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 Town of Whitefield, New Hampshire

is authorized to discharge from the Wastewater Treatment Plant located at

Parker Road
Whitefield, New Hampshire 03598

to receiving waters named

Johns River

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 Whitefield Wastewater Treatment Plant collection system.

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

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

This permit supersedes the permit issued on April 3, 2006.

This permit consists of **Part I** (including effluent limitations, monitoring requirements and related conditions); **Attachment A** (USEPA Region 1, Freshwater Acute Toxicity Test Procedure and Protocol, February 28, 2011), **Attachment B** (USEPA Region I, Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013), **Attachment C** (Summary of Required Reports) and **Part II (**Standard Conditions).

Signed this 26th day of September, 2014.

SIGNATURE ON FILE

_____

Ken Moraff, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency (EPA)
Region I
Boston, Massachusetts

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 sanitary wastewater from outfall serial number 001 to the Johns 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	ContinuousRecorder[1]	
BOD_5; mg/l (lbs/day)	30 (46.3)	45 (69.5)	50 (77.2)	1/Week[2]	Grab
TSS; mg/l (lbs/day)	30 (46.3)	45 (69.5)	50 (77.2)	1/Week[2]	Grab
pH Range[3]; Standard Units	6.5 to 8.0 (See I.H.5., State Permit Conditions)			1/Day	Grab
Escherichia coli[4]; Colonies/100 ml	126	---	406	2/Week	Grab
Total Ammonia Nitrogen as N; mg/l (lbs/d) (June 1st – October 31st)	21.5 (Report)	- - -	Report (Report)	1/Week	Grab
Total Phosphorus; mg/l (lbs/d) (April 1st – October 31st)	0.5 (Report)	---	Report (Report)	1/Week	Grab

PART I.A.1. (Continued)

Effluent Characteristic	Discharge Limitations			Monitoring Requirements	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Total Ammonia Nitrogen as N^5, mg/l (lbs/day)	Report	---	Report	1/Month	Grab
Total Kjeldahl Nitrogen as N^5; mg/l	Report	---	Report	1/Month	Grab
Total Nitrite + Nitrate Nitrogen as N^5; mg/l	Report	---	Report	1/Month	Grab
Total Nitrogen[5]; mg/l (lbs/day)	Report	---	Report	1/Month	Grab
Total Recoverable Copper[6]; µg/l	23	---	30	2/Month	Grab
Total Recoverable Aluminum[,6], µg/l	87	---	Report	2/Month	Grab
Whole Effluent Toxicity					
LC_{50}[7,9,10,11]; Percent Effluent	100			2/Year	Grab
C-NOEC[8,9,10,11]; Percent Effluent	≥ 13.3			2/Year	Grab
Hardness[12]; mg/l	---	---	Report	2/Year	Grab
Total Ammonia Nitrogen as N^{12}; mg/l	---	---	Report	2/Year	Grab
Total Recoverable Aluminum[12]; mg/l	---	---	Report	2/Year	Grab
Total Recoverable Cadmium[12]; mg/l	---	---	Report	2/Year	Grab
Total Recoverable Copper[12] mg/l	---	---	Report	2/Year	Grab
Total Recoverable Lead [12]; mg/l	---	---	Report	2/Year	Grab
Total Recoverable Nickel[12]; mg/l	---	---	Report	2/Year	Grab
Total Recoverable Zinc[12]; mg/l	---	---	Report	2/Year	Grab

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. The average monthly value for *Escherichia coli* (*E. coli*) shall be calculated as a geometric mean. *E. coli* analyses shall be conducted 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.

5. Total ammonia nitrogen, total kjeldahl nitrogen ("TKN"), and total nitrite plus nitrate nitrogen samples shall be collected concurrently and the results used to calculate the concentration and mass loading of total nitrogen. Total nitrogen is the sum of total kjeldahl nitrogen and total nitrite plus nitrate nitrogen.

6. The aluminum and copper and results obtained from the effluent analyses performed in conjunction with whole effluent toxicity ("WET") tests (see Footnote #12) may be used to satisfy one of the twice per month reporting requirements for these metals for the particular month in which the samples were collected.

7. LC_{50} (lethal concentration 50 percent) is the concentration of wastewater causing mortality to 50 % of the test organisms. Therefore, a 100 % limit means that a sample of 100 % effluent (no dilution) shall cause no greater than a 50 % mortality rate in that effluent sample.

8. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction, based on a statistically significant difference from dilution control, at a specific time of observation as determined from hypothesis testing. As described in the EPA WET Method Manual EPA 821-R-02-013, Section 10.2.6.2, all test results are to be reviewed and reported in accordance with EPA guidance on the evaluation of the concentration-response relationship. The "13.3 % or greater" limit is defined as a sample which is composed of 13.3 % (or greater) effluent, the remainder being dilution water.

9. The permittee shall conduct acute and chronic toxicity tests on samples of the effluent using the daphnid, *Ceriodaphnia dubia (C. dubia),* and the Fathead Minnow, *Pimephales promelas (P. promelas),* as test organisms. 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.

10. Acute and chronic whole effluent toxicity tests shall be conducted in accordance with the protocols and procedures specified in **Attachments A** and **B**, respectively.

11. 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 that 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).

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

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

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

2. 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 ensure 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.

3. 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.

4. When the effluent discharged for a period of 3 consecutive months exceeds 80 percent of the 0.185 mgd design flow (0.148 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.

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

6. All POTWs must provide adequate notice to both EPA 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.

7. 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

This permit authorizes discharges only from the outfall listed in Part I.A.1, in accordance with the terms and conditions 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 is required to complete the following activities for the collection system which it owns:

1. Maintenance Staff

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

2. Preventative Maintenance Program

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

3. Infiltration/Inflow

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

4. Collection System Mapping

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

   a. All sanitary sewer lines and related manholes;

   b. All combined sewer lines, related manholes, and catch basins;

   c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combined manholes);

   d. All outfalls, including the treatment plant outfall(s), CSOs, combined manholes, and any known or suspected SSOs;

e. All pump stations and force mains;

f. The wastewater treatment facility(ies);

g. All surface waters (labeled);

h. Other major appurtenances such as inverted siphons and air release valves;

i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j. The scale and a north arrow; and

k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System Operation and Maintenance Plan

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

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

(1) A description of the collection system management goals, staffing, information management, and legal authorities;

(2) A description of the overall condition of the collection system including a list of recent studies and construction activities; and

(3) A schedule for the development and implementation of the full Collection System O & M Plan including the elements in paragraphs b.1. through b.7. below.

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

(1) The required submittal from paragraph 5.a. above, updated to reflect current information;

(2) A preventative maintenance and monitoring program for the collection system;

(3) Sufficient staffing to properly operate and maintain the sanitary sewer collection system;

(4) Sufficient funding and the source(s) of funding for implementing the plan;

(5) Identification of known and suspected overflows and back-ups, including 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 permittee's program for preventing I/I-related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts; and

(7) An educational public outreach program for all aspects of I/I control, particularly private inflow.

6. Annual Reporting Requirement

The permittee shall submit a summary report of activities related to the implementation of its Collection System O & M Plan during the previous calendar year. The report shall be submitted to EPA and NHDES **annually by March 31**. The first annual report is due the first March 31st following submittal of the collection system O&M Plan required by Part I.C.5.b. of this permit. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. If treatment plant flow has reached 80% of the 0.185 mgd design flow (0.145 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 CFR § 122.2, which references the definition at 40 CFR § 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-Wq 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

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

G. MONITORING AND REPORTING

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

   a. Submittal of Reports Using NetDMR

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

      DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA, including the 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 and to NHDES-WD.

H. 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.

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-Wq 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-Wq 904.10.

8. Pursuant to Env-Wq 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-Wq 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

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

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

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

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

II. METHODS

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

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

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

III. SAMPLE COLLECTION

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

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

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

IV. DILUTION WATER

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

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

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

and

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

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

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

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

V. TEST CONDITIONS

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

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

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 ± 1^{o}C or 25 ± 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	≥ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

		series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

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

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

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

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

Footnotes:

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

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

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

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

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

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

No Observed Acute Effect Level (NOAEL)

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

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

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

FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL
USEPA Region 1

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic toxicity data shall be reported as outlined in Section VIII.

II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition. October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at http://www.epa.gov/waterscience/WET/ . Exceptions and clarification are stated herein.

III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6^{o} C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of an alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

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

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

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

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.1. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.1.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥3 standard deviations for IC25 values and ≥ two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1, 4]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3, 4]	x		0.02
Alkalinity[4]	x	x	2.0
pH[4]	x	x	--
Specific Conductance[4]	x	x	--
Total Solids[6]	x		--
Total Dissolved Solids[6]	x		--
Ammonia[4]	x	x	0.1
Total Organic Carbon[6]	x	x	0.5
Total Metals[5]			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 2340B (hardness by calculation)
  -Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 4500-CL E Low Level Amperometric Titration
  -Method 4500-CL G DPD Colorimetric Method
- USEPA 1983. Manual of Methods Analysis of Water and Wastes
  -Method 330.5

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
6. Analysis to be performed on initial samples only

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013. Guidance for this review can be found at http://water.epa.gov/scitech/methods/cwa/ . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value**,** for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.

- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater that the PMSD lower bound, then the treatment is considered statistically significant.

- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type and species
  - Test start date
  - Effluent concentrations tested (%) and permit limit concentration
  - Applicable reference toxicity test date and whether acceptable or not
  - Age, age range and source of test organisms used for testing
  - Results of TAC review for all applicable controls
  - Test sensitivity evaluation results (test PMSD for growth and reproduction)
  - Permit limit and toxicity test results
  - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s)
- Reference toxicity test control charts
- All sample chemical/physical data generated, including minimum limits (MLs) and analytical methods used
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis
- A discussion of any deviations from test conditions
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint

Attachment C

Summary of Reports Required by NPDES Permit No. NH0100510[1]

Report	Date Due	Submit Report to EPA at:[2]	Submit Report to State at:[2]
Discharge Monitoring Report (DMR) (Part I)	Monthly, by the 15th day of the following month.	Environmental Protection Agency Water Technical Unit (SEW) P.O. Box 8127 Boston, Massachusetts 02114	New Hampshire Department of Environmental Services Water Division Wastewater Engineering Bureau P.O. Box 95 Concord, New Hampshire 03302-0095
WET Test Report (Part I.A.1.)	The 15th day of the month following the end of the calendar quarter sampled.	Environmental Protection Agency Water Technical Unit (SEW) P.O. Box 8127 Boston, Massachusetts 02114	New Hampshire Department of Environmental Services Water Division Wastewater Engineering Bureau P.O. Box 95 Concord, New Hampshire 03302-0095
Sludge Report (Part I.E.)	Annually, by February 19th	Environmental Protection Agency Water Technical Unit (SEW) P.O. Box 8127 Boston, Massachusetts 02114	New Hampshire Department of Environmental Services Water Division Wastewater Engineering Bureau P.O. Box 95 Concord, New Hampshire 03302-0095

[1]This table is a summary of the reports required to be submitted under this NPDES permit, and is included in the permit to serve as an aide to the permittee. If there are any discrepancies between the permit and this summary, the permittee shall follow the permit requirements.

[2]See Part I. for electronic (NetDMR) reporting requirements, which go into effect 1 year from the effective date of the permit.

Attachment C[1] (Continued)

Report	Date Due	Submit Report to EPA at[2]:	Submit Report to State at[2]:
Collection System Map (Part I.C.4.)	Within 30 months of the effective date of the permit.	Environmental Protection Agency Water Technical Unit (SEW) P.O. Box 8127 Boston, Massachusetts 02114	New Hampshire Department of Environmental Services Water Division Wastewater Engineering Bureau P.O. Box 95 Concord, New Hampshire 03302-0095
Collection System O&M Plan (Part I.C.5.)	Within 6 months of the effective date of the permit. Full plan due within 24 months from the effective date.	Environmental Protection Agency Water Technical Unit (SEW) P.O. Box 8127 Boston, Massachusetts 02114	New Hampshire Department of Environmental Services Water Division Wastewater Engineering Bureau P.O. Box 95 Concord, New Hampshire 03302-0095
Collection O&M Plan Annual Report (Part I.C.6.)	Annually, by March 31st.	Environmental Protection Agency Water Technical Unit (SEW) P.O. Box 8127 Boston, Massachusetts 02114	New Hampshire Department of Environmental Services Water Division Wastewater Engineering Bureau P.O. Box 95 Concord, New Hampshire 03302-0095

[1]This table is a summary of the reports required to be submitted under this NPDES permit, and is included in the permit to serve as an aide to the permittee. If there are any discrepancies between the permit and this summary, the permittee shall follow the permit requirements.
[2]See Part I. for electronic (NetDMR) reporting requirements, which go into effect 1 year from the effective date of the permit.

Attachment C[1] (Continued)

Report	Date Due	Submit Report to EPA at[2]:	Submit Report to State at[2]:
Sewer Use Ordinance, List of all significant indirect dischargers , List of all permitted indirect dischargers (Part I.G.8)	No less than every 5 years.	NA	New Hampshire Department of Environmental Services Water Division Wastewater Engineering Bureau P.O. Box 95 Concord, New Hampshire 03302-0095
Monthly Operating Report Forms (MORs) (Part I.H.9.)	Monthly, by the 15th day of the following month.	NA	New Hampshire Department of Environmental Services Water Division Wastewater Engineering Bureau P.O. Box 95 Concord, New Hampshire 03302-0095

[1]This table is a summary of the reports required to be submitted under this NPDES permit, and is included in the permit to serve as an aide to the permittee. If there are any discrepancies between the permit and this summary, the permittee shall follow the permit requirements.
[2]See Part I. for electronic (NetDMR) reporting requirements, which go into effect 1 year from the effective date of the permit.

NPDES PART II STANDARD CONDITIONS
(January, 2007)

TABLE OF CONTENTS

PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

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

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

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

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

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

2. Permit Actions

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

3. Duty to Provide Information

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

4. Reopener Clause

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

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

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

5. Oil and Hazardous Substance Liability

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

6. Property Rights

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

7. Confidentiality of Information

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

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

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

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

8. Duty to Reapply

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

9. State Authorities

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

10. Other Laws

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

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

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

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

b. Bypass not exceeding limitations

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

c. Notice

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

d. Prohibition of bypass

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

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

5. Upset

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

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

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

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

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

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

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

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

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

c. Records of monitoring information shall include:

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

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

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

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

2. Inspection and Entry

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

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

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

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

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

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

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

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

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

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

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

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

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

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

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

e. Twenty-four hour reporting.

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

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

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

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

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

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

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

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

2. Signatory Requirement

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

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

3. Availability of Reports.

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

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

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

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

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

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

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

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

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

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

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

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

Construction Activities - The following definitions apply to construction activities:

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

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

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

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

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

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

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

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

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

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

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

Discharge of a pollutant means:

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

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

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

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

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

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

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

EPA means the United States "Environmental Protection Agency".

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

NPDES means "National Pollutant Discharge Elimination System".

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

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

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

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

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

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

(a) Sewage from vessels; or

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Waters of the United States means:

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

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

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

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

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

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

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

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

(f) The territorial sea; and

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Range land is open land with indigenous vegetation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3. Commonly Used Abbreviations

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

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

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

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

FACT SHEET

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

NPDES PERMIT NO: **NH0100510**

PUBLIC COMMENT PERIOD START AND END DATES: January 10, 2014 – February 8, 2014

NAME AND ADDRESS OF THE APPLICANT:

Town of Whitefield
7 Jefferson Road
Whitefield, New Hampshire 03598

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS

Whitefield Wastewater Treatment Plant
Parker Road
Whitefield, New Hampshire 03598

RECEIVING WATER: **Johns River**

CLASSIFICATION: **B**

Table of Contents

Figures and Attachments

I. PROPOSED ACTION

The Town of Whitefield, New Hampshire ("Town" or "permittee"), has applied to the United States Environmental Protection Agency ("EPA") for reissuance of its National Pollutant Discharge Elimination System ("NPDES") permit to discharge to the designated receiving waters.

The discharge is from the Whitefield Wastewater Treatment Plant ("WWTP"), a publicly owned treatment works ("POTW") engaged in the collection and treatment of wastewater generated by approximately 1,175 residences in the Towns of Whitefield and Dalton, New Hampshire.

The most recent NPDES permit was issued to the City on April 3, 2006 and expired on April 3, 2011. This permit has been administratively continued, as a complete application for permit reissuance was filed by the Town in accordance with the Administrative Procedures Act (5 U.S.C. 558(c)) and 40 CFR § 122.6. This permit is hereafter referred to as the "2006 permit" or the "existing permit".

The draft permit, upon final issuance, shall supersede the 2006 permit.

II. TYPE OF FACILITY AND DISCHARGE LOCATION

The Whitefield Wastewater Treatment Plant ("WWTP" or "facility") is a 0.185 million gallons per day (mgd) aerated lagoon wastewater treatment plant, which provides secondary treatment to domestic and industrial wastewater collected from the Towns of Whitefield and Dalton, New Hampshire (see Figure 1). According to the information supplied by the permittee in their NPDES permit application, the facility does not accept septage.

The wastewater collection system is comprised of 100 percent sanitary sewers and conveys influent wastewater to the facility under the Johns River and into the plant headworks through a reverse siphon. The wastewater first passes through a bar screen or comminutor before entering the first of two lagoons. Wastewater flows from the first to the second lagoon through a transfer manhole. Both lagoons are over one acre in area. Aeration is provided by an air dispersion tubing system which is positioned at the bottom of the lagoons. The liquid level in the second lagoon is controlled at the telescoping valve structure at the downstream end. The effluent from the lagoons flows through an ultraviolet (UV) station for disinfection and is then discharged through outfall 001 to the Johns River. The location of the WWTP and a process flow diagram are provided in Figures 1 and 2, respectively.

III. DESCRIPTION OF THE DISCHARGE

A quantitative description of the discharge in terms of significant effluent parameters based on monitoring data submitted by the permittee from 2008-2013 is provided in Attachment A of this fact sheet.

IV. LIMITATIONS AND CONDITIONS

The draft permit contains effluent limitations for outfall serial number 001 (WWTP outfall) for 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), pH, *Escherichia coli* (*E. coli*), total residual chlorine, ammonia nitrogen, total phosphorus, total recoverable aluminum and copper, and whole effluent toxicity ("WET"). The draft permit also contains effluent monitoring requirements for total ammonia nitrogen, total kjeldahl nitrogen , total nitrite and nitrate, total nitrogen, hardness, and total recoverable metals (aluminum, cadmium, copper, lead, nickel, and zinc). These proposed limitations and conditions, the bases of which are discussed throughout this fact sheet, may be found in Part I of the draft permit.

V. STATUTORY AND REGULATORY AUTHORITY

A. General Statutory and Regulatory Background

Congress enacted the Clean Water Act ("CWA" or, the "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 waters of the United States from any point source, except as authorized by specified permitting sections of the CWA, one of which is Section 402 (see CWA §§ 301(a) and 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 CWA, 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) and (2)).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits, technology-based effluent limitations and water quality-based effluent limitations (see CWA §§ 301, 303, and 304(b). Also see 40 CFR Parts 122, 125, and 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 which are based upon secondary treatment. The secondary treatment technology guidelines (effluent limits) consist of effluent limitations for BOD_5, TSS, and pH (see 40 CFR Part 133).

Water quality-based effluent limitations are developed and incorporated into NPDES discharge permits to ensure that state water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limits. In particular, Section 301(b)(1)(C) of the CWA 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 CFR §§ 122.4(d) and 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 40 CFR § 122(45)(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA). Under Section 301(b)(1) of the CWA, POTWs must have achieved effluent limitations based upon secondary treatment by July 1, 1977. Since all statutory deadlines for meeting technology-based

effluent limitations established pursuant to the CWA have expired, the deadline for compliance with technology-based effluent limits for a POTW is the date of permit issuance (40 CFR § 125.3(a)). Extended compliance deadlines cannot be authorized by a NPDES permit if statutory deadlines have passed.

The CWA requires that states develop water quality standards for all water bodies within the state (see CWA § 303). Water quality standards consist of three elements: (1) one or more designated use for each waterbody or waterbody 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 waterbody without impairing the designated use(s) of that waterbody; and (3) an antidegradation provision focused on protecting high quality waters and protecting and maintaining the level of water quality necessary to protect existing uses (CWA § 303(c)(2)(a) and 40 CFR § 131.12). The limits and conditions contained within the draft permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards within the receiving water.

The applicable state water quality standards can be found in the New Hampshire 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.

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 a state's water quality standards to develop permits limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable instream pollutant concentrations. Acute and chronic aquatic life criteria are generally implemented through maximum daily limits and average monthly limits, respectively. When a state has not established a numeric water quality criterion for a specific pollutant that is present in the effluent in a concentration that causes or has the reasonable potential to cause or contributes to a violation of a narrative criterion within a water quality standard, the permitting authority must establish limits in one or more of the following ways: (1) 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 uses; (2) on a case-by-case basis using water quality criteria published under CWA § 304(a), supplemented as necessary by other relevant information; or (3) in certain circumstances, based on an indicator parameter (40 CFR § 122.44(d)(1)(vi)(A-C)).

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

B. Development of Water Quality-based Effluent Limitations

Pursuant to 40 CFR § 122.44(d)(1), NPDES permits must contain any requirements in addition to technology-based limits necessary to achieve water quality standards established under Section 303 of the CWA. In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion

above any water quality standard, including State narrative criteria for water quality" (40 CFR § 122.44(d)(1)(i)). An excursion occurs if the actual or projected instream concentration exceeds the applicable criterion.

1. ***Reasonable Potential***

In determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion above a narrative or numeric criterion within a state water quality standard, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) the variability of the pollutant or pollutant parameter in the effluent; (3) the sensitivity of the species to toxicity testing; (4) where appropriate, the dilution of the effluent in the receiving water; and (4) the statistical approach outlined in the *Technical Support Document for Water Quality-based Toxics Control*, Section 3 (USEPA, March 1991 [EPA/505/2-90-001])(see also 40 CFR § 122.44(d)(1)(ii)). In accordance with New Hampshire's Water Quality Standards (RSA 485-A:8 VI, Env-Wq 1705.02), the 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 with a recurrence interval of once in ten (10) years (7Q10 flow) for aquatic life and human health criteria for non-carcinogens, or the long-term harmonic mean flow for human health (for carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, ten 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. Antibacksliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. EPA has also promulgated anti-backsliding regulations, which are found at 40 CFR § 122.44(l). Unless applicable anti-backsliding requirements are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit. The limitations and conditions contained within the draft permit satisfy the applicable antibacksliding requirements.

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 CFR § 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 CFR § 124.55(a)(2)).

VI. DESCRIPTION OF THE RECEIVING WATER

The Johns River flows for approximately five miles from the point of discharge to the confluence with the Connecticut River. The Johns River is classified by the State of New Hampshire as a Class B water. Class B waters shall be of the second highest quality and shall have no objectionable physical characteristics, and shall contain a dissolved oxygen content of at least 75 percent saturation (see RSA 485-A:8). The following designated uses apply to Class B waters: the protection and propagation of aquatic life and wildlife, for swimming and other recreational purposes; and, after treatment, for water supplies (RSA 485-A:8).

Sections 305(b) and 303(d) of the CWA require that States complete a water quality inventory and develop a list of impaired waters. Specifically, Section 303(d) of the CWA requires States to identify those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of a Total Maximum Daily Load (TMDL) for each pollutant that is prohibiting a designated use(s) from being attained. The results of the 305(b) assessments are used in the development of the State of New Hampshire's 303(d) lists, which are published every two years and identifies the water bodies that are not meeting (or are not expected to meet) water quality standards, identifies the designated use(s) that is impaired and also the pollutant(s) causing the impairment(s).

The segment of the Johns River receiving the Whitefield WWTP discharge (Assessment Unit ID: NHRIV801030102-08) is identified in the *State of New Hampshire Final 2012 Section 303(d) Surface Water Quality List* (NHDES 2012) as not meeting the aquatic life designated use for pH. A TMDL for pH is scheduled to be completed by 2023.

Based on the most current information available, EPA believes that the limitations and conditions contained in the draft permit represent the minimum level of control necessary to ensure protection of all designated uses in the receiving waters.

VII. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATION DERIVATION

A. Flow

The annual (long-term) average design flow of the Whitefield WWTP (0.185 mgd) was used in the calculation of water quality-based effluent limitations including total residual chlorine, ammonia nitrogen, total phosphorous, total recoverable for aluminum and copper, and whole effluent toxicity, as well as, in the calculation of mass-based limits for BOD_5 and TSS, in accordance with the requirements found at 40 CFR § 122.45(b).

The draft permit maintains the requirement in the 2006 permit for the permittee to submit to EPA and NHDES a projection of loadings, a program for maintaining satisfactory treatment levels, and plans for facility improvements whenever the effluent flow exceeds 80 percent of the facility's design flow capacity (0.145 mgd) for three consecutive months. The draft permit also maintains the average monthly and maximum daily flow reporting requirements that are in the 2006 permit.

B. Conventional Pollutants

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

The average monthly and average weekly effluent limitations for BOD_5 and TSS in the draft permit of 30 mg/l and 45 mg/l, respectively, are the same as those in the existing permit, which were based on the secondary treatment regulations for POTWs found at 40 CFR § 133.102(a) and (b). The daily maximum limitations for TSS and BOD5 (50 mg/l)in the draft permit are the same as those in the existing permit, consistent with the antibacksliding requirements found at 40 CFR § 122.44(1).

The draft permit also includes average monthly (46.3 lbs/day), average weekly (69.5 lbs/day), and maximum daily (77.2 lbs/day) mass-based limits for BOD_5 and TSS, in accordance with the requirements of 40 CFR § 122.45(f). The calculations for these limitations are provided in Attachment B.

The draft permit also requires a minimum of 85% reduction in BOD5 and TSS in accordance with the requirements of 40 CFR § 133.102(a)(4)(iii).

The limitations for BOD_5 and TSS in the draft permit are the same as those in the existing permit and are therefore consistent with the antibacksliding requirements of 40 CFR § 122.44(l).

2. *pH*

The pH limit in the draft permit is based upon State Certification requirements and the state's water quality standards for Class B waters established at RSA 485-A:8 II, requiring that "The pH range for said (Class B) waters shall be 6.5-8.0 except when due to natural causes". The pH limitation in the draft permit is the same as that in the existing permit in keeping with the antibacksliding requirements of 40 CFR § 122.44(l) and is at least as stringent as the requirements of 40 CFR § 133.102(c).

The special condition in the 2006 permit, which allows for a change in the pH limitation to outside of the range of 6.5 to 8.0 Standard Units (SU) upon meeting certain conditions, has not been included in the draft permit due to the listing of the aquatic life designated use for the segment of the Johns River in the vicinity of the discharge as impaired due to pH in the *State of New Hampshire Final 2012 Section 303(d) Surface Water Quality List* (NHDES 2012).

3. *Escherichia coli*

The limitations for *Escherichia coli* (*E. coli*) in the draft permit are an average monthly limit of 126 colonies per 100 milliliters (ml) and a maximum daily limit of 406 colonies per 100 ml, which are based on the water quality standards for Class B waters (non-designated beach areas) found at RSA 485-A:8 II. The average monthly value shall be reported as the geometric mean of the sampling results for the reporting month. Compliance with the average monthly value shall be determined from the reported geometric mean.

These limitations are identical to those in the existing permit, and are therefore consistent with the antibacksliding requirements of 40 CFR § 122.44(l).

C. Non-conventional and Toxic Pollutants

7Q10 Flow and Available Dilution

Water quality-based effluent limitations are established using a mass balance equation to estimate the available dilution in the receiving water at the point of discharge. The available dilution is derived from the design flow of the facility and the annual seven consecutive day mean low flow of the receiving water with a recurrence interval of once in every ten years ("7Q10 flow") (see Env-Wq 1702.44). In calculating water quality-based effluent limitations, the available dilution is reduced by 10% to account for the State's assimilative capacity reserve rule (see Env-Wq 1705.01).

The available diultion in the receiving water that was used in the development of the existing permit was based on an estimated 7Q10 flow in the Johns River in the vicinity of the discharge of 2.385 cubic feet per second (cfs) (1.541 MGD).

The available dilution used in the development of the draft permit is based on a revised estimated 7Q10 flow just upstream of Outfall 001 of 2.084 cfs (1.347mgd), which has been adjusted for the water withdrawals within the watershed (see Attachment C).

1. Oil and Grease

The presence of oil and grease in aquatic environments can negatively impact its aesthetic value and can have acute and chronic effects on aquatic organisms. The New Hampshire water quality standards include narrative criteria for oil and grease for Class B waters. Specifically, Class B waters shall not contain oil and grease in concentrations that would impair any existing or designated use (Env-Wq 1703.09).

Oil and grease (O&G) monitoring requirements were included in the 2006 permit due to the occurrence of sanitary sewer overflows (SSOs), the cause of which were identified as the accumulation of O & G and tree roots within the sewer lines. The concentration of oil and grease detected in samples of the effluent from 2008-2010 were less than the detection limit of 5 mg/l for all but one sample (June 2008), and all of the results were below the threshold concentration above which negative effects may be observed (see Attachment A), suggesting that reasonable potential does not exist for the discharge to cause or contribute to violations of water quality standards with respect to oil and grease. Due to the absence of reasonable potential for the discharge to cause or contribute to violations of water quality standards with respect to oil and grease, and because the monitoring requirements in the existing permit were not an effective measure for managing the collection system to prevent oil and grease from accumulating, neither effluent limits nor monitoring requirements for oil and grease have been included in the draft permit.

2. Ammonia

Elevated quantities of ammonia in freshwater systems can have both short term and long term effects on aquatic life. Short term (acute) affects include mortality, and long term (chronic) effects include impaired reproduction and/or growth. In addition to being toxic to aquatic life, discharges of ammonia can result in depletion of instream dissolved oxygen through the nitrification of ammonia to nitrate. Ammonia reporting requirements were included in the 2006 permit in order to evaluate the potential for the discharge to cause or contribute to ammonia toxicity. In addition, ammonia analyses are conducted on samples of the effluent in conjunction with quarterly whole effluent toxicity (WET) tests. The results of ammonia analyses conducted from 2008-2013 are shown in Attachment A.

Ammonia toxicity is a function of the pH and temperature of the water, with increasing pH and temperature correlating to an increase in toxicity. As such, the water quality criteria for ammonia contained in the New Hampshire Water Quality Standards are dependent upon the pH and temperature of the water in which the criteria are being applied. Additionally, the criteria are designed to be protective of the most sensitive life stages of fish species that may be present in the vicinity of the discharge (see Env-Wq 1703.25(b) and (e)).

The chronic and acute ammonia criteria which apply to the receiving water in the vicinity of the discharge during the winter (November 1st – May 31st) and summer (June 1st – October 31st) periods are shown in Table 1. These criteria were determined based on the following factors: a winter instream pH and temperature of 6.9 SU and 10 ° C, respectively; a summer instream pH and temperature of 7.1 SU and 25° C , respectively, and the presence of salmonids and early life stages of fish[1] (see Env-Wq 1703.25(b) and (e)).

Table 1 Seasonal Ammonia Criteria

Season	Criteria	
	Acute Criteria (CMC) (mg/L)	Chronic Criteria (CCC) (mg/L)
Summer	22.0	2.88
Winter	26.2	6.12

In making a determination as to whether the discharge presents reasonable potential to cause or contribute to excursions above the in-stream water quality criteria for ammonia, the following mass balance equation, which accounts for ambient ammonia concentrations (as reported in WET test reports submitted from 2008-2013 (see Appendix A)), is used to project the instream ammonia concentrations downstream from the discharge under 7Q10 flow conditions during both the winter (November 1st - May 31st) and summer (June 1st - October 31st) seasons.

[1] Seasonal pH values were established based on the median pH of samples of the receiving water collected upstream from the discharge for use as dilution water in WET tests from 2008-2013 (see Attachment A). Winter and summer instream temperature values of 10°C and 25 °C, respectively, are based on conservative assumptions.

$$Q_d C_d + Q_S C_S = Q_r C_r$$

rewritten as:

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

where:

C_r = resultant downstream ammonia nitrogen concentration

Q_d = effluent flow (design flow = 0.185 mgd = 0.286 cfs)

C_d = effluent concentration (maximum ammonia nitrogen concentration detected in effluent samples collected from 2008-2013 = 40 mg/l on January 31, 2013 (winter) and 27 mg/l on June 30, 2012 (summer))

Q_S = upstream 7Q10 flow (2.08 cfs)

C_S = upstream concentration (median ammonia nitrogen concentration detedted in upstream receiving water from 2008 – 2013 = 0 mg/l)

Q_r = downstream 7Q10 flow (Qs + Qd = 2.08 cfs + 0.286 cfs = 2.37 cfs)

Reasonable potential is then determined by comparing this resultant in-stream concentration (for both acute and chronic conditions) with the relevant ammonia criteria multiplied by the factor 0.9 to reserve 10% of the assimilative capacity of the receiving water in accordance with the requirements of Env-Wq 1705.01. If there is reasonable potential (the projected downstream concentration is greater than either an acute or chronic criterion multiplied by 0.9), the appropriate limit is then calculated by rearranging the above mass balance to solve for the effluent concentration (C_d) using the criterion multiplied by 0.9 as the resultant in-stream concentration (C_r). The results of these analyses are provided Table 2.

Table 2 Mass Balance Equations for Determining Reasonable Potential and Effluent Limitations for Ammonia

Season[1]	Qd	Cd[2] (max)	Qs	Cs[3] (Median)	Qr = Qs + Qd	Cr[4] = (QdCd+QsCs)/Q_r	Criteria * 0.9		Reasonable Potential	Limit = (QrCr*0.9-QsCs)/Qd	
	cfs	mg/l	cfs	mg/l	cfs	mg/l	Acute (mg/l)	Chronic (mg/l)	Cr > Criteria	Acute (mg/l)	Chronic (mg/l)
Summer	0.286	27	2.08	0	2.37	3.26	19.8	2.59	Y (chronic)	---	21.5
Winter		40		0		4.83	23.6	5.51	N	---	---

[1]Summer: June 1st-October 31st; Winter: November 1st – May 31st

[2]Values determined from the results of analyses conducted on samples of the effluent in conjunction with whole effluent toxicity tests as well as the results of monthly ammonia monitoring (see Attachment A).

[3]Median upstream data from analyses conducted on samples of the Johns River collected just upstream from the discharge for use as dilution water in Whole Effluent Toxicity (WET) tests from 2008-2013. (see Attachment A).

[4]Cr = instream ammonia concentration, downstream from the discharge

As shown in the table above, reasonable potential exists for the discharge to cause or contribute to excursions above the chronic criterion for ammonia during the summer period and therefore a chronic limit has been included in the draft permit. However, there is no reasonable potential (under either acute or chronic conditions) that the discharge will cause or contribute to an exceedance of water quality criteria during the winter period and therefore winter ammonia limits are not included in the draft permit.

3. Phosphorus

Phosphorus is both an essential and limiting nutrient in freshwater systems which, when present in excess quantities, stimulate plant productivity within the system. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by (1) increasing the oxygen demand within the water body (to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter); (2) causing an unpleasant appearance and odor; (3) interfering with navigation and recreation; (4) reducing water clarity; and (5) reducing the quality and availability of suitable habitat for aquatic life. Cultural (or accelerated) eutrophication is the term used to describe excessive plant growth in a water body in response to excess nutrients entering the system as a result of human activities. Discharges from municipal and industrial wastewater treatment plants, agricultural runoff, and stormwater are examples of human-derived (i.e., anthropogenic) sources of nutrients in surface waters.

The New Hampshire Surface Water Quality Regulations do not contain numeric criteria for phosphorus and instead include a narrative criterion requiring that the phosphorus contained in an effluent shall not impair a water body's designated use. Specifically, Env-Wq 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-Wq 1703.14(c) 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 at Env-Wq 1702.15 as "….the human-induced addition of wastes containing nutrients to surface waters which results in excessive plant growth and/or a decrease in dissolved oxygen". Although numeric nutrient criteria have not yet been developed for New Hampshire surface waters, the New Hampshire Department of Environmental Services (NHDES) considers an in-stream total phosphorus concentration of 0.05 mg/l to be a level of concern (NHVRAP & NHDES 2002, 2003, and 2005).

In the absence of numeric criteria for phosphorus, EPA uses nationally-recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus. EPA has published national guidance documents which contain recommended instream criteria for total phosphorus. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") recommends that instream phosphorus concentrations not exceed 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly into lakes or impoundments, and 0.025 mg/l within the lake or reservoir (US EPA 1986 [EPA 440/5-86-001]).

EPA released recommended ecoregional nutrient criteria in December 2000, which were established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published criteria represent conditions in waters within ecoregions that are minimally impacted by human activities (reference conditions), and thus free from the effects of cultural eutrophication. Whitefield is located within Ecoregion VIII, Nutrient Poor Largely Glaciated Upper Midwest and Northeast. The recommended criteria for this ecoregion is a total phosphorus concentration of 10 µg/l (0.01 mg/l) and a chlorophyll *a*

concentration of 0.63 µg/l (0.00063 mg/l) (*Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII* (EPA December 2001 [EPA 822-B-01-015]).

In conjunction with the New England States, Mitchell, Liebman, Ramseyer, and Card developed potential nutrient criteria for rivers and streams in New England (in draft 2004). 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 mg/l – 0.022 mg/l was identified as being protective of designated uses for New England rivers and streams. The development of these New England-wide total phosphorus criteria was based on more recent data than that used in the development of the ecoregional nutrient criteria, and has been subject to quality assurance measures. Additionally, the development of the New England-wide criteria included the use of reference conditions presumed to be protective of designated uses.

EPA has decided to apply the Gold Book criteria (0.1mg/l) when developing effluent limitations for NPDES permits because it was developed from an effects-based approach rather than the reference conditions-based approach used in the derivation of the ecoregional criteria. The effects-based approach is preferred in this case because it is more directly associated with an impairment of a designated use (i.e., recreation, aquatic life, etc.). The effects-based approach provides a threshold value above which adverse effects (i.e., water quality impairments) are likely to occur. It applies empirical observations of a causal variable (i.e., phosphorus) and a response variable (i.e., algal growth) associated with impairment of designated uses. Reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregional class. They are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions.

The results of phosphorus analyses conducted on samples of the Johns River collected upstream from the Whitefield WWTP from 1997-2000 as part of NHDES's Ambient River Monitoring Program (ARMP)[2] were evaluated to establish a median upstream concentration of 0.033 mg/l (see Attachment D). The median upstream concentration and the maximum effluent concentration reported by the permittee in their NPDES permit application (5.70 mg/l) were factored into the equation shown below to project the instream phosphorus concentration that can be expected to occur downstream from the discharge under critical (7Q10) stream flow conditions

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

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

[2]Data retrieved from NHDES's OneStop environmental monitoring database. Samples were collected upstream from the Whitefield WWTP at station 05-JHN (approx. 1 mile upstream) as part of NHDES's Ambient River Monitoring Program. See Attachment D.

Where:

C_r = resultant downstream phosphorus concentration
Q_d = effluent flow (design flow = 0.185 mgd = 0.286 cfs)
C_d = effluent concentration (maximum phosphorus concentration = 5.70 mg/l)
Q_s = upstream 7Q10 flow (2.08 cfs)
C_s = upstream concentration (median phosphorus concentration = 0.033 mg/l)
Q_r = downstream 7Q10 flow (Qs + Qd = 2.08 cfs + 0.286 cfs = 2.37 cfs)

Therefore: C_r = (2.08 cfs * 0.033 mg/l + 0.286 cfs * 5.70 mg/l) / 2.37 cfs = 0.718 mg/l

The projected downstream concentration of 0.718 mg/l is greater than the recommended target of 0.090 mg/l (the Gold Book Criterion of 0.100 mg/l multiplied by a factor of 0.9 to reserve 10% of the assimilative capacity of the receiving water in accordance with the New Hampshire Water Quality Standards found at Env-Wq 1705.01). This indicates that reasonable potential exists for the discharge of phosphorus from the Whitefield WWTF to cause or contribute to violations of water quality standards in the downstream receiving water. Therefore, the draft permit includes a monthly average phosphorus effluent limitation of 0.5 mg/l, which was calculated using the mass balance equation shown below and solving for the effluent concentration (C_d), as follows.

$$Q_dC_d + Q_sC_s = Q_rC_r*0.9$$

Rearranged as: $$C_d = (Q_rC_r*0.9 – Q_sC_s)/Q_d$$

Where:

C_d= maximum allowable effluent phosphorus concentration (i.e., limit)
Q_d = effluent flow (design flow = 0.185 mgd = 0.286 cfs)
C_s = upstream concentration (median phosphorus concentration = 0.033 mg/l)
Q_s = upstream 7Q10 flow (2.08 cfs)
C_r = downstream phosphorus concentration (Gold Book criterion = 0.100 mg/l)
Q_r = downstream 7Q10 flow (Qs + Qd = 2.08 cfs + 0.286 cfs = 2.37 cfs)
0.9 = Factor to reserve 10% of the assimilative capacity of the receiving water

Therefore: C_d = (2.37 cfs *0.10*0.90mg/l - 2.08 cfs * 0.033 mg/l)/0.286 cfs = 0.5 mg/l

This is a seasonal limitation, which shall be in effect from April 1st – October 31st.

4. Nitrogen

The Johns River is tributary to the Connecticut River. In December 2000, the Connecticut Department of Environmental Protection (CTDEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New

Hampshire, and Vermont wastewater facilities discharging to the Connecticut, Housatonic, and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

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

Table 3 Estimated Point Source Nitrogen Loadings to the Connecticut, Housatonic and Thames Rivers Watersheds

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

1. Estimated loading from TMDL, (see Attachment 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
2. Reduction of 25% from baseline loading
3. Estimated current loadings from 2004 – 2005 DMR data (a detailed summary of data) can be found in Attachment E.

The TMDL target of a 25 percent aggregate reduction from baseline loadings is currently being met. In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over baseline loadings, EPA intends to include nitrogen-related conditions in permits for existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic and Thames River watersheds. For facilities discharging loads equal to or greater than 35 lbs/day total nitrogen, permit conditions will require the optimization of nitrogen removal with the existing treatment technology. For existing facilities discharging less than 35 lbs/day, monitoring of nitrogen discharges will be required. This is consistent with the approach applied by the Connecticut Department of Environmenta Protection, which applied a threshold of 20 lbs/day (equivalent in impact to a 35 lbs/day threshold at facilities upstream in MA and NH) when imposing nitrogen controls on existing facilities. See Nitrogen Control for Small Sewage Facilities (CT DEP); General Permit for Nitrogen Discharges (CT DEP 2005).

The estimated current loading for the Whitefield WWTF used in the above analysis was 23 lbs/day, based upon an estimated total nitrogen concentration of 19.6 mg/l and the average flow of 0.140 MGD (19.6 mg/L * 0.140 MGD * 8.34) (see Attachment E). The estimated total nitrogen loading is well below the threshold of 35 lbs/day, therefore, no optimization requirement has been included in the draft permit.

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

5. Metals

The release of metals into surface waters from anthropogenic activities such as discharges from municipal waste water treatment facilities can result in their accumulation to levels that are highly toxic to aquatic life. Therefore, it is imperative to evaluate the downstream effects of discharges of metals from POTWs. The existing permit requires bimonthly effluent monitoring for copper. In addition, the existing permit requires concurrent analyses for aluminum, cadmium, copper, lead, nickel, and zinc on samples effluent in conjunction with quarterly WET tests. The results of metals analyses conducted on samples of the effluent and upstream receiving water from 2008-20123 are shown in Attachment A.

The risk of toxicity associated with copper, lead, zinc, nickel, cadmium and chromium in freshwater systems are hardness-dependent, with an increase in water hardness resulting in a decrease in the toxicity of the metal. The water quality criteria for these metals accounts for this relationship and are specific to the hardness of the water in which the criteria are being applied (see Env-Wq 1703.21, Table 1703.1).

In accordance with the New Hampshire Water Quality Standards, the water quality criteria for the hardness-dependent metals were determined based on the hardness in the receiving water in the vicinity of the discharge (Env-Wq 1703.21). A downstream hardness value of 26.9 mg/l was calculated by applying a median upstream hardness value of 18 mg/l as $CaCO_3$ and a median effluent hardness value of 92 mg/l as CaCO3, as reported in WET tests from 2008-2013 (see Attachment A), the design flow of the facility, and the receiving water 7Q10 flow to a mass balance equation. The factors used to determine the acute and chronic total recoverable criteria for each metal are presented in Table 4.

Table 4 Freshwater Metals Criteria (Total Recoverable)

Metal	Parameters				Total Recoverable Criteria		Criteria * 0.9	
	ma*	ba*	mc**	bc**	Acute Criteria (CMC) (ug/L)	Chronic Criteria (CCC) (ug/L)	Acute Criteria (CMC) (ug/L)	Chronic Criteria (CCC) (ug/L)
Aluminum	—	—	—	—	750	87	675	78.3
Cadmium	1.1280	-3.6867	0.7852	-2.7150	1.03	0.88	0.927	0.792
Chromium III	0.819	3.7256	0.819	0.6848	615.14	29.40	553.63	26.46
Copper	0.9422	-1.7000	0.8545	-1.702	4.06	3.04	3.65	2.74
Lead	1.273	-1.46	1.273	-4.705	15.35	0.60	13.82	0.54
Nickel	0.846	2.255	0.846	0.0584	154.49	17.18	139.04	15.46
Zinc	0.8473	0.884	0.8473	0.884	39.39	39.39	35.45	35.45

*Acute Criteria (CMC) = exp{ma*ln(hardness)+ba}
**Chronic Criteria (CCC) = exp{mc*ln(hardness)+bc}

Determining Reasonable Potential

The effluent was characterized using a statistical analysis of effluent metals data, as reported in monthly discharge monitoring reports and in WET tests from 2008-2013 (see Attachment A), to establish the 95th percentile of the lognormal distribution of the effluent data, which represents the maximum effluent concentration that can be expected to occur 95 percent of the time (i.e., the upper bound of the lognormal distribution of the data). These values are presented in Table 5. The statistical approach to characterizing the effluent is described in Attachment F.

In order to determine whether the effluent presents reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for metals, the following mass balance equation, which accounts for ambient metals concentrations as reported in WET test reports submitted from 2008-2013 (see Attachment A), was used to project instream concentrations downstream from the discharge under 7Q10 flow conditions.

$$Q_d C_d + Q_S C_S = Q_r C_r$$

rewritten as:

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

where:

C_r = resultant downstream metals concentration

Q_d = effluent flow (design flow = 0.185 mgd = 0.286 cfs)
C_d = effluent concentration (95th percentile)
Q_S = upstream 7Q10 flow (2.08 cfs)
C_S = upstream concentration (median metals concentration)
Q_r = downstream 7Q10 flow (Qs + Qd = 2.08 cfs + 0.286 cfs = 2.37 cfs)

Reasonable potential is then determined by comparing this resultant downstream concentration (for both acute and chronic conditions) with the criteria for each metal multiplied by the factor 0.9 to reserve 10% of the assimilative capacity of the receiving water in accordance with the requirements of Env-Wq 1705.01. If there is reasonable potential (the projected downstream concentration is greater than either an acute or chronic criterion multiplied by 0.9), the appropriate limit is then calculated by rearranging the above mass balance to solve for the effluent concentration (C_d) using the criterion multiplied by 0.9 as the downstream concentration (C_r). The results of these analyses are provided Table 5. An example reasonable potential determination is provided in Attachment G.

Table 5 Mass Balance Equations for Determining Reasonable Potential and Effluent Limitations

Metal	Qd	Cd (95th Percentile)	Qs	Cs (Median)	Qr = Qs + Qd	Cr = (QdCd+QsCs)/Q_R	Criteria * 0.9		Reasonable Potential	Limit = (QrCr*0.9-QsCs)/Qd	
	cfs	ug/l	cfs	ug/l	cfs	ug/l	Acute (ug/l)	Chronic (ug/l)	Cr > Criteria	Acute (ug/l)	Chronic (ug/l)
Aluminum		164.2		140		142.9	675	78.3	Y (C)	N/A	87
Cadmium		NA		0		NA	0.927	0.792	N	N/A	N/A
Chromium		NA		0		NA	553.63	26.46	N	N/A	N/A
Copper	0.286	55.9	2.08	0	2.37	6.76	3.65	2.74	Y (C, A)	30.2	22.6
Lead		1.38		0		0.17	13.82	0.54	N	N/A	N/A
Nickel		3.1		0		0.37	139.04	15.46	N	N/A	N/A
Zinc		70.0		14		20.8	35.45	35.45	N	N/A	N/A

[1] Values calculated from the results of metals analyses conducted on samples of the effluent in conjunction with whole effluent toxicity tests from 2008-2013 (see Attachment A) as well as from bi-monthly copper monitoring (see Attachment A)

[2] Median upstream data are from analyses conducted on samples of the Johns River collected just upstream from the discharge for use as dilution water in Whole Effluent Toxicity (WET) tests from 2008-2013. (see Attachment A).

[3] Establishing a limit equal to the criterion would be appropriate because the median upstream concentration exceeds 90% of this value.

As shown in the table above, reasonable potential exists for the discharge to cause or contribute to excursions above the chronic criterion for aluminum as well as both the chronic and acute criteria for copper. Therefore, limits on the discharge of these metals are proposed in the draft permit. The proposed aluminum limit in the draft permit has been set at the applicable criteria, as the median upstream concentrations exceeds 90% of criteria.

There is no reasonable potential (under either acute or chronic conditions) that the discharge of cadmium, chromium, lead, nickel, or zinc will cause or contribute to an exceedance of applicable water quality criteria, therefore limitations for these metals are not included. The draft permit maintains the monitoring requirement in the existing permit for the monitoring for all of the aforementioned metals in conjunction with WET tests with the exception of chromium, as the current WET test protocol no longer requires its analysis. The results of aluminum and copper analyses conducted in conjunction with WET tests may be used to satisfy one of the twice per month monitoring requirements for these metals for the particular month in which the sampling is conducted.

6. Whole Effluent Toxicity (WET)

EPA's *Technical Support Document for Water Quality Based Toxics Control* (USEPA 1991 [EPA/505/290-001]) 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-Region I adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect both aquatic life and human health. Pollutant-specific approaches such as those found 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 "additive" 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.

Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts and New Hampshire law states that, "all 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; ...." (NH RSA 485-A:8, VI and the NH Code of Administrative Rules, Part Env-Wq 1703.21). The federal NPDES regulations found at 40 CFR §122.44(d)(1)(v) require whole effluent toxicity limits in a permit when reasonable potential exists for a discharge to cause or contribute to an excursion above state narrative criteria for toxicity. Furthermore, the results of toxicity tests may be used to demonstrate compliance with the "no toxics in toxics amounts" requirement found in both the CWA and in the State of New Hampshire's regulations.

The current policy of EPA-Region I is to require toxicity testing in all NPDES permits issued to POTWs, with the type of whole effluent toxicity test(s) (acute and/or chronic) and the effluent limitation(s) required by the permit being based on the available dilution. NPDES permits issued to municipal discharges (i.e., POTWs) having a dilution factor less than 10 typically include an acute and chronic WET limit.

The draft permit includes an acute (LC_{50}) limit of 100 % which was based on the revised dilution factor of 7.5. This limit is the same as that in the existing permit. The acute

limit (LC_{50}) is the percentage of effluent in a sample that must not cause more than a 50% mortality rate in the test organisms. Therefore, an acute (LC_{50}) limit of 100% means that a sample of 100% effluent (no dilution) shall be lethal to no more than 50% of the test organisms.

The existing permit also contains a chronic (Chronic-No Observed Effect Concentration (C-NOEC)) limitation of 11.9 %, which was based on the previous dilution factor of 8.4. The C-NOEC is defined as the highest concentration to which test organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival or reproduction during a specific time of observation. The C-NOEC is determined as the receiving water concentration (RWC) and is calculated by dividing one by the dilution factor and multiplying by 100.

The C-NOEC limit in the draft permit has been adjusted from 11.9% to 13.3% and reflects the recalculated dilution factor of 7.5 as shown below:

$$RWC = (1/7.5) * 100 = 13.3$$

The results of WET tests conducted from 2008-2013 are summarized in Attachment A.

The existing permit contains a provision which would allow for a reduction in the frequency of WET testing if specific conditions are met. In response to a request submitted by the permittee requesting such a reduction, WET test reports for tests conducted during the calendar quarters ending June 2012 through March 2013 were evaluated. This evaluation found compliance with the WET test limits in the existing permit for all but one of the acute WET tests (June 2012) that was conducted using the fathead minnow (*Pimephales promelas*) as the test organism. The test acceptability criteria were consistently achieved for all of the tests that were conducted during the review period. The results of this review suggest that reducing the frequency of WET testing from four to two per year is appropriate. Therefore, the draft permit requires that samples for use in WET tests shall be collected and the tests completed by the calendar quarters ending June 30th and September 30th using the daphnid, *Ceriodaphnia dubia* (*C. dubia*) and the fathead minnow, *Pimephales promelas (P. promelas*) as test organisms.

If the results of WET tests indicate that the discharge presents a risk of toxicity, the monitoring frequency and/or testing requirements may be increased. The permit may also be modified, or alternatively revoked and reissued, to incorporate additional toxicity testing requirements or chemical-specific limits. These actions will occur if the Regional Administrator determines that the New Hampshire water quality standards are not adequately enforced and users of the receiving water are not adequately protected during the remaining life of the permit. Results of these toxicity tests are considered “new information not available at the time of permit development”; therefore, the permitting authority is allowed to use said information to modify an issued permit under the authority granted in 40 C.F.R. §122.62(a)(2).

Additional Analyses

The draft permit maintains the requirement in the 2006 permit for the reporting of several selected parameters, including ammonia nitrogen (as N); hardness; and total recoverable aluminum, cadmium, copper, lead, nickel, and zinc, the results of which are determined through analyses conducted on samples of the 100 % effluent sample in conjunction with WET tests. The requirement in the existing permit for the analysis of chromium in addition to the aforementioned parameters has not been included in the draft permit, as it is no longer required in accordance with the current WET test protocol (see Attachment B, *Freshwater Acute Toxicity Test Procedure and Protocol*, USEPA February 2011). The results of additional analyses conducted in conjunction with WET tests from 2008-2013 are shown in Attachment A.

VIII. 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.

IX. INDUSTRIAL USERS

The permittee is currently not required to administer a pretreatment program pursuant to 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 permittee is required to notify EPA and NHDES-WD whenever a process wastewater discharge to the facility from an industrial user within a primary industry category (see 40 CFR § 122 Attachment 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 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 Attachment C for list) who commence discharge to the POTW after the effective date of the permit, and (2) submit copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users to EPA and NHDES-WD.

X. OPERATION AND MAINTENANCE

Regulations regarding proper operation and maintenance are found at 40 CFR § 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 Parts I.B., C. and 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 for maintaining alternate power where necessary.

XI. ESSENTIAL FISH HABITAT

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Services ("NMFS") if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat (16 U.S.C. § 802(10)).

The Amendments broadly define "essential fish habitat" ("EFH") as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. §

1802(10)). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH (50 CFR § 600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences or actions.

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

Atlantic salmon (*Salmo salar*) is the only species for which EFH has been designated in the Johns River. According to the New Hampshire Fish and Game Department ("NHFGD"), there is currently no stocking of Atlantic salmon fry in the Johns River. The Johns River in the vicinity of Whitefield is generally shallow and sandy, with summer temperatures typically exceeding those optimal for juvenile salmon. Salmon fry have been stocked in the waters upstream from Whitefield. These tributaries feed the Johns River. Therefore, the Whitefield area may represent an important habitat for Atlantic salmon smolts. A series of hydroelectric dams on the Connecticut River downstream of the facility currently impede downstream smolt migration and prevent returning adults from accessing these historic spawning grounds.

EPA has determined that the draft permit has been conditioned in such a way so as to minimize any adverse impacts to EFH for the following reasons:

- This permit action is a reissuance of an existing NPDES permit;
- The WWTP withdraws no water from the Johns River; therefore, no life stages of EFH species are vulnerable to impingement or entrainment from this WWTP;
- The draft permit prohibits the discharge from causing a violation of state water quality standards;
- The draft permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts;
- The permit requires toxicity testing two times per year to ensure that the discharge does not present toxicity problems;
- The draft permit contains limits for $BOD_{5,}$ TSS, pH, *Escherichia coli*, total residual chlorine, total recoverable aluminum, copper, total phosphorus and ammonia;
- The draft permit requires monitoring for nitrogen, ammonia, phosphorus; and total recoverable aluminum, cadmium, copper, lead, nickel, and zinc.

EPA believes that the conditions and limitations contained within the proposed permit adequately protect all aquatic life, including those with designated EFH in the receiving water, and that further mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for these conclusions, EPA will contact NMFS Habitat Division.

XII. ENDANGERED SPECIES ACT

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

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

EPA has reviewed the available information pertaining to 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. Therefore, no consultation under the Endangered Species Act is required.

If new information becomes available that changes the basis for this conclusion, EPA will notify the federal agency responsible for protection of the species and initiate consultation.

XIII. ANTIDEGRADATION

The New Hampshire water quality standards include an antidegradation provision which states that the existing designated uses and the level of water quality necessary to protect the existing uses shall be maintained and protected (Env-Wq 1708).

The draft permit contains limitations and conditions which are at least as stringent as those contained in the existing permit. The State of New Hampshire has indicated that there will be no lowering of water quality and no loss of existing designated uses in the receiving water as a result of this permit action, and that additional antidegradation review is not warranted at this time.

XIV. MONITORING AND REPORTING REQUIREMENTS

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 (l), and 122.48.

The draft permit includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. Specifically, the draft permit requires that, no later than

one year following 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").

NetDMR is a national web-based tool for regulated CWA permittees to submit DMRs electronically via a secure internet application to 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: http://www.epa.gov/netdmr. 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 procedures for requesting an "opt-out". 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 who 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 shall be postmarked no later than the 15th day of the month following the completed reporting period.

XV. STATE CERTIFICATION REQUIREMENT

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 that the limitations are adequate to protect water quality. EPA 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.

XVI. COMMENT PERIOD, REQUESTS FOR PUBLIC HEARINGS 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:

Meridith Timony
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100 (Mail Code OEP06-01)
Boston, Massachusetts 02109-3912
Telephone: (617) 918-1533
Fax: (617) 918-0533

Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the state agency. Such requests shall state the nature of the issue proposed to be raised at the hearing. A public hearing may be held after at least thirty (30) 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 the EPA office listed above.

Following the close of the comment period, and after a public hearing (if applicable), 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.

Information concerning the draft permit may be obtained between the hours of 9:00 am and 5:00 pm (8:00 a.m. and 4:00 p.m. for the state), excluding holidays.

Date: 12/31/13

Ken Morraff, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

Figures and Attachments

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

Figure 1 Location of the Whitefield WWTP and Outfall 001

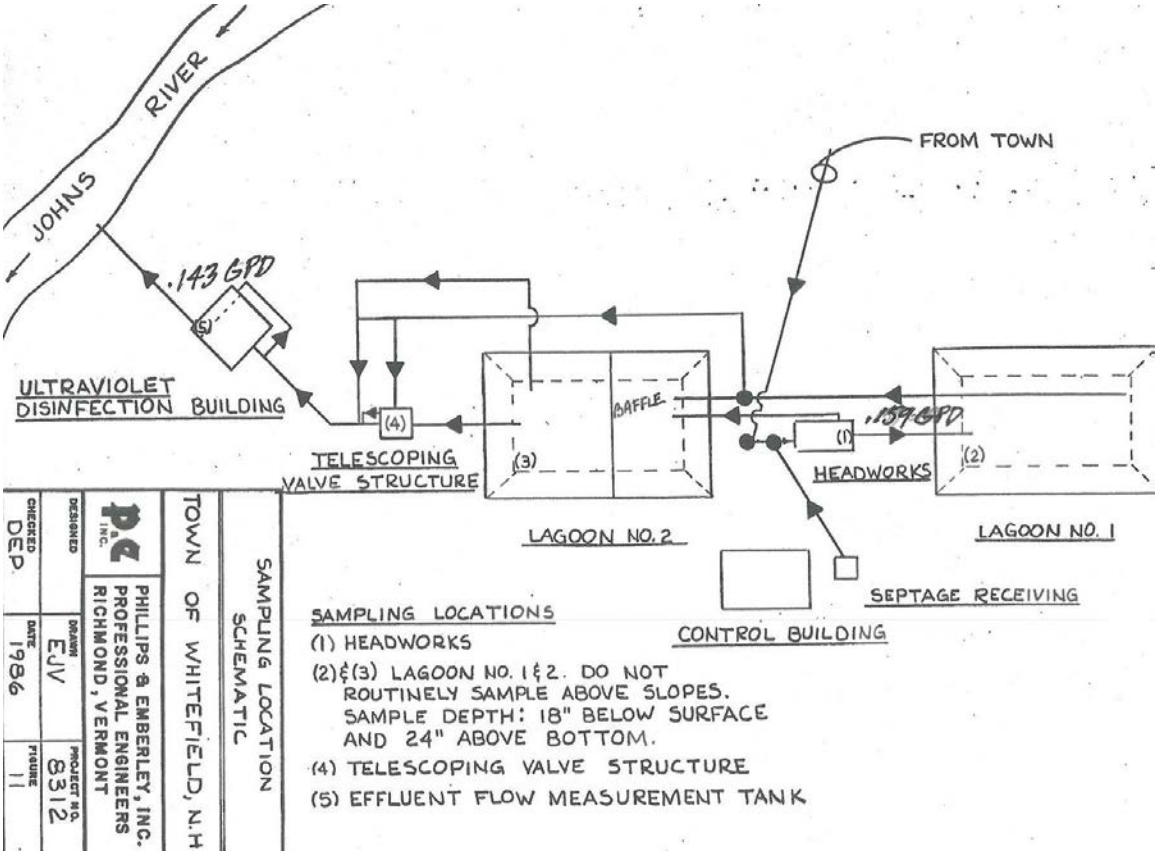

Figure 2 Process Flow Diagram

Attachment A Data Summary (2008-2013)

Outfall 001

Monitoring Period End Date	BOD5							TSS						
	MO AVG		WKLY AVG		DAILY MX		MO AV MN	MO AVG		WKLY AVG		DAILY MX		MO AV MN
	46.3 lb/d	30 mg/L	69.5 lbs/d	45 mg/L	77.2 lbs/d	50 mg/L	85%	46.3 lb/d	30 mg/L	69.5 lb/d	45 mg/L	77.2 lb/d	50 mg/L	85%
05/31/2008	31.8	20.7	54.6	24.0	54.6	24.0	88	35.8	25.6	54.6	34.0	62.2	34.0	86
06/30/2008	27.7	24.3	38.8	33.0	38.8	33.0	84	30.1	26.8	38.8	34.0	37.6	34.0	82
07/31/2008	31.2	29.8	37.1	39.0	37.1	39.0	83	32.9	29.5	37.1	37.0	51.0	37.0	84
08/31/2008	23.1	12.6	32.7	17.3	32.7	17.3	90	43.2	23.6	32.7	29.0	64.0	29.0	85
09/30/2008	11.4	9.9	13.0	13.0	13.0	13.0	93	17.6	15.0	13.0	16.0	23.1	16.0	
10/31/2008	11.0	9.7	17.2	13.0	17.2	13.0	94	16.0	15.6	17.2	21.0	19.4	21.0	91
11/30/2008	16.7	17.2	19.5	20.0	19.5	20.0	91	18.6	17.5	19.5	21.0	27.2	21.0	88
12/31/2008	23.9	20.3	31.6	22.9	31.6	22.9	87	25.6	22.0	31.6	24.0	34.4	24.0	86
01/31/2009	39.6	33.3	48.3	36.0	48.3	36.0	80	29.5	25.4	48.3	28.0	37.6	28.0	84
02/28/2009	30.9	32.0	33.6	32.8	33.6	32.8	85	25.5	26.5	33.6	28.0	27.3	28.0	86
03/31/2009	34.4	30.5	40.3	32.3	40.3	32.3	83	27.5	23.5	40.3	27.0	35.1	27.0	86
04/30/2009	36.9	24.9	42.2	26.8	42.2	26.8	83	24.4	16.0	42.2	22.0	36.1	22.0	86
05/31/2009	27.4	23.2	34.2	27.9	34.2	27.9	87	29.8	25.2	34.2	29.0	39.4	29.0	87
06/30/2009	25.8	20.5	36.1	27.6	36.1	27.6	87	34.5	27.8	36.1	29.0	41.8	29.0	85
07/31/2009	13.3	10.5	15.5	15.5	17.2	15.5	94	22.3	21.2	15.5	28.0	35.8	28.0	89
08/31/2009	14.0	9.1	17.2	11.5	17.2	11.5	94	26.3	18.5	17.2	20.0	35.8	20.0	88
09/30/2009	8.4	9.3	9.3	9.8	9.3	9.8	94	15.8	18.0	9.3	28.0	25.5	28.0	87
10/31/2009	11.7	12.3	16.8	14.6	16.8	14.6		17.2	18.4	16.8	20.0	23.0	20.0	
11/30/2009	13.1	13.6	16.8	16.6	16.8	16.6		19.8	21.5	16.8	23.0	21.3	23.0	
12/31/2009	25.9	24.4	31.4	28.7	31.4	28.7	87	26.2	22.0	31.4	28.0	31.7	28.0	88
01/31/2010	38.7	29.8	82.0	36.3	82.0	36.3		32.4	25.4	82.0	29.0	65.5	29.0	
02/28/2010	29.0	33.4	33.4	36.4	33.4	36.4		23.1	26.0	33.4	30.0	28.3	30.0	
03/31/2010	49.7	35.2	67.0	37.7	67.0	37.7		35.2	27.0	67.0	29.0	48.0	29.0	
04/30/2010	36.0	24.9	57.7	33.4	57.7	33.4		26.4	18.6	57.7	23.0	32.8	23.0	
05/31/2010	28.9	22.7	344.0	27.0	34.4	27.0		26.6	22.5	344.0	24.0	31.8	24.0	
06/30/2010	15.5	16.3	21.9	23.0	21.9	23.0	91	28.2	29.5	21.9	32.0	30.4	32.0	86
07/31/2010	14.3	14.7	24.5	19.0	17.7	19.0	90	22.6	23.6	24.5	28.0	27.4	28.0	87
08/31/2010	17.6	14.0	32.7	21.9	32.7	21.9	93	29.3	21.8	32.7	25.0	53.0	25.0	91
09/30/2010	9.3	10.9	9.9	12.0	9.9	12.0	93	19.9	23.3	9.9	27.0	24.3	27.0	88
10/31/2010	36.5	32.0	100.9	84.0	100.9	84.0	79	24.1	22.2	100.9	28.0	28.0	28.0	86
11/30/2010	29.4	28.9	39.6	34.7	39.6	34.7	87	29.7	28.5	39.6	31.0	35.0	31.0	84
12/31/2010	31.8	30.6	35.4	34.2	35.4	34.2	84	31.1	28.5	35.4	33.0	41.8	33.0	82
01/31/2011	30.7	32.9	32.9	34.3	32.9	34.3	82	26.7	27.5	32.9	34.0	32.6	34.0	82
02/28/2011	30.1	34.1	33.6	35.0	33.6	35.0	86	26.3	30.4	33.6	32.0	30.7	32.0	83
03/31/2011	51.7	46.4	51.7	58.6	79.7	58.6	74	39.3	36.3	51.7	39.0	53.0	39.0	81
04/30/2011	47.6	33.6	69.2	44.6	69.2	44.6	75	33.8	23.8	69.2	31.0	46.5	31.0	86
05/31/2011	33.9	24.7	65.9	47.3	65.9	47.3	86	36.6	27.9	65.9	42.0	58.5	42.0	83
06/30/2011	19.5	15.9	34.5	19.9	34.5	19.9	91	36.6	30.2	34.5	30.4	47.2	40.8	78
07/31/2011	9.0	11.1	10.3	13.2	10.3	12.6	95	17.1	21.3	10.3	40.8	22.6	27.6	76

Attachment A (Continued)

Outfall 001

Monitoring Period End Date	BOD5							TSS						
	MO AVG		WKLY AVG		DAILY MX		MO AV MN	MO AVG		WKLY AVG		DAILY MX		MO AV MN
	46.3 lb/d	30 mg/L	69.5 lbs/d	45 mg/L	77.2 lbs/d	50 mg/L	85%	46.3 lb/d	30 mg/L	69.5 lb/d	45 mg/L	77.2 lb/d	50 mg/L	85%
08/31/2011	7.4	9.9	10.2	13.7	10.2	13.7	95	17.3	23.6	10.2	27.6	20.5	27.6	79
09/30/2011	11.7	11.5	18.4	15.1	18.4	15.1	95	24.8	24.9	18.4	33.2	33.5	33.2	88
10/31/2011	11.6	11.6	18.7	20.6	18.7	20.6	90	34.0	33.5	18.7	39.5	42.9	39.6	93
11/30/2011	14.6	13.5	19.9	16.4	19.9	16.4	94	24.5	22.8	19.9	23.2	32.7	23.2	87
12/31/2011	20.1	18.6	25.7	25.3	25.7	25.3	95	32.4	29.7	25.7	38.0	48.4	38.0	92
01/31/2012	24.0	28.0	32.0	32.0	32.0	32.0	94	34.0	40.0	32.0	43.0	37.0	43.0	93
02/29/2012	38.0	35.0	51.0	43.0	51.0	43.0	89	44.0	40.0	51.0	50.0	60.0	50.0	84
03/31/2012	22.6	31.0	31.2	43.0	31.2	35.0	96	22.3	32.0	31.2	50.0	30.1	44.0	94
04/30/2012	9.6	17.0	12.5	19.0	12.5	19.0	93	15.4	26.0	12.5	30.0	24.8	30.0	92
05/31/2012	14.0	23.0	27.0	29.0	27.0	32.0	93	23.0	34.0	27.0	43.0	47.0	43.0	89
06/30/2012		20.0		32.0		24.0	91		34.0		40.0		40.0	79
07/31/2012		12.0		16.0		16.0	97		28.0		47.0		47.0	93
08/31/2012	5.0	9.0	7.0	12.0	7.0	12.0	98	13.0	23.0	7.0	25.0	17.0	25.0	95
09/30/2012	5.0	10.0	6.0	11.0	6.0	11.0	97	12.0	25.0	6.0	28.0	15.0	28.0	93
10/31/2012	7.0	14.0	12.0	19.0	12.0	19.0	97	15.0	22.0	12.0	26.0	34.0	26.0	92
11/30/2012	4.9	16.0	6.1	22.0	8.7	22.0	96	4.9	15.0	6.1	18.0	7.6	18.0	95
12/31/2012	8.5	16.0	10.6	20.0	10.6	19.0	97	7.1	13.0	10.6	16.0	8.9	16.0	97
01/31/2013	17.1	25.0	20.5	27.0	28.4	31.0	91	13.5	20.0	20.5	24.0	21.1	24.0	92
02/28/2013	15.4	31.0	28.4	32.0	16.0	32.0	91	12.4	25.0	28.4	27.0	14.5	29.0	90
03/31/2013	13.3	26.0	16.3	30.0	16.3	29.0	93	10.7	21.0	16.3	29.0	12.3	21.0	91
04/30/2013	10.7	19.0	11.9	22.0	11.9	22.0	95	10.9	18.0	11.9	19.0	11.9	19.0	94
05/31/2013	18.1	21.0	36.4	25.0	36.4	25.0	94	27.8	33.0	36.4	44.0	52.0	44.0	90
Min	4.9	9.0	6.0	9.8	6.0	9.8	74	4.9	13.0	6.0	16.0	7.6	16.0	76
Max	51.7	46.4	344.0	84.0	100.9	84.0	98	44.0	40.0	344.0	50.0	65.5	50.0	97
Avg	22.0	21.3	36.2	26.9	31.3	26.7	90	24.8	24.9	36.2	30.1	34.2	29.8	87
Median	19.5	20.5	31.4	25.3	31.4	25.0	91	25.6	24.9	31.4	29.0	32.8	28.0	87

Attachment A (Continued)

Outfall 001

Monitoring Period End Date	Flow		E. Coli		pH		Ammonia Nitrogen	
	MO AVG	DAILY MX	MO GEO	DAILY MX	MIN	MAX	MO AVG	DAILY MX
	mgd	mgd	126#/100ml	406 #/100ml	6.5 SU	8 SU	mg/l	mg/l
05/31/2008	0.145	0.287	113	221	7.2	7.4	18	18
06/30/2008	0.135	0.224	86	206	7.2	7.4	25	25
07/31/2008	0.141	0.277	79	180	6.4	7.3	16	16
08/31/2008	0.207	0.319	70	105	6.1	6.9	0.67	0.67
09/30/2008	0.136	0.211	84	130	6.7	7.1	0.22	0.22
10/31/2008	0.127	0.188	88	202	6.6	7.3	0.29	0.29
11/30/2008	0.125	0.155	126	193	7.1	7.7	16	16
12/31/2008	0.145	0.233	190	211	6.8	7.7	22	22
01/31/2009	0.141	0.182	135	219	7.1	7.4	24	
02/28/2009	0.121	0.156	81	172	7	7.3	26	26
03/31/2009	0.153	0.21	143	189	7.2	7.5	29	29
04/30/2009	0.153	0.21	143	189	7.2	7.6	29	29
05/31/2009	0.157	0.234	79	326	7	7.5	18	18
06/30/2009	0.143	0.201	26	123	7	7.3	12	12
07/31/2009	0.16	0.292	7	150	7	7.4	18	18
08/31/2009	0.157	0.226	12	154	6.6	7.6	2.2	2.2
09/30/2009	0.11	0.145	8	69	6.9	7.3	0.86	0.86
10/31/2009	0.126	0.226	62	150	7	7.4	18	18
11/30/2009	0.13	0.356	53	155	7.3	7.6	20	20
12/31/2009	0.148	0.247	70	146	7.3	7.7	19	19
01/31/2010					7.2	7.6		
02/28/2010	0.121	0.257	113	137	7	7.5	23	23
03/31/2010	0.152	0.222	108	127	7	7.5	29	29
04/30/2010	0.166	0.234	38	125	7.2	7.5	28	28
05/31/2010	0.146	0.234	54	100	7.2	7.5	21	21
06/30/2010	0.135	0.228	16	109	6.4	7.4	19	19
07/31/2010	0.119	0.178	24	93	7.1	7.5	11	11
08/31/2010	0.125	0.265	12	166	6.6	7.2	0.05	0.05
09/30/2010	0.107	0.151	4	40	6.5	7	0.66	0.66
10/31/2010	0.14	0.197	56	314	6.9	7.7	12	13
11/30/2010	0.125	0.178	64	152	7.1	7.8	13	13
12/31/2010	0.128	0.18	123	162	7.2	7.9	23	23
01/31/2011	0.111	0.163	131	148	7.1	7.5	22	22
02/28/2011	0.107	0.152	107	122	7	7.5	27	27
03/31/2011	0.137	0.229	123	153	7	7.5	29	29
04/30/2011	0.181	0.237	37	140	7	7.6	24	24
05/31/2011	0.178	0.295	23	376	6.9	7.7	17	17
06/30/2011	0.134	0.208	7	155	7	7.7	26	26
07/31/2011	0.096	0.195	1	2	6.5	7.3	5.2	5.2

Attachment A (Continued)

Outfall 001

Monitoring Period End Date	Copper MO AVG 0.024 mg/l	Copper DAILY MX 0.032 mg/l
05/31/2008	0.045	0.05
06/30/2008	0.03	0.03
07/31/2008	0.03	0.03
08/31/2008	0.03	0.03
09/30/2008	0.01	0.01
10/31/2008	0.01	0.01
11/30/2008	0.04	0.05
12/31/2008	0.03	0.03
min	0.01	0.01
max	0.045	0.05
avg	0.028	0.03
median	0.03	0.03

Monitoring Period End Date	Copper MO AVG 0.053 mg/l	Copper DAILY MX mg/l
01/31/2009	0.022	0.022
02/28/2009	0.03	0.04
03/31/2009	0.037	0.05
04/30/2009	0.037	0.039
05/31/2009	0.019	0.024
06/30/2009	0.034	0.037
07/31/2009	0.023	0.024
08/31/2009	0.015	0.02
09/30/2009	0.011	0.016
10/31/2009	0.03	0.033
11/30/2009	0.13	0.14
12/31/2009	0.022	0.022
01/31/2010	0.115	0.120
02/28/2010	0.027	0.027
03/31/2010	0.033	0.033
04/30/2010	0.035	0.04
05/31/2010	0.021	0.021
06/30/2010	0.013	0.014
07/31/2010	0.047	0.05
08/31/2010	0.018	0.02
09/30/2010	0.014	0.014
10/31/2010	0.03	0.03
11/30/2010	0.025	0.026
12/31/2010	0.021	0.023
01/31/2011	0.024	0.024
02/28/2011	0.025	0.025
03/31/2011	0.031	0.031
04/30/2011	0.017	0.017
05/31/2011	0.009	0.01

Monitoring Period End Date	Copper MO AVG 0.053 mg/l	Copper DAILY MX mg/l
06/30/2011	0.022	0.022
07/31/2011	0.013	0.014
08/31/2011	0.028	0.029
09/30/2011	0.02	0.02
10/31/2011	0.021	0.021
11/30/2011	0.016	0.016
12/31/2011	0.026	0.028
01/31/2012	0.0265	0.027
02/29/2012	0.0205	0.021
03/31/2012	0.019	0.019
04/30/2012	0.019	0.021
05/31/2012	0.019	0.021
06/30/2012	0.021	0.022
07/31/2012	0.014	0.015
08/31/2012	0.012	0.014
09/30/2012	0.014	0.014
10/31/2012	0.016	0.016
11/30/2012	0.019	0.019
12/31/2012	0.018	0.019
01/31/2013	0.023	0.023
02/28/2013	0.023	0.023
03/31/2013	0.026	0.026
04/30/2013	0.02	0.02
05/31/2013	0.019	0.019
min	0	0
max	0.13	0.14
avg	0.026	0.027
median	0.021	0.022

Attachment A (Continued)

Outfall 001

Monitoring Period End Date	Flow		E. Coli		pH		Ammonia Nitrogen	
	MO AVG	DAILY MX	MO GEO	DAILY MX	MIN	MAX	MO AVG	DAILY MX
	mgd	mgd	126 #/100ml	406 #/100ml	6.5 SU	8 SU	mg/l	mg/l
05/31/2008	0.145	0.287	113	221	7.2	7.4	18	18
06/30/2008	0.135	0.224	86	206	7.2	7.4	25	25
07/31/2008	0.141	0.277	79	180	6.4	7.3	16	16
08/31/2008	0.207	0.319	70	105	6.1	6.9	0.67	0.67
09/30/2008	0.136	0.211	84	130	6.7	7.1	0.22	0.22
10/31/2008	0.127	0.188	88	202	6.6	7.3	0.29	0.29
11/30/2008	0.125	0.155	126	193	7.1	7.7	16	16
12/31/2008	0.145	0.233	190	211	6.8	7.7	22	22
01/31/2009	0.141	0.182	135	219	7.1	7.4	24	
02/28/2009	0.121	0.156	81	172	7	7.3	26	26
03/31/2009	0.153	0.21	143	189	7.2	7.5	29	29
04/30/2009	0.153	0.21	143	189	7.2	7.6	29	29
05/31/2009	0.157	0.234	79	326	7	7.5	18	18
06/30/2009	0.143	0.201	26	123	7	7.3	12	12
07/31/2009	0.16	0.292	7	150	7	7.4	18	18
08/31/2009	0.157	0.226	12	154	6.6	7.6	2.2	2.2
09/30/2009	0.11	0.145	8	69	6.9	7.3	0.86	0.86
10/31/2009	0.126	0.226	62	150	7	7.4	18	18
11/30/2009	0.13	0.356	53	155	7.3	7.6	20	20
12/31/2009	0.148	0.247	70	146	7.3	7.7	19	19
01/31/2010					7.2	7.6		
02/28/2010	0.121	0.257	113	137	7	7.5	23	23
03/31/2010	0.152	0.222	108	127	7	7.5	29	29
04/30/2010	0.166	0.234	38	125	7.2	7.5	28	28
05/31/2010	0.146	0.234	54	100	7.2	7.5	21	21
06/30/2010	0.135	0.228	16	109	6.4	7.4	19	19
07/31/2010	0.119	0.178	24	93	7.1	7.5	11	11
08/31/2010	0.125	0.265	12	166	6.6	7.2	0.05	0.05
09/30/2010	0.107	0.151	4	40	6.5	7	0.66	0.66
10/31/2010	0.14	0.197	56	314	6.9	7.7	12	13
11/30/2010	0.125	0.178	64	152	7.1	7.8	13	13
12/31/2010	0.128	0.18	123	162	7.2	7.9	23	23
01/31/2011	0.111	0.163	131	148	7.1	7.5	22	22
02/28/2011	0.107	0.152	107	122	7	7.5	27	27
03/31/2011	0.137	0.229	123	153	7	7.5	29	29
04/30/2011	0.181	0.237	37	140	7	7.6	24	24
05/31/2011	0.178	0.295	23	376	6.9	7.7	17	17
06/30/2011	0.134	0.208	7	155	7	7.7	26	26

Attachment A (Continued)

Outfall 001

Monitoring Period End Date	Flow		E. Coli		pH		Ammonia Nitrogen	
	MO AVG	DAILY MX	MO GEO	DAILY MX	MIN	MAX	MO AVG	DAILY MX
	mgd	mgd	126 #/100ml	406 #/100ml	6.5 SU	8 SU	mg/l	mg/l
07/31/2011	0.096	0.195	1	2	6.5	7.3	5.2	5.2
08/31/2011	0.106	0.206	4	78	6.5	7.3	10	10
09/30/2011	0.112	0.156	4	93		6.5	0.43	0.43
10/31/2011	0.119	0.185	9	22	6	7	20	20
11/30/2011	0.106	0.169	22	62	6.5	7.7	11	11
12/31/2011	0.118	0.191	154	378	7	7.8	28	28
01/31/2012	0.133	0.164	199	378	7.3	7.9	30	30
02/29/2012	0.114	0.18	92	206	7.2	7.8	30	30
03/31/2012	0.068	0.129	17	172	7	7.8	28	28
04/30/2012	0.066	0.118	23	272	7.1	8.4	33	33
05/31/2012	0.076	0.161	39	361	7.1	7.6	33	33
06/30/2012			9	58	6.1	7.5	13	13
07/31/2012			4	115	6.5	7.1	0.57	0.57
08/31/2012	0.067	0.11	1	4	6.6	6.9	0.76	0.76
09/30/2012	0.058	0.085	10	31	6.5	7.3	0.62	0.62
10/31/2012	0.06	0.155	34	361	6.8	7.2	9.4	9.4
11/30/2012	0.05	0.082	11	101	6.5	7.7	9.7	9.7
12/31/2012	0.057	0.088	74	304	7.3	7.8	32	32
01/31/2013	0.06	0.11	196	344	7.2	7.6	40	40
02/28/2013	0.06	0.099	147	361	7.3	7.7	38	38
03/31/2013	0.061	0.086	56	147	7.5	8	31	31
04/30/2013	0.069	0.112	23	210	7.4	7.7	30	30
05/31/2013	0.079	0.208	13	344	6.6	7.6	29	29
Min	0.05	0.082	1	2	6	6.5	0.05	0.05
Max	0.207	0.356	199	378	7.5	8.4	40	40
Avg	0.119	0.193	64	175	6.9	7.5	18.36	18.28
Median	0.125	0.193	55	153	7	7.5	19.5	19

Attachment A (Continued)

Outfall 001

Monitoring Period End Date	Al	Cd	Cu	Pb	Ni	Zn	Hardness	Ammonia -N	LC50 - *C. dubia*	LC50 - *P. promelas*	C-NOEC- *C. dubia*	C-NOEC- *P. promelas*
	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MN	DAILY MN	DAILY MN	DAILY MN
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	100 %	100 %	≥ 11.9 %	≥11.9 %
03/31/2008	0.038	ND	0.035	0.00067	0.003	0.08	91	29	100	100	100	100
06/30/2008	0.13	ND	0.021	0.001	0.0027	0.06	94	27	100	100	12.5	50
09/30/2008	0.02	ND	0.008	0.001	ND	0.021	89	0.35	100	100	100	100
12/31/2008	0.06	ND	0.02	0.001	ND	0.031	92	19	100	100	100	100
03/31/2009	0.22	ND	0.029	0.001	ND	0.047	90	28	100	100	50	50
06/30/2009	0.06	ND	0.016	0.001	0.002	0.025	97	17	100	100	50	100
09/30/2009	0.025	ND	0.011	0.0007	ND	0.022	91	1.2	100	100	100	100
12/31/2009	0.07	ND	0.018	0.001	0.002	0.025	86	16	100	100	100	100
03/31/2010	0.087	ND	0.04	0.001	ND	0.032	98	31	100	100	12.5	100
06/30/2010	0.092	ND	0.024	0.001	0.002	0.12	80	27	100	100	100	100
09/30/2010	0.06	ND	0.015	0.0008	0.002	0.029	88	4.2	100	100	22.2	100
12/31/2010	0.093	ND	0.029	0.001	ND	0.035	85	19	100	100	100	100
03/31/2011	0.042	ND	0.033	0.0009	0.002	0.036	90	29	100	64.1	25	50
06/30/2011	0.086	ND	0.019	0.001	ND	0.022	81	18	100	100	50	100
09/30/2011	0.078	ND	0.023	0.001	0.003	0.022	99	5.7	100	100	100	100
12/31/2011	0.054	ND	0.017	0.0007	0.002	0.028	120	2.2	100	100	25	100
03/31/2012	0.048	ND	0.022	0.0007	ND	0.028	95	31	100	100	50	50
06/30/2012	0.17	ND	0.037	0.002	0.003	0.038	100	27	100	100	22.2	100
09/30/2012	0.047	ND	0.015	0.0006	0.002	0.023	100	2.5	100	100	100	100
12/31/2012	0.055	ND	0.017	0.0007	0.002	0.036	99	5.8	100	100	100	100
03/31/2013	0.049	ND	0.031	0.001	0.003	0.03	95	36	100	93.9	25	50
Min	0.02	NA	0.008	0.0006	0.002	0.021	80	0.35	100	64.1	12.5	50
Max	0.22	NA	0.04	0.002	0.003	0.12	120	36	100	100	100	100
Avg	0.075	NA	0.0228571	0.0009	0.0024	0.038	93	17.90	100	98.0	64.0	89
Median	0.06		0.021	0.001	0.002	0.03	92	19	100	100	50	100

ND = Non-detect

Attachment A (Continued)

Upstream Receiving Water

Monitoring Period End Date	Al	Cd	Cu	Pb	Ni	Zn	Hardness	Ammonia-N	pH
	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	SU
06/30/2008	0.12	0.00069	0	0.002	0	0.039	25	0	7.38
09/30/2008	0.14	0	0	0.001	0	0.012	20	0	7.24
12/31/2008	0.16	0	0	0	0	0.019	18	0	7.02
03/31/2009	0.1	0	0.004	0.0005	0	0.019	14	0	6.85
06/30/2009	0.15	0	0	0.0005	0	0.019	15	0	7.15
09/30/2009	0.22	0	0.005	0.0007	0	0.011	16	0.12	6.92
12/31/2009	0.16	0	0.003	0	0	0.004	16	0.13	6.94
03/31/2010									
06/30/2010	0.13	0	0.009	0.001	0	0.051	16	0	7.2
09/30/2010	0.11	0	0.003	0.001	0	0.019	21	0	7.43
12/31/2010	0.14	0	0	0	0	0.014	15	0	6.92
03/31/2011									
06/30/2011	0.23	0	0	0	0	0.013	11	0	6.9
09/30/2011	0.16	0	0.006	0.0008	0	0.016	29	0	7.02
12/31/2011	0.11	0	0	0	0	0.003	18	0	6.61
03/31/2012	0.11	0	0	0	0	0	23	0	6.7
06/30/2012	0.14	0	0	0	0	0.003	18	0	6.6
09/30/2012	0.15	0	0.005	0	0	0.002	20	0	6.8
12/31/2012	0.14	0	0.005	0	0	0.006	16	0	6.76
03/31/2013	0.089	0	0	0	0	0.044	22	0	7.34
Min	0.09	0	0	0	0	0	11	0	6.6
Max	0.23	0.00069	0.009	0.002	0	0.051	29	0.13	7.43
Avg	0.14	0.00004	0.002	0.000	0	0.016	18.5	0.01	6.99
Median	0.14	0	0	0	0	0.014	18	0	6.93

Data reported as “ND” were assigned a value of zero

Attachment B

Calculation of Mass-based Limits

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

$$L = C \times QPDF * 8.34$$

where:

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

Attachment C

Derivation of 7Q10 Flow and Dilution Factor Calculation

7Q10 Calculation: $Q_{7Q10ADJ} = Q_{7Q10} + Q_{WU}$

Dilution Factor (DF) Calculation $DF = \frac{(Q_{7Q10ADJ} + Q_D) * 0.9}{Q_D}$

Where:

Q_D = Design flow of the wastewater facility.

Q_{7Q10} = upstream 7Q10 flow from the Dingman equation, stream gage data, or a combination

Q_{WU} = Summation of the water use flows within the basin, including water supply withdrawals (positive values used for returns, negative values used for withdrawals). Therefore, if there are more returns than withdrawals, Q_{WU} is a positive value and if there are more withdrawals than returns, Q_{WU} is a negative value (see water use table below)

$Q_{7Q10\ ADJ}$ = upstream 7Q10 flow adjusted to take in account water use within the watershed.

For Whitefield WWTF

Q_{7Q10} :

Since the watershed is ungaged, then the 7Q10 was calculated using the Dingman equation.

Dingman Equation:
$Q_{7Q10} = 10^X$

Where:
$x = -2.22 + 1.25 \text{ Log}_{10}A + .0004Y + 1.49D$
A, Drainage Area in square miles
Y, Mean Basin Elevation in feet above sea level
D, Fraction of Basin Covered with Coarse-Grained Stratified Drift in Contact with Streams

Whitefield:
A = 31.1 sq. mi.
Y = 1398.63 feet
D = 0.124
$x = -2.22 + 1.25 \text{ Log}_{10}(31.1) + .0004(1398.63) + 1.49(0.124) = 0.391$
Therefore: $Q_{7Q10} = 10^{(0.391)} = 2.46$ cfs * (1 mgd / 1.55 cfs) = 1.587 mgd

Attachment C (Continued)

Q_{WU} :

Summary of the water use within Whitefield WWTF's watershed, according to the NHDES's Water Use database.

Water Use ID	FACILITY NAME	Adjusted Average Daily Use Over the Last 3 Years of Records (mgd)
20284-S01	Twin Mountain Fish Hatchery	- 1.031
20284-D01	Twin Mountain Fish Hatchery	+ 1.031
20749-D01	Presby Plastics Inc.[1]	+ 0.005
20375-S02	DG Whitefield LLC[2]	- 0.146
20602-S01	Whitefield Water Dept.[3]	-0.100

TOTAL = - 0.240 mgd

1. Presby Plastics Inc. also withdraws water but it is from a bedrock well which is not considered hydrologically connected to the surface water flows of this particular watershed.
2. DG Whitefield LLC also returns water by evapotranspiration, which is not considered hydrologically connected to the surface water flows of this particular watershed.
3. 54.2% of the water supply is inside Whitefield WWTF's watershed. Therefore the withdrawal within the basin is approximately 0.542 * 0.185 mgd = 0.100 mgd

$Q_{7Q10ADJ}$ = Q_{7Q10} + Q_{WU} = 1.587 mgd - 0.240 mgd = **1.347 mgd (2.08 cfs)**

Q_D = 0.185 mgd

DF:

$$DF = \frac{(Q_{7Q10ADJ} + Q_D) * 0.9}{Q_D}$$

$$DF = \frac{(1.347 \text{ mgd} + 0.185 \text{ mgd}) * 0.9}{0.185 \text{ mgd}} = \boxed{7.5}$$

Attachment D

Ambient Phosphorus Data

Station	Date	Total Phsophorus (mg/l)
05-JHN	06/24/1997	0.037
05-JHN	08/06/1997	0.033
05-JHN	06/22/2000	0.019
05-JHN	08/04/2000	0.044
05-JHN	08/23/2000	0.023
Min.		0.019
Max.		0.044
Median		0.033

[1]Data extracted from NHDES's OneStop Environmental Monitoring Database (http://www2.des.state.nh.us/gis/onestop/. Station 05-JHN located approximately 1.0 miles upstream from the Whitefield WWTP.

Attachment E

Nitrogen Loads to the Connecticut River Watershed

NH, VT & MA POTW Discharges to the Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (mgd)[1]	AVERAGE FLOW (mgd)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
NEW HAMPSHIRE					
Bethlehem Village District	NH0100501	0.340	0.220	19.600	35.962
Charlestown WWTF	NH0100765	1.100	0.360	19.600	58.847
Claremont WWTF	NH0101257	3.890	1.610	14.060	188.789
Colebrook WWTF	NH0100315	0.450	0.230	19.600	37.597
Groveton WWTF	NH0100226	0.370	0.290	19.600	47.405
Hanover WWTF	NH0100099	2.300	1.440	30.000	360.288
Hinsdale WWTF	NH0100382	0.300	0.300	19.600	49.039
Keene WWTF	NH0100790	6.000	3.910	12.700	414.139
Lancaster POTW	NH0100145	1.200	1.080	8.860	79.804
Lebanon WWTF	NH0100366	3.180	1.980	19.060	314.742
Lisbon WWTF	NH0100421	0.320	0.146	19.600	23.866
Littleton WWTF	NH0100153	1.500	0.880	10.060	73.832
Newport WWTF	NH0100200	1.300	0.700	19.600	114.425
Northumberland Village WPCF	NH0101206	0.060	0.060	19.600	9.808
Sunapee WPCF	NH0100544	0.640	0.380	15.500	49.123
Swanzey WWTP	NH0101150	0.167	0.090	19.600	14.712
Troy WWTF	NH0101052	0.265	0.060	19.600	9.808
Wasau Paper (industrial facility)	NH0001562		5.300	4.400	194.489
Whitefield WWTF	NH0100510	0.185	0.140	19.600	22.885
Winchester WWTP	NH0100404	0.280	0.240	19.600	39.231
Woodsville Fire District	NH0100978	0.330	0.230	16.060	30.806
New Hampshire Total		**24.177**	**19.646**		**2169.596**
VERMONT					
Bellows Falls	VT0100013	1.405	0.610	21.060	107.141
Bethel	VT0100048	0.125	0.120	19.600	19.616
Bradford	VT0100803	0.145	0.140	19.600	22.885
Brattleboro	VT0100064	3.005	1.640	20.060	274.373
Bridgewater	VT0100846	0.045	0.040	19.600	6.539
Canaan	VT0100625	0.185	0.180	19.600	29.424
Cavendish	VT0100862	0.155	0.150	19.600	24.520
Chelsea	VT0100943	0.065	0.060	19.600	9.808
Chester	VT0100081	0.185	0.180	19.600	29.424
Danville	VT0100633	0.065	0.060	19.600	9.808
Lunenberg	VT0101061	0.085	0.080	19.600	13.077
Hartford	VT0100978	0.305	0.300	19.600	49.039
Ludlow	VT0100145	0.705	0.360	15.500	46.537
Lyndon	VT0100595	0.755	0.750	19.600	122.598
Putney	VT0100277	0.085	0.080	19.600	13.077

Attachment E (Continued)

NH, VT & MA POTW Discharges to the Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (mgd)[1]	AVERAGE FLOW (mgd)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
Randolph	VT0100285	0.405	0.400	19.600	65.386
Readsboro	VT0100731	0.755	0.750	19.600	122.598
Royalton	VT0100854	0.075	0.070	19.600	11.442
St. Johnsbury	VT0100579	1.600	1.140	12.060	114.662
Saxtons River	VT0100609	0.105	0.100	19.600	16.346
Sherburne Fire Dist.	VT0101141	0.305	0.300	19.600	49.039
Woodstock WWTP	VT0100749	0.055	0.050	19.600	8.173
Springfield	VT0100374	2.200	1.250	12.060	125.726
Hartford	VT0101010	1.225	0.970	30.060	243.179
Whitingham	VT0101109	0.015	0.010	19.600	1.635
Whitingham Jacksonville	VT0101044	0.055	0.050	19.600	8.173
Cold Brook Fire Dist.	VT0101214	0.055	0.050	19.600	8.173
Wilmington	VT0100706	0.145	0.140	19.600	22.885
Windsor	VT0100919	1.135	0.450	19.600	73.559
Windsor-Weston	VT0100447	0.025	0.020	19.600	3.269
Woodstock WTP	VT0100757	0.455	0.450	19.600	73.559
Woodstock-Taftsville	VT0100765	0.015	0.010	19.600	1.635
Vermont Totals		**15.940**	**10.960**		**1727.302**
MASSACHUSETTS					
Amherst	MA0100218	7.100	4.280	14.100	503.302
Athol	MA0100005	1.750	1.390	17.200	199.393
Barre	MA0103152	0.300	0.290	26.400	63.851
Belchertown	MA0102148	1.000	0.410	12.700	43.426
Charlemont	MA0103101	0.050	0.030	19.600	4.904
Chicopee	MA0101508	15.500	10.000	19.400	1617.960
Easthampton	MA0101478	3.800	3.020	19.600	493.661
Erving #1	MA0101516	1.020	0.320	29.300	78.196
Erving #2	MA0101052	2.700	1.800	3.200	48.038
Erving #3	MA0102776	0.010	0.010	19.600	1.635
Gardner	MA0100994	5.000	3.700	14.600	450.527
Greenfield	MA0101214	3.200	3.770	13.600	427.608
Hadley	MA0100099	0.540	0.320	25.900	69.122
Hardwick G	MA0100102	0.230	0.140	14.600	17.047
Hardwick W	MA0102431	0.040	0.010	12.300	1.026
Hatfield	MA0101290	0.500	0.220	15.600	28.623
Holyoke	MA0101630	17.500	9.700	8.600	695.723
Huntington	MA0101265	0.200	0.120	19.600	19.616
Monroe	MA0100188	0.020	0.010	19.600	1.635
Montague	MA0100137	1.830	1.600	12.900	172.138

Attachment E (Continued)

NH, VT & MA POTW Discharges to the Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (mgd)[1]	AVERAGE FLOW (mgd)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
N Brookfield	MA0101061	0.760	0.620	23.100	119.445
Northampton	MA0101818	8.600	4.400	22.100	810.982
Northfield	MA0100200	0.280	0.240	16.800	33.627
Northfield School	MA0032573	0.450	0.100	19.600	16.346
Old Deerfield	MA0101940	0.250	0.180	9.200	13.811
Orange	MA0101257	1.100	1.200	8.600	86.069
Palmer	MA0101168	5.600	2.400	18.800	376.301
Royalston	MA0100161	0.040	0.070	19.600	11.442
Russell	MA0100960	0.240	0.160	19.600	26.154
Shelburne Falls	MA0101044	0.250	0.220	16.900	31.008
South Deerfield	MA0101648	0.850	0.700	7.900	46.120
South Hadley	MA0100455	4.200	3.300	28.800	792.634
Spencer	MA0100919	1.080	0.560	13.600	63.517
Springfield	MA0103331	67.000	45.400	4.300	1628.135
Sunderland	MA0101079	0.500	0.190	8.700	13.786
Templeton	MA0100340	2.800	0.400	26.400	88.070
Ware	MA0100889	1.000	0.740	9.400	58.013
Warren	MA0101567	1.500	0.530	14.100	62.325
Westfield	MA0101800	6.100	3.780	20.400	643.114
Winchendon	MA0100862	1.100	0.610	15.500	78.855
Woronoco Village	MA0103233	0.020	0.010	19.600	1.635
Massachusetts Totals		**166.010**	**106.950**		**9938.820**

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 13,836 lbs/day
MA (41 facilities) = 9,939 lbs/day (72%)
VT (32 facilities) = 1,727 lbs/day (12%)
NH (21 facilities) = 2170 lbs/day (16%)
TMDL Baseline Load = 21,672 lbs/day
TMDL Allocation = 16,254 lbs/day (25% reduction)

Attachment F

Statistical Approach to Characterizing the Effluent for Determining Reasonable Potential

EPA bases its determination of "reasonable potential" on a characterization of the upper bound of expected effluent concentrations based on a statistical analysis of the available monitoring data. As noted in the *Technical Support Document for Water Quality Based Toxics Control* (EPA 1991) ("TSD"), "[a]ll monitoring data, including results for concentrations of individual chemicals, have some degree of uncertainty associated with them. The more limited the amount of test data available, the larger the uncertainty." Thus with a limited data set, the maximum concentration that has been found in the samples may not reflect the full range of effluent concentration.

To account for this, EPA has developed a statistical approach to characterizing effluent variability when the monitoring dataset includes 10 or more samples.[1] As "experience has shown that daily pollutant discharges are generally lognormally distributed," *TSD* at App. E, EPA uses a lognormal distribution to model the shape of the observed data, unless analysis indicates a different distributional model provides a better fit to the data. The model parameters (mean and variance) are derived from the monitoring data. The model parameter μ is the mean of the natural logs of the monitoring data values, while σ is the standard deviation of the natural logs of the monitoring data values.

The lognormal distribution generally provides a good fit to environmental data because it is bounded on the lower end (i.e. you cannot have pollutant concentrations less than zero) and is positively skewed. It also has the practical benefit that if an original lognormal data set X is logarithmically transformed (i.e. Y = ln[X]) the resulting variable Y will be normally distributed. Then the upper percentile expected values of X can be calculated using the z-score of the standardized normal distribution (i.e. the normal distribution with mean = 0 and variance = 1), a common and relatively simple statistical calculation. The p^{th} percentile of X is estimated by

$$X_p = \exp(\mu_y + z_p \times \sigma_y),$$

where μ_y = mean of Y
σ_y = standard deviation of Y
Y = ln[X]
z_p = the z-score for percentile "p"

For the 95^{th} percentile, $z_{95} = 1.645$, so that

$$X_{95} = \exp(\mu_y + 1.645 \times \sigma_y)$$

The 95th percentile value is used to determine whether a discharge has a reasonable potential to cause or contribute to an exceedance of a water quality standard. The

[1] A different statistical approach is applied where the monitoring data set includes less than 10 samples.

Attachment F (Continued)

combination of the upper bound effluent concentration with dilution in the receiving water is calculated to determine whether the water quality criteria will be exceeded.

Datasets including non-detect values

The *TSD* also includes a procedure for determine such percentiles when the dataset includes non-detect results, based on a delta-lognormal distribution. In the delta-lognormal procedures, nondetect values are weighted in proportion to their occurrence in the data. The values above the detection limit are assumed to be lognormally distributed values.

The statistical derivation of the delta-lognormal upper bounds is quite complex and is set forth in the TSD at Appendix E. Calculation of the 95th percentile of the distribution, however, involves a relatively straightforward adjustment of the equations given above for the lognormal distribution, as follows.

For the deltalognormal, the pth percentile of X, referred to here as X_p*, is given by

$$X_p^* = \exp(\mu_y^* + z_p^* \times \sigma_y^*),$$

where μ^*= mean of Y values for data points above the detection limit;
σ_y^*= standard deviation of Y for data points above the detection limit;
$Y = \ln[X^*]$;
X^*= monitoring data above detection limit; and
z_p^* = an adjusted z score that is given by the equation:

$$z_p^* = \text{z-score}[(p - \delta)/(1 - \delta)]$$

where δ is the proportion of nondetects in the monitoring dataset.
k = total number of dataset
r = number of nondetect values in the dataset
$\delta = r/k$

For the 95th percentile, this takes the form of $z_p^* = \text{z-score}[(.95 - \delta)/(1 - \delta)]$. The resulting values of z_p^* for various values of δ is set forth in the table below; the calculation is easily performed in excel or other spreadsheet programs.

Example calculations of z_p^* for 95th percentile

δ	$(0.95 - \delta)/(1 - \delta)$	z_p^*
0	0.95	1.645
0.1	0.94	1.593
0.3	0.93	1.465
0.5	0.90	1.282
0.7	0.83	0.967

Attachment G

Example Calculation of Reasonable Potential

The following is an example of the methodology used for determining reasonable potential, using copper and the relevant chronic water quality criterion.

The downstream concentration (Cr) of aluminum that is expected to occur as a result of the discharge is calculated as follows:

$$C_r = \frac{Q_d C_d + Q_S C_S}{Q_r}$$

where:

C_r = resultant downstream concentration
Q_d = effluent flow (design flow = 0.185 mgd = 0.286 cfs)
C_d = effluent concentration (95th percentile = 164.2 µg/l)
Q_S = upstream 7Q10 flow (2.08 cfs)
C_S = upstream concentration (median = 140 µg/l)
Q_r = downstream 7Q10 flow (Q_S + Q_d = 2.37 cfs)

Following the methodology set forth in Box 3-2 and Attachment E of the *Technical Support Document for Water Quality-based Toxics Control* (US EPA, March 1991 [505/2-90-001]), the 95th percentile estimated effluent daily maximum concentration (C_d) was determined from a statistical analysis of aluminum data submitted with WET test reports from 2008-2013 (see Attachment A and Table 5). Values reported as being either not detected or below the detection limit were assigned a value of 0.

Applying this maximum effluent concentration to the mass balance equation results in a projected downstream concentration of 142.7 µg/l, as shown below.

C_r = (0.286 cfs *164.2 ug/l + 2.08 cfs*140 ug/l) / 2.37 cfs = **143 µg/l**

Reasonable potential is then determined by comparing this resultant downstream concentration with the relevant criterion multiplied by a factor of 0.9 to reserve 10% of the assimilative capacity of the receiving water, in accordance with Env-Wq 1705.01. In this case, the chronic and acute criterion (87 ug/l and 750 µg/l, respectively) multiplied by 0.9 results in a values equal to 78.3 µg/l and 675 µg/l, respectively. Since 143 µg/l is greater than 78.3 ug/l, there is reasonable potential for the discharge to cause or contribute to exceedances of the chronic criterion and a chronic effluent limitation is necessary to ensure attainment of water quality standards. However, there is no reasonable potential for the discharge to cause or contribute to exceedances of the acute criterion, since 143 µg/l is less than 675 µg/l.

Attachment G (Continued)

The proposed chronic aluminum limit in the draft permit has been set at the applicable criterion (87 µg/l), as the median upstream concentrations of aluminum exceeds 90% of the criterion.

RESPONSE TO COMMENTS
REISSUANCE OF NPDES PERMIT NO. NH0100510
TOWN OF WHITEFIELD
WHITEFIELD WASTEWATER TREATMENT FACILITY
WHITEFIELD, NEW HAMPSHIRE

From January 10, 2014 through February 8, 2014, Region 1 of the U.S. Environmental Protection Agency (EPA or Region 1) and the New Hampshire Department of Environmental Services, Water Division (NHDES) solicited public comments on the draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to the Town of Whitefield, NH (Permittee).

Region 1 and NHDES received comments from the City of Manchester, dated February 6, 2014. Below are the comments received and EPA's responses to those comments, including any changes made to the permit as a result of those comments.

A copy of the final permit may be obtained by writing or calling Meridith Timony, United States Environmental Protection Agency, 5 Post Office Square, Suite 100 (Mail Code: OEP06-1), Boston, Massachusetts 02109-3912; Telephone (617) 918-1533. Copies may also be obtained from the EPA Region 1 web site at http://www.epa.gov/region1/npdes/index.html.

Note, Attachment G to the fact sheet contains an example reasonable potential determination for aluminum. The first statement in this attachment incorrectly references a reasonable potential determination for copper. This change has been made in the administrative record.

Summary of Changes Made to the Final Permit:

- Part I.A.1. – The months in which the ammonia limit applies has been changed to June 1st – October 31st.
- Nitrogen optimization requirements are found under Part I.F., Special Conditions.

COMMENTS FROM THE CITY OF MANCHESTER ("Manchester")

Opening Comment

The City of Manchester is providing the following comments to Whitefield's Draft Permit (NH0100510). The Comments focus on the technical analysis based on the "reasonable potential" argument outlined in Whitefield's Draft Permit and the findings from the US Department of the Interior U.S. Geological Survey assessment done on the Upper Connecticut River Basin from December 2002 through September 2005, the EPA Consolidated Assessment Listed Methodology (CALM), the NHDES CALM as approved by the EPA, and the Aluminum Study as developed by the City of Manchester.

Comments Outline

The Whitefield Draft Permit indicates that according to pg. 8 of 29 of the Fact Sheet, "The segment of the Johns River receiving the Whitefield WWTP discharge (Assessment Unit ID: NHRIV801030102-08) is identified in the *State of New Hampshire Final 2012 Section 303(d) Surface Quality List* (NHDES 20132) as not meeting the aquatic life designated use for pH. A TMDL for pH is scheduled to be completed by 2023."

The Fact Sheet states, "*When a State has not established a numeric water quality criterion for a specific pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of the narrative water quality standards, the permitting authority must establish effluent limits in one of three ways"* One is by 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. The second determined on a case-by-case basis using SWA §304(a) recommended water quality criteria, supplemented as necessary by other relevant information. Third, is based on an indicator parameter (pg. 6 of 29 Fact Sheet.

Manchester's comments will demonstrate that;

1. The plant effluent maximum of 0.185 mgd will never be reached due to the permit requirement that at 80% a permittee must submit plans for facility improvements when this condition is met;
2. There is no Ammonia impairment of the St. Johns or Connecticut River;
3. There is an extensive "sound-science" document (Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013) available for compliance confirmation, yet EPA uses chronic concentration criteria for ammonia compliance when acute concentration comparisons are required as a result of the gathered data;
4. The NHDES calculated a "reasonable potential" phosphorus limit as a causal variable when there is absolutely no indication that the response variables (chlorophyll-a and D.O.) are evident in the Johns or Connecticut Rivers;
5. The EPA did not follow the NHDES CALM when developing limitations in the Whitefield NPDES when using outdated samples and non-clean sampling acute and chronic criteria;
6. The aluminum assumptions contained within the permit do not consider "naturally occurring" events within the Upper Johns River that are obviously occurring with median background aluminum concentrations of 140 µg/l;
7. The copper limitation has confusing datasets and is not in conformance with the NHDES's approved CALM for samples obtained with non-clean sampling techniques;
8. The NPDES along with the NHDES is pushing an unfunded mandate to achieve limitations within water bodies that do not exhibit impairment as outlined in the context of "Clean Water" under the CWA.

The Johns River in Wakefield has one parameter that is on the 303(d) listing. The parameter is pH with an expected TMDL to be completed by 2023. There are no other pollutants that are

listed as impairments in the NHDES 2012 303(d) listing as of the writing of the draft Wakefield permit on the Johns River.

Response to Opening Comment

The commenter makes reference to "Wakefield" and the "St. Johns River" in the opening comment. The permittee is the Town of Whitefield, New Hampshire, and the discharge is to the Johns River.

As a factual matter, the commenter should note that the permit is a federal permit that may be adopted by the state of New Hampshire, meaning that most, if not all, of the actions attributed above to NHDES should actually be attributed to EPA.

Additionally, the commenter should be aware that EPA has not yet made any determinations regarding potential limits in the City of Manchester's NPDES permit, which is still being developed. EPA imposes limits on a case-by-case basis, determined in large part by the size and location of the facility, as well as other site-specific factors. The Region's determination of the effluent limit for the Whitefield WWTF is specific to the facility and the particular impacts on its receiving water, and does not translate into a decision to impose the same or similar limit on Manchester. Any such decision will be made only after a site-specific analysis is conducted and there has been an opportunity for public review and comment. The statute and regulations require EPA to set permit effluent limits for each point source at the level that is necessary to ensure compliance with state water quality standards.

Comment 1.

<u>Design Discharge Used for Loading Calculations</u>

Manchester has concerns with the calculation methods for "Reasonable Potential" Loadings. The permit sets a strict limit of maximum effluent discharge at 80% of plant capacity for a 90 day period. This language is found on page 5 of 15 of the permit section A(4) and states;

"When the effluent discharged for a period of 3 consecutive months exceeds 80 percent of the 0.185 mgd design flow (0.148 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." The Fact Sheet further enhances the intent on page 8 of 29, A. Flow by stating, "*The draft permit maintains the requirement in the 2006 permit for the permittee to submit to the EPA and NHDES a projection of loadings, a program for maintaining satisfactory treatment levels, and* ***plans for facility improvements whenever the effluent flow exceeds 80 percent*** *of the facility's design flow capacity (0.145 mgd) for three consecutive months."*

In essence, a WWTP never reaches 100% flow potential without submitting plans for facility improvements whenever the effluent flow exceeds 80 percent. Manchester believes that the EPA cannot cite one instance in NH where a WWTP reached the maximum flow calculated discharge and loading after submitting plans required at the 80% level.

This safeguard assures a plant can never reach 100% discharge and loading as calculated in the spreadsheets and must be revisited for actual case conditions. It is believed that the maximum load calculation should be multiplied by a 90-day 80% criteria factor that assures EPA and the NHDES, by signed permit that this maximum flow condition can never happen.

As with the assimilative capacity condition (multiply the final number by 0.9) the same could be done for the 80% flow factor (multiply the final number that was calculated by the 0.9 factor by 1.2 (20% that may never be discharged). Or, by virtue of the reality of the plant never reaching the 100% discharge potential, call the 10% safety factor a wash with the 80% exceeded flow factor and use a straight calculation.

Response 1.

There is nothing in the permit that precludes the permittee from discharging up to the design flow of the facility. If the effluent flow rate exceeds 80 percent of the 0.185 mgd design flow (0.148 mgd) for a period of three (3) consecutive months then the permittee must notify EPA and the NHDES-WD and implement a program to maintain satisfactory treatment levels (see Part I.A.4.). This requirement was included in the draft permit to ensure that future growth will not cause high flow-related violations of the permit and that proper planning occurs in a timely fashion.

This requirement is from the New Hampshire Regulations for the Design and Construction of Sewerage and Wastewater Treatment Facilities (see Env-Wq 703.07 Sewer Connection Permit. - STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWERAGE AND WASTEWATER TREATMENT FACILITIES) and is included in all NPDES permits issued to New Hampshire POTW and shall remain in the final permit.

These requirements do not affect the reasonable potential determinations presented in the fact sheet, and the effluent limits that were proposed in the draft permit remain in the final permit.

Comment 2.

Total Ammonia Nitrogen as N

Page 11 of 19 of the Fact Sheet outlines ammonia acute and chronic toxicity. Table 1 provides a minimum of 2.88 mg/l as the chronic criteria number. A daily limit of 21.5 mg/l average monthly concentration was outlined in the permit under the Table of Discharge Limitations on Page 2 of 15. This data was based on 60 ammonia samples, each taken once on a monthly basis (60 months of sampling).

The calculated mass balance as outlined in Table 2 of the Fact Sheet can only be considered for acute toxicity. There is no data available that follows the protocol of EPA Guidance Document "Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013 (Attachment 1)." As noted in the highlighted section on pg. xi, "*the chronic criterion duration represents a 30-day rolling average with the additional restriction that the highest 4-day average within the 30 days be no greater than 2.5 times the chronic criterion magnitude*". That same page outlines the acute total ammonia nitrogen (TAN) at 17 mg/l at a temperature of 20 °C and a pH of 7.

As each measurement can only be gauged against the acute criterion, the acute criterion would have to be used. As there was no ammonia measured upstream from Whitefield's discharge the 7.5 dilution factor, as outlined in the attachment C, page xiv. When including the allowable dilution, the acute permit limit would be 127.5 for TAN, or 197 lbs/day. The 33 pounds allowable average monthly discharge as outlined in the limitations page for calculated design discharge is incorrect.

Response 2.

The numeric criteria for ammonia contained within the *Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013* (USEPA April 2013 [EPA 822-R-13-001]), which are referenced in the above comment, have not been adopted by the State of New Hampshire. Therefore, the applicable ammonia criteria are those contained in the *1999 Update of Ambient Water Quality Criteria for Ammonia* (USEPA December 1999 [EPA 822-R-99-014]), which were adopted into the New Hampshire Surface Water Quality Regulations at Env-Wq 1703.25(b) and (e).

Water quality criteria, which are designed to protect aquatic life from both acute and chronic effects, apply to receiving waters while effluent limitations, which are established to ensure that water quality criteria are met in the receiving water, are applied at the "end of pipe" (i.e., point of discharge). As such, water quality criteria and effluent limitations are expressed in different terms. Water quality criteria are generally expressed in terms of magnitude (typically expressed as an allowable concentration), duration (averaging period) over which the in-stream concentration is averaged for comparison with criteria concentrations) and frequency (how often the criteria may be exceeded). Effluent limitations are generally expressed in terms of magnitude and an averaging period. In establishing effluent limitations in NPDES permits, EPA follows procedures that account for both the physical and chemical interactions between the effluent and the receiving water and also accounts for the varying units of expression between the criteria in the water quality standards and the effluent limit to be included in the permit (*NPDES Permit Writers Manual (*USEPA September 2010 [EPA-833-K-10-001]). Permit limits are calculated based on the meeting the criteria in the receiving water under 7Q10 conditions after accounting for the background concentration in the receiving water. In developing the draft permit, a steady state water quality model (i.e., mass balance equation) was used to model interactions between the effluent and the receiving water.

EPA notes that season in which the chronic ammonia limit applies was inadvertently misidentified as November 1st – May 31st in the draft permit. The final permit has been revised to reflect June 1st - October 31st as being the season in which the limit is in effect.

Comment 3.

Total Phosphorus

Attachment D of the draft permit outlines five upstream data sets for phosphorus that sets a permit limit of 0.5 mg/l. This equates to a total monthly average discharge of 0.77 lbs at design flow (0.185 X 0.5 X 8.34). If the rationale for nitrogen in the Fact Sheet states, "*For existing facilities discharging less than 35 lbs/day, monitoring of nitrogen discharges will be required*,"

how can EPA justify a limit of 0.77 lbs of total phosphorus as an effluent limitation when nitrogen is of more concern than phosphorus in the Connecticut River basin?

The basis of this limitation is calculated from two samples taken in 1997 and three in 2000. The NHDES CALM states, "*Surface water quality assessments are intended to determine the current designated use support. Use of out-dated information can result in assessments that are not representative of actual conditions in the water body…Obviously the more current the data the more accurate the assessment… The maximum data age requirement for lakes and ponds is 10 years versus five years for other water body types*." (CALM – Section 3.1.11 Data Age).

The proposed permit includes a water quality-based effluent limitation for phosphorus even though New Hampshire does not have numeric nutrient criteria. EPA included this limitation in an attempt to interpret and implement the state's narrative criteria with respect to phosphorus. (Fact Sheet, pg. 14 of 29). The pertinent part of this standard reads as follows:

> Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally-occurring… 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.

Env-WS 1703.14.

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 decreases in dissolved oxygen." The Johns River is not listed for dissolved oxygen impairments nor chlorophyll-a impairments.

This limitation was based upon application of EPA's 1986 Gold Book value for flowing waters. The Fact Sheet with the draft permit states that the Gold Book criterion was used because it was developed from an effects-based approach versus eco-regional criteria which are based on reference conditions. (Fact Sheet pg. 15 of 29).

> "The effects-based approach provides a threshold value above which adverse effects (i.e., water quality impairments) are likely to occur. It implies empirical observations of a causal variable (i.e., phosphorus) and a response variable (i.e., chlorophyll *a*) associated with designated uses."

At a minimum, this narrative standard requires that there be a demonstration that the discharge is causing impairment, either excessive plant growth that impairs uses or plant growth that causes a dissolved oxygen criteria violation. Moreover, in applying the Gold Book criterion, there needs to be some showing that use impairment is occurring due to plant growth caused by the discharge of phosphorus from anthropogenic sources.

However, the only demonstration provided in the Fact Sheet is that the discharge from the Town of Whitefield POTW may cause an exceedance of the Gold Book value based on mixing under design flow conditions. EPA attempts to justify this approach citing nationally-recommended

criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus. Under the Statutory and Regulatory Authority section (pg. 5 of 29) of the fact sheet EPA references 40 CFR § 122.44(d)(1) which is intended to justify this approach. As discussed below, application of the Gold Book criterion as presented in the Fact Sheet is not supported by any Clean Water Act (CWA) requirements.

In issuing the draft permit, EPA has made three very important unsubstantiated assumptions: first, the Johns River is impaired by nutrients; second, the applicable numeric criteria should be the 0.1 mg/l suggested as a possible objective in the 1986 Quality Criteria of Water ("Gold Book"), and; three, the Town of Whitefield WWTF is causing or contributing to an excursion above the assigned in stream phosphorus criteria. As explained below, Manchester has several significant objections with the assumptions and determinations made by the Region in developing this limit.

Response 3.

The commenter's claim that nitrogen is a greater concern than phosphorus in the Connecticut River Basin is unfounded. Evaluating the impact of the discharge of nutrients from the Whitefield facility is appropriate, since discharges from POTWs represent a significant source of nutrient inputs to receiving waters. As described in the fact sheet, phosphorus, which is a limiting nutrient in freshwater systems, can stimulate plant productivity when present in excess quantities in the water column, consequently negatively affecting water quality. Although nitrogen is typically a greater concern in marine systems, nitrogen monitoring requirements were included in the draft permit to ensure that nitrogen loadings to the Connecticut River remain consistent with the total maximum daily load (TMDL) for addressing nitrogen-driven eutrophication in Long Island Sound, which the Connecticut River drains to (see *Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound* (CT DEP 2000)).

EPA has addressed the specific comments in detail below (see responses 4-10), but as a preliminary matter, the Region observes that most if not all of the legal/regulatory objections to the permit underlying the City of Manchester's comments on phosphorus and other issues have been squarely addressed in past decisions by the United States Environmental Appeals Board and by the United States Court of Appeals for the First Circuit. *See Upper Blackstone Water Pollution Abatement Dist. v. U.S. EPA*, 690 F.3d 9, 33 (1st Cir. 2012), *cert. denied*, 133 S. Ct. 2282 (2013) (upholding the Region's overall methodology for imposing a phosphorus limit, including use of the Gold Book, among other information, to establish a site-specific TP limit applicable to that particular discharge); *In re Upper Blackstone Water Pollution Abatement Dist.*, NPDES Appeal Nos. 08-11 to 08-18 & 09-06 (EAB May 28, 2010) (same); *see also, In re City of Attleboro*, NPDES Appeal No. 8-08 (EAB Sept. 15, 2009) (same). Most recently, the EAB comprehensively addressed the Region's approach to interpreting the State's narrative nutrient criterion to derive an effluent limitation in *In re Town of Newmarket Treatment Plant*, NPDES Appeal No. 12-05, 16 E.A.D. __ (EAB December 2, 2013). EPA encourages the Town to consult the specific portions of these decisions noted below in conjunction with reviewing the Region's responses below. They are available at:

Upper Blackstone First Circuit Decision Affirming Imposition of Phosphorus and Nitrogen Limits

http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/2D0D249E441A18F185257B6600725F04/$File/1st%20cir..pdf

Page	Issue
30, 33-34	Finding that the CWA and EPA regulations allow EPA to proceed with permit reissuance even where there is uncertainty in the existing data without waiting until better science can be developed or more data gathered
31	Discussing risk associated with waiting to address to nutrient-based cultural eutrophication
32	Addressing claim that EPA should have "relied on more recent data" where EPA has no reason to question the continuing validity of data on which it relied
36	Discussing MERL model's use of correlations between data sets, rather than cause-and-effect models, in development of nutrient permit limit
50-53	Upholding EPA's use of national and regional guidance criteria, including the Gold Book value of 0.1 mg/l, in conjunction with site-specific data in determining phosphorus limit

Upper Blackstone EAB Decision Affirming Imposition of Phosphorus and Nitrogen Limits

http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/34E841C87F346D94852577360068976F/$File/Denying%20Review....pdf

Page	Issue
31-32	Finding that affirmative reasonable potential determination requires neither demonstration of causation nor certainty ("greater than a mere possibility")
80-83	Finding EPA's approach of establishing a range of target ambient values for phosphorus from EPA nationally recommended criteria guidance to be a regulatorily-authorized method for determining a phosphorus limit
83	Rejecting request for delay in imposition of phosphorus limit pending additional data or causal demonstrations in light of, *inter alia*, Region's conservative approach to nutrient permitting and overall objectives of the CWA

Attleboro EAB Decision Affirming Imposition of Phosphorus and Nitrogen Limits

http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/D506EBEE22A1035E8525763300499A78/$File/Denying%20NPDES%2008...84.pdf

Page	Issue
63	Upholding EPA's use of recommended Gold Book values and low flow conditions in determining phosphorus limit

65	Finding that EPA need not demonstrate actual impacts to the receiving water prior to imposing a permit effluent limit
72-73	Finding that EPA may reasonably consider current background conditions despite any expected future reductions

Newmarket EAB Decision Affirming Implementation of the Narrative Nutrient Criterion

http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Recent~Additions/97CCD304C9B7E58585257C3500799108/$File/Order%20Denying%20Review.pdf

Page	**Issue**
49-51	Rejecting request for delay in imposition of nutrient limit pending additional data or causal demonstrations in light of, *inter alia*, Region's conservative approach to nutrient permitting and overall objectives of the CWA
54 n 23	Finding that "reasonable potential" determination does not require a conclusive demonstration of cause and effect

Overall, the City of Manchester's comments reflect a flawed understanding of the legal framework for NPDES permitting, including the regulatory standard for imposing necessary effluent limitations in a permit. As established by the decisions cited above, and as evidenced by the plain language of the statute and regulations, a waterbody need not be listed as impaired for a pollutant in order for the Region to impose an effluent limitation for that pollutant in an NPDES permit. Sections 301 and 402 of the Act, and implementing regulations at 40 C.F.R. § 122.44(d), are the provisions that govern this permitting action, not Section 303(d) and associated non-binding listing guidance such as the CALM.

Under CWA section 402, 33 U.S.C. § 1342, EPA may issue NPDES permits "for the discharge of any pollutant, or combination of pollutants" if the permit conditions assure that the discharge complies with certain requirements, including those of section 301 of the CWA, 33 U.S.C. § 1311. Section 301(b)(1)(C), 33 U.S.C. § 1311(b)(1)(C), of the Act requires that NPDES permits include effluent limits more stringent than technology-based limits whenever:

> necessary to meet water quality standards, treatment standards, or schedules of compliance, established pursuant to any State law or regulations…or any other Federal law or regulation, or required to implement any applicable water quality standard established pursuant to [the CWA].

NPDES permits must contain effluent limitations necessary to attain and maintain WQS, without consideration of the cost, availability or effectiveness of treatment technologies. *See Upper Blackstone Water Pollution Abatement Dist. v. U.S. EPA*, 690 F.3d 9, 33 (1st Cir. 2012), *cert. denied*, 133 S. Ct. 2282 (2013).

EPA has implemented Sections 301(b)(1)(C) and 402 of the Act through numerous regulations, which specify when the Region must include permit conditions, water quality-based effluent limitations or other requirements in NPDES permits. Most trenchantly, 40 C.F.R. § 122.4(d) *prohibits* issuance of an NPDES permit "[w]hen the imposition of conditions cannot *ensure*

[emphasis added] compliance with the applicable water quality requirements of all affected States." Section 122.44(d) (1) is similarly broad in scope and obligates the Region to include in NPDES permits "any requirements…necessary to: (1) Achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality."

EPA's regulations set out the process for the Region to determine whether permit limits are "necessary" to achieve WQS and for the formulation of these requirements. *See* 40 C.F.R. § 122.44(d). Permit writers are first required to determine whether pollutants "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion" of the narrative or numeric criteria set forth in the WQS. *Id.* § 122.44(d)(1)(i). EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *In re Washington Aqueduct Water Supply Sys.*, 11 E.A.D. 565, 584 (EAB 2004). If a discharge is found to cause, have the reasonable potential to cause, or contribute to an excursion of a state water quality criterion, then a permit *must* contain effluent limits as stringent as necessary to achieve the WQS. 40 C.F.R. § 122.44(d)(1), (5).

The requirement to impose a permit limit is not only premised on a finding that the pollutant discharges "are" at a level that "causes" violation of the applicable water quality standards, but the requirement is also triggered by a finding that the facility's pollutant discharges "may" be at a level that "contributes" to or has the "reasonable potential" to cause a violation. 40 C.F.R. § 122.44(d)(1)(i). The regulation requires water quality-based effluent limits even when there is some degree of uncertainty regarding both the precise pollutant discharge levels and the potential causal effects of those discharges, so long as the record is sufficient to establish that there is a "reasonable potential" for that discharge to cause or contribute to a violation of water quality standards. EPA in the Final Rule Preamble for 40 C.F.R. § 122.44(d)(1) dispels any doubt over the necessity of proving an impairment and causation of that impairment prior to either deriving a numeric in-stream target to implement a narrative water quality criterion, or imposing a water quality-based effluent limitation to implement that criterion:

> "Several commenters asked if it was necessary to show in-stream impact, or to show adverse effects on human health before invoking [§ 122.44(d)(1)(vi)] as a basis for establishing water quality-based limits on a pollutant of concern. It is not necessary to show adverse effects on aquatic life or human health to invoke this paragraph []. The CWA does not require such a demonstration and it is EPA's position that it is not necessary to demonstrate such effects before establishing limits on a pollutant of concern." 54 Fed. Reg. 23,868, 23,878 (June 2, 1989).

"Reasonable potential" requires some degree of certainty greater than a mere possibility, but it leaves to the permit writer's scientific and technical judgment how much certainty is necessary. The regulations, thus, require a precautionary approach when determining whether the permit must contain a water quality-based effluent limit for a particular pollutant.

The contention that the Region should be limited to the CALM in making its reasonable potential determinations is unfounded, as is the vague allegation that the data and approaches the Region did consider are somehow scientifically or technically unsound. In determining whether a discharge has the reasonable potential to cause or contribute to a WQS violation, "the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent . . . and where

appropriate, the dilution of the effluent in the receiving water." 40 C.F.R. § 122.44; *see also* 54 Fed. Reg. 23,868, 23,873 (June 2, 1989) ("[A] permitting authority has a significant amount of flexibility in determining whether a particular discharge has a reasonable potential to cause an excursion above a water quality criterion, taking the factors in subparagraph (ii) into account"). It is the Region's position that, in making reasonable potential determinations, no one source of information should necessarily be given definitive weight, nor should the absence of any particular information source necessarily preclude EPA from establishing an effluent limit. The approach of utilizing available technical materials generated by EPA and States, as supplemented by other information reasonably available at the time of permit reissuance, is also reasonable in light of federal regulations requiring EPA to include requirements that will achieve state water quality standards when reissuing a permit and prohibiting issuance of a permit when the imposition of conditions cannot ensure compliance with the applicable state water quality requirements of all affected States. *See* 40 C.F.R. §§ 122.4(d), 122.44(d)(1); *see also* CWA §§ 301(b)(1)(C) and 401(a)(2).

As discussed above, whether or not a receiving water segment is listed on the State's 305(b) and 303(d) lists does not determine whether a limit should be included in an NPDES permit. The absence of such a listing is irrelevant from a regulatory standpoint in instances where the Region otherwise concludes that the discharge has the reasonable potential to cause or contribute to a water quality standards violation. While NPDES determinations may be informed by State water quality assessments and listings, such listings are not prerequisites for determining that NPDES permit limits are necessary. EPA's regulations do not require that determinations on water quality-based effluent limits necessarily be consistent with existing state 303(d) listing designations. Impairment designations are not made according to the same standard that governs NPDES permitting decisions; permitting regulations require the imposition of effluent limits whenever a pollutant discharge "causes, has the reasonable potential to cause, or contributes to" a water quality violation.

EPA has used the available data and in the fact sheet articulated a rational approach allowable under the regulations to determine that the facility has the reasonable potential to cause or contribute to a water quality violation (see fact sheet pg. 14-16. This approach is not the same as that used in 303(d) listing procedures, nor is required to be.[1] EPA imposed the limit only after weighing all the evidence before it, including effluent data, receiving water quality data, as well as different methodological approaches and values from the scientific literature.

Comment 4.

Misapplication of 40 CFR § 122.44(d)

The CWA is a "science-based" statute that requires the establishment of criteria "accurately reflecting the latest scientific information" regarding "…the effects of pollutants on biological

[1] While 40 CFR § 122.44 does require consistency with some state determinations, for example requiring that effluent limit be "consistent with the requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA," §122.44(d)(vii)(B), there is no such mention of State listing decisions pursuant to CWA sections 305 and 303(d). Indeed, the State listing materials are not even mentioned in the list of "relevant information" set forth in 122.44(d)(vi)(A), nor in the reasonable potential provision of the regulation.

community diversity, productivity and stability…" Section 304(a)(1); *accord*, 40 CFR 131.3(c) (criteria developed by EPA are based on "the effect of a constituent on a particular aquatic species"). No criteria (including a narrative criteria interpretation) can be approved unless it is "based on a sound scientific rationale". 40 CFR 131.11(a). Likewise, the effluent limit generated to meet the "applicable standard" must be demonstrated to be "necessary" and "which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria". 40 CFR 122.44(d)(1)(vi). Obviously compliance with the statute and applicable regulations requires an objective scientific assessment to show that the selected approach is both necessary and sufficient to achieve criteria compliance.[2]

Given the language of the Act and the implementing regulations, it is not surprising that Courts have determined "that neither the language of the Act nor the intent of Congress appears to contemplate liability without causation" NAMF v. EPA, 719 F. 2d 624, 640 (3rd. Cir. 1983); Ark. Poul. Fed. V. EPA, 852 F. 2d 324, 328 (8th Cir. 1988) (the discharge must at least be "a cause" of the violation.) In the TMDL context, such nutrient wasteload allocations must be based on a documented "cause and effect" relationship using appropriate water quality models:

> An integral part of the TMDL process is the analysis of cause-effect relationships via a mathematical model of loading input and resulting water quality response.[3]

Because there are no downstream analyses of total phosphorus for Johns River, EPA asserts that it may use the procedures identified in Section (d)(1)(vi) to not only develop an effluent limitation but to also use that endpoint to declare that the waters do not attain the state's narrative standard in the first instance. EPA is interpreting 122.44(d) in a manner inconsistent with the rule language, as well as the structure of the Act. Had EPA not done this, these stringent permit limits would never have been imposed.

The USGS document titled *Assessment of Total Nitrogen in the Upper Connecticut River Basin in New Hampshire, Vermont, and Massachusetts*, December 2002 – September 2005. Table 2 of this document outlines the nitrogen and phosphorus loading that was evaluated during this study (Attachment 2). Phosphorus is not even mentioned as a possible impairment on the Connecticut River and data sets are available that are more recent than the data cited in the NPDES draft permit. It is evident that the phosphorus discharge from the Whitefield WWTP neither causes a water quality violation on the Johns River, nor contributes to a water quality violation on the Connecticut River.

The following data table, extrapolated from the various tables of the study, lists the median orthophosphate and total phosphorus form three point sources on the Connecticut River. Two stations are in NH and one in MA. The highest median value is 26.5% of the suggested Gold Book criterion for rivers.

[2] Sufficient does not mean that the individual facility must ensure WQS are attained, but that the selected criteria, when achieved will produce this result.

[3] Technical Guidance Manual for Developing Total Maximum Daily Loads Book 2: Rivers and Streams; Part 1: Biochemical Oxygen Demand/ Dissolved Oxygen and Nutrients/ Eutrophication. USEPA March 1997 at 4-27.

Location	MedianOrtho-P	Median T-Phosphorus	Link for review of all sampling data for location
N. Walpole, NH	0.006 mg/l	0.012 mg/l	http://vt.water.usgs.gov/projects/summaries/ct_ndata/ConnNWalpNutData.xls
W. Lebanaon, NH	0.005 mg/l	0.0125 mg/l	http://vt.water.usgs.gov/projects/summaries/ct_ndata/ConnWLebNutData.xls
Holyoke, MA	0.0045 mg/l	0.0265 mg/l	http://vt.water.usgs.gov/projects/summaries/ct_ndata/ConnHlykNutData.xls

A created numeric value cannot be used to determine that narrative criteria (which describes a desired physical or biological condition in the water body) are being violated.

Under EPA's approach used in the Town of Whitefield's NPDES permit, "cultural eutrophication" (the condition intended to be regulated under the adopted narrative criteria) is equated with a numeric value to conclude more restrictive limits are "necessary" *even if the water body is not exhibiting signs of cultural eutrophication.* However, the NPDES regulation was intended to implement the adopted standard as closely as possible with the state's intent – not to substitute a new numeric value in place of it. See, *Am Iron and Steele v. EPA.*

The structure of the rule and "relevant" preamble discussion[4] confirms this is how the rule is to apply. Under Section 122.44(d)(1)(ii) the permit writer first determines if "a discharge… causes or contributes to an instream excursion" (not evident in the USGS Study). In the case of a narrative standard one looks to see if the characteristics that are intended to be prevented are evidenced in the waters (i.e., cultural eutrophication causing some type of system imbalance). If it is determined that an excursion is occurring (or likely to occur) then and only then "the permitting authority must establish effluent limits using one or more of the following methods…" The structure of the rule is clear; the methods for picking a protective instream level are only used to set the effluent limits, not to decide that the waters are in violation of the narrative standard. The 1989 preamble discussion further supported that the methods used to derive the effluent limit was not the same method used to determine if an excursion existed:

> Subparagraph (i) should assist the permitting authority in determining whether it is necessary, under Federal regulations, to establish limits for a pollutant. Note, however, this is different from calculating water quality-based effluent limits. …Proposed subparagraph (iv) addresses the situation in which…the permitting authority does not have a numeric criteria to use *in deriving a water quality-based limit.*" 54 Fed. Reg. 1303,104 January 12, 1989 (emphasis supplied)

As is clear from these quotes, Section (vi) is used to set the permit limits *after the excursion (violation) is identified*, not to declare the waters in exceedance (violation) of a state's narrative

[4] The preamble indicates that one does not need to wait for impairment to trigger the application of a more restrictive limit under 122.44(d). That is true, but irrelevant. One may project a violation of a narrative standard (i.e., that "cultural eutrophication" is predicted to occur in the future) if adequate modeling or other reliable predictive capabilities are available, considering the physical parameters of the system. This would restrict future load INCREASES. However, in this instance, EPA is dramatically lowering the existing load to the system, claiming that it is currently far too high. In this case, EPA should be able to readily identify the existing cultural eutrophication and identify, with a reasonable scientific certainty, how phosphorus caused the excessive plant growth to occur. However, there is no such demonstration.

standard. Any other approach would turn the structure of the Act on its head.[5] EPA is not implementing the adopted narrative standard; EPA is replacing it with a new numeric standard as if it was the adopted narrative standard. That plainly violates the Alaska Rule and 40 CFR 131.21.

EPA is simply jumping over that process by claiming that exceeding a non-specific nutrient concentration constitutes a narrative criteria violation, regardless of whether or not nutrients are actually causing excessive plant growth or DO violations. Thus, it is apparent, that EPA's latest position is a major reinterpretation of 40 CFR 122.44(d), without rulemaking and contrary to the structure of the Act. It is thus, therefore, patently illegal and may not be applied in this instance. *U.S. Telecom. Ass'n v. FCC*, 400 F.3d 29 at 35 ('a substantive change in the regulation,' requires notice and comment) (quoting *Shalala v. Guernsey Mem'l Hosp.*, 514 U.S. 87, 100 (1995).

Response 4.

The criteria approval and TMDL process, and regulations and guidance pertaining thereto, are not directly applicable to this permit proceeding. There is no approved phosphorus TMDL for the segment of the Johns River into which the Whitefield WWTF discharges. Moreover, EPA is implementing an existing narrative water quality standard for nutrients under section 402 and 40 C.F.R. Part 122, so the criteria approval process is not relevant to its determinations. Manchester's legal objections to the Whitefield draft permit have been resolved by the EAB's recent decision in *In re Town of Newmarket Treatment Plant*, NPDES Appeal No. 12-05, 16 E.A.D. __ (EAB December 2, 2013), *slip op.* at 62-64, including the applicability of the Alaska Rule and whether the Region's derivation of an in-stream target for a pollutant under 122.44(d)(1) amounted to an illegal rulemaking.[6]

The commenter misquotes 40 CFR §122.44(d)(1)(ii) above as stating that a permit writer first determines if "*a discharge… causes or contributes to an instream excursion*." The regulation actually states that the permitting authority must determine whether "*a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion.*" As stated in Response 3 above and restated here, EPA is not required to demonstrate that nutrients are "causing" extensive "cultural eutrophication" but simply that there is the "reasonable potential to cause or contribute" to violations of applicable water quality standards.

---

[5]Under EPA's approach, under Section 303(d) a state could determine that an area is not exhibiting "cultural eutrophication" and therefore not place the water on the Section 303(d) impaired waters list, regardless of the nutrient concentration present. However, when it comes time for permitting, EPA substitutes its chosen numeric criteria for the narrative standard and determines that a more restrictive limit is needed to meet the narrative criteria, contrary to Section 301(b)(1)(C) and the Section 303(d) determination which only allows the imposition of more restrictive water quality based limits where "necessary to meet the applicable water quality standards." The applicable standard is the narrative definition of the intended biological condition (e.g., no excessive plant growth).

[6] This is unsurprising, as the Region notes that the City has merely copied and pasted portions of petitioner's submissions in the Newmarket permit appeal. *See* http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Filings%20By%20Appeal%20Number/E3E03BFDEDDDF6D485257B21006F63D0/$File/Reply%20to%20EPA's%20Memo%20in%20Opposition%20...40.pdf. EPA rebutted that filing at http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Filings%20By%20Appeal%20Number/B85DF6EB6B3EC40B85257B320044E0D9/$File/Respondent%20EPA's%20Sur-Reply...46.pdf and, in the interest of efficiency, incorporates those responses here.

The City of Manchester's interpretation of the First Circuit's decision in Upper Blackstone is entirely without merit. Manchester contends that the *Upper Blackstone* decision actually stands for the proposition that "causation" must be proven prior to imposition of a water quality-based effluent limitation under 40 C.F.R. § 122.44(d), pointing to the Court's use of the word "causing" and its reference to EPA's conclusion, based on a laboratory experiment, "that the basic causal relationship demonstrated in the Marine Ecosystems Laboratory ("MERL") experiments 'corresponds to what is actually occurring in the Providence /Seekonk River system.'" Although the Court in *Upper Blackstone* may indeed have been convinced that EPA's record demonstrated that the District's treatment plant was "causing" a water quality standards excursion, it nowhere suggested that such a finding was necessary prior to imposing a water quality-based effluent limitation. On the contrary, the court specifically acknowledges the full breadth of the regulations:

> EPA regulations require permitting authorities to include in NPDES permits conditions which control all pollutants or pollutant parameters . . . [that] are or may be discharged at a level which will cause, *have the reasonable potential to cause*, [emphasis supplied] or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. We thus reject the notion that in order to strengthen the District's discharge limits, the EPA must show that the new limits, in and of themselves, will cure any water quality problems [internal quotation marks and citations omitted]. *Upper Blackstone Water Pollution Abatement Dist. v. U. S. EPA*, 690 F.3d 9, 33 (1st Cir. 2012).

The City of Manchester's reading of the case is impossible to reconcile with the Court's view that, "[R]ecognizing…the developing nature of [the field]…[t]he [EPA] Administrator may apply his expertise to draw conclusions from suspected, but not completely substantiated, relationships between facts, from trends among facts, from theoretical projections from imperfect data, from probative preliminary data not yet certifiable as 'fact,' and the like." *Id.* at 24 (quoting *Ethyl Corp. v. EPA*, 541 F.2d 1, 27-28 (D.C. Cir. 1976). Manchester should be aware that the reasonable potential determinations in the Blackstone permit were *not* based on a causal model, but correlations among data sets, as here.

Similarly, Manchester badly misreads the Board's decision in the Blackstone case, where it held, the "[Agency] does not need to justify the decision to impose a permit limit based on a site-specific demonstration that nutrients are causing the claimed impairments in the water body of concern, but need only demonstrate that the discharge causes, *has the reasonable potential to cause, or contributes* to an in-stream excursion above a numeric or narrative criteria within a state water quality standard." *In re Upper Blackstone Water Pollution Abatement Dist*., NPDES Appeal Nos. 08-11 to 08-18 & 09-06, slip op. at 32 (May 28, 2010).

Contrary to the comment above, EPA is not required to demonstrate that a receiving water is not attaining water quality standards before applying a permit limit. Nor is EPA required to demonstrate that an excursion is "likely to occur." Rather, EPA is required to demonstrate that there is *reasonable potential* for the discharge to cause or contribute to a water quality standard violation. In this case, reasonable potential was determined based upon the documented excursions above the EPA interpreted numeric criterion (0.1 mg/l) (see fact sheet pg. 14-16).

Additionally, the data presented in the USGS study cited by the commenter does not affect the background conditions that were applied to the reasonable potential analysis, nor do they affect the resultant limit.

The commenter's claim that EPA erred by consulting 40 C.F.R. § 122.44(d)(1)(vi)(A) for guidance on how to interpret the narrative criterion is unfounded. In issuing an NPDES permit, EPA must, by necessity, translate existing narrative criteria into in-stream numeric concentrations when developing water quality-based effluent limitations. *Am. Paper Inst., Inc. v. EPA*, 996 F.2d 346, 351 (D.C. Cir. 1993). The process of translating or interpreting a narrative criterion is governed by 40 C.F.R. § 122.44(d)(1)(vi), subsection (A) of which describes a process for calculating a protective in-stream numeric concentration for the pollutant of concern. This calculated numeric in-stream target, along with other information relied on by EPA such as total phosphorus levels in the receiving waters and in the effluent, is relevant and material to EPA's determination of whether the receiving water's assimilative capacity for phosphorus had been reached, and whether reasonable potential for the discharge to cause, or to contribute, to a water quality criterion exceedance exists. The commenter fails to identify any reason why EPA should be precluded from utilizing an in-stream numeric target as a part of its reasonable potential analysis, which, as described above, was intended to be a flexible process to allow the permit writer to carry out the objectives of the Act, including ensuring compliance with state water quality standards. The commenter, moreover, neglects to describe what alternative technical methodology, other than a conclusive cause-and-effect demonstration, it would employ in order to make such a reasonable potential determination. The proposed numeric thresholds are neither new nor revised water quality standards, so the alleged significance of the "Alaska Rule" is misplaced. In this instance, the only applicable standard in the state water quality standards are *existing* approved narrative criteria for nutrients, which, as explained above, require translation or interpretation in order to yield a numeric effluent limitation. The legal/regulatory requirements associated with criteria adoption are not applicable to permitting decisions based on existing criteria, such as the New Hampshire narrative nutrient criterion applicable in this proceeding.

Similarly, issues associated with impaired waters designation are more appropriately addressed through the 303(d) listing process. Independent of any State decisions associated with 303(d) lists, EPA clearly documented a reasonable potential to exceed the narrative nutrient criteria in the Fact sheet and has affirmed that conclusion through this response to comments.

As stated in footnote (4) above, "the preamble indicates that one does not need to wait for impairment to trigger the application of a more restrictive limit under 122.44(d)." The commenter claims that this is irrelevant because it should be interpreted to apply to future increased loads. However, the preamble specifically states that "more restrictive limits" may be applied, indicating a reduction from current levels, and furthermore says nothing about any reasonable potential findings having to be based on cause-and-effect models or demonstrations.

Comment 5.

Waters Not Listed as Nutrient Impaired

Under section 303(d) of the Clean Water Act, New Hampshire is given primary authority for identifying which of its waterbodies are not meeting the governing water quality standards and

for what reasons. EPA has limited authority (inapplicable in this instance) to intrude into this State responsibility. With regard to Johns River, New Hampshire has never identified the waterbody as nutrient impaired on the State's 303(d) [7] Moreover, Region 1 specifically approved New Hampshire's decision not list the waterbody as nutrient impaired, indicating that the current instream conditions and loadings are acceptable. If EPA wishes to amend a State's 303(d) listing decision, there is a specific process for doing so. Until such steps are taken, however, EPA has no authority to presume nutrients are impairing Johns River or assert that a narrative criteria violation related to nutrients exists in this waterbody.

Response 5.

Including a limit in the permit for a particular pollutant is not dependent on the receiving water being listed as impaired for that pollutant. EPA has an independent duty under Section 301(b)(1)(C) of the Act to impose limits as stringent as necessary to meet applicable water quality standards, regardless of whether waters are listed as impaired under Section 303(d). As stated in Response 4, "The preamble indicates that one does not need to wait for impairment to trigger the application of a more restrictive limit under 122.44(d)." A detailed explanation of the legal and technical basis for including water quality based effluent limitations in NPDES permits may be found in the fact sheet as well as in Response 3.

Comment 6.

State Narrative Criteria Misapplied

Currently, the only duly promulgated New Hampshire water quality criteria addressing nutrients in estuaries are found at Env-Wq 1703.14(b), which states:

> *Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring.* (emphasis supplied). The regulations continue:
>
> *Existing discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated … to ensure attainment and maintenance of water quality standards.* Env-Wq 1703.14(c).
>
> *"Cultural eutrophication" is defined as "human-induced addition of wastes containing nutrients to surface waters which results in excessive plant growth and/or a decrease in dissolved oxygen."* Env-Wq 1702.15.

DES also has a narrative standard regarding "aquatic community integrity," which indicates, in relevant part, that "differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function." Env-Wq 1703.19(b).

[7] As mentioned in the draft permit, the Johns River is identified as impaired by pH. , Unlike numerous other waterbodies in New Hampshire, chlorophyll-a (surrogate for plant growth) is not the basis of impairment.

The key evidentiary component of the narrative nutrient criterion is that a violation is only found when it is demonstrated that phosphorus *is causing* an impairment (*e.g.*, "in such concentrations that would impair"; "human-induced addition of … nutrients … which results in"). This requires a "cause and effect" demonstration to find a violation of the narrative criteria. In issuing the draft permit, EPA relied on the Gold Book phosphorus criterion as an appropriate "narrative translator" and applied the Gold Book phosphorus criterion as though it represented a toxic substance by applying the criterion at the 7Q10 stream flow. However, the Gold Book notes that phosphorus concentrations critical to noxious plant growth vary and nuisance growth may result from a particular concentration of phosphate in one geographical area but not in another. Thus, even the Gold Book, which EPA relied upon to identify a potential criterion, cautioned that adverse effects cannot be assumed but must be confirmed.

To claim a nutrient limitation is necessary to eliminate use impairments and protect ecological resources under the state's narrative standard, EPA must first demonstrate that the nutrient at issue (phosphorus) caused the impairment, otherwise defined as "cultural eutrophication" (excessive algal growth causing impairment such as DO violations – Env-Wq 1702.15) under state law. Moreover, any "narrative translator" must be based on a system-specific defined "cause and effect" relationship showing the nutrients have caused such "cultural eutrophication."

The permit action is premised on the *assumption* that the waters are nutrient impaired, that the Gold Book phosphorus criterion is an appropriate numeric translator, and that a simple mass balance under design conditions is sufficient to demonstrate reasonable potential. However, there is no indication that "cultural eutrophication" has occurred as a result of the discharge, and the 303(d) list does not identify the waters as impaired by nutrients.

- **Deposition Testimony Confirmed Cause and Effect Demonstration Required for Narrative Criteria Violation**

The DES has identified the Great Bay Estuary as nutrient impaired based on a scientifically deficient draft criteria document specific to the estuary, and EPA has applied the draft criteria in setting NPDES limits for several municipal dischargers to the estuary. This action was challenged and several DES staff were deposed and gave testimony on application of the state's narrative nutrient criteria. Mr. Paul Currier of DES confirmed that any claim of narrative criteria violations requires a documented *causal relationship* between nutrients and excessive plant growth adversely impacting designated uses (*See* Currier Dep. at 18, 19, 134)[8].

The Gold Book phosphorus criterion cannot be a proper translator of the existing narrative criteria without a causal demonstration that phosphorus is causing cultural eutrophication. Moreover, both Mr. Currier and Mr. Trowbridge noted that merely exceeding values contained in the draft 2009 Criteria (and, in this case, the Gold Book criterion) does not provide a demonstration that a narrative violation exists. (Currier Dep. at 80; Trowbridge Dep. at 332-333)

Based on these sworn acknowledgements on how state law is intended to operate, it was improper for EPA to presume that the exceeding the Gold Book levels will or has caused

[8] Full copies of the Currier, Short and Trowbridge Depositions, plus exhibits have been provided to EPA by the Coalition's counsel. Due to the voluminous nature of those documents they are not being resubmitted with these comments.

impairment anywhere in the Johns or Connecticut River. It was equally improper for EPA to presume that attaining compliance with the numeric values contained in the Gold Book, was necessary to avoid violating the state's narrative criteria. Finally, it was also improper to presume that the Gold Book criterion accurately reflected the level of scientific demonstration required by the existing narrative standard to designate waters as nutrient impaired. Such speculation is not a basis for narrative criteria implementation and does not constitute "weight of evidence" that phosphorus has triggered narrative criteria violations as assumed in EPA's proposed permitting action. Consequently, the necessary evidence to support use of the Gold Book criterion as a "narrative translator" has not been provided and the use of the Gold Book criterion is this permit action is arbitrary and capricious.

Response 6.

Deposition testimony of NHDES staff does not supplant EPA's obligations under section 301(b)(1)(C) of the Act to ensure compliance with state water quality standards or to implement its regulations, including those pertaining to reasonable potential. Again, Manchester's legal objections have been resolved by the EAB's recent decision *In re Town of Newmarket Treatment Plant*, NPDES Appeal No. 12-05, 16 E.A.D. __ (EAB December 2, 2013), including issues relating to cause-and-effect and relevance of the NHDES depositions, which the Region adopts here. EPA simply fails to see the relevance of deposition testimony in an unrelated state court proceeding to the federal permit proceeding here.

The commenter appears to believe that EPA's NPDES regulations require cause-and-effect proof between a pollutant discharge and a water quality impairment before the permit writer can derive a numeric in-stream target to interpret a narrative water quality criterion, or impose a water quality-based effluent limitation to implement that criterion. The commenter fundamentally misunderstands the legal threshold under 40 C.F.R. § 122.44(d)(1)(i) for determining the need for a water quality-based effluent limitation (*i.e.*, "reasonable potential"), and the types of information that may be used to establish that limit (*e.g.*, "relevant information"). *Id.* at § 122.44(d)(1)(vi). Under NPDES regulation, permit issuers are required to determine whether a given point source discharge "cause[s], ha[s] the reasonable potential to cause, or contribute[s] to an excursion above" the narrative or numeric criteria set forth in state water quality standards. 40 C.F.R. § 122.44(d)(1)(i). Thus, the regulations require nothing more than a *reasonable potential to cause, or contribute to* an excursion of a numeric or narrative state water quality criterion; whenever such a potential exists, a permit must contain effluent limits to meet state water quality standards. *See id.* § 122.44(d)(1), (5) (providing in part that a permit must incorporate any more stringent limits required by CWA § 301(b)(1)(C)). "'Reasonable potential' requires some degree of certainty greater than a mere possibility, but it leaves to the permit writer's scientific and technical judgment how much certainty is necessary." *See In re Upper Blackstone Water Pollution Abatement Dist.*, NPDES Appeal Nos. 08-11 to 08-18 & 09-06, slip op. at 32-33, n.29 (May 28, 2010). As EPA's preamble to its final rulemaking promulgating 40 C.F.R. § 122.44(d)(1)(vi) explained:

> Some commenters said that the phrase "reasonable potential to cause" was too vague and could apply to permittees that are not actually exceeding a water quality criterion. EPA does not believe that it is appropriate to be more specific because a permitting authority has a significant amount of flexibility in determining whether a particular

> discharge has a reasonable potential to cause an excursion above a water quality criterion, taking the factors in subparagraph (ii) into account.

54 Fed. Reg. 23,868, 23,873 (June 2, 1989). This regulatory provision has been upheld as a reasonable, authorized approach of necessary gap-filling in the CWA statutory scheme as it provides permit writers with guidance on how to interpret state narrative water quality standards in deriving effluent limitations. *See Am. Paper Inst. v. EPA*, 996 F.2d 346, 348, 351 (D.C. Cir. 1993); *see also Am. Iron & Steel Inst. v. EPA*, 115 F.3d 979, 990-991 (D.C. Cir. 1997). *Upper Blackstone*, slip op. at 31-32 (The "regulations . . . require a precautionary approach when determining whether the permit must contain a[n] effluent limit for a particular pollutant."); *accord Upper Blackstone Water Pollution Abatement Dist. v. U. S. EPA*, 690 F.3d 9, 33 (1st Cir. 2012) ("EPA regulations require permitting authorities to include in NPDES permits conditions which control all pollutants or pollutant parameters . . . [that] are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. We thus reject the notion that in order to strengthen the District's discharge limits, the EPA must show that the new limits, in and of themselves, will cure any water quality problems." (internal quotation marks and citations omitted)). EPA in the Final Rule Preamble for 40 C.F.R. § 122.44(d)(1) dispels any doubt over the necessity of proving an impairment and causation of that impairment prior to either deriving a numeric in-stream target to implement a narrative water quality criterion, or imposing a water quality-based effluent limitation to implement that criterion:

> Several commenters asked if it was necessary to show in-stream impact, or to show adverse effects on human health before invoking [§ 122.44(d)(1)(vi)] as a basis for establishing water quality-based limits on a pollutant of concern. It is not necessary to show adverse effects on aquatic life or human health to invoke this paragraph [iv]. The CWA does not require such a demonstration and it is EPA's position that it is not necessary to demonstrate such effects before establishing limits on a pollutant of concern.

54 Fed. Reg. at 23,878. EPA's preamble explanation of what is actually required is at odds with Manchester's view that a mathematical model, or controlled experiment, demonstrating direct cause and effect related to harm is the standard to which EPA should be held in the NPDES permitting process.

EPA agrees that merely exceeding the 0.1 mg/l in-stream value does not demonstrate that a narrative water quality violation is occurring. However, such a violation does not need to be demonstrated in order to determine that a discharge has the reasonable potential to cause or contribute to a future violation. EPA imposed the limit only after weighing all the evidence before it, including receiving water and effluent data, as well as different methodological approaches and values from the scientific literature,

Comment 7.

No Evidence of Excessive Algal Growth

The conceptual model on the Connecticut River (LOADTEST – Runkel and others 2004) demonstrated nutrients related aquatic life impairment or the simulation that nutrient loads stimulate aquatic plant growth which, in turn, causes an adverse effect (e.g., dissolved oxygen,

criteria violations, impaired macro invertebrate communities). That is, "cultural eutrophication" is a prerequisite to narrative criteria implementation. Model use is well known and documented in EPA's Gold Book (1986), the Technical Guidance Manual for Developing Total Maximum Daily Loads (EPA, 1995)[9], the Protocol for Developing Nutrient TMDLs (EPA, 1999)[10], and EPA's guidance on Using Stressor-response Relationships to Derive Numeric Nutrient Criteria (2010)[11].

> [I]f the maximum possible chlorophyll *a* level that could be achieved is extremely low, it will usually be safe to conclude that nutrients do not pose a problem in relation to water column algae.
>
> In most natural systems, especially flowing streams, the actual chlorophyll *a* levels that occur will be substantially less than the maximum potential under a combination of ideal conditions. Collection of chlorophyll *a* data could be used to verify the estimated chlorophyll *a l*evels and to determine whether a problem exists.
>
> (Technical Guidance Manual at 4-8)

If the designated use impairment identified for the Johns and Connecticut Rivers was dissolved oxygen and chlorophyll-a it might be due to nitrogen, phosphorus or a combination thereof. There must be a showing that algal levels in the river are elevated and these elevated algal levels cause or contribute to low dissolved oxygen and/or algal growth. However, there are no data reported in the Fact Sheet that address dissolved oxygen or algal concentrations in either of the rivers. Without any data to support a key component of the conceptual model, EPA's presumption that phosphorus is causing a violation of the state's narrative criteria is arbitrary and capricious.

Response 7.

The above comment contains several unfounded arguments which reflect a misunderstanding of the legal basis for NPDES permitting: First, that "cultural eutrophication is a prerequisite to narrative criteria implementation"; second, that EPA is precluded from imposing a phosphorus limit in an NPDES permit unless there is a designated use impairment; and third, that there must be a "a showing that algal levels in the river are elevated and these elevated algal levels cause or contribute to low dissolved oxygen and/or algal growth" .

EPA has a legal obligation to ensure that NPDES permits meet all applicable water quality standards, including narrative criteria (See CWA section 402, 33 U.S.C. § 1342). The requirement to impose a permit limit is not only premised on a finding that the pollutant discharges "are" at a level that "causes" violation of the applicable water quality standards, but

[9] USEPA. September 1995. Technical Guidance Manual for Developing Total Maximum Daily Loads. Book II: Streams and Rivers. Part 1: Biochemical Oxygen Demand/Dissolved Oxygen and Nutrients/Eutrophication. EPA 823-B-95-007.

[10] USEPA. November 1999. Protocol for Developing Nutrient TMDLs. First Edition. EPA 841-B-99-007

[11] USEPA. November 2010. Using Stressor-response Relationships to Derive Numeric Nutrient Criteria. EPA-820-S-10-001.

the requirement is also triggered by a finding that the facility's pollutant discharges "may" be at a level that "contributes" to or has the "reasonable potential" to cause a violation. 40 C.F.R. § 122.44(d)(1)(i). A detailed discussion of the legal basis for including water quality based effluent limits in NPDES permits may be found in response 3.

In consideration of the finding that the discharge of phosphorus from the Whitefield WWTP has reasonable potential to cause or contribute to a violation of water quality standards, the total phosphorus limit in the final permit is necessary and remains unchanged from the draft permit.

Comment 8.

Gold Book Not Applicable as Criteria without Site-Specific Data Confirmation

As described above, EPA simply assumed that the Gold Book's 0.1 mg/L preliminary recommendation for phosphorus was the applicable instream target for the Johns River without using any site-specific data to confirm (1) the existence of a nutrient impairment or (2) whether such a criterion is necessary to protect the applicable uses. In so doing, EPA has effectively adopted a numeric criterion for all similar-situated waters in the state (i.e., free-flowing without a direct link to a lake or reservoir). Moreover, in this case, EPA has effectively concluded that 0.1 mg/l TP limit should be applied to all flowing waters without considering any of the relevant physical factors or whether the nutrient level is actually causing any use impairment. Such EPA action is both procedurally and substantively improper. First, States have primary authority to amend existing water quality standards and all amendments (state or federal) must be subjected to a public notice and comment process. For other states where EPA has determined that a numeric criterion was the applicable translator for a state's narrative standard, EPA has undergone notice and comment rulemaking. This is required by 40 C.F.R. §§ 131.21 and 22. EPA's recent nutrient criteria adoption action in Florida was an example of such agency decision-making. Second, the Gold Book does <u>not</u> recommend that a 0.1 mg/L TP nutrient level be established for streams. Rather, the Gold Book expressly qualifies its recommendation for nutrients because of the dynamic interplay nutrients have with individual ecosystems and the range of potentially appropriate nutrient levels given varied <u>site-specific conditions</u>.[12] Thus, the Region has also failed to properly apply the recommended approach specified in the "Gold Book."

Response 8.

As already explained, the Region imposed permit limits on a site-specific basis and has *not* "adopted a numeric criterion for all similar-situated waters in the state" in implementing the existing narrative criteria. Rather, the Region has translated the state's narrative criterion in accordance with 40 C.F.R. § 122.44(d)(1)(ii) and (vi), which allow consideration of EPA technical guidance and recommended criteria, including the Gold Book. The record clearly does not support the view that EPA determined a phosphorus limit was "necessary" within the

[12] Quality Criteria of Water (Gold Book) EPA 440/5-86-001 (May 1, 1986) (Recognizing that instream phosphorus levels "do not directly impact streams and rivers" and that "a number of specific exceptions can occur to reduce the threat of phosphorus"). Furthermore, EPA's document entitled "National Recommended Water Quality Criteria – Correction" (USEPA April 1999) specifies that no numeric recommendation has been proposed for phosphorus – only a "narrative statement" applies. This narrative statement requires consideration of site-specific information on whether or not the nutrient level is actually causing excessive plant growth and impairment of uses.

meaning of regulations governing the NPDES permitting process without using any site-specific data to confirm the existence of a nutrient impairment.

Contrary to the comment, the Gold Book does cite the 0.1 mg/l as a recommended value for free-flowing streams. However, EPA agrees that the Gold Book elaborates on site-specific natural conditions that dictate the consideration of either a more or less stringent phosphorus level. Specifically, page 241 of the Gold Book states:

> "*There are natural conditions, also, that would dictate the consideration of either a more or less stringent phosphorus level. Eutrophication problems may occur in waters where the phosphorus concentration is less than that indicated above [100 ug/l] and, obviously, such waters would need more stringent nutrient limits. Likewise, there are those waters within the Nation where phosphorus is not now a limiting nutrient and where the need for phosphorus limits is substantially diminished. Such conditions are described in the last paragraph of this rationale.*"

This rationale indicates that in any free-flowing stream where TP is a limiting nutrient (such as the portion of the Johns River in question), the recommended TP value would be either 100 ug/l or less, if eutrophication problems occur at a lower concentration. The paragraph referenced below is found on page 243 of the Gold Book as follows:

"*It should be recognized that a number of specific exceptions can occur to reduce the threat of phosphorus as a contributor to lake eutrophy:*

1. *Naturally occurring phenomena may limit the development of plant nuisances.*
2. *Technological or cost-effective limitations may help control introduced pollutants.*
3. *Waters may be highly laden with natural silts or colors which reduce the penetration of sunlight needed for plant photosynthesis.*
4. *Some waters morphometric features of steep banks, great depth, and substantial flows contribute to a history of no plant problems. Waters may be managed primarily for waterfowl or other wildlife.*
5. *In some waters nutrient other than phosphorus is limiting to plant growth: the level and nature of such limiting nutrient would not be expected to increase to an extent that would influence eutrophication.*
6. *In some waters phosphorus control cannot be sufficiently effective under present technology to make phosphorus the limiting nutrient.*"

In this case, the Whitefield WWTP discharges into a free-flowing segment of the Johns River and with no lakes or impoundments immediately downstream. Additionally, EPA believes that phosphorus is a limiting nutrient in the receiving water and that it can be sufficiently controlled to effectively limit nutrient-related impairment (addressing items five and six). Hence, EPA considers the Gold Book value (100 µg/l) to be appropriate and protective given the site-specific ecological setting and a TP limit is thus justified and necessary to meet this instream target. EPA made this determination only after considering a range of other potential in-stream values in addition to the Gold Book, and upon reviewing the available water quality data pertaining to eutrophic response variables in the receiving water.

Comment 9.

Reference Waters

The Fact Sheet discusses several guidance documents which contain recommended total phosphorus criteria based on an evaluation of the concentration of phosphorus expected in reference waters. Although the Fact Sheet notes that EPA did not choose to apply a reference-based phosphorus criterion, we note that such application is inconsistent with New Hampshire's narrative criterion, which requires a demonstration that phosphorus is causing excessive plant growth and/or dissolved oxygen impairment. Moreover, the application of reference-based nutrient criteria to implement the state's narrative criterion was rejected by the court in the State of Florida (February 2012).

The circumstances in Florida are identical to the circumstances in New Hampshire. Both narrative criteria limit nutrient concentrations to prevent designated use impairments. The court found that reference-based criteria are premised on preventing any change in nutrient concentrations that increase above the "reference" concentration. However, the narrative criteria limit increases in nutrient concentrations above the concentration that causes harm. Consequently, before the reference-based criteria can be applied, EPA must first demonstrate that these criteria are set at a threshold above which use impairment is caused by phosphorus.

Response 9.

For reasons discussed above, EPA disagrees with the claim that a cause-and-effect link must be established between phosphorus and cultural eutrophication in the receiving water prior to implementing the state's narrative nutrient water quality standard through an NPDES permit limit, regardless of the methodological approach (*i.e.*, effects-based or reference). The decision cited to by the commenter is inapposite, and did not involve the circumstances under which EPA could impose of effluent limitations under Section 402 and 301 of the Act to implement an existing narrative water quality standard. As described in the fact sheet and acknowledged by the commenter, EPA did not choose to apply the reference-based Ecoregion phosphorus criterion, but rather the effects-based EPA Gold Book criterion as a numeric interpretation of New Hampshire's narrative water quality standards. This choice was based on a determination that the referenced-based criterion might be more stringent than necessary, based on the methodology used to generate the value, not on a reading of the NH WQS. Had it been determined that the reference-based criterion were more appropriate, EPA would simply need to demonstrate that this criterion is protective of water quality standards.

Comment 10.

7Q10 Flow Inappropriate for Nutrient Regulation

The phosphorus limit proposed in the Town of Whitefield permit was based and developed upon the calculated 7Q10 flow. However, nutrients are not toxics and their impacts are manifested over a growing season as discussed in EPA's Protocol for Developing Nutrient TMDLs (1999) (at 4-3).

> TMDL developers should be aware that nutrient problems tend to be seasonally expressed and in many cases might result from the accumulation of year-round loadings.

Criteria based on the prevention of toxic effects utilize low flow conditions in the development of water quality-based effluent limits to ensure that adverse effects, which are expressed over a short exposure period, do not occur. However, impairments associated with nutrients are not expressed in the same way. Rather, nutrient concentrations must stimulate plant growth which then causes use impairment. This conceptual model has a longer averaging period and does not require application under extreme low flow conditions as discussed in EPA's NPDES Permit Writers' Manual (September 2010).

> [T]he recommended nutrient criteria represent conditions of surface waters that have minimal impacts caused by human activities rather than values derived from laboratory toxicity testing.
>
> [S]tates may adopt seasonal or annual averaging periods for nutrient criteria instead of the 1-hour, 24-hour, or 4-day average durations typical of aquatic life criteria for toxic pollutants.
>
> (NPDES Permit Writers' Manual at 6-6)

Thus, it is well-settled that nutrient concerns for streams and rivers, to the extent they exist at all, are only a concern during the growing season (e.g. April – September). During this period, snow melt and wet weather result in stream flows typically far greater than 7Q10. As a result, the proposed limit was developed using a non-representative flow and is, consequently, unnecessarily stringent.

Response 10.

The Clean Water Act requires that effluent limitations meet state water quality standards; therefore if a state's water quality standards require that water quality-based effluent limits be based upon a single, non-seasonal receiving water low flow to, for instance, introduce pollutant buffering capacity in the receiving water, the Clean Water Act would not allow these limits to be based on seasonal flows. Use of critical low flows to develop permit limits is consistent with New Hampshire Standards, see Env-Wq 1705.02(d), and with the reasonably conservative approach the Region has adopted in nutrient permitting in general. EPA notes that 7Q10 critical low flow conditions would typically occur during portions of the growing season (July – August) and are, thus, appropriate for permit limit development. During the growing season, when light and temperature are optimal for plant growth and the receiving water is subject to elevated

nutrients concentrations, aquatic plant biomass growth can proliferate in relatively short periods of time. A permit limit of 0.1 mg/l calculated using seasonal flows would have the potential to allow periods of excessive loading of nutrients during and around critical low flow conditions while still meeting the overall limit. The resulting biomass from any plant growth would violate water quality standards and have the potential to settle into the sediments and contribute to future water quality violations. It is imperative, therefore, to ensure that phosphorus effluent discharges from the WWTF and the resulting ambient phosphorus concentrations are maintained at consistently low levels. A phosphorus effluent limit that assumes worst case hydrological conditions will accomplish the objective of maintaining consistently low phosphorus in-stream concentrations.

Comment 11.

Aluminum

Attachment A of the draft permit has a determination for reasonable potential form Aluminum. There are 18 upstream datasets that measured aluminum. The median was 140 µg/l with the maximum being 230 µg/l. Whitefield's outfall measured a median of 60 µg/l and a maximum of 220 µg/l. Note that both the median and maximum discharge from the Whitefield WWTP is less than the ambient upstream concentration.

None of the samples from the WWTP or from the upstream water were taken under the chronic criteria as outlined in the Gold Book (four consecutive days of sampling). As such, the aluminum concentrations must be compared against the acute criteria. The Gold Book allows for an adjusted acute concentration as 675 µg/l (10% reserved per NHDES regulations) and an adjusted chronic value of 78.3 µg/l. As the 7Q10 dilution in the Johns River for the Whitefield WWTP is 7.5, the maximum acute concentration allowed would be 5,065 µg/l and for chronic 587 µg/l. Maximum Whitefield discharge was 37.5% of the allowed dilution discharge (well within this calculated limit).

The City of Manchester submitted an extensive Aluminum Study document that illustrated that aluminum was a naturally occurring condition in the feeder ponds of the White Mountains. The findings from the streams that discharge into the Merrimack River are very similar to the findings in the Johns River upstream from Whitefield's WWTP.

Aluminum is a naturally occurring substance, is higher upstream than what is discharged from the Whitefield WWTP and as such, the Johns River should be delisted for Aluminum with no resultant permit limitation placed upon the Town of Whitefield for Aluminum.

Response 11.

Acute and chronic criteria are based on the duration and frequency of exposure to increased aluminum concentrations. Specifically, chronic aquatic life criteria represent the 4-day average concentration not to be exceeded more than once every 3 years on average, while acute aquatic life criteria represent the 1-hour average concentration not to be exceeded more than once every 3 years on average. In order to be protective of water quality uses, these criteria must be met under all flow regimes (*i.e.*, 7Q10 low flow or higher flow). In order to account for the difference in averaging periods of the chronic and acute criteria in NPDES permits, EPA generally applies

chronic criteria as monthly average limitations and acute criteria as daily maximum limitations. EPA determined that the median value of the upstream samples and the 95th percentile of the distribution of effluent data sufficiently characterizes chronic exposure conditions. To be conservative, EPA also applied the same values in characterizing acute exposure conditions.

The commenter suggests that elevated instream aluminum concentrations in the Johns River are naturally-occurring, and, as a result, the draft permit should not have been included an aluminum limit. The draft permit included an aluminum limit that was established to ensure adequate protection of the aluminum criterion contained in the state water quality standards at Env-Wq 1703.21, Table 1703.1.

New Hampshire's Surface Water Quality Regulations includes procedures for determining alternative site-specific criteria in situations where site-specific information is available which substantiates the use of different criteria and/or where new information, not considered in the development of the criteria, are available (Env-Wq 1704). Any such determination would be part of a Water Quality Standards process, not an individual permit issuance process. No such determination has been made by NHDES for the Johns River, and no evidence has been provided that would indicate that the aluminum concentrations currently found upstream of the Whitefield WWTP are naturally occurring. In the absence of site-specific criteria for the Johns River or the development and adoption of statewide criteria that are different from those contained within the existing State water quality standards, EPA is compelled to establish limits that ensure compliance with all existing applicable criteria, which, in this case, are those found at Env-Wq 1703.21, Table 1703.1.

Even if there is a clear correlation between elevated ambient aluminum concentrations and the concentrations of aluminum detected in the effluent discharged from the Whitefield WWTP, it is not clear how this would allow EPA to justify the lack of a water quality- based limit when there is reasonable potential for the discharge to cause or contribute to a violation of an existing water quality criterion. The aluminum limit was established specifically to meet the requirement in the New Hampshire water quality standards, which state that "Unless naturally occurring or allowed under part Env-Wq 1707, all surface waters shall be free from toxic substances or chemical constituents in concentrations or combinations that: (1) Injure or are inimical to plants, animals, humans or aquatic life; or (2) Persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in edible portions of fish, shellfish, other aquatic life, or wildlife which might consume aquatic life". (See Env-Wq 1703.21(a). Additionally, the standard requires that, "Unless allowed in part Env-Wq 1707 or naturally occurring, concentrations of toxic substances in all surface waters shall not exceed the recommended safe exposure levels of the most sensitive surface water use shown in Table 1703.1, subject to the notes as explained in Env-Wq 1703.22" (Env-Wq 1703.21(b)).

For the reasons described above, the aluminum limit shall remain in the final permit.

In a letter from NHDES to EPA (dated July 1, 2014), NHDES stated that the aluminum criteria presented in the New Hampshire water quality regulations (Env-Wq-1700) should be applied in terms of acid-soluble aluminum. The letter goes on to say:

New Hampshire's aluminum criteria are based on EPA's 1988 ambient water quality

criteria document for aluminum[13]. According to this document, acid-soluble aluminum is operationally defined as "[a]luminum that passes through a 0.45 um membrane filter after the sample has been acidified to a pH at between 1.5 and 2.0 with nitric acid" [14]. For the many reasons listed in the "Implementation" section of the EPA document, acid-soluble aluminum is considered a better measurement of the forms that are toxic to aquatic life or that can be readily converted to toxic forms under natural conditions.

In order to express these criteria in terms of total recoverable aluminum, the fraction of acid-soluble to total recoverable aluminum in the receiving water must be determined. EPA is willing to work with the permittee and NHDES to develop an appropriate sampling protocol if the permittee wishes to establish the acid soluble fraction of aluminum in the receiving water. Any determination and approval of site-specific criteria will be considered "New Information" and the permit may be modified as provided in 40 CFR Section 122.62(a)(2).

Comment 12.

Copper

Attachment A (pg. vii) has a table for Copper for samples taken 5/31/2008 through 5/31/2013. There are 61 samples in total. The monthly average of all discharges is 26 µg/l and the median is 21 µg/l. The monthly maximum is 130 µg/l. The daily maximum is 140 µg/l and fell within the same month as the monthly average November of 2009.

Attachment A (pg. x) also has a table for Copper for Outfall 001. These numbers are different from those stated on page vii. Although the permit writer did not distinguish between the two pages, it appears the values on page vii are monthly grab samples and the values on page x are quarterly toxicity samples. In most cases, the values from the 24-hour composite quarterly WET test sampling were lower than the daily grabs. It is hard to determine if these samples were averaged or not into the results on page vii. Further clarification will be needed as the cumulative sample concentration line compliant. The daily maximum from sheet vii is 140 µg/l and the daily maximum from sheet x is 40 µg/l. It is of interest to note that both sheets median concentration was 21 µg/l.

These samples were all collected without the use of clean sampling techniques. The NHDES CALM, as approved by the EPA, has a Table 3-31, that lists Total Metals – WQC for determining results without clean sampling techniques (Attachment 3). Acute freshwater calculation allowable is 16.6 µg/l.

With a dilution of 7.5 (allowing for the 10% reserve flow), the acute freshwater discharge could be 124.5 µg/l. One sample taken on 11/30/2009 exceeded this limit (140 µg/l). All other samples were in compliance.

The CALM has a 10% rule for impairment. "For water quality assessments, there are basically two types of error, Type I, the water body is assessed as impaired when it is really fully supporting and Type II, the water body is assessed as fully supporting when it is really

[13] Ambient Water Quality Criteria for Aluminum - 1988. United Stated Environmental Protection Agency. EPA 440/5-86-008. August 1988.

[14] DES protocols require the sample to be acidified to this low pH and allowed to stand for l6 hours before analysis.

impaired…. DES employed the "binomial approach; in previous reporting cycles. The binomial approach, however, was criticized by some as being too lenient because the number of exceedances needed for a water body to be considered impaired increased with the total sample size, and at least 3 exceedances were needed for total sample sizes of 10 or less. The concern was that some water bodies were not being listed which were actually impaired. In response to these concerns, DES decided to abandon the binomial approach starting with the 2006 cycle and adopt the slightly more stringent ten percent rule (i.e. 10% rule) for determining use support" (CALM – Section 3.1.17 Minimum Number of Samples – 10 Percent Rule). As only one sample out of 61 was over the acute freshwater dilution allowance for non-clean sampling criteria, the 140 µg/l copper value would not be considered a violation under the 10% rule.

Another possibility is that the NHDES release their 10 % capacity for this instance. The 7Q10 would be 8.28 X 16.6 or 137.45 µg/l. This is less than 2% difference between both samples and well within statistical error for sample collection, lab sample preparation error and instrument error. As all samples since November 2009 have been in compliance with the 90% allowance for copper, the limitation for copper should be a monitor only for this permit cycle.

Response 12.

The commenter is correct in that the effluent copper data presented on page vii and page x of Attachment A to the fact sheet are the results of monthly effluent monitoring and monitoring that was conducted in conjunction with WET tests, respectively. Contrary to the statement in the above comment that implies some of the samples were collected as 24-hour composites, all samples were collected as grab samples, in accordance with the 2006 permit.

The limit in the permit is based upon a determination that reasonable potential exists for the discharge of copper from the Whitefield WWTP to cause or contribute to excursions above the applicable water quality criteria in the receiving water.

Sections 301 and 402 of the Act, and implementing regulations at 40 C.F.R. § 122.44(d), are the provisions that govern this permitting action, not Section 303(d) and associated non-binding listing guidance such as CALM. Therefore, the CALM methodology (the methodology by which the state determines whether to list a receiving water as impaired) is not determinative.
Upon establishing that there was a reasonable potential for the discharge of copper from the Whitefield WWTF to cause or contribute to excursions above the applicable water quality criteria, EPA was compelled to include a copper effluent limit sufficiently stringent to ensure compliance with standards. *See* 40 CFR § 122.44(d)(1)(iii). This limit must be imposed whether or not the John's River is designated as impaired for copper on the 303(d) list.

Inclusion of the metals data that was presented in the fact sheet is appropriate, as they represent samples that were collected in accordance with the *Freshwater Acute Whole Effluent Toxicity Test Procedure and Protocol* (February 28, 2011). Although permittees are welcome to submit data collected using methods whose level of sophistication exceeds that required by the *Freshwater Acute Whole Effluent Toxicity Test Procedure and Protocol* (February 28, 2011), they are not required to do so.

The copper limit in the draft permit remains unchanged in the final permit.

Comment 13.

Unfunded Mandate

Article 28-a of the State's Constitution, Bill of Rights, adopted on November 28, 1984 states, "The state shall not mandate or assign any new expanded or modified programs or responsibilities to any political subdivision in such a way as to necessitate additional local expenditures by the political subdivision unless such programs or responsibilities are fully funded by the state or unless such programs or responsibilities are approved for funding by a vote of the local legislative body of the political subdivision."

Section 541-A:25 Unfunded State Mandates II of the Administrative Procedures Act State, "Such programs also include, but are not limited to, functions such as police, fire and rescue, roads and bridges, solid waste, sewer and water, and construction and maintenance of buildings and other municipal facilities or other facilities or functions undertaken by a political subdivision."

The NHDES is establishing new limits for phosphorus at the Whitefield WWTP and within the Johns River where clearly, the available data indicates there is not impairment in the Johns or Connecticut River for ammonia and phosphorus. The "reasonable potential" loadings as expressed in the permit narrative have never been exceeded from the data provided or within the context of the USGS Connecticut River Study. The aforementioned arguments for the Johns and Connecticut River demonstrate that both water bodies are in compliance with WQ standards.

The NHDES "reasonable potential" argument is mandating Whitefield to upgrade their facility to meet phosphorus removal to get down to a discharge of 0.77 lb/day that will cost the town upwards of a few million dollars for the design, construction, equipment and ongoing operations and maintenance costs. It is clear that the pounds loading limit included in the draft permit based on "reasonable potential", but clearly contradicted by the scientific findings of the USGS Connecticut River Study, and the 35 lb/day maximum allowance for a nitrogen monitor condition is an unfunded mandate that will cost the rate payers of Whitefield unneeded expenses to achieve a reduction of a pollutant that does not currently, nor will it during the next permit cycle, cause a water quality violation.

Response 13.

By its terms, Section 541-A:25 Unfunded State Mandates II applies to the state, not EPA in issuing a federal NPDES permit. To the extent that the reference to "unfunded mandates" also refers to the requirements of the Unfunded Mandate Reform Act of 1995 (UMRA), the UMRA is inapplicable to this permitting action. The UMRA applies to rulemaking, and not individual NPDES permit decisions. For example, in *In re City of Blackfoot Wastewater Treatment Facility*, NPDES Appeal No. 00-32 (EAB September 17, 2001) the Environmental Appeals Board denied a petition for review of compliance with UMRA on grounds that UMRA applies only to regulations, not to individual NPDES permits, which are more akin to licenses than a regulation.

The State generally adopts federal NPDES permits as State permits so that facilities can lawfully discharge wastewater under State law, specifically RSA 485-A:13, I(a). However, no issue under Part I, Article 28-a of the N.H. Constitution arises when that happens. Any costs incurred to comply with the federal NPDES permit are attributable to the federal action in issuing the permit. The costs to Whitefield to comply with the permit will not increase as a result of the State's adoption of the federal NPDES permit as a state permit. There are no "additional local expenditures" that can be attributed to the State's actions. RSA 541-A:25, which is the General Court's interpretation of Part I, Article 28-a, likewise does not apply to this case. RSA 541-A:25, I, to which the language quoted by Manchester refers, establishes that the section applies to a "state agency to which rulemaking authority has been granted". The Department is not aware of any case in which RSA 541-A:25 has been applied outside of a rulemaking proceeding.

EPA assists in financing the cost of treatment needed to achieve compliance with the Clean Water Act through the Clean Water Act State Revolving Fund (SRF). Through the SRF program, New Hampshire maintains revolving loan funds to provide low cost financing for a wide range of water quality infrastructure projects. Funds to establish or capitalize the SRF program are provided through federal government grants and state matching funds (equal to 20% of federal government grants). EPA has provided New Hampshire with a total of $358,419,565 in Clean Water Act SRF grant funds for the period from 1989 through 2012.

Contrary to the above comment, the draft permit does not include a mass-based limit. EPA believes that the analysis presented in the fact sheet clearly indicates that reasonable potential exists for the discharge of phosphorus from the Whitefield WWTP to cause or contribute to violations of water quality standards in the receiving water. As such, the phosphorus limit shall remain in the final permit.

Comment 14.

In review of the 80% flow exeedance for 90 days it is apparent that a WWTP (associated with a non-CSO community such as Whitefield) can never reach full flow discharge for any average month condition due to the fact that plans for facility improvements are required when a plant had 90 days of flow at 80% of their maximum discharge (0.145 for Whitefield, NH). Consideration should be given for this condition when making determinations of "Reasonable Potential."

Based on these comments, it is respectfully requested that the Region withdraw the phosphorus limit from the draft permit. Under New Hampshire law, a narrative criteria violation requires some demonstration that a water body is being impaired by nutrients. The USGS Connecticut River Study conducted on the Connecticut River demonstrated that this impairment does not exist.

To impose a phosphorus limit, the Region must demonstrate that nutrients are, in fact, causing impairments in the Johns River and develop an in stream phosphorus target based on the site-specific data used in that determination. Moreover, it is inappropriate to presume that a 0.1 mg/l TP level is required to protect all flowing waters from nutrient impacts. It is also scientifically inappropriate to base the proposed limit on the rarely occurring 7Q10 flow that does not control the degree of plant growth occurring in the river. Given the assumptions in the Region's

approach to interpreting the state's narrative standard and setting phosphorus limits, the draft provision should be withdrawn.

It is also respectfully requested that the ammonia limit should also be withdrawn as the calculation for "reasonable potential" was based on a chronic level and not the appropriate acute level as outlined in the Aquatic life Ambient Water Quality Criteria for Ammonia – Freshwater 2013 document and put forth in these comments. When calculated using the criteria set forth in this document the allowable discharge would be six times greater than the ammonia limitations outlined in the draft permit.

The aluminum limitation should be withdrawn due to the naturally occurring nature of aluminum in the Johns River and the fact that both the median and maximum background concentrations are higher than the discharge from Whitefield's WWTP.

The copper limitation needs further review. What is the actual final data the permit is based upon? Is it sheet vii, sheet x or a combination of both. The non-clean sampling concentrations need to be the reference limit as outlined in the NHDES CALM Table 3-31. The CALM's 10% rule for compliance should apply to the dataset. Finally, this may be a great case where the NHDES allows the use of 10% reserve assimilative capacity for copper in this stretch of the Johns River.

Response 14.

The specific issues raised in the above comment are addressed throughout this response to comments document, as listed below:

1. Response No. 1 – notification requirements in the event that the effluent flow rate exceeds 80 % of the design flow for a period of three consecutive months.

2. Responses No. 3, 4, 6, 7, 8, 9, 10, and 13 - Total phosphorus limit

3. Response No. 2 - Ammonia limit

4. Response No. 11 – Aluminum limit

5. Response No. 12 – Copper limit