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 Hadley
Board of Selectmen

is authorized to discharge from the facility located at

Hadley Indian Hill Wastewater Treatment Plant
134 South Middle Street
Hadley, Massachusetts 01035

to receiving water named

Connecticut River (Segment MA34-04)

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

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

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

This permit supersedes the permit issued on April 26, 2006.

This permit consists of **Part I (**14 pages including effluent limitations and monitoring requirements); **Attachment A** (USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol, February 2011, 8 pages); and **Part II (**25 pages including Standard Conditions).

Signed this 30th day of September, 2011

/S/SIGNATURE ON FILE

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

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

PART I

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

EFFLUENT CHARACTERISTIC	**EFFLUENT LIMITS**			**MONITORING REQUIREMENTS[3]**	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
FLOW [2] FLOW (ANNUAL AVE) [2]	Report mgd 0.54 mgd	********* *********	Report mgd *********	CONTINUOUS	RECORDER
BOD_5 [4]	30 mg/l 135 lbs/day	45 mg/l 203 lbs/day	Report mg/l Report lbs/day	1/WEEK	24-HOUR COMPOSITE[5]
TSS [4]	30 mg/l 135 lbs/day	45 mg/l 203 lbs/day	Report mg/l Report lbs/day	1/WEEK	24-HOUR COMPOSITE[5]
pH RANGE[1]	6.5 - 8.3 SU (See I.A.1.b.)			1/DAY	GRAB
TOTAL RESIDUAL CHLORINE (April 1 – October 31)	Report	*********	1.0 mg/l	1/DAY	GRAB
E. COLI BACTERIA[1,6] (April 1 – October 31)	126 cfu/100 ml	*********	409 cfu/100 ml	1/WEEK	GRAB
TOTAL NITROGEN[7]	Report mg/l Report lbs/day	*********	Report mg/l Report lbs/day	1/MONTH	24-HOUR COMPOSITE[5]
TOTAL AMMONIA NITROGEN	*********	*********	Report	1/MONTH	24-HOUR COMPOSITE[5]
TOTAL KJELDAHL NITROGEN	*********	*********	Report	1/MONTH	24-HOUR COMPOSITE[5]
NITRITE + NITRATE NITROGEN	*********	*********	Report	1/MONTH	24-HOUR COMPOSITE[5]
WHOLE EFFLUENT TOXICITY [8, 9, 10]	Acute $LC_{50} \geq 50\%$			1/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE ALUMINUM[11]	*********	*********	Report	1/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE CADMIUM[11]	*********	*********	Report	1/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE COPPER[11]	*********	*********	Report	1/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE LEAD[11]	*********	*********	Report	1/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE NICKEL[11]	*********	*********	Report	1/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE ZINC[11]	*********	*********	Report	1/YEAR	24-HOUR COMPOSITE[5]

* See footnotes on pages 3 through 4

Footnotes:

1. Required for State Certification.

2. Report annual average, monthly average, and the maximum daily flow. The limit is an annual average, which shall be 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 previous eleven months.

3. All required effluent samples shall be collected after disinfection and prior to discharge. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP. All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

4. Sampling required for influent and effluent.

5. 24-hour composite samples 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.

6. *E. Coli* discharges shall not exceed a geometric mean of 126 colony forming units (cfu) per 100 ml, nor shall the daily maximum discharge exceed 409 cfu per 100 ml. *E. Coli* grab samples shall be taken at the same time as total residual chlorine during the 2 hour period of maximum diurnal flow.

7. See Part I.F., Special Condition, for requirements to evaluate and implement optimization of nitrogen removal.

8. The permittee shall conduct 48-hour static acute toxicity tests on effluent samples following the February 2011 USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol (**Attachment A**). The one species for these tests is the Daphnid (*Ceriodaphnia dubia*). Toxicity test samples shall be collected and tests completed once per year during the calendar month of August. Toxicity test results are due by the 30th day of the month following the end of the quarter sampled.

9. 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 (no dilution) shall cause no more than a 50% mortality rate.

10. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall 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 in Attachment G of *NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, which may be found on the EPA Region I web site at http://www.epa.gov/Region1/enforcementandassistance/dmr.html. 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**.

When using alternate dilution water, the permittee shall continue to submit the results of chemistry tests for all controls (i.e., site water controls and lab water controls).

11. For each whole effluent toxicity test the permittee shall report on the appropriate discharge monitoring report, (DMR), the concentrations of the hardness, ammonia nitrogen as nitrogen, total recoverable aluminum, cadmium, copper, lead, nickel, and zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the minimum quantification level shown in **Attachment A** on page 7 of 8, or as amended. Also the permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report.

Part I.A.1. (Continued)

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

b. The pH of the effluent shall not be less than 6.5 or greater than 8.3 at any time.

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

d. The effluent shall not contain a visible oil sheen, foam, or 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 results of sampling for any parameter done in accordance with EPA approved methods above its required frequency must also be reported.

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 the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; 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(s) 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 General Requirements 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 Standard Conditions 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. This requirement shall be described in the Collection System O & M Plan required pursuant to Section C.5. below.

2. Preventative Maintenance Program

   The permittee shall maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges. 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. combined manholes);
d. All outfalls, including the treatment plant outfall(s), CSOs, combined manholes, and any known or suspected SSOs;
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 overall condition of the collection system including a list 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.7. below.

b. The full Collection System O & M Plan shall be submitted and implemented 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 preventative maintenance and monitoring program for the collection system;
    3. Sufficient staffing to properly operate and maintain the sanitary sewer collection system;
    4. Sufficient funding and the source(s) of funding 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, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;
    6. A description of the permittees program 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.

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 0.54 mgd design flow (0.43 mgd) 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.

D. 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.

E. 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

   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:

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

- 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 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 §

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

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:

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

F. SPECIAL CONDITION

Within one year of the effective date of this permit, the permittee shall complete an evaluation of alternative methods of operating the existing water pollution control 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 implement the recommended operational changes in order to maintain the mass discharge of total nitrogen less than the existing annual discharge load. Existing mass loadings will be based on the **69.1 lbs/day 2004-2005 baseline estimate.**

The permittee shall also submit an annual report to EPA and MassDEP, **by April 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.

G. 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 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 this 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 this 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

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. All reports required under this permit, including 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 or notifications required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (OES04-SMR)

5 Post Office Square - Suite 100
Boston, MA 02109-3912

Duplicate signed copies of all reports or notifications required above shall be submitted to the State at the following address:

MassDEP – Western Region
Bureau of Resource Protection
436 Dwight Street, Suite 402
Springfield, MA 01103

Duplicate signed copies of all Whole Effluent Toxicity tests and nitrogen optimization evaluation and annual reports shall be submitted to the State at the following address:

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

Any verbal reports, if required in **Parts I** and/or **II** of this permit, shall be made to both EPA-New England and to MassDEP.

H. 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.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
FIVE POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT NUMBER: MA0100099

PUBLIC NOTICE START AND END DATES: June 21, 2011 – July 20, 2011

NAME AND MAILING ADDRESS OF APPLICANT:

Board of Selectmen
Town Hall, 100 Middle Street
Hadley, Massachusetts 01035

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Hadley Indian Hill Wastewater Treatment Plant
134 South Middle Street
Hadley, Massachusetts 01035

RECEIVING WATER(S): Connecticut River (Segment MA34-04)

RECEIVING WATER CLASSIFICATION(S): B (Warm Water Fishery)

Table of Contents

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

The above named applicant has applied to the U.S. Environmental Protection Agency ("EPA") for the reissuance of its NPDES permit to discharge into the designated receiving water. The current permit was issued in 2006 and expired on April 25, 2011. The permit has been administratively continued because the applicant made a timely application for renewal.

The Hadley Indian Hill Wastewater Treatment Plant (WWTP) is a 0.54 million gallons per day (mgd) secondary treatment plant serving a population of 3,200. See **Attachment A** for location of facility, Outfall 001 and receiving water.

II. Description of Discharge

A quantitative description of significant effluent parameters based on discharge monitoring data from July 2006 to December 2010 is shown in **Attachment B**.

III. Receiving Water Description

The Connecticut River is classified as a Class B, warm water fishery. The Massachusetts Surface Water Quality Standards designate Class B waters "as a 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 they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value."

The segment of the Connecticut River (MA34-04) receiving the Hadley discharge flows from the confluence of the Deerfield River to the Holyoke Dam. The *Massachusetts Year 2008 Integrated List of Waters* 303 (d) list identifies this segment of the receiving water as Category 5 (Waters requiring a TMDL) for both PCB in fish tissue and *E. coli* bacteria.

IV. Limitations and Conditions

The effluent limitations of the draft permit, the monitoring requirements, and any implementation schedule (if required) may be found in the draft permit.

V. Permit Basis: Statutory and Regulatory Authority

The Clean Water Act (the "CWA") prohibits the discharge of pollutants to waters of the United States without an NPDES permit unless such a discharge is otherwise authorized by the Act. A NPDES permit is used to implement technology-based and water quality-based effluent limitations, as well as other requirements, including monitoring and reporting. This draft NPDES permit was developed in accordance with statutory and regulatory authorities established pursuant to the Act. The regulations governing the NPDES program are found in 40 CFR Parts 122, 124 and 125.

Under Section 301(b)(1)(B) of the CWA, Publicly Owned Treatment Works (POTWs) are required to achieve technology-based effluent limitations based upon secondary treatment. The secondary treatment requirements are set forth in 40 CFR Part 133 and define secondary treatment as an effluent

achieving specific limitations for biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

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, 314 CMR 4.00, include requirements for the regulation and control of toxic constituents and also require that criteria from *National Recommended Water Quality Criteria:2002*, established by EPA pursuant to Section 304(a) of the CWA, shall be used unless a site specific criteria is established. Massachusetts regulations similarly require that its permits contain limitations which are adequate to assure the attainment and maintenance of the water quality standards of the receiving waters as assigned in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00. See 314 CMR 3.11(3).

According to Clean Water Act Section 402(o) and federal regulations at 40 CFR § 122.44(1), when a permit is reissued, effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards or conditions in the previous permit, except under certain limited conditions.

VI. Explanation of the Permit's Effluent Limitation(s)

A. Facility Information

The Hadley Indian Hill Wastewater Treatment Plant (WWTP) is a 0.54 MGD secondary treatment plant serving a population of 3,200. The plant consists of septage holding tanks, grit removal, aeration tanks, secondary clarifiers and chlorination facilities. The collection system is 100% separate sanitary sewers, with inflow and infiltration (I/I) estimated to be 80,000 gallons per day (gpd). Manhole inspections and flow monitoring is planned or underway in suspected I/I areas. The outfall (001) discharging to the Connecticut River is located approximately 10 feet from the shore and 4 feet below the water surface and is not equipped with a diffuser. Sludge is removed to sludge holding tanks and the liquid sludge is hauled by private contractor and incinerated at East Fitchburg WWTF (approximately 112 dry metric tons per year).

B. Permitted Outfalls

The facility's Outfall 001 is located at Latitude 42° 19' 41" N and Longitude 72° 35' 10" W. The discharge location into the Connecticut River is shown in Attachment A.

C. Derivation of Effluent Limits under the Federal CWA and/or the Commonwealth of Massachusetts' Water Quality Standards

The draft permit authorizes the discharge of treated wastewater, subject to effluent limitations as described in detail below. The sections are divided according to the effluent characteristic being regulated.

1. Flow and Available Dilution

The 2006 permit has a flow limit of 0.54 million gallons per day (mgd) expressed as an annual average limitation, to be reported on a 12 month rolling basis. During the review period of July 2006 through December 2010 the WWTP recorded annual average discharge flows from 0.347 to 0.402 mgd (See Attachment B). The flow limit in the draft permit will remain at **0.54 mgd** (0.84 cfs).

The 7Q10 flow (1,711 cfs) used in the development of the 2006 permit is from the *Connecticut River Basin 1998 Water Quality Assessment Report*. A review indicated that the current dilution factor is still valid and will be used in the calculations for this permit. Therefore the dilution factor for the facility is as follows:

7Q10 @ WWTF discharge = 1,711 cfs
Design flow = 0.54 mgd = 0.84 cfs

Dilution factor = (River 7Q10 @ Discharge + Design Flow) ÷ Design Flow
Dilution Factor = (1711 + 0.84) ÷ 0.84 = **2,038**

2. BOD_5 and TSS

The average monthly and average weekly concentration-based limits for BOD_5 and TSS are based on requirements under Section 301(b)(1)(B) of the CWA as defined in the Secondary Treatment Standards in 40 CFR Section 133.102(a) and (b). The average monthly and average weekly mass-based limits for BOD_5 and TSS corresponding to the respective concentration-based limits in the draft permit are based on 40 CFR Section 122.45(f) which requires the Agency to include limits in units of mass.

Average monthly and average weekly allowable mass-based (load) limitations for BOD_5 and TSS shown in the draft permit are based on the POTW's daily design flow of 0.54 mgd and the appropriate constituent concentration for the respective time period being limited. These mass-based limits are calculated based on the following equation.

$$L = C \times Q_{PDF} \times 8.34$$

where:

L	= Maximum allowable load, in lbs/day, rounded to nearest 1 lbs/day.
C	= Maximum allowable effluent concentration for reporting period, in mg/L.
Q_{PDF}	= Treatment plant's design flow, in MGD
8.345	= Factor to convert effluent concentration (mg/L) times design flow (MGD) to lbs/day

Monthly average: 0.54 mgd x **30 mg/l** x 8.34(lb)(l)/(mg)(gal) = **135 lbs/day**
Weekly average: 0.54 mgd x **45 mg/l** x 8.34(lb)(l)/(mg)(gal) = **203 lbs/day**

All the concentration-based and mass-based effluent limits for BOD_5 and TSS in the draft permit are the same as the limits in the 2006 permit and, therefore, are in accordance with antibacksliding requirements found in 40 CFR §122.44. The permittee has been able to achieve consistent compliance with those limits.

Percent removal limits of 85% for BOD_5 and TSS, required under 40 CFR Section 133.102 (a) (3) and (b)(3), respectively, are the same as the limits in the 2006 permit and, therefore, are in accordance with the antibacksliding requirements found in 40 CFR Section 122.44.

The compliance monitoring frequency for BOD_5 and TSS is once per week in the draft permit.

3. pH

The pH shall be in the **range of 6.5 through 8.3** standard units and not more than 0.2 standard units outside of the normally occurring range to be consistent with the Massachusetts Water Quality Standards for Class B waters [314 CMR 4.05(3)(b)(3)]. There shall be no change from background conditions that would impair any use assigned to this class. The permittee has had no pH violations of the permit during the review period.

4. Total Residual Chlorine

The total residual chlorine (TRC) instream criteria to protect aquatic life are 11 ug/l for chronic toxicity and 19 ug/l for acute toxicity. Allowing for available dilution, the TRC permit limit calculations are shown below.

Average Monthly Chlorine Limit = 11 ug/l * 2038 = 22 mg/l
Daily Maximum Chlorine Limit = 19 ug/l * 2038 = 39 mg/l

However, the Massachusetts Implementation Policy for the Control of Toxic Pollutants in Surface Waters[1] (Feb. 23, 1990) 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. As shown in Attachment B, the applicant has been able to achieve consistent compliance with the existing limitation.

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, consistent with anti-backsliding requirements.

5. Fecal Coliform and E. Coli Bacteria

The 2006 permit includes fecal coliform limits as a state certification requirement. Fecal coliform sampling results over the review period ranged from 2.4 to 1570 colony forming units per 100 ml (monthly average) and 3 to 4520 colony forming units per 100 ml (daily maximum). Of these sampling results, 12.5% (4 of 32) were monthly average violations and 15.6% (5 of 32) were daily maximum permit violations as seen in Attachment B.

In 2007, Massachusetts revised its water quality standards, replacing fecal coliform criteria with *E. Coli*, criteria as the bacteria indicator protecting recreational uses in Class B waters. See section 314 CMR 4.05(3)(b)(4). The *E.coli* criteria are a geometric mean of **126 cfu/100 ml** and a single sample maximum of **409 cfu/100 ml.** These criteria have been included in the draft permit as monthly average and maximum daily limits respectively. The monitoring frequency is once per week, as specified in the draft permit.

Fecal coliform limits and monitoring conditions are not included in the draft permit.

6. Nitrogen

1 http://www.mass.gov/dep/water/laws/toxicpol.doc

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

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

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

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
2. Reduction of 25% from baseline loading
3. Estimated current loading from 2004 – 2005 DMR data – detailed summary attached as Attachment C.

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

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

Specifically, the permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and MassDEP within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The

permit also requires implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be **69.1 lbs/day**. The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years.

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

7. Metals

Certain metals in water can be toxic to aquatic life. There is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. An evaluation (see below) of the concentration of metals in the facility's effluent (from June 2006 to September 2010 Whole Effluent Toxicity testing reports) shows that there is no reasonable potential for toxicity caused by any reported metals, including aluminum, cadmium, chromium, copper, lead, nickel and zinc.

Test Date	Effluent						
	Aluminum	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
6/14/2006	34	0	0	19	1.2	3.5	110
9/13/2006	21	0	0	11	0	5.1	84
6/14/2007	51	0	1	23	1.4	3.8	77
9/12/2007	28	0	0	15	0	4.1	69
6/10/2008	21	0	---	21	1.2	3.8	53
9/11/2008	15	0	0	12	1.4	3.2	45
6/11/2009	35	0	0	25	1.1	4.6	70
9/15/2009	23	0	0	27	0.76	2.9	57
6/10/2010	30	0	0	18	1	0	60
9/9/2010	42	0	0	24	1.7	3.2	46
Average	30.0	0	0.11	19.5	1.0	3.42	67.1
Minimum	15	0	0	11	0	0	45
Maximum	**51**	**0**	**1**	**27**	**1.7**	**5.1**	**110**
# Measurements	10	10	9	10	10	10	10
Median Upstream*	**51**	**0**	**0**	**3.1**	**0.29**	**1.3**	**4.5**
Water Quality Criteria (WQC)							
Acute Criteria (total recoverable)	750	0.86	870.45	6.06	26.32	221.13	56.41

Assimilative Capacity (criteria - background)	699	0.86	870.45	2.96	26.03	219.83	51.91
Dilution Factor	2038	2038	2038	2038	2038	2038	2038
Allowable Effluent Conc. With Upstream and Dilution	1424562	1753	1773977	6032	53049	448014	105793
Reasonable Potential (acute)?	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Chronic Criteria (total recoverable)	87	0.14	41.6	4.36	1.03	24.59	56.41
Assimilative Capacity (criteria - upstream conc)	36	0.14	41.6	1.26	0.74	23.29	51.91
Dilution Factor	2038	2038	2038	2038	2038	2038	2038
Allowable Effluent Conc. With Upstream and Dilution	73368	285	84781	2568	1508	47465	105793
Reasonable Potential (chronic)?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

* Median upstream data taken from Whole Effluent Toxicity testing on Connecticut River just upstream of Hadley WWTF from June 2006 to September 2010.

The effluent metals data above are compared to the water quality criteria found in EPA's *National Recommended Water Quality Criteria: 2002*. Based on an upstream median hardness of 41 mg/l as $CaCO_3$ and an effluent median hardness of 160 mg/l as $CaCO_3$, the downstream hardness was calculated to be 41.1 mg/l as $CaCO_3$ (based on a mass balance equation using the design flow and receiving water 7Q10). This downstream hardness was used to determine the total recoverable metals criteria. Subtracting the upstream median concentration from the criteria for each metal (to obtain the current assimilative capacity) and applying the dilution factor of 2,038, results in the maximum allowable effluent concentration which would not cause an exceedence of the in-stream water quality criteria. Reasonable potential is then determined by comparing this allowable concentration (for both acute and chronic conditions) with the maximum reported concentration for each metal. A sample calculation for copper is shown here:

Acute copper criterion (dissolved, using hardness of 41.1 mg/l as $CaCO_3$) = 5.81 ug/l
Chronic copper criterion (dissolved, using hardness of 41.1 mg/l as $CaCO_3$) = 4.19 ug/l

Conversion factor (total recoverable to dissolved) = 0.96

Acute copper criterion (total recoverable) = (5.81 ug/l) / 0.96 = 6.06 ug/l
Chronic copper criterion (total recoverable) = (4.19 ug/l) / 0.96 = 4.36 ug/l

Upstream median copper concentration = 3.1 ug/l

Acute copper assimilative capacity = 6.06 – 3.1 = 2.96 ug/l
Chronic copper assimilative capacity = 4.36 – 3.1 = 1.26 ug/l

Dilution Factor = 2,038

Allowable acute effluent concentration with dilution = (2.96 ug/l) x 2,038 = 6,032 ug/l
Allowable chronic effluent concentration with dilution = (1.26 ug/l) x 2,038 = 2,568 ug/l

Compare to maximum copper concentration from WET reports: 6,032 ug/l >> 27 ug/l
Compare to maximum copper concentration from WET reports: 2,568 ug/l >> 27 ug/l

Conclusion: No Reasonable Potential to exceed in-stream acute or chronic copper criteria

As indicated in the chart above, there is no reasonable potential (for both acute and chronic conditions) that the discharge of aluminum, cadmium, chromium, copper, lead, nickel or zinc will cause or contribute to exceedances of water quality standards. Monitoring will continue to be required for these metals (except chromium) once per year with each whole effluent toxicity test, as indicated in the draft permit.

8. Whole Effluent Toxicity

Under Section 301(b)(1) of the CWA, discharges are subject to effluent limitations based on water quality standards. The State Surface Water Quality Standards [314 CMR 4.05(5)(e)], include the following narrative statements and require that EPA criteria established pursuant to Section 304(a)(l) 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. For pollutants not otherwise listed in 314 CMR 4.00, the National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002 published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the allowable receiving water concentrations for the affected waters, unless the Department either establishes a site specific criterion or determines that naturally occurring background concentrations are higher. Where the Department determines that naturally occurring background concentrations are higher, those concentrations shall be the allowable receiving water concentrations. The Department shall use the water quality criteria for the protection of aquatic life expressed in terms of the dissolved fraction of metals when EPA's 304(a) recommended criteria provide for use of the dissolved fraction. The EPA recommended criteria based on total recoverable metals shall be converted to dissolved metals using EPA's published conversion factors. Permit limits will be written in terms of total recoverable metals. Translation from dissolved metals criteria to total recoverable metals permit limits will be based on EPA's conversion factors or other methods approved by the Department. The Department may establish site specific criteria for toxic pollutants based on site specific considerations. Site specific criteria, human health risk levels and permit limits will be established in accordance with 314 CMR 4.05(5)(e)(1)(2)(3)(4).

National studies conducted by the EPA have demonstrated that domestic sources can contribute toxic constituents to wastewater treatment facilities. These pollutants include metals, chlorinated solvents, aromatic hydrocarbons and other constituents. 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 analysis; (2) bioavailability of pollutants after discharge is measured by toxicity testing including any synergistic effect of pollutants; and (3) pollutants for which there are inadequate analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in connection with pollutant specific control procedures to control the discharge of toxic pollutants.

Whole effluent toxicity (WET) tests were reviewed for the period of July 2006 through December 2010. The 2006 permit includes an acute LC_{50} limit of 50% with a testing frequency of twice per year (in June and September). During the review period, 9 tests were performed resulting in no

violations of the acute LC_{50} limit (see Attachment B). These WET testing results indicate that the receiving stream was not adversely affected by the discharge. Based on the lack of evidence of acute whole effluent toxicity, MADEP recommends in the 2003 Water Quality Assessment Report for the Connecticut River Watershed that the WET testing frequency for Hadley WWTF be reduced to once per year. Based on a review of the most recent WET results and MADEP's recommendation, the draft permit will require WET testing annually, in August, with an acute LC_{50} limit of 50%. The draft permit also carries forward the WET testing requirements of only one test organism, the daphnid (Ceriodaphnia dubia). WET testing shall be conducted in accordance with EPA Region I's protocol found in Attachment A of the draft permit.

EPA-Region I has adopted a species-specific, self-implementing policy for switching to an alternate dilution water during the life of the NPDES permit for WET tests where the receiving water is documented to be toxic or unreliable. The policy authorizes alternate dilution water use: (1) in any WET test repeated due to site water toxicity. No prior notification to EPA is required for any current test that needs to be repeated due to site water toxicity; and (2) in future WET tests where there are two previously documented incidents of site water toxicity associated with a particular test species. Written notification to EPA is required before switching to alternate dilution water testing for the duration of the life of the permit. The details of this policy are provided in the DMR instructions that are sent out annually.

VII. Essential Fish Habitat

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 is not suitable for spawning, which is likely to occur in tributaries were 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 (2,038) is very high;
- The Connecticut River is over 500 feet wide in the vicinity of the discharge, providing a large zone of passage for migrating Atlantic salmon that is unaffected by the discharge;
- Acute toxicity tests will be conducted once 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.

VIII. Endangered Species Act

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 Hadley Indian Hill WWTP is discharged to 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 10.5 miles upstream from the Holyoke Dam. The discharge pipe is approximately 10 feet from the east bank of the river and 4 feet below the water surface. The outfall is not equipped with a diffuser. The Connecticut River is over 500 feet wide in the vicinity of the discharge. The current expected dilution factor is 2,038. The dilution factor was calculated in Section VI.C.1 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, SNS congregate near Deerfield (NMFS BO). 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). 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 a maximum daily 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 daily 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 580 mg/L to 700,000 mg/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 at 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 Hadley Indian Hill 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)

Fecal coliform and *E. coli* bacteria are indicators of the presence of fecal wastes from warm-blooded animals. As these bacteria are often associated with viruses and other pathogens, the primary concern regarding elevated levels of these bacteria is for human health and exposure to pathogen-contaminated recreational waters. Fecal bacteria are associated with fecal matter, which is known to contain nutrients that support plant and animal growth. Algae and other organisms which utilize these nutrients can deplete oxygen under certain environmental conditions (particularly warm water conditions). While fecal bacteria are not known to be toxic to aquatic life, including SNS, water elevated levels of these bacteria are indicative of water quality problems, including lowered dissolved oxygen levels (Montague Letter).

The draft permit includes a monthly average limitation of 126 colony forming units (cfu) per 100 ml, and shall be expressed as a monthly geometric mean. The daily maximum limitation proposed in the draft permit is 409 cfu/100 ml. The *E. coli* monitoring frequency proposed in the draft permit is once per week. The draft permit also requires that the *E. coli* samples be collected during the 2 hour period of maximum diurnal flow.

The *E. coli* limits set for this facility are designed to protect human health and to insure that dissolved oxygen (DO) criteria are met. As discussed above, shortnose sturgeon are known to be adversely affected by DO levels below 5 mg/L (Jenkins et. al1994, Niklitschek 2001). The *E. coli* draft permit

conditions are designed to ensure that elevated bacteria do not occur in the Connecticut River as a result of the discharge, causing DO levels to fall below 5 mg/L. Discharges meeting these E. coli criteria are not likely to have any negative impacts on SNS.

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 2,038 at the outfall of the Hadley Indian Hill WWTP, the total residual chlorine limits have been calculated as 39 mg/l maximum daily and 22 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. As shown in Attachment B, the applicant has been able to achieve consistent compliance with the existing limitation.

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. Nitrogen

It has been determined that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen. In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources.

The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

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

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

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound," April 1998).
2. Reduction of 25% from baseline loading.
3. Estimated current loading from 2004 – 2005 DMR data – detailed summary attached as **Exhibit A**.

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

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

Specifically, 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 draft permit also requires implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual average total

nitrogen load from this facility (2004 – 2005) is estimated to be 69.1 lbs/day. The draft 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 draft permit also includes maximum daily reporting requirements for total nitrogen (TN), ammonia nitrogen, Kjeldahl nitrogen (TKN), and nitrite (NO_2) plus nitrate (NO_3) nitrogen at a sampling frequency of twice per month in the effluent.

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

7. 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 Section VI.C.7.) of the concentration of metals in the facility's effluent (from June 2006 to September 2010 Whole Effluent Toxicity testing reports) shows that there is not reasonable potential for toxicity caused by any reported metals, including aluminum, cadmium, chromium, copper, lead, nickel and zinc.

8. 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.)

Whole effluent toxicity (WET) tests were reviewed for the period of July 2006 through December 2010. The permit limits were set at an acute LC_{50} limit of 50% with a testing frequency of twice per year (in June and September). During the review period, 9 tests were performed resulting in no

violations of the acute LC_{50} limit (see Attachment B). These WET testing results indicate that the receiving stream was not adversely affected by the discharge. Based on the lack of evidence of acute whole effluent toxicity, MADEP recommends in the 2003 Water Quality Assessment Report for the Connecticut River Watershed that the WET testing frequency for Hadley Indian Hill WWTF be reduced to once per year. Based on a review of the most recent WET results and MADEP's recommendation, the draft permit will require WET testing annually, in August, with an acute LC_{50} limit of 50%. The draft permit also carries forward the WET testing requirements of only one test organism, the daphnid (Ceriodaphnia dubia).

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 of the location of the discharge, the permit limits and the 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 if: (a) 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) 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) a new species is listed or critical habitat is designated that may be affected by the identified action.

IX. 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 (General 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[2]). I/I in

2 "Infiltration" is groundwater that enters the collection system through physical defects such as cracked pipes, or

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 80,000 gpd of I/I in the sewer system.

Therefore, specific permit conditions have been included in Part I.B., 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.

X. Monitoring and Reporting

The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308 (a) of the CWA in accordance with 40 CFR §§122.41 (j), 122.44 (l), and 122.48.

The draft permit includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. The draft permit requires that, no later than one year after the effective date of the permit, the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the permittee 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").

In the interim (until 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.

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit discharge monitoring reports (DMRs) electronically via a secure Internet application to U.S. EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 CFR § 122.41 and § 403.12. NetDMR is accessed from the following url: http://www.epa.gov/netdmr. Further information about NetDMR, including contacts for EPA Region 1, is provided on this website.

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deteriorated joints. "Inflow" is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems.

EPA currently conducts free training on the use of NetDMR, and anticipates that the availability of this training will continue to assist permittees with the transition to use of NetDMR. To participate in upcoming trainings, visit http://www.epa.gov/netdmr for contact information for Massachusetts.

The draft permit requires the permittee to report monitoring results obtained during each calendar month using NetDMR, 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 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 must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

The draft permit also includes an "opt-out" request process. Permittees who believe they cannot use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing, to EPA at least sixty (60) days prior to the date the facility would otherwise be required to begin using NetDMR. Opt-outs become effective upon the date of written approval by EPA and are valid for twelve (12) months from the date of EPA approval. The opt-outs expire at the end of this twelve (12) month period. Upon expiration, the permittee must submit DMRs and reports to EPA using NetDMR, unless the permittee submits a renewed opt-out request sixty (60) days prior to expiration of its opt-out, and such a request is approved by EPA.

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the draft permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format. Hard copies of DMRs must be postmarked no later than the 15th day of the month following the completed reporting period.

XI. State Certification Requirements

EPA may not issue a permit unless the state water pollution control agency 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 MassDEP has reviewed the draft permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the draft permit will be certified.

XII. Comment Period, Hearing Requests, and Procedures for Final Decisions

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to **Mr. Michael Cobb**, U.S. EPA, Office of Ecosystem Protection, Municipal Permits Branch, 5 Post Office Square, Suite 100, Mail Code: OEP06-1, Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the draft permit, the EPA 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 any public hearings, if such hearings are held, the EPA 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. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

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:

Michael Cobb
U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square, Suite 100 (OEP06-1)
Boston, Massachusetts 02109-3912
TEL: (617) 918-1369
FAX: (617) 918-0369
Cobb.Michael@epa.gov

Kathleen Keohane
Massachusetts Department of Environmental Protection
627 Main Street, 2nd Floor
Worcester, MA 01608
TEL: (508)-767-2856
FAX: (508) 791-4131
Kathleen.Keohane@state.ma.us

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Date

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

ATTACHMENT A – LOCATION OF HADLEY INDIAN HILL WWTP

Aerial View obtained from Google Maps (http://maps.google.com)

ATTACHMENT B - DMR DATA SUMMARY (OUTFALL 001)

Monitoring Period End Date	BOD5					TSS					pH	pH	Flow
	MO AVG		WKLY AVG		MO AV MN	MO AVG		WKLY AVG		MO AV MN	MINIMUM	MAXIMUM	ANNL AVG
	lb/d	mg/L	lb/d	mg/L	%	lb/d	mg/L	lb/d	mg/L	%	SU	SU	MGD
07/31/2006	21.	6.9	28.	6.9	97.	15.	4.9	17.	4.9	97.	6.92	7.42	0.353
08/31/2006	35.6	14.8	35.6	14.8	94.	15.	6.3	15.	6.3	98.	7.05	7.49	0.351
09/30/2006	35.	15.	35.	15.	94.	18.	7.7	18.	7.7	96.	7.06	7.49	0.35
10/31/2006	43.	15.	43.	15.	95.	16.	5.5	16.	5.5	98.	6.95	7.33	0.359
11/30/2006	47.	13.6	47.	13.6	96.	24.	7.6	24.	7.6	97.	6.84	7.29	0.359
12/31/2006	43.3	15.8	43.3	15.8	96.	30.7	11.2	30.7	11.2	97.	6.87	7.37	0.357
01/31/2007	35.	12.8	35.	12.8	95.	21.5	7.9	23.2	7.9	97.	7.06	7.5	0.352
02/28/2007	44.6	18.1	44.6	18.1	93.	29.6	12.	29.6	12.	96.	7.19	7.6	0.347
03/31/2007	63.2	20.1	80.2	25.5	92.8	33.6	10.7	45.3	14.4	94.5	6.83	7.52	0.347
04/30/2007	63.	17.9	65.5	19.8	93.	28.2	8.	34.	9.2	96.	6.72	7.08	0.356
05/31/2007	50.5	14.6	60.3	17.	94.	28.3	8.2	31.1	9.	95.	6.51	7.61	0.348
06/30/2007	65.	19.	66.	21.	94.	42.	12.2	46.	15.	98.	6.67	6.96	0.356
07/31/2007	61.3	18.	78.8	21.	95.	31.3	9.2	37.5	10.	96.	6.73	7.21	0.36
08/31/2007	53.3	16.3	74.8	22.	93.	33.	10.3	53.	16.	95.	6.56	6.93	0.367
09/30/2007	45.3	14.7	46.	15.9	95.	31.7	10.3	38.1	12.6	96.	6.54	7.04	0.371
10/31/2007	68.4	22.5	91.9	29.	96.	25.5	8.4	36.5	10.3	96.	6.58	7.06	0.371
11/30/2007	52.1	18.9	64.	25.	93.2	22.6	8.2	25.6	10.	95.7	6.62	7.36	0.369
12/31/2007	54.9	21.4	60.9	24.7	93.2	19.7	7.7	21.9	8.9	97.	6.75	7.07	0.361
01/31/2008	39.8	14.9	38.2	17.9	95.	17.6	6.6	23.6	8.8	97.	6.8	7.25	0.366
02/29/2008	69.2	20.4	81.4	26.4	93.5	37.6	11.1	37.	12.	95.8	6.62	7.23	0.376
03/31/2008	105.	28.6	177.	40.4	88.	43.	11.7	88.	19.3	97.	6.65	7.04	0.382
04/30/2008	103.	27.8	110.	29.7	91.	41.	11.	47.	13.	95.	6.72	7.3	0.384
05/31/2008	70.5	20.3	78.	21.	92.	29.9	8.5	33.8	9.6	94.	6.83	7.38	0.385
06/30/2008	58.	17.1	72.	22.	92.5	45.	13.2	65.	20.	93.	6.74	7.3	0.385
07/31/2008	59.	18.	71.8	24.	93.6	37.4	11.4	58.	19.4	96.	6.96	7.54	0.384
08/31/2008	41.2	12.	51.	15.1	95.	28.5	8.3	35.6	10.5	97.	7.01	7.32	0.386
09/30/2008	27.1	7.7	39.3	11.6	97.5	11.2	3.2	11.6	4.4	99.	6.95	7.42	0.39
10/31/2008	51.9	15.7	60.4	20.9	94.	24.8	7.5	31.7	11.4	96.	6.95	7.76	0.392
11/30/2008	49.	16.	70.8	24.	94.5	20.6	6.9	24.2	8.2	96.3	7.07	7.66	0.395
12/31/2008	52.5	16.5	59.8	20.	94.6	17.8	5.6	24.8	8.3	97.8	7.09	7.51	0.401
01/31/2009	55.1	19.9	73.	26.	91.7	27.41	9.9	36.6	13.3	96.	7.12	7.57	0.402
02/28/2009	78.4	27.2	101.	33.	90.7	37.5	13.	48.9	16.	95.	6.99	7.32	0.397
03/31/2009	72.5	23.	71.4	24.	91.2	32.7	10.4	36.	11.2	95.8	7.19	7.8	0.398
04/30/2009	63.1	18.8	81.1	25.6	93.	25.2	7.5	34.7	32.8	96.	6.66	7.34	0.388
05/31/2009	48.9	14.1	66.5	19.	94.1	23.2	6.7	26.4	7.8	97.5	6.93	7.18	0.387

06/30/2009	49.3	14.3	69.8	21.	94.	27.1	7.7	88.	10.6	96.	6.55	7.18	0.388
07/31/2009	40.	10.9	74.7	17.	94.8	22.8	6.2	38.8	12.	97.2	6.88	7.19	0.392
08/31/2009	43.4	12.3	58.4	17.2	94.7	28.2	7.8	42.2	12.2	96.5	6.69	7.32	0.394
09/30/2009	38.4	11.7	42.8	13.8	95.	46.9	14.3	69.5	22.	94.2	6.52	6.93	0.391
10/31/2009	62.1	19.3	87.5	28.	92.	64.3	20.	96.9	31.	90.	6.64	7.02	0.387
11/30/2009	52.3	17.3	78.4	24.	92.7	56.3	18.6	78.4	24.	94.	6.59	6.96	0.385
12/31/2009	51.3	18.6	59.	20.	92.8	43.	15.6	55.5	20.	92.8	6.7	7.29	0.382
01/31/2010	48.3	17.8	52.2	19.	92.7	33.4	12.3	42.2	17.	95.8	6.81	7.17	0.378
02/28/2010	61.	20.8	65.5	26.	92.5	37.	12.9	50.5	20.	94.5	6.75	7.9	0.379
03/31/2010	55.7	16.6	86.1	25.	93.7	41.	12.2	52.3	15.2	95.2	6.89	7.37	0.384
04/30/2010	51.9	15.2	79.9	21.8	93.5	31.1	9.1	31.	10.2	96.	6.75	7.28	0.387
05/31/2010	42.5	13.	44.4	15.5	94.7	24.5	7.5	29.8	10.4	97.	6.68	7.15	0.386
06/30/2010	44.	13.4	52.9	15.4	94.6	39.	11.9	52.2	15.2	96.	6.63	7.06	0.384
07/31/2010	56.8	16.3	64.9	19.	94.	65.5	18.8	78.6	23.	91.	6.7	7.	0.384
08/31/2010	26.5	8.8	32.9	11.4	96.5	27.4	9.1	31.5	10.9	96.	6.53	7.7	0.377
09/30/2010	34.8	11.9	50.1	18.1	96.	26.9	9.2	33.5	12.1	95.	6.73	6.99	0.374
10/31/2010	50.6	15.8	65.5	22.	94.7	42.9	13.4	56.	16.9	93.	6.63	7.06	0.374
11/30/2010	65.	23.	87.	31.	93.5	54.	19.	61.8	22.	93.2	6.63	7.09	0.372
12/31/2010	60.	23.	72.5	27.	93.	66.5	25.	83.6	29.	90.4	6.6	7.19	0.371
Permit Limit	**135.**	**30.**	**203.**	**45.**	**85.**	**135.**	**30.**	**203.**	**45.**	**85.**	**6.5**	**8.3**	**0.054**
Average	53.	16.9	65.3	20.8	93.8	32.3	10.4	42.2	13.7	95.6	6.8	7.3	0.4
Minimum	21.	6.9	28.	6.9	88.	11.2	3.2	11.6	4.4	90.	6.51	6.93	0.347
Maximum	105.	28.6	177.	40.4	97.5	66.5	25.	96.9	32.8	99.	7.19	7.9	0.402

Monitoring Period End Date	TRC MON AVG ug/L	TRC DAILY MAX ug/L	Fecal Coliform MON GEO MEAN #/100mL	Fecal Coliform DAILY MAX #/100mL
07/31/2006	0.6	1.	23.8	73.
08/31/2006	0.6	1.	**262.**	**992.**
09/30/2006	0.7	1.	140.	300.
10/31/2006	0.7	1.	66.	100.
04/30/2007	0.6	1.	29.	42.
05/31/2007	0.7	1.	151.	**490.**
06/30/2007	0.8	1.	16.	40.
07/31/2007	0.5	1.	**1570.**	**4520.**
08/31/2007	0.6	1.	**388.**	**864.**
09/30/2007	0.7	1.	**262.**	**650.**
10/31/2007	1.	1.	33.3	80.
04/30/2008	0.7	1.	2.9	6.
05/31/2008	0.8	1.	3.7	24.
06/30/2008	0.8	1.	6.8	12.
07/31/2008	0.7	1.	13.4	23.
08/31/2008	0.6	1.	18.	35.
09/30/2008	0.6	1.	16.7	34.
10/31/2008	0.8	1.	42.	115.
04/30/2009	0.8	1.	2.4	3.
05/31/2009	0.9	1.	5.6	17.
06/30/2009	0.8	1.	8.6	31.
07/31/2009	0.6	1.	16.6	20.
08/31/2009	0.6	1.	12.3	18.
09/30/2009	0.4	1.	6.1	25.
10/31/2009	0.4	0.8	28.	44.
04/30/2010	0.7	1.	2.6	16.
05/31/2010	0.7	1.	6.	12.
06/30/2010	0.4	0.9	9.1	68.
07/31/2010	0.4	0.8	8.8	31.
08/31/2010	0.6	1.	52.3	200.
09/30/2010	0.6	1.	89.	156.
10/31/2010	0.7	1.	30.2	48.
Permit Limit	**N/A**	**1.**	**200.**	**400.**
Average	0.66	0.98	103.8	284.
Minimum	0.4	0.8	2.4	3.
Maximum	1.	1.	1570.	4520.
# of Measurements	32	32	32	32
# of Exceedences	0	0	4	5
% Exceedences	0%	0%	12.5%	15.6%

Monitoring Period End Date	Nitrite plus nitrate	Ammonia	TKN
	DAILY MAX	DAILY MAX	DAILY MAX
	mg/L	mg/L	mg/L
09/30/2006	130.	4.	5.
12/31/2006	1.	0.1	1.
03/31/2007	19.	0.43	0.
06/30/2007	17.	17.	3.
09/30/2007	25.	1.	0.
12/31/2007	0.05	0.05	1.
03/31/2008	1.	14.	15.
06/30/2008	5.	10.	10.
09/30/2008	12.	3.	4.
12/31/2008	13.	2.	2.
03/31/2009	12.	7.	7.
06/30/2009	7.	1.	3.
09/30/2009	17.	3.	4.
12/31/2009	10.	1.6	3.4
03/31/2010	19.	9.2	12.
06/30/2010	31.	1.3	1.8
09/30/2010	25.	0.55	0.
12/31/2010	15.	1.7	3.6
Permit Limit	**N/A**	**N/A**	**N/A**
Average	19.95	4.27	4.21
Minimum	0.05	0.05	0.
Maximum	130.	17.	15.

Monitoring Period End Date	LC50 Static 48Hr Acute Ceriodaphnia
	DAILY MIN
	%
09/30/2006	100.
06/30/2007	100.
09/30/2007	100.
06/30/2008	100.
09/30/2008	100.
06/30/2009	100.
09/30/2009	100.
06/30/2010	100.
09/30/2010	100.
Permit Limit	**50.**
Average	100.
Minimum	100.
Maximum	100.

ATTACHMENT C – NITROGEN LOADS

NH, VT, MA Discharges to Connecticut River Watershed

NAME	NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN (lbs/day)[4]	Exp. Date
Bethlehem	NH0100501		0.19	19.6	31.1	
Charlestown	NH0100765		0.38	19.6	62.1	
Claremont	NH0101257		1.60	14.0[6]	186.8	2005
Colebrook	NH0100315		0.22	19.6	36.0	
Groveton	NH0100226		0.49	19.6	80.1	
Woodsville	NH0100978		0.19	16.0[6]	25.4	
Hinsdale	NH0100382		0.27	19.6	44.1	
Lancaster	NH0100145		0.98	8.8[6]	71.9	2005
Lisbon	NH0100421		0.17	19.6	27.8	
Littleton	NH0100153		0.77	10.0[6]	64.2	
Newport	NH0100200		0.65	19.6	106.2	2006
Keene	NH0100790	6.0	3.47	12.7	367.5	1999
Northumberland	NH0101206		0.06	19.6	9.8	
Sunapee	NH0100544		0.35	15.5	44.7	
Troy	NH0101052		0.10	19.6	16.3	
Lebanon	NH0100366		1.87	19.0[6]	296.3	2011
Swanzey	NH0101150		0.09	19.6	14.7	
Whitefield	NH0100510		0.12	19.6	19.6	
Winchester	NH0100404		0.23	19.6	37.6	
Hanover	NH0100099		1.5	19.6	245.2	
			13.70		**1,787.4**	
Bellows Falls	VT010013	1.40[5]	0.61	21.0[6]	106.8	
Bethel	VT0100048	0.12[5]	0.12	19.6	19.6	
Bradford	VT0100803	0.14[5]	0.14	19.6	22.9	
Brattleboro	VT010064	3.00[5]	1.64	20.0[6]	273.6	2009
Bridgewater	VT0100846	0.04[5]	0.04	19.6	6.5	
Canaan	VT0100625	0.18[5]	0.18	19.6	29.4	
Cavendish	VT0100862	0.15[5]	0.15	19.6	24.5	
Chelsea	VT0100943	0.06[5]	0.06	19.6	9.8	
Chester	VT010081	0.18[5]	0.18	19.6	29.4	
Danville	VT0100633	0.06[5]	0.06	19.6	9.8	
Lunenberg	VT0101061	0.08[5]	0.08	19.6	13.1	
Hartford	VT0100978	0.30[5]	0.3	19.6	49.0	
Ludlow	VT0100145	0.70[5]	0.36	15.5	46.5	
Lyndon	VT0100595	0.75[5]	0.75	19.6	122.6	2007
Putney	VT0100277	0.08[5]	0.08	19.6	13.1	

Randolph	VT0100285	0.40[5]	0.4	19.6	65.4	
Readsboro	VT0100731	0.75[5]	0.75	19.6	122.6	2007
Royalton	VT0100854	0.07[5]	0.07	19.6	11.4	
ST. Johnsbury	VT0100579	1.60	1.14	12.0[6]	114.1	2009
Saxtons River	VT0100609	0.10[5]	0.1	19.6	16.3	
Sherburne Fire Dist.	VT0101141	0.30[5]	0.3	19.6	49.0	
Woodstock WWTP	VT0100749	0.05[5]	0.05	19.6	8.2	
Springfield	VT0100374	2.20	1.25	12.0[6]	125.1	2003
Hartford	VT0101010	1.22[5]	0.97	30.0[6]	242.7	2006
Whitingham	VT0101109	0.01[5]	0.01	19.6	1.6	
Whitingham Jacksonville	VT0101044	0.05[5]	0.05	19.6	8.2	
Cold Brook Fire Dist.	VT0101214	0.05[5]	0.05	19.6	8.2	
Wilmington	VT0100706	0.14[5]	0.14	19.6	22.9	
Windsor	VT0100919	1.13[5]	0.45	19.6	73.6	
Windsor-Weston	VT0100447	0.02[5]	0.02	19.6	3.3	
Woodstock WTP	VT0100757	0.45[5]	0.45	19.6	73.6	
Woodstock-Taftsville	VT0100765	0.01[5]	0.01	19.6	1.6	
			10.96		**1724.4**	
Huntington	MA0101265	0.20[5]	0.12	19.6	19.6	
Russell	MA0100960	0.24	0.16	19.6	26.2	
Westfield	MA0101800	6.10[5]	3.78	20.4	643.1	2005
Woronoco Village	MA0103233	0.02	0.01	19.6	1.6	
Charlemont	MA0103101	0.05[5]	0.03	19.6	4.9	
Greenfield	MA0101214	3.20	3.77	13.6	427.6	2007
Monroe	MA0100188	0.02	0.01	19.6	1.6	
Old Deerfield	MA0101940	0.25[5]	0.18	9.2	13.8	
Shelburne Falls	MA0101044	0.25[5]	0.22	16.9	31.0	
Amherst	MA0100218	7.10	4.28	14.1	503.3	2005
Barre	MA0103152	0.30[5]	0.29	26.4	63.8	
Belchertown	MA0102148	1.00	0.41	12.7	43.4	
Easthampton	MA0101478	3.80	3.02	19.6	493.7	2000
Hadley	MA0100099	0.54	0.32	25.9	69.1	
Hatfield	MA0101290	0.50[5]	0.22	15.6	28.6	
Holyoke	MA0101630	17.50[5]	9.70	8.6	695.7	2005
Montague	MA0100137	1.83[5]	1.60	12.9	172.1	2006
Northampton	MA0101818	8.60[5]	4.40	22.1	811.0	2005
Northfield	MA0032573	0.45	0.10	19.6	16.3	

School						
Northfield	MA0100200	0.28	0.24	16.8	33.6	
South Deerfield	MA0101648	0.85	0.70	7.9	46.1	
South Hadley	MA0100455	4.20[5]	3.30	28.8	792.6	2005
Sunderland	MA0101079	0.50[5]	0.19	8.7	13.8	
Athol	MA0100005	1.75[5]	1.39	17.2	199.4	2007
Erving #2	MA0101052	2.70[5]	1.80	3.2	48.0	2007
Erving #1	MA0101516	1.02[5]	0.32	29.3	78.2	
Erving #3	MA0102776	0.01	0.01	19.6	1.6	
Gardner	MA0100994	5.00[5]	3.70	14.6	450.5	2007
Orange	MA0101257	1.10[5]	1.20	8.6	86.1	
Royalston	MA0100161	0.04[5]	0.07	19.6	11.4	
Templeton	MA0100340	2.80[5]	0.40	26.4	88.1	
Winchendon	MA0100862	1.10[5]	0.61	15.5	78.9	
Chicopee	MA0101508	15.50[5]	10.0	19.4	1,618.0	2010
Hardwick W	MA0102431	0.04[5]	0.01	12.3	1.0	
Hardwick G	MA0100102	0.23[5]	0.14	14.6	17.0	
N Brookfield	MA0101061	0.76[5]	0.62	23.1	119.4	2005
Palmer	MA0101168	5.60[5]	2.40	18.8	376.3	2005
Spencer	MA0100919	1.08[5]	0.56	13.6	63.5	
Ware	MA0100889	1.00[5]	0.74	9.4	58.0	
Warren	MA0101567	1.50	0.53	14.1	62.3	
Springfield			45.4	4.3	1,628.1	2006
			104.05		**9,938.3**	

1. Design flow – typically included as a permit limit in MA and VT but not in NH.

2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.

3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.

4. Current total nitrogen load.

5. Flow limit is based on an annual average rather than a monthly average.

6. Effluent total nitrogen data from USGS study.

RESPONSE TO COMMENTS – SEPTEMBER 28, 2011
REISSUANCE OF NPDES PERMIT NO. MA0100099
HADLEY INDIAN HILL WASTEWATER TREATMENT PLANT
HADLEY, MASSACHUSETTS

From June 21, 2011 through July 21, 2011 the U.S. Environmental Protection Agency (EPA-New England) and the Massachusetts Department of Environmental Protection (MassDEP) solicited public comments on the draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to the Hadley Indian Hill Wastewater Treatment Plant in Hadley, MA.

EPA-New England and MassDEP received comments from the Town of Hadley Department of Public Works (dated July 20, 2011) and the Connecticut River Watershed Council (dated July 21, 2011). The following are joint responses on behalf of EPA-New England and MassDEP to those comments and descriptions of any changes made to the public-noticed permit as a result of those comments.

A copy of the final permit may be obtained by writing or calling Michael Cobb, United States Environmental Protection Agency, 5 Post Office Square, Suite 100 (Mail Code: OEP06-1), Boston, Massachusetts 02109-3912; Telephone (617) 918-1369. Copies may also be obtained from the EPA Region 1 web site at http://www.epa.gov/region1/npdes/index.html.

A. COMMENTS FROM THE TOWN OF HADLEY DEPARTMENT OF PUBLIC WORKS

COMMENT A1:

Permit Page 2, Table A.1 *Increase in nitrogen monitoring frequency from 1/quarter to 2/month*

"The proposed increase in monitoring frequency will increase the annual nitrogen monitoring cost by a factor of 6. We request that current monitoring frequency of 1/quarter be continued in the renewed permit. Without a NPDES permit limit for total nitrogen, we question the advantage of having 2/month nitrogen data. The quarterly data will be representative to trends in the WPCF effluent.
However, if EPA chooses to increase the sampling frequency we request that the requirement only come into effect after both the required Nitrogen Optimization Study is completed and approved by EPA and Fiscal Year 2012-2013 to allow for budgeting of this cost increase.
Request nitrogen monitoring frequency of once per quarter. "

RESPONSE A1:

Nitrogen monitoring is to ensure protection of Long Island Sound downstream and to better determine compliance with the permit's requirement to optimize the removal of nitrogen. Upon review of the nitrogen monitoring frequency of similar facilities on the

Connecticut River of comparable size, EPA has decided that a monitoring frequency of 1/month is sufficient to achieve these goals. As a result, the monitoring frequency for total nitrogen, total ammonia nitrogen, total kjeldahl nitrogen and nitrite + nitrate nitrogen will be 1/month in the final permit.

Given the relatively low cost of nitrogen analysis and the reduction in frequency from the draft permit, EPA does not believe a schedule for meeting this requirement is necessary.

COMMENT A2:

Permit Page 11, Part F *Nitrogen optimization: "maintain the mass discharge of total nitrogen less than the existing annual discharge load. Existing mass loadings will be based on the 69.1 lbs/day 2004-2005 baseline estimate."*

"We understand that the Nitrogen Optimization requirement is being implemented basin-wide, and optimization will be the only requirement for this permit. However, we don't believe that the proposed baseline of 69.1 lbs/day is appropriate for Hadley's current flows and loads. The proposed baseline is based on very limited nitrogen data from 2004-2005 and based on data that does not reflect current wastewater treatment facility flows and loads. Average flow during this period was 0.32 MGD and average total nitrogen was 25.9 mg/L. Since the 2004-2005 period, flows to the Hadley WWTP have increased, as shown in the data included in Attachment B to the draft NPDES permit. In 2010, average flow was 0.38 MGD and average total nitrogen was 26.9 mg/L, for an average 2010 annual discharge load of 85.0 lbs/day. Please also note that the total nitrogen treatment performance was relatively consistent between the 2004/2005 data (25.9 mg/L) and 2010 data (26.9 mg/I).
Request that the reference to the baseline be eliminated from the permit because it is based on very limited data, or the baseline be increased to 85.0 lbs/day to reflect current wastewater treatment facility flows and loads."

RESPONSE A2:

As stated in the fact sheet, the proposed baseline of 69.1 lbs/day is based on a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound, completed by the Connecticut Department of Environmental Protection (CT DEP) in December 2000. The TMDL included an aggregate waste load allocation (WLA) for point sources at the Massachusetts/Connecticut state line, based on a 25 percent reduction from then-existing loads. EPA calculated the existing loads at the state line based on 2004-2005 discharge data and found that the TMDL-required aggregate load was already achieved. Therefore, EPA determined that to ensure that the aggregate load would continue to be achieved, each facility in MA, NH, and VT would be required to maintain the load it was discharging in 2004-2005.

As described by the commenter, Hadley's load in 2010 was greater than its load in 2004-2005. A review of the data submitted by the permittee over the past three years shows that its load generally met its 2004-2005 baseline load, and that the facility has the ability to achieve lower total nitrogen effluent concentrations than it was achieving during 2004-

2005 (16 mg/l vs. 26 mg/l). This review indicates that with optimization the facility should be able to consistently attain a baseline load of 69.1 lbs/day, even at the increased flows.

Year	Flow, MGD	Total Nitrogen, mg/l	Load, lbs/day
2008	0.38	15.5	49.1
2009	0.39	15.9	51.7
2010	0.38	26.9	85.2
AVERAGE	0.38	19.1	62.0

Regulations at 40 CFR 122.44(d)(1)(vii)(B) require that effluent limitations developed to protect water criteria are consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7. An increase in the baseline load in this permit would increase the authorized load at the state line, absent a reduction in another permittee's baseline load, thereby jeopardizing the attainment of the aggregate load at the state line. The available data appears to show that with some optimization, the facility should be able to consistently attain the 2004-2005 baseline load. Accordingly, EPA has retained the baseline load in the draft permit.

B. COMMENTS FROM THE CONNECTICUT RIVER WATERSHED COUNCIL

COMMENT B1:

"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.

- Rainbow Beach, jointly owned by the City of Northampton and the Massachusetts Division of Fisheries and Wildlife, with a sandy beach on a bend in the river, is located just downstream and across the river from the site.
- Approximately two miles downstream on the Hadley side of the river is Mitch's Marina, a popular boat launching facility near Mitch's Island, which is a popular swimming destination for boaters. The riverbed surrounding Mitch's Island can be quite shallow, and motor boats will typically anchor mid-river and people will wade in the water and sunbathe in the shallow water or off their boats.
- Approximately 3½ miles downstream near the end of the Oxbow, there is a state-owned boat launch that is heavily used for motor boats on any nice weather day (March to December).
- Approximately 3½ miles downstream on the eastern shore is a state-owned beach on the Connecticut River called Hockanum Beach. This sandy area was formerly known as "tent city" but tenting is no longer allowed there.
- Approximately 5 miles downstream of outfall 001 is Brunelle's Marina, a commercial marina that has boat slips, a private launch, an educational cruise boat, and allows camping on site.

- Just upstream of Brunelle's Marina is Mount Holyoke College's brand new boat house, which has a dock for community and college rowing programs.
- Across the river from Brunelle's is the Holyoke Canoe Club, a private club with river access.
- Because the Holyoke dam is about 9 miles downstream from outfall 001, the discharge is within an impounded section of the river that is heavily used by motor boats."

RESPONSE B1:

EPA acknowledges the existing uses described in this comment. The uses listed are consistent with the designated uses included in the Massachusetts Surface Water Quality Standards for Class B waters, which are "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 they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value."

COMMENT B2:

"This section of the river also contains fish and wildlife habitat. Migratory cold-water species of fish such as Atlantic salmon, American shad, sea lamprey, and American eel move upstream using fish passage facilities at the Holyoke dam. Just downstream of the outfall location is one of only a few beach sites in the world with federally endangered Puritan tiger beetles. Federally endangered shortnose sturgeon are known to be in this section of the river. Federally endangered dwarf wedgemussel are known to be present in the Fort River, which enters the Connecticut River near the outfall."

RESPONSE B2:

In the development of this permit, all potential impacts to aquatic life in the receiving water were carefully examined. There is no river water intake at this facility to cause impingement of adult and juvenile fish or entrainment of fish eggs and larvae. The permit requires that the POTW effluent meet all Massachusetts water quality criteria, which are protective of Atlantic salmon, American shad, sea lamprey, and American eels. EPA is aware of the location of the Puritan tiger beetle habitat. The outfall from the facility will not come in contact with the beetle's terrestrial habitat, and this action does not permit disturbance of this habitat.

Based on information detailing the likely location of dwarf wedge mussel (*Alasmidonta heterodon*), EPA determined that this federally protected species was not expected to be present in the vicinity of the facility's discharge. Therefore, no Section 7 consultation is required under ESA for this species.

EPA recognizes that the federally protected shortnose sturgeon (*Acipenser brevirostrum*) is present in the vicinity of the discharge. EPA initiated an informal Section 7

consultation under the Endangered Species Act with the National Marine Fisheries Service (NMFS) to address any potential impacts to the shortnose sturgeon. In a response letter from NMFS, dated September 6, 2011, the service concurred that this permit action is not likely to adversely affect the shortnose sturgeon and no further consultation was required. Please see the Conclusions Section of the September 6, 2011 letter included with this response document for further information.

COMMENT B3:

"The Fact Sheet does not state whether or not there are any commercial or industrial customers to this wastewater treatment facility. Does it serve residential dwellings exclusively? Even if there are no significant industrial users, having a sizable number of commercial users (including restaurants) may affect the type of wastewater discharging into the plant and any seasonal shifts, and it would be nice to know these kinds of details."

RESPONSE B3:

Based upon the 2011 permit application, no industrial or commercial users are identified within the collection system. EPA contacted the plant operator and verified that this is correct.

COMMENT B4:

"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 Hadley 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. Rainbow and Hockanum Beaches are publicly owned, and are fully accessible to the public and there is no deterrence from using the beach in the form of a posted notice.

Using the definition, these beaches are designated beaches, and the water quality standard for NPDES permits along the river should be adjusted accordingly.

If this beach does not fall within the EPA's stringent 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."

RESPONSE B4:

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 75th 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 beaches mentioned are not managed or used in this manner. Rainbow Beach is part of the Division of Fisheries and Wildlife Management Area. This area is habitat for the Puritan Tiger Beetle, an endangered species with habitat on the sandy beaches of the Connecticut River. Division of Fisheries and Wildlife has restricted access to the beach areas with symbolic fencing to protect the habitat. Hockanum Beach is part of the Connecticut River Greenway State Park, and land access is restricted by “No Trespassing” signs.

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 B1, 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 B5:

"CRWC supports the increased frequency in monitoring of total ammonia, total Kjeldahl nitrogen, nitrite + nitrate from once per quarter to twice per month, as well as the addition of total nitrogen testing. We note that according to page 30 of the Fact Sheet, Hadley's nitrogen discharge concentration is 25.9 mg/L, which is among the highest in the watershed. We recommend that the permit include nutrient analysis for both influent and effluent, as was done in the most recent Northampton permit. We look forward to reading Hadley's plan for reducing nitrogen, and we hope they can be successful in major nitrogen reductions."

RESPONSE B5:

While EPA agrees that influent monitoring would be helpful in quantifying nitrogen removal, making this a permit requirement is not necessary to ensure that the nitrogen load being discharged by the facility does not increase above the baseline set forth in the TMDL. The Town of Hadley may opt to monitor influent nitrogen for the development of its nitrogen removal optimization plan, but it will not be included as a requirement of this permit.

COMMENT B6:

"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 #4) at the same time."

RESPONSE B6:

EPA will update nitrogen removal optimization language and monitoring requirements in permits on the Connecticut River as they come up for reissuance. EPA believes that reopening these permits mid-term and conducting the major modifications suggested in this comment would not be an efficient use of limited resources.

COMMENT B7:

"The discharge is impacting a section of the Connecticut River that is an impoundment behind the Holyoke Dam. Other wastewater treatment plant NPDES permits along the Connecticut River have required phosphorus monitoring (South Hadley and Easthampton, for example). Why not this one? The nitrogen levels

discharged at this facility are high, and it would be interesting to see phosphorus levels in comparison. It would also be good to know the combined loads of phosphorus going into the Holyoke impoundment."

RESPONSE B7:

EPA agrees that phosphorus monitoring is useful in some discharges to determine if there is reasonable potential to exceed instream water quality criteria. However, the characteristics of this discharge, including the high dilution factor and absence of significant commercial or industrial users, give no reason to be concerned that there is reasonable potential to violate any existing or designated uses of the Connecticut River due to phosphorus in the effluent. In addition, the *Massachusetts Year 2008 Integrated List of Waters* does not list the Connecticut River as impaired due to nutrient enrichment. Should new water quality information become available that would suggest otherwise, EPA is able to reopen the permit at that time.

COMMENT B8:

"Despite this facility performing well with previous WET tests, we do not think it's appropriate to drop the WET testing to once per year. The Connecticut River is host to several species of migratory fish and many resident fish. Although we understand the rationale for choosing August as the month for WET testing (this month tends to have dry weather and low river flows), this would not be a month that would capture effects on upstream or even downstream migration. Is Hadley certain that their discharges do not have any seasonal changes (schools, etc.)? It is possible that migrating fish may even be attracted to the flow in this pipe. Use of a dilution factor – even the very large dilution factor for this outfall - may be inappropriate in assuming reasonable potential for toxicity. For this reason, WET testing becomes even more important, and allowing the test to fall on only one day of the year is not adequate re-assurance that the effluent is not toxic to aquatic organisms every single day of the year. We also 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 B8:

It is the Region's policy that if a facility has demonstrated compliance with the WET testing permit limits for four (4) consecutive monitoring periods, a reduction in testing frequency may be appropriate. From 2006 to 2010, nine (9) WET tests were performed resulting in no violations of the acute LC_{50} limit. Given this recent record of WET testing compliance, the high dilution factor of this facility, and the absence of significant industrial and commercial users, there is no reason to believe that this discharge would result in toxics in toxic amounts within the Connecticut River. In addition, based on the lack of evidence of acute whole effluent toxicity, MADEP recommended in the 2003 Water Quality Assessment Report for the Connecticut River Watershed that the WET testing frequency for Hadley WWTF be reduced to once per year. EPA believes that the limits established are protective of water quality. The reduction in WET testing frequency as described in the draft permit will remain in the final permit.

Regarding the request to move or add a WET testing requirement to months corresponding to fish migrations, EPA does not believe this is necessary. There is little seasonal variability in the treatment plant flow or composition that would cause a change in WET results. Therefore, EPA believes that maintaining the sampling during the critical low flow period is appropriate.

In addition, EPA would consider changing the test species to one that is "more representative of actual fish in the resource area" if there were reasonable potential for instream toxicity due to this discharge. For the reasons described above, EPA believes that there is no reasonable potential and the test species will remain the Daphnid. EPA also notes that the Daphnid is usually the most sensitive test species in WET analyses and is an appropriate test species for this discharge.

COMMENT B9:

"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? The Fact Sheet includes a blank page purportedly showing a map of the outfall location. Section VI. B. lists a latitude and longitude location for outfall 001, but when using Google Earth to locate that site, the site is located on South Middle Street in Hadley, not in the Connecticut River. The pipe is described as being 10 feet from shore and four 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 4 feet). While we don't know the exact location of the outfall pipe, the river at the location of South Middle Street is at the upstream end of a sharp bend in the river, with the river narrowing at this location. Massachusetts Water Quality Standards 314 CMR 4.03(2) requires that the mixing zone be "as small as feasible," and not "interfere with existing or designated uses of surface waters." 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 morphology 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 B9:

EPA regrets the absence of the map of the outfall location in the permit posted on the Region's website. This map was included in the fact sheet but did not appear on the electronically available version. This issue has been addressed. In addition, the latitude and longitude of the outfall location provided by the facility in the application do not appear to be accurate. More accurate coordinates are Latitude 42° 19' 40" N and Longitude 72° 35' 13" W. EPA confirmed with the plant operator that the discharge is indeed 10 feet from shore and 4 feet below the water surface during low flow conditions.

Regarding the request for the Town to conduct a study of the mixing of its effluent, EPA believes that this is unnecessary given the characteristics of the discharge. The small

flow, high dilution factor and absence of significant commercial and industrial users suggest that mixing of any pollutants of concern is satisfactorily achieved without the need for extensive study or a diffuser.

COMMENT B10:

"Page 4 of the Fact Sheet states that inflow and infiltration (I/I) is estimated to be 80,000 gallons per day (gpd). With the average flow of the WWTP being 400,000 gpd (page 26 of the Fact Sheet), I/I amounts to 20% of its flow. This is very high. The draft permit requires a Collection System Operation and Maintenance Plan (O&M plan), which includes plans to reduce I/I. The existing permit required an annual report with corrective actions and a calculation of the annual average I/I and the maximum month I/I for the reporting year. Has Hadley's I/I rate in fact decreased in the past five years since the last permit was issued? Is the rate of reduction (if any) satisfactory?"

RESPONSE B10:

EPA recognizes that inflow and infiltration (I/I) is an ongoing issue for treatment plants throughout the Region. Therefore, language is included in permits to develop plans for I/I reduction. An I/I rate of 20% is not particularly high in comparison to other POTWs. In this case, the 2006 and 2011 permit applications both stated that I/I was estimated to be 80,000 gpd, indicating that I/I has not decreased over the life of the permit. Recent O&M reports submitted by the facility describe ongoing work to inspect and repair sewer lines suspected of I/I. In addition, the 2011 permit application stated that the steps underway or planned to minimize I/I are manhole inspections and flow monitoring in suspected I/I areas. EPA appreciates the work being done to address I/I and expects significant reductions in the future, while understanding the challenges in achieving such reductions.