

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I – NEW ENGLAND
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114**

FACT SHEET

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

NPDES PERMIT NO.: MA0101681

PUBLIC NOTICE START AND END DATES:

December 28th, 2007 – February 10th, 2008

NAME AND ADDRESS OF APPLICANT:

**City of Pittsfield
Department of Public Works
Pittsfield, Massachusetts 01201**

The Towns of Dalton, Lenox (North), Hinsdale, and Lanesborough are included as co-permittees for specific activities required by the draft permit. See section VII of this fact sheet and Part I.D. and Part I.E. of the draft permit. The responsible Town departments are:

Town of Dalton	Town of Lenox	Town of Hinsdale	Town of Lanesborough
462 Main Street	Dept. of Public Works	39 South Street	83 N. Main Street
Dalton, MA 01226	275 Main Street	P.O. Box 803	Lanesborough, MA 01237
	Lenox, MA 01240	Hinsdale, MA 01235	

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS

**Pittsfield Wastewater Treatment Plant
901 Holmes Road
Pittsfield, Massachusetts 01201**

RECEIVING WATER: Housatonic River

CLASSIFICATION: B (Warm Water Fishery)

EXHIBIT 44

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I. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for re-issuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water, the Housatonic River (**Figure 1**). The existing permit was issued on October 3, 2000 and expired on December 5, 2005. A timely re-application was submitted and the current permit was administratively continued pursuant to 40 CFR § 122.6. The reissued permit, once it becomes effective, will expire five years from the last day of the month preceding the effective date.

II. TYPE OF FACILITY AND DISCHARGE LOCATION

The Pittsfield Wastewater Treatment Plant (WWTP) is an advanced wastewater treatment facility engaged in the collection and treatment of municipal and industrial wastewater. The treated effluent is discharged through a single outfall to the Housatonic River. The entire collection system consists of separate sewers.

The facility's discharge outfall is listed below:

<u>Outfall</u>	<u>Description of Discharge</u>	<u>Outfall Location</u>
003	Advanced Wastewater Treatment Plant Effluent	42°24'15"/73°14'30"

III. RECENT PERMITTING HISTORY

- Current permit issued on October 3, 2000
- Current permit expired on December 2, 2005 and administratively continued
- Reapplication for NPDES permit received June 3, 2005

IV. DESCRIPTION OF THE DISCHARGE

A quantitative description of the discharge in terms of significant effluent parameters based on recent monitoring data is shown in **Appendix A, B, C, and D** of this fact sheet.

V. PERMIT BASIS AND DESCRIPTION OF EFFLUENT LIMITATION DERIVATION**A. PROCESS DESCRIPTION**

The Pittsfield Wastewater Treatment Plant is an advanced wastewater treatment facility with a design flow of 17 million gallons per day (MGD), which discharges treated effluent to the Housatonic River. The Towns of Pittsfield, Dalton, Lenox (North), Hinsdale, and Lanesborough contribute flow to the Pittsfield WWTP and are named as co-permittees for Parts I.C. and I.D. of the draft permit (also see Section VII of this fact sheet).

Wastewater treatment at the facility consists of bar screens to remove coarse debris, grit channels that settle out inorganic solids, primary settling basins for removal of the larger and heavier matter, trickling filters, intermediate settling tanks, aeration tanks, sodium aluminate chemical addition for phosphorus removal, secondary clarifiers, chlorine contact chambers, and dechlorination. The treated effluent is then discharged through Outfall 003 to the Housatonic River (**Figures 1 and 2**).

Solids are removed from the primary and secondary clarifiers, and are transported through gravity sludge thickeners, anaerobic digesters, and a belt filter press. After the sludge has been dewatered, it is transported offsite by Synagro of Waterbury, CT for incineration.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Overview of Federal and State Regulations

EPA is required to consider technology and water quality requirements when developing permit limits. Secondary treatment technology guidelines (effluent limits) represent the minimum level of control that must be imposed on Publicly Owned Treatment Works (POTWs) under Sections 301(b) and 402 of the Clean Water Act (CWA). The secondary treatment technology guidelines can be found at 40 CFR Part 133. Since all Clean Water Act statutory deadlines for meeting technology-based guidelines have expired, the deadline for compliance with technology-based effluent limits for Publicly Owned Treatment Works is the date of permit issuance (see also: 40 CFR § 125.3.(a)(1)). Extended compliance schedules can not be authorized by a NPDES permit if the statutory deadlines have passed.

Section 301(b)(1)(C) of the Clean Water Act requires NPDES permits to contain effluent limits more stringent than technology-based limits when more stringent limits are necessary to maintain or achieve water quality standards. Receiving water requirements are established according to numerical and narrative standards adopted under state law. 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) anti-degradation requirements to assure that existing uses and high-quality waters are protected and maintained.

Pursuant to 40 CFR § 122.44(d), permittees must achieve water quality standards established under Section 303 of the Clean Water Act (CWA), including state narrative criteria for water quality. Additionally, under 40 CFR § 122.44(d)(1)(i), "Limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." When determining whether a discharge causes, or has the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numeric criterion, the permitting authority shall use procedures which account for existing controls on point and non-point sources of

pollution, and where appropriate, consider the dilution of the effluent in the receiving water.

2. Water Quality Standards; Designated Use; Outfall 003

The Massachusetts Surface Water Quality Standards found at 314 Code of Massachusetts Regulations (CMR) classifies the segment of the Housatonic River where the Pittsfield WWTP discharge outfall is located (segment MA21-04) as a Class B-Warm Water Fishery (314 CMR § 4.06 Table 3). Class B waters are designated in 314 CMR § 4.05(3)(b) as having the following uses: (1) habitat for fish, other aquatic life, and wildlife; (2) primary and secondary contact recreation; (3) a source of public water supply (i.e. where designated and with appropriate treatment; (4) suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses; and (5) will have consistently good aesthetic value.

A warm water fishery is defined in the Massachusetts Surface Water Quality Standards (314 CMR § 4.02) as “waters in which the maximum mean monthly temperature generally exceeds 68°F (20° C) during the summer months and are not capable of sustaining a year-round population of cold water stenothermal aquatic life”.

Sections 305(b) and 303(d) of the CWA requires that states complete a water quality inventory and develop a list of impaired waters. Specifically, Section 303(d) of the CWA requires states to identify those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of a total maximum daily load (TMDL). In Massachusetts, these two evaluations have been combined into an Integrated List of Waters. The integrated list format provides the status of all assessed waters in a single, multi-part list. The Massachusetts Year 2006 Integrated List of Waters (303(d) List) lists the segment of the Housatonic River into which the Pittsfield WWTP discharges treated effluent (segment MA21-04) as a Category 5 water (waters requiring a TMDL). The pollutants causing the impairments and requiring a TMDL are listed as priority organics, pathogens, and turbidity.

a. Available Dilution

Water quality-based effluent limitations are established with the use of a calculated dilution factor, based on the available dilution of the effluent. Massachusetts water quality regulations require that the available effluent dilution be based upon the 7 year, 10 day low flow (7Q10 flow) of the receiving water (314 CMR § 4.03(3)(a)). The 7Q10 low flow is the mean low flow over seven consecutive days, recurring every ten years. Additionally, the 30-day, ten year low flow (30Q10 flow) of the receiving water is used in the calculation of water quality-based limitations for parameters such as ammonia (EPA 1999 Update of Ambient Water Quality Criteria for Ammonia).

The 7Q10 and 30Q10 flow data used in the calculation of water quality-based effluent limitations in the draft permit are based on continuous flow data collected in the

Housatonic River upstream from the Pittsfield WWTP by a United States Geological Survey (USGS) flow gage (USGS gaging station number 01197000, East Branch of the Housatonic River at Coltsville, MA). Flows at the USGS gage were then adjusted for the drainage area at the point of discharge (Table 1).

The 7Q10 and 30Q10 low flows for the USGS gage number 01197000 are 12.5 and 23.1 cubic feet per second (cfs), respectively, with a drainage area of 57 square miles (mi²) (USGS gage station No. 01197000; period of record: 1936-2006). These flows were divided by the drainage area at the gage station to derive 7Q10 and 30Q10 flow factors. The flow factors were then multiplied by the drainage area of the Housatonic River at the Pittsfield WWTP (117 mi²) to determine the 7Q10 and 30Q10 flows (available dilution) at the point of discharge (Table 1).

Table 1: Flow Statistics for USGS Gage No. 011970 (Period of Record 1936-2006) and the Pittsfield WWTP

	USGS Gage No. 0119700	Pittsfield WWTP
Drainage Area (mi²)	57	117
7Q10 Flow (cfs)	12.5	25.7
7Q10 Flow Factor (cfs)	0.2193	0.2193
Seasonal (December-April) 30Q10 Flow (cfs)	23.1	47.4
30Q10 Flow Factor (cfs/mi²)	0.4053	0.4053

The available dilution at the outfall during critical flow conditions (7Q10 and 30Q10 flows) and the design flow of the facility (17 MGD = 26.35 cfs) were then used to calculate the dilution factors used in the calculation of water quality-based effluent limitations as follows:

7Q10 Dilution Factor (DF_{7Q10})

$$(DF_{7Q10}) = (7Q10_{\text{Pittsfield WWTP}} + \text{Design Flow}_{\text{Pittsfield WWTP}}) / \text{Design Flow}_{\text{Pittsfield WWTP}}$$

$$(DF_{7Q10}) = (25.7 \text{ cfs} + 26.35 \text{ cfs}) / 26.35 \text{ CFS}$$

$$(DF_{7Q10}) = 1.97$$

30Q10 Dilution Factor (DF_{30Q10})

$$DF_{30Q10} = (30Q10_{\text{Pittsfield WWTP}} + \text{Design Flow}_{\text{Pittsfield WWTP}}) / \text{Design Flow}_{\text{Pittsfield WWTP}}$$

$$DF_{30Q10} = (47.4 \text{ cfs} + 26.35 \text{ cfs}) / 26.35 \text{ cfs}$$

$$DF_{30Q10} = 2.8$$

3. Explanation of Effluent Limitations (Outfall 003)

In addition to the State and Federal regulations described above, data submitted by the permittee in their re-application as well as in monthly discharge monitoring reports (DMRs) and in whole effluent toxicity (WET) test reports from 2005 to 2007 was used to evaluate the discharge during the effluent limitation development process (see **Appendix A, B, C, and D**).

a. Flow

The average monthly flow limitation of 17.0 MGD in the current permit has been maintained in the draft. This limitation is based upon the 17.0 MGD design flow of the facility as required by 40 CFR § 122.45(b). Flow shall be measured continuously. The permittee shall report the annual average monthly flow using the rolling average method. Additionally, the permittee shall report the average monthly and maximum daily flow.

The maximum daily flow limitation in the current permit has been removed from the draft permit, as it is not required by federal regulation and has not been made a condition for State certification.

b. Conventional Pollutants

1. Carbonaceous Biochemical Oxygen Demand (CBOD₅)

The draft permit includes proposed CBOD₅ limitations in accordance with the requirements set forth at 40 CFR §133.102. Pursuant to 40 CFR § 133.102(a)(4), the permitting authority may substitute the BOD₅ limitations set forth within the regulations with CBOD₅ limitations. EPA allows the use of CBOD₅ limitations in place of BOD₅ limitations to minimize test interference by nitrogenous compounds, which can lead to erroneous BOD₅ test results. The requirements set forth at 40 CFR § 133.102(a)(4)(i) and (ii) state that the average monthly discharge of CBOD₅ shall not exceed 25 mg/l, nor shall the average weekly discharge of CBOD₅ exceed 40 mg/l.

The CBOD₅ limitations and monitoring requirements in the draft permit are the same as those in the current permit, and are therefore consistent with antibacksliding requirements.

Pursuant to 40 CFR §122.45(f), the draft permit also contains average monthly and average weekly mass limitations for CBOD₅, which were calculated as follows:

$$\text{Mass Limitation (lbs/day)} = C \times DF \times 8.34$$

Where:

C = Concentration limit

DF = Design flow of the facility, in MGD

8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

$$\text{Average Monthly Mass Limit} = 10 \text{ mg/l} \times 17.0 \text{ MGD} \times 8.34 = 1420 \text{ lbs/day}$$

$$\text{Average Weekly Mass Limit} = 10 \text{ mg/l} \times 17.0 \text{ MGD} \times 8.34 = 1420 \text{ lbs/day}$$

The mass limitations in the draft permit are the same as those in the current permit and are consistent with antibacksliding requirements.

In accordance with the provisions set forth at 40 CFR § 133.102(a)(4)(iii), the draft permit requires that the 30-day average percent removal of CBOD₅ be no less than 85%.

2. Total Suspended Solids (TSS)

The limitations and monitoring requirements for total suspended solids (TSS) in the draft permit are based on the technology-based requirements found at 40 CFR § 133.102(b)(1) and (2). The limits in the draft permit are the same as those in the current permit and are therefore consistent with antibacksliding requirements.

Pursuant to 40 CFR §122.45(f), the draft permit also contains average monthly and average weekly mass limitations for TSS, which were calculated as follows:

$$\text{Mass Limitation (lbs/day)} = C \times DF \times 8.34$$

Where:

C = Concentration limit

DF = Design flow of the facility, in MGD

8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

$$\text{Average Monthly Mass Limit} = 20 \text{ mg/l} \times 17.0 \text{ MGD} \times 8.34 = 2840 \text{ lbs/day}$$

$$\text{Average Weekly Mass Limit} = 25 \text{ mg/l} \times 17.0 \times 8.34 = 3550 \text{ lbs/day}$$

The TSS mass limitations in the draft permit are the same as those in the current permit and are consistent with antibacksliding requirements.

In accordance with the provisions set forth at 40 CFR § 133.102(b)(3), the draft permit requires that the 30-day average percent removal of TSS be no less than 85%.

3. pH

Historically, MassDEP has required compliance with pH limitations at the end-of-pipe with no allowance for dilution. Therefore, the pH limits proposed in the draft permit are based on State certification requirements for Publicly Owned Treatment Works under Section 401(d) of the CWA, 40 CFR §124.53 and § 124.55. Specifically, the Massachusetts Water Quality Standards for Class B Waters (314 CMR § 4.05 (3)(b)(3)) require the pH to be within the range of 6.5-8.3 Standard Units (SU) and not more than 0.5 Standard Units outside of the natural background range. There shall be no change from the natural background conditions that would impair any use assigned to this Class.

The pH limitations in the draft permit are the same as those in the current permit, and so are consistent with antibacksliding requirements of 40 CFR § 122.44(l) and are at least as stringent as the requirements set forth at 40 CFR § 133.102(c.). The monitoring frequency for pH is set at twice per day in the draft permit.

4. Escherichia coli (E. coli)

The *Escherichia coli* (*E. coli*) limits for Outfall 003 are based on state water quality standards for Class B waters (314 CMR 4.05(b)(4)). The State of Massachusetts recently (December 29, 2006) promulgated new bacteria criteria in the Surface Water Quality Standards (314 CMR § 4.00). Fecal coliform bacteria have been replaced by *E. coli* in those standards. These new criteria were approved by EPA on September 19, 2007. Therefore, the draft permit includes *E. coli* limits, with a one year compliance schedule for attaining those limits. After one year, the new *E. coli* limits will go into effect. The permittee shall monitor and report the monthly average and maximum daily discharges of *E. coli* for the first year that the permit is in effect. As discussed below, fecal coliform limits will be in effect during the first year.

The *E. coli* limits proposed in the draft permit for Outfall 003 are 126 colony forming units per 100 ml (cfu/100 ml) geometric monthly mean and 409 cfu/100 ml maximum daily value (this is the 90% distribution of the geometric mean of 126 cfu/100 ml). These limits are seasonal, and the season has been extended from April 1st - October 15th to April 1st - October 31st to fully encompass the contact recreation period. The proposed *E. coli* monitoring frequency in the draft permit is twice per week. The draft permit includes a requirement for the collection of *E. coli* samples with one of the total residual chlorine samples. In addition, during the first year that the permit is in effect, *E. coli* samples shall also be collected concurrently with the fecal coliform bacteria samples.

5. Fecal coliform bacteria

As discussed above, new bacteria criteria have been adopted by MassDEP, and EPA approved these criteria on September 19, 2007. There are no fecal coliform criteria for Class B waters in the Massachusetts Surface Water Quality Standards recently adopted by MassDEP and approved by EPA. EPA and MassDEP believe that a one year compliance schedule for achieving the new *E. coli* limits is reasonable. Therefore, the existing fecal

coliform limits in the current permit are maintained in the draft for the first year that the reissued permit is in effect, whereupon the new *E. coli* limits will go into effect.

The fecal coliform limits in the draft permit are seasonal, and the season has been extended from April 1st - October 15th to April 1st - October 31st to ensure that contact recreation uses are protected. The average weekly fecal coliform bacteria limit that is in the existing permit, which is equivalent to the maximum daily limit, has been removed from the draft since it is not necessary. The draft permit includes a proposed fecal coliform bacteria monitoring frequency of twice per week. The draft permit includes a requirement for the concurrent collection of weekly fecal coliform samples with the *E. coli* samples as well as with one of the total residual chlorine samples.

c. Non-Conventional Pollutants

1. Nitrogen

It has been determined that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen.

In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day respectively (see table below). The estimated current point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers respectively are 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day, based on recent information and including all POTWs in the watershed. The following table summarizes the estimated baseline loadings, TMDL target loadings, and estimated current loadings:

Basin	Baseline Loading ¹ lbs/day	TMDL Target ² lbs/day	Current Loading ³ lbs/day
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	26,211	19,657	17,002

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
2. Reduction of 25% from baseline loading

3. Estimated current loading from 2004 – 2005 DMR data – see **Appendix E**

The TMDL target of a 25 percent aggregate reduction from baseline loadings is currently being met, and the overall loading from MA, NH, and VT wastewater treatment plants discharging to the Connecticut River watershed has been reduced by about 36 percent.

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over baseline loadings, EPA intends to include a permit condition for all existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic and Thames River watersheds, requiring the permittees to evaluate alternative methods of operating their treatment plants to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Facilities not currently engaged in optimization efforts will also be required to implement optimization measures sufficient to ensure that their nitrogen loads do not increase, and that the aggregate 25 % reduction is maintained. Such a requirement has been included in the draft permit. EPA Region I-New England also intends to work with the State of Vermont to ensure that similar requirements are included in its discharge permits.

Specifically, the permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and MassDEP within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The permit also requires implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be 1241 lbs/day (see **Attachment E**). The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years.

The agencies will annually update the estimate of all out-of-basin total nitrogen loads and may incorporate total nitrogen limits in future permit modifications or reissuances as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant the incorporation of numeric permit limits. There have been significant efforts by the New England Interstate Water Pollution Control Commission (NEIWPCC) work group and others since completion of the 2000 TMDL, which are anticipated to result in revised wasteload allocations for in-basin and out-of-basin facilities. Although not a permit requirement, it is strongly recommended that any facilities planning that might be conducted for this facility should consider alternatives for further enhancing nitrogen reduction.

The draft permit maintains the average monthly and maximum daily reporting requirements for total nitrogen, nitrite, nitrate, and Kjeldahl nitrogen that are in the current permit.

Ammonia-nitrogen

The draft permit maintains the ammonia-nitrogen limitations and monitoring requirements in the current permit, which are based on water quality standards, and are therefore consistent with antibacksliding requirements. The seasonal ammonia-nitrogen limitations will ensure that the receiving water will be protected from the toxicity associated with discharges of ammonia, and the increase in oxygen demand resulting from nitrification during the months of the year when instream temperatures are expected to be higher and receiving water flows lower. Effluent data from 2005-2007 indicate that the Pittsfield WWTP is performing properly so as to minimize the quantity of ammonia in the discharge and that they have consistently met the limits in the current permit (see **Appendix B**).

Winter ambient ammonia criteria are dependent on the temperature and pH of the receiving water, as described in the EPA 1999 Update of Ambient Water Quality Criteria for Ammonia. Using a critical instream temperature of 10°C and a critical instream pH of 7.4, the chronic winter ammonia criteria (for fish early life stages absent) in the Housatonic River was determined to be 6.33 mg/l. Using this criteria and the 30Q10 dilution factor (DF_{30Q10}) of 2.8, the average monthly winter ammonia-nitrogen limitation was calculated to be 17.7 mg/l using the following equation (see **Table 1** for explanation of flow and dilution factor calculations):

Monthly Average Winter N-NH₃ Limit (N-NH₃)

$$N-NH_3 = \text{Chronic Ammonia Criterion} \times DF_{30Q10}$$

$$N-NH_3 = 6.33 \text{ mg/l} \times 2.8 = 17.7 \text{ mg/l}$$

Effluent monitoring data from 2005-2007 was used to estimate the current instream ammonia nitrogen concentration downstream of the Pittsfield WWTP, which was then compared to the criteria in order to determine whether there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria during the winter months (October 1st - March 31st). During the 2005 through 2007 winter periods, average monthly discharges of ammonia-nitrogen ranged from a minimum of 0.02 mg/l to a maximum of 0.56 mg/l, and averaged 0.145 mg/l (see **Appendix B**). The maximum daily concentration of ammonia-nitrogen in the discharge ranged from 0.02 mg/l to 0.56 mg/l, and averaged 0.147 mg/l (see **Appendix B**). The results of upstream ammonia analyses conducted on dilution water samples used for whole effluent toxicity testing in December of 2005 and 2006 and March of 2005, 2006, and 2007 indicate an average ambient ammonia concentration of 0.04 mg/l. This value was used along with the maximum concentration of ammonia discharged from the facility during the 2005-2007 winter periods, the design flow of the facility, and the 30Q10 flow of the receiving water to estimate the downstream ammonia-nitrogen concentration as follows:

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

Where:

Q_r = receiving water flow downstream of the discharge ($Q_d + Q_s$)

C_r = concentration of nitrogen in the receiving water downstream of the discharge

Q_d = design flow of the facility

C_d = nitrogen concentration in the discharge

Q_s = receiving water flow upstream of the discharge (30Q10 flow)

C_s = nitrogen concentration upstream of the discharge

$$Q_s = 47.4 \text{ cfs}$$

$$C_s = 0.04 \text{ mg/l}$$

$$C_d = 0.56 \text{ mg/l}$$

$$Q_d = 26.35 \text{ cfs}$$

$$Q_r = (26.4 \text{ cfs} + 25.7 \text{ cfs}) = 52.1 \text{ cfs}$$

$$C_r = (0.04 \text{ mg/l})(47.4 \text{ cfs}) + (0.56 \text{ mg/l})(26.35) / 52.1 \text{ cfs} = 0.32 \text{ mg/l}$$

The resulting estimated downstream ammonia-nitrogen concentration of 0.32 mg/l is below the criteria of 6.33 mg/l, indicating that reasonable potential does not exist for this discharge to cause or contribute to an exceedance of water quality criteria. Therefore, winter ammonia-nitrogen limits are not proposed in the draft permit. The winter (October 1st - March 31st) ammonia-nitrogen monitoring requirement in the current permit has been continued in the draft.

3. Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, in high quantities it stimulates rapid plant growth in freshwater ecosystems. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by (1) increasing the oxygen demand within the water body (both to support plant respiration and to allow for the biological breakdown of dead organic (plant) matter); (2) causing an unpleasant appearance and odor; (3) interfering with navigation and recreation; (4) reducing water clarity; and (5) reducing the quality and availability of suitable habitat for aquatic life. Cultural or accelerated eutrophication is the term used to describe excessive inputs of nutrients into a water body that are the result of human activities. Discharges from wastewater treatment plants, agricultural runoff, and stormwater are examples of human-derived sources of nutrients in surface waterbodies.

The Massachusetts Water Quality Standards do not contain numerical criteria for phosphorus. The narrative criterion for nutrients found at 314 CMR § 4.05(5)(c) 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, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the highest and best practicable treatment to remove such nutrients” (314 CMR § 4.05(5)(c)). MassDEP has established that a monthly average total phosphorus limit of 0.2 mg/l represents the highest and best practical treatment for POTWs.

In the absence of numeric criteria for phosphorus, EPA uses nationally-recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus. EPA has published national guidance documents which contain recommended in-stream criteria for total phosphorus. EPA’s 1986 Quality Criteria for Water (the “Gold Book”) recommends that instream phosphorus concentrations not exceed 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 recommended 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 within ecoregions that are minimally impacted by human activities, and thus free from cultural eutrophication. Pittsfield is located within Ecoregion XIV, Eastern Coastal Plains. The recommended 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 (2000), is 24 µg/l (0.024 mg/l).

The current permit contains average monthly, average weekly, and maximum daily total phosphorus effluent limitations from April 1st- April 30th (2.0 mg/l, 2.0 mg/l, and 3.0 mg/l, respectively) and from May 1st- August 30th (1.0 mg/l, 1.0 mg/l, and 1.5 mg/l, respectively). An average monthly and maximum daily reporting requirement is currently in effect from September 1st- March 31st. The concentration of Phosphorus in the Pittsfield WWTP’s effluent from 2005-2007 is summarized in **Table 2** (data taken from monthly effluent monitoring reports submitted by the permittee; (also see **Appendix C**).

Table 2: Discharges of Phosphorus from the Pittsfield WWTP (2005-2007)

Date	Average Monthly (mg/l)	Average Weekly (mg/l)	Maximum Daily (mg/l)
April 1st-April 30th	0.71-1.19 (0.9)	0.83-1.29 (1.05)	0.83-1.31 (1.06)
May 1st-August 30th	0.78-0.87 (0.83)	0.85-0.97 (0.90)	0.86-1.03 (0.94)
Sept. 1st-March 31st	0.66-1.32 (0.90)	—	0.66-1.32 (0.90)

Note: Minimum-Maximum values shown. Values in parentheses are averages.

Elevated concentrations of chlorophyll *a*, excessive algal and macrophyte growth, and low dissolved oxygen levels are all effects of nutrient enrichment. The relationship between these factors and high concentrations of phosphorus is well documented in scientific literature, including guidance developed by EPA to address nutrient overenrichment (Nutrient Criteria Technical Guidance Manual – Rivers and Streams, EPA July 2000 (EPA-822-B-00-002)). Samples collected upstream from the Pittsfield WWTP contained chlorophyll *a* concentrations of 3.3 µg/l (July 2002) and 2.2 µg/l (September 2002), while samples collected on the same dates from an impoundment downstream of the facility (Woods Pond) contained chlorophyll *a* concentrations as high as 23.0 µg/l (July 2002) and 24.2 µg/l (September 2002) (MassDEP 2002 Housatonic River Watershed Water Quality Assessment Report). The MassDEP 2002 Housatonic River Watershed Water Quality Assessment Report also cites the presence of dense assortments of aquatic macrophytes and phytoplankton as well as dense algal growth in Woods Pond. The elevated chlorophyll *a* measurements and excessive plant growth observed in Woods Pond are indicative of nutrient enrichment. A review of the total phosphorus data for samples collected by MassDEP in 2002 upstream from the Pittsfield WWTP found in-stream total phosphorus concentrations as high as 0.096 mg/l (July 2002) and 0.202 mg/l (September 2002) (MassDEP 2002 Housatonic River Watershed Water Quality Assessment Report). Measurements of flow in the Housatonic River collected by the USGS gage No. 01197000 (East Branch of the Housatonic River, Coltsville, MA) show that the receiving water flows on the dates that these samples were collected were close to the 7Q10 flow of 12.5 cfs for that station (21 cfs on July 2002 and 14 cfs on September 2002), meaning that these samples are representative of critical conditions (MassDEP 2002 Housatonic River Watershed Water Quality Assessment Report).

Further downstream in Connecticut, Chlorophyll *a*, nutrient/eutrophication, excessive algal growth, and taste/odor are described as causing an impairment of recreational uses in Lake Lillinoah, in the State of Connecticut's 2006 Integrated Water Quality Report to Congress. Sources potentially contributing these pollutants include agriculture, unspecified urban stormwater, non-point sources, and municipal point source discharges (CT DEP 2006 Integrated Water Quality Report to Congress).

The effectiveness of the current seasonal average monthly low limit of 1.0 mg/l (May 1st - August 30th) in protecting the quality of the receiving water was evaluated by estimating the instream phosphorus concentration downstream from the discharge under critical flow conditions using a background phosphorus concentration (C_s) of 0.149 mg/l (this is the average of the 2002 sample results), the lowest average monthly phosphorus limit ($C_d = 1.0$ mg/l), the 7Q10 flow of the receiving water ($Q_s = 25.7$ cfs), the design flow of the facility ($Q_d = 17.0$ MGD = 26.35 cfs), and the receiving water flow downstream of the discharge ($Q_r = Q_d + Q_s = 52.1$ cfs) as follows:

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

$$C_r = (25.7 \text{ cfs})(0.149 \text{ mg/l}) + (26.35 \text{ cfs})(1.0 \text{ mg/l}) / 52.1 \text{ cfs} = 0.579 \text{ mg/l}$$

The result of this calculation shows that because the upstream phosphorus concentration exceeds the Gold Book recommended criteria, the current discharge would be expected to result in a downstream concentration of approximately 0.579 mg/l, which greatly exceeds both the ecoregional criteria of 0.024 mg/l and the Gold Book criteria of 0.1 mg/l.

Given the high upstream phosphorus concentration and lack of dilution under 7Q10 conditions, and in response to the negative effects of nutrient enrichment observed in Woods Pond, a water quality-based total phosphorus limit of 0.1 mg/l has been proposed in the draft permit to ensure that the discharge does not cause or contribute to an exceedance of the Gold Book criteria of 0.1 mg/l in the receiving water. This limitation is in effect from April 1st - October 31st in order to provide maximum protection of the receiving water during the entire growing season. This seasonal limit is defined as a 60 day rolling average limit. The 60 day average value for each day in a given month, beginning on the 60th day after April 1st, must be calculated and the highest 60 day average value for that month must be reported on the monthly discharge monitoring report (DMR). In addition, the maximum daily value for each month must be reported.

A four-year compliance schedule for the permittee to come into compliance with the new 0.1 mg/l summer period (April 1st - October 31st) phosphorus limit is included in the draft permit (one year each for the planning and design of necessary facility upgrades and two years for the construction of necessary upgrades and for achieving the new limits). During this four-year period, the permittee shall achieve the following total phosphorus limitations from April 1st - October 31st: 1.0 mg/l average monthly, 1.0 mg/l average weekly, and 1.5 mg/l maximum daily. Monitoring for total phosphorus shall be conducted at the frequency specified in Part I.A.1.a. of the draft permit (See Part I.B. of the draft permit, Schedule of Compliance).

The draft permit also contains a winter period (November 1st - March 31st) average monthly total phosphorus limitation of 1.0 mg/l. This limit is necessary to ensure that higher levels of phosphorus discharged in the winter do not result in the accumulation of phosphorus in the downstream sediments. This limitation assumes that the vast majority of the phosphorus discharged will be in the dissolved fraction, and that the dissolved phosphorus will pass through the system given the short detention time of the impoundments and the lack of plant growth during the winter period.

Because the proposed winter phosphorus limit is new for this facility, the draft permit allows the permittee a schedule of one year from the effective date of the permit to come into compliance with the new winter period phosphorus limit (see Part I.B. of the draft permit, Schedule of Compliance). During the first year that the permit is in effect, the permittee shall report the average monthly total phosphorus concentration during the winter period (November 1st - March 31st).

The draft permit also includes a monitoring requirement for ortho-phosphorus during the winter period (November 1st - March 31st). Monitoring for ortho-phosphorus is necessary to identify whether the particulate fraction remains low and to further understand the physical dynamics of phosphorus in the non-growing season.

**AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE
ELIMINATION SYSTEM**

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

**City of Pittsfield
Department of Public Works
Pittsfield, Massachusetts 01201**

is authorized to discharge from a facility located at

**Pittsfield Wastewater Treatment Plant
901 Holmes Road
Pittsfield, Massachusetts 01201**

to receiving water named **Housatonic River (Class B – Warm Water Fishery)**

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

The Towns of Dalton, Lenox, Hinsdale, and Lanesborough are included as co-permittees for Part I.D. Unauthorized Discharges and Part I.E. Operation and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the wastewater collection systems owned and operated by the Towns. Each of the co-permittees is responsible for specific activities required by these sections, including the reporting on such activities. The responsible Towns are:

Town of Dalton	Town of Lenox	Town of Hinsdale	Town of Lanesborough
462 Main Street	Department of Public Works	35 South Street	83 N. Main Street
Dalton, MA 01226	275 Main Street	P.O. Box 803	Lanesborough, MA 01237
	Lenox, MA 01240	Hinsdale, MA 01235	

This permit shall become effective on October 1, 2008.

This permit and the authorization to discharge expire at midnight, five years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on October 3, 2000.

This permit consists of 15 pages in Part I including effluent limitations, monitoring requirements, **Attachment A (Freshwater Chronic Toxicity Test Procedure and Protocol)**, **Attachment B (Sludge Compliance Guidance)**, **Attachment C (Reassessment of Technically Based Local Limits)**, and **Attachment D (NPDES Permit Requirement for Industrial Pretreatment Program Annual Report)**, and Part II including General Conditions and Definitions.

Signed this 22nd day of August, 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. Outfall 003

a. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 003 to the Housatonic River. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Unit	Discharge Limitation			Monitoring Requirement ³	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow ^{*2} Flow ^{*2}	MGD MGD	17.0 Report	— —	Report Report	Continuous Continuous	Recorder Recorder
CBOD ₅ ^{*4} CBOD ₅ ^{*4}	mg/l lbs/day	10 1420	10 1420	Report Report	3/Week 3/Week	24-Hour Composite ^{*5} 24-Hour Composite ^{*5}
TSS ^{*4} TSS ^{*4}	mg/l lbs/day	20 2840	25 3550	Report Report	3/Week 3/Week	24-Hour Composite ^{*5} 24-Hour Composite ^{*5}
pH Range ^{*1}		6.5-8.3 SU (See Permit Part I.A.1.c.)			2/Day	Grab
<i>E. coli</i> ^{*1,*6} (April 1 st - October 31 st)	cfu/100 ml	126	—	409	2/Week	Grab
Fecal Coliform Bacteria ^{*1,*6} (April 1 st - October 31 st)	cfu/100 ml	200	—	400	2/Week	Grab
Total Residual Chlorine ^{*1,*7,*8} (April 1 st - October 31 st)	µg/l	21.7	—	37.4	2/Day	Grab
Dissolved Oxygen ^{*1} (April 1 st - October 31 st)	mg/l	Maintain a minimum of 6.0 mg/l at all times			1/Day	Grab

Part I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Continued)

1. Outfall 003

a. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 003 to the Housatonic River. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Unit	Discharge Limitation			Monitoring Requirement ^{*3}	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Phosphorus, Total ^{*9} (April 1 st - October 31 st) (November 1 st - March 31 st)	mg/l	0.1	—	Report	3/Week	24-Hour Composite ^{*5}
	mg/l	1.0	—	—	1/Week	24-Hour Composite ^{*5}
Ortho-phosphorus, dissolved (November 1 st - March 31 st)	mg/l	Report	—	—	1/Week	24-Hour Composite ^{*5}
	lbs/day	Report	—	—	1/Week	24-Hour Composite ^{*5}
Total Nitrogen ^{*10}	mg/l	Report	—	Report	1/Week	24-Hour Composite ^{*5}
	lbs/day	Report	—	Report	1/Week	24-Hour Composite ^{*5}
Ammonia Nitrogen ^{*11} (April 1 st - April 30 th) (May 1 st - May 31 st) (June 1 st - September 30 th) (Oct. 1 st - March 31 st)	mg/l	10	10	15	2/Week	24-Hour Composite ^{*5}
	mg/l	5.0	5.0	8.0	2/Week	24-Hour Composite ^{*5}
	mg/l	1.0	1.0	1.5	2/Week	24-Hour Composite ^{*5}
	mg/l	Report	—	Report	1/Week	24-Hour Composite ^{*5}

Part I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Continued)

1. Outfall 003

a. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 003 to the Housatonic River. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Unit	Discharge Limitation			Monitoring Requirement ^{*3}	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Total Kjeldahl Nitrogen ^{*10}	mg/l	Report	—	Report	1/Week	24-Hour Composite ^{*5}
Total Nitrate Nitrogen ^{*10}	mg/l	Report	—	Report	1/Week	24-Hour Composite ^{*5}
Total Nitrite Nitrogen ^{*10}	mg/l	Report	—	Report	1/Week	24-Hour Composite ^{*5}
Total Nitrogen ^{*10}	mg/l	Report	—	Report	1/Week	24-Hour Composite ^{*5}
Total Nitrogen ^{*10}	lbs/day	Report	—	Report	1/Week	24-Hour Composite ^{*5}
Aluminum	µg/l	171	—	Report	1/Month	24-Hour Composite ^{*5}
Copper, Total ^{*12}	µg/l	18.0	—	22.9	1/Month	24-Hour Composite ^{*5}
Lead, Total ^{*13}	µg/l	Report	—	Report	1/Month	24-Hour Composite ^{*5}
Whole Effluent Toxicity ^{*14,*15,*16,*17}	%	LC ₅₀ ≥ 100% C-NOEC ≥ 50%			2/Year 2/Year	24-Hour Composite ^{*5} 24-Hour Composite ^{*5}

Footnotes:

- *1. Required for State Certification
- *2. Report annual average, monthly average, and the maximum daily flow. The limit is an annual average, which shall be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the eleven previous months.
- *3. All required effluent samples shall be collected at the point specified in Part I.A.1.g. of this permit. Any change in the sampling location must be reviewed and approved in writing by EPA and MassDEP.

A routine sampling program shall be developed in which samples are taken at the same location, same time, and same days of every month. Any deviations from the routine sampling program shall be documented in correspondence attached to the applicable discharge monitoring report (DMR) that is submitted to EPA.

All samples shall be tested using the methods found in 40 CFR § 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR § 136. All samples shall be 24-hour composites unless specified as a grab sample in 40 CFR § 136.

- *4. Sampling is required for the influent and effluent.
- *5. A 24-hour composite sample shall consist of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.
- *6. *E. coli* and fecal coliform bacteria limitations and monitoring requirements are seasonal (April 1st through October 31st). The monthly average limits are expressed as geometric means. The fecal coliform limitations and monitoring requirements shall expire one year from the effective date of this permit. The *E. coli* limitations and monitoring requirements shall be report-only for the first year that this permit is in effect, and the limitations shall become effective one year from the effective date of this permit. *E. coli* and fecal coliform bacteria samples shall be collected concurrently. Bacteria samples shall also be collected concurrently with total residual chlorine samples.
- *7. Total residual chlorine (TRC) limitations and monitoring requirements are in effect from April 1st through October 31st. The permittee is not authorized to discharge chlorine from November 1st through March 31st. Each week, two of the total residual chlorine samples shall be collected concurrently with the required fecal coliform bacteria and *E. coli* samples.

The minimum level (ML) for total residual chlorine is defined as 20 µg/l. EPA defines the minimum level as the level at which the entire analytical system shall give recognizable signal and calibration points. For total residual chlorine, this is the minimum level for chlorine using EPA-approved methods found in Standard Methods for the Examination of Water and Wastewater, 20th Edition, Method 4500CL-E and G. One of these methods must be used to determine total residual chlorine. For effluent limitations less than 20 µg/l, compliance/non-compliance shall be determined based on the ML. Sample results of 20 µg/l or less shall be reported as zero on the discharge monitoring report (DMR).

For every day that more than two TRC samples are analyzed, the monthly DMR shall include an attachment documenting the individual grab sample results for that day, the date and time each

sample was collected, the analytical method used, and a summary of any operational modifications implemented in response to the sample results. This requirement applies to all samples taken, including screening level and process control samples. All test results using an EPA-approved analytical method 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)).

- *8 Chlorination and dechlorination systems shall include an alarm system for indicating interruptions or malfunctions of the chlorine and dechlorination chemical dosing systems within 60 days of the effective date of the permit. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine which were inadequate for achieving effective disinfection, or interruptions or malfunctions of the disinfection 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 reduced levels of chlorine or dechlorination chemicals were added to the effluent.
- *9 The 0.1 mg/l total phosphorus limit is a 60 day rolling average limit and applies for the period of April 1st - October 31st. The 60 day average value for each day in a given month, beginning on the 60th day after April 1st, must be calculated and the highest 60 day average value for that month must be reported on the monthly discharge monitoring report (DMR). In addition, the maximum daily value must be reported for each month. For the months of April and May, the 30 day average value shall be reported as a report-only requirement. For the first four years that this permit is in effect, the permittee shall achieve the following total phosphorus limitations from April 1st - October 31st while working towards achieving compliance with the new 0.1 mg/l seasonal total phosphorus limitation (see Part I.B. of this permit, Schedule of Compliance): 1.0 mg/l average monthly, 1.0 mg/l average weekly, and 1.5 mg/l maximum daily.

The 1.0 mg/l limit is a monthly average limit and applies for the period of November 1st-March 31st. The monthly average and maximum daily values shall be reported on each month's discharge monitoring report.

Monitoring results for total phosphorus during the winter months (November 1st - March 31st) shall be report-only for the first winter period that this permit is in effect (see Part I.B. of this permit, Schedule of Compliance).

These permit limits may be modified, subject to public notice and comment, based upon revisions to the water quality standards, compliance with the requirements of a Total Maximum Daily Load (TMDL), or upon a demonstration that an alternative permit limit will achieve water quality standards and the goals of the Clean Water Act.

- *10 See Part I.C. Special Conditions, for requirements to evaluate and implement optimization of nitrogen removal. The weekly total Kjeldahl nitrogen, total nitrite, and total nitrate samples shall be collected concurrently. These samples shall also be collected concurrently with one of the ammonia nitrogen samples. The results of the weekly total Kjeldahl nitrogen, total nitrite, and total nitrate analyses may be used to determine the concentration and mass loading of total nitrogen.
- *11 One of the ammonia nitrogen samples shall be collected concurrently with the weekly total nitrogen, total Kjeldahl nitrogen, total nitrite, and total nitrate samples.

- *12 Samples shall be analyzed for total copper using one of the EPA-approved analytical methods found in 40 CFR § 136 that have a minimum level (ML) of 5.0 µg/l. Sample results of 5.0 µg/l or less shall be reported as zero on the discharge monitoring report.
- *13 Samples shall be analyzed for lead using one of the EPA-approved analytical methods found in 40 CFR § 136 that have a minimum level (ML) of 0.5 µg/l. Sample results of 0.5 µg/l or less shall be reported as zero on the discharge monitoring report.
- *14 The LC₅₀ is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limitation means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.
- *15 The chronic-no observed effect concentration (C-NOEC) is defined as the highest concentration of toxicant or effluent which organisms are exposed to 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 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 "50% or greater" limit is defined as a sample which is composed of 50% (or greater) effluent, the remainder being dilution water. This is a maximum daily limit derived as a percentage of the inverse of the dilution factor of 1.97.
- *16 The permittee shall conduct chronic (and modified acute) toxicity tests two times per year, in accordance with the schedule table below. The chronic test may be used to calculate the LC₅₀ 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 January and July. The test results shall be submitted by the last day of the month following the completion of the test. The test results are due February 28th and August 31st, respectively. The tests must be performed in accordance with the 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
January July	February 28 th August 31 st	<i>Ceriodaphnia dubia</i> (daphnid) See Attachment A	≥ 100 %	≥ 50 %

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

- *17. 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**. If the permittee uses an alternative dilution water, the ambient water will still need to be tested.

Part I.A.1. (continued)

- b. The discharge shall not cause a violation of the water quality standards of the receiving waters.
 - c. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 Standard Units (SU), and not more than 0.5 SU outside of the natural background range, at any time. There shall be no change from natural background conditions that would impair any use assigned to this class.
 - 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 (CBOD₅). The percent removal shall be based on monthly average values.
 - g. Samples taken in compliance with the monitoring requirements stated above shall be taken a point prior to mixing with other streams and shall be representative of the discharge. Samples shall be taken prior to chlorination with the exception of fecal coliform bacteria, *E. coli*, and total residual chlorine samples, which shall be taken after disinfection.
 - h. If the average annual flow in any calendar year exceeds 80 percent of the facility's design flow, the permittee shall submit a report to MassDEP by March 31st of the following calendar year describing their plans for future flow increases and how they will maintain compliance with the flow limitation and all other effluent limitations and conditions in the permit.
2. All POTWs must provide adequate notice to the Director of the following:
- a. Any new introduction of pollutants into the POTW from an indirect discharger in a primary industry category discharging process water; and/or
 - b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
 - c. For purposes of this paragraph, adequate notice shall include information on:

- (1) the quantity and quality of effluent introduced into the POTW; and
 - (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.
3. Prohibitions Concerning Interference and Pass Through
- a. Pollutants introduced into the POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation of the works.
4. Toxics Control
- a. The permittee shall not discharge any pollutants or combinations 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 that has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.
5. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. SCHEDULE OF COMPLIANCE

1. 0.1 mg/l Total Phosphorus Limitation (April 1st - October 31st)

No later than four years from the effective date of the permit, the permittee shall achieve compliance with the 0.1 mg/l total phosphorus limitation from April 1st - October 31st. This limit shall be achieved in accordance with the following schedule:

- a. Complete conceptual design of necessary upgrades no later than twelve months from the effective date of the permit.
- b. Complete plans and specifications for necessary upgrades no later than twenty-four months from the effective date of the permit.
- c. Complete construction of necessary upgrades and attain compliance with the April 1st - October 31st final effluent limits for total phosphorus no later than forty-eight months from the effective date of the permit.

During this four-year period, the following total phosphorus limitations shall be met from April 1st - October 31st: 1.0 mg/l average monthly, 1.0 mg/l average weekly, and 1.5 mg/l maximum daily. The permittee shall monitor the total phosphorus concentration in the discharge at the frequency specified in Part I.A.1.a. of this permit.

2. 1.0 mg/l Total Phosphorus Limitation (November 1st - March 31st)

The 1.0 mg/l total phosphorus limit for the winter period (November 1st - March 31st) shall become effective one year from the effective date of the permit. Specifically, the permittee shall report the average monthly and maximum daily total phosphorus concentrations in the discharge for the first winter period following the effective date of the permit while working towards meeting this new limitation.

C. SPECIAL CONDITIONS

Within one year of the effective date of the permit, the permittee shall complete an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen, and submit a report to EPA and the MassDEP documenting this evaluation and presenting a description of recommended operational changes. The methods to be evaluated include, but are not limited to, operational changes designed to enhance nitrification (seasonal and year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. The permittee shall implement the recommended operational changes in order to maintain the existing mass loading of total nitrogen. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be 1241 lbs/day.

The permittee shall also submit an annual report to EPA and the MassDEP by **February 1st** of each year, that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous year.

D. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from outfall 003, as described in Part I.A.1. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit and shall be reported to EPA and MassDEP in accordance with Section D.1.e.(1) of the General Requirements of this permit (twenty-four hour reporting).

Notification of SSOs to MassDEP shall be made on its SSO reporting form (which includes MassDEP Regional Office telephone numbers). The reporting form and instructions for its completion may be found on-line at: <http://www.mass.gov/dep/water/approvals/surffms.htm#sso>.

The following towns that contribute wastewater flow to the Pittsfield Wastewater Treatment Plant shall also report discharges of wastewater from any other point source, including sanitary sewer overflows (SSOs), which are not authorized by this or any other permit and shall be reported in accordance with Section D.1.e.(1) of the General Requirements of this permit (twenty-four hour reporting): Dalton, Lenox, Hinsdale, and Lanesborough.

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 of this permit and the following terms and conditions:

1. **Maintenance Staff.**

The permittee and co-permittees shall each 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 and co-permittees shall each 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 and co-permittees shall each 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 and co-permittees' programs 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 plans 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.
- The permittee shall require, through appropriate agreements, that all member communities (i.e., those listed as co-permittees) control discharges to the permittee's POTW sufficiently to ensure that high flows do not cause or contribute to a violation of the permittee's collection system.

Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year shall be submitted to EPA and MassDEP annually, by **February 28th**. The summary report shall, at a minimum, include:

- A map and a description of inspection and maintenance activities 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 and the maximum monthly 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.

4. Alternative 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 its treatment works (as defined at 40 CFR § 122.2).

F. SLUDGE CONDITIONS

1. The permittee is required to 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 (lagoons-reed beds), or are otherwise excluded under 40 CFR § 503.6.
5. The permittee shall use and comply with the attached compliance guidance document (**Attachment B**) to determine appropriate conditions. Appropriate conditions contain the following elements:
 - General requirements
 - Pollutant limitations
 - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
 - Management Practices
 - Record Keeping
 - Monitoring
 - Reporting

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

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year.

less than 290	1/year
290 to less than 1500	1/quarter
1500 to less than 15000	6/year
15000 +	1/month

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

G. DEVELOPMENT OF LIMITATIONS FOR INDUSTRIAL USERS

1. Pollutants introduced into the POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation of the works.
2. The permittee shall develop and enforce specific effluent limits (local limits) for any Industrial User(s), and all other users as appropriate, which together with appropriate changes in the POTW's facilities or operation, are necessary to ensure 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 report to EPA analyzing local limits. As part of this evaluation, the permittee shall assess how the POTW performs with respect to the 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 C) 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. Upon completion of its review, EPA will notify the POTW if the evaluation reveals that the local limits should be revised. Should the local limits need to be revised, the permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. If local limits are to be updated, revisions should be performed in accordance with EPA's Local Limits Development Guidance (July 2004).**

H. INDUSTRIAL PRETREATMENT PROGRAM

1. The permittee shall implement an Industrial Pretreatment Program (IPP) as required by 40 CFR Part 403. The industrial pretreatment program shall be operated in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program and the General Pretreatment Regulations at 40 CFR Part 403. At a minimum, the permittee

shall perform the following activities in implementing and operating its industrial pretreatment program:

- a. Carry out the 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.
 - b. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.
 - c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.
 - d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.
2. The permittee shall provide EPA and MassDEP with an annual report required by 40 CFR § 403.12(i) by **October 31st** of each year for the permittee's reporting period of September 1st – August 31st. The annual report shall be consistent with the format described in **Attachment D** of this permit.
 3. 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).
 4. 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.*
 5. On October 14, 2005 EPA published in the Federal Register final changes to the General Pretreatment Regulations. The final "Pretreatment Streamlining Rule" is designed to reduce the burden to industrial users and provide regulatory flexibility in technical and administrative requirements of industrial users and POTWs. **Within 90 days of the effective date of this permit**, the permittee must submit to EPA all required modifications of the Streamlining Rule in order to be consistent with the provisions of the newly promulgated Rule. To the extent that the POTW legal authority is not consistent with the required changes, they must be revised and submitted to EPA for review.

I. MONITORING AND REPORTING

1. Reporting

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate 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 at the following address:

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

Signed and dated originals of Discharge Monitoring Reports and all other reports required herein, with the exception of whole effluent toxicity test reports, shall be submitted to the State at:

Massachusetts Department of Environmental Protection
Western Regional Office-Bureau of Resource Protection
436 Dwight Street
Springfield, Massachusetts 01103

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

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

Signed and dated Industrial Pretreatment Program reports required by this permit shall be submitted to EPA and the State at:

Environmental Protection Agency
Attn: Justin Pimpare
One Congress Street, Suite 1100 - CMU
Municipal Assistance Unit (CMU)
Boston, Massachusetts 02114

The State Agency is:

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

J. 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. Chap. 21, § 43.

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