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

City of Attleboro
Department of Water and Wastewater
Government Center, 77 Park Street
Attleboro, MA 02703

Is authorized to discharge from a facility located at

Attleboro Water Pollution Control Facility
Pond Street
Attleboro, MA 02703

To receiving water named **Ten Mile River,**

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

This Permit shall become effective on **(*See Below)**

This Permit and the authorization to discharge expire at midnight, five years from the effective date.

This Permit supersedes the permit issued on September 30, 1999.

This Permit consists of 14 pages in Part I including effluent limitations, monitoring requirements, etc., Attachments A, B, and C, and 35 pages in Part II including General Conditions and Definitions.

Signed this day of

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

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

** If no comments are received during public notice, this permit will become effective on the date of signature. If comments are received during public notice, this permit will become effective 60 days after signature.

PART I

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 001 **(May 1 - October 31 unless otherwise noted).** Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			Monitoring Requirement	
	Average Monthly	Average Weekly	Maximum Daily	Frequency	Type
Flow, MGD	8.6 [1]	----	----	daily	continuous
Flow, MGD [1]	Report		Report	daily	continuous
CBOD, mg/l (lbs/day) [2]	5 (359)	5 (359)	15 (1,077)	3/week	24-hr.comp.[3]
TSS, mg/l (lbs/day) [2]	5 (359)	5 (359)	15 (1,077)	3/week	24-hr.comp.[3]
pH, s.u. [4]		See I.A.4.b.		daily	grab
Fecal Coliform, CFU/100 ml [4,5]	200	----	400	3/week	grab
Total Residual Chlorine, ug/l [6,7]	15.4	----	26.6	3/day	grab
Ammonia-Nitrogen, mg/l (lbs/day)					
(May 1 - May 31)	4.2	----	----	3/week	24-hr.comp.[3]
(June 1- October 31)	1.5 (108)	1.5 (108)	2.5	3/week	24-hr.comp.[3]
Total Phosphorus, mg/l (April 1 - October 31) [8]	0.2	----	Report	3/week	24.hr.comp.[3]
Total Nitrogen, mg/l [9]	8.0	----	Report	3/week	24-hr.comp.[3]
Dissolved Oxygen, mg/l [4]		See I.A.4.c.			
LC50 [10,11]	----	----	100%	4/year	24-hr.comp.[3]
C-NOEC [10,12]	----	----	71%	4/year	24-hr.comp.[3]

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 001 **(November 1 - April 30 unless otherwise noted).** Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			Monitoring Requirement	
	Average Monthly	Average Weekly	Maximum Daily	Frequency Frequency	Sample Type
Flow, MGD	8.6 [1]	----	----	daily	continuous
Flow, MGD [1]	Report		Report	daily	continuous
CBOD, mg/l (lbs/day) [2]	15 (1077)	25 (1794)	30 (2,153)	3/week	24-hr. comp.[3]
TSS, mg/l (lbs/day) [2]	15 (1077)	25 (1794)	30 (2,153)	3/week	24-hr. comp.[3]
pH, s.u.[4]		See I.A.4.b.		daily	grab
Fecal Coliform [4,5]	200	-----	400	3/week	grab
Total Residual Chlorine, ug/l [6,7]	15.4	-----	26.6	3/day	grab
Ammonia Nitrogen, mg/l					
(November 1- November 30)	8.3	----	----	2/week	24-hr. comp.[3]
(December 1- April 30)	12.5	----	----	2/week	24-hr. comp.[3]
Total Nitrogen, mg/l [9]	Report	----	Report	1/week	24-hr. comp.[3]
Total Phosphorus, mg/l [13]					
(November 1 - March 31)	1.0	----	Report	2/week	24-hr. comp.[3]
Dissolved Ortho Phosphorus [13]					
(November 1 - March 31)	Report	----	Report	2/week	24-hr. comp.[3]
Dissolved Oxygen, mg/l [4]		See I.A.4.c.		daily	grab
LC50 [10,11]	------	-----	100%	4/year	24-hr. comp.[3]
C-NOEC [10,12]	------	-----	>71%	4/year	24-hr. comp.[3]

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 001.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirement		
	Average Monthly	Average Weekly	Maximum Daily	Frequency Frequency	Sample Type
Total Recoverable Metals ug/l[14]					
Copper	13.0		19.6	2/month	24-hr. comp.
Zinc	167.7		167.7	2/month	24-hr. comp.
Silver	----		5.3	2/month	24-hr. comp.
Nickel	73.1		----	2/month	24-hr. comp.
Lead	4.5		----	2/month	24-hr. comp
Aluminum	122		950	2/month	24-hr. comp.
Cadmium	0.4		2.9	2/month	24-hr. comp.
Cyanide	6.3		30.8	1/month	24-hr. comp.

All sampling shall be representative of the effluent that is discharged through outfall 001 to the Ten Mile 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. In addition, all samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

Footnotes:

1. 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. The monthly average and maximum daily flows for each month shall also be reported.

2. Sampling required for influent and effluent.

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

4. Required for state certification.

5. Fecal coliform discharges shall not exceed a monthly geometric mean of 200 colony forming units (cfu) per 100 ml, nor shall they exceed 400 cfu per 100 ml as a daily maximum. This monitoring shall be conducted concurrently with the TRC sampling.

6. 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 USEPA 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 monthly DMR shall include an attachment documenting the individual grab sample results for each day, including the date and time of each sample, and a summary of any operational modifications implemented in response to sample results. All test results shall be used in the calculation and reporting of the monthly average and maximum daily data submitted on the DMR (see Part II. Section D.1.d.(2)).

7. 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. Consistent with Section B.1 of Part II of the Permit, the Permittee shall properly operate and maintain the phosphorus removal facilities in order to obtain the lowest effluent concentration possible.

9. This permit limit is a requirement of the U. S. Environmental Protection Agency (EPA) permit and is not a requirement of the Massachusetts Department of Environmental Protection (MassDEP) permit. Total Nitrogen is the sum of TKN, NO_2, and NO_3. The permittee shall operate the treatment facility to reduce the discharge of total nitrogen during the months of November - April to the maximum extent possible, using all available treatment equipment in place at the facility. The addition of a carbon source that may be necessary in order to meet the total nitrogen limit during the months of May - October is not required during the months of November - April.

10. The permittee shall conduct chronic (and modified acute) toxicity tests four times per year. The chronic test may be used to calculate the acute LC_{50} at the 48 hour exposure interval. The permittee shall test the daphnid, Ceriodaphnia dubia, only. Toxicity test samples shall be collected during the second week of the months of February, May, August, and November. The test results shall be submitted by the last day of the month following the completion of the test. The results are due March 31st, June 30th, September 30th , and December 31st respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**	**Chronic Limit C-NOEC**
February May August November	March 31st June 30th September 30th December 31st	Ceriodaphnia dubia (daphnid) See **Attachment A**	≥ 100%	≥ 94%

Toxicity tests shall be performed using receiving water collected from the Ten Mile River upstream of the Attleboro discharge and downstream of the North Attleboro discharge for dilution. 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**.

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 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. The "100% or greater" limit is defined as a sample which is composed of 100% (or greater) effluent, the remainder being dilution water.

13. The Permittee shall comply with the 1.0 mg/l monthly average total phosphorus limit within one year of the issuance date of the permit. The maximum daily concentration value reported for dissolved ortho phosphorus shall be the value from the same day that the maximum daily total phosphorus concentration was measured.

14. Total recoverable silver, lead, copper, and cadmium shall be measured using the Furnace Atomic Absorption method and total cyanide shall be measured using the Flame Atomic Absorption method. The MLs for silver, lead, copper, cadmium, and cyanide, respectively, are 2 ug/l, 3 ug/l, 3 ug/l, 0.5 ug/l, and 10 ug/l. Any effluent value for these five parameters which is below its respective ML shall be reported as zero.

Total recoverable values of all other metals may be measured using either the Inductively Coupled Plasma ICP method or the Furnace AA method.

Part I.A.4.

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 nor greater than 8.3 at any time.

c. The discharge shall maintain a minimum dissolved oxygen of 6.0 mg/l at all times.

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

e. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

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

g. The results of sampling for any parameter above its required frequency must also be reported.

h. The permittee shall, when the average annual flow exceeds eighty percent (80%) of the permitted facility's design flow, submit a report to the MassDEP describing what steps

the permittee will take in order to remain in compliance with the limitations and conditions in its permit, including in particular, limitations on the amount of flow authorized to be discharged under the permit.

5. 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.

6. 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.

7. 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. DEVELOPMENT OF LIMITATIONS FOR INDUSTRIAL USERS

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.

b. 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 Limits Development Guidance (July 2004).

C. INDUSTRIAL PRETREATMENT PROGRAM

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 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. In accordance with 40 CFR Part 403.12(i), the permittee shall provide the EPA and the MassDEP with an annual report describing the permittee's pretreatment program activities for the twelve month period ending December 31. The annual report shall be consistent with the format described in **Attachment C** of this permit and shall be submitted no later than March 1st 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 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, if applicable, 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 above.

D. UNAUTHORIZED DISCHARGES

The permit only authorizes discharges in accordance with its terms and conditions and only from the outfall listed in Part I A. 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 in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

E. 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:

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.

2. Preventative Maintenance Program

The permittee shall 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:

The permittee shall develop and implement a plan to control infiltration and inflow (I/I) to the separate sewer system. The plan shall be submitted to EPA and MassDEP **within six months of the effective date of this permit** (see page 1 of this permit for the effective date) and shall

describe the permittee's 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.

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 MassDEP annually, **by March 31.**. 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 month I/I for the reporting year.
- A report of any I/I related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Unauthorized Discharges section of this permit.

F. ALTERNATE POWER SOURCE

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

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 and reed beds), or are otherwise excluded under 40 CFR 503.6.

5. The permittee shall comply with the 40 CFR, Part 503 regulations. 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 than1500	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 regulations 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.

I. 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
Southeast Regional Office - Bureau of Resource Protection
20 Riverside Drive
Lakeville, MA 02347

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

Reports required in Sections B and C (local limits and pretreatment program) shall also be submitted to the State at:

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

J. STATE PERMIT CONDITIONS

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

2. 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
FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL

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 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 also describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1 mg/L chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

IV. DILUTION WATER

Grab samples of dilution water used for chronic 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 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. See Section 7 of EPA/600/4-89/001 for further information.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA New England requires that fathead minnow tests be performed using four (not three) replicates of each control and effluent concentration because the non-parametric statistical tests cannot be used with data from only three replicates. Also, if a reference toxicant test was being performed concurrently with an effluent or receiving water test and fails, both tests must be repeated.

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, SURVIVAL AND REPRODUCTION TEST[1]

1.	Test type: Static, renewal	
2.	Temperature (°C):	25 ± 1°C
3.	Light quality: laboratory illumination	Ambient
4.	Photoperiod:	16 hr. light, 8 hr. dark
5.	Test chamber size:	30 mL
6.	Test solution volume:	15 mL
7.	Renewal of test solutions:	Daily using most recently collected sample
8.	Age of test organisms:	Less than 24 hr.; and all released within an 8 hr. period of each other.
9.	Number of neonates per test chamber:	1
10.	Number of replicate test chambers per treatment:	10
11.	Number of neonates per test concentration:	10
12.	Feeding regime:	Feed 0.1 ml each of YCT and concentrated algal suspension per exposure chamber daily.
13.	Aeration:	None
14.	Dilution water:[2]	Receiving water, other surface water, synthetic soft 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 chronic toxicity test manual) or deionized water combined with mineral water to appropriate hardness.

15.	Effluent concentrations:[3]	5 effluent concentrations and a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Dilution factor:	≥ 0.5
17.	Test duration:	Until 60% of control females have three broods (generally 7 days and a maximum of 8 days).
18.	End points:	Survival and reproduction
19.	Test acceptability:	80% or greater survival and an average of 15 or more young/surviving female in the control solutions. At least 60% of surviving females in controls must produce three broods.
20.	Sampling requirements:	For on-site tests, samples are collected daily and used within 24 hr. of the time they are removed from the sampling device. For off-site tests a minimum of three samples are collected (i.e. days 1, 3, 5) and used for renewal (see Sec. III). Off-site tests samples must be first used within 36 hours of collection.
21.	Sample volume required:	Minimum 1 liter/day

Footnotes:

1. Adapted from EPA/600/4-91/002.
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.

EPA NEW ENGLAND RECOMMENDED EFFLUENT TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) LARVAL SURVIVAL AND GROWTH TEST[1]

1.	Test type:	Static, renewal
2.	Temperature (°C):	25 ± 1°C
3.	Light quality:	Ambient laboratory illumination
4.	Photoperiod:	16 hr. light, 8 hr. dark
5.	Test chamber size:	500 mL minimum
6.	Test solution volume:	Minimum 250 mL/replicate
7.	Renewal of test concentrations:	Daily using most recently collected sample.
8.	Age of test organisms:	Newly hatched larvae less than 24 hr. old
9.	No. larvae/test chamber and control:	15 (minimum of 10)
10.	No. of replicate chambers/ concentration:	4
11.	No. of larvae/concentration:	60 (minimum of 40)
12.	Feeding regime:	Feed 0.1 g newly hatched, distilled water-rinsed Artemia nauplii at least 3 times daily at 4 hr. intervals or, as a minimum, 0.15 g twice daily, 6 hrs. between feedings (at the beginning of the work day prior to renewal, and at the end of the work day following renewal). Sufficient larvae are added to provide an excess. Larvae fish are not fed during the final 12 hr. of the test.
13.	Cleaning:	Siphon daily, immediately before test solution renewal.
14.	Aeration:	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L. Rate should be less than 100 bubbles/min.

15.	Dilution water:[2]	Receiving water, other surface water, synthetic soft 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 chronic toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
16.	Effluent concentrations:[3]	5 and a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
17.	Dilution factor:	≥ 0.5
18.	Test duration:	7 days
19.	End points:	Survival and growth (weight)
20.	Test acceptability:	80% or greater survival in controls: average dry weight per control larvae equals or exceeds 0.25 mg.
21.	Sampling requirements:	For on-site tests samples are collected and used within 24 hours of the time they are removed from the sampling device. For off-site tests a minimum of three samples are collected (i.e. days 1, 3, 5) and used for renewal (see Sec.IV). Off-site tests samples must be first used within 36 hours of collection.
22.	Sample volume required:	Minimum 2.5 liters/day

Footnotes:

1. Adapted from EPA/600/4-91/002.
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 or culture water (0% effluent) is required.

VI. CHEMICAL ANALYSIS

As part of each daily renewal procedure, pH, specific conductance, dissolved oxygen, and temperature must be measured at the beginning and end of each 24-hour period in each dilution and the controls. It is also recommended that total alkalinity and total hardness be measured in the control and highest effluent concentration on the Day 1, 3, and 5 samples. The following chemical analyses shall be performed for each sampling event.

Parameter	Effluent	Diluent	Minimum Level (mg/l)	Quantification
Hardness*1	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)*2	x	x		0.05
Dissolved Oxygen	x	x		1.0
Total Metals				
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:

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

*2 Total Residual Chlorine

Either of the following methods from 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 (the preferred method);
-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-Karber
- Trimmed Spearman-Karber
- Graphical

Reference the flow chart on page 84 or page 172 of EPA 600/4-91/002 for the appropriate method to use on a given data set.

Chronic No Observed Effects Concentration (C-NOEC)
Methods of Estimation:

- Dunnett's Procedure
- Bonferroni's T-Test
- Steel's Many-One Rank Test
- Wilcoxin Rank Sum Test

Reference the flow charts on pages 50, 83, 96, 172, and 176 of EPA 600/4-91/002 for the appropriate method to use on a given data set.

In the case of two tested concentrations causing adverse effects but an intermediate concentration not causing a statistically significant effect, report the C-NOEC as the lowest concentration where there is no observable effect. The definition of NOEC in the EPA Technical Support Document only applies to linear dose-response data.

VIII. TOXICITY TEST REPORTING

A report of 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 __

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)		
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 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) Influent Data Analyses Maximum (lb/day)	Average (lb/day)	Column (2) MAIHL 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)	
	Maximum (ug/l)	Average (ug/l)	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 Pollutants	Limitations (ug/l)	Column (2) OLD PERMIT 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	Column (1) Biosolids Data Analyses Average (mg/kg)	Columns (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)			

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 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
b.) Total Chromium
c.) Total Copper
d.) Total Lead
e.) Total Mercury
f.) Total Nickel
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 City is under a State or Federal compliance schedule that includes steps to be taken to revise local limits.

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

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES.

NPDES PERMIT NO.: **MA0100595**

NAME AND ADDRESS OF APPLICANT:

City of Attleboro
Department of Water and Wastewater
Government Center, 77 Park Street
Attleboro, MA 02703

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Attleboro Water Pollution Control Facility
Pond Street
Attleboro, MA 02703

RECEIVING WATER: **Ten Mile River**

CLASSIFICATION: **B (Warm Water Fishery)**

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

The above named applicant has requested that the U.S. Environmental Protection Agency (EPA) reissue its NPDES permit to discharge into the designated receiving water. The Attleboro Water Pollution Control Facility is an 8.6 million gallon per day (MGD) advanced wastewater treatment plant engaged in the collection and treatment of municipal and industrial wastewater. The reissued permit would supercede the current permit, which was issued on September 30, 1999, and expired on October 30, 2004.

II. Description of Discharge.

A quantitative description of the discharge in terms of significant effluent parameters based on recent monitoring data is shown in Attachment A.

III. Limitations and Conditions.

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

IV. Permit Basis and Explanation of Effluent Limitation Derivation.

A. General Statutory and Regulatory Background

EPA is issuing this permit pursuant to Section 402(a) of the Clean Water Act. The Commonwealth of Massachusetts is also issuing this permit, except for certain limitations and conditions discussed below, pursuant to Massachusetts General Laws ch. 21, § 43 (2004).

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and any applicable State administrative rules. The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136.

EPA is required to consider technology and water quality-based requirements as well as those requirements and limitations included in the existing permit when developing the renewed permit's effluent limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA. Secondary treatment technology guidelines (i.e. effluent limitations) for POTWs can be found at 40 CFR Part 133.

All statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. See 40 CFR §125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit. Compliance schedules to meet water quality based effluent limits may be included in permits only when the state's water quality standards clearly authorize such schedules and where the limits are established to meet a water quality standard that is either newly adopted, revised, or interpreted after July 1, 1977.

Section 301(b)(1)(C) of the CWA requires NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to comply with, among other things, any applicable state or federal water quality standards. A water quality standard consists of three elements: (1) beneficial

designated use or uses for a water body or a segment of a water body; (2) numeric and narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirements to ensure that existing uses and high quality waters are protected and maintained.

EPA's regulation at 40 C.F.R. § 122.4(d) prohibits the issuance of an NPDES permit unless its conditions can "ensure compliance with the applicable water quality requirements of all affected States." As discussed below, both Massachusetts and Rhode Island are "affected states" in the context of this permit issuance, and both states' water quality standards are relevant to the permit limitations. Similarly, 40 C.F.R. § 122.44(d) requires EPA to impose conditions that achieve applicable water quality standards.

The Massachusetts Surface Water Quality Standards (314 CMR 4.00, February, 1996) establish designated uses of the State's waters, criteria to protect those uses, and an antidegradation provision to ensure that existing uses and high quality waters are protected and maintained. They also include requirements for the regulation and control of toxic constituents and specify that EPA's recommended water quality criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criterion is established.

Rhode Island's Water Quality Standards (Regulation EVM 112-88.97-1, June 2000) also establish designated uses of the State's waters, criteria to protect those uses, and an antidegradation provision to ensure that existing uses and high quality waters are protected and maintained.

Section 401(a)(1) of the CWA forbids the issuance of a federal license for a discharge to waters of the United States unless the state where the discharge originates, in this case Massachusetts, either certifies that the discharge will comply with, among other things, state water quality standards, or waives certification. EPA's regulations at 40 CFR § 122.44(d)(3), §124.53 and §124.55 describe the manner in which NPDES permits must conform to conditions contained in state certifications. Section 401(a)(2) of the CWA and 40 CFR § 122.44(d)(4) require EPA to condition NPDES permits in a manner that will ensure compliance with the applicable water quality standards of a "downstream affected state," in this case Rhode Island. The statute directs EPA to consider the views of the downstream state concerning whether a discharge would result in violations of the state's water quality standards. If EPA agrees that a discharge would cause or contribute to such violations, EPA must condition the permit to ensure compliance with the water quality standards. If the downstream affected state believes that the permit fails to include such requirements, then it may appeal the permit (like any other interested person with proper standing).

Section 402(o) of the CWA provides, generally, that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. Unless certain limited exceptions are met,

"backsliding" from effluent limitations contained in previously issued permits that were based on CWA §§ 301(b)(1)(C) or 303 is prohibited. EPA has also promulgated anti-backsliding regulations, which are found at 40 CFR § 122.44(l). Unless statutory and regulatory backsliding requirements are met, the limits in the reissued permit must be at least as stringent as those in the previous permit.

B. Development of Water Quality-based Limits

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the state's water quality standards to develop permit limits both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in stream pollutant concentration. Maximum daily limits are generally derived from the acute aquatic life criteria, and the average monthly limit is generally derived from the chronic aquatic life criteria. Chemical specific limits are established in accordance with 40 CFR §122.44(d) and §122.45(d).

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality criterion. An excursion occurs if the projected or actual in stream concentration exceeds the applicable criterion.

In determining reasonable potential, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit application, monthly discharge monitoring reports (DMRs), and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls,* March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with Massachusetts Water Quality Standards [314CMR 4.03(3)], available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10). Rhode Island's Water Quality Standards provide for a similar dilution calculation for freshwaters. See Rule 8.E.(2)(a).

C. Description of Treatment Facility and Receiving Water

The Attleboro Water Pollution Control Facility is an 8.6 million gallon per day (MGD) advanced treatment facility which discharges to the Ten Mile River.

The wastewater treatment process consists of primary clarification, first stage aeration and clarification, second stage aeration and clarification, rapid sand filtration, chlorination, sulfur dioxide dechlorination, and post aeration. The sludge is disposed at a monofill (a

sludge only landfill), which has a liner and leachate collection system.

The Ten Mile River is an interstate water which has its headwaters in Plainville Massachusetts and flows through North Attleborough, Attleboro, and Seekonk, Massachusetts before entering Rhode Island in Pawtucket, flowing through East Providence, and ultimately discharging to the Seekonk River.

The Ten Mile River in Massachusetts is designated by the Massachusetts Water Quality Standards as a Class B Warm Water Fishery. Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They 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. In warm water fisheries the temperature shall not exceed 83°F nor shall the rise in temperature due to a discharge exceed 5°F.

The Ten Mile River is listed on the Massachusetts Year 2004 Integrated List of Waters (which incorporates the CWA § 303(d) list) as a water that is impaired (not meeting water quality standards) and requires one or more Total Maximum Daily Loads (TMDL) to be prepared to reduce pollutant loadings into the River so that it can attain water quality standards. The segment of the Ten Mile River from the North Attleborough WWTP to the MA/RI border, which includes the discharge from the Attleboro treatment plant, is listed as impaired due to unknown toxicity, metals, nutrients, organic enrichment/low DO, pathogens, and noxious aquatic plants. No TMDL has been completed nor is any underway.

The Ten Mile River in Rhode Island is designated by the Rhode Island Water Quality Regulations as a Class B1 water from the MA/RI border to the Newman Avenue Dam in East Providence, and a Class B water from the Newman Avenue Dam to the confluence with the Seekonk River. The Seekonk River is a marine water (seawater) designated as a Class SB{a}water.

Class B waters are designated for fish and wildlife habitat and primary and secondary contact recreational activities. They shall be suitable for compatible industrial process and cooling, hydropower, aquacultural uses, navigation, irrigation and other agricultural uses. These waters shall have good aesthetic value. A Class B1 water has the same designated uses as a Class B water, except that primary contact recreational uses may be impacted due to pathogens from approved wastewater discharges. Class SB waters are designated for primary and secondary contact recreational activities; shellfish harvesting for controlled relay and depuration; and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value. An "{a}" partial use restriction indicates a water which is likely to be impacted by combined sewer overflows in accordance with an approved CSO facilities plan; therefore primary contact recreational activities, shellfishing uses, and fish and wildlife habitat will likely be restricted.

The free flowing segments of the Ten Mile River in RI are listed on the State's 2004 CWA § 303(d) List of Impaired Waters as waters needing a TMDL for copper, lead, and cadmium. Two impoundments are also listed. Turner Reservoir is listed for copper, lead, low DO, and phosphorus, and Omega Pond is listed for copper, lead and phosphorus.

The Seekonk River is listed on the State's 2004 CWA § 303(d) List of Impaired Waters as a water with a TMDL underway for nutrients, low DO, and excess algal growth/chlorophyll(a). The TMDL has not been completed, but as is discussed in the Total Nitrogen section of this fact sheet, the State has performed a physical model assessing the impacts of total nitrogen on non- attainment of water quality standards in the Seekonk River, Providence River and Upper Narragansett Bay and has recommended total nitrogen effluent limitations for POTWs discharging to these receiving waters.

D. Limits Derivation

The effluent limits on all of the pollutants discussed below, with the exception of total nitrogen, are established to ensure compliance with technology- based requirements and the Massachusetts Water Quality Standards. Since the applicable water quality criteria for Massachusetts are similar to, and in some cases more stringent than, the applicable water quality criteria for Rhode Island, the effluent limits also ensure compliance with Rhode Island Water Quality Standards. The limits and requirements on total nitrogen are established solely to ensure compliance with the Rhode Island Water Quality Standards. The City will likely be unable to immediately comply with the limits proposed for nitrogen and phosphorus. EPA will work with the City and its representatives to develop a schedule for the planning, design and construction of facilities that may be necessary to meet the specified limits. It is EPA's intent to begin this process as soon as possible.

Conventional Pollutants:

The effluent limitations for CBOD, and TSS are the same as those limits found in the previous permit, in accordance with antibacksliding requirements. These limits were originally established in accordance with a 1975 waste load allocation for the Ten Mile River.

The numerical limitations for fecal coliform, pH, and dissolved oxygen are based on state certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR §124.53 and §124.55. These limitations are the same as in the existing permit and so are in accordance with antibacksliding requirements.

Phosphorus:

The Massachusetts Water Quality Standards do not contain numerical criteria for total phosphorus. The criterion for nutrients is found at 314 CMR 4.05(5)(c), which states that nutrients "shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication." The Massachusetts Water Quality Standards also require that "any existing point source discharges containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practicable treatment to remove such nutrients." (314 CMR 4.04). The Massachusetts Department of Environmental Protection (MassDEP) has established that a monthly average total phosphorus limit of 0.2 mg/l represents highest and best practical treatment for POTWs.

EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water (the Gold Book) recommends in-stream phosphorus concentrations of no greater than 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impoundments, and 0.025 mg/l within the lake or reservoir.

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

The current permit has a monthly average limit of 1.0 mg/l and daily maximum limit of 1.5 mg/l from May 1 to October 31. Effluent data from DMRs for April thru October during 2003 and 2004 ranged from 0.1 to 0.3 mg/l of total phosphorus.

The impacts associated with the excessive loading of phosphorus are documented in the Ten Mile River Basin 1997 Water Quality Assessment Report published by MassDEP in March 2000, and in the RI 2004 303(d) List of Impaired Waters as discussed above. These include violations of the minimum dissolved oxygen criteria, dense filamentous algal cover in some shallow free flowing reaches of the river, and eutrophic conditions in downstream impoundments.

The current monthly average limit in the permit of 1.0 mg/l would be expected to significantly exceed the national guidance for in-stream phosphorus concentration due to the absence of any significant dilution under 7Q10 conditions. It is clear that the existing limits must be made more stringent to address the documented eutrophication problems in the receiving water. A monthly average total phosphorus limit of 0.2 mg/l has been established based on the "highest and best" practical treatment as defined by the MAWQS. This limit will be in effect seasonally, from April 1 to October 31. The

application of the lower seasonal limit has been extended to the month of April in order to encompass the entire season when there is active aquatic plant growth.

In addition to the seasonal total phosphorus limit of 0.2 mg/l, the permit contains a winter period total phosphorus limit of 1.0 mg/l for November through March. The winter period limitation on total phosphorus is necessary to ensure that the higher levels of phosphorus discharged in the winter period do not result in the accumulation of phosphorus in the downstream sediments. The limitation assumes that the vast majority of the phosphorus discharged will be in the dissolved fraction and that dissolved phosphorus will pass through the system and not accumulate in the sediments. A dissolved orthophosphorous monitoring requirement has been included to verify the dissolved fraction. If future evaluations indicate that phosphorus may be accumulating in downstream sediments, the winter period phosphorus limit may be reduced in future permit actions.

If MassDEP adopts numeric nutrient criteria, a TMDL is completed, or additional water quality information shows that the phosphorus limits are not stringent enough to meet water quality standards, more stringent limits may be imposed.

Nitrogen:

- Ammonia:

The permit limits ammonia-nitrogen in order to control both in-stream oxygen demand and the degree of toxicity associated with the discharge.

The November through May limits in the previous permit were established in accordance with the EPA guidance document titled 1998 Update of Ambient Water Quality Criteria for Ammonia. This guidance document has been replaced with the 1999 Update of Ambient Water Quality Criteria for Ammonia, which includes less stringent criteria. EPA considered whether less stringent limits based on the 1999 criteria should be allowed. Although the current permit limits are stringent enough to ensure that the discharge does not result in an exceedance of instream ammonia toxicity or dissolved oxygen criteria, there is a concern that the receiving water's current nonattainment for toxicity and dissolved oxygen could be exacerbated by increased discharges of ammonia. Consequently, the current limits, which the permittee has demonstrated the ability to meet, are retained in this permit.

The limits in the draft permit for November through May are:

November - 8.3 mg/l monthly average
December through April - 12.5 mg/l monthly average
May - 4.2 mg/l monthly average

The limit for June through October is from the current permit. This limit is stringent

enough to ensure that the discharge does not result in an exceedance of instream ammonia toxicity or dissolved oxygen criteria.

The limit in the draft permit for June through October is 1.5 mg/l monthly average:

- Total Nitrogen:

Upper Narragansett Bay, which includes the Providence and Seekonk Rivers, has suffered from severe cultural eutrophication for many years. This cultural eutrophication results in periodic low dissolved oxygen levels and associated fish kills. In addition, historic estimates of eel grass in Narragansett Bay ranged from 8,000 - 16,000 acres and current estimates of eel grass indicate that less than 100 acres remain. No eel grass remains in the upper two thirds of Narragansett Bay. Severe eutrophication is believed to be a significant contributor to the dramatic decline in eel grass (see Rhode Island Department of Environmental Management (DEM), February 1, 2005 report "Plan for Managing Nutrient Loadings to Rhode Island Waters").

Upper Narragansett Bay has a water quality classification of SB1. The designated uses include primary and secondary contact recreational activities and fish and wildlife habitat. Rhode Island Water Quality Standards Rule 8.B.(2)(c). Applicable criteria include the following:

> "At a minimum, all waters shall be free of pollutants in concentrations or combinations or from anthropogenic activities subject to these regulations that:
>
> i. Adversely affect the composition of fish and wildlife;
> ii. Adversely affect the physical, chemical, or biological integrity of the habitat;
> iii. Interfere with the propagation of fish and wildlife;
> iv. Adversely alter the life cycle functions, uses, processes and activities of fish and wildlife....", Rule 8.D.(1)
>
> The dissolved oxygen shall be "not less than 5 mg/l at any place or time, except as naturally occurs. Normal seasonal and diurnal variations which result in *insitu* concentrations above 5.0 mg/l not associated with cultural eutrophication will be maintained in accordance with the Antidegradation Implementation Policy." Table 2, Rule 8.D.(3)1.
>
> There shall be no nutrients "in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication." Nutrients "shall not exceed site-specific limits if deemed necessary by the Director to prevent or minimize accelerated or cultural eutrophication. Total phosphorus, nitrates and ammonia may be assigned site-specific permit limits based on reasonable Best Available Technologies." Table 2, Rule 8.D.(3)10; see also Rule 8.D.(1)(d).

Additional relevant regulations include Rule 9.A. and B., which prohibit discharges of pollutants which alone or in combination will likely result in violation of any water quality criterion or interfere with one or more existing or designated uses, and prohibit discharges that will further degrade waters which are already below the applicable water quality standards.

It is clear that eutrophication in Upper Narragansett Bay has reached a level where it is adversely affecting the composition of fish and wildlife; adversely affecting the physical, chemical, or biological integrity of the habitat; interfering with the propagation of fish and wildlife; adversely altering the activities of fish and wildlife; and causing dissolved oxygen to drop well below 5 mg/l. The effects of eutrophication, including algae blooms and fish kills, are also interfering with the designated uses of the water. Eutrophication has, therefore, reached a point where it is causing violations of water quality standards.

Excessive loadings of nitrogen have been identified as the cause of the eutrophication. This link has been clearly demonstrated by water quality data and by various studies and reports issued over the years. One key report, which summarizes and references many of the studies and reports, is titled "Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers" (DEM Report), and was completed by DEM in December 2004. This report analyzes both water quality data and information about major discharges to the Providence and Seekonk Rivers. The report, drawing in part on data developed in earlier studies, divides the rivers into segments and analyzes pollutant loadings and specific water quality impairments in each segment. Much of the data used in the analysis is from a 1995 - 1996 study by DEM Water Resources that consisted of measurements of nitrogen loadings from point source discharges and the five major tributaries to the Providence/Seekonk River system. The report also includes an analysis of data produced by a physical model of the Providence/Seekonk River system. That physical model was operated by the Marine Ecosystems Research Laboratory (MERL), and was part of an experiment to evaluate the impact of various levels of nutrient loading on the rivers and Narragansett Bay.

The Commonwealth of Massachusetts submitted detailed comments (February 11, 2005) on the DEM report, questioning the report's evaluation of the nitrogen issue and the basis for nitrogen reductions. Rhode Island responded to those comments on June 27, 2005.

EPA has reviewed all of the available data, including the comments by Massachusetts on the DEM Report and Rhode Island's responses. EPA has concluded that there is convincing evidence that excessive nitrogen loading is impairing the designated uses of the Seekonk and Providence Rivers and that wastewater facilities in Massachusetts contribute a significant portion of the nitrogen loading.

One key issue raised by Massachusetts is whether the impact of nitrogen discharges

from Massachusetts POTW sources is significantly reduced by instream attenuation before the nitrogen reaches impaired portions of Upper Narragansett Bay. The DEM report estimates a 40% attenuation rate for the Ten Mile River. Even assuming this level of attenuation, substantial reductions in nitrogen discharges are needed to meet water quality standards. Moreover, part of this attenuation is due to phosphorus-driven eutrophication in the Ten Mile River (nitrogen attenuation increases as eutrophication levels increase). Phosphorus discharges to the Ten Mile River are expected to be significantly lower during the term of this permit than they were during the 1995-96 period considered in the DEM Report, and the resulting decline in phosphorus-driven eutrophication should reduce the attenuation of nitrogen below the 40% level. Significant reductions in nitrogen discharges are, therefore, clearly necessary. Another issue raised by Massachusetts is that there are inherent uncertainties in the conclusions of the DEM report due to its reliance on a physical model. EPA agrees that the use of the physical model does introduce uncertainty in determining the precise level of nitrogen control which will ultimately be needed in the river. Based on the available evidence, however, including the analysis of loadings included in the DEM report, EPA has concluded that the amount of nitrogen reduction needed to meet water quality standards will be at least as great as required by the proposed limit in this permit (described below). The uncertainties in the physical model may ultimately mean that additional nitrogen reductions are needed, but there is no realistic likelihood that water quality standards could be met with a less stringent nitrogen limit than the one proposed.

The predominate source of the nitrogen loading in Narragansett Bay is municipal wastewater treatment facilities in Rhode Island and in Massachusetts. The State of Rhode Island has recently reissued several Rhode Island Pollutant Discharge Elimination System (RIPDES) permits for POTWs which discharge to Upper Narragansett Bay and its tributaries. These permits include limitations on the discharge of total nitrogen, in order to address the cultural eutrophication in Upper Narragansett Bay. There are five municipal POTWs in Massachusetts which discharge nitrogen into tributaries of the Seekonk and Providence Rivers, including Attleboro. EPA is responsible for issuing permits to these facilities, which as a group represent approximately 38% of the total nitrogen load to Upper Narragansett Bay, and approximately 73% of the total nitrogen load to the Seekonk River, which is the most severely impaired section of Upper Narragansett Bay. (These values are based on permitted flows and loadings, and an assumed effluent nitrogen concentration of 15 mg/l for POTWs without nitrogen permit limits or nitrogen control facilities.)

EPA recognizes that Upper Narragansett Bay and the rivers that discharge into it comprise a complex system, and, as noted above, that there are uncertainties associated with the physical model used in the MERL experiment. EPA has reviewed the available evidence, including the DEM report, in light of that uncertainty, and has concluded that the nitrogen limit proposed in this permit is necessary to meet Rhode Island Water Quality Standards.

In particular, based on the available evidence, EPA has concluded that, at a minimum, a seasonal reduction to no more than 8.0 mg/l is required at the Attleboro facility in order to achieve water quality standards. Therefore, pursuant to §§ 301(1)(b)(1)(C) and 401(a)(2) of the CWA and 40 C.F.R. §§ 122.4(d) and122.44(d), EPA has included in the draft permit a total nitrogen limit of 8 mg/l monthly average from May through October. Nitrogen discharged from May through October is believed to be the dominant source of available nitrogen in the Providence and Seekonk Rivers during the critical growing period (see DEM "Response to Comments Received on Proposed Permit Modifications for the Fields Point, Bucklin Point, Woonsocket and East Providence WWTFs"). EPA's draft permit also includes a treatment optimization requirement for November through April, in order to maximize the nitrogen removal benefits. These nitrogen limits and requirements are contained only in EPA's NPDES permit. Massachusetts is not including these limits in its state-issued permit; the Massachusetts permit establishes limits that are necessary to protect Massachusetts waters only.

DEM has, in partnership with several research and academic institutions in Rhode Island, established an extensive monitoring network in order to provide the data necessary to evaluate compliance with water quality standards upon implementation of the recommended nitrogen reductions (see (DEM), February 1, 2005 report "Plan for Managing Nutrient Loadings to Rhode Island Waters"). It is possible that this monitoring will demonstrate that additional pollutant reductions are ultimately needed to meet water quality standards. EPA therefore strongly recommends that treatment facility upgrades implemented in order to achieve the 8.0 mg/l total nitrogen limit be compatible with alternatives for further reducing the nitrogen level in the discharge.

Toxic Pollutants

- Chlorine

Chlorine and chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. The effluent limits for average monthly and maximum daily total residual chlorine (TRC) were developed using the chronic and acute TRC criteria defined the EPA Quality Criteria for Water, 1986 (the "Gold Book"), as adopted by the Massachusetts Department of Environmental Protection (MassDEP) into the state water quality standards.

The criteria were multiplied by the available receiving water dilution (refer to Attachment B) to obtain the TRC limits found in the draft permit. The criteria state that the average TRC in the receiving water should not exceed 11 ug/l for chronic toxicity protection and 19 ug/l for acute toxicity protection. See Attachment B for the TRC calculations.

The average monthly and maximum daily TRC limits are below the analytical detection limit for this pollutant. In these situations, EPA, Region I is following guidance set forth in the Technical Support Document for Water Quality-Based Toxics Control,

EPA/505/2-90-001, March 1991, page 111, which recommends "... that the compliance level be defined in the permit as the minimum level (ML)." EPA has defined the ML as "the level at which the entire analytical system shall give recognizable signal and acceptable calibration points." The minimum level for TRC is 0.020 mg/l or 20 ug/l, and is defined as such in the draft permit. Therefore, compliance/non-compliance determinations will be based on the Minimum Level (ML). This ML value of 20 ug/l may be reduced by permit modification as more sensitive test methods are approved by the EPA and the MassDEP.

The permit also includes a requirement that the chlorination and dechlorination systems include alarms for indicating system interruptions or malfunctions and that interruptions or malfunctions be reported with the monthly compliance reports. This requirement is intended to supplement the grab sampling requirements for chlorine and bacteria and is a recognition of the limitations of a grab sampling program for determining consistent compliance with permit limits. In the future, continuous monitoring of effluent chlorine levels may be required.

Metals and Cyanide

The limitations in the current permit are taken from the Ten Mile River Basin 1984 Water Quality Program and NPDES Permit Development Final Report (MADEP). These recommended limits were considered to satisfy water quality concerns based on "Clean Water" or background levels in the receiving water. However, the studies conducted in the mid-1980's are not consistent with current policies and guidance relative to developing site specific metals criteria, and the downstream segments continue to be listed in nonattainment of water quality standards for metals despite attainment of the effluent limitations. Accordingly, limitations were calculated using the EPA recommended water quality criteria found in National Recommended Water Quality Criteria 2002 (see **Attachment C**). These limits have been used in the draft permit where a reasonable potential analyses shows that limits are necessary and where these limits are more stringent than the existing limits.

For cyanide, the discharge data submitted by the facility and presented in **Attachment C**, shows that the discharge for this pollutant has been consistently reported below the minimum level (ML). (The ML is defined in EPA's Technical Support Document for Water Quality-Based Toxics Control as "the level at which the entire analytical system shall give recognizable signal and acceptable calibration points". The ML associated with the method specified in the permit is 20 ug/l. However, because the calculated water quality limit for cyanide is significantly below the ML, EPA cannot be certain that there is no reasonable potential for the discharge of cyanide to cause or contribute to a violation of water quality standards. Therefore, EPA has retained the cyanide limits and has specified an analytical method with a lower ML (10 ug/l). Since the calculated monthly average limit is higher than the monthly average limit in the current permit, the current monthly average permit limit has been maintained in accordance with

antibacksliding requirements. The sampling frequency has been reduced to one per month.

Cyanide:

Chronic Criteria = 5.2 ug/l
Acute Criteria = 22 ug/l
Dilution Factor (DF) = 1.4 (see Attachment B for dilution calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (5.2 ug/l)(1.4) = 7.3 ug/l
Daily Maximum Limit = (acute criteria)(dilution factor) = (22 ug/l)(1.4) = 30.8 ug/l

For chromium, the data indicate that there is no reasonable potential to cause or contribute to a violation of water quality standards since the reported data is well below the effluent limitations that would be necessary to ensure compliance with water quality standards. The limits and routine monitoring requirements have therefore been deleted, although chromium analyses must continue to be performed in conjunction with whole effluent toxicity testing. This is consistent with the antibacksliding requirements of Clean Water Act sections 402(o) and 303(d)(4)(B).

For aluminum, cadmium, copper, lead , nickel, silver, and zinc, limitations and monitoring requirements have been retained in the draft permit because the discharge data indicate that the discharge has a reasonable potential to cause or contribute to a violation of water quality standards for these pollutants. As described above, limits were calculated using National Recommended Water Quality Criteria, as required by the Massachusetts Water Quality Standards, at 314 CMR.§ 4.05(5)(e). If the recalculated value was more stringent than the existing limit, it was used. If the existing limit was more stringent it was used, consistent with the antibacksliding requirements of CWA § 402(o). The receiving water has been identified on the Massachusetts and Rhode Island §_303(d) lists as being in nonattainment for metals, and establishing less stringent limits would not comply with the exception to the antibacksliding prohibition provided by CWA §§ 402(o)(1) and 303(d)(4). Furthermore, none of the other antibacksliding exceptions in § 402(o)(2) applies. The calculations are as follows:

Chromium III:

Hardness = 100 mg/l
Chronic Criteria (total recoverable) = 86 ug/l
Acute Criteria (total recoverable) = 1,803 ug/l
Dilution Factor = 1.4 (see Attachment B for calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (86 ug/l)(1.4) = 120 ug/l
Daily Maximum Limit = (acute criteria)(dilution factor) = (1,803 ug/l)(1.4) = 2,524 ug/l

Aluminum:

Chronic Criteria = 87 ug/l
Acute Criteria = 750 ug/l
Dilution Factor (DF) = 1.4 (see Attachment B for dilution calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (87 ug/l)(1.4) = 122 ug/l
Daily Maximum Limit = (acute criteria)(dilution factor) = (750 ug/l)(1.4) = 1050 ug/l

Since the calculated daily maximum limit is higher then the daily maximum limit in the current permit, the current permit limit has been maintained in accordance with antibacksliding requirements.

Copper:

Hardness = 100 mg/l
Chronic Criteria (total recoverable) = 9.3 ug/l
Acute Criteria (total recoverable) = 14.0 ug/l
Dilution Factor = 1.4 (see Attachment B for calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (9.3 ug/l)(1.4) = 13.0 ug/l
Daily Maximum Limit = (acute criteria)(dilution factor) = (14.0 ug/l)(1.4) = 19.6 ug/l

We note that MassDEP has submitted revised site-specific water quality criteria for copper. If EPA approves these criteria and the Ten Mile River is found to be in attainment of these limits, the effluent limit may be modified consistent with the revised water quality standard.

Cadmium:

Chronic Criteria = 0.3 ug/l
Acute Criteria = 2.1 ug/l
Dilution Factor (DF) = 1.4 (see Attachment B for dilution calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (0.3 ug/l)(1.4) = 0.4 ug/l
Daily Maximum Limit = (acute criteria)(dilution factor) = (2.1 ug/l)(1.4) = 2.9 ug/l

Lead:

Chronic Criteria = 3.2 ug/l
Acute Criteria = 81.6 ug/l
Dilution Factor (DF) = 1.4 (see Attachment B for dilution calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (3.2 ug/l)(1.4) = 4.5 ug/l
Daily Maximum Limit = (acute criteria)(dilution factor) = (81.6 ug/l)(1.4) = 114.2 ug/l

Nickel:

Chronic Criteria = 52.2 ug/l
Acute Criteria = 469.2 ug/l
Dilution Factor (DF) = 1.4 (see Attachment B for dilution calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (52.2 ug/l)(1.4) = 73.1 ug/l
Daily Maximum Limit = (acute criteria)(dilution factor) = (469.2 ug/l)(1.4) = 656.9 ug/l

Silver:

Acute Criteria = 3.8 ug/l
Dilution Factor (DF) = 1.4 (see Attachment B for dilution calculations)

Daily Maximum Limit = (acute criteria)(dilution factor) = (3.8 ug/l)(1.4) = 5.3 ug/l

Zinc:

Chronic Criteria = 119.8 ug/l
Acute Criteria = 119.8 ug/l
Dilution Factor (DF) = 1.4 (see Attachment B for dilution calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (119.8 ug/l)(1.4) = 167.7 ug/l
Daily Maximum Limit = (acute criteria)(dilution factor) = (119.8 ug/l)(1.4) = 167.7 ug/l

While both Massachusetts and Rhode Island water quality criteria for metals are based on dissolved metals, national guidance recommends that permit limits be based on total recoverable metals and not dissolved metals. Consequently, it is necessary to apply a translator in order to develop a total recoverable permit limit from a dissolved criteria. The translator reflects how a discharge partitions between the particulate and dissolved phases after mixing with the receiving water. In the absence of site specific data on how a particular discharge partitions in the receiving water, a default assumption that the translator is equivalent to the inverse of the conversion factor (the conversion factor converts a criteria based on total metals to a criteria based on dissolved metals) is used in accordance with the EPA Metals Translator Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA-823-B-96-007).

The permit specifies the Furnace Atomic Absorption (AA) method for measuring silver, lead, copper, and cadmium, Flame Atomic Absorption method for measuring cyanide, and a choice of Furnace AA or Inductively Coupled Plasma (ICP) for all other metals. These determinations were made from the MLs that these methods provide for each parameter. EPA's definition of the ML is given here again as "the level at which the entire analytical system shall give recognizable signal and acceptable calibration points". For any of these parameters, any effluent value less than its corresponding ML shall be recorded as zero.

E. Pretreatment Program

The permittee is required to administer a pretreatment program based on the authority granted under 40 CFR Section 122.44 (j), 40 CFR Section 403 and Section 307 of the Act. Attleboro's pretreatment program received EPA approval on September 24, 1984 and, as a result, appropriate pretreatment program requirements were incorporated into the current permit which were consistent with that approval and federal pretreatment regulations in effect when the permit was issued.

In the reissued permit, activities that the permittee must address if applicable include, but are not limited to, the following: (1) implement and enforce specific effluent limits (technically-based local limits); (2) revise the local sewer-user ordinance or regulation 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 POTW's NPDES permit and its sludge use or disposal practices. Lastly, the permittee must continue to submit, annually by March 1st, a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

F. Whole Effluent Toxicity

Massachusetts' Water Quality Standards contain a narrative toxicity criterion which states that "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 industrial and domestic sources contribute toxic constituents, such as metals, chlorinated solvents, aromatic hydrocarbons, and others to POTWs. The impacts of such complex mixtures are often difficult to assess. Therefore, the toxicity of several constituents in a single effluent can only be accurately examined by whole effluent toxicity (WET) testing. Furthermore, 40 CFR 122.44 (d) requires WET limits in NPDES permits when the permittee has a "reasonable potential" to cause toxicity.

WET tests of the Attleboro effluent have demonstrated frequent toxicity for Daphnid (*Ceriodaphnia dubia*). Furthermore, the low dilution factor, 1.4, calculated for the receiving water at the Attleboro treatment plant's outfall contributes to a "reasonable potential" that the discharge could cause an excursion of the no toxics provision in the State's regulations. Inclusion of the whole effluent toxicity limit in the draft permit will ensure compliance with the State's narrative water quality criterion of "no toxics in toxic amounts". Therefore, based on the potential for toxicity, water quality standards, and available dilution, the draft permit includes chronic and acute whole effluent toxicity limitations and monitoring requirements. (See, e.g., "Policy for the Development of

Water Quality-Based Permit Limitations for Toxic Pollutants", 50 Fed. Reg. 30,784- July 24, 1985. See also EPA's Technical Support Document for Water Quality-Based Toxics Control, EPA/505/1-90-001.) Attachment B contains the calculation for chronic whole effluent toxicity, which is based on available dilution.

The Chronic No Observed Effect Concentration (C-NOEC) limitation in the draft permit prohibits chronic adverse effects (e.g., on survival, growth, and reproduction) when aquatic organisms are exposed to the POTW discharges at the calculated available dilution. The LC50 limitations prohibits acute effects (lethality), to more than 50% of the test organisms when exposed to undiluted POTW effluent for 48 hours.

7. Infiltration/Inflow Requirements

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.
The draft permit includes requirements for the permittee to control infiltration and inflow (I/I) into the collection systems. The permittee shall develop an I/I removal program commensurate with the severity of the I/I in the collection system. In sections of the collection system that have minimal I/I, the control program will logically be scaled down.

Significant I/I in a collection system uses conveyance and treatment capacity that will then not be available for sanitary flow, thereby reducing the capacity and the efficiency of the treatment works and increasing the possibility of sanitary system overflows (SSO) from the collection system.

The permit standard conditions for 'Proper Operation and Maintenance' are found at 40 CFR §122.41(e). These require proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. There is also a 'duty to mitigate' as stated in 40 CFR §122.41 (d). This requires the permittee to take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely effecting human health or the environment. EPA and MassDEP maintain that an I/I removal program is an integral component to insuring permit compliance under both of these provisions.

The MassDEP has stated that inclusion of the I/I conditions in the draft permit shall be a standard State Certification requirement under Section 401 of the Clean Water Act and 40 CFR §124.55(b).

H. Sludge

Section 405(d) of the CWA requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became

effective on March 22, 1993. Domestic sludge which is land applied, disposed of in a surface disposal unit, or fired in a sewage sludge incinerator are subject to Part 503 technical standards. Part 503 regulations have a self implementing provision, however, the CWA requires implementation through permits. Domestic sludge which is disposed of in a municipal solid waste landfill is in compliance with Part 503 regulations provided that the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 C.F.R. Part 258.

The draft permit requires that sewage sludge use and disposal practices meet Section 405(d) Technical Standards of the CWA. In addition, the EPA Region I – NPDES Permit Sludge Compliance Guidance document dated November 4, 1999 is available for use by the permittee in determining its appropriate sludge conditions for its chosen method of sludge disposal.

Currently, the City of Attleboro disposes its sludge in a monofill (a sludge-only landfill). The landfill is lined, has a leachate collection system, and is located 100 feet (30.3 meters) from the nearest property boundary surrounding the landfill. There are no pollutant limitations for lined surface disposal units. However, the permittee must submit the following information by February 19th annually: a certification stating that the appropriate pathogen requirements and vector attraction reduction requirements have been met; and a description of how each of these requirements has been met.

The permittee is also required to submit to EPA, by February 19 each year, an annual report containing the information specified in the regulations for the permittee's chosen method of sludge disposal.

1. Other Monitoring Requirements.

The effluent monitoring requirements have been specified in accordance with 40 CFR 122.41(j), 122.44 (i) and 122.48 to yield data representative of the discharge.

V. State Certification Requirements

The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit. EPA has requested permit certification by the State pursuant to CWA § 401(a)(1) and 40 CFR § 124.53 and expects that the draft permit will be certified. EPA also expects that Rhode Island will be commenting on the permit pursuant to its authorities under CWA § 401(a)(2).

VI. Public Comment Period, Public Hearing, 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 before the close of the public comment

period, to the U.S. EPA,
Office of Ecosystem Protection "CMP", Region 1, 1 Congress Street, Suite 1100, Boston, MA 02114-2023. Any person, prior to such date, may submit a request in writing to EPA and the state 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 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 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. Permits may be appealed to the Environmental Appeals Board in the manner described at 40 CFR § 124.19.

VII. 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:

David Pincumbe
Municipal Permits Branch (CMP)
Office Of Ecosystem Protection
US Environmental Protection Agency
Congress Street, Suite 1100
Boston, MA 02114-2023
Tele: (617) 918-1695

Paul Hogan, Chief
Surface Water Permit Program
Division of Watershed Management
Department of Environmental Protection
627 Main Street, Second Floor
Worcester, MA 01608
Tele: (508) 767-2796

June , 2006
Date

Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

Attachment A
NPDES Permit No. MA0100595
Attleboro, Massachusetts

DESCRIPTION OF DISCHARGE: Effluent from advanced wastewater treatment

DISCHARGE:Outfall 001

Discharge Monitoring Report Date Summary: January 2003 thru December 2004.

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

Parameter	Range of Monthly Average	Range of Daily Maximums
Flow, MGD	2.5 - 7.0	----
BOD, mg/l	1.2 - 4.0	1.8 - 6.8
TSS, mg/l	0.7 - 5.5	1.5 - 84.0
pH, s.u	5.8 - 7.0	7.3 - 7.8
Fecal Coliform, CFU/100/ml	0 - 8	1 - 37
Total Chlorine Residual, ug/l	0 - 0.9	0 - 82.0
Ammonia-Nitrogen, mg/l	0 - 1.2	0 - 2.0
Total Phosphorus (May - Oct), mg/l	0.1 - 0.3	0.2 - 0.7
Total Cadmium, ug/l	0 - 11.5	0 - 15.0
Total Chromium, ug/l	0 - 38.5	0 - 72.0
Total Copper, ug/l	2.0 - 96.2	3.0 - 146.0
Total Lead, ug/l	0 - 11.5	0 - 13.0
Total Nickel, ug/l	10.0 - 70.0	20.0 - 100.0
Total Silver, ug/l	0 - 3.0	0 - 5.0
Total Zinc, ug/l	0 - 60.0	0 - 100.0
Total Aluminum, ug/l	0 - 459.0	0 - 636.0
Cyanide, ug/l	0 - 0	0 - 0
BOD, % removal	97.2 - 99.5	---
TSS, % removal	97.1 - 99.6	—

Attachment B
NPDES Permit No. MA0100595
Attleboro, Massachusetts

Qe = Attleboro WWTP Design Flow: 8.6 mgd = 13.3 cfs

Receiving Water- Ten Mile River
Qs = 7 day 10 year low flow (7Q10): 5.53 cfs

Dilution

(Qs + Qe)/Qe = (5.53 + 13.3)/13.3 = **1.4**

Chlorine Residual:

EPA Recommended Instream Chronic Criterion: 11 ug/1
Acute Criterion: 19 ug/1

Average monthly (chronic) limit:

(11 ug/1) x 1.4 = **15.4 ug/1**

Maximum daily (acute) limit:

(19 ug/1) x 1.4 = **26.6 ug/1**

Toxicity

The chronic (C-NOEC) whole effluent toxicity limit was calculated using the instream waste concentration ("IWC") of the WWTP effluent:

IWC = (1/dilution) x 100%

= (1/(1.4)) x 100%

= **71%**

30Q10 Flow:

30Q10 flow = 7Q10 x 2.37 (based upon US Geological Survey gauge records)

30Q10 = 5.53 x 2.37 = 13.1 cfs

Attachment C
NPDES Permit No. MA0100595
Metals Data and Limitations

Parameter	Range of Monthly Average	Range of Daily Maximums	Current Limits		Calculated Limits*	
			Mo Ave	Max Day	Mo Ave	Max Day
Total Cadmium, ug/l	0 - 11.5	0 - 15.0	9	20	0.4	2.9
Total Chromium, ug/l	0 - 38.5	0 - 72.0	108	1305	120	2524
Total Copper, ug/l	2.0 - 96.2	3.0 - 146.0	30	70	13.0	19.6
Total Lead, ug/l	0 - 11.5	0 - 13.0	60	60	4.5	114.2
Total Nickel, ug/l	10.0 - 70.0	20.0 - 100.0	173	1650	73.1	656.9
Total Silver, ug/l	0 - 3.0	0 - 5.0	8	23	---	5.3
Total Zinc, ug/l	0 - 60.0	0 - 100.0	150	270	167.7	167.7
Total Aluminum, ug/l	0- 459.0	0 - 636.0	210	950	122	1050
Cyanide, ug/l	0 - 0	0 - 0	6.3	33	7.28	30.8

* - Limits calculated using National Recommended Water Quality Critera:2002 and a dilution factor of 1.4. A hardness of 100 mg/l was used to for hardness dependent metals and default translator values from the criteria document were used to translate from dissolved to total metals.