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 Amherst
Department of Public Works
586 South Pleasant Street, Amherst, MA 01002

is authorized to discharge from the facility located at

Amherst Wastewater Treatment Plant
100 Mullins Way, Hadley, MA 01035

to receiving water named

Connecticut River (Connecticut River Watershed – 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 last day of the month preceding the effective date.

This permit supersedes the permit issued on September 29, 2006.

This permit consists of 15 pages in Part I including effluent limitations and monitoring requirements, Part II including Standard Conditions and Definitions, Attachment A – Revised Freshwater Acute Toxicity Test Procedure and Protocol, February 2011, 8 pages, and Attachment B – Summary of Report Submittal.

Signed this 26th day of June, 2012

/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 Connecticut River. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTIC	**EFFLUENT LIMITS**					**MONITORING REQUIREMENTS [3]**	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE[3] TYPE**
FLOW[2]	*********	*********	7.1 MGD	*********	Report MGD	CONTINUOUS	RECORDER
FLOW[2]	*********	*********	Report MGD	*********	*********	CONTINUOUS	RECORDER
$CBOD_5$ [4]	1480 lb/Day	2369 lb/Day	25 mg/l	40 mg/l	Report mg/l	2/WEEK	24-HOUR COMPOSITE[5]
TSS [4]	1776 lb/Day	2665 lb/Day	30 mg/l	45 mg/l	Report mg/l	2/WEEK	24-HOUR COMPOSITE[5]
pH RANGE[1]	6.0 - 8.3 SU (SEE PERMIT PAGE 6 OF 16, PARAGRAPH I.A.1.b.)					1/DAY	GRAB
TOTAL CHLORINE RESIDUAL[1,6] (April 1- October 31)	*********	**********	*********	*********	1.0 mg/l	1/DAY	GRAB
FECAL COLIFORM [1,6] (April 1-October 31)	*********	*********	200 cfu/100 ml	*********	400 cfu/100 ml	2/WEEK	GRAB
ESCHERICHIA COLI [1,6] (April 1- October 31)	*********	**********	126 cfu/100 ml	*********	409 cfu/100 ml	2/WEEK	GRAB
WHOLE EFFLUENT TOXICITY [7, 8, 9]	Acute $LC_{50} \geq 50\%$					2/YEAR	24-HOUR COMPOSITE[5]

CONTINUED FROM PREVIOUS PAGE

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

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS [3]	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE[3] TYPE**
TOTAL NITROGEN[10]	Report lbs/day	*********	Report mg/l	*********	********	1/WEEK	24-HOUR COMPOSITE[5]
AMMONIA-NITROGEN[10]	Report lbs/day	********* *********	Report mg/l	********* *********	********	1/WEEK	24-HOUR COMPOSITE[5]
TOTAL KJELDAHL NITROGEN[10]	Report lbs/day	********* *********	Report mg/l	********* *********	********	1/WEEK	24-HOUR COMPOSITE[5]
TOTAL NITRATE[10]	Report lbs/day	********* *********	Report mg/l	********* *********	********	1/WEEK	24-HOUR COMPOSITE[5]
TOTAL NITRITE[10]	Report lbs/day	********* *********	Report mg/l	********* *********	********	1/WEEK	24-HOUR COMPOSITE5
TOTAL PHOSPHORUS	*********	*********	Report mg/l	*********	*********	1/MONTH	24-HOUR COMPOSITE[5]

Sampling Location: Flow – Influent Parshall Flumes
$CBOD_5$ and TSS – Directly after Parshall Flume (Influent) and Effluent Discharge Pipe (Effluent) .
pH, E. coli, TRC, Phosphorus, Nitrogen and Nitrogen Compounds and Whole Effluent Toxicity – Effluent Discharge Pipe.

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 for the previous eleven months.

3. Effluent sampling shall be collected at the point specified on page 3. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

   A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented in correspondence appended to the applicable discharge monitoring report.

   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, fecal coliform, and total residual chlorine effluent limitations and monitoring requirements will be in effect from April 1 to October 31. This is a State certification requirement. The monthly average limit for E. coli is expressed as a geometric mean. The weekly E. coli sample shall be collected at the same time the daily total residual chlorine sample is collected for that day. See Part I.F. for compliance schedule for E. coli.

   Chlorination system shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection, or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

7. The permittee shall conduct acute toxicity tests two times per year using both the daphnid (*Ceriodaphnia dubia*) and the fathead minnow (*Pimephales promelas*). Toxicity test samples shall be collected during the second week of the months of June and October. The test results shall be submitted by the last day of the month following the completion

of the test. The results are due July 31 and November 30 respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**
June October	July 31 November 30	Daphnid (*Ceriodaphnia dubia*) Fathead Minnow (*Pimephales promelas*)	≥ 50%

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

8. 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 shall cause no more than a 50% mortality rate.

9. 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**.

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

Part I.A.1. (Continued)

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

b. The pH of the effluent shall not be less than 6.0 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 permittee shall minimize the use of chlorine while maintaining adequate bacterial control.

g. The results of sampling for any parameter done in accordance with EPA approved methods above its required frequency must also be reported.

h. If the average annual flow in any calendar year exceeds 80 percent of the facility's design flow, the permittee shall submit a report to MassDEP by March 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 Standard Coditions 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. Written notifications to EPA shall be made to the address given in Part I.G.c. Oral notifications shall be made to the Water Technical Unit at 617-918-1850 to Denny Dart.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

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

1. Maintenance Staff

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

2. Preventive Maintenance Program

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

3. Infiltration/Inflow

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

4. Collection System Mapping

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

a. All sanitary sewer lines and related manholes;
b. All combined sewer lines, related manholes, and catch basins;
c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combination manholes);
d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;
e. All pump stations and force mains;
f. The wastewater treatment facility(ies);
g. All surface waters (labeled);
h. Other major appurtenances such as inverted siphons and air release valves;
i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;
j. The scale and a north arrow; and
k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System Operation and Maintenance Plan

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

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

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

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

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

6. Annual Reporting Requirement

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

a. A description of the staffing levels maintained during the year;
b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;
c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;
d. A map with areas identified for investigation/action in the coming year;
e. If treatment plant flow has reached 80% of the design flow [7.1 x 0.8 = 5.68 mgd] based on the annual average flow during the reporting year or there have been capacity related overflows, submit a calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year; and
f. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit.

7. Alternate Power Source

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

D. SLUDGE CONDITIONS

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

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

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

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

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

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

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:

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

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

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 § 503.48 (incineration)) by **February 19** (*see also* "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted to the address contained in the reporting section of the permit. If the permittee engages a contractor or contractors for sludge preparation and ultimate use or disposal, the annual report need contain only the following information:

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

E. SPECIAL CONDITIONS

Within six (6) months 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 **546.5 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.

F. COMPLIANCE SCHEDULE

The permittee shall achieve compliance with the effluent limittions for E. coli by the **end of the first disinfection season** following the effective date of the permit. The limits will become effective at the start of the next disinfection season. During the interim period, the limits for E. coli will not be in effect, but sampling and reporting will be required at the frequency required in Part I.A.1. The effluent limitations and monitoring requirements for Fecal Coliform will end

when the E. coli limitations go into effect.

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 all DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

a. Submittal of Reports Using NetDMR

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

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

b. Submittal of NetDMR Opt Out Requests

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

Attn: NetDMR Coordinator

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

And

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

c. Submittal of Reports in Hard Copy Form

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

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

The State Agency addresses are:

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

And

Copies of toxicity tests and nitrogen optimization reports only to:

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

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.

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/swguidance/methods/wet/index.cfm#methods

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6^{o}C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

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

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further important details on alternate dilution water substitution requests.

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS[1]

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions[3]	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST[1]

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C):	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality:	Ambient laboratory illumination
4.	Photoperiod:	16 hr light, 8 hr dark
5.	Size of test vessels:	250 mL minimum
6.	Volume of test solution:	Minimum 200 mL/replicate
7.	Age of fish:	1-14 days old and age within 24 hrs of each ~~the~~ others~~~~
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration:	40
11.	Feeding regime:	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12.	Aeration:	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13.	dilution water:[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions[3]	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19.	Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour

intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1,]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3,]	x		0.02
Alkalinity	x	x	2.0
pH[4]	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     -Method 2340B (hardness by calculation)
     -Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     -Method 4500-CL E Low Level Amperometric Titration
     -Method 4500-CL G DPD Colorimetric Method

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012 .

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

Attachment B

Summary of Required Report Submittals*

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

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

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

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

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

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

NPDES PART II STANDARD CONDITIONS
(January, 2007)

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PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed $25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

Note: See 40 CFR §122.41(a)(2) for complete “Duty to Comply” regulations.

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including "sludge-only facilities"), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or permittee;
(2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).

c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can be reasonably expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Paragraphs B.4.c. and 4.d. of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
(3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator determines that it will meet the three conditions listed above in paragraph 4.d. of this section.

5. Upset

a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated;
(3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
(4) The permittee complied with any remedial measures required under B.3. above.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.

e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by

imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The permittee shall allow the Regional Administrator or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. Planned Changes. The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
(2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. Anticipated noncompliance. The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. Transfers. This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

incorporate such other requirements as may be necessary under the CWA. (See 40 CFR Part 122.61; in some cases, modification or revocation and reissuance is mandatory.)

d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. Twenty-four hour reporting.

(1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)

(3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.

h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and Federal standards and limitations to which a “discharge”, a “sewage sludge use or disposal practice”, or a related activity is subject to, including “effluent limitations”, water quality standards, standards of performance, toxic effluent standards or prohibitions, “best management practices”, pretreatment standards, and “standards for sewage sludge use and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in "approved States", including any approved modifications or revisions.

Average means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" measured during the calendar week divided by the number of "daily discharges" measured during the week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Best Professional Judgment (BPJ) means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

Coal Pile Runoff means the rainfall runoff from or through any coal storage pile.

Composite Sample means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

Construction Activities - The following definitions apply to construction activities:

(a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

(b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.

(c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

(d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

(e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

Daily Discharge means the discharge of a pollutant measured during the calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Director normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

Discharge Monitoring Report Form (DMR) means the EPA standard national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source", or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation (See "Point Source" definition).

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead

to a treatment works; and discharges through pipes, sewers, or other conveyances leading into privately owned treatment works.

This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Regional Administrator on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States", the waters of the "contiguous zone", or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under Section 304(b) of CWA to adopt or revise "effluent limitations".

EPA means the United States "Environmental Protection Agency".

Flow-weighted composite sample means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

Grab Sample – An individual sample collected in a period of less than 15 minutes.

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Indirect Discharger means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

Interference means a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act (CWA), the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

Large and Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

Maximum daily discharge limitation means the highest allowable "daily discharge" concentration that occurs only during a normal day (24-hour duration).

Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) is defined as "maximum concentration" or "Instantaneous Maximum Concentration" during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean "a value that shall not be exceeded" during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of "Maximum Daily Discharge" and "Average Daily Discharge" concentrations are specifically limited to the daily (24-hour duration) values.

Municipality means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribe organization, or a designated and approved management agency under Section 208 of the CWA.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program".

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants";

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source"; and

(d) Which has never received a finally effective NPDES permit for discharges at that "site".

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore rig or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Regional Administrator in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants", the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System".

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved" State.

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to any pipe ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 CFR §122.2).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (Natural Resources Defense Council et al. v. Train, 8 E.R.C. 2120 (D.D.C. 1976), modified 12 E.R.C. 1833 (D. D.C. 1979)); also listed in Appendix A of 40 CFR Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (b) not a "POTW".

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly Owned Treatment Works (POTW) means any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a "State" or "municipality".

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary Industry Category means any industry which is not a "primary industry category".

Section 313 water priority chemical means a chemical or chemical category which:

(1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);

(2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and

(3) satisfies at least one of the following criteria:

(i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
(ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
(iii) are pollutants for which EPA has published acute or chronic water quality criteria.

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, and plastic pellets, raw materials used in food processing or production, hazardous substance designated under section 101(14) of CERCLA, any chemical the facility is required to report pursuant to EPCRA Section 313, fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to Section 405(d) of the CWA, and is required to obtain a permit under 40 CFR §122.1(b)(3).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

Storm Water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

Time-weighted composite means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Toxic pollutants means any pollutant listed as toxic under Section 307 (a)(1) or, in the case of "sludge use or disposal practices" any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or wastewater treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and wastewater from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR Part 503 as a "treatment works treating domestic sewage", where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 CFR Part 503.

Waste Pile means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;

(b) All interstate waters, including interstate "wetlands";

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

(1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test. (See Abbreviations Section, following, for additional information.)

2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

Active sewage sludge unit is a sewage sludge unit that has not closed.

Aerobic Digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

Agricultural Land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

Agronomic rate is the whole sludge application rate (dry weight basis) designed:

(1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and

(2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

Annual whole sludge application rate is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

Aquifer is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

Base flood is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

Bulk sewage sludge is sewage sludge that is not sold or given away in a bag or other container for application to the land.

Contaminate an aquifer means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 122.2,

classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the State Director, because of the potential for sewage sludge use or disposal practice to affect public health and the environment adversely.

Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

Cover is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

Cumulative pollutant loading rate is the maximum amount of inorganic pollutant that can be applied to an area of land.

Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

Displacement is the relative movement of any two sides of a fault measured in any direction.

Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

Fault is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

Final cover is the last layer of soil or other material placed on a sewage sludge unit at closure.

Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

Forest is a tract of land thick with trees and underbrush.

Ground water is water below the land surface in the saturated zone.

Holocene time is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

Hourly average is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Industrial wastewater is wastewater generated in a commercial or industrial process.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land with a high potential for public exposure is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

Land with low potential for public exposure is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

Leachate collection system is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

Liner is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.

Lower explosive limit for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

Monthly average (Incineration) is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

Monthly average (Land Application) is the arithmetic mean of all measurements taken during the month.

Municipality means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management agency under section 208 of the CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permitting authority is either EPA or a State with an EPA-approved sludge management program.

Person is an individual, association, partnership, corporation, municipality, State or Federal Agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration; a measure of the acidity or alkalinity of a liquid or solid material.

Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

Pollutant (as defined in sludge disposal requirements) is an organic substance, an inorganic substance, a combination or organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis on information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

Pollutant limit (for sludge disposal requirements) is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

Public contact site is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

Qualified ground water scientist is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

Range land is open land with indigenous vegetation.

Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

Runoff is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

Seismic impact zone is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to:, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR §122.2.

Sewage sludge unit boundary is the outermost perimeter of an active sewage sludge unit.

Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

Unstable area is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
ug/l	Microgram(s) per liter
WET	"Whole effluent toxicity" is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	"Chronic (Long-term Exposure Test) – No Observed Effect Concentration". The highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.
A-NOEC	"Acute (Short-term Exposure Test) – No Observed Effect Concentration" (see C-NOEC definition).
LC_{50}	LC_{50} is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND
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FACT SHEET

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

NPDES PERMIT NO: **MA0100218**

DATE OF PUBLIC NOTICE: January 12, 2012 thru February 10, 2012

NAME AND ADDRESS OF APPLICANT:

Town of Amherst
Department of Public Works
586 South Pleasant Street, Amherst, Massachusetts 01002

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Amherst Wastewater Treatment Plant
100 Mullins Way, Hadley, Massachusetts 01035

RECEIVING WATER: **Connecticut River (Connecticut River Watershed – MA34-04)**

CLASSIFICATION: **Class B - Warm Water Fishery**

I. Proposed Action, Type of Facility and Outfall Location

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

Process Description

The Amherst Wastewater Treatment Plant is a secondary treatment facility with a design capacity of 7.1 million gallons per day. Wastewater collected and treated by the facility consists entirely of domestic wastewaters. There are no known industrial contributors to the collection system. The following is a brief description of the collection system and the treatment plant.

Wastewater flow is brought to the plant by gravity sewers from three regions; the University of Massachusetts, North Amherst, and Amherst. The collection system is a 100% separate sanitary system serving 36,000 inhabitants. Plant influent passes through three Parshall flumes, then to preliminary treatment by two comminutors, and two grit collectors. An onsite septage receiving station discharges septage waste to the head of the treatment plant. Flow is then pumped to three primary sedimentation tanks where the heavier solids are settled out. Clarified wastewater overflows the primary sedimentation tanks and flows to three aeration tanks, where biological treatment occurs. The mixture of wastewater and activated sludge, called the "mixed liquor", then flows by gravity to the three secondary sedimentation tanks for final settling. Clarified wastewater is then discharged to the effluent wet well and pumped through a 3.5 mile force main to a 36 inch outfall. A chlorine diffuser doses the wastewater with chlorine soon after pumping. The required chlorine contact time for disinfection is assured by the 45 minute detention time in the effluent force main and outfall before discharge. The treated effluent is discharged into the main channel of the Connecticut River through diffusers.

The sludge which settles in the primary sedimentation basins is co-thickened with waste activated sludge from the secondary sedimentation basins to about 7% solids and then pumped to a 9,000 gallon tank truck for transport to offsite incineration facilities.

II. Description of Dicharge

A quantitative description of the discharge in terms of significant effluent parameters based on recent discharge monitoring reports (DMRs) from January, 2009 through March 2011 may be found in fact sheet **Attachment B**.

III. Limitations and Conditions

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

IV. Permit Basis and Explanation of Effluent Limitation Derivation

Overview of Federal and State Regulations

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

A permit may not be renewed, reissued, or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of the CWA. EPA's anti-backsliding provisions restrict the relaxation of permit limits, standards, and conditions. Therefore effluent limits in the reissued permit must be at least as stringent as those of the previous permit. Effluent limits based on technology, water quality, and state certification requirements must meet anti-backsliding provisions found under section 402 (o) and 303 (d) of the CWA, and in 40 CFR 122.44 (1).

In accordance with regulations found at 40 CFR Section 131.12, MassDEP has developed and adopted a statewide antidegradation policy to maintain and protect existing in-stream water quality. The Massachusetts Antidegradation Policy is found at Title 314 CMR 4.04. No lowering of water quality is allowed, except in accordance with the antidegradation policy. All existing uses of the Connecticut River must be protected. This draft permit is being reissued with allowable discharge limits as, or more, stringent than those in the current permit and with the same parameter coverage. There is no change in outfall location. The public is invited to participate in the antidegradation finding through the permit public notice procedure.

Under Section 301(b)(1) of the Clean Water Act ("CWA"), publicly owned treatment works (POTWs) must have achieved effluent limitations based upon Secondary Treatment by July 1, 1977. The secondary treatment requirements are set forth at 40 C.F.R. Part 133.102. In addition, Section 301(b)(1)(C) of the CWA requires that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water.

Water Quality Standards and Designated Uses

The Amherst WWTP discharges to the Connecticut River Segment MA34-04. This segment runs from the confluence with the Deerfield River, Greenfield/Montague/Deerfield to the Holyoke Dam, Holyoke/South Hadley, a length of 34.4 miles.

The Connecticut River has been designated as a Class B water, warm water fishery. The Massachusetts Surface Water Quality Standards, 314 Code of Massachusetts Regulations (CMR) 4.05(3) (b) states that Class B waters are designated as habitat for fish, other aquatic life and wildlife including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. The waters should have

consistently good aesthetic value.

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

This segment of the Connecticut River is classified in the State's 2010 Integrated List of Waters as Category 5, as not in attainment and requiring a TMDL. The listed impairments for this segment are PCBs in fish tissue and Escherichia coli.

Available Dilution

Water quality based limits are established with the use of a calculated available dilution. Title 314 CMR 4.03(3)(a) requires that effluent dilution be calculated based on the receiving water 7Q10. The 7Q10 is the lowest observed mean river flow for 7 consecutive days, occurring over a 10-year recurrence interval. The facility design flow was used to calculate available effluent dilution (40 CFR § 122.45(b)(i)).

The facility design flow is 7.1 million gallons per day [10.98 cubic feet per second (cfs)]. The nearest United States Geological Survey (USGS) streamflow gage to the discharge point is located upstream in Montague. The Montague (01170500) gage station has a drainage area of 7860 square miles (mi^2). The USGS-calculated 7Q10 at the gage Station is 1727 cfs for the record years 1905-1999 using D-flow. The drainage area at Route 116 [upstream of Amherst] is 7916 sq mi. Downstream of Rte 116, the Russellville Brook adds 7 sq mi of drainage for a total drainage area downstream of Rte 116 of 7923 sq mi. at the Amherst WWTP. The 7Q10 at the Amherst WWTP was determined by multiplying the 7Q10 measured at the Montague gage by the ratio of the drainage area at the Montague Gage Station divided by the drainage area at the Amherst WWTP.

Drainage Area at the Montague gage = 7860
Drainage area at Amherst WWTP outfall = 7923 sq mi.

7Q10 Flow at Montague gage = 1727 cfs
7Q10 Flow at Amherst WWTP outfall = 1727(7923/7860) = 1741 cfs

Design Flow of Amherst WWTP = 7.1 MGD x 1.547 = 10.98 cfs;

Dilution Factor = (Receiving water 7Q10 + discharge flow)/discharge flow
= (1741 + 10.98)/10.98 = 160

Flow - The flow limit of 7.1 mgd is based on the annual average design flow of the treatment plant, which is found in the Permit Application Form 2A, Part A, Section a.6. The draft permit requires that flow be measured continuously, and requires the permittee to report the annual average flow, the monthly average flow, and the maximum daily flow. Discharge monitoring reports (DMRs) submitted by the Town show that the facility consistently achieves the limit. (**See Attachment B of this fact sheet**)

Conventional Pollutants

Biochemical Oxygen Demand/Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) - Publicly Owned Treatment Works (POTWs) are subject to the secondary treatment requirements set forth at 40 CFR Part 133. The BOD_5 limits were changed to $CBOD_5$ (Carbonaceous BOD) in the previous permit. 40 CFR Part 133.102(a)(4) allows the use of $CBOD_5$ limits in place of BOD_5 limits provided the 30 day limit not exceed 25 mg/l (as opposed to 30 mg/l for BOD_5), that the weekly average limit be 40 mg/l (as opposed to 45 mg/l for BOD_5), and that the 30 day average percent removal not be less than 85 percent (the same as for BOD_5). Accordingly, these limits are continued in the draft permit. The maximum daily concentration shall continue to be reported.

Monthly average and weekly average $CBOD_5$ mass (lbs per day) have been maintained. Discharge monitoring reports (DMRs) submitted by the permittee show that the facility consistently achieves the (lbs/day) limit. The mass limitations for $CBOD_5$ are based on the 7.1 mgd design flow.

Total Suspended Solids (TSS) - Publicly Owned Treatment Works (POTWs) are subject to the secondary treatment requirements set forth at 40 CFR 133.102 (b)(1), (2) and 40 CFR 122.45 (f). The secondary treatment limitations are a monthly average TSS concentration of 30 mg/l and a weekly average concentration of 45 mg/l. The maximum daily limit has been removed because it is no longer required as a condition for obtaining state certification. The maximum daily concentration shall continue to be reported.

Monthly average and weekly average TSS mass (lbs per day) limits have been maintained. Discharge monitoring reports (DMRs) submitted by the permittee show that the facility consistently achieves the (lbs/day) limit. The mass limitations for TSS are based on the 7.1 MGD design flow.

$\underline{CBOD_5}$ and TSS Mass Loading Calculations:

Calculations of maximum allowable loads for average monthly BOD_5 and TSS are based on the following equation:

L = C x DF x 8.34 where:

L = Maximum allowable load in lbs/day.
C = Maximum allowable effluent concentration for reporting period in mg/l. Reporting periods are average monthly and weekly and daily maximum.
DF = Design flow of facility in mgd.
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

$\underline{CBOD_5}$
(Concentration limit) [40] X 8.34 (Constant) X 7.1 (design flow) = 2369 lbs/day

(Concentration limit) [25] X 8.34 (Constant) X 7.1 (design flow) = 1480 lbs/day

TSS
(Concentration limit) [45] X 8.34 (Constant) X 7.1 (design flow) = 2665 lbs/day

(Concentration limit) [30] X 8.34 (Constant) X 7.1 (design flow) = 1776 lbs/day

Eighty-Five Percent (85%) $CBOD_5$ Removal - the provisions of 40 CFR § 133.102(a)(4)(iii), require that the 30 day average percent removal for $CBOD_5$ be not less than 85%.

Eighty-Five Percent (85%) TSS Removal - the provisions of 40 CFR 40 CFR § 133.102(a)(3) require that the 30 day average percent removal for TSS be not less than 85%. The limit is maintained in the draft permit.

pH - The draft permit includes pH limitations which are required by state water quality standards, and are protective of pH standards set forth at Title 314 CMR 4.05(b)(3), for Class B water. The current permit has a pH limitation range of 6.0 to 8.3 s.u. pH limitations for state water quality standards are between 6.5 to 8.3 s.u. In a letter dated December 6, 1999, the permittee requested to reduce the lower limit from 6.5 to 6.0 s.u. EPA and MassDEP reduced the lower limit from 6.5 to 6.0 s.u. in the previous permit. The pH requirements are more stringent than those required under 40 C.F.R. § 133.102(c). The pH limits are carried forward from the current permit. The monitoring frequency is one per day.

E. Coli: Limitations on E.coli bacteria replace the limitations on fecal coliform bacteria found in the current permit. The bacterial limits has been changed to conform to the Class B water quality criteria for bacteria found in the Massachusetts Water Quality Standards (314CMR 4.05(3)(b)4.). Massachusetts adopted these new criteria on December 29, 2006, and they were approved by EPA on September 19, 2007. Accordingly, the monthly average and maximum daily E. coli limits are set at 126 cfu/100ml and 409 cfu/100ml (this is the 90% distribution of the geometric mean of 126 cfu/100 ml) respectively in the draft permit. Monitoring data collected by the permittee shows that the facility does not consistently achieve the proposed limits (see **Attachment B**). A compliance schedule for attaining the E. Coli limits is included in Section F of the draft permit. The limits and monitoring requirements for fecal coliform will continue until E. Coli limits are in place.

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

Non-Conventional Pollutants

Total Residual Chlorine - (TRC) Chlorine compounds produced by the chlorination of wastewater, as well as chlorine, can be extremely toxic to aquatic life. The instream chlorine

criteria for the Connecticut River are defined in the EPA Quality Criteria for Water, as adopted by the MassDEP into the state water quality standards [Title 314 CMR 4.05(5)(e)], and as revised in the Federal Register: December 27, 2002 (Volume 67, Number 249). The recommended criteria include a TRC chronic criteria of 11 ug/l and an acute criteria of 19 ug/l. The following is a water quality based calculation of chlorine limits:

Acute Chlorine WQC = 19 ug/l

Chronic Chlorine WQC = 11 ug/l

Total Residual Chlorine Limitations:

(acute criteria * dilution factor) = Acute (Maximum Daily)
19 ug/l x 160 = 3040 ug/l /1000 = 3.04 mg/l Maximum Daily.

(chronic criteria * dilution factor) = Chronic (Average Monthly)
11 ug/l x 160 = 1760 ug/l /1000 = 1.76 mg/l Average Monthly

The draft permit has a more protective TRC limit of 1.0 mg/l based on the Massachusetts Water Quality Standards Implementation Policy For The Control Of Toxic Pollutants In Surface Waters, February 23, 1990. The Implementation Policy states that: "Waters shall be protected from unnecessary discharges of excess chlorine. In segments with dilution factors greater than 100, the maximum effluent concentration of chlorine shall not exceed 1.0 mg/l." The maximum daily TRC limit of 1.0 mg/l will be carried forward from the current permit. Because the maximum daily TRC limit is well below the calculated average monthly limit, no average monthly permit limit is necessary. The period of applicability will continue as in the current permit from April 1 - October 31.

The permittee is required to have an alarm system to warn of a chlorination system malfunction. This is a best management practice (BMP), and is being required under authority of 40 CFR § 122.44(k)(4). The permit requires the submission of the results to EPA of any additional testing done than that required in the permit, if it is conducted in accordance with EPA approved methods, consistent with the provisions of 40 CFR § 122.41(l)(4)(ii).

Nitrogen

The 2006 Permit requires reporting of average monthly total kjeldahl nitrogen, nitrate-nitrogen, and nitrite-nitrogen on a quarterly basis. The draft permit proposes weekly reporting of average monthly and maximum daily effluent concentrations and masses of total nitrogen, total kjeldahl nitrogen, total ammonia nitrogen, total nitrate nitrogen, and total nitrite nitrogen consistent with other permits. These changes are further explained below.

It has been determined that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen. In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a 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 Loading1 (lbs/day)	TMDL Target2 (lbs/day)	Current Loading3 (lbs/day)
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	26,211	19,657	17,002

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

The estimated current loading for the Amherst WWTP used in the above analysis was 503.3 lbs/day, based upon a total nitrogen concentration of 14.1 mg/l and the average flow of 4.28 MGD (14.1 mg/L *4.28 MGD * 8.34), as indicated in the Facility's 2004 through 2005 DMRs. A review of the DMRs from January 2009 through March 2011 indicate that the monthly average total nitrogen load varied from from 272 lbs/day to 1164 lbs/day with an average value of 664 lbs/day (Refer to Attachment B for TKN and nitrite and nitrate monitoring results) which is more than the estimated loading of 503.3 lbs/day. Based on a review of the data, it appears that the facility is not nitrifying as effectively in recent years as it was during the baseline years.

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over baseline loadings, EPA has included a condition in the draft permit requiring the permittee to evaluate alternative methods of operating its plant to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Specifically, Part I.E. of the draft permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and

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.

year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and MassDEP within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years.

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

Phosphorus

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

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

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

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

Nutrient Criteria, Rivers and Streams in Ecoregion XIV, published in December, 2001, and includes a total phosphorus criteria of 23.75 µg/l (0.024 mg/l).

EPA has employed the Gold Book-recommended concentration (0.1 mg/l) to interpret the state's narrative standards for nutrients. The Gold Book value is based on effects as opposed to the ecoregional criterion, which was developed on the basis of reference conditions. EPA opted for the effects-based approach because it is often more directly associated with an impairment to a designated use (i.e. fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e. water quality impairments) are likely to occur. It applies empirical observations of a causal variable (i.e. phosphorus) and a response variable (i.e. chlorophyll a) associated with designated use impairments. Reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregion class. Specifically, reference conditions presented are based on the 25th percentile of *all* nutrient data, including a comparison of reference conditions for the aggregate ecoregion versus subecoregions. *See* Ecoregional Nutrient Criteria at vii. They are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions. Thus, while reference conditions, which reflect minimally disturbed conditions, may meet the requirements necessary to support designated uses, they may also *exceed* the water quality necessary to support such requirements.

EPA has performed a reasonable potential analysis to determine whether, at the current effluent phosphorus concentration, there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria. EPA has taken the upstream concentration of phosphorus into account in its analysis. The 2003 Connecticut River Watershed Water Quality Assessment presented ambient phosphorus concentrations for samples taken during April 2003 through August 2003 at Station 04A, upstream on the Connecticut River from the Amherst WWTP. Five samples were taken, with results varying from 0.008 mg/l to 0.029 mg/l with an average value of 0.016 mg/l. Because permit limits must protect receiving water during low flow conditions, 7Q10 flow of 1741 cfs, and the average background value of 16 ug/l were used in the equation below. The following data is also used in the calculations: the treatment plant discharge total phosphorus concentration of 1,760 ug/l (2 mg/l) as reported in the DMRs (see Attachment B), and the treatment plant design flow of 7.1 MGD. EPA used this data to calculate an instream concentration downstream of the discharge. If the calculated concentration exceeds 100 ug/l (the EPA-recommended Gold book concentration) there is reasonable potential for the discharge to exceed water quality standards and a phosphorus limit must be included in the permit.

Reasonable Potential Analysis

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

Q_e = effluent flow, i.e. facility design flow	= 7.1 MGD
C_e = effluent pollutant concentration	= 1,760 µg/l
Q_s = 7Q10 flow of receiving water	= 1741 cfs = 1125 MGD
Cs = upstream concentration	= 16 µg/l
Q_r = receiving water flow = $Q_s + Q_e$	= (7.1 + 1125) MGD = 1132.1 MGD
C_r = receiving water concentration	= 100 µg/l (water quality criterion)

$$C_r = \frac{(7.1 \text{ MGD} \times 1{,}760 \text{ µg/l}) + (1125 \text{ MGD} \times 16 \text{ µg/l})}{1132.1 \text{ MGD}}$$

$C_r = 27$ µg/l < 100 µg/l

Since the calculated instream concentration is less than the EPA-recommended criteria, there is no reasonable potential to cause or contribute to an exceedance of water quality standards.

Based on the above calculation, the draft permit does not require a limit. The current permit has a monitoring requirement at a frequency of one per month. This requirement will continue in the draft permit.

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 of the concentration of metals in the facility's effluent (from October 2006 to October 2010 Whole Effluent Toxicity testing reports) was used to determine reasonable potential for toxicity caused by aluminum, cadmium, chromium, copper, lead, nickel and zinc.

Parameter	Criteria (Total Recoverable) Acute (ug/l)	Criteria (Total Recoverable) Chronic (ug/l)	Upstream Median Conc (ug/l)	Assimilative Capacity Acute (ug/l)	Assimilative Capacity Chronic (ug/l)	Dilution Factor	Limit (Total Recoverable) Acute (mg/l)	Limit (Total Recoverable) Chronic (mg/l)	Estimated Daily Max 95th Percentile (mg/l)	Exceedences?
Aluminum	750.00	87.00	59	691	28	160	110.56	4.48	0.315	**NO**
Cadmium	0.88	0.14	0	0.88	0.14	160	0.14	0.023	0.000	**NO**
Chromium	886	42	0	886.03	42.35	160	141.76	6.78	0.000	**NO**
Copper	6.18	4.45	2	4.18	2.45	160	0.6691	0.3912	0.0324	**NO**
Lead	27.06	1.05	0	27.06	1.05	160	4.33	0.169	0.005	**NO**
Nickel	225.22	25.04	0	225.22	25.04	160	36.03	4.01	0.005	**NO**
Zinc	57.45	57.45	6	51.45	51.45	160	8.23	8.23	0.079	**NO**

* Median upstream data taken from Whole Effluent Toxicity testing on Connecticut River just upstream of Amherst WWTP

As shown above, the maximum reported effluent metals concentrations are compared to the water quality criteria found in EPA's *National Recommended Water Quality Criteria: 2002*. Based on an upstream median hardness of 41.6 mg/l as $CaCO_3$ and an effluent median hardness of 63.2 mg/l as $CaCO_3$, the downstream hardness was calculated to be 42 mg/l as $CaCO_3$ (based on a mass balance equation using the design flow and receiving water 7Q10). The downstream hardness of 42 mg/l 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 160, 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 estimated 95^{th} percentile of the effluent concentration (determined using the approach described in EPA's *Technical Support Document for Water Quality-based Toxics Control*, chapter 3) for each metal.

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 an exceedance of applicable water quality criteria. Therefore, the draft permit does not contain limits for these metals. Monitoring will continue to be required for these metals (except chromium) with each whole effluent toxicity test, as indicated in the draft permit.

Whole Effluent Toxicity

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

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

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

Pursuant to EPA Region I policy, and MassDEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990), discharges having a dilution factors greater than 100 require acute toxicity testing two times per year and an acute LC50 limit of 50 percent. The dilution factor for this discharge is greater than 100, so in accordance with EPA and MassDEP policy the draft permit includes an LC50 limit of 50 percent and requires two tests per year. In a previous permit, the required testing had been reduced from two species to one. Based on results, testing for the fathead minnow was eliminated and testing on *Ceriodaphnia dubia* was retained. However, the data submitted over the past two years shows occasional toxicity, and this toxicity appears to correlate to ammonia concentrations. Given that fathead minnows are more sensitive to ammonia than *Ceriodaphnia dubia*, the fathead minnow test has been reinstated instead of *Ceriodaphnia dubia* in the draft permit.

V. Sludge

Section 405(d) of the Clean Water Act requires that sludge conditions be included in all POTW

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

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

VI. Pretreatment

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

VII. Anti-degradation

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

VIII. Essential Fish Habitat (EFH)

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

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

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

crucial functions, and for primary and secondary contact recreation.

Atlantic salmon are expected to be present during one or more lifestages within the area which encompasses the discharge site. Although the last remnant stock of Atlantic salmon indigenous to the Connecticut River was believed to have been extirpated over 200 years ago, an active effort has been underway throughout the Connecticut River system since 1967 to restore this historic run (HG&E/MMWEC, 1997). Atlantic salmon may pass in the vicinity of the discharge either on the migration of juveniles downstream to Long Island Sound or on the return of adults to upstream areas. The area of the discharge on the river mainstem, approximately 16 miles downstream from the Turners Falls Dam and approximately 20 miles upstream from the Holyoke Dam, is not judged to be suitable for spawning, which is likely to occur in tributaries where the appropriate gravel or cobble riffle substrate can be found.

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

- This is a reissuance of an existing permit;
- The dilution factor (160) is high;
- The Connecticut River is approximately 430 feet wide in the vicinity of the discharge at Amherst, providing a large zone of passage for migrating Atlantic salmon that is unaffected by the discharge;
- Acute toxicity tests will be conducted twice per year on fathead minnows (*Pimephales promelas).*
- The draft permit prohibits violations of the state water quality standards.
- Limits specifically protective of aquatic organisms have been established for chlorine, based on state water quality criteria
- The facility withdraws no water from the Connecticut River, so no life stages of Atlantic salmon are vulnerable to impingement or entrainment from this facility.
- The effluent limitations and conditions in the draft permit were developed to be protective of all aquatic life.

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

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

IX. Endangered Species

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

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

EPA is monitoring regulatory activities regarding the protection of Atlantic sturgeon (*Acipenser oxyrinchus*). The following information was taken from a NMFS Letter to EPA, dated September 6, 2011, concerning the repermitting of the Hadley Indian Hill WWTP.

> "On October 6, 2010, NMFS published two proposed rules to list five distinct population segments (DPS) of Atlantic sturgeon under the ESA. NMFS is proposing to list four DPSs as endangered (New York Bight, Chesapeake Bay, Carolina and South Atlantic) and one DPS of Atlantic sturgeon as threatened (Gulf of Maine DPS). Once a species is proposed for listing, as either endangered or threatened, the conference provisions of the ESA may apply (see ESA Section 7(a)(4) and 50 CFR 402.10). As stated at 50 CFR402.1O, "Federal agencies are required to confer with NMFS on any action which is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat."
>
> "Atlantic sturgeon have some potential to travel up the mainstem of the Connecticut River into the state of Massachusetts. Atlantic sturgeon are a longlived, late maturing, estuarine-dependent, anadromous species, feeding predominantly on benthic invertebrates (ASSRT 2007). They have been historically reported in the Connecticut River as far upstream as Hadley, MA. However, significant evidence that Atlantic sturgeon moved past Enfield, CT into the upper Connecticut River was previously rare since this species tends to remain in the lower river in the range of the salt wedge (River mile 6-16) (Savoy and Shake 1993). In 2006, an adult Atlantic sturgeon was observed in the spillway lift at the Holyoke Dam, providing some indication that this species may move further upstream into the freshwater reaches of the Connecticut River. However, extensive sampling and the lack of any strong evidence of Atlantic sturgeon spawning indicates that the presence of this species in the vicinity of the discharges is unlikely."

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

B. Outfall Description

The outfall (001) discharges to the mainstem of the Connecticut River and is located approximately 16 miles downstream of the Turners Falls Dam and approximately 20 miles upstream from the Holyoke Dam. The discharge pipe is approximately 50 feet from the east bank of the river and 10 feet below the water surface. The outfall is equipped with a diffuser. The Connecticut River is approximately 430 feet wide in the vicinity of the discharge. The current expected dilution factor is about 160. The dilution factor was calculated in Section IV of this fact sheet.

C. Shortnose Sturgeon Information

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

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

The Holyoke Dam separates shortnose sturgeon in the Connecticut River into an upriver group (above the Dam) and a lower river group that occurs below the Dam to Long Island Sound. The abundance of the upriver group has been estimated by mark-recapture techniques using Carlin tagging (Taubert 1980) and PIT tagging (Kynard unpublished data). Estimates of total adult abundance calculated in the early 1980s range from 297 to 516 in the upriver population to 800 in the lower river population. Population estimates conducted in the l990s indicated populations in the same range. The total upriver population estimates ranged from 297 to 714 adult shortnose sturgeon, and the size of the spawning population was estimated at 47 and 98 for the years 1992

and 1993 respectively. The lower Connecticut River population estimate for sturgeon >50 cm TL was based on a Carlin and PIT tag study from 1991 to 1993. A mean value of 875 adult shortnose sturgeon was estimated by these studies. Savoy estimated that the lower river population may be as high as 1000 individuals, based on tagging studies from 1988-2002. It has been cautioned that these numbers may overestimate the abundance of the lower river group because the sampled area is not completely closed to downstream migration of upriver fish (Kynard 1997). Other estimates of the total adult population in the Connecticut River have reached 1200 (Kynard 1998) and based on Savoy's recent numbers the total population may be as high as 1400 fish (Montague Letter). Regardless of the actual number of SNS in the river, the effective breeding population consists of only the upriver population, as no lower river fish are successfully passed upstream at the present time. This effective breeding population is estimated at approximately 400 fish (NMFS BO 2009).

Several areas of the river have been identified as concentration areas. In the downriver segment, a concentration area is located in Agawam, MA which is thought to provide summer feeding and over-wintering habitat. Other concentration areas for foraging and over wintering are located in Hartford, Connecticut, at the Head of Tide (Buckley and Kynard 1985) and in the vicinity of Portland, Connecticut (CTDEP 1992). Shortnose sturgeon also make seasonal movements into the estuary, presumably to forage (Buckley and Kynard 1985; Savoy in press). Above the Dam, there are also several concentration areas. During summer, shortnose sturgeon congregate near Deerfield (NMFS BO), which is approximately 14 miles upstream of the facility discharge. Many SNS overwinter at Whitmore.

Two areas above Holyoke Dam, near Montague, have more consistently been found to provide spawning habitat for SNS. This spawning habitat is located at river km 190-192 and is the most upstream area of use. It is located just downstream of the species' historical limit in the Connecticut River at Turners Falls (river km 198). This area is approximately 16 miles upstream of the Amherst discharge. Across the latitudinal range of the species, spawning adults typically travel to approximately river km 200 or further upstream where spawning generally occurs at the uppermost point of migration within a river (Kynard 1997; NMFS 1998). The Montague sites have been verified as spawning areas based on successful capture of sturgeon eggs and larvae in 1993, 1994, and 1995, that were 190 times the number of fertilized eggs and 10 times the number of embryos found in the Holyoke site (Vinogradov 1997). In seven years of study (1993-1999), limited successful spawning, as indicated by capture of embryos or late stage eggs, occurred only once (1995) at Holyoke Dam (Vinogradov 1997; Kynard et al. 1999c). Using this same measure, successful spawning occurred at Montague during 4 of 7 years. Both Montague and Holyoke sites have been altered by hydroelectric dam activities, but all information suggests that females spawn successfully at Montague, not at Holyoke Dam. Thus, it appears that most, if not all, recruitment to the population comes from spawning in the upriver segment (NMFS BO).

The effects of the Holyoke Project on the shortnose sturgeon's ability to migrate in the Connecticut River have likely adversely affected the shortnose sturgeon's likelihood of surviving in the river. An extensive evaluation of shortnose sturgeon rangewide revealed that shortnose sturgeon above Holyoke Dam have the slowest growth rate of any surveyed (Taubert 1980, Kynard 1997) while shortnose sturgeon in the lower Connecticut River have a high condition factor and general robustness (Savoy, in press). This suggests that there are growth advantages associated with foraging in the lower river or at the fresh-and salt-water interface. There are four documented foraging sites downstream of the Holyoke Dam, while only one exists upstream.

The presence of the Holyoke Dam has likely resulted in depressed juvenile and adult growth due to inability to take advantage of the increased productivity of the fresh/salt water interface. This likely has negatively impacted the survival of the Connecticut River population of shortnose sturgeon and impeded recovery. This has also likely made the spawning periodicity of females greater (NMFS BO 2005).

D. Pollutant Discharges Permitted

1. Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)

The draft permit proposes the same $CBOD_5$ 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 25 mg/l and a weekly average concentration of 40 mg/l. The draft permit also requires the permittee to report the maximum daily BOD_5 value each month, but does not establish an effluent limit. The monitoring frequency is two per week.

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

2. Total Suspended Solids (TSS)

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

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

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

water. Dadswell (1984) reports that shortnose sturgeon are more active under lowered light conditions, such as those in turbid waters. (Montague Letter) As such, shortnose sturgeon are assumed to be as least as tolerant to suspended sediment as other estuarine fish such as striped bass.

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

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

3. pH

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

4. Escherichia coli (E. coli)

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

5. Total Residual Chlorine

The acute and chronic water quality criteria for chlorine defined in the 2002 EPA National Recommended Water Quality Criteria for freshwater are 19 ug/l and 11 ug/l, respectively. Given the very high dilution factor of 160 at the outfall of the Amherst WWTP, the total residual chlorine limits have been calculated as 3.03 mg/l maximum daily and 1.76 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 included a maximum daily effluent limitation for TRC of 1.0 mg/l and in compliance with

that policy.

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

There are a number of studies that have examined the effects of TRC (Post 1987; Buckley 1976; EPA 1986) on fish; however, no directed studies that have examined the effects of TRC on shortnose sturgeon. The EPA has set the Criteria Maximum Concentration (CMC or acute criteria; defined in 40 CFR 131.36 as equals the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (up to 96 hours) without deleterious effects) at 0.019 mg/L, based on an analysis of exposure of 33 freshwater species in 28 genera (EPA 1986) where acute effect values ranged from 28 ug/L for *Daphia magna* to 710 ug/L for the threespine stickleback. The CMC is set well below the minimum effect values observed in any species tested. As the water quality criteria levels have been set to be protective of even the most sensitive of the 33 freshwater species tested, it is reasonable to judge assumes that the criteria are also protective of shortnose sturgeon.

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

6. Phosphorus

State water quality standards require any existing point source discharge containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practical treatment to remove such nutrients. Phosphorus interferes with water uses and reduces instream dissolved oxygen. The draft permit includes a one(1) per month monitoring and reporting requirement for effluent phosphorus. If a Total Maximum Daily Load (TMDL) or other data demonstrates that the WWTP is contributing to eutrophication of the river, EPA and MassDEP may reopen the permit under Part II.A.4. of the permit and modify the limit. In order to modify the limit, a formal public review process would be required.

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

Based on the reasonable potential calculation, the draft permit does not require a limit. The current permit has a monthly average monitoring requirement of one per month for phosphorus. Same requirement will continue in the draft permit. Please refer to the Phosphorus Section of Part IV of this fact sheet for a full discussion of the reasonable potential analysis performed.

7. Nitrogen

DO levels in the Long Island Sound estuary, approximately 100 miles downstream from the Amherst WWTP, have been determined to be impacted by nitrogen discharges from wastewater

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

The estimated current loading for the Amherst WWTP used in the above analysis was 503.3 lbs/day, based upon a total nitrogen concentration of 14.1 mg/l and the average flow of 4.28 MGD (14.1 mg/L * 4.28 MGD * 8.34), as indicated in the Facility's 2004 through 2005 DMRs. A review of the DMRs from January 2009 through March 2011 indicate that TKN varies from 63.8 lb/day to 1310.0 lb/day with an average value of 780.4 lb/day. Nitrite and nitrate varies from 25.0 lb/day to 462.0 lb/day with an average value of 177.2 lb/day. Therefore, total nitrogen varies from 88.8 lb/day to 1772.0 lb/day with an average value of 957.6 lb/day (Refer to Attachment B for TKN and nitrite and nitrate monitoring results) which is more than the estimated loading of 503.3 lbs/day.

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over baseline loadings, EPA has included a condition in the draft permit requiring the permittee to evaluate alternative methods of operating its plant to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Specifically, Part I.E. of the draft permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and MassDEP within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years.

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

8. Metals

Certain metals in water can be toxic to aquatic life, including SNS. There is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. An evaluation (see the Metals discussion in Part IV of the fact sheet) of the concentration of metals in the facility's effluent (from October 2006 to October 2010 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.

9. Whole Effluent Toxicity (WET)

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

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

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

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

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

E. Finding

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

Reinitiation of consultation will take place: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously

considered in the consultation; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or (c) If a new species is listed or critical habitat is designated that may be affected by the identified action.

X. Sewer System Operation and Maintenance

EPA regulations set forth a standard condition for "Proper Operation and Maintenance" that is included in all NPDES permits. *See* 40 CFR § 122.41(e). This condition is specified in Part II.B.1 (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). I/I in a collection system can pose a significant environmental problem because it may displace wastewater flow and thereby cause, or contribute to causing, SSOs. Moreover, I/I could reduce the capacity and efficiency of the treatment plant and cause bypasses of secondary treatment. Therefore, reducing I/I will help to minimize any SSOs and maximize the flow receiving proper treatment at the treatment plant. There is presently estimated to be approximately 50,000 gpd of I/I in the sewer system. In its September 6, 2001 Infiltration and Inflow Policy, MassDEP specified that certain conditions related to I/I control be established in NPDES municipal permits

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

XI. State Certification Requirements

EPA may not issue a permit unless the Massachusetts Department of Environmental Protection with jurisdiction over the receiving waters certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to

violate State Water Quality Standards. The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit. EPA has requested permit certification by the state pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

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

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and a supporting material for their arguments in full by the close of the public comment period, to Michael Cobb, U.S. EPA, MA Office of Ecosystem Protection, 5 Post Office Square, Suite 100 , Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and MassDEP for a public hearing to consider the draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston Office. Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

XIII. EPA Contact

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

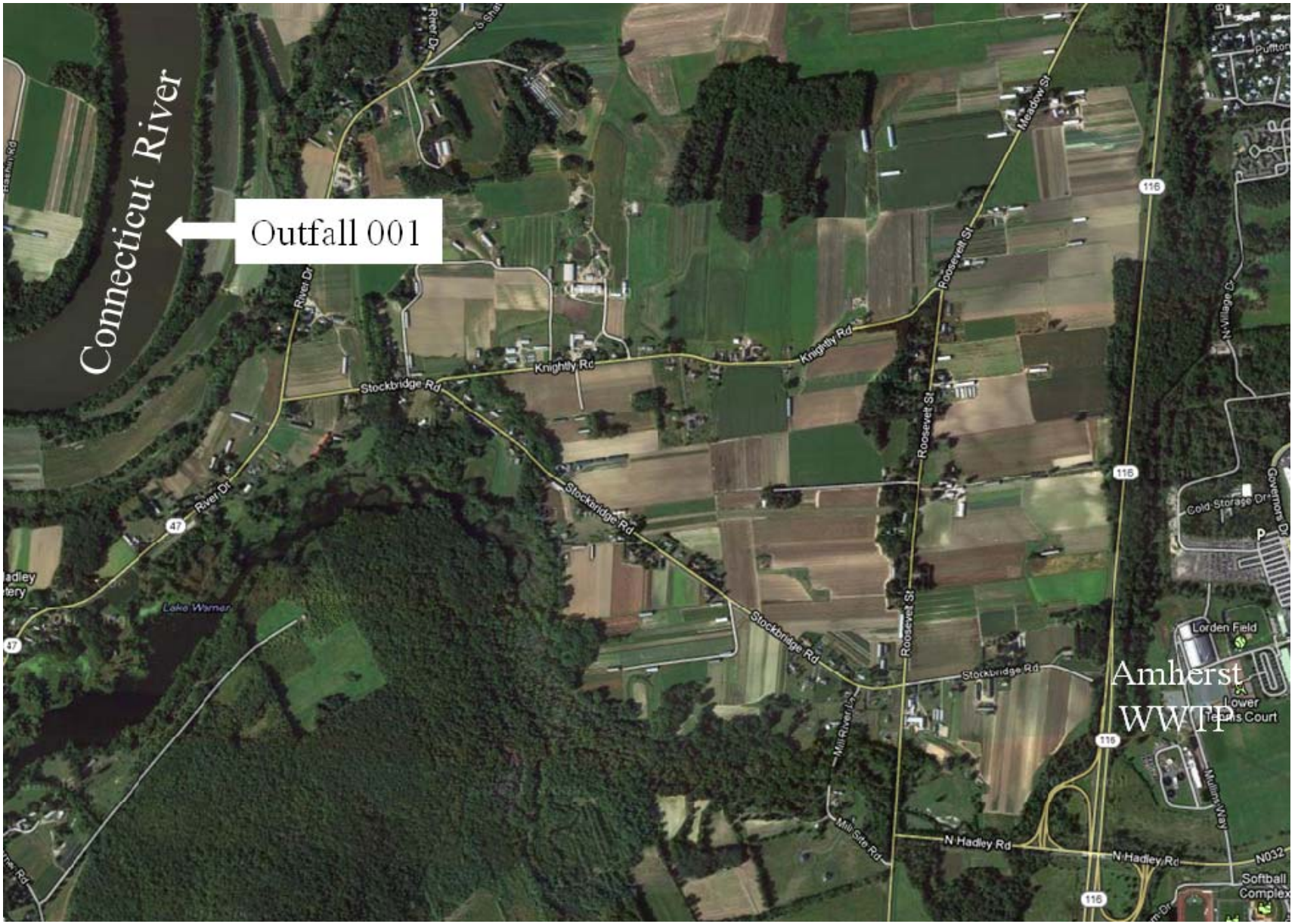
Mr. Michael Cobb
Industrial Permits Branch
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100 (OEP 06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1369
E-Mail: cobb.michael@epa.gov

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

_____
Date

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

Attachment A – Aerial View of Facility, Receiving Water and Outfall Location



(Aerial view obtained from maps.google.com)

Attachment B – Discharge Monitoring Report Summary

Date	Flow			BOD			TSS			TRC	Fecal Coliform		E.coli		Total Phosphorus	TKN	Nitrate/Nitrite	Total N	LC50 ceriodaphnia
	Annual Avg (MGD)	Monthly Avg (MGD)	Daily Max (MGD)	Monthly Avg (mg/l)	Weekly Avg (mg/l)	Daily Max (mg/l)	Monthly Avg (mg/l)	Weekly Avg (mg/l)	Daily Max (mg/l)	Daily Max (mg/l)	Monthly Avg (#/ 100 ml)	Daily Max (#/ 100 ml)	Monthly Avg (#/ 100 ml)	Daily Max (#/ 100 ml)	Monthly Avg (mg/l)	Monthly Avg (mg/l)	Monthly Avg (mg/l)	Monthly Avg (mg/l)	(%)
01/31/2009	4.62	3.93	4.5	4	5	5	4	5	5						2.1	1.7	12.3	14.0	
02/28/2009	4.39	4.32	5.52	5	5	5	5	6	6						4.9	9.2	10.6	19.8	
03/31/2009	4.23	4.85	6.72	5	9	9	5	7	9						1.3	0.0	8.7	8.7	
04/30/2009	4.2	4.7	5.5	3	4	4	4	5	6	0.72	114	367	2005	2005	2.0	8.5	7.8	16.3	
05/31/2009	4.25	4.154	5.771	2	2	2	2	2	2	0.61	32	46	4010	4010	1.0	19.0	1.5	20.5	
06/30/2009	4.33	3.79	5.75	2	2	2	2	3	3	0.74	37	168	870	870	0.6	3.9	4.7	8.6	100.
07/31/2009	4.35	4.035	6.391	2	3	3	2	3	3	0.69	43	66	43	66	1.2	8.1	5.8	13.9	
08/31/2009	4.38	3.516	5.108	2	4	4	2	3	3	0.64	122	**700**	990	990	0.9	3.9	5.4	9.3	
09/30/2009	4.27	3.58	3.798	2	3	94	3	6	8	0.79	136	**520**	13500	13500	2.0	25.0	2.5	27.5	
10/31/2009	4.22	3.79	4.76	3	5	5	3	5	5	0.86	134	369	4000		2.1	35.0	1.8	36.8	70.7
11/30/2009	4.18	3.96	4.53	3	5	6	3	4	5						1.7	28.0	1.9	29.9	
12/31/2009	4.06	4.03	4.92	4	6	7	4	7	7						1.1	20.0	2.1	22.1	
01/31/2010	4.065	3.715	5.803	4	7	8	5	8	9						2.4	20.4	2.7	23.1	
02/28/2010	4.01	4.36	6.67	4	6	6	4	6	6						1.6	19.2	3.8	23.0	
03/31/2010	3.965	5.21	9.434	3	4	4	4	4	4						1.8	14.6	4.2	18.8	
04/30/2010	4.012	4.761	7.407	3	5	7	3	5	7	0.75	14	162	162	162	1.7	16.5	4.2	20.7	
05/31/2010	4.067	3.267	4.014	4	7	11	3	3	4	0.63	9	56	200	200	2.0	14.6	2.7	17.3	
06/30/2010	4.02	2.766	3.076	3	4	6	2	3	4	0.45	13	48	24	24	2.6	12.3	3.6	15.9	100.
07/31/2010	3.905	2.664	2.895	3	3	3	2	2	2	0.51	15	47	330	330	1.7	12.7	2.0	14.7	
08/31/2010	3.722	2.57	2.844	3	4	4	2	3	3	0.51	56	263	350	350	1.4	16.0	1.3	17.3	
09/30/2010	3.7	3.308	4.073	4	6	8	3	5	7	0.94	66	**1256**			3.2	29.1	3.1	32.2	
10/31/2010	3.697	3.76	5.344	5	7	7	3	5	5	0.94	9	111	112	112	1.3	29.4	2.4	31.8	70.7
11/30/2010	3.685	3.811	4.892	4	5	5	4	5	5						3.1	26.6	1.9	28.5	
12/31/2010	3.669	3.835	6.624	5	6	6	4	5	5						1.0	24.8	1.6	26.4	
01/31/2011	3.665	3.226	3.751	6	8	9	5	6	6						0.7	26.3	0.8	27.1	
02/28/2011	3.562	4.082	5.299	7	8	8	8	9	9						1.9	25.9	1.5	27.4	
03/31/2011	3.459	6.473	14.783	4	6	7	5	6	7						0.2	3.4	2.2	5.6	
Avg	4.025			4			4			0.70	57		2046		1.8	16.8	3.8	20.6	
Max	4.620	6.473	14.783	7	9	94	8	9	9	0.94	136	1256	13500	13500	4.9	35.0	12.3	36.8	
Limit in Current Permit	7.1			25	40		25	40		1	200	400							50

RESPONSE TO COMMENTS – JUNE 18, 2012
REISSUANCE OF NPDES PERMIT NO. MA0100218
AMHERST WASTEWATER TREATMENT PLANT
HADLEY, MASSACHUSETTS

From January 12, 2012 through February 10, 2012 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 Amherst Wastewater Treatment Plant in Hadley, MA.

EPA-New England and MassDEP received comments from the Town of Amherst Office of the Superintendent of Public Works (dated February 3, 2012), the Massachusetts Department of Environmental Protection, Division of Watershed Management (dated February 9, 2012) and the Connecticut River Watershed Council (dated February 10, 2012). 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 AMHERST OFFICE OF THE SUPERINTENDENT OF PUBLIC WORKS

The Town of Amherst, Massachusetts has reviewed EPA's draft NPDES permit for the wastewater treatment facility, and would like to make an argument regarding the data and calculations used to derive the amount of total nitrogen in the draft permit. The draft permit reads:

Part I.E. - "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 503.3 lbs/day 2004-2005 baseline estimate."

The argument that we will use will be based on:

1. Data used to arrive at the 503.3 lbs/day

2. 2010/2011 data showing loadings have changed since 2004/2005

3. Inconsistent data in the EPA Fact Sheet

COMMENT A1:

a. The data from the submitted DMR's for 2004/2005 can be found in **Attachment A**. This data has three (3) months where the entry for TKN was "ND" (non-detectable). With the TKN entries as ND, this resulted in 0 lbs/day of TKN on those dates.

   With that said, the calculated data results in average loadings of 490 lbs/day for 2004 and 658 lbs/day for 2005. This would average out to **574** lbs/day over this time period. We are not certain how the 503.3 lbs/day in the draft permit was derived.

b. Since Total Kjeldahl Nitrogen (TKN) is made up of Particulate Organic-N, Soluble Organic-N and Ammonia-N, we can use Ammonia-N data to estimate TKN, as we do have detected values for Ammonia-N on our submitted DMR's. We have substituted Ammonia-N data for the three (3) ND (non-detectable) or zero entries. **See Attachment B**. These three additions would result in 492 lbs/day for 2004 and 668 lbs/day for 2005. This would average out to **580** lbs/day over this time period.

c. Using the same premise that TKN is a total of Particulate Organic-N, Soluble Organic-N and Ammonia-N, we show seven (7) additional entries where Ammonia-N is a higher value than the TKN on our DMR reports. **Refer to Attachment C**. Substituting these higher Ammonia-N values in place of the seven TKN values we derive 501 lbs/day for 2004 and 690 lbs/day for 2005. This averages out to **595.5** lbs/day.

All three of the above examples have merit and are higher than the 503.3 lbs/day of Total Nitrogen stated in the draft permit.

(Note: Attachments A, B and C not reproduced here)

RESPONSE A1:

EPA has reviewed the calculation of the 2004/2005 baseline nitrogen target and agrees that the calculated average does not match the reported data, and should be recalculated. However, calculating an appropriate baseline value using the available data is difficult because it is evident that some of the DMR data submitted by the facility is in error. In the three (3) cases identified that show detectable ammonia-N concentrations and corresponding non-detectable TKN concentrations, and in the seven (7) cases identified that show higher ammonia-N concentrations than corresponding TKN concentrations, one of those two values in each case must be in error since ammonia-N is a component of TKN. EPA does not necessarily agree that the specific assumptions and calculations described in the comment above are appropriate. By choosing to use the higher ammonia-N concentration, the commenter indicates that the smaller TKN value must be in error in each of these ten (10) cases, but has not submitted any information showing why this assumption is correct. Without this information, an equally valid (and more

conservative) approach in setting the baseline total nitrogen target is to use the smaller TKN value in each of these ten (10) cases, assuming that the error is in the larger ammonia-N concentration. EPA has recalculated the 2004/2005 total nitrogen baseline using the reported TKN values (plus the nitrate and nitrite data) for all cases, as shown below. The ten (10) cases showing discrepancies between TKN and ammonia-N are highlighted.

Monitoring Period End Date	Flow	TKN	Ammonia-N	Nitrite + Nitrate	Total Nitrogen
	MGD	mg/L	mg/L	mg/L	mg/L
	MO AVG	MO AVG	MO AVG	MO AVG	MO AVG
01/31/2004	3.88	5.6	5.45	7.13	12.73
02/29/2004	4.05	9.5	8.35	10.13	19.63
03/31/2004	4.4	8.4	8.55	6.1	14.5
04/30/2004	5.97	5.	7.05	10.3	15.3
05/31/2004	4.63	0.	0.5	12.22	12.22
06/30/2004	3.39	0.	0.4	9.1	9.1
07/31/2004	3.15	2.8	1.5	9.31	12.11
08/31/2004	3.08	7.	2.14	5.8	12.8
09/30/2004	4.38	14.	9.85	6.9	20.9
10/31/2004	4.46	6.3	6.25	7.25	13.55
11/30/2004	4.04	5.2	4.1	8.45	13.65
12/31/2004	4.56	1.8	2.	10.2	12.
01/31/2005	4.4	10.	9.5	4.06	14.06
02/28/2005	4.83	11.	9.9	4.1	15.1
03/31/2005	4.83	5.3	4.7	7.06	12.36
04/30/2005	5.45	4.	3.7	8.6	12.6
05/31/2005	4.14	0.	3.95	10.3	10.3
06/30/2005	3.2	2.9	5.	7.5	10.4
07/31/2005	3.25	16.	1.8	10.2	26.2
08/31/2005	2.91	3.9	9.9	7.1	11.
09/30/2005	3.55	39.	13.1	6.95	45.95
10/31/2005	6.25	2.	2.6	6.2	8.2
11/30/2005	5.19	1.3	1.6	8.3	9.6
12/31/2005	4.76	3.7	3.65	19.1	22.8
Average	**4.28**	**6.863**	**5.231**	**8.432**	**15.3**

Based upon this data, the 2004/2005 total nitrogen baseline target is calculated as follows:

TN (lbs/d) = TN (mg/L) * Flow (MGD) * 8.345
TN (lbs/d) = 15.3 mg/L * 4.28 MGD * 8.345
TN = 546.5 lbs/d

The calculated value is greater than the baseline estimated in the draft permit, but is less than the baselines estimated by the commenter. In performing this calculation, EPA noted that the TN value for September 2005 appears to be abnormally high, and considered

either eliminating that month from the calculation or basing the TN calculation on the ammonia and nitrite+nitrate data, rather than on the TKN and nitrite+nitrate data.

If the calculation were done using the TN data, but eliminating the September, 2005 results, the nitrogen baseline could be calculated as 498.8 lbs/day.

If the ammonia data were used instead of the TN data, the nitrogen baseline could be calculated as follows, replacing all TKN data with ammonia-N data:

TN (mg/L) = Ammonia-N (mg/L) + Nitrite/Nitrate (mg/L)
TN (lbs/d) = TN (mg/L) * Flow (MGD) * 8.345
TN (lbs/d) = (5.231 mg/L + 8.432 mg/L) * 4.28 MGD * 8.345
TN = 488.0 lbs/d

However, EPA does not believe that discarding the September 2005 data or basing the calculation on the ammonia data (as opposed to the TKN data) is appropriate. Instead of trying to determine (with very little basis) which TKN values are valid and which are not, the Agency has chosen to use all of the reported TKN data. Accordingly, the permit will be revised to include a total nitrogen baseline target of **546.5 lbs/d**. The facility is required to meet this target as specified in the permit through process changes and/or optimization techniques.

A review of more recent nitrogen data submitted by the facility indicates that TKN and ammonia-N have also shown apparent discrepancies, but none since February of 2010. This more recent data is presented below with the apparent discrepancies highlighted.

Monitoring Period End Date	TKN Monthly Ave (mg/l)	Ammonia-N Monthly Ave (mg/l)
01/31/2009	1.7	2.2
02/28/2009	9.2	10.
03/31/2009	0.	0.3
04/30/2009	8.5	7.4
05/31/2009	19.	16.
06/30/2009	3.9	4.7
07/31/2009	8.1	7.
08/31/2009	3.9	3.8
09/30/2009	25.	27.
10/31/2009	35.	38.
11/30/2009	28.	28.
12/31/2009	20.	21.
01/31/2010	20.4	19.
02/28/2010	19.2	19.5
03/31/2010	14.6	13.
04/30/2010	16.5	15.4

05/31/2010	14.6	13.
06/30/2010	12.3	11.6
07/31/2010	12.7	11.1
08/31/2010	16.	12.9
09/30/2010	29.1	28.
10/31/2010	29.4	26.5
11/30/2010	26.6	24.9
12/31/2010	24.8	24.4
01/31/2011	26.3	25.2
02/28/2011	25.9	23.9
03/31/2011	3.4	2.7
04/30/2011	19.	17.
05/31/2011	10.4	5.7
06/30/2011	12.	10.
07/31/2011	5.6	3.7
08/31/2011	5.6	3.8
09/30/2011	19.	17.3
10/31/2011	15.	14.
11/30/2011	16.	14.
12/31/2011	14.6	12.9
01/31/2012	32.9	26.4
02/29/2012	27.5	26.

EPA expects the facility to ensure the quality of their nitrogen monitoring procedures and analytical methods in order to prevent future discrepancies between TKN and ammonia-N.

COMMENT A2:

Loadings have increased at the Amherst Wastewater Treatment Facility since 2004/2005 data was generated for total nitrogen loadings. Since 2004, the Town of Amherst has taken on 453 new connections to the sewer system. UMass is one of three colleges connected to our system. Since 2004, UMass construction has added 864 new beds and an additional 1500 beds are currently under construction. Over the past five years, UMass has actually contributed less flow from water conservation measures. The amounts of dry solids removed from the Amherst WWTP provide the most reliable loading data. Organic loadings have increased since 2004-05, as indicated below.

Tons of dry solids removed from the Amherst WWTP have been:
2004 - 1040 tons
2005 - 997 tons
2010 - 1068 tons
2011 - 1109 tons

The period 2004/2005 when the nitrogen loading data was based averaged 1019 tons of dry solids. The more recent 2010/2011 data indicate an average of 1089 tons, which demonstrates a nearly 7% increase in plant's loading.

RESPONSE A2:

As stated in the fact sheet, the baseline target 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 in order 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.

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. As described by the commenter, Amherst's load in 2010-2011 was greater than its load in 2004-2005 due to increased connections to the sewer line. While EPA acknowledges this increased load, the Agency does not agree that this warrants an increase in the target of nitrogen optimization. Accordingly, EPA has retained the baseline load from 2004-2005 (with the revision described above) and believes that increased nitrogen removal efficiency at Amherst is possible through process changes and/or optimization techniques.

COMMENT A3:

The data that was provided in the Fact Sheet was inconsistent.

Page 8 of 27 - **"A review of the DMR's from Jan 2009 through Mar 2011 indicate that the monthly average nitrogen load varied from 272 lbs/day to 1164 lbs/day with an average value of 664 lbs/day. (Refer to Attachment B for TKN and nitrite and nitrate monitoring results) which is more than the estimated loading of 503.3 lbs/day."**

Page 22 of 27 - **"A review of the DMR's from Jan 2009 through Mar 2011 indicate that the TKN varies from 63.8 lbs/day to 1310.0 lbs/day with an average value of 780.4 lbs/day. Nitrite and nitrate vary from 25.0 lbs/day to 462.0 lbs/day with an average value of 177.2 lbs/day. Therefore, total nitrogen varies from 88.8 lbs/day to 1772.0 lbs/day with an average value of 957.6 lbs/day. (Refer to Attachment B for**

TKN and nitrite and nitrate monitoring results which is more than the estimated loading of 503.3 lbs/day."

The average value of "**957.6 lbs/day**" was data that was created using the Daily Maximum Flow for the entire month. We have been required to test and report nitrogen data only once each month. It does not appear accurate to use the total nitrogen result and calculate the total lbs using the day of the month with the highest flow. **Refer to Attachment D** for DMR data for the period from January 2009 through March 2011 for lbs of total nitrogen using flow on the day of sample collection to calculate lbs/day of total nitrogen. The calculated lbs/day of total nitrogen for the period of Jan 2009 thru Mar 2011 using the DMR reported results and using flow data on the day of the sample results in **682 lbs/day**. The 957.6 lbs/day does not accurately reflect our average effluent values.

From the Fact Sheet: Page 8 of 27 **"The estimated current loadings for Amherst WWTP used in the above analysis was 503.3 lbs/day, based upon a total nitrogen concentration of 14.1 mg/l and the average flow of 4.28 MGD (14.1 mg/1 * 4.28 MGD * 8.34), as indicated in the Facility's 2004 through 2005 DMR's."** The DMR's in fact show that the average total nitrogen concentration was **15.3 mg/1** and the average flow on the dates of the samples was **4.625 MGD** over that two year period.

Based on the above information, the Town of Amherst is requesting that you revisit the calculated numbers to arrive at the baseline number that targets us to maintain annual total nitrogen loading values of less than 503.3 lbs/day.

RESPONSE A3:

EPA acknowledges that the Jan 2009 through Mar 2011 total nitrogen data of 957.6 lbs/day calculated on page 22 of the fact sheet was done using the daily maximum flow. As mentioned in the comment, it is more appropriate to use flow data on the day of the sample which results in 682 lbs/day. This result is comparable to the total nitrogen load of 664 lbs/day as calculated on page 8 of the fact sheet using average monthly values. However, in either case it is clear that this load remains above the baseline target indicating that further optimization for nitrogen removal is required.

On page 8 of the fact sheet, the calculation of the 2004/2005 baseline loading is described. The total nitrogen concentration of 14.1 mg/l is incorrect according to the DMRs submitted by the facility, and should be 15.3 mg/l. However, the average flow was correctly recorded as 4.28 MGD based on the same DMRs. This results in a baseline load of 546.5 lb/d as calculated in the response above. As mentioned, the baseline target in the permit will be adjusted to 546.5 lb/d and the facility must optimize its treatment process accordingly.

B. COMMENTS FROM THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATERSHED MANAGEMENT

COMMENT B1:

The Department recognizes that the permit condition at Part 1, Section C.4 is a new requirement and the 30 month compliance schedule in which to complete all collection system mapping may not be sufficient in all cases. Technical knowledge and capacity to perform this work may need to be supported initially to accomplish these goals, and some permittees may want to coordinate this work with separately required stormwater collection system mapping requirements expected during the permit term. Initial feedback from a variety of permittees indicated that 48 months may be needed to accomplish this task, aligning the results with the permit compliance evaluation cycle. The Department supports a deadline of 48 months to reasonably accomplish this task. However, if at any time before the current schedule has expired, the permittee determines compliance with the current schedule will not be met, the permittee may submit in writing a request to both agencies to change the deadline in accordance with the regulatory provisions of each agency through permit modification establishing an alternative schedule. Such request must include: a) specific reasons why the extension is necessary; b) documentation dating the progress made to date; c) a proposed alternative date for completing the work; and d) any other relevant information supporting the request for a modified schedule.

RESPONSE B1:

EPA believes that 30 months is a reasonable compliance schedule to complete collection system mapping. However, EPA agrees that if at any time before the current schedule has expired, the permittee determines compliance with the current schedule will not be met, the permittee may submit in writing a request to both the EPA and the Massachusetts Department of Environmental Protection to change the deadline in accordance with the regulatory provisions of each agency through permit modification establishing an alternative schedule. Such request must include: a) specific reasons why the extension is necessary; b) documentation dating the progress made to date; c) a proposed alternative date for completing the work; and d) any other relevant information supporting the request for a modified schedule.

EPA notes that MADEP made the same comment in the state certification letter and this response remains the same.

COMMENT B2:

Ammonia mass loadings do not need to be reported in kg/day.

RESPONSE B1:

The kg/day reporting requirements for total nitrogen, ammonia-nitrogen, Kjeldahl nitrogen, total nitrate, and total nitrite mass loadings have been removed from the final permit. The permittee is required to report these only in lbs/day.

C. COMMENTS FROM THE CONNECTICUT RIVER WATERSHED COUNCIL

COMMENT C1:

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 just upstream of where Russellville Brook empties into the Connecticut River.

- Massachusetts Department of Conservation and Recreation (DCR) owns "the Bashan," which is just downstream of this outfall on the Hatfield side of the river, and is part of the Connecticut River Greenway State Park. This spot offers a sandy beach that is popular with swimmers. On the Hadley side of the river lies "Red Rocks," also a popular swim spot.
- The Hatfield Access ramp, a state-owned dirt boat ramp, is located less than a mile downstream of the discharge point on the Hatfield side of the river.
- Downstream and in the vicinity of the outfall location, the Connecticut River is used for swimming, agricultural irrigation, fishing, paddling, and motor boating.

RESPONSE C1:

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 C2:

Amherst's outfall location is less than a half of a mile upstream of the Hatfield WWTP outfall pipe (the two pipes are on opposite sides of the river, but there is a large bend in the river so depending on the sizes of the mixing zones, there may be overlap). Given the proximity of these two pipes, it seems appropriate to add a protection factor and lower some of the limits in case the two outfalls lead to a cumulative effect. For example, perhaps the TSS, BOD, or bacteria limits should be slightly lowered to protect existing uses. For TSS and BOD, the facility is keeping well below existing limits, and such a reduction would seemingly not be a challenge to comply with. The bacteria is even more

important, since this river segment is impaired for bacteria and is located very close to a state-owned swimming area and boat ramp, and Amherst has had a number of bacteria violations over the last several years.

RESPONSE C2:

EPA believes that an additional protection factor based on the possibility of overlapping mixing zones is unnecessary given the characteristics of the discharge. The high dilution factor (160) and absence of significant industrial users suggest that mixing of any pollutants of concern is satisfactorily achieved. Regarding TSS and BOD, the limits in the permit are technology-based and do not pose a threat to the existing uses of the Connecticut River. As mentioned, the facility is discharging well below their current technology-based limits for TSS and BOD, which further indicates that there is not a need to impose water quality-based limits for these pollutants. As stated in the fact sheet, the listed impairments for this segment of the Connecticut River are PCBs in fish tissue and *E. coli*. Regarding bacteria, *E. coli* limits are replacing fecal coliform limits by the end of the first disinfection season following the effective date of the permit. The bacterial limits have been changed to conform to the Class B water quality criteria for bacteria found in the Massachusetts Water Quality Standards (314 CMR 4.05(3)(b)4.). EPA believes that these limits are protective of existing uses in the Connecticut River. The facility should make every effort to avoid further violations of their bacterial limits.

COMMENT C3:

We recommend that this permit follow Massachusetts State Water Quality Standards for pH, which are 6.5-8.3 in Class B waters. In particular, page 13 of the Fact Sheet identifies ammonia as a possible source of effluent toxicity. Decreased pH increases the toxicity of ammonia, so it makes sense to keep the pH limit consistent with the state water quality standard.

RESPONSE C3:

EPA agrees with the commenter that decreased pH increases the toxicity of ammonia, albeit in a limited way due to the large amount of dilution afforded by the receiving water. The permit requires the WWTF to optimize nitrification. During the period that the WWTF evaluates alternative methods of optimizing nitrogen removal, operational changes may result in lower alkalinity and pH. Therefore, the pH limit will remain 6.0 – 8.3 SU.

COMMENT C4:

We note that DMR data for pH was missing from Attachment B.

RESPONSE C4:

The pH data was provided in the facility's DMR submittals but was inadvertently left out of the table in Attachment B of the fact sheet. There were no violations over the review period (Jan 2009 through Mar 2011) and the data is included here:

Date	pH	
	Min	Max
	S.U.	S.U.
01/31/2009	6.	7.
02/28/2009	6.2	7.
03/31/2009	6.	7.
04/30/2009	6.6	7.5
05/31/2009	6.8	7.3
06/30/2009	6.34	7.
07/31/2009	6.8	7.1
08/31/2009	6.7	7.
09/30/2009	7.	7.5
10/31/2009	7.1	7.4
11/30/2009	7.	7.5
12/31/2009	6.7	7.3
01/31/2010	6.6	7.3
02/28/2010	7.1	7.5
03/31/2010	6.8	7.4
04/30/2010	6.9	7.3
05/31/2010	6.8	7.3
06/30/2010	6.9	7.3
07/31/2010	7.	7.5
08/31/2010	7.2	7.6
09/30/2010	7.3	7.6
10/31/2010	7.4	7.6
11/30/2010	7.3	7.5
12/31/2010	7.1	7.4
01/31/2011	7.3	7.5
02/28/2011	7.1	7.5
03/31/2011	6.8	7.4
Avg	**6.8**	**7.3**
Max	**---**	**7.6**
Min	**6.**	**---**
Limit in 2006 Permit	**6.0**	**8.3**

COMMENT C5:

The draft permit and existing permit require the permittee to conduct WET testing the second week of June and October. All other permits on the mainstem Connecticut River that require twice yearly sampling require sampling in June and September rather than October (we looked at Easthampton, Northampton, and South Hadley, for example). We are not sure why WET testing in Amherst should take place during a different set of months. However, we note that the toxicity tests tend to show higher toxicity in October than in June. Is there a reason for this? Amherst's wastewater must vary seasonally, since there is a university and two colleges that have lower activity during the summer months. Are there months when the effluent characteristics are different? If October is the month most likely to demonstrate toxicity, we are in favor of keeping this month in the permit.

RESPONSE C5:

EPA expects toxicity to be of most concern during months with the lowest flow and most critical instream conditions combined with higher effluent flows and pollutant concentrations. In most facilities, EPA would not expect to see a distinction in toxicity between September and October due to these factors. However, in this case the seasonal variation due to the university and colleges could have a greater effect in October (in the middle of the academic cycle) than in September (at the beginning of the academic cycle). Accordingly, the facility will continue to be required to conduct WET testing in the second week of June and October.

COMMENT C6:

The proposed permit recommends switching the test species for WET tests from *Ceriodaphnia dubia* to the fathead minnow, something we are not necessarily in favor of, for reasons described in the following paragraph. According to page 13 of the Fact Sheet, the WET tests have shown toxicity correlated with ammonia concentrations, and fathead minnows are more sensitive to ammonia than *Ceriodaphnia dubia*. However, based on data presented in EPA's 2009 Draft Ambient Water Quality Criteria for Ammonia (linked at http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/pollutants/ammonia/factsheet2.cfm), it looks to us like *Ceriodaphnia* are more sensitive than fathead minnow, unless we have interpreted the results wrong in Table 1 of the 2009 draft document. Additionally, EPA said in the Hatfield WWTP NPDES response to comment document, "Please note that under previous permits, WET test were run on both *Ceriodaphnia* and fathead minnows. Because there was consistent compliance for both species, EPA reduced the required testing to one species and determined that daphnids were the more sensitive species in this case." CRWC would like to understand which of the parameters that are likely to be discharged by the Amherst WWTP are daphnids the more sensitive species than the minnow. Would the switch overall not pick up on typical sources of toxicity? Perhaps it's appropriate to re-instate both species, so as not to miss any sensitivity that might exist from other pollutants. Or, stick with the daphnid, and also increase the frequency of WET testing to four times a year.

RESPONSE C6:

The most sensitive test species are often determined on a case-by-case basis. As mentioned, in the Hatfield NPDES permit EPA determined that the daphnids were the most sensitive test species. This was done by comparing the specific results of Hatfield's WET reports in recent tests for both species. In the case of Amherst, EPA determined in the 2006 permit that the daphnids were the most sensitive test species based on recent (as of 2006) WET reports and reduced testing to daphnids only. In the recent draft permit, EPA noted that the sensitivity of the daphnid in WET tests during the review period (Jan 2009 through Mar 2011) corresponded to an increase in ammonia-N (see Attachment B of the fact sheet) which typically has a greater effect on the fathead minnows. However, based on the comment above, it seems reasonable to include both test species in order to not miss any sensitivity that might exist from other pollutants. Accordingly, the final permit requires WET testing only **twice per year** (the second week of June and October) using **two species** (the daphnid and fathead minnow). EPA believes that these tests will provide an adequate indication of toxicity as well as further insight into which species is most sensitive to this facility's effluent.

COMMENT C7:

After looking at the draft ambient water quality criteria for ammonia online and seeing that there is existing criteria from 1999 for waters with mussels and salmon, we wonder why EPA has not presented a reasonable potential analysis for ammonia here. The ammonia discharge concentrations shown for this facility in EPA's ECHO database lead us to think that the discharge concentrations may exceed EPA's existing water quality criteria. And, as mentioned in the Section VIII of the Fact Sheet, the Connecticut River is Essential Fish Habitat for Atlantic salmon.

RESPONSE C7:

Ammonia can impact the receiving water dissolved oxygen and also be toxic at elevated levels. The recommended criteria in the 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-014, December 1999 and 64 Federal Register 71973-71980) are based on the pH and temperature of the receiving waters. The 1999 update also stipulates a warm season instream goal of 3.0 mg/l for ammonia. A reasonable potential analysis can be done to ensure that the discharge does not cause or contribute to instream toxicity. In this case, there was not an ammonia-N monitoring requirement in the 2006 permit (only TKN, nitrate/nitrite and total nitrogen) making it difficult to accurately determine reasonable potential. Since ammonia-N is a component of TKN, the TKN data may be used as a conservative estimate of the reasonable potential for toxicity due to ammonia-N. A statistical analysis of the TKN data in Attachment B of the fact sheet results in a 95^{th} percentile value of 50.0 mg/l. Dividing this by the dilution factor for this facility (160) results in a maximum potential instream concentration of 0.313 mg/l. This value is significantly below the goal of 3.0 mg/l (even using the conservative TKN data) indicating that there is no reasonable potential for ammonia-N to cause or contribute to instream toxicity.

COMMENT C8:

With regard to the federally endangered shortnose sturgeon (SNS), Holyoke Gas & Electric was required by NOAA for several years to conduct radio tracking studies of 20 tagged SNS upstream of the dam each year, to record their movements and see if any moved downstream and approached the Holyoke dam. This document is available in full on the FERC e-library (docket P-2004), but relevant excerpts are attached here. Of the tagged SNS individuals, two of them were recorded multiple times right in the vicinity of the Amherst WWTP outfall pipe. One tag was confirmed to ultimately be ejected near this location, and the other was assumed to be ejected. It is of interest that of the few individuals that were tagged, two wound up at this location. One must wonder why the tags were ejected here, and could it in any way have been related to stress/mortality from exposure to the WWTP outfall pipe? It does seem that further research is warranted, or to be on the safe side, EPA could consider that SNS (and potentially other species) may be exposed to the full potency of the discharge contaminants, and not assume any dilution. The fact that this is a re-issuance of an existing permit, used as an argument to indicate minimal adverse effects to Atlantic salmon EFH (page 15 of the Fact Sheet), does not really hold up when one considers how the salmon population has not flourished and SNS continue to be endangered. I don't think we truly know if the cumulative effects of permitted or unpermitted discharges into the Connecticut River are not contributing to the continual struggle of these species to survive and reproduce.

RESPONSE C8:

EPA is aware of the shortnose sturgeon (SNS) radio tracking studies conducted as part of the Holyoke Dam Federal Energy Regulatory Commission (FERC) relicensing action. Representatives of EPA have participated on the FERC relicensing team and have monitored the results of the various studies conducted by Holyoke Gas & Electric to support the relicensing effort. One SNS radio tag was ejected in the vicinity of the Amherst WWTP outfall and another was assumed to be ejected in the area. However, a review of the factors associated with the radio tracking study data and the location of the outfall do not implicate Amherst WWTP in this occurrence. Based on results of the radio tracking study, two SNS were recorded in the reach of the river at the location of the Amherst WWTP, but it has been determined that neither specimen was in the actual vicinity of outfall pipe or the discharge plume. As reported in the Amherst WWTP Fact Sheet, the discharge pipe is approximately 50 feet from the east bank of the river and 10 feet below the water surface. The outfall is equipped with a diffuser. The Connecticut River is approximately 430 feet wide in the vicinity of the discharge. EPA contacted a biologist who was part of the SNS radio tracking team in the Connecticut River. Through this communication, EPA confirmed that SNS tracked in the studies were located in the deeper channel waters of the Connecticut River, as expected. SNS were not documented in shallow water or in near shore areas (personal communication, Chris Tomichek, Senior Manager, Kleinschmidt Associates, with John Nagle, EPA, April 10, 2012). In order for the discharge to have an acute effect of the magnitude to cause mortality or incapacitation to SNS found in a deep water habitat not associated with the direct influence of an even partially mixed discharge plume, the discharge would have to be extremely toxic. The current expected dilution factor is about 160:1. EPA is not aware of a pollutant that

would cause mortality to SNS and not negatively impact other fish species that would be expected to be exposed to much greater concentrations of the pollutant under this scenario. Two events like this would result in mortality or incapacitation to a number of resident species in the Connecticut River that are found in aquatic habitat closer to the discharge diffuser. An environmental upset of this magnitude would likely be detected and investigated. This would be a clear violation of the discharge limits specified in the draft permit. The permit further protects the aquatic resources through whole effluent toxicity testing of undiluted discharge water from the facility. EPA believes that this discharge, as regulated by the permit, is protective of all aquatic life, including the federally endangered SNS. The loss of two SNS radio tags cannot be reasonably attributed to the Amherst WWTP outfall.

The commentor also took issue with EPA's statement that the reissuance of an existing permit was an indication of minimal adverse effects to Atlantic salmon EFH (page 15 of the fact sheet). EPA recognizes that the salmon population in the Connecticut River has not flourished and SNS continue to be endangered. EPA included the permit reissuance statement as one of eight factors listed to support the determination that the conditions and limitations contained within the permit adequately protect all aquatic life, including those with designated EFH in the receiving water, and that further mitigation is not warranted. By stating that the permit is a reissuance, EPA was making it clear that this discharge is not a new, additional source of regulated discharge into the Connecticut River. In addition, since this is a permit reissuance, it is in accordance with anti-backsliding regulations to prevent any decline in water quality.

EPA shares the concern of the commentor that it is unknown whether cumulative effects of permitted or unpermitted discharges into the Connecticut River are contributing to the continual struggle of Atlantic salmon and SNS to survive and reproduce. The focus of this federal action is the reissuance of a permitted outfall to ensure that the discharge meets state water quality standards.

COMMENT C9:

The Endangered Species Act consultation did not mention the dwarf wedge mussel, which is known to be present at least in the Mill River in Hatfield, less than five miles downstream of this discharge point. The puritan tiger beetle is present at a location less than 10 miles downstream. Is this permit consistent with the Recovery Plans for both species, and were the Federal agencies consulted about these species?

RESPONSE C9:

Regarding the dwarf wedgemussel (DWM), this protected species has not been documented in the mainstem of the Connecticut River in the vicinity of the discharge. Figure C9 shows the location of the discharge in relation to sections of the tributaries of the Connecticut River where DWM are found (USFWS, August 27, 2007). The location of these DWM areas is at least one mile upstream of the confluence of the tributaries with the mainstem of the Connecticut River. The discharge from the WWTP will not influence these identified areas. When a protected species is not present in the vicinity of

the discharge and cannot be influenced by the discharge, no discussion or consultation is necessary under section 7 of the Endangered Species Act.

In addition, EPA recognizes that the larval stage of the DWM (called glochidia) must attach to the gills or fins of a vertebrate host to develop into juveniles. The tessellated darter is considered the primary host in the Connecticut River watershed and its range is most congruent with that of the DWM. Tessellated darters usually move within a 100 meter area during their short lives, which would also place the host fish well away from any potential influence of the WWTP discharge. Several other fish, however, including Atlantic salmon, have also been identified as potential hosts. EPA believes that the conditions and limitations contained within the draft permit and summarized in Section VIII of the fact sheet adequately protects all aquatic life, including those fish that may potentially serve as host fish for the DWM larval stage.

Regarding the puritan tiger beetle, the discharge from this facility would not affect terrestrial species that do not live in the water. Hence, discussions or consultations with other agencies in regards to the puritan tiger beetle is not necessary in this case.

COMMENT C10:

CRWC supports the increased frequency in monitoring of nitrogen compounds from once per month to once per week, and the requirement to submit, implement, and evaluate a plan for optimizing the removal of nitrogen.

RESPONSE C10:

EPA acknowledges this support and will maintain these requirements in the final permit.

Figure C9. Amherst Wastewater Treatment Plant NPDES Discharge Point (Outfall 001) in relation to areas of the Connecticut River tributaries where dwarf wedgemussels are present.