	0.6	1	1	10	
Count	20	13	0	1	1	0	28	13	0	9	28	12	28	

Metals
Log normal distribution and estimated 95th and 99th percentile

Date	Al* (ug/l)	lnAl (ug/l)	Cu (ug/L)	lnCu (ug/L)	Ni (ug/L)	lnNi (ug/L)	Zn (ug/L)	lnZn (ug/L)
12/13/2006	26	3.2581	17	2.8332	2	0.6931	36	3.5835
3/7/2007	29	3.3673	11	2.3979	8	2.0794	34	3.5264
6/13/2007	17	2.8332	25	3.2189	3	1.0986	41	3.7136
9/12/2007	53	3.9703	18	2.8904	4	1.3863	23	3.1355
12/12/2007	31	3.4340	33	3.4965	5	1.6094	43	3.7612
3/12/2008	78	4.3567	13.6	2.6101	2.3	0.8329	18	2.8904
6/11/2008	82	4.4067	15	2.7081	2	0.6931	36	3.5835
7/16/2008	76	4.3307	16	2.7726	2	0.6931	36	3.5835
9/10/2008	23	3.1355	8	2.0794	3	1.0986	20	2.9957
12/10/2008	78	4.3567	28	3.3322	1	0.0000	21	3.0445
3/11/2009	40	3.6889	20	2.9957	2	0.6931	30	3.4012
6/10/2009	0		28	3.3322	3	1.0986	40	3.6889
9/9/2009	0		25	3.2189	3	1.0986	38	3.6376
12/9/2009	0		11	2.3979	2	0.6931	23	3.1355
3/10/2010	0		28	3.3322	2	0.6931	34	3.5264
6/9/2010	20	2.9957	18	2.8904	2	0.6931	22	3.0910
9/15/2010	0		45	3.8067	1	0.0000	28	3.3322
12/8/2010	0		12	2.4849	1	0.0000	22	3.0910
3/9/2011	32	3.4657	38	3.6376	1.5	0.4055	13.1	2.5726
6/8/2011	33	3.4965	16	2.7726	3	1.0986	33	3.4965
9/7/2011	11	2.3979	18.6	2.9232	2.1	0.7419	14.4	2.6672
12/14/2011	47	3.8501	12.1	2.4932	2.1	0.7419	13.8	2.6247
3/14/2012	49	3.8918	6.8	1.9169	1.6	0.4700	29.8	3.3945
6/13/2012	73	4.2905	16.9	2.8273	2.4	0.8755	21.8	3.0819
9/12/2012	0		6.6	1.8871	2.2	0.7885	17.1	2.8391
12/12/2012	35	3.5553	12.3	2.5096	1.7	0.5306	30.1	3.4045
3/13/2013	0		7.3	1.9879	1.6	0.4700	20.6	3.0253
6/12/2013	96	4.5643	4	1.3863	2.8	1.0296	10	2.3026
μ = mean of ln(X)		3.6823		2.7550		0.7967		3.2189
σ = standard deviation of ln (X)		0.5955		0.5726		0.4552		0.3878
95th percentile = exp(μ+1.645σ)	95.6889		40.3245		4.689921		47.32056	
99th percentile = (μ = 2.326σ)	147.0444		59.5561		6.394151		61.62479	

Hardness Data

Date	Hardness, as CaCO3 (mg/l)	
	Effluent	Ambient
12/13/2006	56	No Data
3/7/2007	74	No Data
6/13/2007	80	No Data
9/12/2007	76	No Data
12/12/2007	68	No Data
3/12/2008	76	No Data
6/11/2008	90	No Data
7/16/2008	92	No Data
9/10/2008	82	No Data
12/10/2008	80	No Data
3/11/2009	84	No Data
6/10/2009	108	No Data
9/9/2009	105	No Data
12/9/2009	100	No Data
3/10/2010	96	No Data
6/9/2010	110	42
9/15/2010	124	46
12/8/2010	92	32
3/9/2011	92	20
6/8/2011	90	38
9/7/2011	82	20
12/14/2011	56	20
3/14/2012	78	22
6/13/2012	84	30
9/12/2012	80	42
12/12/2012	84	30
3/13/2013	86	20
6/12/2013	72	12
Median	84	30

Hardness Calculations

$$Cr = \frac{QdCd + QsCs}{Qr}$$

Where:

Qs = streamflow above the point of discharge = 18.6 cfs = 12.02 MGD
Cs = background in-stream concentration = 30 mg/l
Qd = effluent (design) flow = 9.3 MGD
Cd = effluent concentration = 84 mg/l
Qr = resultant in-streamflow, after discharge = 21.32 MGD
Cr = resultant in-streamflow concentration (after complete mixing occurs)

$$Cr = \frac{(9.3\ MGD * 84\ mg/l)+(12.02\ MGD * 30\ mg/l)}{21.32\ MGD}$$

Cr = 53.55 mg/l

Therefore, a hardness of 54 as $CaCO_3$ was used to calculate the total recoverable metals criteria.

Copper Reasonable Potential Analysis

no ND, >10 data points, Lognormal distribution

Date	Cu (ug/L)	*Yi* lnAl (ug/L)
12/13/2006	17	2.8332
3/7/2007	11	2.3979
6/13/2007	25	3.2189
9/12/2007	18	2.8904
12/12/2007	33	3.4965
3/12/2008	13.6	2.6101
6/11/2008	15	2.7081
7/16/2008	16	2.7726
9/10/2008	8	2.0794
12/10/2008	28	3.3322
3/11/2009	20	2.9957
6/10/2009	28	3.3322
9/9/2009	25	3.2189
12/9/2009	11	2.3979
3/10/2010	28	3.3322
6/9/2010	18	2.8904
9/15/2010	45	3.8067
12/8/2010	12	2.4849
3/9/2011	38	3.6376
6/8/2011	16	2.7726
9/7/2011	18.6	2.9232
12/14/2011	12.1	2.4932
3/14/2012	6.8	1.9169
6/13/2012	16.9	2.8273
9/12/2012	6.6	1.8871
12/12/2012	12.3	2.5096
3/13/2013	7.3	1.9879
6/12/2013	4	1.3863

Cu - (Lognormal distribution, no ND)

Estimated Daily Maximum Effluent Concentration

k = number of daily samples =	28	
u_y = Avg of Nat. Log of daily Discharge =	2.75499	
s_y = Std Dev. of Nat Log of daily discharge =	0.57263	
σ_y^2 = estimated variance = (SUM[$(y_i - u_y)^2$]) / (k-1) =	0.3279017 42	
cv(x)= Coefficient of Variation =	0.2078509 52	

99th Percentile Daily Max Estimate = exp (u_y + 2.326*s_y)

Estimated Daily Max 99th percentile =	**59.5561**	**ug/L**
Estimated Daily Max including Dilution Factor =	**59.5561**	**ug/L**

95th Percentile Daily Max Estimate = exp (u_y + 1.645*s_y)

Estimated Daily Max =	**40.3245**	**ug/L**
Estimated Daily Max including Dilution Factor =	**40.3245**	**ug/L**

Attachment 1

EPA REGION 1 NPDES PERMITTING APPROACH FOR PUBLICLY OWNED TREATMENT WORKS THAT INCLUDE MUNICIPAL SATELLITE SEWAGE COLLECTION SYSTEMS

This interpretative statement provides an explanation to the public of EPA Region 1's interpretation of the Clean Water Act ("CWA" or "Act") and implementing regulations, and advises the public of relevant policy considerations, regarding the applicability of the National Pollutant Discharge Elimination System ("NPDES") program to publicly owned treatment works ("POTWs") that are composed of municipal satellite sewage collection systems owned by one entity and treatment plants owned by another ("regionally integrated POTWs"). When issuing NPDES permits to these types of sanitary sewer systems, it is EPA Region 1's practice to directly regulate, as necessary, the owners/operators of the municipal satellite collection systems through a co-permitting structure. This interpretative statement is intended to explain, generally, the basis for this practice. In determining whether to include municipal satellite collection systems as co-permittees in any particular circumstances, Region 1's decision will be made by applying the law and regulations to the specific facts of the case before the Region.

EPA has set out a national policy goal for the nation's sanitary sewer systems to adhere to strict design and operational standards:

> "Proper [operation and maintenance] of the nation's sewers is integral to ensuring that wastewater is collected, transported, and treated at POTWs; and to reducing the volume and frequency of …[sanitary sewer overflow] discharges. Municipal owners and operators of sewer systems and wastewater treatment facilities need to manage their assets effectively and implement new controls, where necessary, as this infrastructure continues to age. Innovative responses from all levels of government and consumers are needed to close the gap."1

Because ownership/operation of a regionally integrated POTW is sometimes divided among multiple parties, the owner/operator of the treatment plant many times lacks the means to implement comprehensive, system-wide operation and maintenance ("O & M") procedures. Failure to properly implement O & M measures in a POTW can cause, among other things, excessive extraneous flow (*i.e.*, inflow and infiltration) to enter, strain and occasionally overload treatment system capacity. This failure not only impedes EPA's national policy goal concerning preservation of the nation's wastewater infrastructure assets, but also frustrates achievement of the water quality- and technology-based requirements of CWA § 301 to the extent it results in sanitary sewer overflows and degraded treatment plant performance, with adverse impacts on human health and the environment.

In light of these policy objectives and legal requirements, it is Region 1's permitting practice to subject all portions of the POTW to NPDES requirements in order to ensure that the treatment system as a whole is properly operated and maintained and that human health and water quality

---

1 *See Report to Congress: Impacts and Control of CSOs and SSOs* (EPA 833-R-04-001) (2004), at p. 10-2. *See also* "1989 National CSO Control Strategy," 54 Fed. Reg. 37371 (September 8, 1989).

impacts resulting from excessive extraneous flow are minimized. The approach of addressing O&M concerns in a regionally integrated treatment works by adding municipal satellite collection systems as co-permittees is consistent with the definition of "publicly owned treatment works," which by definition includes sewage collection systems. Under this approach, the POTW in its entirety will be subject to NPDES regulation as a point source discharger under the Act. Region 1's general practice will be to impose permitting requirements applicable to the POTW treatment plant along with a more limited set of conditions applicable to the connected municipal satellite collection systems.

The factual and legal basis for the Region's position is set forth in greater detail in *Attachment A*.

Attachment A

ANALYSIS SUPPORTING EPA REGION 1 NPDES PERMITTING APPROACH FOR PUBLICLY OWNED TREATMENT WORKS THAT INCLUDE MUNICIPAL SATELLITE SEWAGE COLLECTION SYSTEMS

Exhibit A List of POTW permits that include municipal satellite collection systems as co-permittees

Exhibit B Analysis of extraneous flow trends and SSO reporting for representative systems

Exhibit C Form of Regional Administrator's waiver of permit application requirements for municipal satellite collection systems

Introduction

On May 28, 2010, the U.S. EPA Environmental Appeals Board ("Board") issued a decision remanding to the Region certain NPDES permit provisions that included and regulated satellite collection systems as co-permittees. *See In re Upper Blackstone Water Pollution Abatement District*, NPDES Appeal Nos. 08-11 to 08-18 & 09-06, 14 E.A.D. __ (*Order Denying Review in Part and Remanding in Part*, EAB, May 28, 2010).2 While the Board "did not pass judgment" on the Region's position that its NPDES jurisdiction encompassed the entire POTW and not only the treatment plant, it held that "where the Region has abandoned its historical practice of limiting the permit only to the legal entity owning and operating the wastewater treatment plant, the Region had not sufficiently articulated in the record of this proceeding the statutory, regulatory, and factual bases for expanding the scope of NPDES authority beyond the treatment plant owner/operator to separately owned/operated collection systems that do not discharge directly to waters of the United States, but instead that discharge to the treatment plant." *Id., s*lip op**.** at 2, 18. In the event the Region decided to include and regulate municipal satellite collection systems as co-permittees in a future permit, the Board posed several questions for the Region to address in the analysis supporting its decision:

> (1) In the case of a regionally integrated POTW composed of municipal satellite collection systems owned by different entities and a treatment plant owned by another, is the scope of NPDES authority limited to owners/operators of the POTW treatment plant, or does the authority extend to owners/operators of the municipal satellite collection systems that convey wastewater to the POTW treatment plant?
>
> (2) If the latter, how far up the collection system does NPDES jurisdiction reach, *i.e.*, where does the "collection system" end and the "user" begin?

2 The decision is available on the Board's website via the following link: http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/30b93f139d3788908525706c005185b4/34e841c87f346d94852577360068976f!OpenDocument.

(3) Do municipal satellite collection systems "discharge [ ] a pollutant" within the meaning of the statute and regulations?

(4) Are municipal satellite collection systems "indirect dischargers" and thus excluded from NPDES permitting requirements?

(5) Is the Region's rationale for regulating municipal satellite collection systems as co-permittees consistent with the references to "municipality" in the regulatory definition of POTW, and the definition's statement that "[t]he term also means the municipality…which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works"?

(6) Is the Region's rationale consistent with the permit application and signatory requirements under NPDES regulations?

See *Blackstone,* slip op**.** at 18, 20, n. 17.

This regional interpretative statement is, in part, a response to the Board's decision. It details the legal and policy bases for regulating publicly owned treatment works ("POTWs") that include municipal satellite collection systems through a co-permittee structure. Region 1's analysis is divided into five sections. First, the Region provides context for the co-permitting approach by briefly describing the health and environmental impacts associated with poorly maintained sanitary sewer systems. Second, the Region outlines its evolving permitting practice regarding regionally integrated POTWs, particularly its attempts to ensure that such entity's municipal satellite collection systems are properly maintained and operated. Third, the Region explains the legal authority to include municipal satellite collection systems as co-permittees when permitting regionally integrated POTWs. In this section, the Region answers the questions posed by the Board in the order presented above. Fourth, the Region sets forth the basis for the specific conditions to which the municipal satellite collection systems will be subject as co-permittees. Finally, the Region discusses other considerations informing its decision to employ a co-permittee structure when permitting regionally integrated POTWs.

I. Background

A sanitary sewer system (SSS) is a wastewater collection system owned by a state or municipality that conveys domestic, industrial and commercial wastewater (and limited amounts of infiltrated groundwater and some storm water runoff) to a POTW.3 *See* 40 C.F.R. § 35.2005(b)(37) (defining "sanitary sewer"). The purpose of these systems is to transport wastewater uninterrupted from its source to a treatment facility. Developed areas that are served by sanitary sewers often also have a separate storm sewer system (*e.g.*, storm drains) that collects and conveys runoff, street wash waters and drainage and discharges them directly to a receiving water (*i.e.*, without treatment at a POTW). While sanitary sewers are not designed to collect large amounts of runoff from precipitation events or provide widespread drainage, they typically are built with some allowance for higher flows that occur during periods of high groundwater and storm

3 *See generally* Report to Congress: Impacts and Control of CSOs and SSOs (EPA 833-R-04-001) (2004), from which EPA Region 1 has drawn this background material.

events. They are thus able to handle minor and controllable amounts of extraneous flow (*i.e.*, inflow and infiltration, or I/I) that enter the system. Inflow generally refers to water other than wastewater—typically precipitation like rain or snowmelt—that enters a sewer system through a direct connection to the sewer. Infiltration generally refers to other water that enters a sewer system from the ground, for example through defects in the sewer.

Municipal sanitary sewer collection systems can consist of a widespread network of pipes and associated components (*e.g.*, pump stations). These systems provide wastewater collection service to the community in which they are located. In some situations, the municipality that owns the collector sewers may not provide treatment of wastewater, but only conveys its wastewater to a collection system that is owned and operated by a different municipal entity (such as a regional sewer district). This is known as a satellite community. A "satellite" community is a sewage collection system owner/operator that does not have ownership of the treatment facility and the wastewater outfall but rather the responsibility to collect and convey the community's wastewater to a POTW treatment plant for treatment. *See* 75 Fed. Reg. 30395, 30400 (June 1, 2010).

Municipal sanitary sewer collection systems play a critical role in protecting human health and the environment. Proper operation and maintenance of sanitary sewer collection systems is integral to ensuring that wastewater is collected, transported, and treated at POTW treatment plants. Through effective operation and maintenance, collection system operators can maintain the capacity of the collection system; reduce the occurrence of temporary problem situations such as blockages; protect the structural integrity and capacity of the system; anticipate potential problems and take preventive measures; and indirectly improve treatment plant performance by minimizing I/I-related hydraulic overloading.

Despite their critical role in the nation's infrastructure, many collection systems exhibit poor performance and are subjected to flows that exceed system capacity. Untreated or partially treated overflows from a sanitary sewer system are termed "sanitary sewer overflows" (SSOs). SSOs include releases from sanitary sewers that reach waters of the United States as well as those that back up into buildings and flow out of manholes into city streets.

There are many underlying reasons for the poor performance of collection systems. Much of the nation's sanitary sewer infrastructure is old, and aging infrastructure has deteriorated with time. Communities also sometimes fail to provide capacity to accommodate increased sewage delivery and treatment demand from increasing populations. Furthermore, institutional arrangements relating to the operation of sewers can pose barriers to coordinated action, because many municipal sanitary sewer collection systems are not entirely owned or operated by a single municipal entity.

I.

II. The performance and efficiency of municipal sanitary sewer collection systems influence the performance of sewage treatment plants. When the structural integrity of a municipal sanitary sewer collection system deteriorates, large quantities of infiltration (including rainfall-induced infiltration) and inflow can enter the collection system, causing it to overflow. These extraneous flows are among the most serious and widespread operational challenges confronting treatment works.4

4 In a 1989 Water Pollution Control Federation survey, 1,003 POTWs identified facility performance problems. Infiltration

III. Infiltration can be long-term seepage of water into a sewer system from the water table. In some systems, however, the flow characteristics of infiltration can resemble those of inflow, *i.e.*, there is a rapid increase in flow during and immediately after a rainfall event, due, for example, to rapidly rising groundwater. This phenomenon is sometimes referred to as rainfall-induced infiltration.

Sanitary sewer systems can also overflow during periods of normal dry weather flows. Many sewer system failures are attributable to natural aging processes or poor operation and maintenance. Examples include years of wear and tear on system equipment such as pumps, lift stations, check valves, and other moveable parts that can lead to mechanical or electrical failure; freeze/thaw cycles, groundwater flow, and subsurface seismic activity that can result in pipe movement, warping, brittleness, misalignment, and breakage; and deterioration of pipes and joints due to root intrusion or other blockages.

Inflow and infiltration impacts are often regional in nature. Satellite collection systems in the communities farthest from the POTW treatment plant can cause sanitary sewer overflows ("SSOs") in communities between them and the treatment plant by using up capacity in the interceptors. This can cause SSOs in the interceptors themselves or in the municipal sanitary sewers that lead to them. The implication of this is that corrective solutions often must also be regional in scope to be effective.

The health and environmental risks attributed to SSOs vary depending on a number of factors including location and season (potential for public exposure), frequency, volume, the amount and type of pollutants present in the discharge, and the uses, conditions, and characteristics of the receiving waters. The most immediate health risks associated with SSOs to waters and other areas with a potential for human contact are associated with exposure to bacteria, viruses, and other pathogens.

Human health impacts occur when people become ill due to contact with water or ingestion of water or shellfish that have been contaminated by SSO discharges. In addition, sanitary sewer systems can back up into buildings, including private residences. These discharges provide a direct pathway for human contact with untreated wastewater. Exposure to land-based SSOs typically occurs through the skin via direct contact. The resulting diseases are often similar to those associated with exposure through drinking water and swimming (*e.g.*, gastroenteritis), but may also include illness caused by inhaling microbial pathogens. In addition to pathogens, raw sewage may contain metals, synthetic chemicals, nutrients, pesticides, and oils, which also can be detrimental to the health of humans and wildlife.

II. Region 1 Past Practice of Permitting POTWs that Include Municipal Satellite Collection Systems

Region 1's practice in permitting regionally integrated POTWs has developed in tandem with its increasing focus on addressing I/I in sewer collection systems, in response to the concerns outlined above. Up to the early 1990s, POTW permits issued by Region 1 generally did not include specific requirements for collection systems. When I/I and the related issue of SSOs became a focus of concern both nationally and within the region in the mid-1990s, Region 1 began adding general requirements to POTW permits

---

and inflow was the most frequently cited problem, with 85 percent of the facilities reporting I/I as a problem. I/I was cited as a major problem by 41 percent of the facilities (32 percent as a periodic problem).

that required the permittees to "eliminate excessive infiltration and inflow" and provide an annual "summary report" of activities to reduce I/I. As the Region gathered more information and gained more experience in assessing these reports and activities, it began to include more detailed requirements and reporting provisions in these permits.

MassDEP also engaged in a parallel effort to address I/I, culminating in 2001 with the issuance of MassDEP Policy No. BRP01-1, "Interim Infiltration and Inflow Policy." Among other provisions, this policy established a set of standard NPDES permit conditions for POTWs that included development of an I/I control plan (including funding sources, identification and prioritization of problem areas, and public education programs) and detailed annual reporting requirements (including mapping, reporting of expenditures and I/I flow calculations). Since September 2001, these requirements have been the basis for the standard operation and maintenance conditions related to I/I.

Regional treatment plants presented special issues as I/I requirements became more specific, as it is generally the member communities, rather than the regional sewer district, that own the collection systems that are the primary source of I/I. Before the focus on I/I, POTW permits did not contain specific requirements related to the collection system component of POTWs. Therefore, when issuing NPDES permits to authorize discharges from regionally integrated treatment POTWs, Region 1 had generally only included the legal entity owning and/or operating the regionally centralized wastewater treatment plant as the permittee. As the permit conditions were focused on the treatment plant and its effluent discharge, a permit issued only to the owner or operator of the treatment plant was sufficient to ensure that permit conditions could be fully implemented and that EPA had authority to enforce the permit requirements.

In implementing the I/I conditions, Region 1 initially sought to maintain the same structure, placing the responsibility on the regional sewer district to require I/I activities by the contributing systems and to collect the necessary information from those systems for submittal to EPA. MassDEP's 2001 Interim I/I Policy reflected this approach, containing a condition for regional systems:

> ((FOR REGIONAL FACILITIES ONLY)) The permittee shall require, through appropriate agreements, that all member communities develop and implement infiltration and inflow control plans sufficient to ensure that high flows do not cause or contribute to a violation of the permittee's effluent limitations, or cause overflows from the permittee's collection system.

As existing NPDES permittees, the POTW treatment plants were an obvious locus of regulation. The Region assumed the plants would be in a position to leverage preexisting legal and/or contractual relationships with the satellite collection systems they serve to perform a coordinating function, and that utilizing this existing structure would be more efficient than establishing a new system of direct reporting to EPA by the collection system owners. The Region also believed that the owner/operator of the POTW treatment plant would have an incentive to reduce flow from contributing satellite systems because doing so would improve treatment plant performance and reduce operation costs. While relying on this cooperative approach, however, Region 1 also asserted that it had the authority to require that POTW collection systems be included as NPDES permittees and that it would do so if it proved necessary. Indeed, in 2001 Region 1 acceded to Massachusetts Water Resources Authority's ("MWRA") request to include as co-permittees the contributing systems to the MWRA Clinton wastewater treatment plant ("WWTP") based on evidence provided by MWRA that its relationship with those communities would not permit it to run an effective I/I reduction program for these collection systems. Region 1 also put

municipal satellite collection systems on notice that they would be directly regulated through legally enforceable permit requirements if I/I reductions were not pursued or achieved.

In time, the Region realized that its failure to assert direct jurisdiction over municipal satellite dischargers was becoming untenable in the face of mounting evidence that cooperative (or in some cases non-existent) efforts on the part of the POTW treatment plant and associated satellites were failing to comprehensively address the problem of extraneous flow entering the POTW. The ability and/or willingness of regional sewer districts to attain meaningful I/I efforts in their member communities varied widely. The indirect structure of the requirements also tended to make it difficult for EPA to enforce the implementation of meaningful I/I reduction programs.

It became evident to Region 1 that a POTW's ability to comply with CWA requirements depended on successful operation and maintenance of not only the treatment plant but also the collection system. For example, the absence of effective I/I reduction and operation/maintenance programs was impeding the Region's ability to prevent or mitigate the human health and water quality impacts associated with SSOs. Additionally, these excess flows stressed POTW treatment plants from a hydraulic capacity and performance standpoint, adversely impacting effluent quality. *See Exhibit B* (Analysis of extraneous flow trends and SSO reporting for representative systems). Addressing these issues in regional systems was essential, as these include most of the largest systems in terms of flow, population served and area covered.

The Region's practice of imposing NPDES permit conditions on the municipal collection systems in addition to the treatment plant owner/operator represents a necessary and logical progression in its continuing effort to effectively address the serious problem of I/I in sewer collection systems.[5] In light of its past permitting experience and the need to effectively address the problem of extraneous flow on a system-wide basis, Region 1 decided that it was necessary to refashion permits issued to regionally integrated POTWs to include all owners/operators of the treatment works (*i.e.*, the regional centralized POTW treatment plant and the municipal satellite collection systems).[6] Specifically, Region 1

---

5 Although the Region has in the past issued NPDES permits only to the legal entities owning and operating the wastewater treatment plant (*i.e.*, only a portion of the "treatment works"), the Region's reframing of permits to include municipal satellite collection systems does not represent a break or reversal from its historical legal position. Region 1 has never taken the legal position that the satellite collection systems are beyond the reach of the CWA and the NPDES permitting program. Rather, the Region as a matter of discretion had merely never determined it necessary to exercise its statutory authority to directly reach these facilities in order to carry out its NPDES permitting obligations under the Act.

Although the Region adopted a co-permittee structure to deal I/I problems in the municipal satellite collection systems, that decision does nothing to foreclose a permitting authority from opting for alternative permitting approaches that are consistent with applicable law. Each permitting authority has the discretion to determine which permitting approach best achieves the requirements of the Act based on the facts and circumstances before it. Upon determining that direct regulation of a satellite collection system via an NPDES permit is warranted, a permitting authority has the discretion to make the owner or operator of the collection system a co-permittee, or to cover it through an individual or general permit. Nothing in EPA regulations precludes the issuance of a separate permit to an entity that is part of the larger system being regulated. As in the pretreatment program, there are many ways to ensure that upstream collection systems are adequately contributing to the successful implementation of a POTW's permit requirements.

6 EPA has "considerable flexibility in framing the permit to achieve a desired reduction in pollutant discharges." *Natural Resources Defense Council, Inc. v. Costle*, 568 F.2d 1369, 1380 (D.C.Cir.1977). ("[T]his ambitious statute is not hospitable to the concept that the appropriate response to a difficult pollution problem is not to try at all.").

determined that the satellite systems should be subject as co-permittees to a limited set of O&M-related conditions on permits issued for discharges from regionally integrated treatment works. These conditions pertain only to the portions of the POTW collection system that the satellites own. This ensures maintenance and pollution control programs are implemented with respect to all portions of the POTW. Accordingly, since 2005, Region 1 has generally included municipal satellite collection systems as co-permittees for limited purposes while it required the owner/operator of the treatment plant, as the primary permittee, to comply with the full array of NPDES requirements, including secondary treatment and water-quality based effluent limitations. The Region has identified 25 permits issued by the Region to POTWs in New Hampshire and Massachusetts that include municipal satellite collection systems as co-permittees. *See Exhibit A*. The 25 permits include a total of 55 satellite collection systems as co-permittees.

III. Legal Authority

The Region's prior and now superseded practice of limiting the permit only to the legal entity owning and/or operating the wastewater treatment plant had never been announced as a regional policy or interpretation. Similarly, the Region's practice of imposing NPDES permit conditions on the municipal collection systems in addition to the treatment plant owner/operator has also never been expressly announced as a uniform, region-wide policy or interpretation. Upon consideration of the Board's decision, described above, Region 1 has decided to supply a clearer, more detailed explanation regarding its use of a co-permittee structure when issuing NPDES permits to regionally integrated POTWs. In this section, the Region addresses the questions posed by the Board in the *Upper Blackstone* decision referenced above.

(1) In the case of a regionally integrated POTW composed of municipal satellite collection systems owned by different entities and a treatment plant owned by another, is the scope of NPDES authority limited to owners/operators of the POTW treatment plant, or does the authority extend to owners/operators of the municipal satellite collection systems that convey wastewater to the POTW treatment plant?

The scope of NPDES authority extends beyond the owners/operators of the POTW treatment plant to include the owners/operators of the municipal satellite collection systems conveying wastewater to the treatment plant for the reasons discussed below.

The CWA prohibits the "discharge of any pollutant by any person" from any point source to waters of the United States, except, *inter alia,* in compliance with an NPDES permit issued by EPA or an authorized state pursuant to Section 402 of the CWA. CWA § 301, 402(a)(1); 40 C.F.R. § 122.1(b).

"Publicly owned treatment works" are facilities that, when they discharge, are subject to the NPDES program. Statutorily, POTWs as a class must meet performance-based effluent limitations based on available wastewater treatment technology. *See* CWA § 402(a)(1) ("[t]he Administrator may…issue a permit for the discharge of any pollutant….upon condition that such discharge will meet (A) all applicable requirements under [section 301]…"); § 301(b)(1)(B) ("In order to carry out the objective of this chapter there shall be achieved…for publicly owned treatment works in existence on July 1, 1977...effluent

limitations based upon secondary treatment[.]"); *see also* 40 C.F.R. pt 133. In addition to secondary treatment requirements, POTWs are also subject to water quality-based effluent limits if necessary to achieve applicable state water quality standards. *See* CWA § 301(b)(1)(C). *See also* 40 C.F.R. § 122.44(a)(1) ("…each NPDES permit shall include…[t]echnology-based effluent limitations based on: effluent limitations and standards published under section 301 of the Act") and (d)(1) (same for water quality standards and state requirements). NPDES regulations similarly identify the "POTW" as the entity subject to regulation. *See* 40 C.F.R. § 122.21(a) (requiring "new and existing POTWs" to submit information required in 122.21(j)," which in turn requires "all POTWs," among others, to provide permit application information).

The CWA and its implementing regulations broadly define "POTW" to include not only wastewater treatment plants but also the sewer systems and associated equipment that collect wastewater and convey it to the treatment plants. When a municipal satellite collection system conveys wastewater to the POTW treatment plant, the scope of NPDES authority extends to both the owner/operators of the treatment facility and the municipal satellite collection system, because the POTW is discharging pollutants.

Under section 212 of the Act,

> "(2)(A) The term 'treatment works' means any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature to implement section 1281 of this title, or necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, outfall sewers, *sewage collection systems* [emphasis added], pumping, power, and other equipment, and their appurtenances; extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and any works, including site acquisition of the land that will be an integral part of the treatment process (including land used for the storage of treated wastewater in land treatment systems prior to land application) or is used for ultimate disposal of residues resulting from such treatment.
>
> (B) In addition to the definition contained in subparagraph (A) of this paragraph, 'treatment works' means any other method or system for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste, including storm water runoff, or industrial waste, including waste in combined storm water and *sanitary sewer systems* [emphasis added]. Any application for construction grants which includes wholly or in part such methods or systems shall, in accordance with guidelines published by the Administrator pursuant to subparagraph (C) of this paragraph, contain adequate data and analysis demonstrating such proposal to be, over the life of such works, the most cost efficient alternative to comply with sections 1311 or 1312 of this title, or the requirements of section 1281 of this title."

EPA has defined POTW as follows:

> "The term *Publicly Owned Treatment Works* or *POTW* [emphasis in original]…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."

See 40 C.F.R. §§ 403.3(q) and 122.2.

Thus, under the CWA and its implementing regulations, wastewater treatment plants and the sewer systems and associated equipment that collect wastewater and convey it to the treatment plants fall within the broad definition of "POTW."

The statutory and regulatory definitions plainly encompass both the POTW treatment plant and municipal satellite collection systems conveying wastewater to the POTW treatment plant even if the treatment plant and the satellite collection system have different owners. Municipal satellite collection systems indisputably fall within the definition of a POTW. First, they are "sewage collection systems" under section 212(A) and "sanitary sewer systems" under section 212(B). Second, they convey wastewater to a POTW treatment plant for treatment under 40 C.F.R. § 403.3(q)). The preamble to the rule establishing the regulatory definition of POTW supports the reading that the treatment plant comprises only one portion of the POTW. *See* 44 Fed. Reg. 62260, 62261 (Oct. 29, 1979).7 Consistent with Region 1's interpretation, courts have similarly taken a broad reading of the terms treatment works and POTW.8 Finally, EPA has long recognized that a POTW can be composed of different parts, and that sometimes direct control is required under a permit for all parts of the POTW system, not just the POTW treatment plant segment. *See Multijurisdictional Pretreatment Programs Guidance Manual,* Office off Water (4203) EPA 833-B-94-005 (June 1994) at 19. ("If the contributing jurisdiction owns or operates the collection system within its boundaries, then it is a co-owner or operator of the POTW. As such, it can be included on the POTW's NPDES permit and be required to develop a pretreatment program. Contributing jurisdictions should be made co-permittees where circumstances or experience indicate that it is necessary to ensure adequate pretreatment program implementation."). The Region's interpretation articulated here is consistent with the precepts of the pretreatment program, which pertains to the same regulated entity, i.e., the POTW.9

---

7 "A new provision…defining the term 'POTW Treatment Plant' has been added to avoid an ambiguity that now exists whenever a reference is made to a POTW (publicly owned treatment works). …[T]he existing regulation defines a POTW to include both the treatment plant and the sewer pipes and other conveyances leading to it. As a result, it is unclear whether a particular reference is to the pipes, the treatment plant, or both. The term "POTW treatment plant" will be used to designate that portion of the municipal system which is actually designed to provide treatment to the wastes received by the municipal system."

8 *See, e.g.*, *United States v. Borowski, 977 F.2d 27, 30 n.5* (1st Cir. 1992) ("We read this language [POTW definition] to refer to such sewers, pipes and other conveyances that are publicly owned. Here, for example, the City of Burlington's sewer is included in the definition because it conveys waste water to the Massachusetts Water Resource Authority's treatment works."); *Shanty Town Assoc. v. Envtl. Prot. Agency, 843 F.2d 782, 785* (4th Cir. 1988) ("As defined in the statute, a 'treatment work' need not be a building or facility, but can be any device, system, or other method for treating, recycling, reclaiming, preventing, or reducing liquid municipal sewage and industrial waste, including storm water runoff.") (citation omitted); *Comm. for Consideration Jones Fall Sewage System v. Train,* 375 F. Supp. 1148, 1150-51 (D. Md. 1974) (holding that NPDES wastewater discharge permit coverage for a wastewater treatment plant also encompasses the associated sanitary sewer system and pump stations under § 1292 definition of "treatment work").

9 The fact that EPA has endorsed a co-permittee approach in addressing pretreatment issues in situations where the downstream treatment plant was unable to adequately regulate industrial users to the collection system in another jurisdiction reinforces the approach taken here.

Thus, under the statutory and regulatory definitions, a satellite collection system owned by one municipality that transports municipal sewage to another portion of the POTW owned by another municipality can be classified as part of a single integrated POTW system discharging to waters of the U.S.

(2) If the latter, how far up the collection system does NPDES jurisdiction reach, i.e., where does the "collection system" end and the "user" begin?

NPDES jurisdiction extends beyond the treatment plant to the outer boundary of the municipally-owned sewage collection systems, that is, to the outer bound of those sewers whose purpose is to transport wastewater for others to a POTW treatment plant for treatment, as explained below.

As discussed in response to Question 1 above, the term "treatment works" is defined to include "sewage collection systems." CWA § 212. In order to identify the extent of the sewage collection system for purposes of co-permittee regulation—*i.e.*, to identify the boundary between the portions of the collection system that are subject to NPDES requirements and those that are not—Region 1 is relying on EPA's regulatory interpretation of the term "sewage collection system." In relevant part, EPA regulations define "sewage collection system" at 40 C.F.R. § 35.905 as:

> ".... each, and all, of the common lateral sewers, within a publicly owned treatment system, which are primarily installed to receive waste waters directly from facilities which convey waste water from individual structures or from private property and which include service connection "Y" fittings designed for connection with those facilities. The facilities which convey waste water from individual structures, from private property to the public lateral sewer, or its equivalent, are specifically excluded from the definition…."

Put otherwise, a municipal satellite collection system is subject to NPDES jurisdiction under the Region's approach insofar as it transports wastewater for others to a POTW treatment plant for treatment. This test (i.e., common sewer installed to receive and carry waste water from others) allows Region 1 to draw a principled, predictable and readily ascertainable boundary between the POTW's collection system and the users. This test would exclude, for example, single user branch drainpipes that collect and transport wastewater from plumbing fixtures in a commercial building or public school to the common lateral sewer, just as service connections from private residential structures to lateral sewers are excluded. This type of infrastructure would not be considered part of the collection system, because it is not designed to receive and carry wastewaters from other users. Rather, it is designed to transport its users' wastewater to such a common collection system at a point further down the sanitary sewer system.

EPA's reliance on the definition of "sewage collection system" from the construction grants regulations for interpretative guidance is reasonable because these regulations at 40 C.F.R. Part 35, subpart E pertain to grants specifically for POTWs, the entity that is the subject of this NPDES policy. Additionally, the term "sewage collection systems" expressly appears in the definition of treatment works under section 212 of the Act as noted above.

(3) Do municipal satellite collection systems "discharge [] a pollutant" within the meaning of the statute and regulations?

Yes, the collection system "discharges a pollutant" because it adds pollutants to waters of the U.S. from a point source. This position is consistent with the definition of "discharge of a pollutant" at 40 C.F.R. § 122. 10 The fact that a collection system may be located in the upper reaches of the POTW and not necessarily near the ultimate discharge point at the treatment plant, or that its contribution may be commingled with other wastewater flows prior to the discharge point, is not material to the question of whether it "discharges" a pollutant and consequently may be subject to conditions of an NPDES permit issued for discharges from the POTW.11
40 C.F.R. § 122.2 defines "discharge of a pollutant" as follows:

> "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.'"

POTW treatment plants as well as the municipal satellite collection systems that comprise portions of the larger POTW and that transport flow to the POTW treatment plant clearly add pollutants or combinations of pollutants to waters of the U.S. and to waters of the "contiguous zone" and are thus captured under sections (a) and (b) of this definition.12

---

10 This position differs from that taken by the Region in the *Upper Blackstone* litigation. There, the Region stated that the treatment plant was the discharging entity for regulatory purposes. The Region has clarified this view upon further consideration of the statute, EPA's own regulations and case law and determined that a municipal satellite collection system in a POTW is a discharging entity for regulatory purposes.

11 As explained more fully below, non-domestic contributors of pollutants to the collection system and treatment plant do not require NPDES permits because they are regulated through the pretreatment program under Section 307 of the CWA and are specifically excluded from needing an NPDES permit. 40 C.F.R. § 122.3(c).

12 Some municipal satellite collection systems have argued that the addition of pollutants to waters of the United States from pipes, sewers or other conveyances that go to a *treatment plant* are not a "discharge of a pollutant" under 40 C.F.R. § 122.2. This is erroneous. Only one category of such discharges is excluded: indirect discharges. For the reasons explained below in section 4, the satellite system discharges at issue here are not indirect discharges. It is correct that the discharge of wastewater that does not go to the treatment works is included as a discharge under the definition. However, interpreting the *inclusion* of such discharges under the definition as categorically *excluding* the conveyance of other discharges that do go to the treatment works is not a reasonable reading of the regulation. This argument is also flawed in that it incorrectly equates "treatment works," the term used in the definition above, with "treatment plant." To interpret "treatment works" as it appears in the regulatory definition of "discharge of a pollutant" as consisting of only the POTW treatment plant would be inconsistent with the definition of "treatment works" at 40 C.F.R. § 403.3(q), which expressly includes the collection system. *See also* § 403.3(r) (defining "POTW Treatment Plant" as "*that portion* [emphasis added] of the POTW which is designed to provide treatment

(4) Are municipal satellite collection systems "indirect dischargers" and thus excluded from NPDES permitting requirements?

No, municipal satellite collection systems that convey wastewater from domestic sources to another portion of the POTW for treatment are not "indirect dischargers" to the POTW.

Section 307(b) of the Act requires EPA to establish regulatory pretreatment requirements to prevent the "introduction of pollutants into treatment works" that interfere, pass through or are otherwise incompatible with such works. Section 307 is implemented through the General Pretreatment Regulations for Existing and New Sources of Pollution (40 C.F.R. Part 403) and categorical pretreatment standards (40 C.F.R. Parts 405-471). Section 403.3(i) defines "indirect discharger" as "any non-domestic" source that introduces pollutants into a POTW and is regulated under pretreatment standards pursuant to CWA § 307(b)-(d). The source of an indirect discharge is termed an "industrial user." *Id*. at § 403.3(j). Under regulations governing the NPDES permitting program, the term "indirect discharger" is defined as "a non-domestic discharger introducing 'pollutants' to a 'publicly owned treatment works.'" 40 C.F.R. § 122.2. Indirect dischargers are excluded from NPDES permit requirements at 40 C.F.R. § 122.3(c), which provides, "The following discharges do not require an NPDES permit: . . . The introduction of sewage, industrial wastes or other pollutants into publicly owned treatment works by indirect dischargers."

Municipal satellite collection satellite systems are not indirect dischargers as that term is defined under part 122 or 403 regulations. Unlike indirect dischargers, municipal satellite collection systems are not a non-domestic discharger "introducing pollutants" to POTWs as defined in 40 C.F.R. § 122.2. Instead, they themselves fall within the definition of POTW, whose components consist of the municipal satellite collection system owned and operated by one POTW and a treatment system owned and operated by another POTW. Additionally, they are not a non-domestic *source* regulated under section 307(b) that introduces pollutants into a POTW within the meaning of § 403.3(i). Rather, they are part of the POTW and collect and convey municipal sewage from industrial, commercial and domestic users of the POTW.

The Region's determination that municipal satellite collection systems are not indirect dischargers is, additionally, consistent with the regulatory history of the term indirect discharger. The 1979 revision of the part 122 regulations defined "indirect discharger" as "a non-municipal, non-domestic discharger introducing pollutants to a publicly owned treatment works, which introduction does not constitute a 'discharge of pollutants'…" *See* National Pollutant Discharge Elimination System, 44 Fed. Reg. 32854, 32901 (June 7, 1979). The term "non-municipal" was removed in the Consolidated Permit Regulations, 45 Fed. Reg. 33290, 33421 (May 19, 1980) (defining "indirect discharger" as "a nondomestic discharger…"). Although the change was not explained in detail, the substantive intent behind this provision remained the same. EPA characterized the revision as "minor wording changes." 45 Fed. Reg. at 33346 (Table VII: "Relationship of June 7[, 1979] Part 122 to Today's Regulations"). The central point again is that under any past or present regulatory incarnation, municipal satellite collection systems, as POTWs, are not within the definition of "indirect discharger," which is limited to non-domestic sources subject to section 307(b) that introduce pollutants to POTWs.

(5) How is the Region's rationale consistent with the references to "municipality" in the regulatory

---

(including recycling and reclamation) of municipal sewage and industrial waste.")

definition of POTW found at 40 C.F.R. § 403.3(q), and the definition's statement that "[t]he term also means the municipality….which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works?"

There is no inconsistency between the Region's view that municipally-owned satellite collection systems fall within the definition of POTW, and the references to municipality in 40 C.F.R. § 403.3(q), including the final sentence of the regulatory definition of POTW in the pretreatment regulations.

The Region's co-permitting rationale is consistent with the first part of the pretreatment program's regulatory definition of POTW, because the Region is only asserting NPDES jurisdiction over satellite collection systems that are owned by a "State or municipality (as defined by section 502(4) of the Act)." The term "municipality" as defined in CWA § 502(4) "means a city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes…" Thus, in order to qualify under this definition, a wastewater collection system need only be "owned by a State or municipality." There is no requirement that the constituent components of a regionally integrated POTW, *i.e.*, the collection system and regional centralized POTW treatment plant, be owned by the same State or municipal entity.

Furthermore, there is no inconsistency between the Region's view that a satellite collection system is part of a POTW, and the final sentence of the regulatory definition of POTW in the pretreatment regulations. As noted above, the sentence provides that "POTW" may "also" mean a municipality which has jurisdiction over indirect discharges to and discharges from the treatment works. This is not a limitation because of the use of the word "also" (contrast this with the "only if" language in the preceding sentence of the regulatory definition).

(6) How does the Region's rationale comport with the permit application and signatory requirements under NPDES regulations?

"Any person who discharges or proposes to discharge pollutants"… must comply with permit application requirements set forth in 40 C.F.R. § 122.21 ("Application for a Permit"), including the duty to apply in subsection 122.21(a). It is the operator's duty to obtain a permit. *See* 40 C.F.R. § 122.21(b). An operator of a sewage collection system in a regionally integrated treatment works is operating a portion of the POTW and thus can be asked to submit a separate permit application pursuant to § 122.21(a) (requiring applicants for "new and existing POTWs" to submit information required in 122.21(j)," which in turn requires "all POTWs," among others, to provide permit application information). In the Region's experience, however, sufficient information about the collection system can be obtained from the treatment plant operator's permit application. The NPDES permit application for POTWs solicits information concerning portions of the POTW beyond the treatment plant itself, including the collection system used by the treatment works. *See* 40 C.F.R. § 122.21(j)(1). Where this information is not sufficient for writing permit conditions that apply to a separately owned municipal satellite system, EPA can request that the satellite system to submit an application with the information required in 122.21(j), or alternatively use its authority under CWA section 308 to solicit the necessary information. Because Region 1 believes that it will typically receive information sufficient for NPDES permitting purposes from the POTW treatment plant operator's application, the Region will formalize its historical practice by issuing written waivers to exempt municipal satellite collection systems from permit application and

signatory requirements in accordance with 40 C.F.R. § 122.21(j).13 To the extent the Region requires additional information, it intends to use its information collection authority under CWA § 308.

IV. Basis for the Specific Conditions to which the Municipal Satellite Collection Systems are Subject as Co-permittees

Section 402(a) of the CWA is the legal authority for extending NPDES conditions to all portions of the municipally-owned treatment works to ensure proper operation and maintenance and to reduce the quantity of extraneous flow into the POTW. This section of the Act authorizes EPA to issue a permit for the "discharge of pollutants" and to prescribe permit conditions as necessary to carry out the provisions of the CWA, including Section 301 of the Act. Among other things, Section 301 requires POTWs to meet performance-based requirements based on secondary treatment technology, as well as any more stringent requirements of State law or regulation, including water quality standards. *See* CWA § 301(b)(1)(B),(C).

The Region imposes requirements on co-permittees when it determines that they are necessary to assure continued achievement of effluent limits based on secondary treatment requirements and state water quality standards in accordance with sections 301 and 402 of the Act, and to prevent unauthorized discharges of sewage from downstream collection systems. With respect to achieving effluent limits, the inclusion of the satellite systems as co-permittees may be necessary when high levels of I/I dilute the strength of influent wastewater and increase the hydraulic load on treatment plants, which can reduce treatment efficiency (*e.g.*, result in violations of technology-based percent removal limitations for BOD and TSS due to less concentrated influent, or violation of other technology-based or water quality-based effluent limitations due to reduction in treatment efficiency). Excess flows from an upstream collection system can also lead to bypassing a portion of the treatment process, or in extreme situations make biological treatment facilities inoperable (*e.g.*, wash out the biological organisms that treat the waste).

By preventing excess flows, the co-permittee requirements will also reduce water quality standards violations that result from SSOs by lessening their frequency and extent. *See Exhibit B* (Analysis of extraneous flow trends and SSO reporting for representative systems). SSOs that reach waters of the U.S. are discharges in violation of section 301(a) of the CWA to the extent not authorized by an NPDES permit.

Imposing standard permit conditions on the satellite communities may be necessary to give full effect to some of the standard permit conditions applicable to all NPDES permits at 40 C.F.R. § 122.41 . To illustrate, NPDES permitting regulations require standard conditions that "apply to all NPDES permits," pursuant to 40 C.F.R. § 122.41, including a duty to mitigate and to 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 the permit." *Id.* at § 122.41(d), (e). If the owner or operator of a downstream POTW treatment plant is unable, due to legal constraints for example, or unwilling to ensure that upstream collection systems are implementing requirements concerning the collection system, such as I/I requirements, making the upstream POTW collection system subject to its

13 EPA may waive applications for municipal satellite collection systems, when requiring such applications may result in duplicative or immaterial information. The Regional Administrator ("RA") may waive any requirement of this paragraph if he or she has access to substantially identical information. 40 C.F.R. § 122.21(j). *See generally*, 64 Fed. Reg. 42440 (August 4, 1999). The RA may also waive any application requirement that is not of material concern for a specific permit. *Id.*

own permit requirements may be the only or best available option to give full effect to these permit obligations.

V. Conclusion

For all the reasons above, Region 1 has determined that it is reasonable to, as necessary, directly regulate municipal satellite collection systems as co-permittees when issuing NPDES permits for discharges from regionally integrated treatment works.

Exhibit A

Name	Issue Date
Massachusetts Water Resources Authority – Clinton (NPDES Permit No. MA0100404)	September 27, 2000
City of Brockton (NPDES Permit No. MA0101010)	May 11, 2005
City of Marlborough (NPDES Permit No. MA0100480)	May 26, 2005
Westborough Wastewater Treatment Plant (NPDES Permit No. MA0100412)	May 20, 2005
Lowell Regional Wastewater Utilities (NPDES Permit No. MA0100633)	September 1, 2005
Town of Webster Sewer Department (NPDES Permit No. MA0100439)	March 24, 2006
Town of South Hadley, Board of Selectmen (NPDES Permit No. MA0100455)	June 12, 2006
City of Leominster (NPDES Permit No. MA0100617)	September 28, 2006
Hoosac Water Quality District (NPDES Permit No. MA0100510)	September 28, 2006
Board of Public Works, North Attleborough (NPDES Permit No. MA0101036)	January 4, 2007
Town of Sunapee (NPDES Permit No. 0100544)	February 21, 2007
Lynn Water and Sewer Commission (NPDES Permit No. MA0100552)	March 3, 2007
City of Concord (NPDES Permit No. NH0100331)	June 29, 2007
City of Keene (NPDES Permit No. NH0100790)	August 24, 2007
Town of Hampton (NPDES No. NH0100625)	August 28, 2007
Town of Merrimack, NH (NPDES No. NH0100161)	September 25, 2007
City of Haverhill (NPDES Permit No. MA0101621)	December 5, 2007
Greater Lawrence Sanitary District (NPDES Permit No. MA0100447)	August 11, 2005
City of Pittsfield, Department of Public Works (NPDES No.	August 22, 2008

MA0101681)	
City of Manchester (NPDES No. NH0100447)	September 25, 2008
City of New Bedford (NPDES Permit No. MA0100781)	September 28, 2008
Winnipesaukee River Basin Program Wastewater Treatment Plant (NPDES Permit No. NH0100960)	June 19, 2009
City of Westfield (NPDES Permit No. MA0101800)	September 30, 2009
Hull Permanent Sewer Commission (NPDES Permit No. MA0101231)	September 1, 2009
Gardner Department of Public Works (NPDES Permit No. MA0100994)	September 30, 2009

Exhibit B

Analysis of extraneous flow trends and SSO reporting for representative systems

I. Representative POTWS

The **South Essex Sewer District (SESD)** is a regional POTW with a treatment plant in Salem, Massachusetts. The SESD serves a total population of 174,931 in six communities: Beverly, Danvers, Marblehead, Middleton, Peabody and Salem. The **Charles River Pollution Control District (CRPCD)** is a regional POTW with a treatment plant in Medway, Massachusetts. The CRPCD serves a total population of approximately 28,000 in four communities: Bellingham, Franklin, Medway and Millis. Both of these facilities have been operating since 2001 under permits that place requirements on the treatment plant to implement I/I reduction programs with the satellite collection systems, in contrast to Region 1's current practice of including the satellite collection systems as co-permittees.

II. Comparison of flows to standards for nonexcessive infiltration and I/I

Flow data from the facilities' discharge monitoring reports (DMRs) are shown in comparison to the EPA standard for nonexcessive infiltration/inflow (I/I) of 275 gpcd wet weather flow and the EPA standard for nonexcessive infiltration of 120 gallons per capita per day (gpcd) dry weather flow; the standards are multiplied by population served for comparison with total flow from the facility. See *I/I Analysis and Project Certification*, EPA Ecol. Pub. 97-03 (1985); 40 CFR 35.2005(b)(28) and (29).

Figures 1 and 2 show the Daily Maximum Flows (the highest flow recorded in a particular month) for the CRPCD and SESD, respectively, along with monthly precipitation data from nearby weather stations. Both facilities experience wet weather flows far exceeding the standard for nonexcessive I/I, particularly in wet months, indicating that these facilities are receiving high levels of inflow and wet weather infiltration.

Figure 1. CRPCD Daily Maximum Flow Compared to Nonexcessive I/I Standard

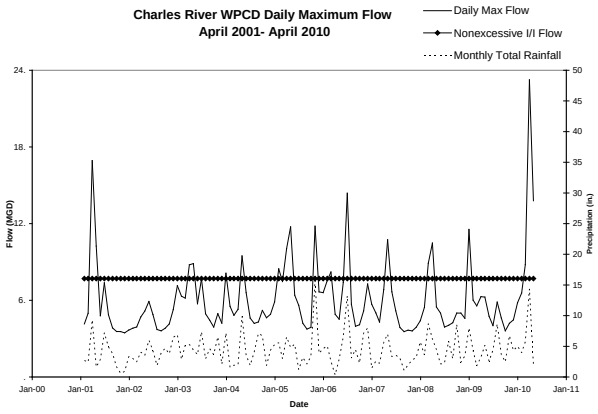
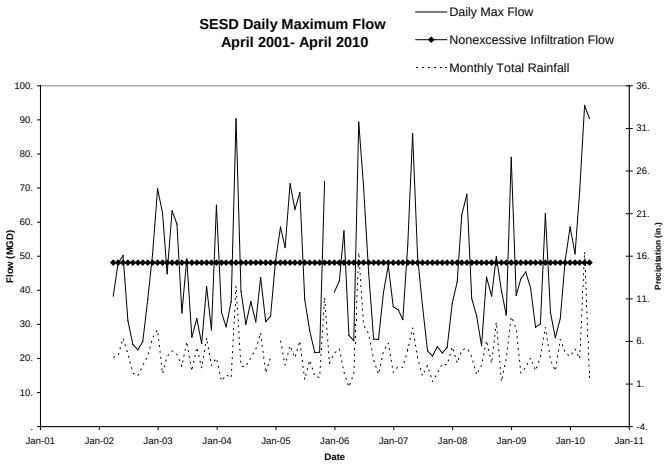


Figure 2. SESD Daily Maximum Flow Compared to Nonexcessive I/I Standard



Figures 3 and 4 shows the Average Monthly Flows for the CRPCD and SESD, which exceed the nonexcessive infiltration standard for all but the driest months. This indicates that these systems experience high levels of groundwater infiltration into the system even during dry weather.

Figure 3. CRPCD Monthly Average Flow Compared to Nonexcessive Infiltration Standard

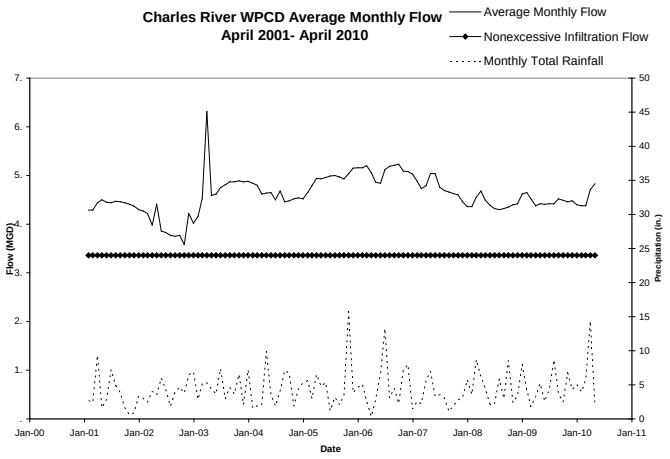
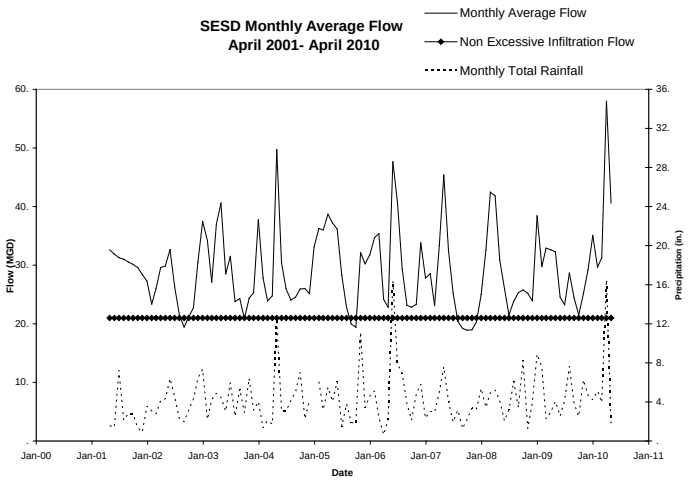


Figure 4. SESD Monthly Average Flow Compared to Nonexcessive Infiltration Standard



II. Flow Trends

Figures 5 and 6 show the trend in Maximum Daily Flows over the period during which these regional facilities have been responsible for implementing cooperative I/I reduction programs with the satellite collection systems. The Maximum Daily Flow reflects the highest wet weather flow for each month. The trend over this time period has been of increasing Maximum Daily Flow, indicating that I/I has not been reduced in either system despite the permit requirements.

Figure 5. CRPCD Daily Maximum Flow Trend

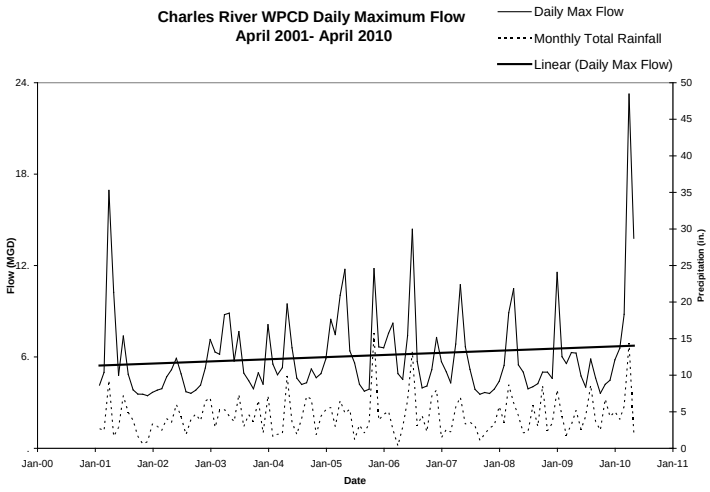
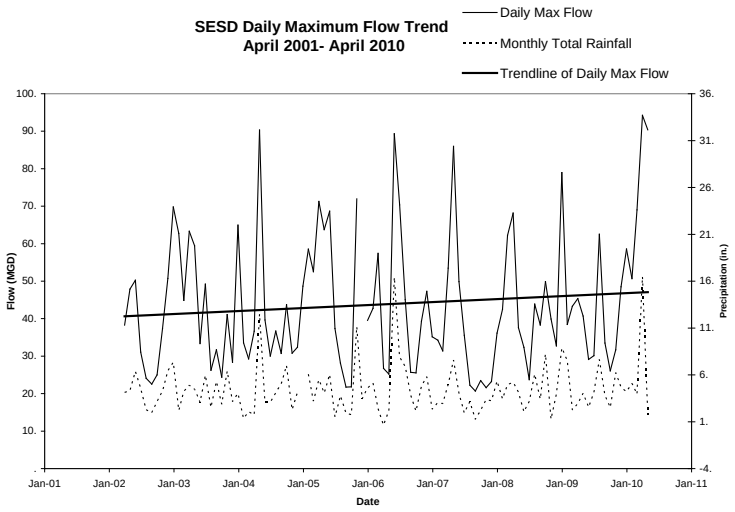


Figure 6. SESD Daily Maximum Flow Trend



III. Violations Associated with Wet Weather Flows

Both the CRPCD and SESD have experienced permit violations that appear to be related to I/I, based on their occurrence during wet weather months when excessive I/I standards are exceeded. Figure 7 shows violations of CRPCD's effluent limits for CBOD (concentration) and TSS (concentration and percent removal). Twelve of the sixteen violations occurred during months when daily maximum flows exceeded the EPA standard.

Figure 7. CRPCD CBOD and TSS Effluent Limit Violations

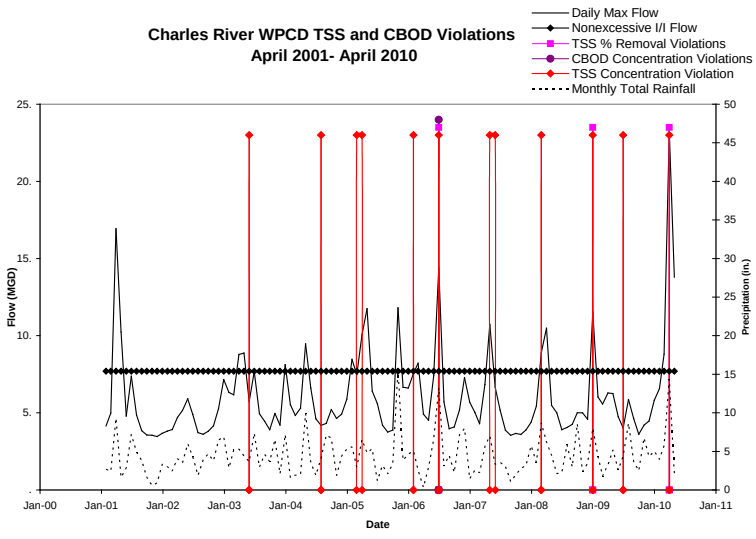
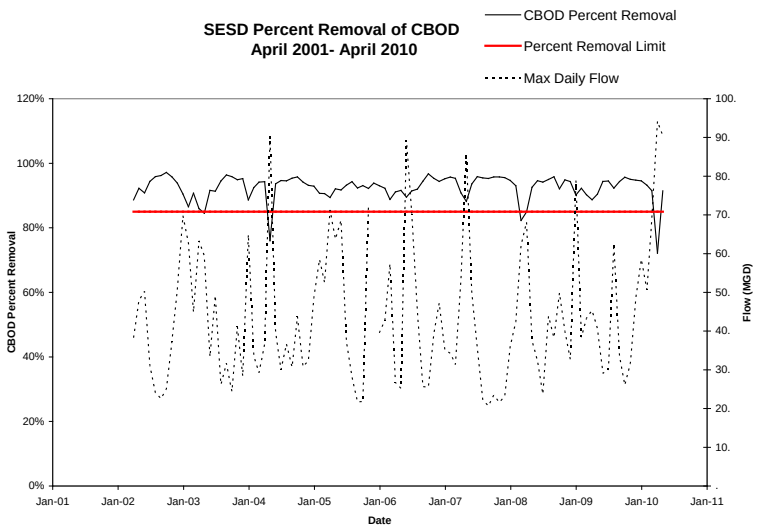


Figure 8 shows SESD's results for removal of CBOD, in percentage, as compared to maximum daily flow. SESD had three permit violations where CBOD removal fell below 85%, all during months with

high Maximum Daily Flows.

Figure 8. SESD CBOD Percent Removal



IV. SSO Reporting

In addition, both of these regional POTWs have experienced SSOs within the municipal satellite collection systems. In the SESD system, Beverly, Danvers, Marblehead and Peabody have reported SSOs between 2006 and 2008, based on data provided by MassDEP. In the CRPCD system, both Franklin and Bellingham have reported SSOs between 2006 and 2009.

Exhibit C

Form of Regional Administrator's or Authorized Delegate's Waiver of Permit Application Requirements for Municipal Satellite Collection Systems

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

Re: Waiver of Permit Application and Signatory Requirements for [Municipal Satellite Sewage Collection System]

Dear _____:

Under NPDES regulations, all POTWs must submit permit application information set forth in 40 C.F.R. § 122.21(j) unless otherwise directed. Where the Region has "access to substantially identical information," the Regional Administrator [or Authorized Delegate] may waive permit application requirements for new and existing POTWs. *Id.* Pursuant to my authority under this regulation, I am waiving NPDES permit application and signatory requirements applicable to the above-named municipal satellite collection systems.

Although EPA has the authority to require municipal satellite collection systems to submit individual permit applications, in this case I find that requiring a single permit application executed by the regional POTW treatment plant owner/operator will deliver "substantially identical information," and will be more efficient, than requiring separate applications from each municipal satellite collection system owner/operator. Municipal satellite collection system owners/operators are expected to consult and coordinate with the regional POTW treatment plant operators to ensure that any information provided to EPA about their respective entities is accurate and complete. In the event that EPA requires additional information, it may use its information collection authority under CWA § 308. 33 U.S.C. § 1318.

This notice reflects my determination based on the specific facts and circumstances in this case. It is not intended to bind the agency in future determinations where a separate permit for municipal satellites would not be duplicative or immaterial.

If you have any questions or would like to discuss this decision, please contact [EPA Contact] at [Contact Info].

Sincerely,

Regional Administrator

Corrections

Introduction

From March 14. 2014 to April 12, 2014, the United States Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection (together, the "Agencies") solicited public comments on a draft NPDES permit, #MA0100617, developed pursuant to an permit application from the City of Leominster, for the re-issuance of a National Pollutant Discharge Elimination System ("NPDES") permit to discharge treated wastewater from the Leominster Water Pollution Control Facility to the North Nashua River (Segment MA-8104) in Leominster, Massachusetts.

During the public comment period the Agencies received no formal comments. EPA did, however, note a typographical error in the Draft Permit. The correction required for this item is summarized below and are reflected in the Final Permit, where necessary.

Copies of the Final Permit may be obtained by writing or calling Michele Cobban Barden of EPA's NPDES Municipal Permits Section (OEP 06-1), Office of Ecosystem Protection, 5 Post Office Square, Suite 100, Boston, MA 02109-3912; Telephone: (617) 918-1539.

Corrections

1. A typographical error was corrected from the draft permit to the final permit. The appropriate sampling frequency for total copper is 1/month rather than 1/day as included in the draft permit. This is the same frequency as required by the previous permit. This correction has been made to Part I, Table A.1., page 3.