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),

Town of Hatfield
Board of Selectmen

is authorized to discharge from the facility located at

Hatfield Wastewater Treatment Plant
260 Main Street
Hatfield, MA 01038

to receiving water named **Connecticut River**

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

This permit shall become effective on the first day of the calendar month immediately following 60 days after signature.

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

This permit supersedes the permit issued on April 27, 2006.

This permit consists of 14 pages in Part I including effluent limitations, monitoring requirements, Attachment A (Toxicity Protocol), Attachment B (Summary of Report Submittals) and Part II including Standard Conditions.

Signed this 16th day of December, 2011

/S/SIGNATURE ON FILE

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

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

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

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

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirement[1]	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow[2] (annual average)	MGD	0.5	----	----	Continuous	Recorder
Flow[2]	MGD	Report	----	Report	Continuous	Recorder
BOD_5	mg/l lbs/day	30 125	45 188	Report	1/Week[3]	24 Hour Composite[4]
TSS	mg/l lbs/day	30 125	45 188	Report	1/Week[3]	24 Hour Composite[4]
pH		6.5 s.u.- 8.3 s.u. (See Condition I.A.1.b. on Page 5)			1/Day	Grab
Total Kjeldahl Nitrogen[9]	mg/l lbs/day	Report Report	---- ----	Report Report	1/Month	24 Hour Composite[4]
Total Nitrite Nitrogen[9]	mg/l lbs/day	Report Report	---- ----	Report Report	1/Month	24 Hour Composite[4]
Total Nitrate Nitrogen[9]	mg/l lbs/day	Report Report	---- ----	Report Report	1/Month	24 Hour Composite[4]
Total Ammonia Nitrogen[9]	mg/l lbs/day	Report Report	---- ----	Report Report	1/Month	24 Hour Composite[4]
Total Nitrogen[9]	mg/l lbs/day	Report Report	---- ----	Report Report	1/Month	24 Hour Composite[4]
Aluminum	mg/l lbs/day	---- ----	---- ----	Report Report	1/Quarter	24 Hour Composite[4]

Part I.A.1. continued						
Effluent Characteristic		**Discharge Limitation**			**Monitoring Requirement[1]**	
		Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
E. Coli Bacteria[5]	cfu/100 ml	126	----	409	1/Week	Grab
Total Residual Chlorine[5]	mg/l	Report	----	1.0	1/Day	Grab
Whole Effluent Toxicity[6, 7, 8]	%	≥50			2/Year	24 Hour Composite[4]

Footnotes:

1. All required effluent samples shall be collected prior to chlorination except for the chlorine residual and fecal coliform bacteria samples, which shall be taken after disinfection.

   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 procedures in 40 CFR 136.

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

   The permittee shall include with the discharge monitoring reports the results of any additional testing done to that required herein, if it is conducted in accordance with EPA approved methods, consistent with the provisions of 40 CFR Section 122.41(l)(4)(ii)

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

3. Sampling required for influent and effluent.

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

5. E. coli and total residual chlorine effluent limitations and monitoring requirements will be in effect from April 1-October 31. This is a State certification requirement. The monthly average limit for E. coli is expressed as a geometric mean. The weekly E. coli sample shall be collected at the same time the daily total residual chlorine sample is collected for that day.

6. The LC_{50} 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 (with 50% dilution water) shall cause no more than a 50% mortality rate.

7. The permittee shall conduct acute toxicity tests two times per year. The permittee shall test the daphnid, Ceriodaphnia dubia, only. Toxicity test samples shall be collected in June and September. Results are to be submitted by the 30th day of the month after the sample (i.e. July and October). See Permit **Attachment A**, Toxicity Test Procedure and Protocol.

8. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or

unreliable, the permittee shall either follow procedures outlined in **Attachment A (Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER** in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the Self-Implementing Alternative Dilution Water Guidance which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found on the EPA, Region I web site at http://www.epa.gov/region1/enforcementandassistance/dmr.pdf. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachment A**. Any modification or revocation to this guidance will be transmitted to the permittees. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

9. See Part I.E. for requirements to evaluate and implement optimization of nitrogen removal.

Part I.A.1. (Continued)

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

b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time.

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

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

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

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

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

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

a. Any new introduction of pollutants into that POTW from an indirect discharger in a primary industry category discharging process water; and

b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For purposes of this paragraph, adequate notice shall include information on:

(1) the quantity and quality of effluent introduced into the POTW; and

(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

3. Prohibitions Concerning Interference and Pass-Through:

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

4. Toxics Control

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

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

5. Numerical Effluent Limitations for Toxicants

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

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed 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 Standard Conditions of this permit (Twenty-four hour reporting).

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

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

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

1. Maintenance Staff

   The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Provisions to meet this requirement shall be described in the Collection System O & M Plan required pursuant to Section C.5. below.

2. Preventive Maintenance Program

   The permittee shall maintain an ongoing preventive maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges. Plans and programs to meet this requirement shall be described in the Collection System O & M Plan required pursuant to Section C.5. below.

3. Infiltration/Inflow

   The permittee shall control infiltration and inflow (I/I) into the sewer system as necessary to prevent high flow related unauthorized discharges from their collection systems and high flow related violations of the wastewater treatment plant's effluent limitations. Plans and programs to control I/I shall be described in the Collection System O & M Plan required pursuant to Section C.5. below.

4. Collection System Mapping

   Within 30 months of the effective date of this permit, the permittee shall prepare a map of the sewer collection system it owns (see page 1 of this permit for the effective date). The map shall be on a street map of the community, with sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up to date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

   a. All sanitary sewer lines and related manholes;
   b. All combined sewer lines, related manholes, and catch basins;
   c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combination manholes);
   d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;
   e. All pump stations and force mains;
   f. The wastewater treatment facility(ies);
   g. All surface waters (labeled);
   h. Other major appurtenances such as inverted siphons and air release valves;

i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;
j. The scale and a north arrow; and
k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System Operation and Maintenance Plan

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

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

(1) A description of the collection system management goals, staffing, information management, and legal authorities;
(2) A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of recent studies and construction activities; and
(3) A schedule for the development and implementation of the full Collection System O & M Plan including the elements in paragraphs b.1.through b.8. below.

b. The full Collection System O & M Plan shall be completed, implemented and submitted to EPA and MassDEP within twenty four (24) months from the effective date of this permit. The Plan shall include:

(1) The required submittal from paragraph 5.a. above, updated to reflect current information;
(2) A preventive maintenance and monitoring program for the collection system;
(3) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;
(4) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;
(5) Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;
(6) A description of the permittee's programs for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts; and
(7) An educational public outreach program for all aspects of I/I control, particularly private inflow.

(8) An Overflow Emergency Response Plan to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

6. Annual Reporting Requirement

The permittee shall submit a summary report of activities related to the implementation of its Collection System O & M Plan during the previous calendar year. The report shall be submitted to EPA and MassDEP annually by March 31. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;
b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;
c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;
d. A map with areas identified for investigation/action in the coming year;
e. If treatment plant flow has reached 80% of the design flow (0.4 MGD) based on the annual average flow during the reporting year, or there have been capacity related overflows, submit a calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year; and
f. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit.

7. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works[1] it owns and operates.

D. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR Part 503, which prescribe "Standards for the Use or Disposal of Sewage Sludge" pursuant to Section 405(d) of the CWA, 33 U.S.C. § 1345(d).

2. If both state and federal requirements apply to the permittee's sludge use and/or disposal practices, the permittee shall comply with the more stringent of the applicable requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge use or disposal practices.

a. Land application - the use of sewage sludge to condition or fertilize the soil

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

b. Surface disposal - the placement of sewage sludge in a sludge only landfill

c. Sewage sludge incineration in a sludge only incinerator

4. The requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g. lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The 40 CFR. Part 503 requirements including the following elements:

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

Which of the 40 C.F.R. Part 503 requirements apply to the permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the permittee to assist it in determining the applicable requirements.[2]

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year

less than 290	1/ year
290 to less than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

Sampling of the sewage sludge shall use the procedures detailed in 40 CFR 503.8.

7. Under 40 CFR § 503.9(r), the permittee is a "person who prepares sewage sludge" because it "is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the permittee contracts with *another* "person who prepares sewage sludge" under 40 CFR § 503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for

2 This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf

that purpose. If the permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR §503.7. If the ultimate use or disposal method is land application, the permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

8. The permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48 (incineration)) by **February 19** (*see also* "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted to the address contained in the reporting section of the permit. If the permittee engages a contractor or contractors for sludge preparation and ultimate use or disposal, the annual report need contain only the following information:

   a. Name and address of contractor(s) responsible for sludge preparation, use or disposal

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

E. 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 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 also submit an annual report to EPA and MassDEP, **by February 1 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.

F. MONITORING AND REPORTING

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

a. Submittal of Reports Using NetDMR

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

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

b. Submittal of NetDMR Opt Out Requests

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

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

and

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

c. Submittal of Reports in Hard Copy Form

Hard copy DMR submittals shall be completed and postmarked no later than the 15th day of the month following the completed reporting period. MassDEP Monthly Operation and Maintenance Reports shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports required herein, shall be submitted to the appropriate State addresses and to the EPA address listed below:

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

The State Agency addresses are:

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

Toxicity test reports nitrogen optimization reports only to:

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

G. STATE PERMIT CONDITIONS

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

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

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

force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

Attachment B

Summary of Required Report Submittals*

Required Report	**Date Due**	**Submitted By:**	**Submitted To: ** (see next page for key)**
Discharge Monitoring Report (DMR)	Monthly, postmarked by the 15th of the month following the monitoring month (e.g. the March DMR is due by April 15th.	Town of Hatfield	1, 2
Whole Effluent Toxicity (WET)Test Report (Part I.A.1)	July 31 and October 31 of each year	Town of Hatfield	1, 2, 3
Collection System Mapping (Part I.C.4)	Within 30 months of effective date	Town of Hatfield	Available for review
Collection System O & M Plan (Part I.C.5)	Within 24 months of effective date	Town of Hatfield	1,2
Collection System Summary Report (Part I.C.6)	By March 31 of each year	Town of Hatfield	1,2
Annual Sludge Report (Part I.D.8)	February 19 each year	Town of Hatfield	1,2
Nitrogen Optimization (Part I.E.) Annual Report	Within one year. By February 1 of each year	Town of Hatfield Town of Hatfield	1,2,3 1,2,3

*This Table is a summary of reports required to be submitted under this NPDES permit as an aid to the permittee. If there are any discrepancies between the permit and this summary, the permittee shall follow the permit requirements.

**The addresses are for the submittal of hard copies. When the permittee begins reporting using NetDMR, submittal of hard copies of many of the required reports will not be necessary. See permit conditions for details.

1. Environmental Protection Agency
   Water Technical Unit (OES04-SMR)
   5 Post Office Square – Suite 100
   Boston, Massachusetts 02109 - 3912

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

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

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND
5 POST OFFICE SQUARE-SUITE 1100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

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

NPDES PERMIT NO.: **MA0101290**

NAME AND ADDRESS OF APPLICANT:

Town of Hatfield
Board of Selectmen
Hatfield, MA 01038

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Hatfield Wastewater Treatment Plant
260 Main Street
Hatfield, MA 01038

RECEIVING WATER: **Connecticut River**

CLASSIFICATION: **B: warm water fishery (Connecticut Watershed)**

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

The above named applicant has applied to the U.S. Environmental Protection Agency for the reissuance of its NPDES permit to discharge to the Connecticut River, the designated receiving water. The facility is engaged in the collection and treatment of municipal wastewater. A figure showing the For wastewater treatment facility and outfall locations is included as see **Attachment A.**

Wastewater Treatment Facility, Sewerage Collection System and other Related Operational Information:

The wastewater collection and treatment system serves about 3,327900 residents in the community. The system is a separate sewer system, but is with no combined sewers. The collection system is subject to significant amounts of inflow and infiltration (I/I), as evidenced by significant increases in daily maximum flow during the spring. The Town has established an I/I control program as required by the current permit and has removed numerous storm water and groundwater connections.

The collected wastewater collected is mostly domestic sewage, with a small amount of commercial and industrial sewage. The wastewater treatment facility has an average daily design flow of 0.5 million gallons per day (MGD), a maximum daily design flow of 1 MGD, and a maximum hourly design flow of 1.6 MGD. The actual average daily flow over the past two years has been about 0.23 MGD.

Treatment Plant Process:

Wastewater treatment consists of the following units:

* 1 aerated grit chamber
* 2 fine rotary influent screens (coarse screening at influent pump station)
* 3 parallel rotating biological reactor/contactor units (RBCs)
* 2 secondary clarifiers
* 2 chlorine contact tanks

Sludge processing consists of the following unit processes:

* 2 aerobic digesters
* 1 belt press

Chlorine gas is used for disinfection, which is seasonal, from April 1 through October 31. The disinfection system is flow paced.

Dewatered sludge is sent to the East Fitchburg wastewater treatment plant for incineration. The annual volume of sludge is about 37 dry metric tons.

II. Description of Discharge

A quantitative description of the discharge, in terms of significant effluent parameters from the discharge monitoring reports (DMRs) from January 2008 through August 2010 may be found in the **Attachment B.**

III. Permit Limitations and Conditions

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

IV. Permit Basis and Explanation of Effluent Limitation Derivation

Waterbody Classification and Usage:

The Connecticut River is classified in the Massachusetts Surface Water Quality Standards (314 CMR 4.00) as a Class B-warm water fisheryies water body by the Massachusetts Department of Environmental Protection (MassDEP) in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Class B waters are designated as habitat for

fish, other aquatic life, and wildlife including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. Where designated, Class B waters shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value.

Municipal Waste Water Treatment Facility [also referred to as "Publicly Owned Treatment Works" (POTW Discharges)] Regulatory Basis for Effluent Limits

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301(b) of the Clean Water Act (CWA) (see 40 CFR 125 Subpart A). For a publicly owned treatment works (POTW), technology based requirements are effluent limitations based on secondary treatment as defined in 40 CFR Part 133.

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

Under Section 301(b)(1)(C) of the CWA, discharges are subject to limits more stringent than technology-based limits where necessary to meet effluent limits based on water quality standards. The Massachusetts Surface Water Quality Standards (314 CMR 4.00) include requirements for the regulation and control of toxic constituents and also require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site-specific criteria is established. The state will limit or prohibit discharge of pollutants to surface waters to assure that water quality of the receiving waters are protected and maintained, or attained.

EPA regulations at 40 CFR 122.44(d) require that a The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that caused, or has reasonable potential to cause, or contributes to an excursion above any water quality criterion. An excursion occurs if the projected or actual in-stream concentrations exceed the applicable criterion. In determining reasonable potential, EPA considers existing controls on point and non-point sources of pollution, variability of the pollutant in the effluent, sensitivity of the species to toxicity and where appropriate, the dilution of the effluent in the receiving water.

A permit may not be renewed, reissued, or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the antibacksliding requirements of the CWA. Anti-backsliding provisions are found in Section 402(o) of the CWA and 40 CFR 122.44 (l) and require that limits in a reissued permit be at least as stringent as those in the previous permit, except under certain limited circumstances. Effluent limitations based on technology standards, water quality, and state certification requirements must all meet anti-backsliding provisions.

Receiving Water Flow:

The stream flow information used to calculate effluent limits is based upon the 7Q10 flow at the United States Geological Survey (USGS) gage located on the Connecticut River in Montague, adjusted for drainage area. The 7Q10 flow at the gage is 1690 cfs and drainage area is 7860 square miles. The drainage area of the Connecticut River at the outfall of the Hatfield treatment plant is about 7950 square miles. The adjusted 7Q10 can therefore be calculated as:

7Q10@ Hatfield = 7Q10@Montague (7950/7860)
= 1690(7950/7860)
= 1709 cfs = 1105 mgd

Dilution Factor

The dilution factor can be calculated as follows:

$$\text{Dilution Factor(DF)} = \frac{\text{7Q10+ design flow}}{\text{design flow}}$$

where 7Q10 = 1709 cfs and design flow = 0.5 MGD (0.77cfs)

$$\text{DF} = \frac{1709+0.77}{0.77} = 2220$$

Flow: Design flow for this facility is 0.5 mgd. Monthly average flow varies from between 0.14 mgd to 0.541 mgd with average value of 0.23 mgd.

BOD_5 and Total Suspended Solids: The monthly average, weekly average and percent removal limits for BOD and TSS are based on the secondary treatment requirements found at 40 CFR Part 133. Limits have also been expressed as mass loads pursuant to 40 CFR Part 122.45 (f). The mass loading limits were calculated using the following equation:

L = C x Q x 8.34 where:

L = maximum allowable load in lbs/day
C = maximum allowable concentration in mg/l. Average monthly and average weekly limits

were calculated.
Q = design flow of facility in MGD
8.34 = factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

Monthly average = (30)(0.5)(8.34) = 125 lbs/day
Weekly average = (45)(0.5) (8.34) = 188 lbs/day

pH: The limits is 6.5-8.3 SU b are based on the pH criteria in the Massachusetts Surface Water Quality Standards. The minimum limit is 6.5 SU and the maximum limit is 8.3 SU. The permittee is complying with pH effluent limits

E. Coli: The limits reflect the in-stream Class B standard. These are seasonal limits which apply from April 1 through October 31, the months in which primary and secondary contact recreation is expected to occur. Current permit has a monthly average limit of 200 cfu/100ml and a daily maximum limit of 400 cfu/100ml fecal coliform. E. coli are based on state certification requirements under section 401 (a) (1) of the CWA, as described in 40 CFR 124.53 and 124.55. Limitations on E.coli bacteria replace the limitations on fecal coliform bacteria found in the current permit. The bacterial limitsindicator has been changed to conform to the Class B water quality criteria for bacteria found in the Massachusetts Water Quality Standards (314 CMR 4.05(3)(b)4..). Massachusetts adopted these new criteria on December 29, 2006, and they and were approved by EPA on September 19, 2007. Accordingly, the monthly average and maximum daily E. coli limits are set at 126 cfu/100ml and 409 cfu/100 ml (this is the 90% distribution of the geometric mean of 126 cfu/100 ml) respectively in the draft permit.

The limits reflect the Class B water quality criteria. These are seasonal limits that apply from April 1 through October 31, the months in which primary and secondary contact recreation are expected to occur. The limits are based on state certification requirements under section 401 (a) (1) of the CWA, as described in 40 CFR 124.53 and 124.55

The permittee is complying fecal coliform effluent limits and indicated that there would be no problem to comply with the new E. coli limits.

<u>Chlorine</u>

Total Residual Chlorine (TRC) water quality criteria are established in the Gold Book and the subsequent 2002 update and are adopted into the State Water Quality Standards. The in-stream criteria shall not exceed 11 ug/l for chronic toxicity and 19 ug/l for acute toxicity to protect aquatic life. Allowing for available dilution at the annual monthly average flow, the TRC permit limit calculations are shown below.

Chronic chlorine limit	11 ug/l * 2220 = 24420 ug/l = 24.4 mg/l
Acute chlorine limit	19 ug/l * 2220 =42180 ug/l = 42.2 mg/l

The months of the year during which the limits are in effect are at the discretion of the Mass DEP. Because chlorine and chlorine compounds can be extremely toxic to aquatic life, it is preferable to limit the discharge of chlorine to the receiving water to those months when primary and secondary contact recreational activities may occur. Consequently, the draft permit maintains the current maximum daily limit of 1.0 mg/l with the seasonal chlorination.

The permittee is complying with chlorine effluent permit limits.

Nitrogen

The 2004 Permit requires reporting of average monthly tTotal kKjeldahl nNitrogen, nNitrate-nNitrogen, and nNitrite-nNitrogen on a quarterly basis. The Draft Permit proposes monthly reporting of average monthly and maximum daily effluent concentrations and masses of ntTotal nNitrogen, tTotal kKjeldahl nNitrogen, tTotal aAmmonia nNitrogen, tTotal nNitrate nNitrogen, and tTotal nNitrite nNitrogen. These changes are further explained below.

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 tTotal mMaximum dDaily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a wWaste lLoad aAllocation (WLA) for point sources and a lLoad aAllocation (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 Loading1	TMDL Target2	Current Loading3

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.

7

	(lbs/day)	(lbs/day)	(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			

The TMDL target of a 25 percent aggregate reduction from baseline loadings is currently being met.

The estimated current loading for the Hatfield WWTP used in the above analysis was 28.6 lbs/day, based upon a tTotal nNitrogen concentration of 15.6 mg/l and the average flow of 0.22 MGD (15.6 mg/L * 0.22 MGD * 8.34), as indicated in the Facility's 2004 through 2005 DMRs. A review of the DMRs from May 2008 through August 2010 indicate that TKN varies from between 1.4 lb/day to 63.0 lb/day with an average value of 24.1 lb/day. Nitrite and nitrate varies from between 7.7 lb/day to 34.5 lb/day with an average value of 22.3 lb/day. Therfore, total nitrogen varies from between 9.1 lb/day to 97.5 lb/day with an average value of 46.4 lb/day (Refer to Attachment B for TKN and nitrite and nitrate monitoring results) which is more than the estimated loading of 28.6 lbs/day.

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 has included a condition in the Draft Permit requiring the permittee to evaluate alternative methods of operating itstheir pPlant to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Specifically, Part I.E. of the Draft 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 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 intend to 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 pPlant consider alternatives for further enhancing nitrogen reduction.

8
Phosphorus

Excessive phosphorus in a water body can interfere with water uses by promoting excessive plant growth that can interfere with recreational activities and can also to reduce instream dissolved oxygen concentrations below levels necessary to support aquatic life.

Massachusetts Surface Water Quality Standards tate water quality standards include narrative nutrient criteria at 314 CMR 4.05(5), requiring that "unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria established in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00. Any require any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural which encourage eutrophication, including the excessive growth of aquatic plant or algae, in any surface water or growth of weeds or algae shall be provided with the most appropriate treatment as determined by the Department, including where necessary, highest and best practicable treatment for POTWs…"to remove such nutrients. Phosphorus interferes with water uses and reduces instream dissolved oxygen.

EPA has published national guidance documents that contain recommended total phosphorus criteria and other indicators of eutrophication. EPA's Quality Criteria for Water 1986 (the Gold Book) recommends, to control eutrophication, that in-stream phosphorus concentrations should be less than 100 µg/l (0.100 mg/l) in streams or other flowing waters not discharging directly to lakes or impoundments.

More recently, EPA released Ecoregional Nutrient Criteria, established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published ecoregion-specific criteria represent conditions in waters minimally impacted by human activities, and thus representative of water without cultural eutrophication. The HatfieldBarre Wastewater Treatment Plant is within Ecoregion XIV, Eastern Coastal Plain, Northeastern Coastal Zone. Recommended criteria for this Ecoregion is found in Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV, published in December, 2001, and includes a total phosphorus criteria of 23.75 µg/l (0.024 mg/l).

EPA has employed the Gold Book-recommended concentration (0.1 mg/l) to interpret the state's narrative standards for nutrients. The Gold Book value is based on effects as opposed to the ecoregional criterion, which was developed on the basis of reference conditions. EPA opted for the effects-based approach because it is often more directly associated with an impairment to a designated use (i.e. fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e. water quality impairments) are likely to occur. It applies empirical observations of a causal variable (i.e. phosphorus) and a response variable (i.e. chlorophyll a) associated with designated use impairments. Reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregion class. Specifically, reference conditions presented are based on the 25th percentile of *all* nutrient data, including a comparison of reference conditions for the aggregate ecoregion versus

subecoregions. *See* Ecoregional Nutrient Criteria at vii. They are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions. Thus, while reference conditions, which reflect minimally disturbed conditions, may meet the requirements necessary to support designated uses, they may also *exceed* the water quality necessary to support such requirements.

Reasonable Potential Analysis for Phosphorus

EPA has performed made a rReasonable pPotential aAnalysis to determine whether, at the current effluent phosphorus concentration, there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria. EPA has must taken the upstream concentration of phosphorus into account in its analysiswhen setting effluent limitations. The 2003 Connecticut River Watershed Water Quality Assessment presented ambient phosphorus concentrations for samples taken during April 2003 through August 2003 at Station 04A, upstream on the Connecticut River from the Hatfield WWTP. Five samples were taken, with results which varying from between 0.008 mg/l to 0.029 mg/l with an average value of 0.016 mg/l. Because permit limits must protect receiving water during low flow conditions, 7Q10 flow of 11105 MGD, and the with maximum background value of 29 ug/l were are used in the equation below. to determine whether there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria. The following data is also used in the calculations: the treatment plant discharge total phosphorus concentration of 2,000 ug/l (2 mg/l) as reported in the permit application, and the treatment plant design flow of 0.5 MGD. EPA used this data to calculate an instream concentration downstream of the discharge. If the calculated concentration exceeds 100 ug/l (the EPA-recommended Gold book concentration) there is reasonable potential for the discharge to exceed water quality standards and a phosphorus limit must be included in the permit.

Reasonable Potential Analysis

$$C_r = \frac{Q_e C_e + Q_s C_s}{Q_r}$$

Q_e = effluent flow, i.e. facility design flow = 0.5 MGD
C_e = effluent pollutant concentration = current permit limit concentration = 2,000 µg/l
Q_s = 7Q10 flow of receiving water = 1709 cfs = 11105 MGD
Cs = upstream concentration = 29 µg/l
Q_r = receiving water flow = $Q_s + Q_e$ = (0.5 + 11105) MGD = 11105.5 MGD
C_r = receiving water concentration = 100 µg/l (water quality criterion)

$$C_r = \frac{(0.5 \text{ MGD} \times 2{,}000 \text{ µg/l}) + (11105 \text{ MGD} \times 29 \text{ µg/l})}{11105.5 \text{ MGD}}$$

$C_r = 30$ µg/l < 100 µg/l

Since the calculated instream concentration is less than the EPA-recommended criteriaTherefore,

Based on the above calculation, the draft permit does not require a limit or monitoring requirement. The current permit does not have any limit or monitoring requirements.

Metals

Certain metals like copper, lead, cadmium and zinc can be toxic to aquatic life. EPA has evaluated (see below) the reasonable potential of toxicity on the concentration of metals in the effluent these metals to cause or contribute to exceedances of water quality standards. Based on this evaluation, EPA has determined that there is no reasonable potential for these metals to cause or contribute to exceedances. The draft permit therefore does not include effluent limitations adverse impact on the aquatic life and no need to monitor and limit these metalsfor these metals. These metals will continue to be monitored twice per year in conjunction with the WET test requirements.

Calculations of reasonable potential for copper, lead, zinc and cadmium :

EPA recommended criteria from National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-47) and a dilution factor have of 2220 hasve been in the calculations. Dissolved metal criteria have been converted to total recoverable metals using the conversion factors recommended in the criteria document.

All effluent metals data are taken from the Toxicity Test Reports from the period May 2008 to August 2010.

The equation used is:

$C_r = (C_d * DF)/CF$

Where:

C_r = Allowable downstream receiving water concentration (total recoverable metal) –ug/l
C_d = Metal criteria (dissolved metal) – ug/l
DF = dilution factor
CF = conversion factor (dissolved metal to total recoverable metal)

Allowable Receiving Water Concentration, C = Criteria (Tot. Rec.) x Dilution Factor

From Federal Register, November 2002, National Recommended Water Quality Criteria is used for fresh water with a dilution factor of 2220. Dissolved concentration is converted to total concentration with the conversion factor.

Copper:

Chronic C = 9 x 2220 / 0.96 = 20,812 ug/l which is far greater than the monthly average monthly average effluent concentration range of 19 - 58 ug/l. So, there is no reasonable potential does not exist.

Acute C =13 x 2220 / .96 = 30,062 ug/l which is far greater than the maximum maximum effluenteffluent concentration of 58 ug/l. So, there is no reasonable reasonable potentialpotential does not exist.

Lead:

Chronic C = 2.5 x 2220/0.993.= 5589 ug/l, which is far greater than the monthly average effluent concentration range of 1- 4 ug/l. So, there is no reasonable potential does not exist.

Acute C = 65 x 2220/0.993 = 145317 ug/l, which is far greater than the maximum effluent concentration 4 ug/l. So, there is no reasonable potential does not exist.

Zinc:

Chronic C = 120 x 2220 /.986 = 270182 ug/l, which is far greater than the monthly average effluent concentration range of 26 - 46 ug/l. So, there is no reasonable potential does not exist.

Acute C = 120 x 2220 / .978 = 272392 ug/l which is far greater than the maximum effluent concentration of 46 ug/l. So, there is no reasonable potential does not exist.

Nickel:

Chronic C = 52 x 2220 / .997 = 115987 ug/l which is far greater than the monthly average effluent concentration range of 2 - 4 ug/l. So, there is no reasonable potential does not exist.

Acute C = 470 x 2220 / .998 = 1045491 ug/l which is far greater than the maximum effluent concentration of 4 ug/l. So, there is no reasonable potential does not exist.

Whole Effluent Toxicity

National studies conducted by the Environmental Protection Agency have demonstrated that domestic sources contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents and aromatic hydrocarbons, among others.

Based on the potential for toxicity resulting from domestic and industrial contributions, and in accordance with EPA regulation and policy, the draft permit includes acute toxicity limitations and monitoring requirements. (See, e.g., Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants, 50 Fed. Reg. 30,784 (July 24, 1985); see also, EPA's Technical Support Document for Water Quality-Based Toxics Control). EPA Region I has developed a toxicity control policy which requires wastewater treatment facilities to perform toxicity bioassays on their effluents. The Region's current policy is to include toxicity testing requirements in all municipal permits, while Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts.

The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant- specific control procedures to control the discharge of toxic pollutants.

Pursuant to EPA Region I policy, and MassDEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990), discharges having a dilution factors greater than 100 require acute toxicity testing two times per year and an acute LC50 limit of 50 percent. National studies conducted by the Environmental Protection Agency have demonstrated that domestic sources contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents and aromatic hydrocarbons among others. The Region's current policy is to
include toxicity testing requirements in all municipal permits, while Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts.

Based on the potential for toxicity resulting from domestic and industrial contributions, and in accordance with EPA regulation and policy, the draft permit includes acute toxicity limitations and monitoring requirements. (See, e.g., "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 50 Fed. Reg. 30,784 (July 24,1985); see also, EPA's Technical Support Document for Water Quality-Based Toxics Control). EPA Region I has developed a toxicity control policy which requires wastewater treatment facilities to perform toxicity bioassays on their effluents. This draft permit requires acute toxicity testing twice per year on the daphnid, *Ceriodaphnia dubia*, as in the current permit.

The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.The dilution factor for this discharge is greater than 100, so in accordance with EPA and MassDEP policy the draft permit includes an LC50 limit of 50 percent and requires acute toxicity testing twice per year on the daphnid, *Ceriodaphnia dubia*. These are the same requirements that are in the current permit.

V. Sludge

Section 405(d) of the Clean Water Act requires that sludge conditions be included in all POTW permits. Technical sludge standards required by Section 405 of the Clean Water Act (CWA) were finalized on November 25, 1992 and were published on February 19, 1993. The regulations went into effect on March 21, 1993 (see 40 CFR part 503).

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the Act's Section 405(d) Technical Standards. In addition, EPA-New England prepared a 72-page document entitled "EPA Region I NPDES Permit Sludge Compliance Guidance" for use by the permittee in determining their appropriate sludge conditions for their chosen method of sewage sludge use or disposal practices. This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf .

VI. Pretreatment

There are no permittee does not have any significant major industries contributing industrial wastewater to the WWTF and . the permittee is not required to develop an industrial pretreatment program. The draft permit does include conditions specifying that pPollutants introduced into POTWs by a non-domestic sources shall not pass through the POTW or interfere with the operation or performance of the treatment works.

VII. Antidegradation

This draft permit is being reissued with an allowable wasteload identical to the current permit and there has been no change in outfall location. The State of Massachusetts has indicated that there will be no lowering of water quality and no loss of existing water uses and that no additional anti-degradation review is warranted.

VIII. Essential Fish Habitat (EFH)

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §1801 et seq. (1998)), EPA is required to consult with the National Fisheries Services (NOAA Fisheries) if EPA's action or proposed action that it funds, permits, or undertakes, may adversely impact any essential fish habitat (EFH). The Amendments broadly define "essential fish habitat" as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. §1802 (10)). "Adversely impact" means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. §600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. §1855(b)(1)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

The Atlantic salmon (*Salmo salar)* is the only managed species with designated EFH in the Connecticut River, which is classified in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00 as a Class B - warm water fishery. Class B waters are designated as a habitat for fish,

other aquatic life, and wildlife, including for their reproduction, migration, growth and other crucial functions, and for primary and secondary contact recreation.

Atlantic salmon are expected to be present during one or more lifestages within the area which encompasses the discharge site. Although the last remnant stock of Atlantic salmon indigenous to the Connecticut River was believed to have been extirpated over 200 years ago, an active effort has been underway throughout the Connecticut River system since 1967 to restore this historic run (HG&E/MMWEC, 1997). Atlantic salmon may pass in the vicinity of the discharge either on the migration of juveniles downstream to Long Island Sound or on the return of adults to upstream areas. The area of the discharge on the river mainstem, approximately 18.4 miles downstream from the Turners Falls Dam and approximately 18.8 miles upstream from the Holyoke Dam, is not judged to be suitable for spawning, which is likely to occur in tributaries where the appropriate gravel or cobble riffle substrate can be found.

EPA has determined that the limits and conditions contained in this draft permit minimize adverse effects to Atlantic Salmon EFH for the following reasons:

- This is a reissuance of an existing permit;
- The dilution factor (2,220) is very high;
- The Connecticut River is approximately 450 feet wide in the vicinity of the discharge at Hatfield, providing a large zone of passage for migrating Atlantic salmon that is unaffected by the discharge;
- Acute toxicity tests will be conducted twice per year on daphnids *(Ceriodaphnia dubia).* Current results of the toxicity tests are in compliance with the permit limits;
- The draft permit prohibits violations of the state water quality standards.
- Limits specifically protective of aquatic organisms have been established for chlorine, based on EPA water quality criteria
- The facility withdraws no water from the Connecticut River, so no life stages of Atlantic salmon are vulnerable to impingement or entrainment from this facility.
- The effluent limitations and conditions in the draft permit were developed to be protective of all aquatic life.

EPA believes that the conditions and limitations contained within the draft permit adequately protects all aquatic life, including those with designated EFH in the receiving water, and that further mitigation is not warranted. Should adverse impacts to EFH be detected as a result of this permit action, or if new information is received that changes the basis for EPA's conclusions, NMFS will be contacted and an EFH consultation will be re-initiated.

As the federal agency charged with authorizing the discharge from this facility, EPA has submitted the Draft Permit and fact sheet, along with a cover letter, to NMFS Habitat Division for their review.

IX. Endangered Species

Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended (the "Act"), grants authority to and imposes requirements upon federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and the habitats of such species that has been designated as critical ("critical habitat").

Section 7(a)(2) of the Act requires every federal agency in consultation with and with the assistance of the Secretary of the Interior, to ensure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish.

Based on EPA's assessment, the only endangered species potentially influenced by the reissuance of this permit is the shortnose sturgeon (*Acipenser brevirostrum*). It is EPA's preliminary determination that the operation of this facility, as governed by the permit action, is not likely to adversely affect the species of concern. It is our position that this permit action does not warrant a formal consultation under Section 7 of the ESA. The reasoning to support this position follows.

A. Environmental Setting

Effluent from the Hatfield WWTP is discharged to approximately the mid-point of segment MA34-04 of the Connecticut River, which is classified in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00 as a Class B - warm water fishery. Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other crucial functions, and for primary and secondary contact recreation. The Standards define a warm water fishery as waters in which the maximum mean monthly temperatures generally exceed 68° F (20° C) during the summer months and are not capable of sustaining a year-round population of cold water stenothermal aquatic life.

B. Outfall Description

The outfall (001) discharges to the mainstem of the Connecticut River and is located approximately 18.4 miles downstream of the Turners Falls Dam and approximately 18.8 miles upstream from the Holyoke Dam. The discharge pipe is approximately 5 feet from the west bank of the river and 3 feet below the water surface. The outfall is not equipped with a diffuser. The Connecticut River is approximately 450 feet wide in the vicinity of the discharge. The current expected dilution factor is 2,220. The dilution factor was calculated in Section IV of this fact sheet.

C. Shortnose Sturgeon Information

Update information presented in this section on the life history and known habitat of shortnose sturgeon (SNS) in the Connecticut River was obtained from, among other sources, "The Connecticut River IBI Electrofishing NMFS Biological Opinion, Connecticut and Merrimack River Bioassessment Studies" (NMFS BO, July 30, 2009) and the Draft Endangered Species Act Section 7 Consultation Biological Opinion (BO) for the Holyoke Hydroelectric Project (Federal Energy Regulatory Commission (FERC) Permit #2004), issued to FERC by NOAA Fisheries on January 27, 2005 (NMFS BO 2005). Information dealing with the potential effects of pollutants on SNS was obtained from, among other sources, a detailed ESA response letter from NMFS to EPA regarding the Montague Water Pollution Control Facility, dated September 10, 2008 (Montague Letter).

Information gathered from a variety of sources confirms the presence of shortnose sturgeon in the Connecticut River. The population is largely divided by the Holyoke Dam, although limited successful downstream passage does occur. Modifications to the dam are currently ongoing to ensure the safe and successful upstream and downstream passage of fish, including shortnose sturgeon, at the Dam (Montague Letter).

The Holyoke Dam separates shortnose sturgeon in the Connecticut River into an upriver group (above the Dam) and a lower river group that occurs below the Dam to Long Island Sound. The abundance of the upriver group has been estimated by mark-recapture techniques using Carlin tagging (Taubert 1980) and PIT tagging (Kynard unpublished data). Estimates of total adult abundance calculated in the early 1980s range from 297 to 516 in the upriver population to 800 in the lower river population. Population estimates conducted in the l990s indicated populations in the same range. The total upriver population estimates ranged from 297 to 714 adult shortnose sturgeon, and the size of the spawning population was estimated at 47 and 98 for the years 1992 and 1993 respectively. The lower Connecticut River population estimate for sturgeon >50 cm TL was based on a Carlin and PIT tag study from 1991 to 1993. A mean value of 875 adult shortnose sturgeon was estimated by these studies. Savoy estimated that the lower river population may be as high as 1000 individuals, based on tagging studies from 1988-2002. It has been cautioned that these numbers may overestimate the abundance of the lower river group because the sampled area is not completely closed to downstream migration of upriver fish (Kynard 1997). Other estimates of the total adult population in the Connecticut River have reached 1200 (Kynard 1998) and based on Savoy's recent numbers the total population may be as high as 1400 fish (Montague Letter). Regardless of the actual number of SNS in the river, the effective breeding population consists of only the upriver population, as no lower river fish are successfully passed upstream at the present time. This effective breeding population is estimated at approximately 400 fish (NMFS BO 2009).

Several areas of the river have been identified as concentration areas. In the downriver segment, a concentration area is located in Agawam, MA which is thought to provide summer feeding and over-wintering habitat. Other concentration areas for foraging and over wintering are located in Hartford, Connecticut, at the Head of Tide (Buckley and Kynard 1985) and in the vicinity of Portland, Connecticut (CTDEP 1992). Shortnose sturgeon also make seasonal movements into the estuary, presumably to forage (Buckley and Kynard 1985; Savoy in press). Above the Dam, there are also several concentration areas. During summer, shortnose sturgeon congregate near Deerfield (NMFS

BO), which is approximately 12.3 miles upstream of the facility discharge. Many SNS overwinter at Whitmore.

Two areas above Holyoke Dam, near Montague, have more consistently been found to provide spawning habitat for SNS. This spawning habitat is located at river km 190-192 and is the most upstream area of use. It is located just downstream of the species' historical limit in the Connecticut River at Turners Falls (river km 198). This area is approximately 18 miles upstream of the Hatfield discharge. Across the latitudinal range of the species, spawning adults typically travel to approximately river km 200 or further upstream where spawning generally occurs at the uppermost point of migration within a river (Kynard 1997; NMFS 1998). The Montague sites have been verified as spawning areas based on successful capture of sturgeon eggs and larvae in 1993, 1994, and 1995, that were 190 times the number of fertilized eggs and 10 times the number of embryos found in the Holyoke site (Vinogradov 1997). In seven years of study (1993-1999), limited successful spawning, as indicated by capture of embryos or late stage eggs, occurred only once (1995) at Holyoke Dam (Vinogradov 1997; Kynard et al. 1999c). Using this same measure, successful spawning occurred at Montague during 4 of 7 years. Both Montague and Holyoke sites have been altered by hydroelectric dam activities, but all information suggests that females spawn successfully at Montague, not at Holyoke Dam. Thus, it appears that most, if not all, recruitment to the population comes from spawning in the upriver segment (NMFS BO).

The effects of the Holyoke Project on the shortnose sturgeon's ability to migrate in the Connecticut River have likely adversely affected the shortnose sturgeon's likelihood of surviving in the river. An extensive evaluation of shortnose sturgeon rangewide revealed that shortnose sturgeon above Holyoke Dam have the slowest growth rate of any surveyed (Taubert 1980, Kynard 1997) while shortnose sturgeon in the lower Connecticut River have a high condition factor and general robustness (Savoy, in press). This suggests that there are growth advantages associated with foraging in the lower river or at the fresh-and salt-water interface. There are four documented foraging sites downstream of the Holyoke Dam, while only one exists upstream. The presence of the Holyoke Dam has likely resulted in depressed juvenile and adult growth due to inability to take advantage of the increased productivity of the fresh/salt water interface. This likely has negatively impacted the survival of the Connecticut River population of shortnose sturgeon and impeded recovery. This has also likely made the spawning periodicity of females greater (NMFS BO 2005).

D. Pollutant Discharges Permitted

1. Biochemical Oxygen Demand (BOD_5)

The draft permit proposes the same BOD_5 concentration limits as in the current permit, which are based on the secondary treatment requirements set forth at 40 CFR 133.102 (a)(1), (2), (4) and 40 CFR 122.45 (f). The secondary treatment limitations are a monthly average BOD_5 concentration of 30 mg/l and a weekly average concentration of 45 mg/l. The draft permit also requires the permittee to report the maximum daily BOD_5 value each month, but does not establish an effluent limit. The monitoring frequency is once per week.

Shortnose sturgeon are known to be adversely affected by DO levels below 5 mg/L (Jenkins et. al1994, Niklitschek 2001). The permit conditions above are designed to ensure that the discharge meets the Massachusetts Water Quality Standards for Class B waterbodies, which requires that waters attain a minimum DO of 5 mg/L. Discharges meeting these criteria are not likely to have any negative impacts on SNS.

2. Total Suspended Solids (TSS)

TSS can affect aquatic life directly by killing them or reducing growth rate or resistance to disease, by preventing the successful development of fish eggs and larvae, by modifying natural movements and migration, and by reducing the abundance of available food (EPA 1976). These effects are caused by TSS decreasing light penetration and by burial of the benthos. Eggs and larvae are most vulnerable to increases in solids.

The draft permit proposes the same TSS concentration limitations as in the existing permit. The average monthly and average weekly limits are based on the secondary treatment requirements set forth at 40 CFR 133.102 (b)(1), (2) and 40 CFR 122.45 (f) and are a monthly average TSS concentration of 30 mg/l and a weekly average concentration of 45 mg/l. The permittee has been able to achieve consistent compliance with those limits in the past. The draft permit requires the permittee to report the maximum TSS value each month, but does not establish a maximum daily effluent limit. The monitoring frequency is once per week.

Studies of the effects of turbid waters on fish suggest that concentrations of suspended solids can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton 1993). The studies reviewed by Burton demonstrated lethal effects to fish at concentrations of 580mg/L to 700,000mg/L depending on species. Sublethal effects have been observed at substantially lower turbidity levels. For example, prey consumption was significantly lower for striped bass larvae tested at concentrations of 200 and 500 mg/L compared to larvae exposed to 0 and 75 mg/L (Breitburg 1988 in Burton l993). Studies with striped bass adults showed that pre-spawners did not avoid concentrations of 954 to 1,920 mg/L to reach spawning sites (Summerfelt and Moiser 1976 and Combs 1979 in Burton l993). While there have been no directed studies on the effects of TSS on shortnose sturgeon, SNS juveniles and adults are often documented in turbid water. Dadswell (1984) reports that shortnose sturgeon are more active under lowered light conditions, such as those in turbid waters. (Montague Letter) As such, shortnose sturgeon are assumed to be as least as tolerant to suspended sediment as other estuarine fish such as striped bass.

As noted above, shortnose sturgeon eggs and larvae are less tolerant to sediment levels than juveniles and adults. Several studies have examined the effects of suspended solids on fish larvae. Observations in the Delaware River indicated that larval populations may be negatively affected when suspended material settles out of the water column (Hastings 1983). Larval survival studies conducted by Auld and Schubel (1978) showed that striped bass larvae tolerated 50 mg/l and 100 mg/l suspended sediment concentrations and that survival was significantly reduced at 1000 mg/L. According to Wilber and Clarke (2001), hatching is delayed for striped bass and white perch eggs exposed for one day to sediment concentrations of 800 and 1000 mg/L, respectively (Montague Letter).

In a study on the effects of suspended sediment on white perch and striped bass eggs and larvae performed by the ACOE (Morgan et al. 1973), researchers found that sediment began to adhere to the eggs when sediment levels of over 1000 parts per million (ppm) were reached. No adverse effects to demersal eggs and larvae have been documented at levels at or below 50 mg/L (Montague Letter). This is above the highest level authorized by this permit. Based on this information, it is likely that the discharge of sediment in the concentrations allowed by the permit will have an insignificant effect on shortnose sturgeon .

3. pH

The draft permit requires that the pH of the Hatfield WWTP effluent shall not be less than 6.5 or greater than 8.3 standard units at any time. Since a pH from 6.0 to 8.3 is considered harmless to most marine organisms (Ausperger 2004), no adverse effects to SNS are likely to occur as a result of a discharge meeting the above pH range.

4. Escherichia coli (E. coli)

E. coli bacteria are indicators of the presence of fecal wastes from warm-blooded animals. The primary concern regarding elevated levels of these bacteria is for human health and exposure to pathogen-contaminated recreational waters. Fecal bacteria are not known to be toxic to aquatic life. E. coli limits are therefore designed to ensure compliance with human health criteria and are seasonal, corresponding to the recreational use season, consistent with the Massachusetts WQS.

5. Total Residual Chlorine

The acute and chronic water quality criteria for chlorine defined in the 2002 EPA National Recommended Water Quality Criteria for freshwater are 19 ug/l and 11 ug/l, respectively. Given the very high dilution factor of 2,220 at the outfall of the Hatfield WWTP, the total residual chlorine limits have been calculated as 42.2 mg/l maximum daily and 24.4 mg/l average monthly. However, the Massachusetts Implementation Policy for the Control of Toxic Pollutants in Surface Waters stipulates that the maximum effluent concentration of chlorine shall not exceed 1.0 mg/l for discharges with dilution factors greater than 100. Consequently, the 2006 permit includes a maximum daily effluent limitation for TRC of 1.0 mg/l and an average monthly monitoring requirement, in compliance with that policy.

Based upon this analysis, the TRC maximum daily limit of 1.0 mg/l and monthly reporting requirement are being carried forward in the draft permit, in accordance with anti-backsliding requirements. The sampling frequency has been maintained as once per day.

There are a number of studies that have examined the effects of TRC (Post 1987; Buckley 1976; EPA 1986) on fish; however, no directed studies that have examined the effects of TRC on shortnose sturgeon. The EPA has set the Criteria Maximum Concentration (CMC or acute criteria; defined in 40 CFR 131.36 as equals the highest concentration of a pollutant to which aquatic life can be exposed

for a short period of time (up to 96 hours) without deleterious effects) at 0.019 mg/L, based on an analysis of exposure of 33 freshwater species in 28 genera (EPA 1986) where acute effect values ranged from 28 ug/L for *Daphia magna* to 710 ug/L for the threespine stickleback. The CMC is set well below the minimum effect values observed in any species tested. As the water quality criteria levels have been set to be protective of even the most sensitive of the 33 freshwater species tested, it is reasonable to judge assumes that the criteria are also protective of shortnose sturgeon.

The anticipated TRC level at the outfall satisfies the EPA's ambient water quality criteria and is lower than TRC levels known to effect aquatic life. As such, the discharge of the permitted concentrations of TRC are likely to have an insignificant effect on shortnose sturgeon.

6. Phosphorus

State water quality standards require any existing point source discharge containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practical treatment to remove such nutrients. Phosphorus interferes with water uses and reduces instream dissolved oxygen. The draft permit includes a six (6) per year monitoring and reporting requirement for effluent phosphorus. If a Total Maximum Daily Load (TMDL) or other data demonstrates that the WWTP is contributing to eutrophication of the river, EPA and MADEP may reopen the permit under Part II.A.4. of the permit and modify the limit. In order to modify the limit, a formal public review process would be required.

EPA has employed the Gold Book-recommended concentration (0.1 mg/l) to interpret the state's narrative standards for nutrients EPA also performed a reasonable potential analysis to determine whether, at the current effluent phosphorus concentration, there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria. EPA has taken the upstream concentration of phosphorus into account in its analysis.

Based on the reasonable potential calculation, the draft permit does not require a limit or monitoring requirement. The current permit does not have any limit or monitoring requirements for phosphorus. Please refer to the Phosphorus Section of Part IV of this fact sheet for a full discussion of the reasonable potential analysis performed.

7. Nitrogen

DO levels in the Long Island Sound estuary, approximately 100 miles downstream from the Hatfield WWTP, have been determined to be impacted by nitrogen discharges from wastewater treatment plants on the Connecticut River and other tributaries. A TMDL has been developed that includes, *inter alia*, a Waste Load Allocation for Massachusetts, New Hampshire and Vermont wastewater facilities discharging to those receiving waters that is design to achieve the DO criteria. That WLA is currently being met, and the draft permit contains conditions to ensure that the WLA continues to be met by requiring optimization of nitrogen removal, in order to ensure that nitrogen loads do not increase over the 2004-2005 baseline of 16,254 lbs/day. Please see the Nitrogen Section of Part IV of this fact sheet for a detailed explanation.

The estimated current loading for the Hatfield WWTP used in the nitrogen analysis was 28.6 lbs/day, based upon a total nitrogen concentration of 15.6 mg/l and the average flow of 0.22 MGD (15.6 mg/L * 0.22 MGD * 8.34), as indicated in the Facility's 2004 through 2005 DMRs. A review of the DMRs from May 2008 through August 2010 indicate that TKN varies from 1.4 lb/day to 63.0 lb/day with an average value of 24.1 lb/day. Nitrite and nitrate varies from 7.7 lb/day to 34.5 lb/day with an average value of 22.3 lb/day. Therefore, total nitrogen varies from 9.1 lb/day to 97.5 lb/day with an average value of 46.4 lb/day (Refer to Attachment B for TKN and nitrite and nitrate monitoring results) which is more than the estimated loading of 28.6 lbs/day.

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 has included a condition in the Draft Permit requiring the permittee to evaluate alternative methods of operating its plant to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Specifically, Part I.E. of the Draft 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 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 intend to 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 plant consider alternatives for further enhancing nitrogen reduction.

8. Metals

Certain metals in water can be toxic to aquatic life, including SNS. There is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. An evaluation (see the Metals discussion in Part IV of the fact sheet) of the concentration of metals in the facility's effluent (from May 2008 to August 2010 Toxicity Testing Reports) shows that there is not reasonable potential for toxicity caused by any reported metals, including copper, lead, zinc and nickel.

9. Whole Effluent Toxicity (WET)

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

> *"All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife."*

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

Pursuant to EPA Region I policy, and MassDEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990), discharges having a dilution factors greater than 100 require acute toxicity testing two times per year and an acute LC50 limit of 50 percent. The dilution factor for this discharge is greater than 100, so in accordance with EPA and MassDEP policy the draft permit includes an LC50 limit of 50 percent and requires acute toxicity testing twice per year on the daphnid, *Ceriodaphnia dubia*. These are the same requirements that are in the current permit.

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

E. Finding

Based on the above analysis, including (1) the location of the discharge along the west bank of a wide, channelized portion of the Connecticut River (approximately 450 feet wide); (2) the extremely high dilution factor; (3) the proposed permit limits; and (4) the minimal water quality effects of the permit action, EPA has made the preliminary determination that the proposed reissuance of the NPDES permit for this facility is not likely to adversely affect shortnose sturgeon. Therefore, EPA has judged that a formal consultation pursuant to Section 7 of the ESA is not required. EPA is seeking concurrence from NMFS regarding this determination through the information in this fact sheet, the Draft Permit as well as a letter under separate cover.

Reinitiation of consultation will take place: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or (c) If a new species is listed or critical habitat is designated that may be affected by the identified action.

XUnder the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with NMFS if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat.16 U.S.C. § 1855(b). The Amendments broadly define essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. 16 U.S.C. § 1802(10). Adversely impact means any impact which reduces the quality and/or quantity of EFH. 50CFR.§ 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for fish species for which federal Fisheries Management Plans exist. 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. The Ware River[bp1] is not covered by the EFH designation for riverine systems and thus EPA has determined that a formal EFH consultation with the NMFS is not required.

IX. Endangered Species

EPA has determined that there are no endangered species in the vicinity of the outfall from the Hatfield Wastewater Treatment Facility.[bp2]

X. Sewer System Operation and Maintenance

EPA regulations set forth a standard condition for "Proper Operation and Maintenance" that is included in all NPDES permits. *See* 40 CFR § 122.41(e). This condition is specified in Part II.B.1 (GeneralStandard Conditions) of the draft permit and it requires the proper operation and maintenance of all wastewater treatment systems and related facilities installed or used to achieve permit conditions.

EPA regulations also specify a standard condition to be included in all NPDES permits that specifically imposes on permittees a "duty to mitigate." *See* 40 CFR § 122.41(d). This condition is specified in Part II.B.3 of the draft permit and it requires permittees to take all reasonable steps – which in some cases may include operations and maintenance work - to minimize or prevent any discharge in violation of the permit which has the reasonable likelihood of adversely affecting human health or the environment.

Proper operation of collection systems is critical to prevent blockages and equipment failures that would cause overflows of the collection system (sanitary sewer overflows, or SSOs), and to limit the amount of non-wastewater flow entering the collection system (inflow and infiltration or I/I). I/I in a collection system can pose a significant environmental problem because it may displace wastewater flow and thereby cause, or contribute to causing, SSOs. Moreover, I/I could reduce the capacity and efficiency of the treatment plant and cause bypasses of secondary treatment. Therefore, reducing I/I will help to minimize any SSOs and maximize the flow receiving proper treatment at the treatment plant. There is presently estimated to be approximately 30,000 gpd of (I/I) in the sewer system. MassDEP has stated that the inclusion in NPDES permits of I/I control conditions is a standard State Certification requirement under Section 401 of the CWA and 40 CFR § 124.55(b).

Therefore, specific permit conditions have been included in Part I.B., and I.C. and I.D. of the draft permit. These requirements include mapping of the wastewater collection system, preparing and implementing a collection system operation and maintenance plan, reporting unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling infiltration and inflow to the extent necessary to prevent SSOs and I/I related-effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary. These requirements are intended to minimize the occurrence of permit violations that have a reasonable likelihood of adversely affecting human health or the environment.

Several of the requirements in the draft permit are not included in the current permit, including collection system mapping, and preparation of a collection system operation and maintenance plan. EPA has determined that these additional requirements are necessary to ensure the proper operation and maintenance of the collection system and has included schedules for completing these requirements in the draft permit.

XI. State Certification Requirements

EPA may not issue a permit unless the Massachusetts Department of Environmental Protection with jurisdiction over the receiving waters certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit. EPA has requested permit certification by the state pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

XII. Public Comment Period, Public Hearing, And Procedures For Final Decision

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and a supporting material for their arguments in full by the close of the public comment period, to Suprokash Sarker, U.S. EPA, MA Office of Ecosystem Protection, 5 Post Office Square, Suite 100 , Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and MassDEP for a public hearing to consider the draft permit. Such requests shall state the nature of the issues proposed to be raised in

the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston Office. Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

XIII. EPA Contact

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

Suprokash Sarker, P.E.
Municipal Permits Branch
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100 (OEP 6-1)
Boston, MA 02109-3912
Telephone: (617) 918-1693
E-Mail: sarker.soupy@epa.gov

Kathleen Keohane
Department of Environmental Protection
Division of Watershed Management
627 Main Street, Floor # 2
Worcester, MA 01608
508-767-2856
kathleen.keohane@state.ma.us

_____
Date

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

List of Attachments:

A - Facility Location
B - DMR Data

RESPONSE TO PUBLIC COMMENTS FOR
DRAFT NPDES PERMIT MA0101290
T0WN OF HATFIELD
HATFIELD WASTEWATER TREATMENT FACILITY
260 MAIN STREET
HATFIELD, MA 01038

On August 12, 2011, the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) released a draft National Pollutant Discharge Elimination System (NPDES) permit for the Hatfield wastewater treatment facility for public notice and comment. The public comment period ended on September 10, 2011.

MassDEP has issued a water quality certification pursuant to Section 401(a) of the Clean Water Act ("CWA"). While concluding that the conditions of the permit would achieve compliance with the CWA and the Massachusetts Clean Waters Act, the certification letter also included commentary on the schedule for collection system mapping, found in Part I.C.4 of the permit. The issues raised by MassDEP in its certification letter are addressed at the end of this document under the heading "Section 401 Certification."

The following comments were received from **the Connecticut River Watershed Council.** The comments are reproduced below as received and have not been edited:

Comment 1

The protection of existing uses is required under 40 CFR 131.12(a)(1). Below is our understanding of existing uses on the Connecticut River in the vicinity of the outfall, which is located near the confluence of the Fort and Connecticut Rivers.

- The Hatfield boat ramp is located just downstream of the wastewater treatment plant.
- Downstream and in the vicinity of the outfall location, the river is used for swimming, agricultural irrigation, paddling, and motor boating.

Response

The commenter is correct that 40 CFR Part 131.12 (Antidegradation policy) requires that states develop and adopt antidegradation policies, identify methods for implementing such policies, and that such policies and implementation methods be consistent with protecting existing uses. We also agree that the activities summarized in the comment are existing uses.

Comment 2

The Fact Sheet on page 1 indicates that there is an Attachment A showing a figure of the wastewater treatment facility and outfall locations. No attachment A was found. A map and diagram would have been extremely helpful.

Response

We regret that Attachment A was not posted on our web site. In the future, please contact the permit writer regarding any information that is missing or appears incorrect.

Comment 3

The Fact Sheet was filled with so many typographical errors that it was cumbersome to read and decipher. One error was in the number of residents served by the plant. The Fact sheet says "3,327900" and we would like to know what the real number is. In addition, the text box containing the reasonable potential analysis on page 10 cut off the conclusion. For the metals analysis, each toxicity calculation concludes with, "So, there is no reasonable reasonable potentialpotential does not exist," which is contradictory and meaningless. We have been told in the past that Fact Sheets are final documents not to be revised, but in this case because of the number of typographical errors, we think it's appropriate to re-issue a corrected Fact Sheet. We also hope that future EPA Fact Sheets will go through a more thorough editing process before being released to the public.

Response

There was a word processing error in the file of the fact sheet posted on the Region's web site that resulted in the inclusion of some extraneous text that had actually been deleted in the editing process. The hard copies of the fact sheet that were sent out did not include this extraneous text. The corrected version of the fact sheet will be included with information posted on the Region's web site with the final permit. The draft permit information will be removed at that time.

In response to the specific errors cited in your comments, the correct population is 3,300, the missing language in the text box in question concluded that there was no reasonable potential for the discharge of phosphorus to cause or contribute to an exceedance of water quality standards, and the language in the reasonable potential determinations should have been, "So, there is no reasonable potential."

Comment 4

Most current permits contain the pH limit (6.5 to 8.3) right in the effluent table, rather than citing Condition I.A.1.b on page 5. We recommend that the pH limit be inserted here for increased clarity.

Response

EPA agrees and has put the pH limits in the effluent table.

Comment 5

The proposed maximum daily limit for *E. coli* bacteria is 409 cfu/100 ml. We have commented to EPA in the past that this limit is not consistent with the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, which states that no single sample shall exceed 235 colonies/100 mL. EPA's response has been that MassDEP "views the use of the 90% upper confidence level (lightly used full body contact recreation) of 409 cfu/100mL as appropriate for setting effluent bacteria levels in NPDES permits." EPA here refers to their *1986 Ambient Water Quality for Bacteria* document. We think this rationale might be appropriate for some of the rivers in the state that truly do not get much recreational contact. But such is not the case with the Connecticut River. See our comment #1 above for a description of at least three bathing sites within a few miles of the outfall pipe for this facility. Additionally, since the river segment is considered impaired because of pathogens, we want the draft permit limits to be restrictive enough to prevent the Hatfield WWTP discharge from contributing to an impairment.

We think that it would be more appropriate to consider this section of river "designated beach" and give all permit limits on the river a maximum bacteria limit of 235 cfu/100 mL, which corresponds to the designated beach criteria in the 1986 document and the Massachusetts water quality standards. Under Massachusetts regulations, 105 CMR 445.010, a "Public Bathing Beach" means "any bathing beach open to the general public, whether or not any entry fee is charged, that permits access to bathing waters." A Bathing Beach is defined to be: "[T]he land where access to the bathing water is provided." Id. This section of river is undoubtedly used for bathing, but if this doesn't fit EPA's standard for a beach, it must at least fall within the "moderate use for bathing" rather than "light use," based on the heavy traffic of swimmers. This would establish a maximum bacteria limit of 298 cfu/100 mL, rather than the existing 409.

Response

Regarding the impairment of the Connecticut River (Segment 34-04) due to pathogens, the Connecticut River Watershed 2003 Water Quality Assessment Report lists this segment as supporting both primary and secondary contact uses. The report describes *E. coli* monitoring that was conducted in 2003 that supports this conclusion. In any case, since the *E. coli* geometric mean criteria of 126 colonies/100 ml is set as the monthly average limit, the discharge will not cause or contribute to an exceedance of the *E. coli* water quality criteria.

The water quality criteria for bacteria are based on the relationship between observed illness and the geometric mean of the relevant bacteria indicator. EPA, *1986 Ambient Water Quality for Bacteria*, at 9. Inherent in the geometric mean is a variability in monitoring results that allows for approximately half of the samples to be above the mean while remaining protective of water quality standards. Additional criteria elements, such as single sample maxima, are set not because they have a direct relationship to human health, but because they provide a useful indicator of whether the long term geometric mean is being met, given this inherent variability in bacteria monitoring results. As stated in the 1986 EPA criteria document:

> [B]acterial enumeration techniques are imprecise, and environmental conditions, such as rainfall, wind and temperature will vary temporally and spatially. The variable nature of the environment, which affects the die-off and transport of bacteria indicators, and the inherent imprecision of bacterial enumeration methods, suggests an approach that takes these elements into account. Noncompliance with the criterion is signaled when the maximum acceptable geometric mean is exceeded or when any individual sample exceeds a confidence limit, chosen according to a level of swimming use.

To reflect this inherent uncertainty, the bacterial standards used to close a beach and develop effluent limits are based on the same theoretical log-normal distribution curve. The geometric mean is the basis of the criterion, and a statistical threshold value, or margin of safety is applied when evaluating beach notifications and closure decisions or POTW effluent based on a single sample. Both 235 colonies/100 ml and 409 colonies/100 ml correspond to confidence levels (75% and 90% respectively) on the theoretical lognormal distribution of effluent data. When taking individual grab samples, any one individual sample can be greater than or less than the numerical value of the geometric mean criterion, however, this does not necessarily indicate that the geometric mean criterion has actually been exceeded. Therefore, the maximum daily limit should be set at a confidence level on the theoretical lognormal distribution that is protective of water quality and takes into account the public use of the waterbody, with bathing beaches using the more protective 75^{th} percentile. If the geometric mean (average monthly limit) is being met, there is at least a 75% chance that a single sample will be under the 75% confidence level. This margin of safety is appropriate for high use beaches because they often have to make decisions on single samples. Retrospective sampling and the calculation of a geometric mean do not necessarily reflect current conditions.

For other regulatory uses such as permitting, TMDLs, and water quality assessments, the geometric mean is the relevant value to ensure appropriate actions are taken to protect and improve water quality and the use of higher confidence levels as daily maximum limits is warranted. Decisions as to beach closures and maximum daily permit limits, however, are based on single samples and the varying degrees of risk implied by these other confidence levels should be applied appropriately in such decisions.

In the NPDES permitting context, MassDEP requires that effluent limits be based not on predicted conditions in the receiving water, where mixing, dilution and die-off would be taken into account, but at the end-of-pipe. In this situation the maximum daily limit is appropriately chosen to reflect a reasonable upper bound of the statistical distribution of 90%, or 409 colonies/100 ml. This will identify pollution episodes caused by short term spikes in bacteria resulting from disturbances to plant operation or chlorination failure and provide an ongoing indicator of whether the geometric mean is being met. To choose a lower confidence level of 75% could result in either frequent permit violations, or overtreatment with chlorine in order to shift the entire statistical distribution downward to avoid any permit violations. Such a result is neither desirable nor required by the water quality standards.

With respect to the current uses of the receiving water, “designated beaches” are referred to in the 1986 EPA criteria document as swimming areas that that are frequently protected by

lifeguards, provide parking or other public access and are heavily used by the public. The recreational uses in close proximity to the outfall do not meet this definition.

Given the relatively light recreational use (no "designated beaches") in close proximity to the discharge and the mixing that would occur between the discharge and the recreational sites described in Comment 1, EPA has determined that the 90% confidence level for bacteria monitoring is appropriate here. Hence, the maximum daily *E. coli* limit will remain 409 colonies/100 ml as specified in the draft permit.

Comment 6

CRWC supports the increased frequency in monitoring of nitrogen compounds from once per quarter to once per month. We recommend that this permit (and all others) include nutrient analysis for both influent and effluent, as was done in the most recent Northampton permit, so as to better inform the permittee as they evaluate alternative methods to optimize nitrogen removal.

Response

EPA has not typically required influent monitoring of nitrogen, and generally does not believe that it is necessary to ensure that effluent loads do not increase. There is no indication that influent nitrogen concentration is atypical, so an influent monitoring requirement has not been included in the final permit.

Comment 7

Again, CRWC is very supportive of the revised monitoring for nitrogen and the obligation to submit, implement, and evaluate a plan for optimizing the removal of nitrogen. This is important, but unfortunately very overdue, information. We are concerned that these requirements are being implemented only as permits are coming up for renewal, which is delaying the acquisition of data relevant to the pending TMDL revision for Long Island Sound. CRWC requests that EPA or MassDEP reopen all the permits within the Connecticut River watershed that do not currently have these requirements and amend them for these requirements. Given that this is now a standard requirement and there is authority to reopen permits, there does not appear any reason to further delay this very important information need. Should the permits be re-opened, we request adjustments to the bacteria limit (see comment #5) at the same time.

Response

We have noted your comments. Regarding your request that NPDES permits in the Long Island watershed area in Massachusetts be reopened for the addition of nitrification optimization requirements, we would note that this would be a substantial effort by EPA given that these would be major modifications requiring a draft permit modification, fact sheet, public notice, response to comments, and a final permit modification decision, and that the intent of the optimization requirement is to ensure that current nitrogen loads do not increase pending an updated TMDL. In consideration of these factors, EPA has determined that including these

requirements as part of routine permit reissuance is protective of water quality while being a more effective use of federal and state administrative resources.

Comment 8

CRWC appreciates the "Reasonable Potential Analysis for Phosphorus" provided on page 9 of the Fact Sheet. Many Fact Sheets we have read recently for discharges into the Connecticut River have not included this analysis, and it is good to know EPA's rationale for including or not including a phosphorus limit in a draft permit. Nevertheless, we are not in favor of using the 1986 Gold Book concentration as the criterion for analysis.

Response

The Gold Book criteria is effects-based, meaning that waters exceeding this criteria would be expected to show effects of eutrophication, as opposed to reference-based criteria such as the Ecoregion criteria, which are based on the characteristics of unimpacted waters. EPA prefers using the effects- based criteria since the use of the reference–based criteria may result in limitations that are more stringent than necessary.

In addition, EPA has, in other permits, compared the use of the Gold Book criteria as a "not to exceed crtierion" as was evaluated here, to more stringent criteria, such as the Ecoregion criteria, which would be applied under more average conditions, and have found that they produce similar effluent limitations.

Comment 9

The Connecticut River is host to several species of migratory fish and many resident fish. We think that it would be appropriate for EPA to designate a test species more representative of actual fish in the resource area, rather than the Daphnid currently used for most permit compliance.

Response

We have noted your comments. Please note that under previous permits, WET test were run on both ceriodaphnia and fathead minnows. Because there was consistent compliance for both species, EPA reduced the required testing to one species and determined that daphnids were the more sensitive species in this case.

For POTW discharges that have high dilution factors and no significant industrial contributions (such as Hatfield) we do not believe there is a significant risk of toxicity to endangered species, and therefore no need to adjust WET test species.

Comment 10

Has EPA, MassDEP, or the Town verified the dimensions of the mixing zone of this discharge, and whether or not the mixing zone is truly distinct from other mixing zones in the Connecticut

River in this segment, such as the Amherst wastewater plant outfall? We would like to see an analysis and documentation of the size of the mixing zone and its location in relation to other mixing zones in the Connecticut River. The pipe is described as being five feet from shore and three feet below the water surface (given the natural and unnatural daily fluctuations in river depth, we are not sure for what conditions the pipe is at a depth of 3 feet). We would ask that EPA or DEP provide more specific information on the pipe's location relative to water level. Given the proximity of heavy recreational use near the outfall plus the fisheries habitat along the river in this section, one must assume that people and fish are using the river right at the outfall location. We recommend that the Town be required to study the mixing of its effluent in relation to site conditions and evaluate whether there are any modifications that could be made to improve mixing in this area, such as the addition of a diffuser.

Response

The top of the outfall pipe is submerged by approximately 3 inches under normal low flow conditions and 5 feet 9 inches under normal high flow conditions, with an average depth of about 3 feet. The outfall is a 20 inch diameter concrete pipe with a gentle slope. It lies over bedrock with stone rip-rap on both sides.

To the best of our knowledge there has been no detailed mixing analysis of the discharge. EPA considers dilution in its calculation of most water quality-based limits using the design flow of the treatment facility and the 7Q10 low flow of the receiving water. Limits on pH, bacteria and WET are exceptions to this general rule. The bacteria and pH limits assume no dilution, meaning that water quality criteria must be met at the end of the discharge pipe. The methodology for bacteria limits ensures that recreational uses will not be lost in the vicinity of the outfall. The WET limits of LC50 = 50% (or two toxic units) ensure that the state criteria of 0.3 toxic units will be attained close to the outfall (at a point where the dilution factor equals about 7) See the Massachusetts Implementation Policy for the Control of Toxics in Surface Waters February 23, 1990, and the Massachusetts Implementation Policy for Mixing Zones, January 8, 1993 for further information.

To confirm that there are no significant upstream water quality issues EPA also reviewed the upstream chemical data collected by the Town in conjunction with its whole effluent toxicity tests. The data shows that the upstream receiving water quality is generally well within Massachusetts water quality criteria (see Table 1 below). One aluminum sample exceeded the chronic water quality criteria, so EPA again reviewed the effluent data collected in conjunction with the WET tests to confirm that there was no reasonable potential for the discharge of aluminum to cause or contribute to an exceedance of water quality standards. This data is shown on Table 2, and shows that the effluent aluminum concentration is generally less than the chronic water quality criteria, with one of six samples showing a concentration greater than the chronic criteria. **To confirm the aluminum concentration in the discharge, EPA has included a quarterly monitoring requirement in the final permit.** The samples taken in conjunction with the WET tests may be used for two of the four annual samples.

Table 1

Receiving Water Data (mg/l)								
	10/13/10	6/8/10	10/14/09	6/17/09	10/7/08	6/10/08	WQ Criteria	
							Acute	Chronic
Aluminum	0.064	0.086	0.055	0.187	0.048	0.050	0.750	0.087.
Copper	<0.001	<0.001	0.003	<0.001	0.008	0.003	0.013	0.009
Nickel	0.001	0.001	<0.001	<0.001	<0.001	0.002	0.47	0.052
Lead	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	0.065	0.0025
Zinc	<0.002	0.003	<0.002	0.002	0.012	0.011	0.12	0.12

Table 2

Effluent Data (mg/l)						
	10/13/10	6/8/10	10/14/09	6/17/09	10/7/08	6/10/08
Aluminum	0.045	0.022	0.161	0.022	0.076	0.032
Copper	0.032	0.045	0.058	0.025	0.027	0.032
Nickel	0.004	0.004	0.003	0.002	0.003	0.004
Lead	0.003	0.004	<0.002	<0.002	<0.001	<0.001
Zinc	0.029	0.044	0.041	0.026	0.045	0.035

Section 401 Certification

In its Section 401 certification of the permit, the Massachusetts Department of Environmental Protection (MassDEP) included the following statement:

> The Department recognizes that the permit condition at Part 1, Section C.4 is a new requirement and the 30 month compliance schedule in which to complete all collection system mapping may not be sufficient in all cases. Technical knowledge and capacity to perform this work may need to be supported initially to accomplish these goals, and some permittees may want to coordinate this work with separately required stormwater collection system mapping requirements expected during the permit term. Initial feedback from a variety of permittees indicated that 48 months may be needed to accomplish this task, aligning the results with the permit compliance evaluation cycle. The Department supports a deadline of 48 months to reasonably accomplish this task. However, if at any time before the current schedule has expired, the permittee determines compliance with the current schedule will not be met, the permittee may submit in writing a request to both agencies to change the deadline in accordance with the

regulatory provisions of each agency through permit modification establishing an alternative schedule. Such request must include: a) specific reasons why the extension is necessary; b) documentation dating the progress made to date; c) a proposed alternative date for completing the work; and d) any other relevant information supporting the request for a modified schedule.

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency validating the permit's compliance with the pertinent federal and state water pollution control standards. *See* CWA § 401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 C.F.R. § 124.53(a). The regulations further provide that "when certification is required…no final permit shall be issued…unless the final permit incorporates the requirements specified in the certification under § 124.53(e)." 40 C.F.R. § 124.55(a). Section 124.53(e) provides that the State certification shall include "any conditions more stringent than those in the draft permit which the State finds necessary to "assure compliance with, among other things, state water quality standards, 40 C.F.R. § 124.53(e)(2), and shall include "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards," *id.* § 124.53(e)(3). Under 40 C.F.R. § 124.55(c), "a State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition."

EPA's "duty under CWA section 401 to defer to considerations of State law is intended to prevent EPA from *relaxing* any requirements, limitations, or conditions imposed by the State law." *In re City of Jacksonville*, 4 E.A.D. 150, 157 (EAB 1992); *In re City of Moscow*, 10 E.A.D. 135, 151 (EAB 2001); *accord In re Ina Rd. Water Pollution Control Facility*, 2 E.A.D. 99, 100 (CJO 100).

EPA believes that the 30 month schedule for completing the required mapping included in the draft permit is reasonable and notes that there were no comments regarding this schedule submitted during the public comment period. The 30 month schedule has been included in the final permit.

EPA acknowledges that EPA's recent draft NPDES municipal stormwater general permit for affected Massachusetts municipalities contains storm sewer mapping requirements as a component of the illicit discharge detection and elimination program, and that municipalities may want to conduct storm sewer mapping in conjunction with sewer system mapping. Further, EPA generally agrees with MassDEP that if the permittee submits information showing that despite its best efforts it is unable to complete the required sewer system mapping within the specified period (e.g. if field work for both sewer system mapping and collection system mapping is longer than for mapping the sewer system alone), EPA may allow a reasonable extension of the schedule. However, EPA will not be inclined to grant extensions to municipalities that seek schedule extensions that are based on a delay in initiating collection system mapping because they were awaiting issuance of the municipal stormwater permit.

Other Issues and Changes:

1. In its review of the Fact Sheet supporting the Draft Permit, the National Marine Fisheries Service noted an error in Section IX, Endangered Species. The following sentence, "The draft permit includes a six (6) per year monitoring and reporting requirement for effluent phosphorus" is incorrect and should not have been included. The draft permit did not include phosphorus monitoring. As documented in the fact sheet, the effluent phosphorus data reported in the permit application was used to show that the discharge of phosphorus does not have the reasonable potential to cause or contribute to an exceedance of water quality standards.

2. In Part F.1.c, the address for submitting reports to MassDEP has been corrected. Reports are to be sent to the Western Regional Office rather than the Central Regional Office.

3. In Part 1.A.1, the following a language has been added to the permit as item "g". This requirement, which is standard language in Massachusetts POTW permits was inadvertently left out of the draft permit

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

4. In the first sentence of Part C.5.b, the words "submitted and implemented" were deleted and the words "completed, implemented and submitted" added to correct a grammatical error.

5. In the first sentence of Part C.6.e, the words "based on the annual average flow during the reporting year" have been added after (0.4 MGD) to clarify that the permittee must use the annual average flow in determining whether the facility exceeded 80 percent of its design capacity.