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"),

The City of Concord, New Hampshire

is authorized to discharge from the Wastewater Treatment Plant located at

7 Penacook Street
Penacook, New Hampshire 03303

to receiving waters named

Merrimack River (Hydrologic Basin Code 01070002)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein including, but not limited to, conditions requiring the proper operation and maintenance of the Penacook Wastewater Treatment Plant collection system.

The Town of Boscawen is a co-permittee for activities required in Part I.B (Unauthorized Discharges), Part I.C. (Operation and Maintenance of the Sewer System), and Part I.D. (Alternate Power Source). The responsible municipal department is:

Boscawen Board of Selectmen
116 North Main Street
Boscawen, New Hampshire 03303

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

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

This permit supersedes the permit issued on June 28, 2007.

This permit consists of **Part I (**14 pages including effluent limitations and monitoring requirements); **Attachment A** (USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol, February 2011, 8 pages) and **Part II** (NPDES Part II Standard Conditions, January 2007, 25 pages).

Signed this day of

_____
Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency (EPA)
Region I
Boston, Massachusetts

* Pursuant to 40 CFR 124.15(b)(3), if no comments requesting a change to the draft permit are received, the permit will become effective upon the date of signature.

DRAFT

PART I
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge treated domestic and industrial wastewater from outfall serial number 001 to the Merrimack River. Such discharges shall be limited and monitored by the permittee, as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the discharge.

Effluent Characteristic	Discharge Limitations			Monitoring Requirements	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow; MGD	Report		Report	Continuous Recorder[1]	
BOD_5; mg/l (lbs/day)	30 (593)	45 (890)	50 (989)	2/Week[2]	24 Hour Composite
TSS; mg/l (lbs/day)	30 (593)	45 (890)	50 (989)	2/Week[2]	24 Hour Composite
Total Phosphorus; mg/l (lb/d) (Applicable April 1-October 31)	Report (Report)	---	Report (Report)	1/Month	24 Hour Composite
pH Range[3]; Standard Units	6.5 to 8.0 (See I.I.5., State Permit Conditions)			1/Day	Grab
Total Residual Chlorine[4,6]; mg/l	1.0	---	1.0	1/Day	Grab
Escherichia coli[4,5]; Colonies/100 ml	126	---	406	3/Week	Grab
Whole Effluent Toxicity LC50 [7,8,9]; Percent	≥ 50			2/Year	24 Hour Composite
Hardness[10]; mg/l	---	---	Report	2/Year	24 Hour Composite
Ammonia Nitrogen as N[10]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Aluminum[10]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Cadmium[10]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Copper[10] mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Nickel[10]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Lead[10]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Zinc[10]; mg/l	---	---	Report	2/Year	24 Hour Composite

See pages 3 and 4 for footnotes

FOOTNOTES

1. The effluent flow shall be continuously measured and recorded using a flow meter and totalizer.

2. Effluent sampling frequency. The influent shall be sampled twice per month using 24-hour composite samples.

3. State certification requirement.

4. Monitoring for *Escherichia coli* bacteria as described in footnote (5) below shall be conducted concurrently with the daily monitoring for total residual chlorine (TRC) as described in footnote (6) below.

5. The average monthly value for *Escherichia coli* shall be calculated as a geometric mean. *Escherichia coli* shall be tested using an approved method as specified in 40 Code of Federal Regulations (CFR) Part 136, List of Approved Biological Methods for Wastewater and Sewage Sludge.

6. Total residual chlorine shall be measured using any one of the following three methods listed in 40 CFR Part 136:
   a. Amperometric direct.
   b. DPD-FAS.
   c. Spectrophotometric, DPD.

7. LC50 (lethal concentration 50 percent) is the concentration of wastewater causing mortality to 50 % of the test organisms. Therefore, a 50 % limit means that a sample of 50 % effluent shall cause no greater than a 50 % mortality rate in that effluent sample.

8. The permittee shall conduct 48-hour static acute toxicity tests on effluent samples following the February 2011 USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol (**Attachment A**). The two species for these tests are the Daphnids (*Ceriodaphnia dubia*) and the Fathead Minnow (*Pimephales promelas*). Toxicity test samples shall be collected and tests completed twice per year during the calendar quarters ending June 30th and September 30th. Toxicity test results are to be postmarked by the 15th day of the month following the end of the quarter sampled.

9. This permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits such as for metals, 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 as provided in 40 CFR Section 122.62(a)(2).

10. For each whole effluent toxicity test the permittee shall report on the appropriate discharge monitoring report, (DMR), the concentrations of the hardness, ammonia

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

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

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

3. The discharge shall be adequately treated to ensure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible pollutants. It shall be adequately treated to insure that the surface waters remain free from pollutants which produce odor, color, taste or turbidity in the receiving waters which is not naturally occurring and would render it unsuitable for its designated uses.

4. The permittee's treatment facility shall maintain a minimum monthly average of 85 percent removal of both BOD_5 and TSS. The percent removal shall be calculated using the average monthly influent and effluent concentrations.

5. When the effluent discharged for a period of 3 consecutive months exceeds 80 percent of the 2.37 mgd design flow (1.9 mgd), the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans. Before the design flow will be reached, or whenever treatment necessary to achieve permit limits cannot be assured, the permittee may be required to submit plans for facility improvements.

6. The permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts.

7. All POTWs must provide adequate notice to both EPA-New England and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) of the following:

    a. Any new introduction of pollutants into the POTW from an indirect discharger in a primary industry category (see 40 CFR §122 Appendix A as amended) discharging process water; and

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

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

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

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

8. Limitations for Industrial Users

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

b. The permittee shall submit to EPA and NHDES-WD the name of any Industrial User (IU) subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443, 446-447, 454-455, 457-461, 463-469, and 471 as amended) who commences discharge to the POTW after the effective date of this permit.

This reporting requirement also applies to any other IU who discharges an average of 25,000 gallons per day or more of process wastewater into the POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastewater which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW; or is designated as such by the Control Authority as defined in 40 CFR § 403.12(a) on the basis that the industrial user has a reasonable potential to adversely affect the wastewater treatment facility's operation, or for violating any pretreatment standard or requirement (in accordance with 40 CFR § 403.8(f)(6)).

c. In the event that the permittee receives reports (baseline monitoring reports, 90-day compliance reports, periodic reports on continued compliance, etc.) from industrial users subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443, 446-447, 454-455, 457-461, 463-469, and 471 as amended), the permittee shall forward all copies of these reports within ninety (90) days of their receipt to EPA and NHDES-WD.

B. UNAUTHORIZED DISCHARGES

The permit only authorizes discharges in accordance with the terms and conditions of this permit and only from the Outfall listed in Part I.A.1. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit and shall be reported to EPA and NHDES in accordance with Part II, Section D.1.e. of the General Requirements of this permit (twenty four hour reporting).

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 and co-permittee are required to complete the following activities for the collection system which it owns:

1. Maintenance Staff

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

2. Preventative Maintenance Program

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

3. Infiltration/Inflow

   The permittee and co-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

   In accordance with the requirements in the 2007 permit, the permittee and co-permittee prepared and submitted maps of the sewer collection systems they own. The collection system maps shall be kept up-to-date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

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

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

5. Collection System Operation and Maintenance Plan

In accordance with the requirements in the 2007 permit, the permittee and co-permittee prepared and submitted Collection System Operation and Maintenance Plans. Within **twenty-four (24) months from the effective date of this permit** the permittee and co-permittee shall each update and submit its Collection System O & M Plan. The plan shall include the information listed below. The bolded language is information that has been added to the 2007 permit requirements.

(1) **A description of the collection system management goals, staffing, information management, and legal authorities;**
(2) A preventative maintenance and monitoring program for the collection system;
(3) Sufficient staffing to properly operate and maintain the sanitary sewer collection system;
(4) Sufficient funding and the source(s) of funding for implementing the plan;
(5) Identification of known and suspected overflows **and back-ups**, including combined manholes, a description of the cause of the identified overflows **and back-ups**, and a plan for addressing the overflows **and back-ups** consistent with the requirements of this permit;
(6) **A description of the permittees program for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes** and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts; and
(7) An educational public outreach program for all aspects of I/I control, particularly private inflow.

6. Annual Reporting Requirement

The permittee and co-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 NHDES **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 2.37 mgd design flow (1.9 mgd) based on the daily flow for three consecutive months or there have been capacity related overflows, submit a calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year; and
f. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit.

D. ALTERNATE POWER SOURCE

In order to maintain compliance with the terms and conditions of this permit, the permittee shall provide an alternate power source with which to sufficiently operate the wastewater facility, as defined at 40 C.F.R. § 122.2, which references the definition at 40 C.F.R. § 403.3(o). Wastewater facility is defined by RSA 485A:2.XIX as the structures, equipment, and processes required to collect, convey, and treat domestic and industrial wastes, and dispose of the effluent and sludge.

E. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal & state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state (Env-Ws 800) or federal (40 CFR Part 503) requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to facilities which perform one or more of the following use or disposal practices.

   a. Land application - the use of sewage sludge to condition or fertilize the soil.
   b. Surface disposal - the placement of sewage sludge in a sludge only landfill.
   c. Sewage sludge incineration in a sludge only incinerator.

4. The 40 CFR Part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions do not apply to facilities which do not dispose of sewage sludge during the life of the permit, but rather treat the sludge (lagoons-reed beds), or are otherwise excluded under 40 CFR Section 503.6.

5. The permittee shall use and comply with the NPDES Permit Sludge Compliance Guidance, November 1999, to determine appropriate conditions. 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. Appropriate

conditions contain the following elements.

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

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

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction for the permittee's chosen sewage sludge use or disposal practices 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 plus	1/Month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR Section 503.8.

8. The permittee shall submit an annual report containing the information specified in the attached Sludge Compliance Guidance document. Reports are **due annually by February 19th**. Reports shall be submitted to both addresses (EPA-New England and NHDES-WD) contained in the reporting section of the permit.

F. SPECIAL CONDITIONS

1. WET Test Frequency Adjustment

   The permittee may submit a written request to the EPA-New England requesting a reduction in the frequency (to not less than once per year) of required toxicity testing, after completion of a minimum of the most recent four (4) successive toxicity tests of effluent, all of which must be valid tests and demonstrate compliance with the permit limits for whole effluent toxicity. Until written notice is received by certified mail from the EPA-New England indicating that the WET testing requirement has been changed, the permittee is required to continue testing at the frequency specified in the respective permit.

2. pH Limit Adjustment

The permittee may submit a written request to the EPA-New England requesting a change in the permitted pH limit range to be not less restrictive than 6.0 to 9.0 Standard Units found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for this facility. The permittee's written request must include the State's approval letter containing an original signature (no copies). The State's letter shall state that the permittee has demonstrated to the State's satisfaction that as long as discharges to the receiving water from a specific outfall are within a specific numeric pH range the naturally occurring receiving water pH will be unaltered. That letter must specify for each outfall the associated numeric pH limit range. Until written notice is received by certified mail from the EPA-New England indicating the pH limit range has been changed, the permittee is required to meet the permitted pH limit range in the respective permit.

G. REQUIREMENTS FOR POTWS WITH EFFLUENT DIFFUSERS

a. The facility shall maintain elastomeric check valves on the diffuser ports to prevent receiving water intrusion into the outfall pipe.

b. Effluent diffusers shall be maintained when necessary to ensure proper operation. Proper operation means that the plumes from each port will be balanced relative to each other and that they all have unobstructed flow. Maintenance may include dredging in the vicinity of the diffuser, cleaning out of solids in the diffuser header pipe, removal of debris and repair/replacement of riser ports, and duckbill valves.

c. Any necessary maintenance dredging must be performed only during the receiving water construction season authorized by the New Hampshire Fish and Game Department and only after receiving all necessary permits including those from the NHDES Wetlands Bureau, U.S. Coast Guard, and the U.S. Army Corps of Engineers.

d. To determine if maintenance will be required, the permittee shall have a licensed diver or licensed marine contractor inspect and videotape the operation of the diffuser. The inspections and videotaping shall be performed once every two years with the first inspection required during the first calendar year following final permit issuance.

e. Copies of a report summarizing the results of each diffuser inspection shall be submitted to EPA and NHDES-WD by December 31st of the year the inspection occurred. Where it is determined that maintenance will be necessary, the permittee shall also provide the proposed schedule for the maintenance.

H. MONITORING AND REPORTING

1. **For a period of one year from the effective date of the permit,** the permittee may either submit monitoring data and other reports to EPA in hard copy form or report electronically using NetDMR, a web-based tool that allows permittees to electronically

submit Discharge Monitoring Reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit,** the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

a. Submittal of Reports Using NetDMR

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

DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA, including the NHDES Monthly Operating Reports (MORs), 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 or to NHDES.

b. Submittal of NetDMR Opt-Out Requests

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

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

And

Attn: Compliance Supervisor
New Hampshire Department of Environmental Services (NHDES)
Water Division
Wastewater Engineering Bureau
P.O. Box 95
Concord, New Hampshire 03302-0095

c. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy DMRs postmarked no later than the 15th day of the month following the completed reporting period. All reports required under the permit, including NHDES MORs, shall be submitted as an attachment to the DMRs. Signed and dated original DMRs and all other reports (with the exception of pretreatment reports) or notifications required herein or in Part II shall be submitted to the Director at the following address:

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

All pretreatment reports shall be submitted to:

US Environmental Protection Agency
Attn: Justin Pimpare
Regional Pretreatment Coordinator
5 Post Office Square - Suite 100
OE P06-03
Boston, MA 02109-3912

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

New Hampshire Department of Environmental Services
Water Division
Wastewater Engineering Bureau
P.O. Box 95
Concord, New Hampshire 03302-0095

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

I. STATE PERMIT CONDITIONS

1. The permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving water unless it has been treated in such a manner as will not lower the legislated water quality classification or interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:12).

2. This NPDES discharge permit is issued by EPA under federal and state law. Upon final issuance by EPA, the New Hampshire Department of Environmental Services-Water Division (NHDES-WD) may adopt this permit, including all terms and conditions, as a state permit pursuant to RSA 485-A:13.

3. EPA shall have the right to enforce the terms and conditions of this permit pursuant to federal law and NHDES-WD shall have the right to enforce the permit pursuant to state law, if the permit is adopted. 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 the permit as issued by the other agency.

4. Pursuant to New Hampshire Statute RSA 485-A13,I(c), any person responsible for a bypass or upset at a *wastewater facility* shall give immediate notice of a bypass or upset to all public or privately owned water systems drawing water from the same receiving water and located within 20 miles downstream of the point of discharge regardless of whether or not it is on the same receiving water or on another surface water to which the receiving water is tributary. Wastewater facility is defined at RSA 485-A:2XIX as the structures, equipment, and processes required to collect, convey, and treat domestic and industrial wastes, and dispose of the effluent and sludge. The permittee shall maintain a list of persons, and their telephone numbers, who are to be notified immediately by telephone. In addition, written notification, which shall be postmarked within 3 days of the bypass or upset, shall be sent to such persons.

5. The pH range of 6.5 to 8.0 Standard Units (S.U.) must be achieved in the final effluent unless the permittee can demonstrate to NHDES-WD: (1) that the range should be widened due to naturally occurring conditions in the receiving water or (2) that the naturally occurring receiving water pH is not significantly altered by the permittee's discharge. The scope of any demonstration project must receive prior approval from NHDES-WD. In no case, shall the above procedure result in pH limits outside the range of 6.0 – 9.0 S.U., which is the federal effluent limitation guideline regulation for pH for secondary treatment and is found in 40 CFR 133.102(c).

6. Pursuant to New Hampshire Code of Administrative Rules, Env-Wq 703.07(a):

   a. Any person proposing to construct or modify any of the following shall submit an application for a sewer connection permit to the department:

      (1) Any extension of a collector or interceptor, whether public or private, regardless of flow;

      (2) Any wastewater connection or other discharge in excess of 5,000 gpd;

      (3) Any wastewater connection or other discharge to a WWTP operating in excess of 80 percent design flow capacity based on actual average flow for 3 consecutive months;

(4) Any industrial wastewater connection or change in existing discharge of industrial wastewater, regardless of quality or quantity; and

(5) Any sewage pumping station greater than 50 gpm or serving more than one building.

7. For each new or increased discharge of industrial waste to the POTW, the permittee shall submit, in accordance with Env-Ws 904.14(e) an "Industrial Wastewater Discharge Request Application" approved by the permittee in accordance with 904.13(a). The "Industrial Wastewater Discharge Request Application" shall be prepared in accordance with Env-Ws 904.10.

8. Pursuant to Env-Ws 904.17, at a frequency no less than every five years, the permittee shall submit to NHDES:

   a. A copy of its current sewer use ordinance. The sewer use ordinance shall include local limits pursuant to Env-Ws 904.04 (a).

   b. A current list of all significant indirect dischargers to the POTW. At a minimum, the list shall include for each significant indirect discharger, its name and address, the name and daytime telephone number of a contact person, products manufactured, industrial processes used, existing pretreatment processes, and discharge permit status.

   c. A list of all permitted indirect dischargers; and

   d. A certification that the municipality is strictly enforcing its sewer use ordinance and all discharge permits it has issued.

9. In addition to submitting DMRs, monitoring results shall also be summarized for each calendar month and reported on separate Monthly Operations Report Form(s) (MORs) postmarked or submitted electronically using NetDMR no later than the 15th day of the month following the completed reporting period. Signed and dated MORs, which are not submitted electronically using NetDMR shall be submitted to:

New Hampshire Department of Environmental Services (NHDES)
Water Division
Wastewater Engineering Bureau
29 Hazen Drive, P.O. Box 95
Concord, New Hampshire 03302-0095

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

FACT SHEET

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

PUBLIC NOTICE START AND END DATES: May 31, 2012 – June 29, 2012

PUBLIC NOTICE NUMBER: NH-009-12

CONTENTS: 26 pages including Attachments A through C.

NPDES PERMIT NO.: NH0100331

NAME AND MAILING ADDRESS OF APPLICANT:

City of Concord, New Hampshire
City Manager
41 Green Street
Concord, New Hampshire 03301

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Penacook Wastewater Treatment Facility
Wastewater Treatment Plant Supt.
7 Penacook Street
Penacook, New Hampshire 03303

RECEIVING WATER: Merrimack River (Hydrologic Basin Code: 01070002)

CLASSIFICATION: B

Table of Contents

I. Proposed Action, Type of Facility and Discharge Location

The Penacook Wastewater Treatment Facility (WWTF) is a publicly owned treatment works (POTW) owned and operated by the City of Concord, NH. The City applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge treated effluent into the Merrimack River. The facility collects and treats domestic and commercial wastewater from the Village of Penacook and portions of the Town of Boscawen, and also receives about 500 gallons per day of process wastewater from a metal finishing industry. The collection system consists entirely of separate sanitary sewers. The treatment plant has a design flow of 2.37 million gallons per day (mgd) and provides secondary treatment using sequencing batch reactors (SBRs).

As described in the draft permit, the Town of Boscawen is a co-permittee for activities required in Part I.B (Unauthorized Discharges), Part I.C. (Operation and Maintenance of the Sewer System), and Part I.D. (Alternate Power Source). This is a requirement being carried forward from the permit issued in 2007.

Wastewater flows to the treatment plant by gravity, where it is screened and degritted, followed by biological treatment in the SBRs. SBRs are a batch treatment process that combines biological treatment and sedimentation in the same tank. In order to maintain appropriate treatment times in the SBRs during high flows, surge tanks are provided upstream of the SBRs. Treated effluent from the SBRs is discharged to equalization tanks, followed by disinfection in chlorine contact tanks. Disinfection is provided by sodium hypochlorite, which is injected into the flow equalization tank discharge. Treated effluent is discharged through a three port diffuser to the Merrimack River.

Waste activated sludge produced during treatment of the wastewater is pumped to aerated sludge storage tanks. Polymer may be added to the tank to increase sludge solids concentration. A decant system allows supernatant to be pumped back to the facility headworks. Thickened sludge from the sludge holding tanks is pumped to a tank truck that transports the material to the Hall Street WWTF for dewatering, stabilization, and reuse in a land application program.

The most recent permit was issued to the facility on June 28, 2007, and will expire on May 31, 2012. If the final permit is not issued before the expiration date of the current permit (hereafter referred to as the "2007 permit") the 2007 permit will be administratively extended, as the applicant filed a complete application for permit reissuance within the prescribed time period as per 40 Code of Federal Regulations (CFR) §122.6.

The location of the treatment facility and the receiving water are shown in Attachment A.

II. Description of Discharge

A quantitative description of significant effluent parameters based on discharge monitoring data from July 2007 to October 2011 is shown in Attachment B.

III. Limitations and Conditions

The draft permit contains limitations for five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), pH, *Escherichia coli* (*E. coli*) bacteria, total residual chlorine (TRC) and whole effluent toxicity (WET). It also contains monitoring requirements for flow, total phosphorus, ammonia nitrogen as N, hardness, and other metals. The effluent limitations and monitoring requirements are found in Part I of the draft NPDES permit. The basis for each limit and condition is discussed below in Section VI of this fact sheet.

IV. Statutory and Regulatory Authority

A. General Statutory and Regulatory Background

Congress enacted the Clean Water Act (CWA or Act), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specified permitting sections of the Act, one of which is Section 402. See CWA §§ 301(a), 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System ("NPDES"). Under this section of the Act, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§ 301, 303, 304(b); 40 CFR Parts 122, 125, 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant-reducing technology available and economically achievable for the type of facility being permitted. See CWA § 301(b). As a class, POTWs must meet performance-based requirements based on available wastewater treatment technology. CWA § 301(b)(1)(B). The performance level for POTWs is referred to as "secondary treatment." Secondary treatment is comprised of technology-based requirements expressed in terms of BOD_5, TSS and pH. 40 C.F.R. Part 133.

Water quality-based effluent limits, on the other hand, are designed to ensure that state water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limitations. In particular, Section 301(b)(1)(C) requires achievement of "any more stringent limitation, including those necessary to meet water quality standards...established pursuant to any State law or regulation...." See 40 C.F.R. §§ 122.4(d), 122.44(d)(1) (providing that a permit must contain effluent limits as necessary to protect state water quality standards, "including State narrative criteria for water quality") (emphasis added) and 122.44(d)(5) (in part providing that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that States develop water quality standards for all water bodies within the state. CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria," consisting of

numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. CWA § 303(c)(2)(A); 40 C.F.R. § 131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards.

The applicable New Hampshire water quality standards can be found in Surface Water Quality Regulations, Chapter Env-Wq 1700 et seq. See generally, Title 50, Water Management and Protection, Chapter 485A, Water Pollution and Waste Disposal Section 485-A. Hereinafter, New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the State's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in stream pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits and chronic aquatic life criteria are generally implemented through average monthly limits. Where a State has not established a numeric water quality criterion for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use"; on a "case-by-case basis" using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an "indicator parameter." 40 CFR § 122.44(d)(1)(vi)(A-C).

All statutory deadlines for meeting secondary treatment-based effluent limitations established pursuant to the CWA have expired. Therefore, when technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. See 40 CFR § 125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit.

The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136.

B. Development of Water Quality-based Limits

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality standard, including narrative water quality criteria. See 40 CFR §122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

1. Reasonable Potential

In determining reasonable potential, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit application, monthly discharge monitoring reports (DMRs), and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls*, March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire water quality standards (RSA 485-A:8,VI, Env-Wq 1705.02, Env-Wq 1702.44) available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days on an annual basis with a recurrence interval of once in ten (10) years on average (7Q10) for aquatic life and human health criteria for non-carcinogens, or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water. Available dilution for tidal waters is based on conditions that result in dilution that is exceeded 99 percent of the time. Furthermore, for all waters, 10 percent (%) of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Wq 1705.01.

C. Anti-Backsliding

Section 402(o) of the CWA and regulations found at 40 C.F.R. § 122.44(l) generally require that the effluent limitations of a renewed, reissued, or modified permit be at least as stringent as the comparable effluent limitations in the previous permit. Unless a relaxation is allowed pursuant to 402(o) and 40 CFR 122.44(l), the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

D. State Certification

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

However, when EPA reasonably believes that a State water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA §301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §§ 122.44(d)(1) and (5). It should be noted that under CWA § 401, EPA's duty to defer to considerations of State law is intended to prevent EPA from relaxing any requirements,

limitations, or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 C.F.R. § 124.55(c). In such an instance, the regulations provide that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4(d) and 40 C.F.R. § 122.44(d).

V. Description of Receiving Water

The Merrimack River in the vicinity of the discharge is classified as a Class B water by the New Hampshire State Legislature. The waters of this classification shall be considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies.

VI. Permit Basis and Explanation of Effluent Limitation Derivation

A. Flow

Effluent flow must be continuously measured. If the effluent discharged for a period of three consecutive months exceeds 80 percent of the 2.37 mgd design flow (1.9 mgd), the permittee must notify EPA and NHDES-WD, and implement a program for maintaining satisfactory treatment levels. See Part I.A.5 of the proposed draft permit.

The facility's design flow rate of 2.37 mgd is used to calculate the mass and concentration limits for five-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS), as discussed below.

B. Conventional Pollutants

1. Five-Day Biochemical Oxygen Demand (BOD5) and Total Suspended Solids (TSS)

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

Average monthly, average weekly and maximum daily allowable mass-based (load) limitations for BOD_5 and TSS shown in the draft permit are based on the POTW's daily design flow of 2.37 mgd and the appropriate constituent concentration for the respective time period being limited. See Attachment C for the equation used to calculate each of these mass-based limits.

All the concentration-based and mass-based effluent limits for BOD_5 and TSS in the draft permit are the same as the limits in the 2007 permit and, therefore, are consistent with antibacksliding requirements found in 40 CFR §122.44(1). The permittee has been able to achieve consistent

compliance with those limits.

Percent removal limits for BOD_5 and of TSS, required under 40 CFR Section 133.102 (a) (3) and (b)(3), respectively, are the same as the limits in the 2007 permit and in accordance with the antibacksliding requirements found in 40 CFR Section 122.44.

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

2. pH and Bacteria (E. coli) Limits Including Related Conditions

The limit for pH is based upon State Certification Requirements and RSA 485-A:8, which states that "The pH range for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes." The limit for *E. coli* is based on requirements in the State's Statutes (N.H. RSA 485-A:8) for non-designated beach area, and Env-Wq 1703.06 (b), which requires that bacteria criteria shall be applied at the end of a wastewater treatment facility's discharge pipe.

Effluent limitations for pH and Escherichia coli bacteria (*E. coli*) in the draft permit are the same as the limits in the 2007 permit and, therefore, are in accordance with antibacksliding requirements found in 40 CFR §122.44(1).

The compliance monitoring frequencies for *E. coli* and pH in the draft permit are 3/week and 1/day, respectively. Samples for *E. coli* compliance monitoring must be taken concurrently with samples for total residual chlorine.

The draft permit includes a provision allowing a relaxation of the pH limits if the permittee performs an in-stream dilution study that demonstrates that the in-stream standards for pH would be protected. If the State approves results from a pH demonstration study, this permit's pH limit range may be relaxed. The notification of the relaxation must be made by certified letter to the permittee from EPA-New England. The pH limit range cannot be less restrictive than 6.0 - 9.0 S.U., the limitations included in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for the facility.

C. Non-Conventional and Toxic Pollutants

Water quality-based limits for specific toxic pollutants such as chlorine, ammonia, and copper are determined from numeric chemical-specific criteria derived from extensive scientific studies. The EPA has summarized and published specific toxic pollutants and their associated toxicity criteria in Quality Criteria for Water, 1986, EPA440/5-86-001 as amended, commonly known as the federal "Gold Book". Each pollutant generally includes acute aquatic life criteria to protect against short term aquatic life effects, such as death; chronic aquatic life criteria to protect against long term aquatic life effects, such as poor reproduction or impaired growth; and human health criteria to protect water and fish consumption uses. New Hampshire adopted these "Gold Book" criteria, with certain exceptions, and included them as part of the State's Surface Water Quality Regulations. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine pollutant specific draft permit limits.

1. Available Dilution

The dilution factor is an estimate of the available dilution afforded the POTW's effluent by the receiving water. The dilution factor calculated for this draft permit is 164. This is the same dilution factor as the one calculated in the 2007 permit. This factor was calculated using the plant's design flow of 2.37 mgd, an estimate of the 7Q10 low flow of 664.5 cfs in the Merrimack River above the treatment plant's outfall, and 90 percent of the Assimilative Capacity Reserve, in accordance with NH Regulation Env-Ws 1705.01.

The value of the 7Q10 flow at the outfall for the draft permit and 2007 permit were calculated by summing the 7Q10 flows from the two nearest U.S. Geological Survey gaging stations above the outfall (Merrimack River and Contoocook River), multiplying the summed flow by a ratio of the cumulative drainage area and the interim drainage area, and finally adding the sum of the gaged flows to the prorated flow. See Attachment C for the calculations of the 7Q10 flow and the dilution factor.

2. Total Residual Chlorine

The New Hampshire water quality standards specify the chronic and acute aquatic-life criterion for chlorine at 0.011 mg/l and 0.019 mg/l, respectively, for freshwater. Chlorine and chlorine compounds, such as "organochlorines", produced by the chlorination of wastewater can be extremely toxic to aquatic life. Section 101(a)(3) of the Act, and New Hampshire standards at Env-Ws 1703.21(a) prohibit the discharge of toxic pollutants in toxic amounts. Therefore, to reduce the potential for the formation of chlorinated compounds during the wastewater disinfection process and to be protective of the States' narrative standards, EPA-New England has, historically, established a maximum Total Residual Chlorine (TRC) limitation of 1.0 mg/l for both the average monthly and the maximum daily limitations. These limitations may be more stringent, after considering the available dilution, than the limits determined using the State's numeric water quality criteria. The equation used to determine these TRC limits is shown in Attachment C. In this case, the 1.0 mg/L maximum limit is more stringent for both average monthly and maximum daily than the 1.80 and 3.12 mg/L limits that would be allowed based on available dilution and the NH Standards for chronic and acute aquatic-life criteria of 0.011 and 0.019 mg/L. Accordingly, this draft permit contains a maximum daily and average monthly limit of 1.0 mg/L. The applicant has been able to achieve consistent compliance with these limitations, having only one daily maximum violation of the discharge concentration (July 2009), as shown in Attachment B.

3. Phosphorus

Phosphorus and other nutrients (i.e. nitrogen) can promote the growth of nuisance algae and rooted aquatic plants. Typically, elevated levels of nutrients will cause excessive algal and/or plant growth resulting in reduced water clarity, poor aesthetic quality, and impaired aquatic habitat. Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce in-stream dissolved oxygen concentrations to levels that could negatively impact aquatic life and/or produce strong unpleasant odors.

EPA had produced several guidance documents that contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water (Gold Book) recommends instream phosphorus concentrations of 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l (100 ug/l) for any stream not discharged directly to lakes or impoundments, and 0.025 mg/l within a lake or reservoir.

In December 2000, EPA released "Ecoregional Nutrient Criteria" (USEPA 2000), which was established as part of an effort to reduce problems associated with excess nutrients in water bodies located within specific areas of the country. The published criteria represent conditions in waters within each specific ecoregion which are minimally impacted by human activities, and thus are representative of waters without cultural eutrophication. Concord is within Ecoregion VIII, *Nutrient Poor Largely Glaciated Upper Midwest and Northeast*. Recommended criteria for this ecoregion is a total phosphorus criterion of 10 ug/l (0.010 mg/l) and chlorophyll *a* criteria of 0.63 ug/l (0.00063 mg/l). These recommended criteria are found in the *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII* (USEPA 2001).

More recently, Mitchell, Liebman, Ramseyer, and Card (in draft 2004), in conjunction with the New England states, developed potential nutrient criteria for rivers and streams in New England. Using several river examples representative of typical conditions for New England streams and rivers, they investigated several approaches for the development of river and stream nutrient criteria that would be dually protective of designated uses in both upstream reaches and downstream impoundments. Based on this investigation an instream total phosphorus concentration of 0.020 – 0.022 mg/l was identified as protective of designated uses for New England rivers and streams. The development of the New England-wide total phosphorus concentration was based on more recent data than the National Ecoregional nutrient criteria, and has been subject to quality assurance measures. Additionally, the development of the New England-wide concentration included reference conditions for waters presumed to be protective of designated uses.

The New Hampshire Surface Water Quality Regulations contain a narrative criterion that states that phosphorus contained in effluent shall not impair a water body's designated use. Specifically, Env-Ws 1703.14(b) states that, "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring." Env-Ws 1703.14 further states that, "Existing discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards." Cultural eutrophication is defined in Env-Ws 1702.15 as, "…the human-induced addition of wastes containing nutrients which results in excessive plant growth and/or decrease in dissolved oxygen." Although numeric nutrient criteria have not yet been developed in New Hampshire, a total phosphorus concentration of 0.05 mg/l is considered by the NHDES as a level of concern (NHVRAP & NHDES 2002, 2003, and 2005).

As previously discussed, Section 303(d) of the CWA requires states to identify those waterbodies that are not expected to meet surface water quality standards after implementation of technology-based controls and thus require the development of total maximum daily loads (TMDL).

Impaired water quality conditions persist in the Merrimack River and have resulted in its listing in the State of New Hampshire's *Final List of Threatened or Impaired Waters That Require a TMDL* (NHDES, 2010), also referred to as the 303(d) list. According to the 303(d) list, aquatic life and primary contact recreational uses in the Merrimack River are threatened in stretches of the river. For instance, aluminum, dissolved oxygen saturation, dissolved oxygen, and pH threaten aquatic life uses just downstream of the Penacook WWTF discharge and *Escherichia coli* bacteria threatens primary contact recreational uses just downstream of the Penacook WWTF discharge.

Although impairments related to in-stream dissolved oxygen saturation are indicative of waters with high nutrient content, it is unclear whether the Penacook WWTF discharge is causing or contributing to these downstream impairments. An analysis of the downstream segment indicated that there is an approximate median phosphorus concentration of 24 ug/l. This is well under the1986 Quality Criteria of Water (Gold Book) recommended instream phosphorus concentration of 100 ug/l for any stream not discharged directly to lakes or impoundments, indicating that the facility's discharge does not have reasonable potential to cause or contribute to an exceedance downstream. However, in order to collect more relevant nutrient data, the draft permit contains a seasonal phosphorus monitoring requirement. Total phosphorus shall be monitored once per month (April through October) as a 24-hour composite sample, as described in the draft permit. Should the data indicate that downstream impairments are due to high phosphorus discharges from this facility, the permit may be reopened to include an appropriate phosphorus limit.

4. Metals

Certain metals in water can be toxic to aquatic life. There is a need to limit effluent toxic metal concentrations where the discharge has the reasonable potential to cause or contribute to aquatic life impairment. An evaluation of the facility's effluent metals concentration (from September 2007 to September 2011 Whole Effluent Toxicity reports) was used to determine reasonable potential for toxicity caused by aluminum, cadmium, chromium, copper, lead, nickel and zinc.

The facility's effluent concentrations (from Attachment B) were characterized assuming a lognormal distribution in order to determine the estimated 95^{th} percentile of the daily maximum. The water quality criteria according to EPA's *National Recommended Water Quality Criteria: 2002* are hardness specific and were determined based on an upstream median hardness of 11 mg/l as $CaCO_3$ and an effluent median hardness of 46 mg/l as $CaCO_3$. The downstream hardness was calculated to be 11.2 mg/l as $CaCO_3$ (using a mass balance equation with the design flow and receiving water 7Q10). Since this downstream hardness is below 25 mg/l, the default value of 25 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 164, results in the maximum allowable effluent concentration which would not cause an exceedance 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 daily maximum concentration for each metal.

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	Potential Limit (Total Recoverable) Acute (ug/l)	Potential Limit (Total Recoverable) Chronic (ug/l)	Estimated Daily Max 95th Percentile of Effluent (ug/l)	Exceedances?
Aluminum	750	87	120	630	0	164	103320.0	0.0	72.0**	**NO**
Cadmium	0.52	0.10	0	0.52	0.10	164	85.3	16.4	0.9	**NO**
Chromium	579	28	0	579.00	28.00	164	94956.0	4592.0	3.6	**NO**
Copper	3.79	2.85	0	3.79	2.85	164	621.6	467.4	52.2	**NO**
Lead	13.98	0.54	0	13.98	0.54	164	2292.7	88.6	1.6	**NO**
Nickel	145.21	16.14	0	145.21	16.14	164	23814.4	2647.0	5.4	**NO**
Zinc	37.02	37.02	5	32.02	32.02	164	5251.3	5251.3	91.8	**NO**

* Median upstream data taken from Whole Effluent Toxicity testing on Merrimack River just upstream of the Penacook WWTF
** No reasonable potential for aluminum because 95th percentile of effluent is below the chronic criteria (87 ug/l)

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. Due to high background concentrations of aluminum, the assimilative capacity for chronic conditions was 0 ug/l. However, since the 95th percentile of aluminum in the effluent is below the chronic criteria, there is no reasonable potential to cause or contribute to an aluminum exceedance of water quality standards. Monitoring will continue to be required for these metals (except chromium) with each whole effluent toxicity test, as indicated in the draft permit.

D. Whole Effluent Toxicity (WET)

EPA's Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant-specific approaches such as those in the Gold Book and State regulations address individual chemicals, whereas, Whole Effluent Toxicity (WET) approaches evaluate interactions between pollutants, thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the “additivity" and/or "antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

New Hampshire law states that, "all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Ws 1730.21(a)(1)). The federal NPDES regulations at 40 CFR §122.44(d)(1)(v) require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity. Furthermore, results of these toxicity tests will demonstrate compliance of the POTW’s discharge with the “no toxic provision of the NH Standards.”

Accordingly, to fully implement the “integrated strategy” and to protect the “no toxic provision of the NH Standards,” EPA-New England requires toxicity testing in all municipal permits with the type of toxicity test(s) (acute and/or chronic) and effluent limitation(s) (LC50 and/or CNOEC) based on the available dilution as shown in the Toxicity Strategy for Municipal Permits.

The effluent limitation in the draft permit for LC50 is the same as the 2007 permit and, therefore, is in accordance with the antibacksliding requirements found in 40 CFR Section 122.44(1). WET testing is still required twice per year. The greater than or equal to 50% limit means that a sample of 50% effluent shall have no greater than a 50% mortality rate. The permittee is required to collect and test effluent samples twice per year during calendar quarters ending June 30th and September 30th using two species, Ceriodaphia dubia (Daphnia) and Pimephales promelas (Fathead Minnow). As shown in Attachment B, the permittee has been able to show consistent compliance with the Daphnia LC50 and Fathead Minnow LC50 limits.

The WET limits in the draft permit include conditions to allow EPA-New England to modify, or alternatively, revoke and reissue 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 as provided in 40 CFR §122.62(a)(2).

Alternately, if a permittee has consistently demonstrated that its discharge, based on data for the most recent one-year period, or four sampling events, whichever yields the greater time period, causes no acute and chronic toxicity, the permitted limits will be considered eligible for a reduced frequency of toxicity testing. This reduction in testing frequency is evaluated on a case-by-case basis.

Accordingly, a special condition has been carried forward from the 2007 permit into the draft permit that allows for a reduced frequency of WET testing using a certified letter from EPA-New England. This permit provision anticipates the time when the permittee requests a reduction in WET testing that is approvable by both EPA-New England and the NHDES-WD. As previously stated, EPA-New England's current policy is that after completion of a minimum of four consecutive WET tests, all of which must be valid tests and must demonstrate compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to EPA-New England seeking a review of the toxicity test results. EPA-New England's policy is to reduce the frequency of toxicity testing to no less than one (one-species) test per year. The permittee is required to continue testing at the frequency specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA-New England indicating a change in the permit condition. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

This draft permit, as in the 2007 permit, requires the permittee to continue reporting selected parameters from the chemical analysis of the WET tests' 100 percent effluent sample. Specifically, hardness, total ammonia nitrogen as nitrogen, and total recoverable aluminum, cadmium, copper, lead, nickel and zinc are to be reported on the appropriate DMR for entry into EPA's Permit Compliance System's Data Base. EPA-New England does not consider these reporting requirements an unnecessary burden as reporting these constituents is already required with the submission of each toxicity testing report.

E. Sludge

Section 405(d) of the Clean Water Act (CWA) requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became effective on March 22, 1993. Domestic sludge which is land applied, disposed of in a surface disposal unit, or fired in a sewage sludge incinerator is subject to Part 503 technical standards and to State Env-Wq 800 standards. Part 503 regulations have a self-implementing provision, however, the CWA requires implementation through permits. Domestic sludge which is disposed of in municipal solid waste landfills are in compliance with Part 503 regulations provided the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 CFR Part 258.

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA-New England has 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. The permittee is required to submit an annual report to EPA-New England and NHDES-WD, by February 19th each year, containing the information specified in the Sludge Compliance Guidance document for their chosen method of sewage sludge use or disposal practices.

All sludges generated at the Penacook facility (approximately 67.8 dry metric tons annually) are hauled as a thickened sludge (in liquid form) to the City of Concord's Hall Street Wastewater Treatment Plant for treatment and disposal. At Concord's Hall Street facility the sludge is dewatered, amended and lime-stabilized (to pH > 12) in a thermo-blender, and pasteurized to produce a finished biosolid that is land applied. The City of Concord identified Resource Management Inc. of Ashland, NH, as the company that land applies the sludge at 10 sites providing nutrients for feed crops (i.e., hay, corn silage or grain).

F. Industrial Users (Pretreatment Program)

The permittee is not required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR §403 and Section 307 of the Act. However, the draft permit contains conditions that are necessary to allow EPA and NHDES-WD to ensure that pollutants from industrial users will not pass through the facility and cause water quality standards violations and/or sludge use and disposal difficulties or cause interference with the operation of the treatment facility. The facility does receive wastewater from one categorical industrial user (Beede Instruments) which is subject to the Metal Finishing categorical pretreatment standards found at 40 CFR 433.15. The permittee is required to notify EPA and NHDES-WD whenever a process wastewater discharge to the facility from a primary industrial category (see 40 CFR §122 Appendix A for list) is planned or if there is any substantial change in the volume or character of pollutants being discharged into the facility by a source that was discharging at the time of issuance of the permit. The permit also contains the requirements to: 1) report to EPA and NHDES-WD the name(s) of all Industrial Users subject to Categorical Pretreatment Standards (see 40 CFR §403 Appendix C for list) who commence discharge to the POTW after the effective date of the finally issued permit, and 2) submit copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users to EPA and NHDES-WD.

G. Operation and Maintenance

Regulations regarding proper operation and maintenance are found at 40 C.F.R. § 122.41(e). These regulations require, "that the permittee shall at all times 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 the permit." The treatment plant and the collection system are included in the definition "facilities and systems of treatment and control" and are therefore subject to proper operation and maintenance requirements.

Similarly, a permittee has a "duty to mitigate" pursuant to 40 C.F.R. § 122.41(d), which requires the permittee to "take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the

environment."

General requirements for proper operation and maintenance and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Part I.B., I.C., and I.D. of the draft permit. These requirements include mapping of the wastewater collection system, reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to the extent necessary to prevent SSOs and I/I related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary.

H. Antidegradation

This draft permit is being reissued with BOD_5, TSS, pH, TRC and *E. coli* effluent limitations identical to those in the current permit with no change in outfall location. The State of New Hampshire has indicated that there is no lowering of water quality and no loss of existing water uses and that no additional antidegradation review is warranted at this time.

I. Additional Requirements and Conditions

The effluent monitoring requirements in the draft permit have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 CFR § 122.41(j), § 122.44(i) and § 122.48. In addition, the WET test monitoring requirements have been set according to EPA-New England's Municipal Toxicity Policy.

The remaining conditions of the permit are based on the NPDES regulations 40 CFR, Parts 122 through 125, and consist primarily of management requirements common to all permits.

J. Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104267), established a new requirement to describe and identify (designate) "essential fish habitat" (EFH) in each federal fishery management plan. Only species managed under a federal fishery management plan are covered. Fishery Management Councils determine which area will be designated as EFH. The Councils have prepared written descriptions and maps of EFH, and include them in fishery management plans or their amendments. EFH designations for New England were approved by the Secretary of Commerce on March 3, 1999.

The 1996 Sustainable Fisheries Act broadly defined EFH as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment, hard bottom, and structures underlying the waters. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types utilized by a species throughout its life cycle. Adversely affect means any impact which reduces the quality and/or quantity of EFH. Adverse impacts may include direct (i.e. contamination, physical disruption), indirect (i.e.

loss of prey), site specific or habitat wide impacts including individual, cumulative, or synergistic consequences of actions.

According to the National Marine Fisheries Service (NMFS), the Merrimack River is EFH for Atlantic salmon (*Salmo salar*). According to the New Hampshire Fish and Game Department, Atlantic salmon are stocked further upstream in the Merrimack River watershed but not in this area. This stretch of the river is used by salmon smolts in spring months for downstream passage to the sea. Adult Atlantic salmon returning to the river from the ocean do not make it up this far because they are collected at a dam in Lawrence, Massachusetts primarily for use as broodstock.

- The permit prohibits the discharge to cause a violation of State water quality standards.
- The permit contains water quality-based limits for total residual chlorine and *E. coli*.
- The dilution factor is high (164)
- The permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts.
- The permit requires toxicity testing two (2) times per year to ensure that the discharge does not present toxicity problems.
- The discharge is rapidly mixed with a diffuser.

EPA believes the draft permit adequately protects EFH and therefore additional mitigation is not warranted. NMFS will be notified and EFH consultation will be reinitiated if adverse impact to EFH are detected as a result of this permit action or if new information becomes available that changes the basis for these conclusions.

K. Endangered Species

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and habitat of such species that has been designated as critical (a "critical habitat"). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure 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 (NOAA Fisheries) administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the federal endangered or threatened species of fish and wildlife to see if any such listed species might potentially be impacted by the re-issuance of this NPDES permit. Based on the normal distribution of these species, it is highly unlikely that they would be present in the vicinity of this discharge. Furthermore, effluent limitations and other permit conditions which are in place in this draft permit should preclude any adverse effects should there be any incidental contact with listed species in the Merrimack River.

EPA believes the proposed limits are sufficiently stringent to assure that water quality standards will be met and to ensure protection of aquatic life and maintenance of the receiving water as an

aquatic habitat. The Region finds that adoption of the proposed permit is unlikely to adversely affect any threatened or endangered species or its critical habitat. If adverse effects do occur as a result of this permit action, or if new information becomes available that changes the basis for this conclusion, then EPA will notify and initiate consultation with both the USFWS and the NOAA Fisheries. A copy of the Draft Permit has been provided to both USFWS and NOAA Fisheries for review and comment.

VII. Monitoring and Reporting

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

The draft permit includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. The draft permit requires that, no later than one year after the effective date of the permit, the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt-out request").

In the interim (until one year from the effective date of the permit), the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

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

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

The draft permit requires the permittee to report monitoring results obtained during each calendar month using NetDMR, no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA or to NHDES.

The draft permit also includes an "opt-out" request process. Permittees who believe they cannot use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must

submit the justification, in writing, to EPA at least sixty (60) days prior to the date the facility would otherwise be required to begin using NetDMR. Opt-outs become effective upon the date of written approval by EPA and are valid for twelve (12) months from the date of EPA approval. The opt-outs expire at the end of this twelve (12) month period. Upon expiration, the permittee must submit DMRs and reports to EPA using NetDMR, unless the permittee submits a renewed opt-out request sixty (60) days prior to expiration of its opt-out, and such a request is approved by EPA.

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

VIII. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either 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 or waives its right to certify as set forth in 40 CFR §124.53. State Water Quality Standards contain three major elements: Beneficial uses; Water Quality Criteria; and an Antidegradation Policy, all of which are part of the State's Water-Quality Certification under Section 401 of the Act. **The only exception to this is that sludge conditions/requirements are not part of the Section 401 State Certification.** The staff of the NHDES-WD has reviewed the draft permit and advised EPA-New England that the limitations are adequate to protect water quality. EPA-New England has requested permit certification by the State and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and §124.55.

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

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to: **Mr. Michael Cobb, U.S. Environmental Protection Agency, Region 1 (New England), 5 Post Office Square - Suite 100, Mail Code OEP06-1, Boston, MA 02109-3912**. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA-New England and the State Agency. 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-New England'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.

X. EPA-New England Contact

Additional information concerning the draft permit may be obtained between the hours of 9:00 A.M. and 5:00 P.M. (8:00 A.M. and 4:00 P.M. for the state), Monday through Friday, excluding holidays from:

Mr. Michael Cobb, Environmental Engineer
U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square
Suite 100, Mail Code: OEP06-1
Boston, Massachusetts 02109-3912
Telephone No.: (617) 918-1369
FAX No.: (617) 918-0369

May 24, 2012

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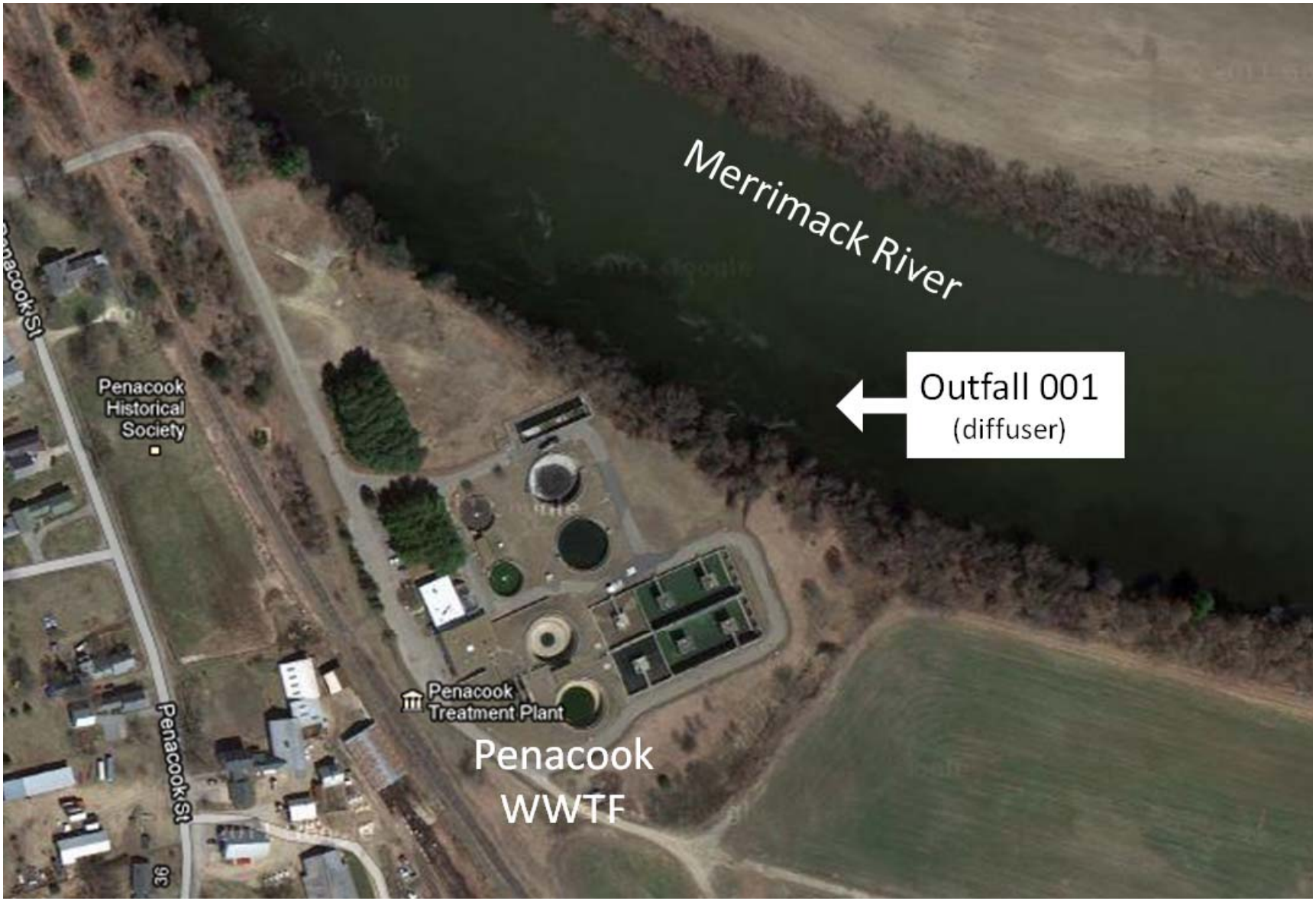
Date:

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

ATTACHMENT A – LOCATION OF PENACOOK WWTF



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

ATTACHMENT B - DMR DATA SUMMARY (OUTFALL 001)

Monitoring Period End Date	BOD5							TRC		E. coli	
	MO AVG		WKLY AVG		DAILY MX		MINIMUM	MO AVG	DAILY MX	MO GEO	DAILY MX
	593 lb/d	30 mg/L	890 lb/d	45 mg/L	989 lb/d	50 mg/L	85 %	1 mg/L	1 mg/L	126 #/100mL	406 #/100mL
07/31/2007	39.	13.	56.	19.	61.	21.	93.	0.49	0.94	55.	196.
08/31/2007	38.	13.	50.	19.	63.	26.	94.1	0.54	1.	4.	39.
09/30/2007	22.	6.	36.	7.	37.	7.	96.7	0.54	0.68	3.	11.
10/31/2007	21.	7.	22.	8.	29.	8.	95.8	0.35	0.46	1.	1.
11/30/2007	35.	9.	30.	8.	81.	13.	95.	0.48	0.67	1.	17.
12/31/2007	37.	11.	59.	12.	48.	12.	95.	0.37	0.54	2.	8.
01/31/2008	40.	9.	42.	10.	51.	13.	95.2	0.47	0.64	4.	20.
02/29/2008	55.	8.	59.	12.	86.	10.	94.4	0.5	0.75	4.	20.
03/31/2008	58.	7.	74.	8.	94.	11.	92.6	0.47	0.7	19.	55.
04/30/2008	65.	5.	74.	9.	107.	11.	92.9	0.47	0.8	6.	26.
05/31/2008	44.	9.	62.	16.	69.	17.	94.7	0.36	0.71	3.	19.
06/30/2008	59.	20.	77.	27.	85.	30.	92.5	0.402	0.92	21.	113.
07/31/2008	51.	12.	86.	16.	129.	18.	95.2	0.46	0.79	3.	23.
08/31/2008	43.	9.	58.	12.	75.	10.	96.2	0.17	0.61	2.	78.
09/30/2008	26.	6.	32.	8.	37.	9.	96.7	0.19	0.47	4.	61.
10/31/2008	35.	9.	35.	10.	51.	11.	96.4	0.27	0.64	1.	2.
11/30/2008	38.	8.	50.	10.	75.	11.	95.9	0.352	0.84	2.	12.
12/31/2008	41.	7.	48.	8.	54.	10.	95.2	0.36	0.76	2.	7.
01/31/2009	55.	15.	68.	22.	71.	22.	93.	0.38	0.76	3.	16.
02/28/2009	58.	17.	71.	22.	75.	23.	92.	0.35	0.69	3.	23.
03/31/2009	37.	6.	72.	10.	75.	11.	95.2	0.42	0.71	2.	17.
04/30/2009	37.	6.	45.	7.	51.	7.	94.9	0.327	0.57	6.	157.
05/31/2009	23.	7.	27.	8.	34.	9.	96.6	0.31	0.55	2.	2.
06/30/2009	25.	6.	30.	6.	48.	11.	96.7	0.29	0.53	1.	3.
07/31/2009	55.	11.	70.	14.	79.	14.	92.9	0.25	**2.**	1.	2.
08/31/2009	43.	10.	84.	17.	106.	19.	96.	0.12	0.37	6.	184.
09/30/2009	22.	8.	30.	10.	45.	15.	97.8	0.22	0.49	2.	6.
10/31/2009	32.	10.	45.	14.	53.	18.	95.9	0.23	0.53	2.	**816.**
11/30/2009	25.	7.	30.	9.	40.	12.	95.2	0.29	0.64	1.	1.
12/31/2009	33.	8.	39.	10.	80.	17.	95.3	0.32	0.7	2.	16.
01/31/2010	41.	11.	58.	13.	51.	15.	93.9	0.21	0.4	2.	20.
02/28/2010	37.	12.	56.	16.	72.	18.	94.3	0.27	0.73	1.	3.
03/31/2010	94.	10.	128.	12.	199.	13.	90.2	0.29	0.96	7.	122.3
04/30/2010	35.	7.	172.	12.	55.	11.	95.1	0.35	0.64	2.	214.
05/31/2010	40.	15.	54.	18.	55.	19.	93.6	0.2	0.42	2.	2.
06/30/2010	31.	12.	40.	14.	40.	15.	95.5	0.26	0.75	1.3	8.5
07/31/2010	17.	8.	29.	12.	24.	11.	97.2	0.21	0.8	1.	1.
08/31/2010	16.	7.	30.	11.	38.	12.	97.9	0.24	0.52	1.2	4.
09/30/2010	13.	6.	16.	7.	19.	8.	98.4	0.21	0.48	1.3	4.1
10/31/2010	20.	8.	26.	12.	33.	13.	97.8	0.32	0.74	2.	7.4
11/30/2010	30.	10.	34.	11.	47.	14.	95.1	0.32	0.88	3.5	**547.5**
12/31/2010	45.	15.	56.	17.	69.	24.	92.9	0.33	0.56	1.6	10.7
01/31/2011	43.	18.	60.	23.	50.	22.	93.2	0.24	0.47	1.8	6.3
02/28/2011	34.	13.	63.	19.	80.	21.	95.1	0.24	0.38	2.3	18.7

03/31/2011	52.	7.	73.	9.	92.	10.	94.6	0.55	0.83	2.5	124.6
04/30/2011	42.	6.	52.	9.	55.	7.	94.8	0.44	0.67	1.8	9.8
05/31/2011	58.	11.	98.	14.	137.	19.	92.8	0.36	0.78	1.5	4.1
06/30/2011	59.	18.	92.	28.	115.	34.	91.6	0.24	0.44	1.2	5.
07/31/2011	36.	14.	44.	16.	52.	21.	94.8	0.3	0.69	16.8	78.8
08/31/2011	30.	10.	28.	14.	58.	16.	95.3	0.25	0.61	4.8	228.2
09/30/2011	49.	13.	68.	15.	76.	17.	94.1	0.94	0.27	1.6	6.1
10/31/2011	43.	9.	58.	14.	70.	13.	94.1	0.27	0.59	1.1	3.1
Minimum	**13.0**	**5.0**	**16.0**	**6.0**	**19.0**	**7.0**	**90.2**	**0.12**	**0.27**	**1.0**	**1.0**
Maximum	**94.0**	**20.0**	**172.0**	**28.0**	**199.0**	**34.0**	**98.4**	**0.94**	**2.0**	**55.0**	**816.0**
Average	**39.56**	**9.98**	**55.69**	**13.15**	**66.85**	**14.98**	**94.83**	**0.34**	**0.67**	**4.41**	**65.0**

Monitoring Period End Date	**TSS**							**Flow**		**pH**	
	MO AVG		**WKLY AVG**		**DAILY MX**		**MINIMUM**	**MO AVG**	**DAILY MX**	**MIN**	**MAX**
	593 lb/d	**30 mg/L**	**890 lb/d**	**45 mg/L**	**989 lb/d**	**50 mg/L**	**85 %**	**mgd**	**mgd**	**6.5 SU**	**8 SU**
07/31/2007	29.	10.	36.	12.	39.	13.	92.8	0.37	0.63	7.09	7.35
08/31/2007	25.	9.	34.	12.	41.	14.	95.4	0.37	0.57	7.12	7.44
09/30/2007	20.	5.	34.	8.	35.	7.	97.2	0.37	0.64	6.99	7.27
10/31/2007	19.	6.	22.	8.	23.	8.	95.7	0.4	0.53	6.97	7.21
11/30/2007	18.	5.	20.	6.	44.	7.	96.3	0.46	0.75	6.91	7.21
12/31/2007	24.	7.	36.	9.	36.	9.	95.	0.43	0.67	6.72	7.29
01/31/2008	28.	7.	30.	7.	44.	12.	92.9	0.56	0.91	6.91	7.19
02/29/2008	43.	6.	54.	11.	76.	8.	95.3	0.78	1.3	6.85	7.14
03/31/2008	49.	6.	69.	8.	111.	13.	92.2	1.16	1.84	6.78	7.08
04/30/2008	94.	8.	146.	12.	233.	16.	87.5	1.4	2.25	6.72	6.89
05/31/2008	42.	8.	80.	11.	66.	14.	94.3	0.66	1.26	6.83	7.2
06/30/2008	34.	12.	42.	15.	43.	15.	93.	0.41	1.43	7.	7.31
07/31/2008	29.	7.	62.	12.	79.	14.	96.	0.46	0.92	6.85	7.4
08/31/2008	20.	4.	27.	6.	38.	6.	97.8	0.53	0.9	6.62	6.92
09/30/2008	18.	5.	22.	7.	24.	8.	95.9	0.56	1.08	6.51	6.88
10/31/2008	21.	5.	26.	6.	28.	7.	97.3	0.5	0.65	6.52	6.78
11/30/2008	17.	4.	26.	6.	32.	7.	97.1	0.57	1.29	6.62	7.56
12/31/2008	21.	4.	36.	6.	50.	7.	95.7	0.75	2.2	6.6	6.87
01/31/2009	33.	9.	41.	13.	50.	14.	93.8	0.45	0.85	6.79	7.14
02/28/2009	36.	10.	43.	13.	49.	14.	93.8	0.43	0.64	6.89	7.08
03/31/2009	30.	5.	70.	10.	89.	13.	94.6	0.79	1.12	6.66	7.03
04/30/2009	29.	5.	34.	6.	41.	7.	93.4	0.8	1.52	6.6	6.94
05/31/2009	13.	4.	27.	4.	19.	5.	97.5	0.47	0.75	6.6	7.08
06/30/2009	15.	4.	20.	4.	26.	6.	97.2	0.52	1.08	6.68	7.11
07/31/2009	39.	7.	74.	12.	86.	13.	94.7	0.67	1.4	**6.43**	6.69
08/31/2009	27.	6.	52.	10.	78.	14.	97.2	0.49	0.85	6.56	6.77
09/30/2009	7.	3.	8.	3.	10.	4.	99.	0.33	0.44	6.66	7.02
10/31/2009	8.	2.	12.	4.	15.	5.	98.9	0.42	0.75	6.65	6.92
11/30/2009	8.	2.	9.	2.	9.	2.	98.4	0.51	0.91	6.55	6.95
12/31/2009	11.	3.	12.	3.	33.	7.	97.8	0.5	0.68	6.71	6.99

01/31/2010	13.	3.	20.	4.	17.	4.	97.9	0.43	0.81	6.77	7.07
02/28/2010	18.	6.	27.	8.	40.	10.	96.4	0.49	1.78	6.79	7.12
03/31/2010	34.	4.	37.	4.	61.	4.	94.7	0.89	1.84	6.69	7.03
04/30/2010	24.	4.	60.	6.	108.	10.	96.1	0.68	1.31	6.63	7.02
05/31/2010	19.	7.	28.	10.	29.	10.	96.4	0.35	0.45	6.64	7.19
06/30/2010	23.	9.	36.	13.	43.	15.	96.	0.33	0.55	6.71	6.96
07/31/2010	11.	5.	14.	6.	13.	6.	98.1	0.26	0.32	6.69	6.94
08/31/2010	10.	4.	14.	5.	16.	5.	98.6	0.272	0.416	6.68	6.95
09/30/2010	10.	4.	9.	4.	18.	7.	98.7	0.27	0.337	6.66	6.85
10/31/2010	14.	6.	17.	7.	17.	7.	97.1	0.325	0.7	6.55	6.89
11/30/2010	21.	7.	28.	9.	31.	10.	96.1	0.386	0.48	6.63	7.01
12/31/2010	27.	9.	39.	12.	47.	15.	94.7	0.387	0.525	6.65	7.01
01/31/2011	23.	10.	34.	15.	35.	15.	95.	0.279	0.326	6.85	7.17
02/28/2011	24.	9.	46.	14.	58.	16.	95.8	0.305	0.533	6.99	7.11
03/31/2011	61.	8.	118.	15.	132.	18.	94.	1.025	2.06	6.6	7.02
04/30/2011	30.	4.	62.	10.	32.	5.	95.3	0.879	1.56	6.72	6.95
05/31/2011	23.	4.	28.	4.	32.	5.	96.9	0.711	1.405	6.75	7.05
06/30/2011	12.	4.	18.	6.	24.	7.	98.1	0.425	0.541	6.95	7.16
07/31/2011	16.	6.	18.	8.	22.	11.	97.2	0.307	0.391	6.75	7.14
08/31/2011	19.	6.	20.	7.	42.	8.	96.2	0.395	1.157	6.57	6.99
09/30/2011	42.	11.	53.	13.	64.	13.	93.4	0.505	0.931	6.6	6.97
10/31/2011	24.	5.	41.	12.	62.	9.	96.8	0.63	0.927	6.61	6.89
Minimum	**7.0**	**2.0**	**8.0**	**2.0**	**9.0**	**2.0**	**87.5**	**0.26**	**0.32**	**6.43**	**---**
Maximum	**94.0**	**12.0**	**146.0**	**15.0**	**233.0**	**18.0**	**99.0**	**1.4**	**2.25**	**---**	**7.56**
Average	**25.1**	**6.02**	**37.9**	**8.42**	**47.88**	**9.6**	**95.83**	**0.53**	**0.96**	**6.73**	**7.06**

Monitoring Period End Date	**Al**	**Cd**	**Cr**	**Cu**	**Pb**	**Ni**	**Ammonia N**	**Zn**	**Hardness**	**LC50 48Hr Acute Ceriodaphnia**	**LC50 48Hr Acute Pimephales**
	DAILY MX	**DAILY MX**	**DAILY MX**	**DAILY MX**	**DAILY MX**	**DAILY MX**	**DAILY MX**	**DAILY MX**	**DAILY MX**	**DAILY MN**	**DAILY MN**
	mg/L	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**50 %**	**50 %**
09/30/2007	0.	0.	0.	0.005	0.	0.	22.	0.045	39.	100.	100.
06/30/2008	0.02	0.0005	0.002	0.006	0.00055	0.003	11.	0.038	48.	100.	100.
09/30/2008	0.03	0.0005	0.001	0.005	0.00068	0.002	20.	0.03	50.	100.	100.
06/30/2009	0.02	0.0005	0.002	0.029	0.0005	0.002	14.	0.023	46.	100.	100.
09/30/2009	0.02	0.0005	0.002	0.006	0.0005	0.002	0.67	0.044	42.	100.	100.
06/30/2010	0.04	0.0005	0.002	0.019	0.0007	0.002	5.	0.028	50.	100.	100.
09/30/2010	0.03	0.0005	0.002	0.009	0.0009	0.002	2.	0.049	39.	100.	100.
06/30/2011	0.034	0.0005	0.002	0.008	0.0008	0.002	8.3	0.026	60.	100.	100.
09/30/2011	0.032	0.0005	0.002	0.011	0.0008	0.002	19.	0.051	44.	100.	100.
Minimum	**0.**	**0.**	**0.**	**0.005**	**0.**	**0.**	**0.67**	**0.023**	**39.**	**100.**	**100.**
Maximum	**0.04**	**0.0005**	**0.002**	**0.029**	**0.0009**	**0.003**	**22.**	**0.051**	**60.**	**100.**	**100.**
Median	**0.03**	**0.0005**	**0.002**	**0.008**	**0.00068**	**0.002**	**11.**	**0.038**	**46.**	**100.**	**100.**

ATTACHMENT C – EFFLUENT LIMIT CALCULATIONS

CALCULATIONS OF MASS-BASED LIMITS

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

$$L = C \times Q_{PDF} \times 8.345$$

where:

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

DERIVATION OF 7Q10 LOW-FLOW AT OUTFALL 001

$$Q_{001} = \frac{(Q_{Merrimack} + Q_{Contoocook})}{(DA_{Merrimack} + DA_{Contoocook})}(DA_{AreaBetween}) + Q_{Merrimack} + Q_{Contoocook}$$

where:

Q_{001} = Estimated 7Q10 flow at Outfall 001, in cubic feet per second (cfs)
$Q_{Merrimack}$ = 7Q10 flow of Merrimack River gage, in cfs
$Q_{Contoocook}$ = 7Q10 flow of Contoocook River gage, in cfs
$DA_{Merrimack}$ = Drainage area associated with the gaged portion of the Merrimack
$DA_{Contoocook}$ = Drainage area associated with the gaged portion of the Contoocook
$DA_{AreaBetween}$ = Drainage area of area between gaged watersheds and Outfall 001; and

where:

Merrimack River gage at Franklin Junction, NH;
U.S. Geological Survey No. 01081500;
Drainage Area: 1507 mi^2
7Q10 = 550.62 cfs
Period of Record: 1906 – 1978.

Contoocook River gage at Penacook, NH;
U.S. Geological Survey No. 01088000;
Drainage Area: 766 mi^2
7Q10 = 94.03 cfs
Period of Record: 1930 - 1977.

$$Q_{001} = \frac{(550.62cfs + 94.03cfs)}{(1507 + 766)mi^2}(70mi^2) + 550.62cfs + 94.03cfs = 664.5cfs$$

DILUTION FACTOR

Equation used to calculate dilution factor at Outfall 001.

$$DilutionFactor = \frac{Q_{001} \times 0.646 + Q_{PDF}}{Q_{PDF}} \times 0.9$$

where:

Q_{001} = Estimated 7Q10 low flow of the Merrimack River just downstream of Outfall 001, in cfs.
0.90 = Factor to reserve 10 % assimilative capacity
Q_{PDF} = Treatment plant's design flow, in mgd.
0.646 = Factor to convert cfs to mgd.

WATER QUALITY CRITERIA BASED LIMIT

Equation used to calculate average monthly and maximum daily Total Residual Chlorine limits.

Chlorine Limit = Dilution Factor x Water Quality Standard

where water quality standards for chlorine are:

0.011 = Chronic Aquatic-Life Criterion, in mg/L.
0.019 = Acute Aquatic-Life Criterion, in mg/L.

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
WATER DIVISION
P.O. BOX 95
CONCORD, NEW HAMPSHIRE 03302-0095

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ECOSYSTEM PROTECTION
REGION I
BOSTON, MASSACHUSETTS 022030001

JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTIONS 301 AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT, AND ISSUANCE OF A STATE SURFACE WATER PERMIT UNDER NH RSA 485-A:13, I(a).

DATE OF NOTICE: May 31, 2012 – June 29, 2012

PERMIT NUMBER: **NH0100331**

PUBLIC NOTICE NUMBER: NH-009-12

NAME AND MAILING ADDRESS OF APPLICANT:

City of Concord, New Hampshire
City Manager
41 Green Street
Concord, New Hampshire 03301

NAME AND LOCATION OF FACILITY WHERE DISCHARGE OCCURS:

Penacook Wastewater Treatment Facility
7 Penacook Street
Penacook, New Hampshire 03303

RECEIVING WATER: Merrimack River

RECEIVING WATER CLASSIFICATION: Class B

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services, Water Division have cooperated in the development of a draft permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure that State Water Quality Standards and provisions of the Clean Water Act will be met. EPA has formally requested that the State certify the draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

A fact sheet (describing the type of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) and the draft permit may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_ma.html or by writing or calling EPA's contact person named below:

Michael Cobb
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1369

The administrative record containing all documents relating to the draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of the draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **June 29, 2012**, to the U.S. EPA, 5 Post Office Square, Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the State Agency 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.

FINAL PERMIT DECISION:

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.

HARRY T. STEWART, P.E., DIRECTOR
WATER DIVISION
NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES

STEPHEN S. PERKINS, DIRECTOR
OFFICE OF ECOSYSTEM PROTECTION
U.S. ENVIRONMENTAL PROTECTION
AGENCY - REGION I