

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

Lowell Cogeneration Company L.P.

is authorized to discharge from a facility located at

**Lowell Cogeneration Company L.P.
282 Western Avenue
Lowell, MA 01851**

to the receiving water named the **Pawtucket Canal to the Merrimack River**, a class B water, in accordance with effluent limitations, monitoring requirements, and other conditions set forth herein.

This permit shall become effective on March 1, 2009.

This permit and the authorization to discharge expire at midnight, February 28, 2014.

This permit supersedes the permit issued on August 11, 1987.

This permit consists of 10 pages in Part I including effluent limitations, monitoring requirements, **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol), **Attachment B** (Treatment Chemicals Listing used at Lowell Cogeneration) and 25 pages in Part II, Standard Conditions.

Signed this 9th day of December, 2008

/S/ SIGNATURE ON FILE

Stephen S. Perkins, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

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

PART I.A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge cooling tower blowdown, boiler blowdown, demineralizer wastewater, and water softener regeneration wastewater from outfall serial number 001 . Such discharges shall be limited and monitored by the permittee as specified below:				
<u>EFFLUENT CHARACTERISTIC</u>		<u>EFFLUENT LIMITS</u>		<u>MONITORING REQUIREMENTS</u>
<u>PARAMETER</u>	<u>AVERAGE MONTHLY</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE TYPE</u> ¹
Flow	86,500 GPD	115,000 GPD	Continuous	Recorder ²
pH Range ³	6.5 – 8.3 standard units		1/Month	Grab
Temperature, Effluent	Monitor °F	105 °F	Continuous	Recorder
Oil & Grease	15 mg/l	15 mg/l	1/Month	Grab
Total Residual Chlorine ^{3,4}	0.1 mg/l	0.1 mg/l	1/Month	Grab
126 Priority Pollutants ⁵	Below detection	Below Detection	1/Year	Grab or Calculation ⁵
Chromium, Total ⁶	0.2 mg/l	0.2 mg/l	1/Quarter ⁶	Grab
Zinc, Total ⁶	1.0 mg/l	1.0 mg/l	1/Quarter ⁶	Grab
Volatile Organic Compounds ⁷	Report ug/l	Report ug/l	See Footnote 7	Grab
Whole Effluent Toxicity ^{8,9,10}	LC ₅₀ ≥ 50%		See Footnote 8	8-Hour Composite ¹¹
Total Suspended Solids	30 mg/l	100 mg/l	1/Month	Grab ¹²

- a. The discharge shall not cause a violation of the water quality standards of the receiving waters.
- b. The effluent pH shall be in the range of 6.5 to 8.3 standard units and not more than 0.5 units outside of the natural background range.
- c. The discharge shall not cause objectionable discoloration of the receiving waters.
- d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
- e. The results of sampling for any parameter above its required frequency must also be reported.
- f. During periods when a drawdown of the Pawtucket Canal is occurring, these discharges shall be limited to the extent practicable.

Footnotes are listed on Pages 3 and 4

Part I.A.1 (continued)

Footnotes:

1. Sampling shall be conducted at a location prior to discharge to Outfall 001 and prior to mixing with any other stream, including any stream from Outfall 002. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP. All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.
2. For flow, report maximum and minimum daily rates and total flow for each operating date. Attach this data to each DMR form. Effluent flow can be measured or estimated through the use of pump capacity curves consistent with the pumps used at the site.
3. Requirement for State Certification
4. The minimum level (ML) for total residual chlorine (TRC) 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.
5. Sampling for this requirement shall be conducted on the cooling tower blowdown only once per year, during the calendar quarter of July 1 to September 30. There shall be no detectable amounts for all priority pollutants, with the exception of chromium and zinc, which are limited as shown. At the permitting authority's discretion, compliance with this limitation may be determined by engineering calculations (mass balance) which demonstrate that the regulated pollutants are not detectable in the final discharge by analytical methods in 40 CFR Part 136. If this approach is taken, each cooling tower chemical additive must be tested for priority pollutants at least once in the first year of the permit to determine the basis of the engineering calculations. Dilution for such engineering calculations must be based on lowest projected cooling tower blowdown flow. The chemical concentration used in such engineering calculations shall be based on anticipated (or manufacturer's suggested) feed rates. Upon receipt of written approval from EPA, the permittee is not required to sample/analyze for the demonstrated pollutants after this first year. In every December Discharge Monitoring Report (DMR) thereafter, the permittee shall certify that no new chemicals or waste streams have been added and that the engineering demonstrations are still valid.
6. Sampling for chromium and zinc shall be conducted on the cooling tower blowdown only for every calendar quarter as follows: one each for the periods of January 1 to March 31, April 1 to June 30, July 1 to September 30 and October 1 to December 31. This method of compliance described for priority pollutants in footnote 5 may not be used for chromium and zinc.

Part I.A.1 (continued)

7. This sampling shall be conducted in the first year of the permit only, during the calendar quarter of July 1 to September 30. The permittee shall conduct sampling on parameters 1V through 31V of EPA's Form 2C NPDES application form.
8. The permittee shall conduct an acute whole effluent toxicity (WET) test once during the first full calendar year of this permit, and then once every other year thereafter. The permittee shall test the daphnid, Ceriodaphnia dubia, and the fathead minnow, Pimephales promelas. Toxicity test samples shall be collected during the calendar quarter ending September 30 and shall be taken during periods that the cooling tower blowdown, boiler blowdown and demineralizer waste streams are being discharged. The test results shall be submitted no later than the last day of the month following the completed quarter, or October 31. The WET tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.
9. The LC₅₀ is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 50% limit means that a sample of 50% effluent shall cause no more than a 50% mortality rate.
10. 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 mailing. However, at any time, the permittee may choose to contact EPA directly using the approach outlined in **Attachment A**.
11. An 8-hour composite sample will consist of at least eight (8) grab samples taken during a consecutive 8 hour period. A shorter duration composite sample may be taken if the discharge duration is less than eight consecutive hours. Although all three process wastewaters must be included in this composite sample, the sample need not have proportional amounts of these individual wastewaters. The water softener regeneration water may be used in place of the demineralizer wastewater for this sampling.
12. The sampling for Total Suspended Solids (TSS) shall be conducted when the boiler blowdown and demineralizer wastewater are being discharged and when cooling tower blowdown is not being discharged.

PART I.A.

2. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge building floor drains (equipment water leakage), equipment drains, and intermittent boiler blowdown from outfall serial number 002, an internal outfall . Such discharges shall be limited and monitored by the permittee as specified below and apply during dry weather ¹ conditions:				
<u>EFFLUENT CHARACTERISTIC</u>	<u>EFFLUENT LIMITS</u>		<u>MONITORING REQUIREMENTS</u>	
<u>PARAMETER</u>	<u>AVERAGE MONTHLY</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE TYPE</u> ¹
Flow	8,250 GPD	Report GPD	1/Month	Estimate
pH Range ²	6.5 – 8.3 standard units		1/Month	Grab
Oil & Grease	Report mg/l	15 mg/l	1/Month	Grab

- a. The discharge shall not cause a violation of the water quality standards of the receiving waters.
- b. The effluent pH shall be in the range of 6.5 to 8.3 standard units and not more than 0.5 units outside of the natural background range.
- c. The discharge shall not cause objectionable discoloration of the receiving waters.
- d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
- e. The results of sampling for any parameter above its required frequency must also be reported.

Footnotes:

- 1. Sampling shall be conducted before mixing with any other stream at a location prior to discharge to Outfall 002. Dry weather condition sampling shall be conducted at any time when there is no precipitation and that is at least 48 hours after a storm event that was greater than 0.1 inches in magnitude. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP. All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.
- 2. Requirement for State Certification.

PART I.A.

3. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge **storm water** as well as building floor drain water (equipment water leakage), equipment drain water, and intermittent boiler blowdown from outfall serial number **002, an internal outfall**. Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTIC</u>		<u>EFFLUENT LIMITS</u>		<u>MONITORING REQUIREMENTS</u>	
<u>PARAMETER</u>	<u>AVERAGE MONTHLY</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE TYPE¹</u>	
Flow	Report MGD	Report MGD	4/Year	Estimate	
pH RANGE	Report standard units		4/Year	Grab	
Oil & Grease, mg/l	-----	15 mg/l	4/Year	Grab	
Total Suspended Solids	-----	Report mg/l	4/Year	Grab	

- a. The discharge shall not cause a violation of the water quality standards of the receiving waters.
- b. The discharge shall not cause objectionable discoloration of the receiving waters.
- c. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
- d. The results of sampling for any parameter above its required frequency must also be reported.

Footnotes:

- 1. Sampling shall be conducted for this discharge resulting from a storm event that is greater than 0.10 inches in magnitude and that occurs at least 48 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. This sample shall be taken within the first 60 minutes after this outfall discharges, if feasible. If there is no significant rain storm during the quarter to sample, the permittee shall enter "C" on the Discharge Monitoring Report (DMR), signifying no discharge for the reporting period.

Part I.A. (continued)

4. Toxics Control

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

5. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the 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.

6. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
 - a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - (1) One hundred micrograms per liter (100 ug/l);
 - (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
 - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or
 - (4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f).
 - b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - (1) Five hundred micrograms per liter (500 ug/l);
 - (2) One milligram per liter (1 mg/l) for antimony;

- (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or
 - (4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f).
 - c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.
7. This permit may be modified, or revoked and reissued, on the basis of new information in accordance with 40 CFR §122.62.
8. The permittee is prohibited from withdrawing water from the Pawtucket Canal through a cooling water intake structure (CWIS) to be used at the facility. If the permittee proposes to construct a CWIS, it must apply for a permit modification. In this modification, the permittee must provide specific details of the design, location, construction and capacity of this CWIS and explain how this CWIS proposal represents the Best Technology Available (BTA) for minimizing adverse environmental impacts from impingement mortality and entrainment. During the modification process, EPA and MassDEP may request additional information regarding BTA and the eventual modification may require additional or revised BTA measures from those proposed by the permittee.

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfalls listed in Parts I A.1, I.A.2 and I.A.3 of this permit. Discharges of wastewater from any other point sources are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements (Part II) of this permit (Twenty-four hour reporting).

C. TREATMENT CHEMICALS CONDITIONS

1. The permittee shall use only the treatment chemicals in dosages and combinations that are appropriate to control biological growth, corrosion and other needs in accordance with the manufacturer's specifications. The use of treatment chemicals shall be limited to the chemicals listed in permit **Attachment B**.
2. The permittee shall notify EPA any time that it proposes to begin using a new treatment chemical or to substitute for an existing treatment chemical. For each chemical, the permittee shall identify:
 - a. The product name and chemical formulation
 - b. The purpose of the chemical
 - c. The dosage rate, frequency of application, and the duration of treatment

- d. The method of application
 - e. The method or methods used to detoxify the wastewater prior to discharge, if necessary
 - f. Information on the persistence and toxicity of this chemical such as may be found on a Material Safety Data Sheet (MSDS)
3. The addition or change of a treatment chemical would be conditionally approved until the permittee (1) demonstrates through engineering calculations that each of the 126 priority pollutants in 40 CFR Part 423.15 (j)(1) is not detectable in the final discharge (See footnote 5 on Page 3) and (2) when the effluent successfully passes an acute WET test within thirty (30) days of any changes in the water treatment chemicals and/or their concentration occurs.
 4. The permittee must ensure the proper storage of chemicals in a manner designed to prevent spills or releases that may result in the discharges of these chemicals to the receiving water. The permittee shall implement procedures for properly containing, cleaning, and disposing of any spilled or otherwise released material.

D. 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 (with the exception that the WET tests results shall not be sent to the Wilmington MassDEP office) 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
Bureau of Waste Prevention
Northeast Regional Office
205B Lowell Street
Wilmington, MA 01887

Signed and dated Discharge Monitoring Report Forms and WET test results 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

E. STATE PERMIT CONDITIONS

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 are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MassDEP pursuant to M.G.L. Chapter 21, §43.

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

ATTACHMENT B

TREATMENT CHEMICALS USED AT LOWELL COGENERATION

BOILER CHEMICALS PARAMETER	DOSAGE USED (MG/L)	FLOW RATE (MG/D)	DILUTION RATIO	IN STREAM CONCENTRATION (MG/L)	PIMEPHA- LES PROMELAS LC-50 (MG/L)	CERIODA- PHNIA DUBIA LC-50 (MG/L)	TROUT LC-50 (MG/L)	BLUEGILL LC-50 (MG/L)
Pawtucket Canal		32,000,000						
BLOWDOWN		8,000	4,000					
BL 1347 AS PRODUCT PMA AND SSMA	500			0.125	96 hr->1000	96 hr->1000		
CT 55 AS PRODUCT Hexametaphosphate 100%	100			0.025	LC50 = 247.1 mg/l	48h LC50 = 272.3 mg/l		
BL 1283 as product Diethylhydroxyl Amine 25%	20			0.005	96h LC50 = >1000 mg/l	48h LC50 = 87.6 mg/l		
BL 1544 as product Cyclohexylamine 20% Diethylaminoethanol 20%	100			0.025	96 hr LC50 = 654..5 mg/l	48 hr LC50 = 124.3mg/l	96 hr static >1000 mg/l	48 hr static >1000 mg/l
B 120 as product Sodium Sulfito 100%	500			0.125	96h LC50 = >1000 mg/l	48h LC50 = 69.0 mg/l	96h LC50 = >500mg/l	48h LC50 = 500 mg/l
COOLING TOWER CHEMICALS PARAMETER	PERMIT LIMIT AS PRODUCT (MG/L)	FLOW RATE (GPM)	DILUTION RATIO	IN STREAM CONCENTRATION (MG/L)	PIMEPHA- LES PROMELAS LC-50 (MG/L)	CERIODA- PHNIA DUBIA LC- 50 (MG/L)	TROUT LC-50 (MG/L)	BLUEGILL LC-50 (MG/L)
Pawtucket Canal		32,000,000						
BLOWDOWN *		28,000	1,142.86					
CL 1432 AS PRODUCT	400			0.35	96 hr-301.5	48 hr-721.7		
CL 4400 AS PRODUCT	500			0.44	96 hr->1000	96 hr->1000		
CL 2150 AS PRODUCT 1.5% Chloro-2-methyl-4- isothiazolin-3-one EPA Reg. No. 15300-24	200			0.18	96 hr- 8.0	48 hr-10.67	144 hr-9.33	144 hr-36.0
CL 4125 AS PRODUCT tolyltriazole	100			0.09	LC50 = 70- 154 mg/l	48h LC50 = 141.79 mg/l		
BL 122 as product NaHSO3 30%	100			0.09	96 hr->1000	48 hr-390.4		
CL 240 as Product Silicone Defoamer	100			0.09	96 hr- 8600	48 hr-6000		