

Lowell Regional Wastewater Utility  
NPDES Permit  
National Pollutant Discharge Elimination System

November 2005

**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),

**Lowell Regional Wastewater Utilities, (the Permittee)**

is authorized to discharge from the facility located at

**First Street Boulevard (Route 110)  
Lowell, Massachusetts 01850 and nine Combined Sewer Overflows (CSO's)**

to receiving waters named

**Merrimack River, Concord River, and Beaver Brook**

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

The Massachusetts Municipalities of Chelmsford, Dracut, Tewksbury and, Tyngsboro (the Co-permittees) are co-permittees for specific activities required in Part I.C. Unauthorized Discharges, Part I.D. Operation Maintenance of the Sewer System and, Part I.E. Alternate Power Source. The responsible Municipal Departments are:

**Town of Chelmsford  
Sewer Commission  
50 Billerica Road  
Chelmsford, MA 01824**

**Town of Dracut  
Sewer Commission  
1196 Lakeview Avenue  
Dracut, MA 01826**

**Town of Tewksbury  
Department of Public Works  
999 Whipple Road  
Tewksbury, MA 01876**

and, **Town of Tyngsborough  
Town Hall  
25 Bryants Lane  
Tyngsborough, MA 01879**

This permit shall become effective sixty days from the date of signature.

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on August 14, 1997.

This permit consists of 16 pages in Part I including effluent limitations, monitoring requirements, Attachments A through E, and 35 pages in Part II including General Conditions and Definitions.

Signed this 1 day of *September, 2005*

  
Director  
Office of Ecosystem Protection  
Environmental Protection Agency  
Boston, MA

  
Director  
Division of Watershed Management  
Department of Environmental Protection  
Commonwealth of Massachusetts  
Boston, MA

PART I

A.1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number **035**, treated effluent. Such discharges shall be limited and monitored as specified below.

<u>EFFLUENT CHARACTERISTIC</u>		<u>EFFLUENT LIMITS</u>			<u>MONITORING REQUIREMENTS</u>		
<b>PARAMETER</b>	<b>AVERAGE MONTHLY</b>	<b>AVERAGE WEEKLY</b>	<b>AVERAGE MONTHLY</b>	<b>AVERAGE WEEKLY</b>	<b>MAXIMUM DAILY</b>	<b>MEASUREMENT FREQUENCY</b>	<b>SAMPLE<sup>3</sup> TYPE</b>
FLOW <sup>2</sup>	*****	*****	32 MGD	*****	Report MGD	CONTINUOUS	RECORDER
CBOD <sub>5</sub>	6672 lbs/Day	*****	25 mg/l	40 mg/l	50 mg/l	5/WEEK	24-HOUR COMPOSITE <sup>4,5</sup>
TSS	8006 lbs/Day	*****	30 mg/l	45 mg/l	50 mg/l	5/WEEK	24-HOUR COMPOSITE <sup>4,5</sup>
pH RANGE <sup>1</sup>	6.0 - 8.3 SU SEE PERMIT PAGE 6 OF 16, PARAGRAPH I.A.1.b.					1/DAY	GRAB
TOTAL CHLORINE RESIDUAL <sup>6,7</sup>	*****	*****	0.21 mg/l	*****	0.37 mg/l	1/Day	GRAB
TOTAL CHLORINE RESIDUAL <sup>6,7</sup>	*****	*****	REPORT mg/l	*****	REPORT mg/l	CONTINUOUS	RECORDER
FECAL COLIFORM <sup>1,6,8</sup>	*****	*****	200/100 ml	*****	400/100 ml	5/WEEK	GRAB
DISSOLVED OXYGEN (APRIL 1 - OCTOBER 31)	REPORT					1/DAY	GRAB

A.1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 035, treated effluent. Such discharges shall be limited and monitored as specified below.

<u>EFFLUENT CHARACTERISTIC</u>		<u>EFFLUENT LIMITS</u>			<u>MONITORING REQUIREMENTS</u>		
<u>PARAMETER</u>	<u>AVERAGE MONTHLY</u>	<u>AVERAGE WEEKLY</u>	<u>AVERAGE MONTHLY</u>	<u>AVERAGE WEEKLY</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE<sup>3</sup> TYPE</u>
AMMONIA NITROGEN <sup>9</sup>	*****	*****	*****	*****	REPORT	1/QUARTER	24-HOUR COMPOSITE <sup>4,5</sup>
TOTAL KJELDAHL NITROGEN <sup>9</sup>	*****	*****	*****	*****	REPORT	1/QUARTER	24-HOUR COMPOSITE <sup>4,5</sup>
NITRITE & NITRATE NITROGEN <sup>9</sup>	*****	*****	*****	*****	REPORT	1/QUARTER	24-HOUR COMPOSITE <sup>4,5</sup>
TOTAL PHOSPHORUS <sup>9</sup>	*****	*****	*****	*****	REPORT	1/MONTH	24-HOUR COMPOSITE <sup>4,5</sup>
WHOLE EFFLUENT TOXICITY <sup>10,11,12,12</sup>	Acute LC <sub>50</sub> ≥ 100% Chronic C-NOEC ≥ Report %					4/YEAR	24-HOUR COMPOSITE <sup>5</sup>

All sampling shall be representative of the effluent that is discharged through outfall 035 to the Merrimack River. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA.

Footnotes

1. Required for State Certification.
2. For flow, report maximum and minimum daily rates and total flow for each operating date. This is an annual average limit, which shall be reported as a rolling average. The first value will be calculated using the monthly average flow for the first full month ending after the effective date of the permit and the eleven previous monthly average flows. Each subsequent month's DMR will report the annual average flow that is calculated from that month and the previous 11 months.
3. All samples shall be taken at the outfall structure after the chlorine contact chamber. Any change in sampling location must be reviewed and approved in writing by EPA and MADEP. 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. Samples shall be 24-hour composites unless specified as a grab sample in 40 CFR §136.
4. Sampling required for influent and effluent.
5. A 24-hour flow proportional composite sample will consist of at least twenty four (24) grab samples taken during one working day. A working day is defined as a 24-hour period, i.e., 12:00 midnight to 12:00 midnight the following day.
6. Fecal coliform and total residual chlorine monitoring will be conducted year round. Fecal coliform is a State certification requirement. Fecal coliform discharges shall not exceed an average monthly geometric mean of 200 colony forming units per 100 ml (cfu) nor shall they exceed 400 cfu per 100 ml as a daily maximum. Fecal coliform samples shall be taken 5 times per week and be conducted concurrently with the TRC sampling described below.

The chlorination system shall include an alarm 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 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 chlorination occurred.

7. The permittee shall collect one TRC grab sample per day for compliance purposes. Any additional grab sample monitoring results shall be included in the compliance report. The results of the grab samples and a comparison to the continuous analyzer reading, including the time of the grab samples, shall be included with the DMRs.

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, or United States Environmental Protection Agency Manual of Methods of Analysis of Water and Wastes, Method 330.5. 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.

The permittee shall also report the average monthly and daily maximum discharge of TRC using data collected by the continuous TRC analyzer. The permittee shall collect and analyze a minimum of one grab sample per day for calibration purposes. One grab sample can be used for both compliance and calibration.

Four continuous recording charts, (1/week), showing weekly data shall be submitted with the monthly DMRs. The permittee shall report the average of three TRC grab sample per day, if the continuous analyzer is not working properly.

8. The permittee is required to submit an additional fecal coliform grab sample of the final combined effluent that is discharged into the receiving water when there is a bypass. This requirement applies during regular operating hours at the LRWU. Regular operating working hours are Monday through Friday, 7:00 am to 3:00 pm. The sample shall be representative of the blended effluent discharged to the river. This is a report only requirement and shall be included with the CSO/bypass reports submitted with the monthly DMRs.
9. The permittee shall report two additional samples collected during days when secondary treatment is bypassed. A high flow event is defined as flow that exceeds 19 MGD.
10. The permittee shall conduct chronic (and modified acute) toxicity tests six times per year. The chronic test may be used to calculate the acute LC<sub>50</sub> at the 48 hour exposure interval. The permittee shall test the invertebrate, Ceriodadaphnia dubia, only. Four toxicity test samples shall be collected and tests completed during the second week of January, April, July, and October. Results for these tests are to be submitted by last day of the month following the test date. An additional two samples shall be collected and acute toxicity test shall be completed on these additional samples during days when secondary treatment is bypassed. These two test may be conducted during any month of the year. The results for these tests shall be submitted by the last day of the month following the test in which they are taken. See Permit Attachment A, Toxicity Test Procedure and Protocol.

Test Dates Second Week in	Submit Results By:	Test Species	Acute Limit LC <sub>50</sub>	Chronic NOEC
January April July October	February 28 <sup>th</sup> May 31 <sup>th</sup> August 31 <sup>th</sup> November 30 <sup>th</sup>	<u>Ceriodadaphnia dubia</u> (daphnid)	≥ 100 %	≥ Report %
		See Attachment A		

11. The LC<sub>50</sub> 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 at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect.
13. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required in **Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic

approval of an alternate dilution water, including the appropriate species for use with that water.

If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this

"Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

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 6.0 nor greater than 8.3 at any time.
  - c. The discharge shall not cause objectionable discoloration, odor or turbidity of the receiving waters.
  - d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
  - e. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control.
  - f. The results of sampling for any parameter above its required frequency must also be reported.
2. All POTWs must provide adequate notice to the Director of the following:
- a. any new introduction of pollutants into that POTW from an indirect discharger in a primary industry category discharging process water; and
  - b. any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
  - c. For purposes of this paragraph, adequate notice shall include information on:
    - (1) the quantity and quality of effluent introduced into the POTW; and
    - (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.
3. Prohibitions Concerning Interference and Pass Through:
- 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 DEP 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. INDUSTRIAL 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 180 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 Guidance Manual for the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program (December, 1987).
- a. 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):
  1. 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.
  2. 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.

3. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.
  4. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.
- b. The permittee shall provide the EPA and MA DEP with an annual report describing the permittee's pretreatment program activities for the twelve 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.
  - c. 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).
  - d. 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.
  - e. The permittee must modify its pretreatment program 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) development of an enforcement response plan; (2) revise the local sewer-use ordinance or regulation, as appropriate, to be consistent with Federal Regulations; (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.B.1. If the permittee has already submitted the above documents to EPA for approval and is awaiting an EPA decision, this section shall not apply.

### C. UNAUTHORIZED DISCHARGES

The permit only authorizes discharges in accordance with its terms and conditions and only from outfalls listed in Part 1.A.1. of this permit and the combined sewer overflow outfalls identified in Attachment D of the permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and shall be reported in accordance with Part II. Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

### D. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements in Part II, and the following terms and conditions. The permittee and each co-permittee are required to complete the following activities for the collection system which it owns.

#### 1. Maintenance Staff

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.

## 2. Preventative Maintenance Program

Maintain an ongoing preventative 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.

## 3. Infiltration/Inflow Control Plan:

Develop and implement a plan to control infiltration and inflow (I/I) to the separate sewer systems. The plan shall be submitted to EPA, MA DEP and, the Lowell Regional Water and Wastewater Utilities within six months of the effective date of this permit (see page 1 of this permit for the effective date) and shall describe the permittees' and co-permittees' program for preventing I/I related effluent limit violations, and all unauthorized discharges of wastewater, including overflows and by-passes due to excessive I/I. In addition, the plan shall also prioritize the I/I removal program in areas tributary to combined sewer areas so that the frequency, duration and volume of discharges from combined sewer overflows is minimized or reduced during the effective period of this permit.

The plan shall include:

- An ongoing program to identify and remove sources of I/I. The program shall include the necessary funding level and the source(s) of funding.
- An inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts. Priority should be given to removal of public and private inflow sources that are upstream from, and potentially contribute to, known areas of sewer system backups and/or overflows.
- Identification and prioritization of areas that will provide increased aquifer recharge as the result of reduction/elimination of I/I to the system.
- An educational public outreach program for all aspects of I/I control, particularly private inflow.

Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year shall be submitted to EPA and the MADEP annually, by the anniversary date of the effective date of this permit. The summary report shall, at a minimum, include:

- A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year.
- Expenditures for any I/I related maintenance activities and corrective actions taken during the previous year.
- A map with areas identified for I/I related investigation/action in the coming year.
- A calculation of the annual average I/I, the maximum monthly I/I for the reporting year.

- A report of any *II* related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Section 1.C., Unauthorized Discharges section of this permit.

#### **E. ALTERNATE POWER SOURCE**

In order to maintain compliance with the terms and conditions of this permit, the permittee and co-permittees shall continue to provide an alternative power source with which to sufficiently operate the Publically Owned Treatment Works as defined at 40 CFR §403.3.

#### **F. COMBINED SEWER OVERFLOWS (CSO's)**

##### **1. EFFLUENT LIMITATIONS**

- a. During wet weather, the permittee is authorized to discharge storm water/wastewater from combined sewer outfalls listed in Attachment D, subject to the following effluent limitations.
  - i. The discharges shall receive treatment at a level providing Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT) to control and abate conventional pollutants and Best Available Technology Economically Achievable (BAT) to control and abate non-conventional and toxic pollutants. The EPA has made a Best Professional Judgement (BPJ) determination that BPT, BCT, and BAT for combined sewer overflow (CSO) control include the implementation of Nine Minimum Controls (NMC) specified below and detailed further in Part I.E.2. "Nine Minimum Controls, Minimum Implementation Levels" of this permit:
    1. Proper operation and regular maintenance programs for the sewer system and the combined sewer overflows.
    2. Maximum use of the collection system for storage.
    3. Review and modification of the pretreatment program to assure CSO impacts are minimized.
    4. Maximization of flow to the POTW for treatment.
    5. Prohibition of dry weather overflows from CSOs.
    6. Control of solid and floatable materials in CSO.
    7. Pollution prevention programs that focus on contaminant reduction activities.
    8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts.
    9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls. Implementation of these controls is required by the effective date of the permit. Documentation of the implementation of these controls has been submitted and is currently under review by EPA and the State. EPA and the State consider that approvable

documentation must include the minimum requirements set forth in Part I.F.2 of this Permit and additional activities the permittee can reasonably undertake.

- ii. The discharges shall not cause or contribute to violations of Federal or State Water Quality Standards.

## 2. Nine Minimum Controls, Minimum Implementation Levels

- a. The permittee must implement the nine minimum controls in accordance with the documentation provided to EPA and MADEP or as subsequently modified to enhance the effectiveness of the controls. This implementation must include the following controls plus other controls the Permittee can reasonably implement as set forth in the documentation.
- b. Each CSO structure/regulator, pumping station and/or tidegate shall be routinely inspected, at a minimum of once per month, to insure that they are in good working condition and adjusted to minimize combined sewer discharges and tidal surcharging. (NMC # 1, 2 and 4). The following inspection results shall be recorded: the date and time of the inspection, the general condition of the facility, and whether the facility is operating satisfactorily. If maintenance is necessary, the permittee shall record: the description of the necessary maintenance, the date the necessary maintenance was performed, and whether the observed problem was corrected. The permittee shall maintain all records of inspections for at least three years. The State and EPA have the right to inspect any CSO related structure or outfall at any time without prior notification to the permittee.
- c. Discharges to the combined system of septage, holding tank wastes or other material which may cause a visible oil sheen or containing floatable material are prohibited during wet weather when CSO discharges may be active. (NMC# 3,6, and 7).
- d. Dry weather overflows (DWOs) are prohibited (NMC# 5). All dry weather sanitary and/or industrial discharges from CSOs must be reported to EPA and the State within 24 hours and provide a written report within 5 days in accordance with the reporting requirements for plant bypass (Paragraph D.1.e(1) of Part II of this permit).
- e. The permittee shall quantify and record all discharges from combined sewer outfalls (NMC# 9). Quantification may be through direct measurement or estimation. When estimating, the permittee shall make reasonable efforts, i.e. gaging, measurements, to verify the validity of the estimation technique. The following information must be recorded for each combined sewer outfall for each discharge event:
  - Estimated duration (hours) of discharge;
  - Estimated volume (gallons) of discharge; and
  - National Weather Service precipitation data from the nearest gage where precipitation is available at daily (24-hour) intervals and the nearest gage where precipitation is available at one-hour intervals. Cumulative precipitation per discharge event shall be calculated.

The permittee shall maintain all records of discharges for at least six years after the effective date of this permit.

Annually no later than March 31st, the permittee shall submit a certification to the State and EPA which states that all discharges from combined sewer overflow outfalls were recorded and records

maintained for the previous calendar year.

- f. The permittee shall install and maintain identification signs for all combined sewer outfall structures (NMC# 8). The signs must be located at or near the combined sewer outfall structures and easily readable by the public. These signs shall be a minimum of 12 x 18 inches in size, with white lettering against a green background, and shall contain the following information:

CITY OF LOWELL  
WET WEATHER  
SEWAGE DISCHARGE  
OUTFALL (discharge serial number)

3. Annual Report

By April 30, 2005 and April 30 of each year thereafter the permittee shall submit a report which includes the following information;

- a. Activation frequency and discharge volume for each CSO during the previous calendar year. The report shall include this information for each of the authorized CSO discharges listed on Attachment D.
- b. Precipitation during the previous year for each day, including total rainfall, peak intensity, and average intensity.
- c. A certification which states that the previous calendar year's monthly inspections were conducted, results recorded, and records maintained
- d. A summary of modifications to the approved NMC program which have been evaluated, and a description of those which will be implemented during the upcoming year.

In the first annual report submitted in accordance with this permit, the permittee shall submit a public notification plan to describe the measures actively being taken to meet NMC #8 (see NMC #8), and an evaluation of further measures to enhance the public notification program, including the following;

- i. Outfall signs visible from both water and land.
- ii. Signs/Notices at areas where people may be using CSO-impacted waters for recreation such as swimming, boating or fishing. The notice would include information on the health risks posed by CSOs and links for additional information on CSOs and water quality.
- iii. Review of the sewer system model to determine the threshold rain events which normally will cause overflows.
- iv. Quarterly postings on the permittee's website which would give the locations of the CSOs, and associated health risks and estimates of CSO activations and volumes.
- v. Annual press release and notification to interested individuals and groups on the progress of the CSO abatement work, also noting contacts for additional information on CSOs and water quality.

- vi. Notice to local health agents and other downstream public officials, including drinking water treatment plants, shellfish wardens, and harbor masters within 24 hours of activation of CSOs. The public notification plan shall include a schedule for implementation of enhanced public notice measures.

#### G. 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 and with the CWA Section 405(d) technical standards.
2. The permittee shall comply with the more stringent of either the state or federal (40 CFR part 503), requirements.
3. The requirements and technical standards of 40 CFR part 503 apply to facilities which perform one or more of the following 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 40 CFR part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not 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. See Sludge Guidance Attachment.
5. The permittee shall use and comply with the attached sludge compliance guidance document to determine appropriate conditions. Appropriate conditions contain the following elements.
  - General requirements
  - Pollutant limitations
  - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
  - Management practices
  - Record keeping
  - Monitoring
  - Reporting

Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction 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 1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8.
8. The permittee shall submit an annual report containing the information specified in the guidance by February 19. Reports shall be submitted to the address contained in the reporting section of the permit. Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge disposal. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such case, the permittee is required only to submit an annual report by February 19 containing the following information:
  - Name and address of contractor responsible for sludge disposal
  - Quantity of sludge in dry metric tons removed from the facility by the sludge contractor

#### **G. MONITORING AND REPORTING**

##### **1. Reporting**

Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the following month.

Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

Environmental Protection Agency  
Water Technical Unit (SEW)  
P.O. Box 8127  
Boston, Massachusetts 02114

The State Agency is:

Massachusetts Department of Environmental Protection  
Northeast Regional Office  
Bureau of Resource Protection  
1 Winter Street  
Boston, MA 02108

Signed and dated Discharge Monitoring Report Forms and toxicity test reports required by this permit shall also be submitted to the State at:

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

Signed and dated Industrial Pretreatment reports and Industrial User reports revising local limits required by this permit shall also be submitted to the State at:

Massachusetts Department of Environmental Protection  
Bureau of Waste Prevention - Industrial Waste Section  
1 Winter Street  
Boston, MA 02108

2. The permittee shall notify all downstream water supply communities listed below of any emergency condition, plant upset, bypass, CSO discharge or other system failure which has the potential to violate permit limits and affect harvesting of shellfish or the quality of water to be withdrawn for drinking water purposes. This notification should be made as soon as possible, and in anticipation of such an event, if feasible, without taking away from any response time necessary to attempt to alleviate the situation. The permittee shall follow up with written notification within 10 days to the contacts below. This notification shall include the reason for the emergency, any sampling information, any visual data recorded, a description of how the situation was handled, and when it would be considered to no longer be an emergency situation. Below are the contacts and phone numbers of the drinking water suppliers which will be contacted:

Andover Water Department: Treatment Facility (508) 623-8350

- 1) DPW Superintendent, Robert McQuade
- 2) Treatment Facility Operator, John Polano

Lawrence Water Department: Treatment Facility (508) 794-5779, Pumping Station/Office (508) 794-5781

- 1) Head Chemist, Bill McCarthy
- 2) Head Operator/Water Manager, Dante Savastano

Methuen Water Division: Treatment Facility (508) 794-3286

- 1) Water Superintendent, Harold Johnson
- 2) Water Treatment Plant Supervisor, Mark Riopelle

Tewksbury Water Division: Treatment Facility (508) 858-0345

- 1) Treatment Facility Supervisor, Leon Garratt
- 2) Head Chemist, Lou Zediana

3. The permittee shall notify the Massachusetts Division of Marine Fisheries, within twenty-four hours when a permit excursion for fecal coliform or plant failure occurs. A twenty four hour notification of a permit excursion or plant failure should be sent to the following address and telephone number:

Division of Marine Fisheries  
Shellfish Management Program  
30 Emerson Avenue  
Gloucester, MA 01930  
(978)282-0308

**H. STATE PERMIT CONDITIONS**

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chap.21, §43.

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 an 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.

Attachment A  
Toxicity Testing

**Attachment A**  
**FRESHWATER CHRONIC**  
**TOXICITY TEST PROCEDURE AND PROTOCOL**  
**Lowell Regional Wastewater Utility**

## **I. GENERAL REQUIREMENTS**

The permittee shall conduct acceptable chronic (and modified acute) toxicity tests on three samples collected during the test period. The following tests shall be performed in accordance with the appropriate test protocols described below:

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

Chronic and acute toxicity data shall be reported as outlined in Section VIII. The chronic fathead minnow and daphnid tests can be used to calculate an LC50 at the end of 48 hours of exposure when both an acute (LC50) and a chronic (C-NOEC) test is specified in the permit.

## **II. METHODS**

Methods to follow are those recommended by EPA in:

Lewis, P.A. et al. Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Third Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. July 1994, EPA/600/4-91/002.

Any exceptions are stated herein.

## **III. SAMPLE COLLECTION**

For each sampling event, three discharge samples shall be collected. Fresh samples are necessary for Days 1, 3, and 5 (see Section V. for holding times). The initial sample is used to start the test on Day 1, and for test solution renewal on Day 2. The second sample is collected for use at the start of Day 3, and for renewal on Day 4. The third sample is used for renewal on Days 5, 6, and 7 (or until termination for the Ceriodaphnia dubia test). The initial (Day 1) sample will be analyzed chemically (see Section VI). Day 3 and 5 samples will be held until test completion. If either the Day 3 or 5 renewal sample is of sufficient potency to cause lethality to 50 percent or more test organisms in any of the dilutions for either species, then a chemical analysis shall be performed on the appropriate sample(s) as well.

Aliquots shall be split from the samples, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses. The remaining samples 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

#### IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point upstream of the discharge free from toxicity or other sources of contamination. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall 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  
U.S. Environmental Protection Agency-New England  
JFK Federal Building (CAA)  
Boston, MA 02203

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 RECOMMENDED EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS<sup>1</sup>**

1. Test type

Static, non-renewal

2. Temperature (°C)

20 ± 1° C or 25 ± 1°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 25 ml

7. Age of test organisms	1-24 hours (neonates)
8. No. daphnids per test chamber	5
9. No. of replicate test chambers	4 per treatment
10. Total no. daphnids per test	20 concentration
11. Feeding regime	Feed YCT and <u>Selenastrum</u> while holding organisms prior to initiating test as per manual.
12. Aeration	None
13. Dilution water <sup>2</sup>	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q <sup>R</sup> 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 factor	≥ 0.5
15. Number of dilutions <sup>3</sup>	5 plus a control. 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 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

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**Footnotes:**

1. Adapted from EPA/600/4-90/027F.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

**EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST<sup>1</sup>**

---

1. Test Type	Static, non-renewal
2. Temperature (°C):	20 ± 1 ° C or 25 ± 1°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 the others
8. No. of fish per chamber	10 (not to exceed loading limits)
9. No. of replicate test vessels	4 per treatment
10. Total no. organisms per concentration:	40
11. Feeding regime:	Light feeding using concentrated brine shrimp nauplii while holding prior to initiating the test as per manual
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: <sup>2</sup>	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using

		either Millipore Milli-Q <sup>R</sup> 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 factor	≥ 0.5
15.	Number of dilutions <sup>3</sup>	5 plus a control. 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 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

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**Footnotes:**

1. Adapted from EPA-600/4-90/027F.
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

## VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, 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. It is also recommended that total alkalinity and total hardness be measured in the control and highest effluent concentration at the beginning of the test. The following chemical analyses shall be performed for each sampling event.

<u>Parameter</u>	Minimum Quantification		
	<u>Effluent Diluent Level(mg/L)</u>		
Hardness* <sup>1</sup>	x	x	0.5
Alkalinity	x	x	2.0
pH	x	x	---
Specific Conductance	x	x	---
Total Solids and Suspended Solids	x	x	---
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Residual Chlorine (TRC)* <sup>2</sup>	x	x	0.05
Dissolved Oxygen	x	x	1.0
<u>Total Metals</u>			
Cd	x		0.001
Cr	x		0.005
Pb	x	x	0.005
Cu	x	x	0.0025
Zn	x	x	0.0025
Ni	x	x	0.004
Al	x	x	0.02
Mg, Ca	x	x	0.05

### Superscripts:

\*<sup>1</sup> Method 2340 B (hardness by calculation) from APHA (1992) Standard Methods for the Examination of Water and Wastewater, 18th Edition.

\*<sup>2</sup> Total Residual Chlorine

Either of the following methods the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses.

-Method 4500-CL E Low Level Amperometric Titration Method (the preferred method); or

-Method 4500-CL G DPD Colorimetric Method

or use USEPA Manual of Methods Analysis of Water and Wastes, Method 330.5

## VII. TOXICITY TEST DATA ANALYSIS

### LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Kärber
- Trimmed Spearman-Kärber
- Graphical

See the flow chart in Figure 6 on p. 77 of EPA 600/4-90/027F 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. 94 of EPA 600/4-90/027F.

## 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; and
- 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  
 Lowell Regional Water and Wastewater Utility  
 NPDES 0100633  
 Discharge Monitoring Data Summary  
 Lowell, Massachusetts

Range between September 2001 and September 2003

Flow, MGD	26.4 - 59.9
Average monthly BOD <sub>5</sub> , mg/l	12.0 - 17.2
Average monthly TSS, mg/l	8.3 - 14.8
pH, S.U	6.0 - 7.4
Average monthly fecal coliform, cfu's	1.0 - 20.0
Total residual chlorine, mg/l	0.0 - 0.7

Whole Effluent Toxicity Test

Test Dates	Acute Toxicity	
	LC-50	A-NOEC
2/5/2003	>100.0%	100.0%
5/7/2003	>100.0%	100.0%
8/7/2003	>100.0%	100.0%
11/6/2003	>100.0%	100.0%

Attachment B  
Local Limits

**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) each Maximum Allowable Industrial Headworks Loading (MAIHL) value corresponding to each of the local limits derived from an applicable environmental criteria or standard, e.g. water quality, sludge, NPDES, inhibition, etc. For each pollutant, the MAIHL equals the calculated Maximum Allowable Headwork Loading (MAHL) minus the POTW's domestic loading source(s). For more information, please see p. 3-28 in EPA's Guidance Manual on the Development and Implementation of Local Limits Under the Pretreatment Program, 12/87.

#### 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)	_____	_____
SIU Flow (MGD)	_____	_____
Dilution Ratio or 7Q10 (from NPDES Permit)	_____	_____

Safety Factor \_\_\_\_\_ N/A

Biosolids Disposal Method(s) \_\_\_\_\_

**ITEM II.**

**EXISTING TBLLs**

<b>POLLUTANT</b>	<b>NUMERICAL LIMIT (mg/l) or (lb/day)</b>	<b>POLLUTANT</b>	<b>NUMERICAL LIMIT (mg/l) or (lb/day)</b>
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----

**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 Industrial Headwork Loading (MAIHL) values used to derive your TBLLs listed in Item II. In addition, please note the Environmental Criteria for which each MAIHL value was established, i.e. water quality, sludge, NPDES etc.

Pollutant	Column (1)		Column (2)	
	Influent Data Analyses		MAIHL Values	Criteria
	Maximum (lb/day)	Average (lb/day)	(lb/day)	
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)		Columns (2A) (2B)	
	Effluent Data Analyses		Water Quality Criteria	
	Maximum (ug/l)	Average (ug/l)	(Gold Book) From TBLLs (ug/l)	Today (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		Column (2) OLD PERMIT	
Pollutants	Limitations (ug/l)	Pollutants	Limitations (ug/l)
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----

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

Molybdenum  
Selenium  
Other (List)

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Attachment C  
Industrial Pretreatment Program Annual Report

ATTACHMENT C  
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 Lowell's Wastewater Treatment Plant 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 Lowell's Wastewater Treatment Plant shall be conducted for the following pollutants:

a.) Total Cadmium

f.) Total Nickel

- b.) Total Chromium
- c.) Total Copper
- d.) Total Lead
- e.) Total Mercury
- g.) Total Silver
- h.) Total Zinc
- i.) Total Cyanide
- 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 Town is under a State or Federal compliance schedule that includes steps to be taken to revise local limits.

Attachment D  
Outfalls and CSO's

**ATTACHMENT D**  
**Lowell Regional Wastewater Utility**  
**NPDES MA0100633**  
**LIST of OUTFALLS and CSO'S**

Serial Discharge Number	Location	Type of Discharge	Composition of Discharge	Receiving Water
035	Lowell Regional WWTP	continuous	sanitary and industrial wastewater	Merrimack River
002-SDS#1	Walker Street	intermittent	CSO	Merrimack River
007-SDS#2	Beaver Brook	intermittent	CSO	Beaver Brook
008-SDS#3	West Street	intermittent	CSO	Merrimack River
011-SDS#4	Read Street	intermittent	CSO	Merrimack River
012-SDS#5	First Street	intermittent	CSO	Merrimack River
020-SDS#6	Warren Street Parking Lot	intermittent	CSO	Concord River
027-SDS#7	Tilden Street	intermittent	CSO	Merrimack River
030(1)-SDS#8	Barasford Street	intermittent	CSO	Merrimack River
030(2)	Merimack River	intermittent	CSO	Merrimack River

Attachment E  
Nine Minimum Controls

**ATTACHMENT E**  
**NINE MINIMUM TECHNOLOGY BASED CONTROLS**  
**DOCUMENTATION AND IMPLEMENTATION GUIDANCE**

The following guidance is for communities preparing documentation to demonstrate adequate implementation of the nine minimum technology based control measures for combined sewer overflows.

EPA has made a Best Professional Judgement (BPJ) determination that adequate implementation of these nine minimum control measures satisfies technology based requirements (Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT) to control and abate conventional pollutants and Best Available Technology Economically Achievable (BAT) to control and abate non-conventional and toxic pollutants.

**Documentation Requirements**

Documentation should provide sufficient information to demonstrate:

- that alternatives were considered for each of the nine minimum control measures.
- the reasoning for the alternatives that were selected.
- that the selected alternatives have been implemented.
- that the permittee has developed a schedule for actions that have been selected but not yet fully implemented.

**Nine Minimum Technology Based Limitations (MTBL)**

The following is a summary of specific information which must be included in the documentation of each of the MTBLs.

1. **Proper operation and regular maintenance programs for the sewer system and combined sewer overflow points.**
  - a. An organizational chart showing the staff responsible for operation and maintenance (O&M) of the combined sewer system. Document that organization and staffing levels are adequate.
  - b. The funding allocated for O&M of the combined sewer system. Document that funding is adequate.
  - c. A list of facilities and structures that are critical to the performance of the combined sewer system, including all regulators, tide gates, pumping stations, and sections of sewer lines which are prone to sedimentation or obstruction. Include an inspection plan which identifies the locations, frequency, procedures, documentation, and reporting of periodic and emergency inspections and maintenance. Document that these facilities are adequately operated and maintained.

- d. A summary of safety training and equipment provided to inspection and maintenance personnel. For instance, workers entering sewers must be trained and equipped for confined space entry. Document that training listed is adequate.
- e. A summary of technical training and maintenance equipment provided to inspection and maintenance personnel. Document that training and equipment are adequate to maintain the facilities identified in item 1.c. above.

**2. Maximum Use of the Collection System for Storage**

- a. Collection system inspection: This should focus on the identification of maintenance or design deficiencies that restrict the use of otherwise available system capacity. This evaluation should document that inadequate regulators, piping bottlenecks, and pumping deficiencies have been identified and corrected, or scheduled for correction. Where increased inspection and/or maintenance is proposed, this shall be reflected in the inspection plan required in item 1.c.
- b. Tide gate maintenance and repair: Tide gates prevent significant volumes of water from entering the conveyance system, thereby freeing up system storage capacity during wet weather periods. Where appropriate, document that tide gate maintenance and repair procedures are adequate.
- c. Adjustment of regulator settings: Adjustment of regulating devices can increase in-system storage of CSO flows and maximize transport to the POTW. Care should be taken to ensure that the regulator adjustment will not result in unacceptable surcharging of the system. Document that regulators have been adjusted to optimum settings. The method by which the community determined the optimum regulator setting (e.g. modeling, trial and error) shall be included in the documentation.
- d. Removal of obstructions to flow: Document that accumulations of debris which may cause flow restrictions are identified, and debris is removed routinely. Documentation shall include a summary of the locations where sediment is removed, the number of times each year the sediment is removed and the total quantity of material removed each year.

**3. Review and Modification of the Industrial Pretreatment Program to assure CSO impacts are minimized.**

- a. Review legal authority: Review the community's legal authority (i.e. pretreatment program, sewer use ordinance) to regulate non domestic discharges to its collection system. Identify those activities for which the community has or can obtain legal authority to address CSO induced water quality violations. For example, does the community have legal authority to require non domestic dischargers to store wastewater discharges during precipitation events or can the community require non domestic dischargers to implement runoff controls?
- b. Inventory non domestic dischargers: Identify those non domestic discharges that may,

through quantity of flow or pollutant concentration or loadings, contribute to CSO induced water quality violations,

- c. Assess the significance of identified dischargers to CSO control issues: Assess whether the identified non domestic sources cause or contribute to CSO induced water quality standards by using monitoring, dilution calculations or other reasonable methods.
- d. Evaluate and propose feasible modifications: Identify, evaluate, and propose site-specific modifications to the pretreatment program which would address the non domestic dischargers identified as significant. Modifications which shall be considered include;

Volume-related controls: Document that detaining wastewater flows (sanitary, industrial, and/or storm water) within the industrial facility until they can be safely discharged to the POTW for treatment was considered and implemented where reasonable. Pollutant Load-related controls: Document that reduction of concentrations of pollutants that enter the collection system during storm periods was considered and implemented where reasonable. Methods to be considered for reducing pollutant concentrations from stormwater runoff controls include structural and non-structural controls such as covering material storage areas, reducing impervious area, detention structures, and good housekeeping.

#### **4. Maximization of flow to the POTW for treatment**

It is recognized that most of the actions recommended for maximization of the collection system for storage will also serve to maximize flow to the POTW. In addition to optimizing those controls to maximize flow to the POTW, the following specific controls should be evaluated and implemented where possible;

- a. Use of off-line or unused POTW capacity for storage of wet weather flows.
- b. Use of excess primary treatment for treatment of wet weather flows. If the use of excess primary capacity will result in violations of the community's NPDES permit limits, the community shall get approval of the proposed bypass from the permitting authority prior to implementation.

#### **5. Prohibition of CSO discharges during dry weather**

- a. Document that the community's monitoring and inspections are adequate to detect and correct dry weather overflows (DWOs) in a timely manner.
- b. Document that DWOs due to inadequate sewer system capacity have been eliminated. If elimination is scheduled but not yet completed, the documentation shall include the schedule.
- c. Document that DWOs due to clogging of pipes and regulators or due to other maintenance problems have been eliminated to the maximum extent practicable. Increased inspection and maintenance of problem areas must be considered as well as

modification or replacement of existing structures.

**6. Control of Solid and Floatable Material in CSO Discharges**

Document that low cost control measures have been implemented which reduce solids and floatables discharged from CSOs to the maximum extent practicable. Alternatives which shall be considered include;

- a. baffles in regulators or overflow structures.
- b. trash racks in CSO discharge structures.
- c. static screens in CSO discharge structures.
- d. catch basin modifications.
- e. end of pipe nets.
- f. outfall booms (on surface of receiving water)

**7. Pollution prevention programs that focus on contaminant reduction activities.**

- a. Prevention: through public education or increased awareness. For example, a water conservation outreach effort could result in less dry weather sanitary flow to the POTW and an increase in the volume of wet weather flows that can be treated at the POTW.
- b. Control of disposal: through the use of garbage receptacles, more efficient garbage collection, or again, through public education.
- c. Anti-litter campaigns: Campaigns through public outreach and public service announcements can be employed to educate the public about the effects of littering, overfertilizing, pouring used motor oil down catch basins, etc.
- d. Illegal dumping: Programs such as law enforcement and public education can be used as controls for illegal dumping of litter, tires, and other materials into water bodies or onto the ground. Free disposal of these products at centrally located municipal dump sites can also reduce the occurrence of illegal dumping.
- e. Street cleaning
- f. Hazardous waste collection days: Communities are encouraged to schedule one or two days a year where household hazardous wastes can be brought to a common collection area for collection and environmentally safe disposal.

**8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts.**

The objective of this control element is to ensure that the public receives adequate notification of CSO impacts on pertinent water use areas. Of particular concern are beach and recreational areas that are affected by pollutant discharges in CSOs.

Where applicable, the permittee shall provide users of these types of areas with a reasonable opportunity to inform themselves of the existence of potential health risks associated with the use of the water body (bodies). The minimum control level, found in Section C.2.e. of the permit is posting of CSO discharge points.

**9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.**

If possible, the permittee shall initiate monitoring and/or inspection activities above and beyond the minimum control levels specified in the permit. The purpose of these additional monitoring and/or inspection events is to better characterize quality of the CSOs and their impacts on all receiving waters. Examples of such events include CSO monitoring or receiving water monitoring for pollutants of particular concern.

October 2005  
Correction Letter



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 1

1 CONGRESS STREET, SUITE 1100  
BOSTON, MASSACHUSETTS 02114-2023

October 13, 2005

Mark A. Young, Executive Director  
Lowell Regional Wastewater Utility  
451 First Street Boulevard (Route 110)  
Lowell, MA 01850

Re: NPDES Application No. MA0100633

Dear Mr. Young:

On September 1, 2005, a final NPDES permit was issued to the Lowell Regional Wastewater Utility. It has come to our attention that the mass limit for the monthly average TSS limit on page 2 of the final permit is a typographical error. The correct mass limit is 8006 #/day and is calculated below.

Flow, MGD x TSS concentration-based limit, mg/l x conversion factor = TSS mass limit, lbs/day  
 $32 \text{ MGD} \times 30 \text{ mg/l} \times 8.34 = 8006 \text{ lbs/day}$

According to 40 CFR 122.63(a), typographical errors may be processed as a minor modification without following the public notice procedures in 40 CFR Part 124. Please replace page 2 in your NPDES permit with the pages attached.

I apologize for any inconvenience this has caused, please contact Betsy Davis of my staff at (617) 918-1576 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Roger A. Janson".

Roger Janson, Chief  
Municipal Permits Branch

Enclosures

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