AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act, as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§ 26-53),

The City of Taunton
Department of Public Works

is authorized to discharge from the facility located at

Taunton Wastewater Treatment Plant
825 West Water Street
Taunton, MA 02780
and one combined sewer overflow (CSO)

to receiving water named **Taunton River** (Taunton River Basin - MA62-02)

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

The Towns of Raynham and Dighton are co-permittees for PART 1.B. UNAUTHORIZED DISCHARGES and PART 1.C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM, which include conditions regarding the operation and maintenance of the collection systems owned and operated by the Towns. The responsible Town authorities are:

Town of Raynham Sewer Dept 416 Titicut Road Raynham, MA 02767	Town of Dighton Sewer Dept P.O. Box 229 North Dighton, MA 02764

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

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

This permit supersedes the permit issued on March 27, 2001.

This permit consists of 23 pages in Part I including effluent limitations and monitoring requirements, Attachments A (USEPA Region 1 Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013), B (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011), C (Reassessment of Technically Based Industrial Discharge Limits) and D (NPDES Permit Requirement For Industrial Pretreatment Annual Report), and Part II General Conditions and Definitions.

Signed this 10th day of April, 2015

/S/SIGNATURE ON FILE
Ken Moraff, Acting Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

/S/SIGNATURE ON FILE
David Ferris, Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

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

EFFLUENT CHARACTERISTIC	**EFFLUENT LIMITS**					**MONITORING REQUIREMENTS**[3]	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
FLOW[2]	******	******	8.4 MGD	******	Report MGD	CONTINUOUS	RECORDER
FLOW[2]	******	******	Report MGD	******	*********	CONTINUOUS	RECORDER
$CBOD_5$ [4] (April 1-October 31)	1051 lbs/Day	1051 lbs/Day	15 mg/l	15 mg/l	Report mg/l	3/WEEK	24-HOUR COMPOSITE[5]
$CBOD_5$ [4] (November 1 - March 31)	2102 lbs/Day	3153 lbs/Day	30 mg/l	45 mg/l	Report mg/l	3/WEEK	24-HOUR COMPOSITE[5]
TSS [4] (April 1-October 31)	1401 lbs/Day	1401 lbs/Day	20 mg/l	20 mg/l	Report mg/l	3/WEEK	24-HOUR COMPOSITE[5]
TSS [4] (November 1 - March 31)	2102 lbs/Day	3153 lbs/Day	30 mg/l	45 mg/l	Report mg/l	3/WEEK	24-HOUR COMPOSITE[5]
pH RANGE[1]	6.0 - 8.5 SU (SEE PERMIT PARAGRAPH I.A.1.b.)					1/DAY	GRAB
TOTAL RESIDUAL CHLORINE[7]	******	*******	27 ug/l	******	47 ug/l	3/DAY	GRAB
FECAL COLIFORM [1,6]	******	*******	88 cfu/100 ml	******	260 cfu/100 ml	2/WEEK	GRAB
ENTEROCOCCI [1,6]	******	*******	35 cfu/100 ml	******	276 cfu/100 ml	2/WEEK	GRAB
AMMONIA-NITROGEN (June 1 - September 30)	Report lbs/Day	Report lbs/Day	1 mg/l	1 mg/l	2 mg/l	3/WEEK	24-HOUR COMPOSITE[5]
AMMONIA-NITROGEN (October 1 - May 31)	Report lbs/Day	******	Report mg/l	******	Report mg/l	1/MONTH	24-HOUR COMPOSITE[5]

Sampling Location: 24-hour composite sampling at head of aeration cascade; grab samples at foot of aeration cascade.

CONTINUED FROM PREVIOUS PAGE

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

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS [3]	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
TOTAL NITROGEN[12, 13] (May 1 - October 31)	210 lbs/day	******	Report mg/l	******	Report mg/l	3/WEEK	24-HOUR COMPOSITE
TOTAL KJELDAHL NITROGEN	Report lbs/day		Report mg/l				
TOTAL NITRATE	Report lbs/day		Report mg/l				
TOTAL NITRITE	Report lbs/day		Report mg/l				
TOTAL NITROGEN[12, 13] (November 1 - April 30)	Report lbs/day	******	Report mg/l	******	Report mg/l	1/WEEK	24-HOUR COMPOSITE
TOTAL KJELDAHL NITROGEN	Report lbs/day		Report mg/l				
TOTAL NITRATE	Report lbs/day		Report mg/l				
TOTAL NITRITE	Report lbs/day		Report mg/l				
TOTAL PHOSPHORUS (April 1 - October 31)	Report lbs/day	******	Report mg/l	******	Report mg/l	1/WEEK	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE COPPER[14]	******	******	0.008 mg/l	******	0.016 mg/l	1/MONTH	24-HOUR COMPOSITE[5]
DISSOLVED OXYGEN (April 1st-October 31st)	NOT LESS THAN 6.0 mg/l					1/DAY	GRAB
WHOLE EFFLUENT TOXICITY [8, 9, 10, 11]	Acute $LC_{50} \geq 100\%$ Chronic C-NOEC ≥ 29%					4/YEAR	24-HOUR COMPOSITE[5]
Hardness[15]	******	******	******	******	Report mg/l	4/YEAR	24-HR COMP
Ammonia Nitrogen as N[15]	******	******	******	******	Report mg/l	4/YEAR	24-HR COMP
Total Recoverable Aluminum[15]	******	******	******	******	Report mg/l	4/YEAR	24-HR COMP
Total Recoverable Cadmium[15]	******	******	******	******	Report mg/l	4/YEAR	24-HR COMP
Total Recoverable Copper[15]	******	******	******	******	Report mg/l	4/YEAR	24-HR COMP
Total Recoverable Lead[15]	******	******	******	******	Report mg/l	4/YEAR	24-HR COMP
Total Recoverable Nickel[15]	******	******	******	******	Report mg/l	4/YEAR	24-HR COMP
Total Recoverable Zinc[15]	******	******	******	******	Report mg/l	4/YEAR	24-HR COMP

Footnotes:

1. Required for State Certification.

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

3. Effluent sampling shall be of the discharge and shall be collected at the point specified on page 2. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

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

   All samples shall be tested using the analytical methods found in 40 CFR § 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR § 136.

4. Sampling required for influent and effluent.

5. 24-hour composite samples will consist of at least twenty-four (24) grab samples taken during one consecutive 24 hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.

6. The monthly average limits for fecal coliform and enterococci are expressed as a geometric mean. Fecal coliform and enterococci monitoring shall be conducted concurrently with a total residual chlorine sample.

7. Total residual chlorine monitoring is required whenever chlorine is added to the treatment process (i.e. TRC sampling is not required if chlorine is not added for disinfection or other purpose). The limitations are in effect year-round.

   The minimum level (ML) for total residual chlorine is defined as 20 ug/l. This value is the minimum level for chlorine using EPA approved methods found in the most currently approved version of Standard Methods for the Examination of Water and Wastewater, Method 4500 CL-E and G. One of these methods must be used to determine total residual chlorine.

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

8. The permittee shall conduct chronic and acute toxicity tests *four* times per year. The chronic test may be used to calculate the acute LC_{50} at the 48 hour exposure interval. The permittee shall test the daphnid, Ceriodaphnia dubia, only. Toxicity test samples shall be collected during the months of February, May, August and November. The test results shall be submitted by the last day of the month following the completion of the test. The results are due March 31, June 30, September 30 and December 31, respectively. The chronic test must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit. The acute test must be performed in accordance with test procedures and protocols specified in **Attachment B** of this permit.

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**	**Chronic Limit C-NOEC**
February May August November	March 31 June 30 September 30 December 31	Ceriodaphnia dubia (daphnid)	≥ 100%	≥ 29%

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

9. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

10. 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 “29% or greater" limit is defined as a sample which is composed of 29% (or greater) effluent, the remainder being dilution water.

11. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in **Attachment A (Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER** in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the Self-Implementing Alternative Dilution Water Guidance, which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, which may be found on the EPA Region I web site at http://www.epa.gov/Region1/enforcementandassistance/dmr.html. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachment A**. Any modification or revocation to this guidance will be transmitted to the permittees. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

12. The nitrogen limit is a rolling seasonal average limit, which is effective from May 1– October 31 of each year. The first value for the seasonal average will be reported after an entire May – October period has elapsed following the effective date of the permit (results do not have to be from the same year). For example, if the permit becomes effective on December 1, 2014, the permittee will calculate the first seasonal average from samples collected during the months of May through October 2015, and report this average on the October 2014 DMR. For each subsequent month that the seasonal limit is in effect, the seasonal average shall be calculated using samples from that month and the previous five months that the limit was in effect.

    The permittee shall comply with the 210 lbs/day total nitrogen limit (and the optimization requirement of footnote 13) in accordance with the schedule contained in Section G below. Upon the effective date of the permit, and until the date specified in Section G below for completion of the Phase 1 upgrade, monitoring for total nitrogen shall be conducted once per week.

13. The permittee shall operate the treatment facility to reduce the discharge of total nitrogen during the months of November to April to the maximum extent possible. All available treatment equipment in place at the facility shall be operated unless equal or better performance can be achieved in a reduced operational mode. The addition of a carbon source that may be necessary in order to meet the total nitrogen limit during the months of May to October is not required during the months of November to April.

14. The minimum level (ML) for copper is defined as 3 ug/l. This value is the minimum

level for copper using the Furnace Atomic Absorption analytical method (EPA Method 220.2). This method or other EPA-approved method with an equivalent or lower ML shall be used.

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

Part I.A.1. (Continued)

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

b. The pH of the effluent shall not be less than 6.0 or greater than 8.5 at any time.

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

d. The effluent shall not contain a visible oil sheen, foam, or floating solids at any time.

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

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

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

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

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

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

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

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

(1) The quantity and quality of effluent introduced into the POTW; and
(2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

3. Prohibitions Concerning Interference and Pass Through:

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

4. Toxics Control

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

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

5. Numerical Effluent Limitations for Toxicants

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

B. UNAUTHORIZED DISCHARGES

This permit authorizes discharges only from the outfall listed in Part I.A.1 and one CSO located on West Water Street, 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 must be reported to EPA and MassDEP orally within 24 hours of the time the permittee becomes aware of the circumstances and a written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances (Paragraph D.1.e of Part II of this permit).

Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at http://www.mass.gov/eea/agencies/massdep/service/approvals/sanitary-sewer-overflow-bypass-backup-notification.html.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

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

1. Maintenance Staff

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

2. Preventive Maintenance Program

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

3. Infiltration/Inflow

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

4. Collection System Mapping

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

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

5. Collection System Operation and Maintenance Plan

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

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

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

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

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

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

6. Annual Reporting Requirement

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

a. A description of the staffing levels maintained during the year;
b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;
c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;
d. A map with areas identified for investigation/action in the coming year;
e. If treatment plant flow has reached 80% of its design flow (6.7 MGD) based on the annual average flow during the reporting year, or there have been capacity related overflows, submit a calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year; and
f. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit.

7. Alternate Power Source

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

D. SLUDGE CONDITIONS

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

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

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

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

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

   c. Sewage sludge incineration in a sludge only incinerator

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

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

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

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

- Monitoring
- Reporting

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

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

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

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

7. Under 40 CFR § 503.9(r), the permittee is a "person who prepares sewage sludge" because it "is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the permittee contracts with *another* "person who prepares sewage sludge" under 40 CFR § 503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR § 503.7. If the ultimate use or disposal method is land application, the permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

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

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

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

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

E. INDUSTRIAL USERS AND PRETREATMENT PROGRAM

1. The permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within 120 days of the effective date of this permit, the permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the permittee shall assess how the POTW performs with respect to influent and effluent of pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety and collection system concerns. In preparing this evaluation, the permittee shall complete and submit the attached form (Attachment C) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004).

2. The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program, and the General Pretreatment Regulations, 40 CFR 403. At a minimum, the permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):

   a. Carry out inspection, surveillance, and monitoring procedures which will determine independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP but in no case less than once per year and maintain adequate records.

b. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.

c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.

d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.

3. The permittee shall provide the EPA and MassDEP with an annual report describing the permittee's pretreatment program activities for the twelve (12) month period ending 60 days prior to the due date in accordance with 403.12(i). The annual report shall be consistent with the format described in Attachment D of this permit and shall be submitted no later than March 1 of each year.

4. The permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR 403.18(c).

5. The permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 CFR 405 et. seq.

6. The permittee must modify its pretreatment program, if necessary, to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the industrial pretreatment program. The permittee must provide EPA, in writing, within 180 days of this permit's effective date proposed changes, if applicable, to the permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the permittee must address in its written submission the following areas: (1) Enforcement response plan; (2) revised sewer use ordinances; and (3) slug control evaluations. The permittee will implement these proposed changes pending EPA Region I's approval under 40 CFR 403.18. This submission is separate and distinct from any local limits analysis submission described in Part I.E.1.

F. COMBINED SEWER OVERFLOWS (CSOs)

1. Effluent Limitations

During wet weather, the permittee is authorized to discharge storm water/wastewater from the combined sewer overflow located on West Water Street, subject to the following effluent limitations:

a. The discharges shall receive treatment at a level providing Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant

Control Technology (BCT) to control and abate conventional pollutants and Best Available Technology Economically Achievable (BAT) to control and abate non-conventional and toxic pollutants. The EPA has made a Best Professional Judgment (BPJ) determination that BPT, BCT, and BAT for combined sewer overflow (CSO) control includes the implementation of Nine Minimum Controls (NMC) specified below and detailed further in Part I.F.2, "Nine Minimum Controls Minimum Implementation Levels" of this permit:

(1) Proper operation and regular maintenance programs for the sewer system and the combined sewer overflows;

(2) Maximum use of the collection system for storage;

(3) Review and modification of the pretreatment program to assure CSO impacts are minimized;

(4) Maximization of flow to the POTW for treatment;

(5) Prohibition of dry weather overflows from CSOs;

(6) Control of solid and floatable materials in CSOs;

(7) Pollution prevention programs that focus on contaminant reduction activities;

(8) Public notification to ensure that the public receives adequate notification of CSO occurrences and impacts; and

(9) Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

b. **Within 6 months of the effective date of this permit**, the permittee shall submit to EPA updated documentation on its implementation of the Nine Minimum Controls. Implementation of the Nine Minimum Controls is required by the effective date of the permit. EPA and MassDEP consider that approvable documentation must include the minimum requirements set forth in Part I.F.2 of this permit and additional activities the permittee can reasonably undertake.

c. The discharges shall not cause or contribute to violations of federal or state Water Quality Standards.

2. Nine Minimum Controls Minimum Implementation Levels

a. The permittee must implement the nine minimum controls in accordance with the documentation provided to EPA and MassDEP or as subsequently modified to enhance the effectiveness of the controls. This implementation must include the following controls plus other controls the permittee can reasonably undertake as set forth in the documentation.

b. Each CSO structure/regulator, pumping station and/or tidegate shall be routinely inspected, at a minimum of once per month, to insure that they are in good working condition and adjusted to minimize combined sewer discharges and tidal surcharging (NMC # 1, 2 and 4). The following inspection results shall be recorded: the date and time of inspection, the general condition of the facility, and whether the facility is operating satisfactorily. If maintenance is necessary, the permittee shall record: the description of the necessary maintenance, the date the necessary maintenance was performed, and whether the observed problem was corrected. The permittee shall maintain all records of inspections for at least three years.

Annually, no later than April 30th, the permittee shall submit a certification to MassDEP and EPA which states that the previous calendar year's monthly inspections were conducted, results recorded, and records maintained.

MassDEP and EPA have the right to inspect any CSO related structure or outfall at any time without prior notification to the permittee.

c. Discharges to the combined system of septage, holding tank wastes, or other material which may cause a visible oil sheen or containing floatable material are prohibited during wet weather when CSO discharges may be active (NMC # 3, 6, and 7).

d. Dry weather overflows (DWOs) are prohibited (NMC # 5). All dry weather sanitary and/or industrial discharges from CSOs must be reported to EPA and MassDEP orally within 24 hours of the time the permittee becomes aware of the circumstances and a written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances (Paragraph D.1.e of Part II of this permit).

e. The permittee shall quantify and record all discharges from combined sewer outfalls (NMC # 9). Quantification may be through direct measurement or estimation. When estimating, the permittee shall make reasonable efforts, i.e. gauging or measurements, to verify the validity of the estimation technique. The following information must be recorded for each combined sewer outfall for each discharge event:

- Estimated duration (hours) of discharge;
- Estimated volume (gallons) of discharge;
- National Weather Service precipitation data from the nearest gage

where precipitation is available at daily (24-hour) intervals and the nearest gage where precipitation is available at one-hour intervals. Cumulative precipitation per discharge event shall be calculated.

The permittee shall maintain all records of discharges for at least six years after the effective date of this permit.

Annually, no later than April 30th, the permittee shall submit a report containing the required discharge monitoring information for all combined sewer discharges during the previous calendar year.

f. The permittee shall install and maintain identification signs for all combined sewer outfall structures (NMC # 8). The signs must be located at or near the combined sewer outfall structures and easily readable by the public from the land and water. These signs shall be a minimum of 12 x 18 inches in size, with white lettering against a green background, and shall contain the following information:

CITY OF TAUNTON
WET WEATHER
SEWAGE DISCHARGE
OUTFALL (discharge serial number)

Where easements over property not owned by the permittee must be obtained to meet this requirement, the permittee shall identify the appropriate landowners and obtain the necessary easements, to the extent practicable.

The permittee, to the extent feasible, shall place additional signs in languages other than English or add a universal wet weather sewage discharge symbol to existing signs based on notification from the EPA and the State or on the permittee's own good faith determinations that the primary language of a substantial percentage of the residents in the vicinity of a given outfall structure is not English.

3. Nine Minimum Controls Reporting Requirement

Annually, no later than April 30th, the permittee shall submit a report summarizing activities during the previous calendar year relating to compliance with the nine minimum controls including the required information on the frequency, duration, and volume of discharges from each CSO.

G. TOTAL NITROGEN COMPLIANCE SCHEDULE

1. Ten (10) years from the effective date of the permit, the 210 lbs/day seasonal rolling average

total nitrogen limit shall become effective.[3]

2. Within one (1) year of the effective date of the permit, the permittee shall report on progress made towards completing design of a treatment plant upgrade to achieve an interim monthly average 5 mg/l total nitrogen limit or less in a manner that is consistent with a further upgrade to 3 mg/l ("Phase 1 Upgrade").

3. Within two (2) years of the effective date of the permit, the permittee shall complete facilities planning and initiate the design of the Phase 1 Upgrade. This period for facilities planning is designed to allow time for the permittee to evaluate the effect of peak wet weather flows and other factors relative to design considerations in order to ensure that the waste water treatment facility upgrade will be able to attain all permit limits.

4. Within (3) years of the effective date of the permit, the permittee shall complete design of the Phase 1 upgrade and initiate construction of the Phase 1 upgrade.

5. Within five (5) years of the effective date of permit, the permittee shall complete construction of the Phase 1 Upgrade, optimize total nitrogen removal, including the addition of supplemental carbon, and achieve compliance with the interim monthly average limit of 5 mg/l TN or less.

6. Annually, beginning one year from the effective date of the permit, the permittee shall submit progress reports that detail the following:
    a. Status of compliance with the above schedule, and
    b. All nitrogen-related water quality data collected and water quality analyses completed during the previous year.

7. If at any time the permittee believes it has sufficient new information to justify a revision of the total nitrogen limit, it may submit the information to EPA and MADEP and the agencies will review the information and, if appropriate, act on a request for a permit modification if there exists "cause" under 40 CFR § 124.62 or incorporate the information in a new water quality-based permit limit analysis as part of permit reissuance.

H. MONITORING AND REPORTING

The monitoring program in the permit specifies sampling and analysis, which will provide continuous information on compliance and the reliability and effectiveness of the installed pollution abatement equipment. The approved analytical procedures found in 40 CFR Part 136 are required unless other procedures are explicitly required in the permit. The Permittee is obligated to monitor and report sampling results to EPA and the MassDEP within the time

3 Antibacksliding prohibitions with respect to the final effluent limitation of 210 lbs/day are not triggered until the WQBEL in the permit goes into effect. Therefore, the WQBEL can be relaxed, if justified, at any time prior to the end of the compliance schedule without triggering antibacksliding prohibition with respect to that limit.

specified within the permit.

Unless otherwise specified in this permit, the permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

The permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and MassDEP no later than the 15th day of the month electronically using NetDMR. When the permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or MassDEP.

2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this permit, the permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. Permittees shall continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP. (See Part I.G.6. for more information on state reporting.) Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15^{th} day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this permit.

3. Submittal of Pre-treatment Related Reports

All reports and information required of the permittee in the Industrial Users and Pretreatment Program section of this permit shall be submitted to the Office of Ecosystem Protection's Pretreatment Coordinator in Region 1 EPA's Office of Ecosystem Protection (OEP). These requests, reports and notices include:

A. Annual Pretreatment Reports,
B. Pretreatment Reports Reassessment of Technically Based Industrial Discharge Limits Form,
C. Revisions to Industrial Discharge Limits,
D. Report describing Pretreatment Program activities, and
E. Proposed changes to a Pretreatment Program

This information shall be submitted to EPA/OEP as a hard copy at the following address:

U.S. Environmental Protection Agency
Office of Ecosystem Protection
Regional Pretreatment Coordinator
5 Post Office Square - Suite 100 (OEP06-03)

Boston, MA 02109-3912

4. Submittal of Requests and Reports to EPA/OEP

The following requests, reports, and information described in this permit shall be submitted to the EPA/OEP NPDES Applications Coordinator in the EPA Office Ecosystem Protection (OEP).

A. Transfer of Permit notice
B. Request for changes in sampling location
C. Request for reduction in testing frequency
D. Request for Reduction in WET Testing Requirement
E. Report on unacceptable dilution water / request for alternative dilution water for WET testing

These reports, information, and requests shall be submitted to EPA/OEP electronically at R1NPDES.Notices.OEP@epa.gov or by hard copy mail to the following address:

U.S. Environmental Protection Agency
Office of Ecosystem Protection
EPA/OEP NPDES Applications Coordinator
5 Post Office Square - Suite 100 (OEP06-03)
Boston, MA 02109-3912

5. Submittal of Reports in Hard Copy Form

The following notifications and reports shall be submitted as hard copy with a cover letter describing the submission. These reports shall be signed and dated originals submitted to EPA.

A. Written notifications required under Part II
B. Notice of unauthorized discharges, including Sanitary Sewer Overflow (SSO) reporting
C. Collection System Operation and Maintenance Plan (from co-permittee)
D. Report on annual activities related to O&M Plan (from co-permittee)

This information shall be submitted to EPA/OES at the following address:

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

6. State Reporting

Unless otherwise specified in this permit, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports, information, requests or notifications described in Parts I.G.3, I.G.4, and I.G.5 also shall be submitted to the State at the following addresses:

MassDEP – Southeast Region
Bureau of Resource Protection (Municipal)
20 Riverside Drive
Lakeville, MA 02347

Copies of toxicity tests and nitrogen optimization reports only shall be submitted to:

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

7. Verbal Reports and Verbal Notifications

Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to both EPA and to MassDEP. This includes verbal reports and notifications which require reporting within 24 hours. (As examples, see Part II.B.4.c.(2), Part II.B.5.c. (3), and Part II.D.1.e.) Verbal reports and verbal notifications shall be made to EPA's Office of Environmental Stewardship at:

U.S. Environmental Protection Agency
Office of Environmental Stewardship
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912
617-918-1510

I. STATE PERMIT CONDITIONS

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

contained in 314 CMR 3.19, are hereby incorporated by reference into this state surface water discharge permit.

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

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

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. $\geq$3 standard deviations for IC25 values and $\geq$ 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

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

EPA - New England

Reassessment of Technically Based Industrial Discharge Limits

Under 40 CFR §122.21(j)(4), all Publicly Owned Treatment Works (POTWs) with approved Industrial Pretreatment Programs (IPPs) shall provide the following information to the Director: a written evaluation of the need to revise local industrial discharge limits under 40 CFR §403.5(c)(1).

Below is a form designed by the U.S. Environmental Protection Agency (EPA - New England) to assist POTWs with approved IPPs in evaluating whether their existing Technically Based Local Limits (TBLLs) need to be recalculated. The form allows the permittee and EPA to evaluate and compare pertinent information used in previous TBLLs calculations against present conditions at the POTW.

Please read direction below before filling out form.

ITEM I.

* In Column (1), list what your POTW's influent flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present influent flow rate. Your current flow rate should be calculated using the POTW's average daily flow rate from the previous 12 months.

* In Column (1) list what your POTW's SIU flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present SIU flow rate.

* In Column (1), list what dilution ratio and/or 7Q10 value was used in your old/expired NPDES permit. In Column (2), list what dilution ration and/or 7Q10 value is presently being used in your new/reissued NPDES permit.

  The 7Q10 value is the lowest seven day average flow rate, in the river, over a ten year period. The 7Q10 value and/or dilution ratio used by EPA in your new NPDES permit can be found in your NPDES permit "Fact Sheet."

* In Column (1), list the safety factor, if any, that was used when your existing TBLLs were calculated.

* In Column (1), note how your bio-solids were managed when your existing TBLLs were calculated. In Column (2), note how your POTW is presently disposing of its biosolids and how your POTW will be disposing of its biosolids in the future.

ITEM II.

* List what your existing TBLLs are - as they appear in your current Sewer Use Ordinance (SUO).

ITEM III.

* Identify how your existing TBLLs are allocated out to your industrial community. Some pollutants may be allocated differently than others, if so please explain.

ITEM IV.

* Since your existing TBLLs were calculated, identify the following in detail:

  (1) if your POTW has experienced any upsets, inhibition, interference or pass-through as a result of an industrial discharge.

  (2) if your POTW is presently violating any of its current NPDES permit limitations - include toxicity.

ITEM V.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in pounds per day) received in the POTW's influent. Current sampling data is defined as data obtained over the last 24 month period.

  All influent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* Based on your existing TBLLs, as presented in Item II., list in Column (2), for each pollutant the Maximum Allowable Headwork Loading (MAHL) values derived from an applicable environmental criteria or standard, e.g. water quality, sludge, NPDES, inhibition, etc. For more information, please see EPA's <u>Local Limit Guidance Document</u> (July 2004).

Item VI.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in micrograms per liter) present your POTW's effluent. Current sampling data is defined as data obtained during the last 24 month period.

(Item VI. continued)

All effluent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* List in Column (2A) what the Water Quality Standards (WQS) were (in micrograms per liter) when your TBLLs were calculated, please note what hardness value was used at that time. Hardness should be expressed in milligram per liter of Calcium Carbonate.

List in Column (2B) the current WQSs or "Chronic Gold Book" values for each pollutant multiplied by the dilution ratio used in your new/reissued NPDES permit. For example, with a dilution ratio of 25:1 at a hardness of 25 mg/l - Calcium Carbonate (copper's chronic WQS equals 6.54 ug/l) the chronic NPDES permit limit for copper would equal 156.25 ug/l.

ITEM VII.

* In Column (1), list all pollutants (in micrograms per liter) limited in your new/reissued NPDES permit. In Column (2), list all pollutants limited in your old/expired NPDES permit.

ITEM VIII.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants in your POTW's biosolids. Current data is defined as data obtained during the last 24 month period. Results are to be expressed as total dry weight.

All biosolids data collected and analyzed must be in accordance with 40 CFR §136.

In Column (2A), list current State and/or Federal sludge standards that your facility's biosolids must comply with. Also note how your POTW currently manages the disposal of its biosolids. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria will be and method of disposal.

In general, please be sure the units reported are correct and all pertinent information is included in your evaluation. If you have any questions, please contact your pretreatment representative at EPA - New England.

REASSESSMENT OF TECHNICALLY BASED LOCAL LIMITS (TBLLs)

POTW Name & Address : ____________________

NPDES PERMIT # : ____________________

Date EPA approved current TBLLs : ____________________

Date EPA approved current Sewer Use Ordinance : ____________________

ITEM I.

In Column (1) list the conditions that existed when your current TBLLs were calculated. In Column (2), list current conditions or expected conditions at your POTW.

	Column (1) EXISTING TBLLs	Column (2) PRESENT CONDITIONS
POTW Flow (MGD)		
Dilution Ratio or 7Q10 (from NPDES Permit)		
SIU Flow (MGD)		
Safety Factor		N/A
Biosolids Disposal Method(s)		

ITEM II.

EXISTING TBLLs			
POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)	POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)

ITEM III.

Note how your existing TBLLs, listed in Item II., are allocated to your Significant Industrial Users (SIUs), i.e. uniform concentration, contributory flow, mass proportioning, other. Please specify by circling.

ITEM IV.

Has your POTW experienced any upsets, inhibition, interference or pass-through from industrial sources since your existing TBLLs were calculated?
If yes, explain.

____

____

Has your POTW violated any of its NPDES permit limits and/or toxicity test requirements?

If yes, explain.

____

____

ITEM V.

Using current POTW influent sampling data fill in Column (1). In Column (2), list your Maximum Allowable Headwork Loading (MAHL) values used to derive your TBLLs listed in Item II. In addition, please note the Environmental Criteria for which each MAHL value was established, i.e. water quality, sludge, NPDES etc.				
Pollutant	Column (1) Influent Data Analyses Maximum (lb/day)	Average (lb/day)	Column (2) MAHL Values (lb/day)	Criteria
Arsenic				
Cadmium				
Chromium				
Copper				
Cyanide				
Lead				
Mercury				
Nickel				
Silver				
Zinc				
Other (List)				

ITEM VI.

Using current POTW effluent sampling data, fill in Column (1). In Column (2A) list what the Water Quality Standards (Gold Book Criteria) were at the time your existing TBLLs were developed. List in Column (2B) current Gold Book values multiplied by the dilution ratio used in your new/reissued NPDES permit.				
Pollutant	Column (1) Effluent Data Analyses Maximum (ug/l)	Average (ug/l)	Columns (2A) (2B) Water Quality Criteria (Gold Book) From TBLLs (ug/l)	Today (ug/l)
Arsenic				
*Cadmium				
*Chromium				
*Copper				
Cyanide				
*Lead				
Mercury				
*Nickel				
Silver				
*Zinc				
Other (List)				

*Hardness Dependent (mg/l - CaCO3)

ITEM VII.

In Column (1), identify all pollutants limited in your new/reissued NPDES permit. In Column (2), identify all pollutants that were limited in your old/expired NPDES permit.

Column (1) NEW PERMIT Pollutants	Limitations (ug/l)	Column (2) OLD PERMIT Pollutants	Limitations (ug/l)

ITEM VIII.

Using current POTW biosolids data, fill in Column (1). In Column (2A), list the biosolids criteria that was used at the time your existing TBLLs were calculated. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria would be and method of disposal.

Pollutant	Column (1) Biosolids Data Analyses Average (mg/kg)	Columns (2A) Biosolids Criteria From TBLLs (mg/kg)	Columns (2B) Biosolids Criteria New (mg/kg)
Arsenic			
Cadmium			
Chromium			
Copper			
Cyanide			
Lead			
Mercury			
Nickel			
Silver			
Zinc			
Molybdenum			
Selenium			
Other (List)			

NPDES PERMIT REQUIREMENT
FOR
INDUSTRIAL PRETREATMENT ANNUAL REPORT

The information described below shall be included in the pretreatment program annual reports:

1. An updated list of all industrial users by category, as set forth in 40 C.F.R. 403.8(f)(2)(i), indicating compliance or noncompliance with the following:
   - baseline monitoring reporting requirements for newly promulgated industries
   - compliance status reporting requirements for newly promulgated industries
   - periodic (semi-annual) monitoring reporting requirements,
   - categorical standards, and
   - local limits;

2. A summary of compliance and enforcement activities during the preceding year, including the number of:
   - significant industrial users inspected by POTW (include inspection dates for each industrial user),
   - significant industrial users sampled by POTW (include sampling dates for each industrial user),
   - compliance schedules issued (include list of subject users),
   - written notices of violations issued (include list of subject users),
   - administrative orders issued (include list of subject users),
   - criminal or civil suits filed (include list of subject users) and,
   - penalties obtained (include list of subject users and penalty amounts);

3. A list of significantly violating industries required to be published in a local newspaper in accordance with 40 C.F.R. 403.8(f)(2)(vii);

4. A narrative description of program effectiveness including present and proposed changes to the program, such as funding, staffing, ordinances, regulations, rules and/or statutory authority;

5. A summary of all pollutant analytical results for influent, effluent, sludge and any toxicity or bioassay data from the wastewater treatment facility. The summary shall include a comparison of influent sampling results versus threshold inhibitory concentrations for the Wastewater Treatment System and effluent sampling results versus water quality standards. Such a comparison shall be based on the sampling program described in the paragraph below or any similar sampling program described in this Permit.

At a minimum, annual sampling and analysis of the influent and effluent of the Wastewater Treatment Plant shall be conducted for the following pollutants:

a.) Total Cadmium	f.) Total Nickel
b.) Total Chromium	g.) Total Silver
c.) Total Copper	h.) Total Zinc
d.) Total Lead	i.) Total Cyanide
e.) Total Mercury	j.) Total Arsenic

The sampling program shall consist of one 24-hour flow-proportioned composite and at least one grab sample that is representative of the flows received by the POTW. The composite shall consist of hourly flow-proportioned grab samples taken over a 24-hour period if the sample is collected manually or shall consist of a minimum of 48 samples collected at 30 minute intervals if an automated sampler is used. Cyanide shall be taken as a grab sample during the same period as the composite sample. Sampling and preservation shall be consistent with 40 CFR Part 136.

6. A detailed description of all interference and pass-through that occurred during the past year;

7. A thorough description of all investigations into interference and pass-through during the past year;

8. A description of monitoring, sewer inspections and evaluations which were done during the past year to detect interference and pass-through, specifying parameters and frequencies;

9. A description of actions being taken to reduce the incidence of significant violations by significant industrial users; and,

10. The date of the latest adoption of local limits and an indication as to whether or not the permittee is under a State or Federal compliance schedule that includes steps to be taken to revise local limits.

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
NEW ENGLAND - REGION I
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109

FACT SHEET

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

NPDES PERMIT NO: **MA0100897**

NAME AND ADDRESS OF APPLICANT:

The City of Taunton
Department of Public Works
90 Ingell Street
Taunton, MA 02780-3507

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Taunton Wastewater Treatment Plant (WWTP)
825 West Water Street
Taunton, MA 02780

The municipalities of Raynham and Dighton are co-permittees for specific activities required by the permit, as set forth in Section VIII of this Fact Sheet and Sections 1.B and 1.C. of the Draft Permit. The responsible municipal departments are:

Town of Raynham Sewer Dept 416 Titicut Road Raynham, MA 02767	Town of Dighton Sewer Dept P.O. Box 229 North Dighton, MA 02764

RECEIVING WATER: **Taunton River** (Taunton River Basin - MA62-02)

CLASSIFICATION: **Class SB – Shellfishing (R) and CSO**

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Fact Sheet Attachments:

I. PROPOSED ACTION, TYPE OF FACILITY AND DISCHARGE LOCATION

The above named applicant has applied to the U.S. Environmental Protection Agency for the re-issuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water. The current permit became effective on March 27, 2001. The permit expired on March 27, 2006 and has been administratively continued pursuant to 40 C.F.R. 122.6.

A draft permit was placed on public notice in 2007. Upon reviewing the public comments received on the draft permit, EPA determined that substantial new questions had been raised regarding the need for nutrient limits in the permit. EPA has conducted further research and analysis regarding the setting of nutrient limits for this facility, and has developed a new draft permit for the Taunton Wastewater Treatment Plant (WWTP) containing nutrient limits as well as new collection system operation and maintenance requirements, changes to the indicator organism for bacteria limits, and other changes. Given the need to update a number of provisions to reflect changes in standard permit language, as well as the time that has passed since the first draft, EPA is issuing a complete new draft permit and is accepting public comment on all aspects of the draft permit. This new draft permit supersedes the 2007 draft and all comments on the 2007 draft are also superseded. New comments must be filed during this public comment period for those comments to be addressed in the issuance of the Final Permit.

The Taunton WWTP is an advanced secondary treatment plant that is currently authorized to discharge a flow of 8.4 mgd. The treatment plant discharges to the Taunton River (Outfall 001). There is one combined sewer overflow (CSO) that also discharges to the Taunton River (Outfall 004). The locations of the outfalls are shown on Figure 1.

The treatment plant and Taunton collection system are owned by the City of Taunton and are currently operated under contract by Veolia Water (formerly PSG/USFilter). Veolia submitted the application for renewal of the NPDES permit as required by 40 CFR §122.22(b). The City shall be the sole permittee for the treatment plant and CSO discharge, <u>as of this permit reissuance</u>, consistent with other contract operated publicly owned treatment works (POTWs). The Towns of Raynham and Dighton shall be co-permittees for their collection systems that discharge to the Taunton WWTP.

II. DESCRIPTION OF DISCHARGE

Quantitative descriptions of the discharge in terms of significant effluent parameters based on recent discharge monitoring reports (DMRs) for June 2010 through June 2012 may be found in Fact Sheet Table 1 (attached).

III. RECEIVING WATER DESCRIPTION

The Taunton WWTP discharges to segment MA62-02 of the Taunton River, extending from the Rte 24 Bridge to the Berkley Bridge in Dighton/Berkley. The Massachusetts Surface Water Quality Standards (MA SWQS) at 314 CMR 4.06 – Table 18 classify this segment of the River as Class SB-Shellfishing (R) and CSO.

Class SB - These waters are designated as a habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. In approved areas they shall be suitable for shellfish harvesting with depuration (Restricted Shellfish Areas). These waters shall have consistently good aesthetic value. (314 CMR 4.05(4)(b))

Restricted shellfishing areas are designated as "(R)". These waters are subject to more stringent regulation in accordance with the rules and regulations of the Massachusetts Division of Marine Fisheries pursuant to M.G.L. c. 130, § 75. These include applicable criteria of the National Shellfishing Sanitation Program. (314 CMR 4.06(1)(d)5)

CSO - (314 CMR 4.06(1)(d)11) These waters are identified as impacted by the discharge of combined sewer overflows in the classification tables in 314 CMR 4.06(3). Overflow events may be allowed by the permitting authority without a variance or partial use designation provided that:

a. an approved facilities plan under 310 CMR 41.25 provides justification for the overflows;
b. the Masssachusetts Department of Environmental Protection (MassDEP or the Department) finds through a use attainability analysis, and EPA concurs, that achieving a greater level of CSO control is not feasible for one of the reasons specified at 314 CMR 4.03(4);
c. existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected; and
d. public notice is provided through procedures for permit issuance and facility planning under M.G.L. c. 21, §§ 26 through 53 and regulations promulgated pursuant to M.G.L.c. 30A. In addition, the Department will publish a notice in the *Environmental Monitor*. Other combined sewer overflows may be eligible for a variance granted through permit issuance procedures. When a variance is not appropriate, partial use may be designated for the segment after public notice and opportunity for a public hearing in accordance with M.G.L. c. 30A.

No variance or use attainability analysis has been submitted or approved, so CSO discharges must comply with all applicable water quality standards.

The current permit incorrectly lists the Taunton River segment at the point of discharge as Class B (freshwater). The draft permit corrects this error. Effluent limitations for fecal coliform and total copper have been made more stringent based on the SB criteria.

The Massachusetts 2010 303(d) list (Category 5 of the Year 2010 Integrated List of Waters) lists this segment of the Taunton River, Segment MA62-02, as impaired due to pathogens. The segments of the River downstream of this segment, to the mouth of the River at the Braga Bridge in Fall River, are listed as impaired for pathogens and organic enrichment/low dissolved oxygen. Mount Hope Bay, which receives the discharge of the Taunton River, is listed as impaired for fishes bioassessments, total nitrogen, dissolved oxygen, temperature, fecal coliform and chlorophyll-a.

IV. LIMITATIONS AND CONDITIONS

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

V. PERMIT BASIS: STATUTORY AND REGULATORY AUTHORITY

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

Under Section 301(b)(1)(B) of the CWA, POTWs are required to achieve technology-based effluent limitations based upon secondary treatment. The secondary treatment requirements are set forth in 40 CFR Part 133 and define secondary treatment as an effluent achieving specific limitations for biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The MA SWQS, 314 CMR 4.00, include requirements for the regulation and control of toxic constituents and also require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criteria is established. Massachusetts regulations similarly require that its permits contain limitations which are adequate to assure the attainment and maintenance of the water quality standards of the receiving waters as assigned in the MA SWQS, 314 CMR 4.00. See 314 CMR 3.11(3). Additionally, under 40 CFR. § 122.44 (d)(1)(i), "Limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard."

VI. EXPLANATION OF THE PERMIT'S EFFLUENT LIMITATIONS

A. TREATMENT PROCESS AND COLLECTION SYSTEM DESCRIPTION

The Taunton WWTP is engaged in the collection and treatment of municipal wastewater, including industrial wastewater from 12 non-categorical significant industrial users and 10 categorical industrial users (including a semiconductor manufacturer, battery manufacturer and metal finishers). This is a smaller number than noted in the previous draft permit as a number of industrial users have closed since the last draft permit was issued, including several metal finishers. The facility provides advanced treatment and single stage ammonia-nitrogen removal. Figure 2. The wastewater treatment processes are as follows:

At the headworks, wastewater passes through one of two mechanically cleaned bar screens or a bypass bar rack. Lime is added for pH control and flocculation. After screening, the wastewater passes through a distribution structure and then to one of three primary settling tanks. Grit is removed by pumping primary sludge to a cyclone degritter. After settling, the flow continues on through one of two parallel treatment trains. Each treatment train, or “Battery,” consists of a bank of three aeration tanks and two secondary settling tanks. Battery 2 is twice the size of Battery 1 and the flow is split approximately 2/3 to 1/3, with adjustments depending on treatment performance. After settling, the recombined flow is sent to the chlorine contact chamber where it is disinfected with the flow paced addition of liquid hypochlorite and dechlorinated with bisulfate. Defoamer is added for suppression of foam at the discharge. The effluent passes through a reaeration cascade to a 36-inch pipe leading to a headwall on the bank of the Taunton River. Sludge is dewatered by centrifuge and is sent for co-disposal at the Taunton Municipal Sanitary Landfill.

The treatment process described reflects a treatment plant rehabilitation and upgrade project completed in 2004. The rehabilitation and upgrade included the construction of increased pumping capacity, conversion of the activated sludge aeration facilities from pure oxygen to air, addition of two new aeration tanks, replacement of the influent screens, and rehabilitation of the primary clarifiers.

The sewage collection system is partially combined, with over 150 miles of sewer and 20 pump stations in the municipalities of Taunton, Raynham, Dighton and Norton. Table 2 below shows the number of households served in each municipality.

Table 2. Communities served

Town	Households served by WWTP
Taunton	13,000
Raynham	4,120
Dighton	560
Norton	40

Some of the collection system is over 100 years old, and is subject to large amounts of inflow and infiltration. As of 2006, at least 300 manhole covers in the system had holes drilled in them so that they act as catch basins during storm events, and an additional 33 manholes had combined drainage and sanitary pipelines in the same structure (August 28, 2006 letter from Veolia Water). This results in high peak flows under wet weather conditions. The highest maximum daily flow reported by the facility since 2001 is 21.8 million gallons per day (MGD), recorded in October 2005; the facility also exceeded 20 MGD in maximum daily flow in April 2010 (20.7 MGD).

Pursuant to an Administrative Order (AO) issued by EPA (EPA AO Docket No. 08-042) in September, 2008 and a MassDEP Administrative Consent Order from April 2005, the permittee has undertaken a seven phase program to address high priority improvements required for the collection system, including manhole repairs and rehabilitation, sewer and service lateral line replacement and/or relining, and private inflow source elimination. According to the permittee’s 2010 Inflow/Infiltration Report, the City has removed 4.49 MGD of inflow and infiltration from the system from 2005 to 2010. An overall reduction in flows is confirmed by the facility’s DMR data: twelve month average flow ranged between 7.4 and 9.1 MGD in 2004-05 as compared to a range of 6.5 to 7.6 MGD in 2010-11. Work remains to be done, however, as indicated by continued high peak flows in wet weather (e.g April 2010 maximum daily flow of 20.7 mgd).

There is one remaining combined sewer overflow (CSO) on West Water Street, Outfall 004. Pursuant to the 2008 AO, the City is required to continue working on improving its collection system and to evaluate its ability to eliminate the CSO outfall through the collection system improvements. If the collection system improvements by themselves will not eliminate the CSO outfall, the AO requires that the City submit a plan and schedule for additional options; the target elimination date set in the AO is October 2013.

The City has also prepared a comprehensive wastewater management plan (CWMP) as required by the 2005 MassDEP order, and has submitted a Draft Environmental Impact Report (DEIR). The Secretary of the Executive Office of Environmental Affairs (EOEA) issued a Certificate on the DEIR on October 30, 2009 (EOEA No. 13897), and the City is currently completing the Final Environmental Impact Report. As described in the DEIR, the City proposes to expand its sewer system to encompass an additional 14 priority needs areas throughout the city that are currently served by on-site wastewater disposal systems, involving the expansion of the wastewater collection system, an upgrade of the WWTP for nutrient control and future flow capacity, and implementation of a plan to eliminate the CSO. The project would require the expansion of the wastewater treatment plant to a design flow of 10.2 MGD to handle the wastewater from the priority needs areas, future infill development within existing areas and projected additional inter-municipal flows.

B. DERIVATION OF EFFLUENT LIMITATIONS

1. Available Dilution

Water quality based limitations are established with the use of a calculated available dilution. Title 314 CMR 4.03(3)(a) requires that effluent dilution be calculated based on the receiving water 7Q10. The 7Q10 is the lowest observed mean river flow for 7 consecutive days, recorded over a 10 year recurrence interval. Additionally, the plant design flow is used to calculate available effluent dilution.

The plant design flow used to calculate the dilution factor for the current permit was 8.4 mgd (13.0 cfs). The City in its application requested that a design flow of 9 MGD be used, consistent with estimates made by its consultant that the current upgraded treatment plant capacity would be 9 MGD. Because this design flow has not received final state approval, and because such an increase would not be consistent with MassDEP's antidegradation regulations, we have used 8.4 MGD in our calculations. A further discussion of this decision follows in the Flow section.

The nearest USGS river gage station to the discharge is located near Bridgewater (USGS Station No. 01108000). The 7Q10 flow at the Taunton Treatment Plant has been calculated using the 7Q10 flow at the Bridgewater gage and adjusting it based on drainage area. The 7Q10 for the Taunton River at the Bridgewater gaging station is 22.9 cfs, using daily flow data from 1931 to 2002. The drainage area at the gage is 261 square miles. The drainage area at the Taunton WWTP is about (360) square miles, per the USGS Taunton River Gazetteer.

Using drainage area ratios the 7Q10 at the POTW is 22.9 x 360/261 = 31.6 cfs.

The dilution factor for the Taunton WWTP can then be calculated using the following equation.

$$\text{Dilution Factor} = \frac{\text{Daily average design effluent flow + river flow (7Q10)}}{\text{Daily average design effluent flow}}$$

(13.0 cfs + 31.6 cfs) / 13.0 cfs = 3.4

2. Flow

The draft permit continues the flow limit in the current permit of 8.4 mgd. Flow is to be measured continuously. The permittee shall report the annual average monthly flow using the annual rolling average method (See Permit Footnote 2). The monthly average and maximum daily flow shall also be reported.

As described earlier, the permittee has requested that the flow limit be increased to 9 MGD based in the estimate of design flow made by its consultant. EPA will not consider that request until the State has approved a design flow pursuant to its antidegradation policy. As the permittee is subject to the SRF process, the State does not anticipate approving any increase in design flow until the permittee has completed the Environmental Impact Report (EIR) for its CWMP and received an EOEA certificate. Mass DEP, *Implementation Procedures for the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards*, 314 CMR 4.00 (10/21/09). The permittee has completed a draft EIR and is currently preparing a final EIR.

Additionally, any increase in authorized flow and increase in pollutant discharge can only be authorized in compliance with water quality standards, including antidegradation. As has been shown previously, the Taunton River and Mount Hope Bay are not currently attaining water quality standards. The reach of the Taunton River immediately below the Taunton WWTP discharge is impaired for pathogens, and the lower reaches of the Taunton River are impaired for pathogens and organic enrichment/low dissolved oxygen. Mount Hope Bay is impaired for fishes bioassessments, total nitrogen, dissolved oxygen, temperature, fecal coliform and chlorophyll-a.

The Taunton WWTP discharge is only one source of pollutants to a waterbody receiving numerous municipal discharges, industrial discharges, and nonpoint source discharges, which all contribute to the noted water quality violations. In the absence of a TMDL or other water quality information, EPA does not believe that an increase in any pollutant loads to this watershed can be authorized, particularly for pollutants causing the noted water quality impairments. Table 3 lists the wastewater discharges to the Taunton River and its tributaries.

Table 3. Wastewater Treatment Plants discharging to Taunton River Watershed

Discharger	River or Tributary	Flow in MGD*
SOMERSET WPCF	TAUNTON RIVER	4.2
TAUNTON WWTP	TAUNTON RIVER	8.4
OAK POINT HOMES	TAUNTON RIVER	0.185
EAST BRIDGEWATER SCHOOLS	TRIBUTARY BROOK TO TAUNTON	0.012
DIGHTON-REHOBOTH SCHOOL	SEGREGANSET RIVER	0.01
MCI-BRIDGEWATER WPCF	SAW MILL BROOK TO TAUNTON	0.55
MIDDLEBOROUGH WPCF	NEMASKET RIVER	2.16
WHEATON COLLEGE	RUMFORD RIVER	0.12
BRIDGEWATER WWTF	TOWN RIVER	1.44
BROCKTON AWTF	SALISBURY PLAIN RIVER	18.0
MANSFIELD WPCF	THREE MILE RIVER	3.14
	Total	≈ 40. MGD

*MGD-million gallons per day – design flow

As noted earlier, the 7Q10 flow of the Taunton River upstream of the Taunton WWTP is 31.6 cfs (20 MGD). Design flows for facilities upstream of Taunton total approximately 27MGD (total design flows in Table minus Taunton and Somerset). While the actual wastewater discharge volume during critical low flow periods will be lower than the design discharge volume, it is clear that this is an effluent dominated watershed.

3. Conventional Pollutants

Biochemical Oxygen Demand (BOD_5) and Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) – Limits for BOD_5 and $CBOD_5$ are the same as in the current permit. POTWs are subject to the secondary treatment requirements set forth at 40 CFR Part 133. The permit alternates BOD_5 and $CBOD_5$ limits seasonally.

For November through March the standard secondary treatment requirements for BOD_5 (30 mg/l avg monthly; 45 mg/l avg weekly) apply based on the requirements set forth at 40 CFR §§ 133.102(a)(1), (2), (3), and 40 CFR § 122.45(f).

For April through October, the permit contains more stringent water quality based limitations for $CBOD_5$. The limits are an average monthly concentration of 15 mg/l, and a weekly average concentration of 15 mg/l, with accompanying mass limitations. These were established by the MassDEP as a wasteload allocation for BOD_5. These limits are more stringent than those required in 40 CFR § 133.102(a)(4).

The permit utilizes $CBOD_5$ seasonally as the measure of oxygen demand due to high nitrogenous oxygen demand in the effluent during the summer nitrifying season, as allowed under 40 CFR § 133.102(a)(4). The $CBOD_5$ test reduces the interference from nitrogenous compounds that would otherwise make accurate assessment of the organic (carbonaceous) oxygen demand impossible. The use of $CBOD_5$ instead of BOD_5 is not necessary in the colder season as the facility discontinues the nitrifying process, making the use the $CBOD_5$ tests unnecessary.

Total Suspended Solids (TSS) - Limits for TSS are the same as in the current permit. The draft permit includes average monthly and average weekly TSS limitations that are based on secondary treatment requirements set forth at 40 CFR §§ 133.102(b)(1), (2), and (3), and 40 CFR § 122.45(f) for November through March. For April through October, the TSS limits are based on the wasteload allocation. The maximum daily concentration shall continue to be reported.

The mass limitations for BOD_5, $CBOD_5$, and TSS are based on the 8.4 mgd design flow. Average monthly and average weekly TSS mass limits (lbs per day) are required under 40 CFR §122.45(f).

$CBOD_5$, BOD_5, and TSS Mass Loading Calculations:

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

L = C x 8.4 x 8.34

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

(Concentration limit) [45] X 8.34 (Constant) X 8.4 (design flow) = 3,152 lb/day
(Concentration limit) [30] X 8.34 (Constant) X 8.4 (design flow) = 2,102 lb/day
(Concentration limit) [20] X 8.34 (Constant) X 8.4 (design flow) = 1,401 lb/day
(Concentration limit) [15] X 8.34 (Constant) X 8.4 (design flow) = 1,051 lb/day

<u>Eighty-Five Percent (85%) BOD_5 and TSS Removal</u> - the provisions of 40 CFR §133.102(a)(3), require that the 30 day average percent removal for BOD_5 and TSS be not less than 85%.

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

<u>pH</u> - The draft permit includes pH limitations required as a condition of state certification, that are protective of pH standards set forth at 314 CMR 4.05(4)(b)(3), for Class SB waters.

The biological nitrification process uses alkalinity, which tends to lower the pH of wastewater leaving the activated sludge process. Lime is added to supplement alkalinity during the nitrification season, but there are still occasional periods when the pH is depressed below 6.5 SU. The MassDEP has stated that a permitted pH range of 6.0-8.5 SU is protective of State water quality standards, and this range has been included in the draft permit. These pH limits are more stringent than those required under 40 CFR § 133.102(c). The monitoring frequency remains once (1) per day.

<u>Bacteria</u> – The MA SWQS include criteria for two bacterial indicators for Class SB waters. Fecal coliform bacteria are applicable in water designated for shellfishing and enterococci criteria have been established to protect recreational uses. Criteria for enterococci were first promulgated for

Massachusetts coastal waters by EPA on November 16, 2004 (see 40 CFR 131.41). Massachusetts subsequently adopted enterococci criteria for marine waters into its water quality standards that were approved by EPA on September 19, 2007. Given the location of this discharge, the draft permit includes permit limitations for both bacterial indicators.

The fecal coliform criteria for SB water designated for shellfishing require that the median or geometric mean most probable number (MPN) not exceed 88 organisms/100 ml, and that no more than 10% of the samples may exceed an MPN of 260/100 ml. The draft permit includes a monthly average (geometric mean) effluent limit of 88 MPN and a maximum daily limit of 260 MPN.

The enterococci criteria require that no single sample exceed 104 colonies per 100 ml and that geometric mean of all samples taken within the most recent six months based on a minimum of five samples shall not exceed 35 colonies per 100 ml. MassDEP views the use of the 90% upper confidence level of 276 cfu/100ml as appropriate for setting the maximum daily limit for enterococci in the draft permit. Therefore EPA has established a monthly average (geometric mean) effluent limit of 35 cfu/100ml and daily maximum effluent limit of 276 cfu/100ml for enterococci in the draft permit in order to ensure that the discharge does not cause or contribute to exceedances of the MA SWQS found at 314 CMR 4.05 (4)(a)4b.

Sampling is required three times per week. Colony forming units (CFU) are determined by membrane filter methods and MPN units are determined by most probable number methods. Both methods and units are acceptable.

Disinfection is currently required year-round as determined by the MassDEP due to the designation of the receiving water for shellfishing and the location of the Aquaria desalinization plant in Dighton, downstream of the Taunton WWTP discharge. The year round disinfection requirement shall remain in the draft permit.

4. Dissolved Oxygen (DO) and Total Residual Chlorine

Dissolved Oxygen - The instantaneous minimum effluent DO limit of 6.0 mg/l or greater is carried forward from the current permit. The limit ensures that DO levels depleted during wastewater treatment process are restored prior to discharge to the Taunton River. The limit is established to protect the DO minimum Water Quality Criteria of 5.0 mg/l for waters designated by the State as Class SB.

Total Residual Chlorine (TRC) - Chlorine compounds resulting from the disinfection process can be extremely toxic to aquatic life. The instream chlorine criteria are defined in *National Recommended Water Quality Criteria: 2002*, EPA 822R-02-047 (November 2002), as adopted by the MassDEP into the state water quality standards at 314 CMR 4.05(5)(e). The criteria establish that the total residual chlorine in the receiving water should not exceed 7.5 ug/l (chronic) and 13 ug/l (acute). The following is a water quality based calculation of chlorine limits:

Acute Chlorine Salt Water Criteria = 13 ug/l

Chronic Chlorine Salt Water Criteria = 7.5 ug/l

(acute criteria * dilution factor) = Acute (Maximum Daily)
13 ug/l x 3.4 = 44.2 ug/l = **0.044 mg/l Maximum Daily**.

(chronic criteria * dilution factor) = Chronic (Average Monthly)
7.5 ug/l x 3.4 = 25.5 ug/l = **0.026 mg/l Average Monthly**

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

5. Total Nitrogen

In their comments on the 2007 draft permit, several commenters contended that, among other things, the permit failed to ensure compliance with applicable state water quality standards and relevant provisions of the CWA because it lacked an effluent limitation for total nitrogen (TN).

Upon review, EPA concluded that the comments raise substantial new questions regarding the need to establish an effluent limit for total nitrogen under CWA Section 301(b)(1)(C), which requires, among other things, the imposition of effluent limitations to ensure that the discharge will not cause or contribute to a violation of state water quality standards, including narrative criteria for water quality. Based on an analysis of these comments and other relevant information, EPA decided to issue a new draft permit pursuant to 40 C.F.R. § 124.14(b)(1), containing a new effluent limit for nitrogen. The permit limit is 3.0 mg/l total nitrogen as a seasonal average, and a mass limit of 210 lbs/day based on the concentration limit and the design flow of the treatment facility, in effect for the months of May through October. In addition to this seasonally-applied numeric limit, the permit requires the permittee to optimize the treatment facility operations for the removal of total nitrogen during the months of November through April using all available treatment equipment at the facility. The basis for this determination is set forth below.

a. Ecological Setting: the Taunton River Estuary, Mount Hope Bay and Estuarine Systems Generally

The saltwater portions of the Taunton River (the "Taunton River Estuary") and Mount Hope Bay are part of the greater Narragansett Bay Estuary system, which covers approximately 147 square miles within Massachusetts and Rhode Island (RI). The Narragansett Bay Estuary is one of only 28 "estuaries of national significance" under the National Estuary Program (NEP), which was established in 1987 by amendments to the CWA to identify, restore and protect estuaries along the coasts of the United States.

Mt. Hope Bay (the Bay) is situated in the northeast corner of Narragansett Bay, lying within both

Rhode Island to the south and west and Massachusetts to the north and east. The Bay connects to the East Passage of Narragansett Bay to the southwest, via a deep, narrow channel where the Mt. Hope Bridge crosses over from Aquidneck Island to Bristol Point, and to Rhode Island Sound to the South via the Sakonnet River (actually an embayment) between Tiverton, RI and Aquidneck Island. The Bay covers an area of 13.6 square miles, and has a volume of 53.3 billion gallons at mean low water (MLW). http://www.smast.umassd.edu/MHBNL/report2003.php
The Bay has a tidal range averaging approximately 4.5 feet.

The Taunton River is the largest freshwater source to Mount Hope Bay. It discharges into the Bay from the north at Fall River. The Taunton River Estuary consists of the saltwater portions of the Taunton River, extending from the Braga Bridge at the confluence with Mount Hope Bay upstream to the Route 24 bridge (Taunton/Raynham), approximately four miles upstream of the Taunton WWTP discharge. (MassDEP, 2001). It is the longest river unobstructed by dams in New England, with tidal influence extending upriver approximately 20 miles. (Horsley Witten, 2007).

Estuaries are extremely significant aquatic resources. An estuary is a partially enclosed coastal body of water located between freshwater ecosystems (lakes, rivers, and streams; freshwater and coastal wetlands; and groundwater systems) and coastal shelf systems where freshwater from the land measurably dilutes saltwater from the ocean. This mixture of water types creates a unique transitional environment that is critical for the survival of many species of fish, birds, and other wildlife. Estuarine environments are among the most productive on earth, creating more organic matter each year than comparably sized areas of forest, grassland, or agricultural land (EPA, 2001).

Maintaining water quality within an estuary is important for many reasons. Estuaries provide a variety of habitats such as shallow open waters, freshwater and saltwater marshes, sandy beaches, mud and sand flats, rocky shores, oyster reefs, tidal pools, and seagrass beds. Tens of thousands of birds, mammals, fish, and other wildlife depend on estuarine habitats as places to live, feed, and reproduce. Many species of fish and shellfish rely on the sheltered waters of estuaries as protected places to spawn.

Moreover, estuaries also provide a number of recreational values such as swimming, boating, fishing, and bird watching. In addition, estuaries have an important commercial value since they serve as nursery grounds for two thirds of the nation's commercial fish and shellfish, and support tourism drawing on the natural resources that estuaries supply. (EPA, 1998). Consequently, EPA believes sound environmental policy reasons favor a pollution control approach that is both protective and undertaken expeditiously to prevent degradation of these critical natural resources. Because estuaries are the intermediary between oceans and land, both of these geographic features influence their physical, chemical, and biological properties. In the course of flowing downstream through a watershed to an estuary, tributaries pick up materials that wash off the land or are discharged directly into the water by land-based activities.

Eventually, the materials that accumulate in the tributaries are delivered to estuaries. The types of materials that eventually enter an estuary largely depend on how the land is used. Undisturbed land, for example, will discharge considerably fewer pollutants than an urban center or areas with large amounts of impervious cover. Accordingly, an estuary's overall health can be heavily impacted by surrounding land uses.

Unlike free-flowing rivers, which tend to flush out sediments and pollutants relatively quickly, an estuary will often have a lengthy retention period as up-estuary saltwater movement interacts with down-estuary freshwater flow (EPA, 2001). Estuaries are particle-rich relative to coastal systems and have physical mechanisms that tend to retain particles. These suspended particles mediate a number of activities (e.g., absorbing and scattering light, or absorbing hydroscopic materials such as phosphate and toxic contaminants). New particles enter with river flow and may be resuspended from the bottom by tidal currents and wind-wave activity. Many estuaries are naturally nutrient-rich because of inputs from the land surface and geochemical and biological processes that act as "filters" to retain nutrients within estuaries (EPA, 2001). Consequently, waterborne pollutants, along with contaminated sediment, may remain in the estuary for a long time, magnifying their potential to adversely affect the estuary's plants and animals.

b. Effects of Nutrients on Estuarine Water Quality

The basic cause of nutrient problems in estuaries and nearshore coastal waters is the enrichment of freshwater with nitrogen (N) and phosphorus (P) on its way to the sea and by direct inputs within tidal systems (EPA, 2001). EPA defines nutrient overenrichment as the anthropogenic addition of nutrients, in addition to any natural processes, causing adverse effects or impairments to beneficial uses of a waterbody. (EPA, 2001).

Eutrophication is an aspect of nutrient overenrichment and is defined as an increase in the rate of supply of organic matter to a waterbody (EPA, 2001). Increased nutrient inputs promote a progression of symptoms beginning with excessive growth of phytoplankton and macroalgae to the point where grazers cannot control growth (NOAA, 2007). Phytoplankton is microscopic algae growing in the water column and is measured by chlorophyll-a. Macroalgae are large algae, commonly referred to as "seaweed." The primary symptoms of nutrient overenrichment include an increase in the rate of organic matter supply, changes in algal dominance, and loss of water clarity and are followed by one or more secondary symptoms such as loss of submerged aquatic vegetation, nuisance/toxic algal blooms and low dissolved oxygen. (EPA, 2001). In U.S. coastal waters, nutrient overenrichment is a common thread that ties together a diverse suite of coastal problems such as red tides, fish kills, some marine mammal deaths, outbreaks of shellfish poisonings, loss of seagrass and bottom shellfish habitats, coral reef destruction, and hypoxia and anoxia now experienced as the Gulf of Mexico's "dead zone." (EPA, 2001). Figure 1 shows the progression of nutrient impacts on a waterbody.

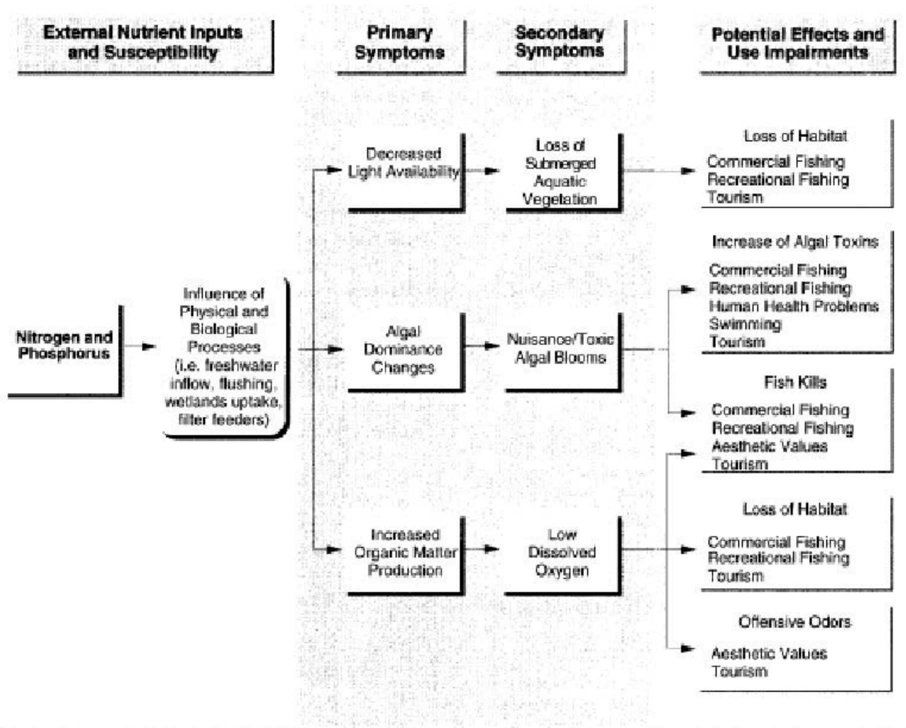

Figure 1
Source: EPA, 2001

Estuarine nutrient dynamics are complex and are influenced by flushing time, freshwater inflow and stratification, among other factors. The deleterious physical, chemical, and biological responses in surface water resulting from excessive plant growth impair designated uses in both receiving and downstream waterbodies. Excessive plant growth can result in a loss of diversity and other changes in the aquatic plant, invertebrate, and fish community structure and habitat.

Nutrient-driven impacts on aquatic life and habitat are felt throughout the eutrophic cycle of plant growth and decomposition. Nutrient-laden plant detritus can settle to the bottom of a water body. In addition to physically altering the benthic environment and aquatic habitat, organic materials (*i.e.*, nutrients) in the sediments can become available for future uptake by aquatic plant growth, further perpetuating and potentially intensifying the eutrophic cycle.

Excessive aquatic plant growth, in addition, degrades aesthetic and recreational uses. Unsightly algal growth is unappealing to swimmers and other stream users and reduces water clarity. Decomposing plant matter also produces unpleasant sights and strong odors. Heavy growths of algae on rocks can make streambeds slippery and difficult or dangerous to walk on. Algae and macrophytes can interfere with angling by fouling fishing lures and equipment. Boat propellers and oars may also get tangled by aquatic vegetation.

When nutrients exceed the assimilative capacity of a water body, the ensuing eutrophic cycle can negatively impact in-stream dissolved oxygen levels. Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce instream dissolved oxygen concentrations to levels that could negatively impact aquatic life. During the day, primary producers (*e.g.*, algae, plants) provide oxygen to the water as a by-product of photosynthesis. At night, however, when photosynthesis ceases but respiration continues, dissolved oxygen concentrations decline. Furthermore, as primary producers die, they are decomposed by bacteria that consume oxygen, and large populations of decomposers can consume large amounts of dissolved oxygen. Many aquatic insects, fish, and other organisms become stressed and may even die when dissolved oxygen levels drop below a particular threshold level.

Nutrient overenrichment of estuaries and nearshore coastal waters from human-based causes is now recognized as a national problem on the basis of CWA Section 305(b) reports from coastal States (EPA, 2001). Most of the nation's estuarine and coastal waters are moderately to severely polluted by excessive nutrients, especially nitrogen and phosphorus (NOAA, 2007; NOAA, 1999, EPA, 2006; EPA, 2004, EPA; and EPA, 2001).

c. Water Quality Standards Applicable to the Taunton River Estuary and Mount Hope Bay

Under the Massachusetts Surface Water Quality Standards, 314 CMR 4.00 (MA SWQS), surface waters are divided into water "use" classifications, including Class SA and SB for marine and coastal waters. The Taunton River Estuary and the eastern portion of Mount Hope Bay are classified as SB waters, with designations for Shellfishing (R) and CSO. Class SB waters are designated as a "habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. In certain waters, habitat for fish, other aquatic life and wildlife may include, but is not limited to, seagrass. Where designated in the tables to 314 CMR 4.00 for shellfishing, these waters shall be suitable for shellfish harvesting with depuration (Restricted and Conditionally Restricted Shellfish Areas)." 314 CMR 4.05(4)(b). Waters in this classification "shall have consistently good aesthetic value." *Id.*

Class SB waters are subject to class-specific narrative and/or numeric water quality criteria. 314 CMR 4.05(4)(b)1 to 8. Dissolved oxygen concentrations in Class SB waters "[s]hall not be less than 5.0 mg/l. Seasonal and daily variations that are necessary to protect existing and designated uses shall be maintained. Where natural background conditions are lower, DO shall not be less than natural background."

The western portion of Mount Hope Bay is designated as a Class SA – Shellfishing water. These waters are designated as an excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. In approved areas, they shall be suitable for shellfish harvesting without depuration (Open Shellfish Areas). These waters shall have excellent aesthetic value. With respect to DO, the criteria for class SA waters is "not less than 6.0 mg/L unless background conditions are lower; natural seasonal and daily variations above this level shall be maintained; levels shall not be lowered below 75% of saturation due to a discharge."

Both Class SA and Class SB waters are also subject to additional minimum standards applicable to all surface waters, as set forth at 314 CMR 4.05(5). With respect to nutrients, the MA SWQS provide:

> Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated

> uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00. Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and Best Available Technology (BAT) for non POTWs, to remove such nutrients to ensure protection of existing and designated uses.

314 CMR 4.05(5)(a). In addition, the MA SWQS require:

> Aesthetics – All surface waters shall be free from pollutants in concentrations or combinations that settle to form objectionable deposits; float as debris, scum, or other matter to form nuisances; produce objectionable odor, color, taste, or turbidity; or produce undesirable or nuisance species of aquatic life. 314 CMR 4.05(5)(a)

Massachusetts has not adopted numeric criteria for total nitrogen or other nutrients. MassDEP has, however, used a number of indicators in interpreting its narrative nutrient standard. The DEP/SMAST Massachusetts Estuaries Project report, *Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators - Interim Report* (Howes et al., 2003) (Critical Indicators Report), was developed to provide "a translator between the current narrative standard and nitrogen thresholds (as they relate to the ecological health of each embayment) which can be further refined based on the specific physical, chemical and biological characteristics of each embayment. This report is intended to provide a detailed discussion of the issue and types of indicators that can be used, as well as propose an acceptable range of nitrogen thresholds that will be used to interpret the current narrative standard." http://www.oceanscience.net/estuaries/pdf/nitroest.pdf. This interpretive guidance has been used in a number of TMDLs for estuarine waters in southeastern Massachusetts.

The Critical Indicators Report finds that the indicators of primary concern to be:

- plant presence and diversity (eelgrass, macroalgae, etc.)
- animal species presence and diversity (finfish, shellfish, infauna)
- nutrient concentrations (nitrogen species)
- chlorophyll-a concentration
- dissolved oxygen levels in the embayment water column

(Howes et al., 2003 at 11). With respect to total nitrogen, it concluded:

> It is not possible at this time to put quantitative nitrogen levels on each Water Quality Class. In fact, initial results of the Massachusetts Estuaries Project (Chatham Embayment Report 2003) indicate that the total nitrogen level associated with a particular ecological response can vary by over 1.4 fold (e.g. Stage Harbor versus Bassing Harbor in Chatham MA). Although between embayments nitrogen criteria may be different, it does appear that within a single embayment a consistent quantitative nitrogen criterion can be developed.

However, the Critical Indicators Report provides guidance for indicators, including total nitrogen, for various water quality classes. The nitrogen indicator ranges are based on long-term (>3 yr) average mid-ebb tide concentrations of total nitrogen (mg/L) in the water column. For "Excellent to Good" nitrogen related water quality conditions, equivalent to SA classification, the Report guidance is as follows: "Eelgrass beds are present, macroalgae is generally non-existent but in some cases may be present, benthic animal diversity and shellfish productivity are high, oxygen levels are generally not less than 6.0 mg/l with occasional depletions being rare (if at all), chlorophyll-a levels are in the 3 to 5 µg/L range. . . . For the case study, total nitrogen levels of 0.30-0.39 mg N/L were used to designate "excellent to good" quality areas." Id at 21-22.

For SB waters, the Critical Indicators Report provides the following guidance for indicators of unimpaired conditions, to be refined based on data from the specific embayments: "benthic animal diversity and shellfish productivity are high, oxygen levels are generally not less than 5.0 mg/l with depletions to <4 mg/L being infrequent, chlorophyll-a levels are in the 3 to 5 µg/L range and nitrogen levels are in the 0.39 - 0.50 range. . . . eelgrass is not present . . . and macroalgae is not present or present in limited amounts even though a good healthy aquatic community still exists." Id. at 22.

"Moderate Impairment" is indicated by "Shellfisheries may shift to more resistant species. Oxygen levels generally do not fall below 4 mg/L, although phytoplankton blooms raise chlorophyll a levels to around 10 µg/L. Eelgrass is not sustainable and macro-algae accumulations occur in some regions of the embayment. In the Case Study, embayment regions supporting total nitrogen levels >0.5 mg N/L were clearly impaired." Significant Impairment is indicated by total nitrogen concentrations of 0.6/0.7 mg/l and above. In "severely degraded" conditions, "algal blooms are typical with chlorophyll-a levels generally >20 µg/L, oxygen depletions to hypoxic levels are common, there are periodic fish kills, and macro-algal accumulations occur with both ecological and aesthetic impacts."

In addition to the Massachusetts water quality standards, RI water quality standards applicable to the Rhode Island portion of Mount Hope Bay must also be satisfied. As in Massachusetts, the Rhode Island portions of Mount Hope Bay are designated SB waters in the eastern portion and SA waters in the western portion of the Bay. Rhode Island, like Massachusetts, has specific numeric criteria for dissolved oxygen in SA and SB waters[1], and narrative criteria for nutrients[2]

[1] Rule 8.D.3. Table 3. For waters with a seasonal pynocline, no less than 4.8 mg/l above the seasonal pynocline; below the seasonal pynocline DO concentrations above 4.8 mg/l shall be considered protective of Aquatic Life Uses. When instantaneous DO values fall below 4.8 mg/l, the waters shall not be (1) Less than 2.9 mg/l for more than 24 consecutive hours during the recruitment season; nor (2) Less than 1.4 mg/l for more than 1 hour more than twice during the recruitment season; nor (3) Shall they exceed the allowable cumulative DO exposure (Table 3.A).

For waters without a seasonal pycnocline, DO concentrations above 4.8 mg/l shall be considered protective of Aquatic Life Uses. When instantaneous DO values fall below 4.8 mg/l, the waters shall not be: (1) Less than 3.0 mg/l for more than 24 consecutive hours during the recruitment season; nor (2) Less than 1.4 mg/l for more than 1 hour more than twice during the recruitment season; nor (3) Shall they exceed the allowable cumulative DO exposure presented (Table 3.A. and Table 3.B).

and aesthetics.[3] The Rhode Island portions of Mount Hope Bay, like the Massachusetts portions are listed for impairments due to total nitrogen, dissolved oxygen (as well as fishes bioassessments and temperature impairments linked to the Brayton Point power plant). As discussed below, permit limits designed to meet water quality standards in the Taunton River Estuary and the Massachusetts portions of Mount Hope Bay are expected to achieve water quality standards in Rhode Island.

d. Receiving Water Quality Violations

The Taunton River Estuary and Mount Hope Bay have reached their assimilative capacity for nitrogen and are suffering from the adverse water quality impacts of nutrient overenrichment, including cultural eutrophication. They are, consequently, failing to attain the water quality standards described above. The impacts of excessive nutrients are evident throughout the Taunton River Estuary and Mount Hope Bay.

Section 303(d) of the CWA requires states to identify those waterbodies that are not expected to meet surface water quality standards after implementation of technology-based controls. The State of Massachusetts has identified Mount Hope Bay and the lower reach[es] of the Taunton River Estuary for impairments due to organic enrichment/low DO, with Total Nitrogen specifically identified as a cause of impairments in Mount Hope Bay.

A three-year water quality monitoring study was conducted by the School for Marine Science and Technology at UMass-Dartmouth (SMAST) and involved monthly sampling at 22 sites across Mount Hope Bay and the Taunton River Estuary from 2004 to 2006 (see Figure 4). This study showed that average chlorophyll-a over the three year period was above 10 ug/l at all monitoring stations across the Taunton River Estuary and Mount Hope Bay. The 20th percentile DO concentrations for the three year period were below the 5.0 mg/l water quality standard at four of the six sites in the Taunton River Estuary (MHB 1, 2 and 18-21). Table 4, reproduced from SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* at 24 (August 16, 2007).

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[2] Rule 8.D.1(d). Nutrients - Nutrients shall not exceed the limitations specified in rule 8.D.(2) (freshwaters) and 8.D.(3) (seawaters) and/or more stringent site-specific limits necessary to prevent or minimize accelerated or cultural eutrophication.

Rule 8.D.3. None in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication. Shall not exceed site-specific limits if deemed necessary by the Director to prevent or minimize accelerated or cultural eutrophication. Total phosphorus, nitrates and ammonia may be assigned site-specific permit limits based on reasonable Best Available Technologies. Where waters have low tidal flushing rates, applicable treatment to prevent or minimize accelerated or cultural eutrophication may be required for regulated nonpoint source activities.

[3] Rule 8.D.1(b)(iv). Aesthetics - all waters shall be free from pollutants in concentrations or combinations that: iv. Result in the dominance of species of fish and wildlife to such a degree as to create a nuisance or interfere with the existing or designated uses.

Table 4. Mount Hope Bay Monitoring Program results as reported in SMAST, 2007.

Summary of average levels of primary nutrient related water quality parameters measured in the summers of 2004, 2005 and 2006 in Mount Hope Bay by SMAST Coastal Systems staff.

Station	Total Depth (m)	20% Low* D.O. (mg/L)	Sal (ppt)	PO4 (mg/L)	NH4 (mg/L)	NOX (mg/L)	DIN (mg/L)	DON (mg/L)	PON (mg/L)	TN (mg/L)	DIN/DIP Molar Ratio	Total Chl a (ug/L)
MHB1	10.0	5.02	23.3	0.054	0.052	0.095	0.147	0.299	0.155	0.601	6	11.75
MHB2	8.9	4.94	26.1	0.052	0.047	0.043	0.090	0.312	0.170	0.572	4	13.50
MHB3	5.2	5.49	26.0	0.051	0.037	0.035	0.072	0.282	0.163	0.517	3	14.32
MHB4	3.5	5.61	25.7	0.052	0.026	0.017	0.043	0.308	0.173	0.525	3	14.71
MHB5	5.6	5.20	26.2	0.050	0.029	0.020	0.050	0.294	0.169	0.512	2	14.53
MHB6	3.9	5.09	24.1	0.061	0.049	0.030	0.079	0.359	0.168	0.606	3	12.87
MHB7	4.5	5.94	25.5	0.049	0.023	0.016	0.039	0.308	0.189	0.536	2	17.46
MHB8	5.1	4.93	25.8	0.046	0.022	0.019	0.041	0.280	0.165	0.486	2	15.84
MHB9	ND	ND	19.7	0.062	0.049	0.040	0.089	0.453	0.263	0.805	3	14.02
MHB10	3.2	5.86	25.7	0.048	0.017	0.012	0.027	0.314	0.167	0.508	1	14.11
MHB11	4.9	5.02	26.2	0.043	0.017	0.012	0.029	0.268	0.175	0.472	1	16.23
MHB12	5.0	5.36	26.4	0.049	0.020	0.021	0.040	0.284	0.168	0.493	2	16.12
MHB13	5.9	6.00	26.8	0.045	0.020	0.013	0.033	0.282	0.158	0.473	2	15.40
MHB14	6.5	5.34	27.0	0.044	0.024	0.009	0.033	0.289	0.197	0.519	2	16.78
MHB15	12.9	6.46	27.9	0.035	0.021	0.009	0.029	0.273	0.143	0.445	2	12.68
MHB16	11.2	6.33	27.7	0.043	0.028	0.012	0.039	0.265	0.157	0.461	2	13.02
MHB17	ND	ND	24.6	0.064	0.057	0.026	0.083	0.404	0.181	0.669	3	11.81
MHB18	6.7	4.96	22.3	0.062	0.061	0.136	0.197	0.300	0.156	0.652	7	11.44
MHB19	4.0	4.93	18.7	0.058	0.074	0.201	0.275	0.342	0.178	0.799	10	12.27
MHB20	1.8	5.09	17.5	0.054	0.063	0.144	0.207	0.372	0.192	0.771	8	13.59
MHB21	2.6	4.60	14.2	0.061	0.066	0.350	0.415	0.420	0.219	1.058	15	13.34
MHBMOOR	6.3	5.85	26.8	0.045	0.025	0.013	0.038	0.284	0.181	0.503	2	15.57

* Average of the lowest 20% of recorded values

Figure 4. Mount Hope Bay Monitoring Program estuarine stations.

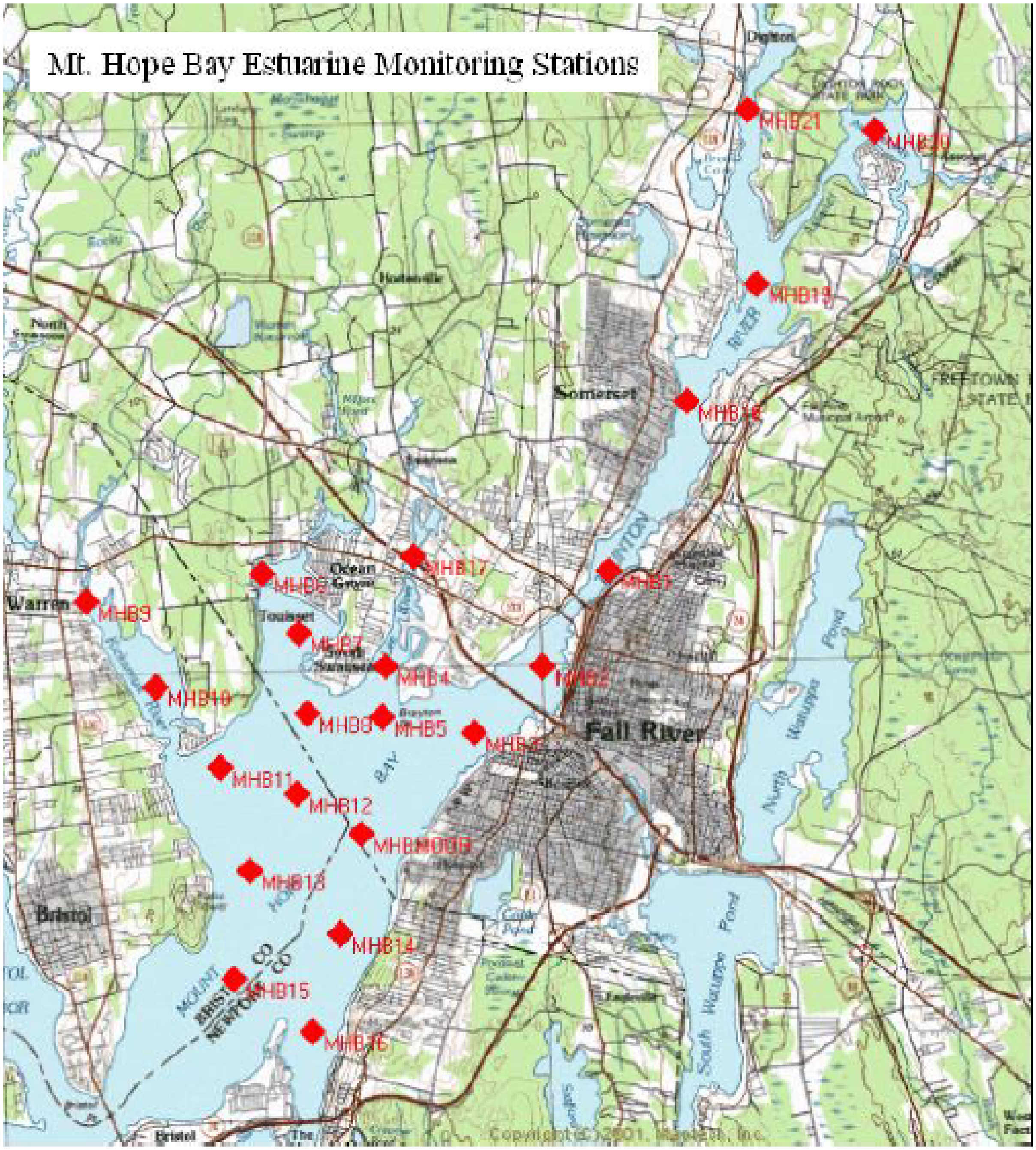


Table 5 below shows the results of the SMAST monitoring for each of the three years of the monitoring program, with the Taunton River stations highlighted. Minimum measured DO concentrations in each year were below 5.0 mg/l at all the Taunton River stations in 2004 and 2006, and a majority of those stations in 2005. In Mount Hope Bay proper, minimum DO concentrations below 5.0 mg/l were encountered at all but one of the Mount Hope Bay stations at least once during the three year period, and at five of the ten stations in both 2004 and 2005. This is compelling evidence of pervasive low DO conditions throughout the Taunton River

Estuary and Mount Hope Bay, given that the sampling was intermittent (and therefore unlikely to capture isolated low DO events) and was not timed to reflect the lowest DO conditions in the waterbody (just before dawn, when oxygen depletion due to respiration is greatest).

Elevated chlorophyll-a concentrations are similarly pervasive based on the SMAST monitoring data. Mean chlorophyll-a concentrations are above the Critical Indicators Report guidelines for unimpaired waters (3-5 ug/l) at every station monitored, in all three of the monitoring seasons. See Table 5. Maximum chlorophyll-a concentrations are routinely above 20 ug/l, a commonly used threshold for determining algal blooms. Again, given the likelihood of intermittent sampling missing the worst conditions in terms of algal blooms, this is compelling evidence of pervasive eutrophic conditions throughout the Taunton River Estuary and Mount Hope Bay.

Total nitrogen concentrations are elevated throughout the system, with a three year average TN concentration above 0.5 mg/l at sixteen of the 22 sites and above 0.45 mg/l at 21 of 22 sites. SMAST, 2007. Total Nitrogen concentrations are generally highest in the tidal rivers, including the Taunton River (e.g. Station 19, TN range 0.66 to 0.99 mg/l). Molar N/P ratios are consistent with nitrogen limitation (≤ 10 at all stations other than MHB21, the uppermost Taunton River station).

Table 5. SMAST Monitoring Data Summarized by Year. Taunton River stations highlighted.

			2004				2005				2006			
Station	**Location**	**State**	**DO min (mg/l)**	**Chl-a max (ug/l)**	**Chl-a mean (ug/l)**	**TN mean (mg/l)**	**DO min (mg/l)**	**Chl-a max (ug/l)**	**Chl-a mean (ug/l)**	**TN mean (mg/l)**	**DO min (mg/l)**	**Chl-a max (ug/l)**	**Chl-a mean (ug/l)**	**TN mean (mg/l)**
1	Taunton River	MA	4.8	24.2	7.8	0.53	5.1	49.2	10.9	0.56	4.1	26.6	10.3	0.74
2	Taunton River	MA	4.7	33.2	9.6	0.53	5.0	16.6	8.2	0.51	3.0	48.6	14.2	0.68
3	MHB proper (61-06)	MA	5.1	65.1	11.9	0.51	5.2	20.0	10.2	0.45	4.8	41.5	16.8	0.60
4	Lee River	MA	4.7	19.5	10.5	0.51	5.1	16.0	10.8	0.48	6.1	28.6	16.3	0.59
5	MHB proper (61-07)	MA	4.7	22.4	10.5	0.48	4.6	22.6	11.7	0.49	5.1	29.7	14.3	0.57
6	Cole River	MA	4.9	26.4	11.1	0.52	4.7	16.0	11.0	0.56	5.3	18.6	8.5	0.74
7	MHB proper (61-07)	MA	3.4	37.2	14.2	0.47	5.3	22.3	13.3	0.54	7.1	24.9	16.2	0.60
8	MHB proper (61-07)	MA	3.8	38.8	12.7	0.46	2.6	27.5	11.8	0.45	5.6	32.7	14.1	0.55
9	Kickamut River	RI	No data	19.1	11.9	0.70	No Data	17.7	9.7	0.73	No data	33.1	13.1	1.03
10	Kickamut River	RI	6.0	12.5	8.5	0.48	5.4	29.9	13.6	0.49	5.4	28.9	14.6	0.57
11	MHB-proper	RI	3.2	26.3	10.4	0.44	4.5	33.2	14.3	0.45	5.5	35.6	17.1	0.53
12	MHB-proper	RI	4.0	29.2	10.8	0.45	4.0	29.6	14.4	0.50	5.4	36.4	14.1	0.52
13	MHB-proper	RI	6.5	25.8	11.2	0.42	4.1	27.9	13.4	0.46	6.2	26.5	13.7	0.53
14	MHB-proper	RI	6.0	36.8	14.2	0.58	6.1	32.4	12.1	0.41	2.1	80.6	19.4	0.57
15	MHB-proper	RI	6.9	23.1	9.8	0.45	6.3	23.6	8.8	0.42	4.3	42.4	14.5	0.46
16	MHB-proper	RI	6.2	25.5	10.5	0.45	6.0	33.3	10.3	0.44	5.3	30.4	14.1	0.50
17	Lee River	MA	No data	9.2	4.7	0.65	No Data	17.3	7.9	0.61	No data	27.2	13.8	0.76
18	Taunton River	MA	4.7	16.1	7.5	0.61	4.4	38.0	9.0	0.60	4.3	12.9	7.2	0.80
19	Taunton River	MA	4.4	27.0	10.8	0.72	4.7	33.2	10.5	0.73	4.6	15.0	5.5	0.99
20	Assonet River	MA	5.1	15.7	9.1	0.72	5.6	27.1	12.2	0.63	4.8	16.9	7.6	0.94
21	Taunton River	MA	3.8	23.1	10.5	0.98	4.1	19.8	10.5	1.04	4.8	14.3	5.9	1.24
MOOR	MHB proper (61-06)	MA	6.3	21.4	11.4	0.51	5.4	19.9	11.5	0.45	2.7	35.4	16.5	0.55

Based on these data, the SMAST report concluded that a Massachusetts Estuaries Project ("MEP") analysis of nitrogen loading was warranted for the Mount Hope Bay/Taunton River complex, stating:

> Given the high population within the watershed and resultant N loading to this down gradient estuary and the observed high chlorophyll levels and oxygen depletions, it is not surprising that nitrogen levels are moderately to highly enriched over offshore waters. The Taunton River estuarine reach, as the focus of upper watershed N loading, showed very high total nitrogen levels (TN) in its upper reach (1.058 mg N L^{-1}) and maintained high levels throughout most of its reach (>0.6 mg N L^{-1}). The main basin of Mt. Hope Bay supported lower TN levels primarily as a result of mixing with incoming waters (generally 0.5-0.6 mg N L^{-1}). This is consistent with the observed oxygen depletions and infauna animal communities. The highest (Moderate) water quality was found at the stations in the main basin and lower reaches of Mt Hope Bay out to the channels to lower Narragansett Bay and the Sakonet River (Figure 6).
>
> . . .
>
> In general, the Taunton River Estuary, with its large watershed N load and high TN levels, is showing poor water quality due to its high chlorophyll and oxygen depletions. The main basin of Mt. Hope Bay, with its greater flushing and access to higher quality waters of the lower Bay, is showing less impairment with moderate water quality. Finally, the lower basin of Mt. Hope Bay, nearest the tidal "inlet", is generally showing moderate water quality. . . . [T]hese data indicate that the MEP analysis of this system should focus on restoration of the main basin of Mt. Hope Bay and the Taunton River estuarine reach, and that it is likely that restoration of the Taunton River Estuary will have a significant positive effect on the habitat quality of the main basin of Mt. Hope Bay.

To date, the MEP analysis, along with the TMDL that would result from the analysis, has not been completed.[4]

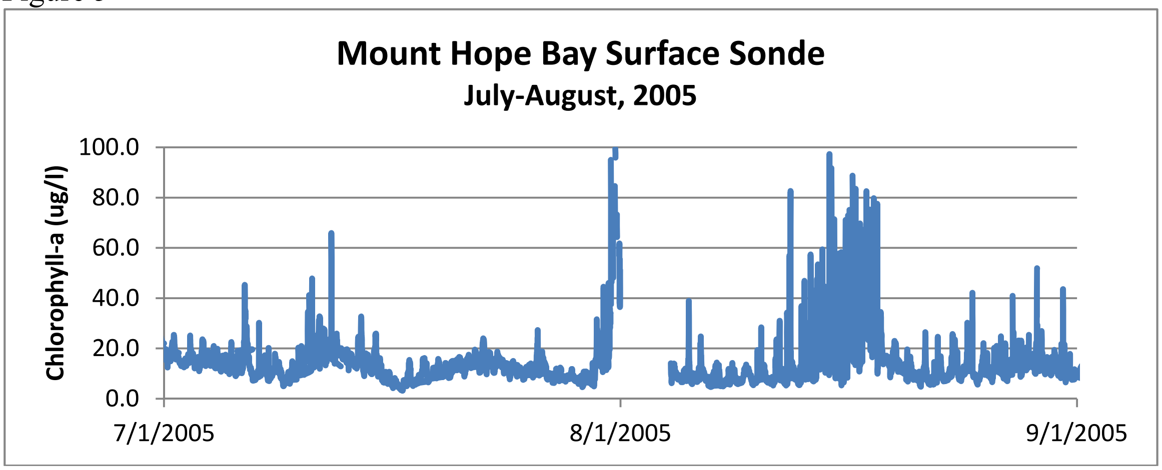
Additional evidence of conditions in Mount Hope Bay is provided from the Narragansett Bay Water Quality Network, fixed monitoring station in the Bay, equipped with two datasondes that measured temperature, salinity, dissolved oxygen and depth at approximately 1 meter from the bottom and 0.5 meters below the surface, and chlorophyll fluorescence at the near surface sonde. (http://www.narrbay.org/d_projects/buoy/buoydata.htm). The datasondes have been deployed in the Rhode Island portion of Mount Hope Bay near SMAST site MHB13, from May or June through October, since 2005. Analysis of the DO data from the deep sonde at this site in 2005 and 2006 showed multiple events (three in 2005; seven in 2006) of DO depletion below the 4.8 mg/l RI water quality threshold, with individual events lasting between two and twelve days. Codiga et al, "Narragansett Bay Hypoxic Even Characteristics Based on Fixed-Site Monitoring

[4] EPA is required to issue the permit with limits and conditions necessary to ensure compliance with State water quality standards at the time of permit reissuance. Neither the CWA nor EPA regulations require that a TMDL be completed before a water quality-based limit may be included in a permit. Rather, water quality-based effluent limitations in NPDES permits must be "consistent with the assumptions and requirements of any *available* [emphasis added] wasteload allocation." 40 C.F.R. § 122.44(d)(1)(vii)(B). Thus, an approved TMDL is not a precondition to the issuance of an NPDES permit for discharges to an impaired waterway.

Network Time Series: Intermittency, Geographic Distribution, Spatial Synchronicity, and Interannual Variability," *Estuaries and Coasts* 32:621-641 (2009). Two of the 2006 events were characterized as "hypoxic", with DO concentrations less than 2.9 mg/l persisting for over two days. Id.

The sonde data also confirms the occurrence of algal blooms and generally elevated chlorophyll-a concentrations in Mount Hope Bay. The 2005 sonde data, Figure 5, shows multiple events with chlorophyll-a concentrations well above 20 ug/l, and above the maximum concentrations captured with the intermittent SMAST sampling.

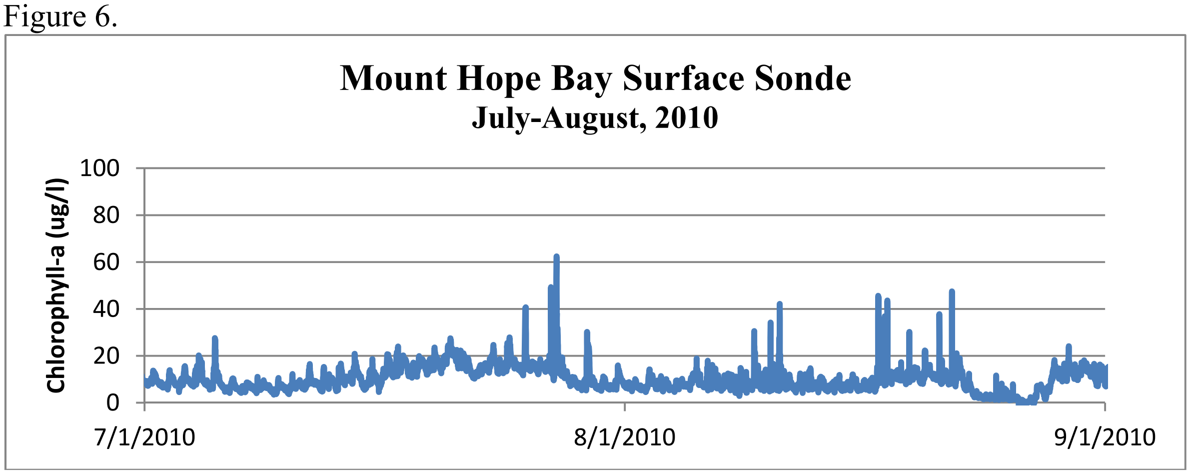
Figure 5



Charts by EPA. Source data: Narragansett Bay Fixed-Site Monitoring Network (NBFSMN), 2005. 2005 Datasets. Rhode Island Department of Environmental Management, Office of Water Resources. Data available at www.dem.ri.gov/bart

The sonde monitoring also confirms that these water quality violations continue to the present. The most recent published data (for 2010) show elevated chlorophyll-a concentrations and persistent DO concentrations below 5 mg/l. Figure 6.

Figure 6.



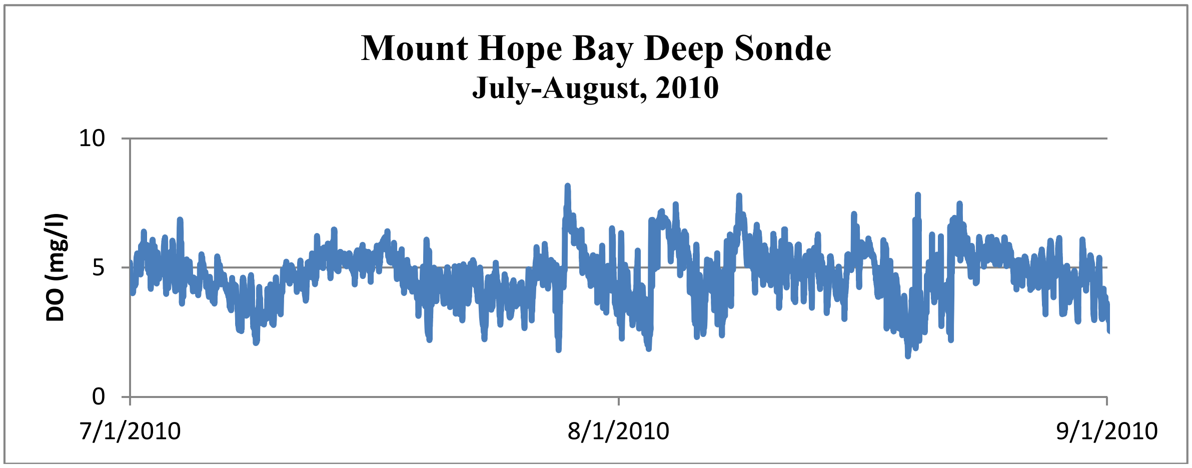


Chart by EPA. Source data: Narragansett Bay Fixed-Site Monitoring Network (NBFSMN), 2010. 2010 Datasets. Rhode Island Department of Environmental Management, Office of Water Resources. Data available at www.dem.ri.gov/bart

Based on these data, EPA has concluded that cultural eutrophication due to nitrogen overenrichment in the Taunton River Estuary and Mount Hope Bay has reached the level of a violation of both Massachusetts and Rhode Island water quality standards for nutrients and aesthetics, and has also resulted in violations of the numeric DO standards in these waters.

e. Reasonable Potential Analysis

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, including state narrative criteria for water quality. In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) that the Director has determined 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 data exceeds any numeric or narrative water quality criterion.

To determine the extent of the facility's contribution to the violation of the MA SWQS, EPA performed an analysis of nitrogen loading to the Taunton River Estuary using data from the SMAST monitoring program, which included monitoring on the Taunton River and major tributaries to the Taunton River Estuary, in additional to the estuarine stations. The analysis focuses on the Taunton River Estuary because that area shows the greatest eutrophication impacts and greatest nitrogen concentrations. Using the 2004-2005 to representative a "typical year" based on precipitation data,[5] EPA used the USGS LOADEST program to calculate a

[5] Rainfall during the summers of 2004 and 2005 totalled 17.82 and 11.03 inches respectively (http://weather-warehouse.com/WeatherHistory/PastWeatherData_TauntonMuniArpt_EastTaunton_MA_September.html), compared to a long term average of 15.24 inches (http://www.weather.com/weather/wxclimatology/monthly/graph/02780). The third monitoring year, 2006, was excluded because extremely high rainfall in May and June (over 9 inches per month, or more than twice the long term average) has potential to disturb the "steady-state" assumption that underlies EPA's load analysis.

seasonal average (June to September) nitrogen load for the Taunton River and each tributary using measured nitrogen concentrations and flow for several discrete events. A description of the LOADEST analysis is provided in Attachment A.

EPA also calculated the point source loads to the Taunton River Estuary derived from wastewater treatment plants based on DMR data from each facility from June through September 2004. These include direct discharges to the Taunton River Estuary (Taunton and Somerset WWTPs), and discharges to the tributaries from other POTWs, which are a component of the tributary loads calculated above. For POTWs discharging to tributaries to the Taunton River, an attenuation factor was applied to account for instream uptake of nitrogen. A description of the attenuation calculation is provided in Attachment B. Attenuation was determined to range from four to eighteen percent for the major (> 1 mgd) facilities located on tributaries (eleven percent for Brockton, the largest discharger), with higher attenuation for some of the smaller facilities on smaller tributaries. Table 6 shows the point sources, the receiving stream, their nitrogen discharges and the delivered load to the estuary.

Table 6.

WWTF	**Design Flow (MGD)**	**Receiving stream**	**Average 2004-05 Summer TN discharged (lb/d)**	**Average 2004-05 Summer TN delivered to Estuary (lb/d)**
Direct discharges to Estuary				
Taunton	8.4	Taunton River Estuary	610	610
Somerset	4.2	Taunton River Estuary	349.5	349.5
			Total direct point source load:	959
Upstream discharges				
MCI Bridgewater	0.55	Taunton River	37	33
Brockton	18	Salisbury Plain River	1303	1160
Bridgewater	1.44	Town River	137.5	132
Dighton-Rehoboth Schools	0.01	Segregansett River	1	1
Mansfield	3.14	Three Mile River	375.5	312
Middleboro	2.16	Nemasket River	207.5	191
Wheaton College	0.12	Three Mile River	6	3
Oak Point	0.18	Bartlett Brook	9	8
East Bridgewater High School	0.01	Matfield River	1.5	1
			Total upstream point source load:	1841

Finally, EPA calculated total loads to the estuary and allocated those loads between point sources and nonpoint sources. For upstream loads, nonpoint sources were calculated by subtracting the delivered point source loads from the LOADEST total load. Nonpoint source loads from the watershed area downstream of the SMAST monitoring sites, not accounted for in the LOADEST analysis, were calculated using an areal loading factor derived from the LOADEST loading figures. Direct atmospheric deposition to the Taunton River Estuary was not included in the model as it is a relatively small contribution given the relatively small area of the estuary.[6] The average summer load to the estuary in 2004 to 2005 is 4,228 lbs/day.

Figure 7 and Table 7 show the total watershed nitrogen loads to the Taunton River Estuary. Wastewater treatment plant loads make up 66% of the total nitrogen load, with the Taunton WWTP alone constituting 14% of the total load. Nonpoint sources make up the remaining 34%.

Figure 7

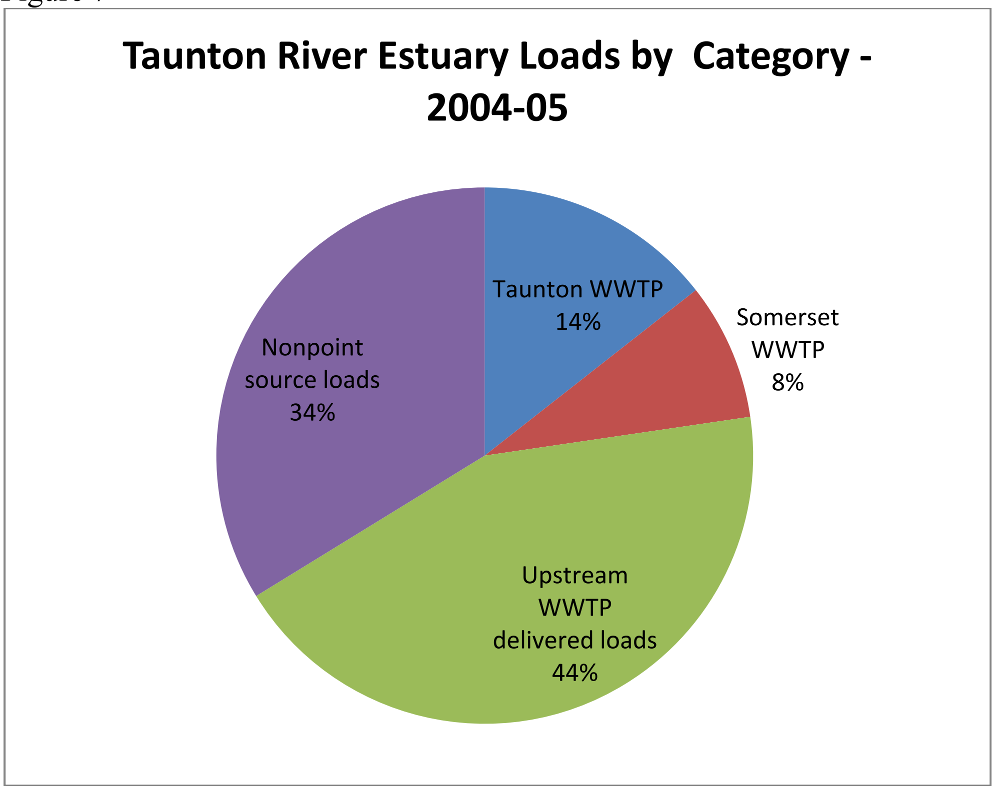


Table 7.

Total loads	**Avg 2004-05 Summer Load (lb/d)**
Taunton WWTP	610
Somerset WWTP	350
Upstream WWTP delivered loads	1841
Nonpoint source loads	1428
Total	4228

[6] Atmospheric deposition to the watershed is included in the nonpoint source loading figures.

On this basis, EPA concludes that the Taunton WWTP's nitrogen discharges "cause, have a reasonable potential to cause, or contribute" to nitrogen-related water quality violations in the Taunton River Estuary. Therefore, an effluent limit must be included in the permit.

f. Effluent limitation calculation

EPA's calculation of an effluent limitation for nitrogen consists of two parts. First, EPA determines a threshold nitrogen concentration in the water body that is consistent with unimpaired conditions. Second, EPA determines the allowable load from watershed sources generally, and this facility specifically, that will result in receiving water concentrations at or below the allowable threshold.

i. Threshold nitrogen concentration

To determine an appropriate threshold concentration, EPA applied the procedure developed by the Massachusetts Estuaries Project of identifying a target nitrogen concentration threshold based on a location within the estuary where water quality standards are not violated, in order to identify a nitrogen concentration consistent with unimpaired conditions. This approach is consistent with EPA guidance regarding the use of reference conditions for the purposes of developing nutrient water quality criteria. The Taunton River Estuary is classified as an SB water and is not a location where eelgrass has historically been found.[7] Therefore the primary water quality parameter considered in determining a sentinel location is DO. EPA notes that total nitrogen concentrations previously found to be protective of DO in other southeastern Massachusetts estuaries have ranged between 0.35 and 0.55 mg/l.[8]

Data from the SMAST monitoring program indicates widespread DO violations at a range of TN concentrations. Table 5 of the SMAST report (Table 4 above) provides the three year period 20% low DO concentration, which was below the 5 mg/l water quality standard at four stations, with long term average TN concentrations ranging from 0.486 to 1.058 mg/l. However, EPA does not consider a three year, 20% low DO to be a sufficiently sensitive indicator of water quality violations because the water quality criteria are based on a minimum DO concentration of 5 mg/l.

Closer examination of the SMAST monitoring data indicates multiple stations with minmum DO violations during the year with corresponding TN mean concentrations below 0.48 mg/l Indeed, minimum DO concentrations of less than 5.0 mg/l were encountered at all but one site (MHB16) during the three year monitoring program. See Table 5.

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[7] Known historic eelgrass locations within Mount Hope Bay are located on the western portion of the Bay, including the mouths of the Kickamuit, Cole and Lee Rivers, and in the Sakkonet River. See Restoration Sites and Historical Eelgrass Distribution in Narragansett Bay, Rhode Island (2001), http://www.edc.uri.edu/restoration/images/maps/historiceelgrass.pdf . Water quality based TN thresholds would be lower in those areas to protect eelgrass habitat. The DO-based thresholds used for development of permit limits will also protect eelgrass in those locations due to much greater dilution of the Taunton River discharges in those areas of the Bay.

[8] See, e.g. MassDEP, *FINAL West Falmouth Harbor Embayment System Total Maximum Daily Loads For Total Nitrogen* (2007) (Harbor Head threshold 0.35 – SA water); MassDEP, *Oyster Pond Embayment System Total Maximum Daily Loads For Total Nitrogen* (2008) (threshold 0.55).

In addition, DO concentrations from the fixed site monitoring station indicate extensive periods with DO below 5.0 mg/l in 2005 and 2006 (the datasonde was not operating in 2004). EPA considers fixed site monitoring to be superior to intermittent sampling data with respect to DO concentrations because the continuous monitoring includes critical conditions and time periods (e.g. early morning DO minimums) that are generally missed in intermittent sampling. The SMAST monitoring station that is closest to the fixed site station is MHB13. The average TN concentration at MHB13 between 2004 and 2006 was 0.473 mg/l, indicating that the threshold concentration must be lower than that value.

On the basis of these data, EPA determined that station MHB16 was appropriate as a sentinel site where dissolved oxygen standards were met, and that a total nitrogen concentration of **0.45** mg/l (the average of 2004-05 concentrations) represents the threshold protective of the dissolved oxygen water quality standard of 5.0 mg/l. Higher TN concentrations are associated with multiple DO violations, based on the available monitoring data. EPA notes that this value is within the range of target nitrogen thresholds previously determined in southeastern Massachusetts embayments, and is also consistent with TN concentration thresholds to protect dissolved oxygen standards identified in other estuaries. See NHDES, 2009.

ii. Allowable TN load

EPA next determined an allowable total nitrogen load from the watershed that would result in TN concentrations at or below the 0.45 mg/l TN threshold. To do so, EPA applied a steady state ocean water dilution model based on salinity, from Fischer et al. (1979). A similar approach was used by the New Hampshire Department of Environmental Services (NHDES) to develop loading scenarios for the Great Bay Estuary (NHDES, 2009). The basic premise is that steady state concentrations of nitrogen in an estuary will be equal to the nitrogen load divided by the total water flushing rate from freshwater and ocean water. Estuaries are complicated systems with variability due to tides, weather, and stream flows. However, by making the steady state assumption, it is not necessary to model all of these factors. The steady state assumption can be valid for calculations based on long term average conditions, which approximate steady state conditions.

Salinity data is used to determine the proportion of fresh and ocean water in the estuary. Freshwater input is calculated from streamflow measurements at USGS gages in the watershed. Then, ocean water inputs are estimated using salinity measurements and the freshwater inputs. The total flushing rate is then used with the target nitrogen threshold to determine the total allowable load to the estuary. For this calculation, salinity at Station MHB19 during 2004-05[9] was used to represent the sentinel location for meeting the target threshold, because it is the uppermost station that appears clearly nitrogen limited based on the Mount Hope Bay Monitoring Program data.

<u>Freshwater Flow</u>: Average freshwater flow input to the estuary in the summers of 2004 and 2005 is shown in Table 8. Freshwater flows at the mouths of the river is determined based on the USGS streamgage data using a drainage area ratio calculation as follows:

[9] As discussed above, 2004-05 represent a typical year.

Flow at mouth = Flow at USGS gage * Drainage area at mouth/Drainage area at gage

Table 8

	1 Taunton River (Bridge-water) *USGS Gage*	2 Taunton River (area to mouth of estuary minus tributaries) *Drainage Area calculation*	3 Three Mile River (North Dighton) *USGS Gage*	4 Three Mile River (mouth) *Drainage Area calculation*	5 Segre-ganset River (Dighton) *USGS Gage*	6 Segre ganset River (mouth) *Drainage Area calculation*	7 Assonet River (dam) *based on Segregansett*	8 Quequechan River (mouth) *based on Segregansett*	Total Fresh-water Flow (Sum of Columns 2+ 4+6+ 7+8
Drainage Area	261 sq. miles	410 sq. Miles	84 sq. miles	85 sq. miles	10.6 sq. miles	14.9 sq. miles	21.9 sq. miles	30.5 sq. miles	
2004	195 cfs	306 cfs	54 cfs	55 cfs	4.4 cfs	6.1 cfs	9.0 cfs	12.6 cfs	**389 cfs**
2005	217 cfs	341 cfs	55 cfs	56 cfs	4.6 cfs	6.4 cfs	9.4 cfs	13.1 cfs	**427 cfs**

Salinity: A mass balance equation is applied as follows:

Average salinity at ocean boundary (Rhode Island Sound) = 30 ppt (Kincaid and Pockalny, 2003)
Average salinity at MHB19 in Taunton River Estuary for 2004-05 = 22.35 ppt

Average freshwater flow 2004-05 (Table 8) = 408 cfs

(30 ppt * X cfs + 0 ppt * 408 cfs)/(408 cfs + X) = 22.35 ppt

X = 1,192 cfs ocean water

Nitrogen Target: The nitrogen target load in lbs per day is calculated by combining all water inputs and multiplying by the threshold concentration and the appropriate conversion factors.

(408 cfs + 1,192 cfs)*(0.646)*(8.34)*(0.45 mg/l) = 3,879 lbs/day

The nitrogen concentration at the seaward boundary is 0.28 mg/l (from Oviattet al., Annual Primary Production in Narragansett Bay with no Bay-Wide Winter-Spring*** (2001)). The ocean load can then be calculated:

Ocean load = 1,192 cfs * (0.646)*(8.34)*(0.28 mg/l) = 1,798 lbs/day

Based on the overall flow of the estuary (average of summers 2004 and 2005), the allowable TN load to the Taunton River Estuary, including both ocean and watershed loads, is 3,879 lbs/day.[10]

[10] To provide a check on this calculation, EPA calculated the predicted TN concentration in the estuary using calculated loads from 2004-05 using the same mass balance equation. Using the calculated watershed load of 4,228 lbs/day and an ocean load of 1,798 lbs/day as calculated above, the predicted concentration in the estuary is 0.70

The load from the ocean is 1,798 lbs/day, leaving an allowable load of **2,081** lbs/day from watershed sources. As noted above, actual loads in 2004-05 averaged 4,228 lbs/day. This means a reduction in watershed loads of 2,147 lbs/day, or approximately 51%, is required in order to meet water quality standards in the Taunton River Estuary.[11]

Clearly, the required load reduction is greater than the total load currently discharged from the Taunton WWTP and cannot be achieved only through permit limits on this facility. Furthermore, the reduction should be fairly allocated among all discharges to the estuary. EPA notes that all the wastewater treatment plants contributing to the Taunton River are due for permit reissuance, and it is EPA's intent to include nitrogen limits in those permits as appropriate, consistent with this analysis. In doing so, EPA considers not only the facility's current discharges, but their potential discharges under their approved design flows. As this analysis considers summer flows only, an estimated summer flow is calculated at 90% of design flow, consistent with the analysis done by RIDEM for Narragansett Bay facilities. (RIDEM, 2004) See Table 9. This accounts for the fact that a facility discharging at an annual average flow equal to its design flow will average less than design flow during the drier summer months.

For purposes of allocating the required load reduction, EPA first notes that nonpoint sources are unlikely to be reduced by 51% (the overall reduction required in the estuary), and that therefore a higher proportion of the reduction will be allocated to wastewater point sources in the estuary. This is consistent with approaches in approved TMDLs in Massachusetts and elsewhere. EPA considers a 20% nonpoint source (NPS) reduction to be a reasonably aggressive target for nonpoint source reduction in this watershed based on the prevalence of regulated MS4 stormwater discharges, trends in agricultural uses and population, and potential reductions in atmospheric deposition through air quality programs. EPA notes that should nonpoint source reductions fail to be achieved, permit limits for WWTPs in the watershed shall be revisited to ensure that water quality standards are met.

Using the baseline NPS load of 1,428 lbs/day from 2004-05, as shown in Table 7, a 20% reduction would result in a NPS load of 1,142 lbs/day. This leaves an available load for wastewater discharges of 939 lbs/day. Of the eleven facilities discharging to the watershed, five are minor discharges (< 1 MGD) with a combined load of less than 50 lbs/day. These facilities are considered de minimis contributors for the purposes of this analysis and are not analyzed further here.

To determine an equitable load allocation, EPA first determined the permit limit that would be required to meet the allowable load if a uniform limit were applied to all facilities. While permit limits are generally set to be more stringent on larger dischargers/direct discharges to impaired waters, calculating a uniform limit allows EPA to determine the range of options for permit limits. As shown in Table 9 below, a uniform permit limit on all discharges > 1 MGD in the Taunton would have to be between 3.4 and 3.5 mg/l for the allowable loading threshold to be met. For the largest discharges such at Taunton, therefore, a 3.4 mg/l limit represents the upper bound of possible permit limits to meet the water quality requirement. For a lower bound on

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mg/l. The monitoring data indicates that the average TN concentration was 0.73 mg/l, within 5% of the predicted value.

[11] Ocean loads are not considered controllable.

potential permit limits, EPA notes that the currently accepted limit of technology (LOT) for nitrogen removal is a seasonal average of 3.0 mg/l.

Table 9.

WWTF	Design Flow (MGD)	Percent delivered to estuary	Limit assumption: 3.3	Limit assumption: 3.4	Limit assumption: 3.5
Taunton	8.4	100%	208	214	221
Somerset	4.2	100%	104	107	110
Brockton	18	89%	397	409	421
Bridgewater	1.44	96%	34	35	36
Mansfield	3.14	83%	65	67	69
Middleboro	2.16	92%	49	51	52
Smaller facilities (at current loads)			46	46	46
Total			903	929	955

Given the determination that the maximum possible limit is less than 4 mg/l, and that upgrades to meet the most stringent permit limits are more cost-effective at facilities with the highest flows and highest proportion of the load delivered to the estuary, EPA concludes that a LOT permit limit of 3.0 mg/l (seasonal average) is required for the Taunton WWTP. The Taunton WWTP is the second largest discharger to the Taunton River watershed, is responsible for approximately 14% of watershed loads, and discharges directly to the upper portion of the Taunton River estuary, with no potential for uptake or attenuation of its nitrogen discharges.

EPA notes that this will mean the potential for somewhat higher, although still stringent, nitrogen limits at some of the smaller dischargers in the Taunton River watershed. Table 10 shows an example permitting scenario that would meet the allowable loading threshold. In this particular example permit limits for the Brockton AWRF (the largest discharger) and Somerset WWTP (the third largest discharge and a direct discharger to the estuary) are also set at 3.0 mg/l; and the remaining three facilities (Bridgewater, Mansfield and Middleboro) are set at 5.5 mg/l. Final determinations as to the permit limits on these facilities will be made in each individual permit issuance.

Table 10.

WWTF	Design Flow (MGD)	Percent delivered to estuary	Potential permit limit	Load discharged (lbs/d) at 90% design flow	Load delivered to Estuary
Taunton	8.4	100%	3	189	189
Somerset	4.2	100%	3	95	95
Brockton	18	89%	3	405	361
Bridgewater	1.44	96%	5.5	59	57
Mansfield	3.14	83%	5.5	130	108
Middleboro	2.16	92%	5.5	89	82
Smaller facilities (at current loads)					46
Total					938

For these reasons, EPA has included a seasonal average total nitrogen limit of 3.0 mg/l (May to October) in the new draft permit.[12] The seasonal limit shall be applied on a rolling basis (e.g. the average reported for June shall include May and June of the reporting year as well as July through October of the preceding year). Also, in accordance with 40 CFR 122.45(f), EPA is imposing a seasonal average mass limit of 210 lbs/day, also applicable during the months of May through October. This mass limit is based on the seasonal average concentration limit and the design flow of the facility, and represents the highest load that the facility can discharge consistent with achieving water quality standards. The sampling frequency is three times per week. The permit contains a compliance schedule for meeting the nitrogen limits (see Permit Section 1.G); EPA encourages the permittee and others to provide comments on the specific milestone and deadlines included in that schedule.

Consistent with the seasonal analysis, EPA has not included nitrogen limits for the timeframe of November through March because these months are not the most critical period for phytoplankton growth. As noted earlier, EPA is imposing a condition requiring the permittee to optimize nitrogen removal during the wintertime. The summer limits and the winter optimization requirements will serve to keep the annual discharge load low. In combination, the numeric limitations and the optimization requirements are designed to ensure that the discharge does not cause or contribute to violations of applicable water quality standards, including narrative water quality criterion for nutrients, in accordance with Section 301(b)(1)(C) of the CWA.

EPA also notes that while the permit limit was set based on standards in the Taunton River Estuary, the limit is also protective of water quality standards in Mount Hope Bay under Massachusetts and Rhode Island water quality standards. Mount Hope Bay receives much greater dilution by ocean water, so that the nitrogen concentrations resulting from Taunton River loadings will be lower in the Bay than the 0.45 mg/l being met in the Taunton River Estuary. While other loads to Mount Hope Bay (particularly the Fall River WWTP) will need to be addressed as well, the reduction in nitrogen loadings from the Taunton River will ensure that those discharges do not cause or contribute to nitrogen-related impairments in Mount Hope Bay.

6. Ammonia-Nitrogen

The draft permit also carries over the ammonia-nitrogen limits of the current permit of 1 mg/l average monthly and average weekly, and 2 mg/l maximum daily, in the June to September period. EPA notes that the new 3 mg/l total nitrogen limits, once in effect, should be sufficient to ensure that ammonia-nitrogen concentrations are below these limits. The facility had one violation of the monthly average permit limit and two violations of the weekly average and daily maximum limits in the period June 2010 to June 2012. See Table 1.

[12] The May to October seasonal period is consistent with other Narragansett Bay-related nitrogen limits. See Upper Blackstone Water Pollution Abatement District, MA01002369. The Mount Hope Bay Monitoring Program did not include May and October sampling, so those months were not explicitly included in the loading analysis. However, the Narragansett Bay Fixed Site Monitoring Program extends through October and includes limited data at the end of May and supports the need for permit limits in those months. For example, in 2006 chlorophyll-a concentrations in the last week of May averaged 13 ug/l with a maximum of 25 ug/l, with an average DO at the surface sonde of less than 5.0 mg/l. In 2005, chlorophyll-a concentrations from October 1 through 5 averaged 15 ug/l, with a maximum of 45 ug/l; DO concentrations measured at the near-bottom datasonde were less than 5.0 mg/l for approximately 5% of that time.

7. Phosphorus

EPA also received comments contending that an effluent limitation on phosphorus was necessary to ensure that water quality standards are met in the immediate vicinity of the discharge. Phosphorus is generally the 'limiting nutrient' in freshwater systems and therefore the focus of control with respect to eutrophication,. While the segment of the Taunton River that receives the discharge is classified as marine water, salinities are quite low in the vicinity of the discharge, conditions under which phosphorus may cause or contribute to water quality violations. EPA therefore reviewed the available information regarding phosphorus in the immediate receiving water to determine whether an effluent limit is required.

Phosphorus data collected during the Mount Hope Bay Monitoring Program just upstream at Weir Village (Plain Street, Taunton) indicate total phosphorus concentrations averaged 0.10 mg/l (range 0.06-0.19) in 2004 and 0.70 mg/l (range 0.65-0.13) in 2005. Total nitrogen concentrations were also monitored, and the average total nitrogen/total phosphorus (TN/TP) ratio was 19 (range 11 to 30), consistent with expected phosphorus limitation in this area. However, upstream facilities have implemented permit limits on their phosphorus discharges since 2005. The Taunton River Watershed Association (TRWA) monitors sites upstream (Plain Street, Taunton) and downstream (Center Street/Berkley Bridge). TRWA phosphorus data for April to October 2010 averaged 0.12 mg/l at both the upstream and downstream sites. In 2011, the average concentration was 0.08 mg/l at both sites.[13] The 2011 concentration is below the EPA-recommended Gold Book concentration of 0.1 mg/l, which has been used by EPA as the basis for permit limits in numerous permit proceedings as an interpretation of the Massachusetts narrative water quality standard for nutrients. See, e.g., *In re Upper Blackstone Water Pollution Abatement District*, 14 E.A.D. __ (2010). While the Taunton WWTP does not monitor phosphorus discharges under its current permit, these data do not indicate discernable increases in total phosphorus concentrations attributable to the Taunton WWTP.

Receiving water quality data is limited with respect to other indicators of eutrophic conditions in the immediate vicinity of the discharge. Dissolved oxygen data was not collected in the Mount Hope Bay Monitoring Program, but monthly monitoring by the TRWA did not document any violations of the DO standard. No chlorophyll-a data was collected in either program. MassDEP monitoring in 2006 did not include this portion of the Taunton River; the most downstream station was at the South Street East/Old Colony Bridge (Taunton/Raynham), several river miles upstream. The most recent MassDEP Water Quality Assessment from 2001 found that this segment of the Taunton River "Supports" the Aquatic Life use, although the only data cited were toxicity test results for the Taunton WWTP (including ambient toxicity testing from receiving water at Weir Village).

Based on the available information, particularly the recent TRWA total phosphorus data showing instream concentrations approximately equal to the Gold Book value (averaging 0.1 mg/l in 2010-11) both upstream and downstream of the discharge, there is insufficient basis to conclude that phosphorus discharges from the Taunton WWTP cause, have reasonable potential to cause, or contribute to violations of water quality standards in the Taunton River. EPA therefore has included a monitoring requirement for phosphorus in the Draft Permit, but no effluent limit.

[13] Non-detects included at detection limit of 0.05 mg/l.

EPA encourages the permittee to provide flexibility in its facility planning so that phosphorus removal may be incorporated at a later date if necessary.

8. Metals

The current permit for this facility contains an effluent limit for total recoverable copper based on the freshwater criteria for class B waters. The correct criteria for SB waters is set forth below in terms of dissolved metals (form used for water quality standard) and total recoverable metals (used for permit limits). See 314 CMR 4.05(5)(e).

Dissolved Criteria CMC ug/l	Dissolved Criteria CCC ug/l	Translator	Total Criteria CMC ug/l	Total Criteria CCC ug/l
4.8	3.1	0.83	**5.8**	**3.7**

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.

Mass balance:

$$\frac{\text{(Upstream 7Q10 flow)*(Background) + (Taunton WWTP design flow)*(permit limit)}}{\text{(Upstream 7Q10 flow + Taunton WWTP flow)}} = \text{Criteria}$$

Where: Upstream flow = 31.6 cfs
Taunton flow = 13 cfs
Background copper = 2 ug/l(tr) (median of upstream concentration from WET reports)
Criteria = CCC (3.7 ug/l tr) for average monthly permit limit
CMC (5.8 ug/l tr) for daily maximum permit limit

The resulting permit limits are:

Average monthly = 8 ug/l
Maximum Daily = 15 ug/l

Average Monthly Mass Loading Limits = (constant)(chronic criteria mg/l)(design Q mgd)

(8.34)(0.008 mg/l)(8.4 mgd) = 0.56 lbs/Day

The average monthly limit for total recoverable copper based on the chronic water quality criteria will be 8 ug/l and the maximum daily limit, based on the acute criteria, will be 15 ug/l. These limits are made more stringent than those in the existing permit based upon the use of salt water criteria and revised dilution.

EPA also reviewed analytical data submitted in connection with the Taunton WET Reports to determine whether the facility discharges other toxic metals. Data from samples of the effluent and receiving water for the period February 2008 through August 2011 are set forth in Table 11 (attachment), along with the relevant water quality criteria for each parameter. The facility discharges none of these metals at concentrations above the water quality criteria, so no limits are required.

Whole Effluent Toxicity (WET) - Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The MA SWQS include the following narrative statement and requires that EPA criteria established pursuant to Section 304(a)(1) of the CWA be used as guidance for interpretation of the following narrative criteria: "All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife."

National studies conducted by the EPA have demonstrated that domestic sources contribute toxic constituents. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. The Region's current policy is to include toxicity testing requirements in all permits, while Section 101(a) (3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts.

Based on the potential for toxicity resulting from domestic sewage, in accordance with EPA national and regional policy, and in accordance with MassDEP policy, the draft permit includes acute toxicity limitations and monitoring requirements. (See *Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants*, 50 Fed. Reg. 30,784 (July 24, 1985); EPA, *Technical Support Document for Water Quality-Based Toxics Control* (September, 1991); and MassDEP, *Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990)).

Pursuant to EPA, Region I and MassDEP policy, discharges having a dilution factor less than 100:1 (3.4:1 for this discharge) require acute and chronic toxicity testing and an acute LC_{50} limit of ≥100%. The draft permit requires the permittee to conduct four chronic and acute WET tests per year. The tests use the species, Ceriodaphnia dubia, in accordance with existing permit conditions, and are to be conducted in accordance with the EPA Region I Toxicity protocol found in the draft permit Attachment A for the chronic test and Attachment B for the acute test. While the receiving water has been determined to be Class SB (seawater), the location where the permittee draws its upstream dilution water is freshwater. MassDEP has therefore requested that the freshwater toxicity protocol continue to be used for this discharge. The prior permit'ss use of the single "chronic (and modified acute)" test has been revised to two separate tests, consistent with the requirement to use approved test methods.

The chronic no observable effects concentration (C-NOEC) limit is calculated to be greater than or equal to the effluent concentration in the receiving water. The inverse of the receiving water concentration (chronic dilution factor) multiplied by one hundred is used to calculate the chronic C-NOEC as a percent limit. (1/3.4)(100) ≥ 29%

VII. INDUSTRIAL PRETREATMENT PROGRAM

The permittee is required to administer a pretreatment program based on the authority granted under 40 CFR 122.44(j), 40 CFR Part 403 and Section 307 of the Act. The permittee's pretreatment program received EPA approval on July 31, 1982 and, as a result, appropriate pretreatment program requirements were incorporated into the previous permit, which were consistent with that approval and federal pretreatment regulations in effect when the permit was issued.

The Federal Pretreatment Regulations in 40 CFR Part 403 were amended in October 1988, in July 1990, and again in October 2005. Those amendments established new requirements for implementation of pretreatment programs. Upon reissuance of this NPDES permit, the permittee is obligated to modify its pretreatment program to be consistent with current Federal Regulations. Those activities that the permittee must address include, but are not limited to, the following: (1) develop and enforce EPA approved specific effluent limits (technicallybased local limits); (2) revise the local sewer-use ordinance or regulation, as appropriate, to be consistent with Federal Regulations; (3) develop an enforcement response plan; (4) implement a slug control evaluation program; (5) track significant noncompliance for industrial users; and (6) establish a definition of and track significant industrial users.

These requirements are necessary to ensure continued compliance with the POTW's NPDES permit and its sludge use or disposal practices.

In addition to the requirements described above, the draft permit requires the permittee to submit to EPA in writing, within 180 days of the permit's effective date, a description of proposed changes to permittee's pretreatment program deemed necessary to assure conformity with current federal pretreatment regulations. These requirements are included in the draft permit to ensure that the pretreatment program is consistent and up-to-date with all pretreatment requirements in effect. Lastly, the permittee must continue to submit, annually by October 1, a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

VIII. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

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

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

Proper operation of collection systems is critical to prevent blockages and equipment failures that would cause overflows of the collection system (sanitary sewer overflows, or SSOs), and to limit the amount of non-wastewater flow entering the collection system (inflow and infiltration or I/I[14]). I/I in a collection system can pose a significant environmental problem because it may

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

displace wastewater flow and thereby cause, or contribute to causing, SSOs. Moreover, I/I could reduce the capacity and efficiency of the treatment plant and cause bypasses of secondary treatment. Therefore, reducing I/I will help to minimize any SSOs and maximize the flow receiving proper treatment at the treatment plant. MassDEP has stated that the inclusion in NPDES permits of I/I control conditions is a standard State Certification requirement under Section 401 of the CWA and 40 CFR § 124.55(b).

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

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

Because Raynham and Dighton each own and operate collection systems that discharge to the Taunton treatment works, these municipalities have been included as co-permittees for the specific permit requirements discussed in the paragraph above. The historical background and legal framework underlying this co-permittee approach is set forth in Attachment C to this Fact Sheet, EPA Region 1 NPDES Permitting Approach for Publicly Owned Treatment Works that Include Municipal Satellite Sewage Collection Systems. The town of Norton is not a co-permittee due to the low number of homes tied in to the Taunton collection system.

IX. COMBINED SEWER OVERFLOWS

A. Combined Sewer System

The City of Taunton's sewer system is partially combined, with at least 300 manhole covers in the system had holes drilled in them so that they act as catch basins during storm events, and an additional 33 manholes had combined drainage and sanitary pipelines in the same structure There is one active combined sewer overflow (CSO) located on West Water Street, Outfall 004. Pursuant to the 2008 AO, the City is required to continue working on improving its collection system and to evaluate its ability to eliminate the CSO outfall through the collection system improvements. If the collection system improvements by themselves will not eliminate the CSO outfall, the AO requires that the City submit a plan and schedule for additional options; the target

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

elimination date set in the AO is October 2013. CSO discharges are subject to the conditions set forth in Part I.F. of the Draft Permit

B. Regulatory Framework

CSOs are point sources subject to NPDES permit requirements for both water-quality based and technology-based requirements but are not subject to the secondary treatment regulations applicable to publicly owned treatment works in accordance with 40 CFR §133.103(a).

As noted above, Section 301(b)(1)(C) of the Clean Water Act of 1977 mandated compliance with water quality standards by July 1, 1977. Technology-based permit limits must be established for best conventional pollutant control technology (BCT) and best available technology economically achievable (BAT) based on best professional judgment (BPJ) in accordance with Section 301(b) and Section 402(a) of the Water Quality Act Amendments of 1987 (WQA).

The framework for compliance with Clean Water Act requirements for CSOs is set forth in EPA's National CSO Control Policy, 59 Fed. Reg. 18688 (1994). It sets the following objectives:

1) To ensure that if the CSO discharges occur, they are only as a result of wet weather;
2) To bring all wet weather CSO discharge points into compliance with the technology based requirements of the CWA and applicable federal and state water quality standards; and
3) To minimize water quality, aquatic biota, and human health impacts from wet weather flows.

The CSO Control Policy also established as a matter of national policy the minimum BCT/BAT controls that represent the BPJ of the agency on a consistent, national basis. These are the "nine minimum controls" defined in the CSO Control Policy and set forth in the Draft Permit Part 1.e.1.a (1) through (9): (1) proper operation and maintenance of the sewer system and the CSOs, (2) maximum use of the collection system for storage, (3) review pretreatment programs to assure that CSO impacts are minimized, (4) maximization of flow to the POTW for treatment, (5) prohibition of dry weather overflows, (6) control of solid and floatable materials in CSOs, (7) pollution prevention programs, (8) public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts, and (9) monitoring to effectively characterize CSO impacts and the efficacy of CSO controls. Massachusetts has established similar requirements for CSO permits. MassDEP, *Guidance for Abatement of Pollution from CSO Discharges* (1997).

C. Permit Requirements

In accordance with the National CSO Control Policy, the draft permit contains the following conditions for CSO discharges:

(i) Dry weather discharges from CSO outfalls are prohibited. Dry weather discharges must be immediately reported to EPA and MassDEP.

(ii) During wet weather, the discharges must not cause any exceedance of water quality standards. Wet weather discharges must be monitored and reported as specified in the permit.

(iii) The permittee shall meet the technology-based nine minimum controls, set forth above, complying with the implementation levels as set forth in Part I.F.2 of the draft permit.

(iv) The permittee shall submit updated documentation on its implementation of the Nine Minimum Controls within 6 months of the effective date of the permit, and shall provide an annual report on monitoring results from CSO discharges and the status of CSO abatement projects by April 30 of each year.

X. SLUDGE INFORMATION AND REQUIREMENTS

The Taunton WWTP produces approximately 1655.29 dry metric tons of sludge each year. Section 405(d) of the CWA requires that sludge conditions be included in all POTW permits. Primary and secondary thickened sludge from the Taunton WWTF is currently trucked off-site to the Taunton Municipal Sanitary Landfill. If the ultimate sludge disposal method changes, the permittee must notify EPA and MassDEP and the requirements pertaining to sludge monitoring and other conditions would change accordingly (See enclosed Sludge Guidance Document).

XI. UNAUTHORIZED DISCHARGES

This permit authorizes discharges only from the outfalls listed in Part I.A.1 and I.D of this permit, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources are not authorized by the permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of the permit (Twenty-four hour reporting).

XII. ENDANGERED SPECIES ACT

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and habitat of such species that has been designated as critical (a "critical habitat"). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, or plants to determine if any listed species might potentially be impacted by the re-issuance of this NPDES permit. The only listed species that have the potential to be present in the vicinity of the Taunton WWTP is the Atlantic sturgeon (*Acipenser oxyrinchus*).

Based on the analysis of potential impacts to Atlantic sturgeon presented in Attachment D to this Fact Sheet, EPA has determined that impacts to Atlantic sturgeon from the discharge at Taunton

WWTP, if any, will be insignificant or discountable. Attachment D provides the complete discussion of EPA's Endangered Species Act assessment as it relates to the renewal of the Taunton WWTP's NPDES permit.

XIII. 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 as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. § 600.910 (a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. § 1855(b) (1) (A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. The Taunton River is not covered by the EFH designation for riverine systems and is not included within the scope of the EFH designation for Mount Hope Bay. Therefore EPA has determined that a formal EFH consultation with NMFS is not required.

XIV. MONITORING AND REPORTING

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

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

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

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

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

Massachusetts.

The Draft Permit requires the permittee to report monitoring results obtained during each calendar month using NetDMR, no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

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

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

XV. STATE PERMIT CONDITIONS

The NPDES Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of the permit are, therefore, incorporated into and constitute a discharge permit issued by the MassDEP Commissioner.

XVI. GENERAL CONDITIONS

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

XVII. STATE CERTIFICATION REQUIREMENTS

EPA may not issue a permit unless MassDEP certifies that the effluent limitations included 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 certification. EPA has requested permit certification by the State pursuant to 40 CFR §124.53 and expects the draft permit will be certified.

XVIII. COMMENT PERIOD, HEARING REQUESTS, AND PROCEDURES FOR FINAL DECISIONS

All persons, including applicants, who believe any condition of the 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 Susan Murphy, U.S. Environmental Protection Agency, 5 Post Office Square, Suite 100 (OEP06-1), Boston, MA 02109. Any person prior to such date may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after the public hearing, if held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and to each person who has submitted written comments or requested notice.

XIX. EPA CONTACT

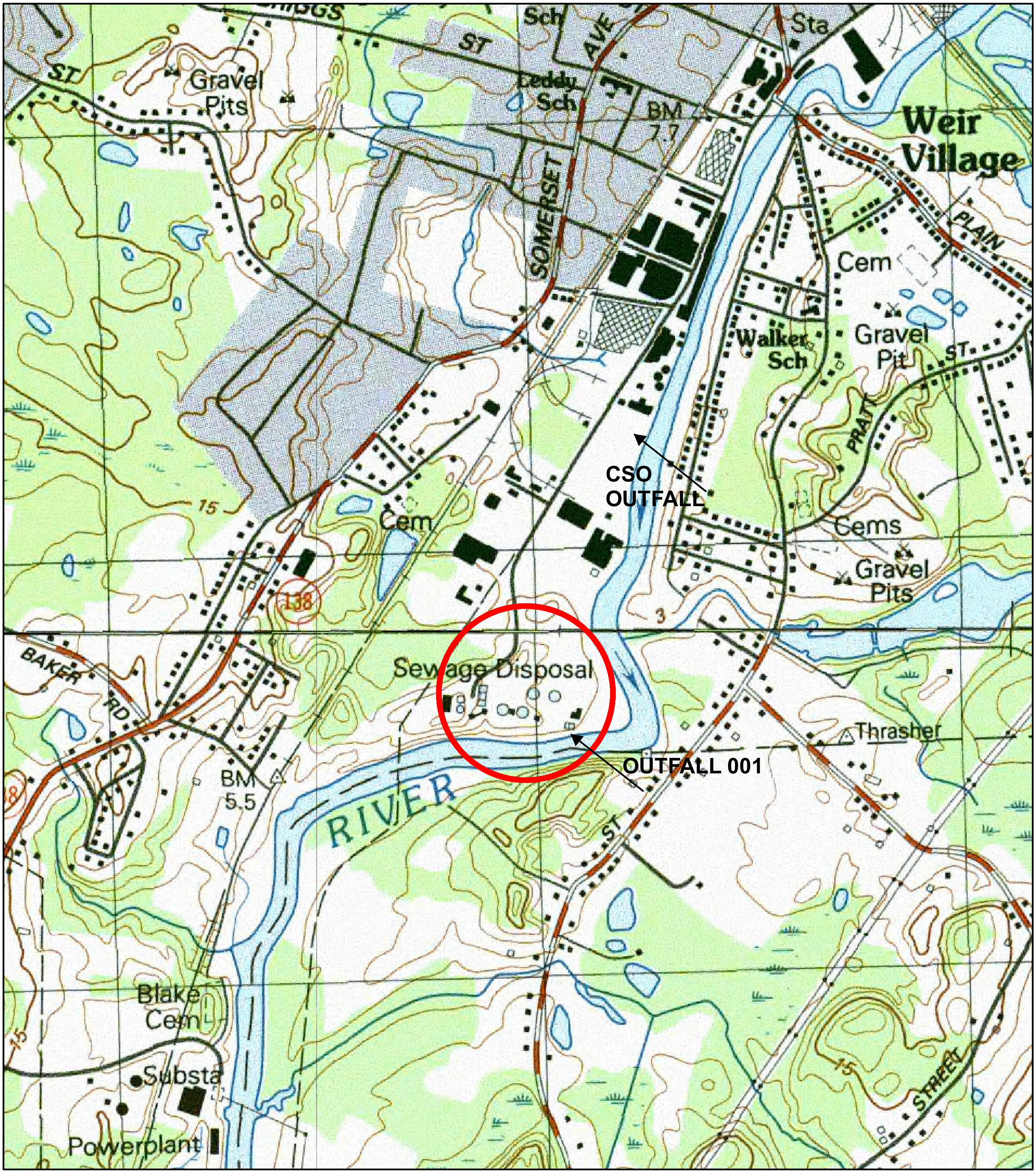
Requests for additional information or questions concerning the draft permit may be addressed Monday through Friday, between the hours of 9:00 a.m. and 5:00 p.m., to :

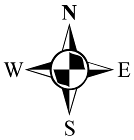
Susan Murphy
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109
Telephone: (617) 918-1534 Fax: (617) 918-0534
Email: murphy.susan@epa.gov

Claire Golden
Massachusetts Department of Environmental Protection
205B Lowell Street
Wilmington, MA 01887
Telephone: (978) 694-3244 Fax (978) 694-3498
Email: claire.golden@state.ma.us

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

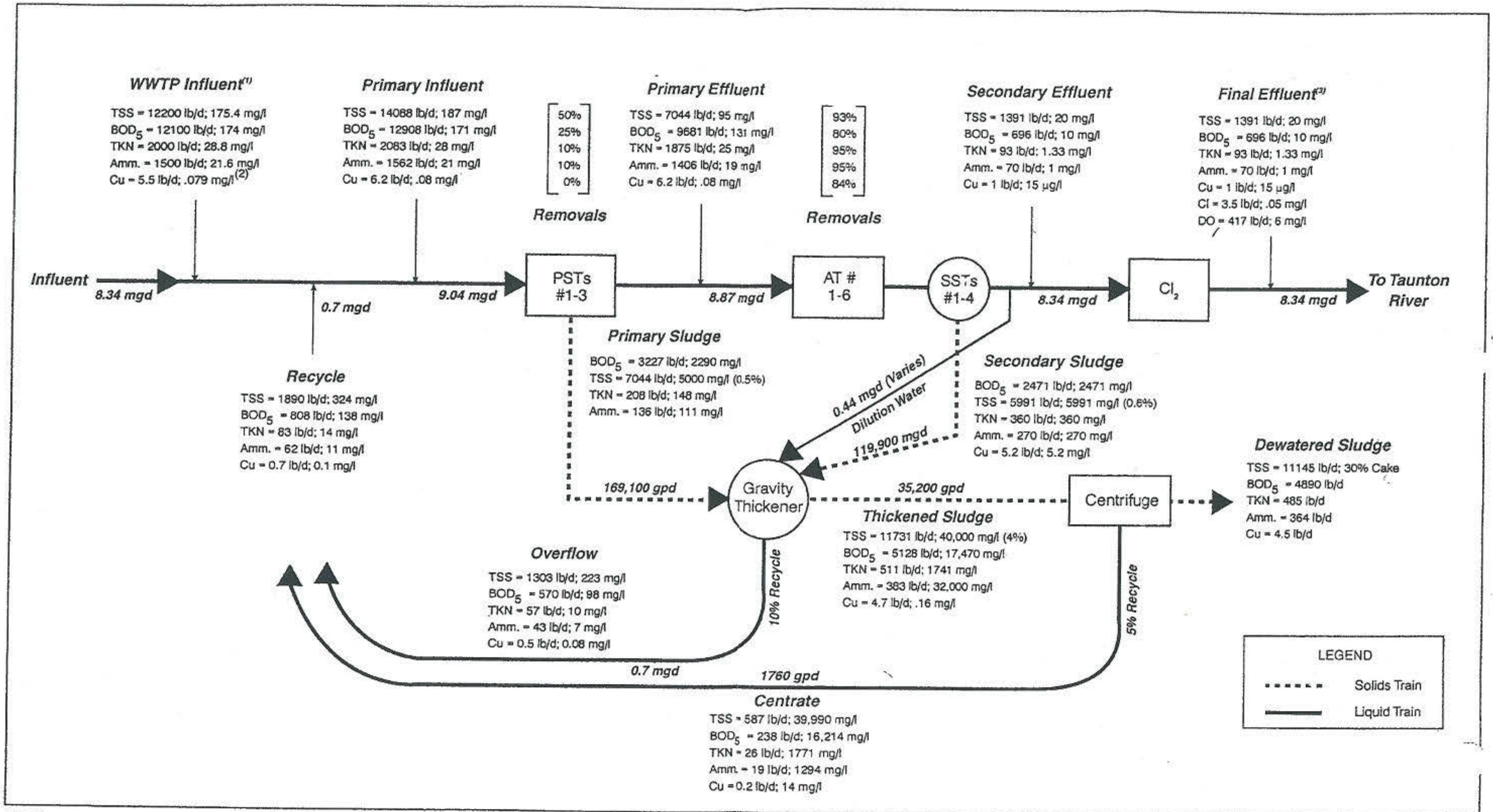
____
Date





Taunton WWTF

Figure 1. Location Map
Taunton WWTP
NPDES No. MA0100897



NOTES:

1. The influent loads are based on values given in Appendix K of the RFP; "Sewerage Flow and Load Allowances Taunton WWTP Planning Criteria".
2. Copper loading value is estimated based on average concentration determined from quarterly sampling data reported by OMI, included in the RFP.
3. Recycle flows and loads based on continuous operation under average design conditions. Dilution water loads are negligible and are not included in the calculation.
4. Secondary system removals calculated based on meeting NPDES permit units. It is expected that these removal rates are conservative.

TAUNTON WWTP UPGRADE
AND MODIFICATIONS
MASS BALANCE

Monitoring Period End Date	BOD5					CBOD5					Total Residual Chlorine		Fecal Coliform	
	Average Monthly	Average Weekly	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
	lb/day	lb/day	mg/L	mg/L	mg/L	lb/day	lb/day	mg/L	mg/L	mg/L	mg/L		cfu/100mL	
06/30/2010	Test Not Required					76	159	2	3	9	0.028	0.047	4	150
07/31/2010	Test Not Required					133	264	3	6	18	0.028	0.053	4	380
08/31/2010	Test Not Required					96	214	2	5	6	0.024	0.07	6	280
09/30/2010	Test Not Required					50	199	1	4	6	0.019	0.05	1	6
10/31/2010	Test Not Required					20	79	0	2	5	0.02	0.06	2	6
11/30/2010	386	572	7	10	19	Test Not Required					0.018	0.05	8	86
12/31/2010	446	785	8	15	20	Test Not Required					0.02	0.047	3	190
01/31/2011	404	844	7	15	25	Test Not Required					0.021	0.057	2	14
02/28/2011	721	433	10	8	37	Test Not Required					0.025	0.06	1	4
03/31/2011	298	1734	4	20	17	Test Not Required					0.024	0.077	3	10
04/30/2011	Test Not Required					193	302	3	5	12	0.022	0.063	3	12
05/31/2011	Test Not Required					243	365	4	6	11	0.02	0.057	3	35
06/30/2011	Test Not Required					102	278	2	5	9	0.02	0.05	2	8
07/31/2011	Test Not Required					87	289	2	6	8	0.012	0.04	21	97
08/31/2011	Test Not Required					0	0	0	0	0	0.015	0.067	23	130
09/30/2011	Test Not Required					103	156	2	2	6	0.01	0.05	41	260
10/31/2011	Test Not Required					91	162	1	3	6	0.009	0.053	12	55
11/30/2011	776	1857	12	29	44	Test Not Required					0.014	0.043	5	18
12/31/2011	469	785	6	9	20	Test Not Required					0.008	0.047	14	27
01/31/2012	267	371	5	7	13	Test Not Required					0.008	0.05	23	430
02/29/2012	111	202	2	4	7	Test Not Required					0.011	0.047	4	63
03/31/2012	80	132	2	2	7	Test Not Required					0.008	0.043	3	58
04/30/2012	Test Not Required					200	402	4	6	11	0.012	0.047	1	4
05/31/2012	Test Not Required					142	168	3	3	11	0.015	0.047	8	48
06/30/2012	Test Not Required					113	351	2	7	10	0.013	0.047	8	21
Existing Permit Limit	2102	3153	30	45	Report	1051	1051	15	15	Report	0.046	0.08	200	400
Minimum	80	132	2	2	7	0	0	0	0	0	0.008	0.04	1	4
Maximum	776	1857	12	29	44	243	402	4	7	18	0.028	0.077	41	430
Average	396	772	6	12	21	110	226	2	4	9	0.017	0.053	8.2	95.68
Standard Deviation	227	592	3	8	12	66	110	1	2	4	0.006	0.009	9.574	121.574
Number of Measurements	10	10	10	10	10	15	15	15	15	15	25	25	25	25
Number of Exceedences	0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	1

Note: NR = Test Not Required

Monitoring Period End Date	Total Copper			Flow		Ammonia Nitrogen (October 1-May 31)			Ammonia Nitrogen (June 1-September 30)				
	Average Monthly	Average Monthly	Maximum Daily	12 Month Average	Maximum Daily	Average Monthly	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Average Monthly	Average Weekly	Maximum Daily
	lb/day	mg/L	mg/L	MGD		lb/day	mg/L	mg/L	lb/day	lb/day	mg/L	mg/L	mg/L
06/30/2010	0.3	0.005	0.005	7.7	6.576	Test Not Required			88	122	1.7	2	3
07/31/2010	0.3	0.006	0.006	7.6	7.518	Test Not Required			45	90	0.9	2	3
08/31/2010	0.27	0.0058	0.007	7.6	6.968	Test Not Required			19	22	0.4	0.4	0.8
09/30/2010	0.17	0.004	0.004	7.6	6.748	Test Not Required			63	66	1	1	1
10/31/2010	0.3	0.006	0.006	7.6	6.867	119	2	3	Test Not Required				
11/30/2010	0.54	0.0102	0.012	7.6	6.874	109	2	3.7	Test Not Required				
12/31/2010	0.62	0.012	0.012	7.4	6.896	109	2	2	Test Not Required				
01/31/2011	0.4	0.008	0.008	7.4	6.918	53	1	1	Test Not Required				
02/28/2011	0.6	0.012	0.014	7.3	13.44	177	3	5	Test Not Required				
03/31/2011	0.3	0.004	0.004	7	10.686	0	0	0	Test Not Required				
04/30/2011	0.3	0.005	0.005	6.6	9.858	413	6.7	8.8	Test Not Required				
05/31/2011	0.3	0.006	0.008	6.6	7.697	229	4	7	Test Not Required				
06/30/2011	0.4	0.007	0.007	6.6	6.844	Test Not Required			34	42	0.7	1	1
07/31/2011	0.2	0.0045	0.0045	6.6	7.797	Test Not Required			28	56	0.6	1	1.9
08/31/2011	0.51	0.009	0.011	6.5	7.76	Test Not Required			41	57	0.8	1	1.7
09/30/2011	0.3	0.0068	0.0068	6.6	12.914	Test Not Required			42	50	0.8	1	1.8
10/31/2011	0.3	0.006	0.006	6.8	12.23	51	0.9	0.9	Test Not Required				
11/30/2011	0.65	0.009	0.012	7	11.413	283	4.3	6.6	Test Not Required				
12/31/2011	0.8	0.009	0.009	7.2	13.69	91	1.1	1.1	Test Not Required				
01/31/2012	0.4	0.007	0.007	7.2	8.108	63	1.1	1.1	Test Not Required				
02/29/2012	0.5	0.01	0.012	7.1	7.041	50	1	1.4	Test Not Required				
03/31/2012	0.5	0.01	0.012	6.9	7.101	48	0.9	1.2	Test Not Required				
04/30/2012	0.4	0.009	0.009	6.8	7.841	29	0.6	1.2	Test Not Required				
05/31/2012	0.34	0.0063	0.0063	6.8	8.546	71	1	5	Test Not Required				
06/30/2012	0.34	0.007	0.007	6.7	6.714	Test Not Required			30	41	0.6	1	1.1
Existing Permit Limit	1.1	0.016	0.022	8.4	Report	Report	Report	Report	Report	Report	1	1	2
Minimum	0.17	0.004	0.004	6.5	6.576	0	0	0	19	22	0.4	0.4	0.8
Maximum	0.8	0.012	0.014	7.7	13.69	413	6.7	8.8	88	122	1.7	2	3
Average	0.402	0.007	0.008	7.072	8.602	118	2	3	45	63	1	1	2
Standard Deviation	0.153	0.002	0.003	0.405	2.348	108	2	3	22	31	0	1	1
Number of Measurements	25	25	25	25	25	16	16	16	8	8	8	8	8
Number of Exceedences	0	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A	1	2	2

Note: NR = Test N

Monitoring Period End Date	Total Kjeldahl Nitrogen			Total Nitrate			Total Nitrite			Disolved Oxygen	pH		Settleable Solids	
	Average Monthly	Average Monthly	Maximum Daily	Average Monthly	Average Monthly	Maximum Daily	Average Monthly	Average Monthly	Maximum Daily	Minimum	Daily Minimum	Daily Maximum	Average Weekly	Maximum Daily
	lb/day	mg/L	mg/L	lb/day	mg/L	mg/L	lb/day	mg/L	mg/L	mg/L	SU		mg/L	
06/30/2010	152	2.8	2.8	218	4	4	0	0	0	7.61	6.8	7.5	0.6	4
07/31/2010	103	2.1	2.1	190.9	3.9	3.9	0	0	0	7.63	6.9	7.4	0	0
08/31/2010	58	1.3	1.3	228	5.1	5.1	0.9	0.02	0.02	7.52	7	7.4	0	0
09/30/2010	101	2.1	3.1	281	5.8	6.7	36	0.7	0.8	7.43	6.7	7.3	0	0
10/31/2010	131	2.6	2.6	383	7.6	7.6	21	0.4	0.4	7.87	6.7	7.3	0	0
11/30/2010	257	5.5	5.5	252	5.4	5.4	369	7.9	7.9	NR	6.4	7	0	0
12/31/2010	139	2.7	2.7	515	10	10	21	0.41	0.41	NR	6.5	7	0	0
01/31/2011	144	2.7	2.7	336	6.3	6.3	0	0	0	NR	6.5	7	0	1
02/28/2011	146	2.8	2.8	506	9.7	9.7	0	0	0	NR	6.6	7.7	0	0
03/31/2011	834	11	11	137	1.8	1.8	55	0.72	0.72	NR	6.7	7.3	0	0
04/30/2011	311	5.4	5.4	150	2.6	2.6	47	0.8	0.8	8.52	6.8	7.4	0.3	2
05/31/2011	405	6.9	6.9	106	1.8	1.8	23	0.4	0.4	8.16	6.8	7.3	0	0
06/30/2011	149	2.8	2.8	512	9.6	9.6	0	0	0	7.29	6.9	7.4	0	0
07/31/2011	80	1.5	1.5	310	5.8	5.8	0	0	0	7.2	7.1	7.4	0	0
08/31/2011	49	1.2	1.2	408	9.9	9.9	0	0	0	6.57	6.91	7.43	0	0
09/30/2011	72	1.6	1.6	435	9.7	9.7	0	0	0	7.99	6.98	7.33	0	0
10/31/2011	96	1.7	1.7	441	7.8	7.8	0	0	0	8.16	6.56	7.24	0	0
11/30/2011	127	1.5	1.5	931	11	11	0	0	0	NR	6.6	7.3	0	0
12/31/2011	208	2.5	2.5	631	7.6	7.6	14	0.17	0.17	NR	6.5	7	0	0
01/31/2012	159	2.8	2.8	501	8.8	8.8	21	0.37	0.37	NR	6.5	7	0	0
02/29/2012	124	2.3	2.3	593	11	11	0	0	0	NR	6.5	7	0	0
03/31/2012	102	2	2	559	11	11	0	0	0	NR	6.5	6.9	0	0
04/30/2012	101	2.2	2.2	642	14	14	0	0	0	9.21	6.53	7.26	0	0
05/31/2012	141	2.6	2.6	544	10	10	0	0	0	8.34	6.7	7.3	1.3	6.5
06/30/2012	113	2.5	2.9	503	11	13	0	0	0	7.29	6.74	7.26	1.4	6
Existing Permit Limit	Report	Report	Report	Report	Report	Report	Report	Report	Report	Not less than 6 mg/L	6.5	8.3	Report	Report
Minimum	49	1.2	1.2	106	1.8	1.8	0	0	0	6.57	6.4	6.9	0	0
Maximum	834	11	11	931	14	14	369	7.9	7.9	9.21	7.1	7.7	1.4	6.5
Average	172.08	3.004	3.06	412.516	7.648	7.764	24.316	0.476	0.48	7.786	6.697	7.257	0.144	0.78
Standard Deviation	158.979	2.145	2.134	194.412	3.269	3.36	73.586	1.569	1.569	0.642	0.192	0.197	0.386	1.871
Number of Measurements	25	25	25	25	25	25	25	25	25	15	25	25	25	25
Number of Exceedences	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	1	0	N/A	N/A

Note: NR = Test N

Monitoring Period End Date	TSS (April 1 - October 31)					TSS (November 1 - March 31)					Ceriodaphnia Dubia	
	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Acute	Chronic
	lb/day	lb/day	mg/L	mg/L	mg/L	lb/day	lb/day	mg/L	mg/L	mg/L	%	
06/30/2010	375	676	7	13	21	Test Not Required					NR	NR
07/31/2010	245	546	5	11	11	Test Not Required					NR	NR
08/31/2010	163	191	3	4	5	Test Not Required					100	100
09/30/2010	152	257	3	5	5	Test Not Required					NR	NR
10/31/2010	207	239	4	5	6	Test Not Required					NR	NR
11/30/2010	Test Not Required					417	538	8	10	14	100	100
12/31/2010	Test Not Required					628	701	12	12	18	NR	NR
01/31/2011	Test Not Required					620	1435	11	25	30	NR	NR
02/28/2011	Test Not Required					540	511	8	9	16	100	100
03/31/2011	Test Not Required					418	1090	6	13	10	NR	NR
04/30/2011	871	1570	14	23	28	Test Not Required					NR	NR
05/31/2011	684	1048	12	18	33	Test Not Required					100	100
06/30/2011	448	551	9	10	17	Test Not Required					NR	NR
07/31/2011	212	649	5	13	10	Test Not Required					NR	NR
08/31/2011	225	334	5	6	10	Test Not Required					100	100
09/30/2011	216	316	4	5	6	Test Not Required					NR	NR
10/31/2011	268	268	4	4	7	Test Not Required					NR	NR
11/30/2011	Test Not Required					661	994	10	15	21	100	100
12/31/2011	Test Not Required					477	731	7	9	10	NR	NR
01/31/2012	Test Not Required					341	545	6	10	13	NR	NR
02/29/2012	Test Not Required					292	368	6	7	9	100	100
03/31/2012	Test Not Required					224	354	4	6	8	NR	NR
04/30/2012	533	1069	11	18	23	Test Not Required					NR	NR
05/31/2012	652	913	12	18	40	Test Not Required					100	100
06/30/2012	748	1497	16	31	58	Test Not Required					NR	NR
Existing Permit Limit	1401	1401	20	20	Report	2102	3153	30	45	Report	>100	>24
Minimum	152	191	3	4	5	224	354	4	6	8	100	100
Maximum	871	1570	16	31	58	661	1435	12	25	30	100	100
Average	400	675	8	12	19	462	727	8	12	15	100	100
Standard Deviation	240	453	4	8	15	150	348	3	5	7	0	0
Number of Measurements	15	15	15	15	15	10	10	10	10	10	8	8
Number of Exceedences	0	2	0	2	N/A	0	0	0	0	N/A	0	0

Note: NR = Test N

Taunton WWTP
NPDES Permit No. MA 0100897

Table 11
Metals Effluent Data and Criteria Calculations

	Effluent Analytical Data (ug/l total recoverable metal)						Receiving Water Analytical Data (ug/l total recoverable)					
	Hardness	**Al**	**Cd**	**Ni**	**Pb**[1]	**Zn**	**Hardness**	**Al**	**Cd**[1]	**Ni**	**Pb**	**Zn**
February-08	72	ND-20	ND-0.5	ND-3	ND-0.5		34	110	ND-0.5	ND-2	1	
May-08	120	28	ND-0.5	3	ND-0.5	40	34	110	ND-0.5	ND-2	1.5	24
August-08	100	70	ND-0.5	3	1	40	59	60	ND-0.5	ND-2	1	12
November-08	67	30	ND-0.5	2	0.5	35	33	ND-20	ND-0.5	ND-2	2	20
February-09	67	40	ND-0.5	3	1	50	34	140	ND-0.5	ND-2	2*	24*
May-09	87	30	ND-0.5	3	ND-0.5	27	31	180	ND-0.5	ND-2	1	14
August-09	87	ND-20	ND-0.5	3	ND-0.5	22	41	100	ND-0.5	ND-2	1.4	18
November-09	65	30	ND-0.5	4	0.6	14	35	140	ND-0.5	ND-2	1	11
February-10	61	ND-20	ND-0.5	4	0.6	28	33	ND-20	ND-0.5	ND-2	0.9	21
May-10	110	28	ND-0.5	3	0.9	58	27	170	ND-0.5	ND-2	2	21
August-10	160	ND-20	ND-0.5	3	ND-0.5	28	46	130	ND-0.5	ND-2	2	7
November-10	65	45	ND-0.5	3	0.5	25	39	200	3	24	2	13
February-11	66	29	ND-0.5	3	ND-0.5	27	37	130	0.6	ND-2	1	15
May-11	93	38	ND-0.5	3	0.6	9	36	160	ND-0.5	ND-2	1	6
August-11	96	27	ND-0.5	3	ND-0.5	20	39	130	ND-0.5	ND-2	2	14
Median	87	30	ND	3.0	ND	28	35	130	ND	24.0	1.2	14.0
95th percentile		53	ND	3.9	1.0	61						
99th percentile		67	ND	4.3	1.3	85						
Marine water												
Chronic Criterion		NA	8.80	8	8.1	81						
Acute Criterion		NA	40.00	74	210	90						

1 95th and 99th percentile calculated using adjustment for non-detects as set forth in Technical Support Document for Water Quality Based Toxics Control (1991)

To estimate the TN load to the Taunton River Estuary, the USGS LOADEST computer modeling program was used. This program develops a number of regression equations correlating constituent concentration and streamflow based on an input calibration file listing corresponding data points of these two variables. For each regression equation, three different models are used to estimate the average summer load based on the summer flow record. The first, Adjusted Maximum Likelihood Estimation (AMLE), and the second, Maximum Likelihood Estimation (MLE) are applicable when the calibration model errors, or "residuals," are normally distributed. Normality is determined by the Turnbull-Weiss test. These two estimations will be the same unless there are any censored data points, in which case the AMLE estimate is more accurate. The third model, Least Absolute Deviation (LAD), is used for non-normally distributed data.

The average summer TN load to the Taunton River at Weir Village, as well as to the four tributaries downstream from this point, were modeled by LOADEST using nitrogen concentration data from the Mount Hope Bay Monitoring Program and 2004 and 2005 daily streamflow data either measured by USGS gages, or adjusted proportionally based on drainage area. For days on which more than one concentration was measured, the average concentration was used in the LOADEST calibration file. Days on which the streamflow was 0 cfs were excluded from the dataset.

For all load estimations the best regression equation was automatically selected by the program based on the Akaike Information Criteria (AIC) value. In calculating the summer loads, the regression equation was selected based on the full year of monitoring data (i.e., the equation used to calculate the summer 2004 loads was selected based on a calibration dataset of the entire year 2004 monitoring data).

As described earlier, LOADEST gives load estimations based on three different models. If the calibration residuals were distributed normally, the Maximum Likelihood Estimation (MLE) was chosen. Otherwise, the Least Absolute Deviation (LAD) estimation was chosen. The calibration residuals were considered normal if the p-value of the Turnbull Weiss test was greater than 0.05.

Taunton River at Weir Village	
Year	Load Est. (lb/d)
2004	2659
2005	2289

Three Mile River	
Year	Load Est. (lb/d)
2004	547
2005	403

Segreganset River	
Year	Load Est. (lb/d)
2004	35
2005	34

Assonet River	
Year	Load Est. (lb/d)
2004	49
2005	51

Quequechan River	
Year	Load Est. (lb/d)
2004	85
2005	112

Sum of Loads (lb/d)	
2004	3375
2005	2889

Nitrogen Attenuation

As a result of chemical and biological processes, not all of the nitrogen discharged from each point source reaches the estuary. To determine the delivered nitrogen load, attenuation from each point source was calculated. The governing equation is:

$$L_f = L_i * e^{-kt} \text{ ; where}$$

L_f = the delivered load;
L_i = discharged load;
k = attenuation coefficient; and
t = travel time in days.

Attenuation calculations have been estimated in a number of studies for smaller order streams but generally do not reflect the effluent-dominated stream conditions encountered downstream of the Brockton AWRF (DF (dilution factor) = 1.02) and, to a lesser extent, the Bridgewater (DF 2.2), Mansfield (DF 2.2) and Middleboro (DF 1.9) WWTPs. For example, attenuation coefficients for small streams are given by the NE SPARROW models. Moore et al., *Estimation of Total Nitrogen and Phosphorus in New England Streams Using Statistically Referenced Regression Models*, USGS SIR-2004-5012. The NE SPARROW model indicates that no attenuation would be expected in the Taunton River mainstem, but that the tributaries (with flows ≤ 100cfs) are given an attenuation coefficient of 0.77 day^{-1}.

For the Brockton AWRF, attenuation calculations based on regional regression equations were determined to be insufficient. Using the above analysis with SPARROW regression coefficients, the calculated attenuation of the Brockton AWRF discharge under summer flow conditions is predicted to be approximately 30%. EPA determined that this figure was unreliable for the following reasons:

(1) Use of a 30% attenuation factor for Brockton's load to allocate the total loads at Weir Village from the LOADEST analysis resulted in an implausibly large nonpoint source load per square mile compared to the other tributaries. This would indicate that the point source component of the load is being understated; the likeliest explanation for that is that attenuation of Brockton's load is overstated.[1]

[1] To explain further, monitoring of the Taunton River at Weir Village indicates an average summer load for 2004-05 of 2,474 lbs/day. If the Brockton discharge of 1,303 lbs/day is assumed to be reduced by 30% through attenuation, then 912 lbs/day of the load at Weir Village is due to Brockton. Other WWTPs contribute 330 lbs/day, leaving 1,232 lbs/day attributable to nonpoint sources. Given the drainage area above Weir Village of 358 square miles, this gives an estimated summer nonpoint source loading of 3.4 lbs/day/sq.mi. This is significantly greater than the areal nonpoint source loading found at any other monitoring site in the Mount Hope Bay Monitoring Program, including the Quequechan River (which drains the City of Fall River) as well as the Ten Mile, Assonet and Segreganset Rivers.

(2) Nitrogen data collected by CDM for the Brockton AWRF receiving water study, although not collected for the purposes of attenuation calculations, do not appear to be consistent with significant in-stream attenuation.[2]

(3) The extremely effluent-dominated conditions downstream of the Brockton AWRF discharge are likely outside of the range of conditions used in developing the SPARROW regional regression equations.[3,4]

Because of the large impact of Brockton's discharge on the loading analysis, EPA determined that an improved attenuation estimate was necessary for this analysis, and therefore conducted a monitoring study including sampling and streamflow measurements in the summer of 2012, in order to determine an attenuation rate for Brockton's discharge.

The Matfield River Monitoring Study utilized a Lagrangian sampling program modelled on USGS, *Lagrangian Sampling of Wastewater Treatment Plant Effluent in Boulder Creek, Colorado, and Fourmile Creek, Iowa*, Open File Report 2011-1054 (2011), based on following the same "packet" of water downstream from the AWRF and sampling downstream based on calculated time of travel from the AWRF. Samples were taken at one upstream and four downstream locations on the Salisbury Plain and Matfield Rivers, as well as the two major tributaries (Beaver Brook and Meadow Brook) and the AWRF discharge, and streamflow was measured at three downstream locations. Sampling locations are shown on Figure B-1.

The furthest downstream station (MATF08) was located at the former USGS streamgage site on the Matfield River at Elmwood (USGS 01106500). Time of travel to this site was based on 15-minute streamflow data provided by USGS for summer months prior to discontinuance of data collection at the streamgage in October 2009. These show a clear pattern of influence from the Brocton AWRF's diurnal discharge variation. Figure B-2 shows two 24-hour streamflow records from September 2009 at relatively low (chart A)

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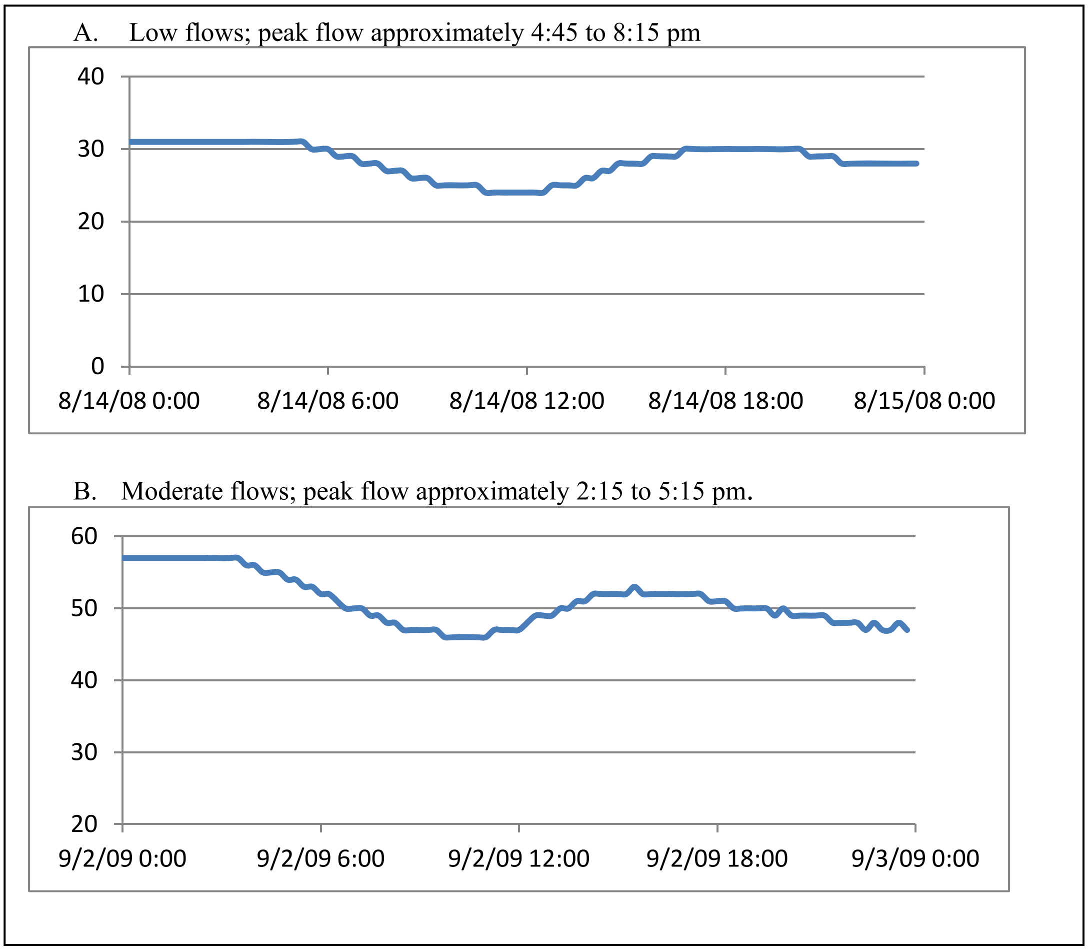
[2] For example, total nitrogen concentrations at the site of the discontinued USGS gage on the Matfield (CDM's station BR1-08) were within 5% of the concentrations found over 4 miles upstream on the Salisbury Plain River (CDM Station BR1-03), indicating on a qualitative level that little attuenuation is occurring once the additional dilution resulting from the confluence of Beaver Brook, Meadow Brook and other minor tributaries and baseflow is accounted for.

[3] Furthermore, the SPARROW regression equations themselves indicate that more wastewater load is passing thought the system than would be indicated by the discharge loads and attenuation coefficient. For the predictor variable 'municipal wastewater facilities' the regression coefficient is 1.11, so that the regression model predicts 11% more in-stream load from WWTPs than is actually discharged. That is, direct application of the SPARROW model would require that Brockton's load be inflated by 11% before applying the attenuation factor in order to calculate Brockton's contribution to the delivered flow.

[4] Available literature also indicates the potential for significant reduction in attenuation rates under high nitrogen concentrations. See Alexander et al, Dynamic modeling of nitrogen losses in river networks unravels the coupled effects of hydrological and biogeochemical processes, *Biogeochemistry* 93:91–116 (2009).

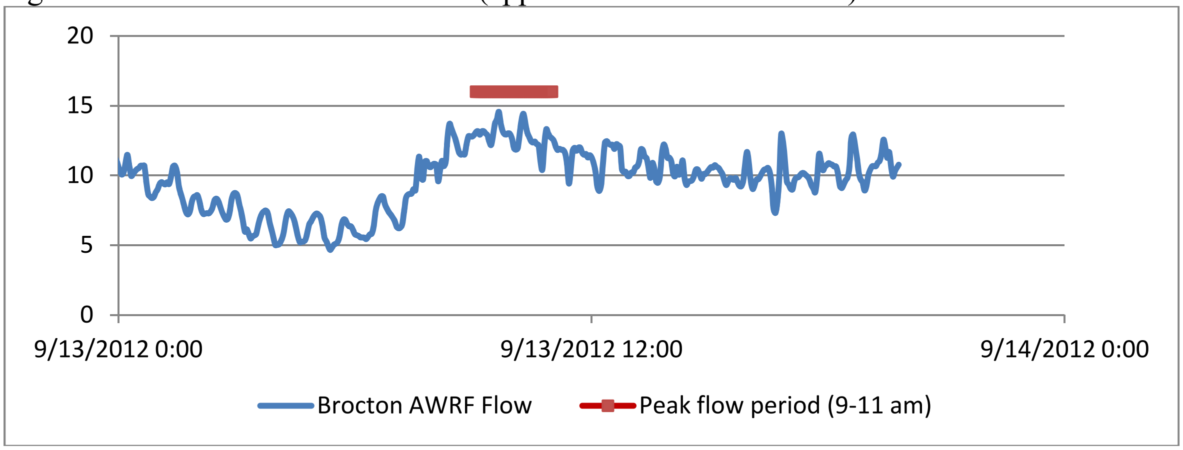
and moderate (chart B) flows. These show a distinct diurnal flow pattern, consistent with wastewater discharges, and a delayed and more spread out pattern under lower flow conditions, consistent with lower stream velocities under those conditions. The time of travel for individual days was determined by comparison of the daily streamflow pattern with the Brocton AWRF discharge data from the facility's SCADA system (measurements approximately every 3 minutes; an example is shown at Figure B-3). Time of travel to the intermediate sites was assumed to be proportional to time of travel to MATF08, based on the distance in river miles to each site.

Figure B-2. USGS 01106500, Matfield River at Elmwood, 15-minute flow data



As can be seen from the Brockton AWRF SCADA data, there is considerable short term variability in the AWRF discharge rate. As explained by the facility, this is due to the interaction of the various pump operations related to facility discharge and is inherent in the operation of the facility. While this variability will tend to dissipate as the plume moves downstream (see smoother pattern in 15-min data from the USGS gage downstream), there is potential for initial load calculations, and thus the attenuation factor, to vary on the order of 5-8% in the short term (on the order of 3 minutes). A time of travel analysis is not expected to be sufficiently precise to capture the exact packet of discharge within the sub-3 minute variability of the discharge. Therefore the analysis focused of following the peak period of Brockton's flows, approximately 9 to 11 a.m. While this provides a lower level of precision than would be ideal, it is sufficient that attenuation on the order of 30% (as predicted using regional regression models) would be apparent.

Figure B-3. Brockton AWRF Flows (approx. 3-min SCADA data)



Monitoring data from sampling stations on the Salisbury Plain and Matfield River are shown in Table B-1. On two of the sampling dates, instream total nitrogen concentrations increase slightly as sampling moves downstream, inconsistent with significant attenuation of nitrogen under those flow conditions (these are the two lowest flow dates). These increases could indicate instream release of nitrogen under low flow conditions. In contrast, in the August sampling a significant reduction in total nitrogen concentration occurred between sites 5 and 8. In general, the reach between sites 5 and 8 saw the most variability, with both load increases and one day of significant load decrease recorded between the two sites. This is likely due to the extensive wetland system the river passes through between these two stations, which appear to provide potential for sizeable release as well as uptake of nitrogen discharges. EPA notes that results showing widely variation attenuation rates under different stream conditions are consistent with the available literature (see, e.g. Smith et al., Nitrogen attenuation in the Connecticut River, northeastern USA; a comparison of mass balance and N2 production modeling approaches, *Biogeochemistry* 87, 311-323 (2008) (differing attenuation in April (zero in both reaches) from August (zero in southern reach, 18% in northern reach)); Vanderburg et al., Field Evaluation of Mixing Length and Attenuation of Nutrients and Fecal Coliform in a Wastewater Effluent Plume, Environmental Monitoring and Assessment (2005) 107: 45–57 (2005) ("Nitrate attenuation is markedly different between the two sampling events.").

Table B-1

Station	Distance Downstream from AWRF (ft)	6/18/2012		7/9/2012		8/13/2012		9/13/2012	
		Flow (cfs)	TN (mg/l)	Flow (cfs)	TN (mg/l)	Flow (cfs)	TN (mg/l)	Flow (cfs)	TN (mg/l)
SALP01	-200	--	1.67	--	2.13	--	1.67	--	1.53
AWRF	0	25.2	4.22	18.3	4.32	22.1	4.82	19.9	4.00
SALP03	6644	37.4	3.26	26.0	3.21	42.2	3.32	25.2	3.43
MATF05	17288	42.1	2.79	26.8	3.22	55.3	2.82	25.8	3.51
MATF08[1]	28742	46.0	3.09	27.7	3.40	63.0	1.64	26.7	3.82

[1] Flow at MATF08 determined from USGS staff gage and most recent shifted rating curve for June, August and September sampling dates. Direct streamflow measurements on 7/9/12 and early morning on 9/13/12 used to confirm shifted rating curve, which is considered highly provisional by USGS since discontinuance of site as active USGS streamgage.

Load reduction percentages were calculated for each sampling station on the Salisbury Plain/Matfield Rivers for each monitoring data and are shown in Table B-2. In general load reductions are on the order of a few percent and, given the uncertainty in the analysis, are consistent with either zero attenuation or a low level of attenuation in the system on all sampling dates but August 13 (when significant attenuation is shown). These calculations indicate that, averaged over the summer, there is attenuation of nitrogen taking place downstream of the AWRF discharge. Average attenuation over the summer for the three reaches were combined to determine a cumulative attenuation percentage from the AWRF to Station MATF08 of 7%. This corresponds to an attenuation coefficient k of 0.28 day^{-1}.

An alternative approach to estimating attenuation from these data was also applied as a qualitative check on this analysis, using chloride concentrations to assess relative changes in TN concentrations using the approach of Vanderburg et al. (2005). This approach uses chloride concentration to determine dilution of the nitrogen discharge, then compares TN predicted based purely on dilution to the measured concentration to determine whether attenuation of nitrogen has occurred. Results using the approach are generally consistent with the above analysis, with no attenuation shown on sampling dates other than August 13.[5]

[5] The chlorides analysis was not used to assess attenuation upstream of site 3 due to the nearly identical chloride concentration of the discharge and upstream flow, which prevents dilution analysis based on chloride concentration.

Table B-2

	6/18/2012			7/9/2012			8/13/2012			9/13/2012		
	Flow (cfs)	TN (mg/l)	Load	Flow (cfs)	TN (mg/l)	Load	Flow (cfs)	TN (mg/l)	Load	Flow (cfs)	TN (mg/l)	Load
Input Loads												
Brockton AWRF	25.2	4.2	572	18.3	4.3	425	22.1	4.8	572	19.9	4.0	428
Upstream of SALP03[1]	12.2	1.7	110	7.8	2.1	89	20.1	1.7	181	5.3	1.5	44
			682			**514**			**753**			**472**
Output Load												
Total load at SALP03	37.4	3.26	**656**	26.0	3.21	**450**	42.2	3.32	**754**	25.2	3.43	**465**
Attenuation percent			**4%**			**12%**			**0%**			**1%**

[1] Flow upstream calculated from flow at SALP03 minus Brockton AWRF flow; concentration upstream from Salisbury Plain River at SALP01, representing 82% of watershed at SALP03.

	6/18/2012			7/9/2012			8/13/2012			9/13/2012		
	Flow (cfs)	TN (mg/l)	Load	Flow (cfs)	TN (mg/l)	Load	Flow (cfs)	TN (mg/l)	Load	Flow (cfs)	TN (mg/l)	Load
Input Loads												
Load at SALP03	37.4	3.3	656.1	26.0	3.2	449.6	42.2	3.3	754.1	25.2	3.4	465.1
Load added between SALP03 and MATF05	4.7	1.0	25	0.7	1.4	5	13.1	1.5	106	0.7	1.0	3
			681			**455**			**860**			**468**
Output Load												
Total load at SALP05	42.1	2.785	**632**	26.8	3.22	**464**	55.3	2.82	**839**	25.8	3.51	**488**
Attenuation percent			**7%**			**-2%**			**2%**			**-4%**

[2] Flow input between SALP03 and SALP05 calculated from flow at SALP05 minus flow at SALP03; concentration of input flow based on concentration of Beaver Brook at BEAB04, representing 91% of additional watershed betwee SALP03 and SALP05.

	6/18/2012			7/9/2012			8/13/2012			9/13/2012		
	Flow (cfs)	TN (mg/l)	Load	Flow (cfs)	TN (mg/l)	Load	Flow (cfs)	TN (mg/l)	Load	Flow (cfs)	TN (mg/l)	Load
Input Loads												
Load at SALP03	42.1	2.8	632.0	26.8	3.2	464.0	55.3	2.8	839.1	25.8	3.5	488.4
Load added between MATF05 and MATF08	3.9	1.6	34	1.0	1.7	9	7.7	2.8	117	0.9	1.5	7
			666			**473**			**956**			**495**
Output Load												
Total load at SALP08[3]	46	3.085	**765**	27.7	3.40	**508**	63	1.64	**555**	26.7	3.82	**549**
Attenuation percent			**-15%**			**-7%**			**42%**			**-11%**

[3] Flow input between SALP08 and SALP05 calculated from flow at SALP08 minus flow at SALP05; concentration of input flow based on concentration of Meadow Brook at MEBR06, representing 77% of additional watershed betwee SALP05 and SALP08

Reach	**Average attenuation in reach**	**Cumulative attenuation**	**Cumulative delivery factor**	**k (1/day)**
Upstream of SAPB03	4%	4%	96%	
Between SALP03 and MATF05	1%	5%	95%	
Between MATF05 and MATF08	2%	7%	93%	0.28

The calculated value of k (0.28 day^{-1}) was used to determine the delivery factor for the Brockton AWRF and for the Bridgewater, Mansfield and Middleborough WWTPs that also discharge to effluent-dominated streams. For the small facilities discharging to tributaries the New England SPARROW attenuation coefficient was applied. Travel time from each point source to the Taunton River, was calculated using river distance and a calculated average summer velocity,[6] Table B-3 shows the river distance, average velocity, travel time and percent load delivered for each facility.

Table B-3

Facility	River distance on tributary (ft)	Average velocity (fps)	Travel Time (days)	Percent of load delivered
Oak Point	9,613	0.67	0.17	88
MCI Bridgewater	7,665	0.67	0.13	90
Brockton	44,135	1.23	0.42	89
Bridgewater	13,015	1.04	0.14	96
Dighton-Rehoboth Schools	53,385	0.79	0.78	55
Mansfield	62,503	1.1	0.66	83
Middleboro	27,608	1.05	0.30	92
Wheaton College	81,449	1.1	0.86	52
East Bridgewater H.S.	22,976	0.99	0.27	81

EPA notes that the results of this field work confirm the complex nature of nitrogen cycling in the Salisbury Plain and Matfield River, and that continued work developing a water quality model of the Salisbury Plain and Matfield Rivers as contemplated by MassDEP and USGS would assist in informing this analysis and any future TMDL

[6] Annual average velocities by reach were obtained from the National Hydrography Dataset (NHDPlus), and were used to calculate the average summer velocity based on the following relationship from Jobson, H.E., 1996, *Prediction of traveltime and longitudinal dispersion in rivers and streams*: U.S. Geological Survey Water-Resources Investigations Report 96-4013 (equation 12).

$$V_p = 0.094 + 0.0143 \times (D'_a)^{0.919} \times (Q'_a)^{-0.469} \times S^{0.159} \times \frac{Q}{D_a}.$$

Where $Q'_a = Q/Qa$
Q = summer average flow
Qa = annual average flow
Da = Drainage area

$$D'_a = \frac{D_a^{1.25} \times \sqrt{g}}{Q_a}$$

The NHDPlus average annual velocities were calculated using the Jobson equation where Q=Qa. The Jobson equation can be used to derive a relationship between summer average and annual average velocity:

$$V_{summer} = 0.094 + (V_{annual} - 0.094) * (Q/Qa)^{0.531}$$

This equation was used to calculate average summer flows for each reach in NHDPlus.

analysis, particularly with respect to attenuation under differing loads as upgrades are implemented. However, at this time no modeling effort is ongoing, and the attenuation analysis performed by EPA is the best available information upon which to develop this permit limit. EPA also notes that the permit limit for the Taunton facility of 3.0 mg/l would remain the same under a wide range of assumptions regarding attenuation of the Brockton discharge. For example, the Fact Sheet notes that, using the 7% attenuation figure, if a uniform permit limit were applied to all facilities in the watershed it would have to be less than 3.5 mg/l. For comparison, if it were assumed that there is zero attenuation of Brockton's discharge, the resulting uniform permit limit would be only slightly higher (approximately 3.7). On the other hand, if the attenuation factor was doubled (approximately 21% attenuation), a permit limit between 3.1 and 3.2 mg/l would need to be applied. (Required permit limits are more stringent if greater attenuation is assumed. This is because the attenuation factor is used in calculating how much of the measured load is from nonpoint sources; a higher attenuation rate means more load is attributed to the (more difficult to control) nonpoint sources, so that greater reduction from point sources is needed to meet the same total load target). As discussed in the Fact Sheet, since the highest possible permit limit is less than 4, and the Taunton WWTP is the second largest discharge and is a direct discharger to the estuary, a permit limit of 3.0 mg/l would still be applied.

EPA REGION 1 NPDES PERMITTING APPROACH FOR PUBLICLY OWNED TREATMENT WORKS THAT INCLUDE MUNICIPAL SATELLITE SEWAGE COLLECTION SYSTEMS

This interpretative statement provides an explanation to the public of EPA Region 1‘s interpretation of the Clean Water Act (―CWA” or ―Act”) and implementing regulations, and advises the public of relevant policy considerations, regarding the applicability of the National Pollutant Discharge Elimination System (―NPDES”) program to publicly owned treatment works (―POTWs”) that are composed of municipal satellite sewage collection systems owned by one entity and treatment plants owned by another (―regionally integrated POTWs”). When issuing NPDES permits to these types of sanitary sewer systems, it is EPA Region 1‘s practice to directly regulate, as necessary, the owners/operators of the municipal satellite collection systems through a co-permitting structure. This interpretative statement is intended to explain, generally, the basis for this practice. In determining whether to include municipal satellite collection systems as co-permittees in any particular circumstances, Region 1‘s decision will be made by applying the law and regulations to the specific facts of the case before the Region.

EPA has set out a national policy goal for the nation‘s sanitary sewer systems to adhere to strict design and operational standards:

> ―Proper [operation and maintenance] of the nation‘s sewers is integral to ensuring that wastewater is collected, transported, and treated at POTWs; and to reducing the volume and frequency of …[sanitary sewer overflow] discharges. Municipal owners and operators of sewer systems and wastewater treatment facilities need to manage their assets effectively and implement new controls, where necessary, as this infrastructure continues to age. Innovative responses from all levels of government and consumers are needed to close the gap.”[1]

Because ownership/operation of a regionally integrated POTW is sometimes divided among multiple parties, the owner/operator of the treatment plant many times lacks the means to implement comprehensive, system-wide operation and maintenance (―O & M”) procedures. Failure to properly implement O & M measures in a POTW can cause, among other things, excessive extraneous flow (*i.e.*, inflow and infiltration) to enter, strain and occasionally overload treatment system capacity. This failure not only impedes EPA‘s national policy goal concerning preservation of the nation‘s wastewater infrastructure assets, but also frustrates achievement of the water quality- and technology-based requirements of CWA § 301 to the extent it results in sanitary sewer overflows and degraded treatment plant performance, with adverse impacts on human health and the environment.

In light of these policy objectives and legal requirements, it is Region 1‘s permitting practice to subject all portions of the POTW to NPDES requirements in order to ensure that the treatment system as a whole is properly operated and maintained and that human health and water quality impacts resulting from excessive extraneous flow are minimized. The approach of addressing

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[1] *See Report to Congress: Impacts and Control of CSOs and SSOs* (EPA 833-R-04-001) (2004), at p. 10-2. *See also* ―1989 National CSO Control Strategy,” 54 Fed. Reg. 37371 (September 8, 1989).

O&M concerns in a regionally integrated treatment works by adding municipal satellite collection systems as co-permittees is consistent with the definition of ―publicly owned treatment works," which by definition includes sewage collection systems. Under this approach, the POTW in its entirety will be subject to NPDES regulation as a point source discharger under the Act. Region 1‘s general practice will be to impose permitting requirements applicable to the POTW treatment plant along with a more limited set of conditions applicable to the connected municipal satellite collection systems.

The factual and legal basis for the Region‘s position is set forth in greater detail in *Attachment A*.

Attachment A

ANALYSIS SUPPORTING EPA REGION 1
NPDES PERMITTING APPROACH FOR PUBLICLY OWNED TREATMENT WORKS THAT INCLUDE MUNICIPAL SATELLITE SEWAGE COLLECTION SYSTEMS

Exhibit A	List of POTW permits that include municipal satellite collection systems as co-permittees
Exhibit B	Analysis of extraneous flow trends and SSO reporting for representative systems
Exhibit C	Form of Regional Administrator‘s waiver of permit application requirements for municipal satellite collection systems

Introduction

On May 28, 2010, the U.S. EPA Environmental Appeals Board (―Board”) issued a decision remanding to the Region certain NPDES permit provisions that included and regulated satellite collection systems as co-permittees. *See In re Upper Blackstone Water Pollution Abatement District*, NPDES Appeal Nos. 08-11 to 08-18 & 09-06, 14 E.A.D. __ (*Order Denying Review in Part and Remanding in Part*, EAB, May 28, 2010).[2] While the Board ―did not pass judgment” on the Region‘s position that its NPDES jurisdiction encompassed the entire POTW and not only the treatment plant, it held that ―where the Region has abandoned its historical practice of limiting the permit only to the legal entity owning and operating the wastewater treatment plant, the Region had not sufficiently articulated in the record of this proceeding the statutory, regulatory, and factual bases for expanding the scope of NPDES authority beyond the treatment plant owner/operator to separately owned/operated collection systems that do not discharge directly to waters of the United States, but instead that discharge to the treatment plant.” *Id., slip op***.** at 2, 18. In the event the Region decided to include and regulate municipal satellite collection systems as co-permittees in a future permit, the Board posed several questions for the Region to address in the analysis supporting its decision:

> (1) In the case of a regionally integrated POTW composed of municipal satellite collection systems owned by different entities and a treatment plant owned by another, is the scope of NPDES authority limited to owners/operators of the POTW treatment plant, or does the authority extend to owners/operators of the municipal satellite collection systems that convey wastewater to the POTW treatment plant?
>
> (2) If the latter, how far up the collection system does NPDES jurisdiction reach, *i.e.*, where does the ―collection system” end and the ―user” begin?

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[2] The decision is available on the Board‘s website via the following link: http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/30b93f139d3788908525706c005185b4/34e841c87f346d94852577360068976f!OpenDocument.

(3) Do municipal satellite collection systems ―discharge [ ] a pollutant" within the meaning of the statute and regulations?

(4) Are municipal satellite collection systems ―indirect dischargers" and thus excluded from NPDES permitting requirements?

(5) Is the Region's rationale for regulating municipal satellite collection systems as co-permittees consistent with the references to ―municipality" in the regulatory definition of POTW, and the definition's statement that ―[t]he term also means the municipality…which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works"?

(6) Is the Region's rationale consistent with the permit application and signatory requirements under NPDES regulations?

See *Blackstone, slip op***.** at 18, 20, n. 17.

This regional interpretative statement is, in part, a response to the Board's decision. It details the legal and policy bases for regulating publicly owned treatment works (―POTWs") that include municipal satellite collection systems through a co-permittee structure. Region 1's analysis is divided into five sections. First, the Region provides context for the co-permitting approach by briefly describing the health and environmental impacts associated with poorly maintained sanitary sewer systems. Second, the Region outlines its evolving permitting practice regarding regionally integrated POTWs, particularly its attempts to ensure that such entity's municipal satellite collection systems are properly maintained and operated. Third, the Region explains the legal authority to include municipal satellite collection systems as co-permittees when permitting regionally integrated POTWs. In this section, the Region answers the questions posed by the Board in the order presented above. Fourth, the Region sets forth the basis for the specific conditions to which the municipal satellite collection systems will be subject as co-permittees. Finally, the Region discusses other considerations informing its decision to employ a co-permittee structure when permitting regionally integrated POTWs.

I. Background

A sanitary sewer system (SSS) is a wastewater collection system owned by a state or municipality that conveys domestic, industrial and commercial wastewater (and limited amounts of infiltrated groundwater and some storm water runoff) to a POTW.[3] *See* 40 C.F.R. § 35.2005(b)(37) (defining ―sanitary sewer"). The purpose of these systems is to transport wastewater uninterrupted from its source to a treatment facility. Developed areas that are served by sanitary sewers often also have a separate storm sewer system (*e.g.*, storm drains) that collects and conveys runoff, street wash waters and drainage and discharges them directly to a receiving

[3] *See generally* Report to Congress: Impacts and Control of CSOs and SSOs (EPA 833-R-04-001) (2004), from which EPA Region 1 has drawn this background material.

water (*i.e.*, without treatment at a POTW). While sanitary sewers are not designed to collect large amounts of runoff from precipitation events or provide widespread drainage, they typically are built with some allowance for higher flows that occur during periods of high groundwater and storm events. They are thus able to handle minor and controllable amounts of extraneous flow (*i.e.*, inflow and infiltration, or I/I) that enter the system. Inflow generally refers to water other than wastewater—typically precipitation like rain or snowmelt—that enters a sewer system through a direct connection to the sewer. Infiltration generally refers to other water that enters a sewer system from the ground, for example through defects in the sewer.

Municipal sanitary sewer collection systems can consist of a widespread network of pipes and associated components (*e.g.*, pump stations). These systems provide wastewater collection service to the community in which they are located. In some situations, the municipality that owns the collector sewers may not provide treatment of wastewater, but only conveys its wastewater to a collection system that is owned and operated by a different municipal entity (such as a regional sewer district). This is known as a satellite community. A ―satellite" community is a sewage collection system owner/operator that does not have ownership of the treatment facility and the wastewater outfall but rather the responsibility to collect and convey the community‘s wastewater to a POTW treatment plant for treatment. *See* 75 Fed. Reg. 30395, 30400 (June 1, 2010).

Municipal sanitary sewer collection systems play a critical role in protecting human health and the environment. Proper operation and maintenance of sanitary sewer collection systems is integral to ensuring that wastewater is collected, transported, and treated at POTW treatment plants. Through effective operation and maintenance, collection system operators can maintain the capacity of the collection system; reduce the occurrence of temporary problem situations such as blockages; protect the structural integrity and capacity of the system; anticipate potential problems and take preventive measures; and indirectly improve treatment plant performance by minimizing I/I-related hydraulic overloading.

Despite their critical role in the nation‘s infrastructure, many collection systems exhibit poor performance and are subjected to flows that exceed system capacity. Untreated or partially treated overflows from a sanitary sewer system are termed ―sanitary sewer overflows" (SSOs). SSOs include releases from sanitary sewers that reach waters of the United States as well as those that back up into buildings and flow out of manholes into city streets.

There are many underlying reasons for the poor performance of collection systems. Much of the nation‘s sanitary sewer infrastructure is old, and aging infrastructure has deteriorated with time. Communities also sometimes fail to provide capacity to accommodate increased sewage delivery and treatment demand from increasing populations. Furthermore, institutional arrangements relating to the operation of sewers can pose barriers to coordinated action, because many municipal sanitary sewer collection systems are not entirely owned or operated by a single municipal entity.

The performance and efficiency of municipal sanitary sewer collection systems influence the performance of sewage treatment plants. When the structural integrity of a municipal sanitary sewer collection system deteriorates, large quantities of infiltration (including rainfall-induced infiltration) and inflow can enter the collection system, causing it to overflow. These extraneous flows are among the most serious and widespread operational challenges confronting treatment works.[4]

Infiltration can be long-term seepage of water into a sewer system from the water table. In some systems, however, the flow characteristics of infiltration can resemble those of inflow, *i.e.*, there is a rapid increase in flow during and immediately after a rainfall event, due, for example, to rapidly rising groundwater. This phenomenon is sometimes referred to as rainfall-induced infiltration.

Sanitary sewer systems can also overflow during periods of normal dry weather flows. Many sewer system failures are attributable to natural aging processes or poor operation and maintenance. Examples include years of wear and tear on system equipment such as pumps, lift stations, check valves, and other moveable parts that can lead to mechanical or electrical failure; freeze/thaw cycles, groundwater flow, and subsurface seismic activity that can result in pipe movement, warping, brittleness, misalignment, and breakage; and deterioration of pipes and joints due to root intrusion or other blockages.

Inflow and infiltration impacts are often regional in nature. Satellite collection systems in the communities farthest from the POTW treatment plant can cause sanitary sewer overflows (“SSOs”) in communities between them and the treatment plant by using up capacity in the interceptors. This can cause SSOs in the interceptors themselves or in the municipal sanitary sewers that lead to them. The implication of this is that corrective solutions often must also be regional in scope to be effective.

The health and environmental risks attributed to SSOs vary depending on a number of factors including location and season (potential for public exposure), frequency, volume, the amount and type of pollutants present in the discharge, and the uses, conditions, and characteristics of the receiving waters. The most immediate health risks associated with SSOs to waters and other areas with a potential for human contact are associated with exposure to bacteria, viruses, and other pathogens.

Human health impacts occur when people become ill due to contact with water or ingestion of water or shellfish that have been contaminated by SSO discharges. In addition, sanitary sewer systems can back up into buildings, including private residences. These discharges provide a direct pathway for human contact with untreated wastewater. Exposure to land-based SSOs typically occurs through the skin via direct contact. The resulting diseases are often similar to those associated with exposure through drinking water and swimming (*e.g.*, gastroenteritis), but may also include illness caused by inhaling microbial pathogens. In addition to pathogens, raw sewage may contain metals, synthetic chemicals, nutrients, pesticides, and oils, which also can be detrimental to the health of humans and wildlife.

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[4] In a 1989 Water Pollution Control Federation survey, 1,003 POTWs identified facility performance problems. Infiltration and inflow was the most frequently cited problem, with 85 percent of the facilities reporting I/I as a problem. I/I was cited as a major problem by 41 percent of the facilities (32 percent as a periodic problem).

II. Region 1 Past Practice of Permitting POTWs that Include Municipal Satellite Collection Systems

Region 1's practice in permitting regionally integrated POTWs has developed in tandem with its increasing focus on addressing I/I in sewer collection systems, in response to the concerns outlined above. Up to the early 1990s, POTW permits issued by Region 1 generally did not include specific requirements for collection systems. When I/I and the related issue of SSOs became a focus of concern both nationally and within the region in the mid-1990s, Region 1 began adding general requirements to POTW permits that required the permittees to ―eliminate excessive infiltration and inflow" and provide an annual ―summary report" of activities to reduce I/I. As the Region gathered more information and gained more experience in assessing these reports and activities, it began to include more detailed requirements and reporting provisions in these permits.

MassDEP also engaged in a parallel effort to address I/I, culminating in 2001 with the issuance of MassDEP Policy No. BRP01-1, ―Interim Infiltration and Inflow Policy." Among other provisions, this policy established a set of standard NPDES permit conditions for POTWs that included development of an I/I control plan (including funding sources, identification and prioritization of problem areas, and public education programs) and detailed annual reporting requirements (including mapping, reporting of expenditures and I/I flow calculations). Since September 2001, these requirements have been the basis for the standard operation and maintenance conditions related to I/I.

Regional treatment plants presented special issues as I/I requirements became more specific, as it is generally the member communities, rather than the regional sewer district, that own the collection systems that are the primary source of I/I. Before the focus on I/I, POTW permits did not contain specific requirements related to the collection system component of POTWs. Therefore, when issuing NPDES permits to authorize discharges from regionally integrated treatment POTWs, Region 1 had generally only included the legal entity owning and/or operating the regionally centralized wastewater treatment plant as the permittee. As the permit conditions were focused on the treatment plant and its effluent discharge, a permit issued only to the owner or operator of the treatment plant was sufficient to ensure that permit conditions could be fully implemented and that EPA had authority to enforce the permit requirements.

In implementing the I/I conditions, Region 1 initially sought to maintain the same structure, placing the responsibility on the regional sewer district to require I/I activities by the contributing systems and to collect the necessary information from those systems for submittal to EPA. MassDEP's 2001 Interim I/I Policy reflected this approach, containing a condition for regional systems:

> ((FOR REGIONAL FACILITIES ONLY)) The permittee shall require, through appropriate agreements, that all member communities develop and implement infiltration and inflow control plans sufficient to ensure that high flows do not cause or contribute to a violation of the permittee's effluent limitations, or cause overflows from the permittee's collection system.

As existing NPDES permittees, the POTW treatment plants were an obvious locus of regulation. The Region assumed the plants would be in a position to leverage preexisting legal and/or contractual relationships with the satellite collection systems they serve to perform a coordinating function, and that utilizing this existing structure would be more efficient than establishing a new system of direct reporting to EPA by the collection system owners. The Region also believed that the owner/operator of the POTW treatment plant would have an incentive to reduce flow from contributing satellite systems because doing so would improve treatment plant performance and reduce operation costs. While relying on this cooperative approach, however, Region 1 also asserted that it had the authority to require that POTW collection systems be included as NPDES permittees and that it would do so if it proved necessary. Indeed, in 2001 Region 1 acceded to Massachusetts Water Resources Authority‘s (―MWRA”) request to include as co-permittees the contributing systems to the MWRA Clinton wastewater treatment plant (―WWTP”) based on evidence provided by MWRA that its relationship with those communities would not permit it to run an effective I/I reduction program for these collection systems. Region 1 also put municipal satellite collection systems on notice that they would be directly regulated through legally enforceable permit requirements if I/I reductions were not pursued or achieved.

In time, the Region realized that its failure to assert direct jurisdiction over municipal satellite dischargers was becoming untenable in the face of mounting evidence that cooperative (or in some cases non-existent) efforts on the part of the POTW treatment plant and associated satellites were failing to comprehensively address the problem of extraneous flow entering the POTW. The ability and/or willingness of regional sewer districts to attain meaningful I/I efforts in their member communities varied widely. The indirect structure of the requirements also tended to make it difficult for EPA to enforce the implementation of meaningful I/I reduction programs.

It became evident to Region 1 that a POTW‘s ability to comply with CWA requirements depended on successful operation and maintenance of not only the treatment plant but also the collection system. For example, the absence of effective I/I reduction and operation/maintenance programs was impeding the Region‘s ability to prevent or mitigate the human health and water quality impacts associated with SSOs. Additionally, these excess flows stressed POTW treatment plants from a hydraulic capacity and performance standpoint, adversely impacting effluent quality. *See Exhibit B* (Analysis of extraneous flow trends and SSO reporting for representative systems). Addressing these issues in regional systems was essential, as these include most of the largest systems in terms of flow, population served and area covered.

The Region‘s practice of imposing NPDES permit conditions on the municipal collection systems in addition to the treatment plant owner/operator represents a necessary and logical progression in its continuing effort to effectively address the serious problem of I/I in sewer collection systems.[5] In light of its past permitting experience and the need to effectively address

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[5] Although the Region has in the past issued NPDES permits only to the legal entities owning and operating the wastewater treatment plant (*i.e.*, only a portion of the ―treatment works”), the Region‘s reframing of permits to include municipal satellite collection systems does not represent a break or reversal from its historical legal position. Region 1 has never taken the legal position that the satellite collection systems are beyond the reach of the CWA and the NPDES permitting program. Rather, the Region as a matter of discretion had merely never determined it

the problem of extraneous flow on a system-wide basis, Region 1 decided that it was necessary to refashion permits issued to regionally integrated POTWs to include all owners/operators of the treatment works (*i.e.*, the regional centralized POTW treatment plant and the municipal satellite collection systems).[6] Specifically, Region 1 determined that the satellite systems should be subject as co-permittees to a limited set of O&M-related conditions on permits issued for discharges from regionally integrated treatment works. These conditions pertain only to the portions of the POTW collection system that the satellites own. This ensures maintenance and pollution control programs are implemented with respect to all portions of the POTW. Accordingly, since 2005, Region 1 has generally included municipal satellite collection systems as co-permittees for limited purposes while it required the owner/operator of the treatment plant, as the primary permittee, to comply with the full array of NPDES requirements, including secondary treatment and water-quality based effluent limitations. The Region has identified 25 permits issued by the Region to POTWs in New Hampshire and Massachusetts that include municipal satellite collection systems as co-permittees. *See Exhibit A*. The 25 permits include a total of 55 satellite collection systems as co-permittees.

III. Legal Authority

The Region's prior and now superseded practice of limiting the permit only to the legal entity owning and/or operating the wastewater treatment plant had never been announced as a regional policy or interpretation. Similarly, the Region's practice of imposing NPDES permit conditions on the municipal collection systems in addition to the treatment plant owner/operator has also never been expressly announced as a uniform, region-wide policy or interpretation. Upon consideration of the Board's decision, described above, Region 1 has decided to supply a clearer, more detailed explanation regarding its use of a co-permittee structure when issuing NPDES permits to regionally integrated POTWs. In this section, the Region addresses the questions posed by the Board in the *Upper Blackstone* decision referenced above.

(1) In the case of a regionally integrated POTW composed of municipal satellite collection systems owned by different entities and a treatment plant owned by another, is the scope of

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necessary to exercise its statutory authority to directly reach these facilities in order to carry out its NPDES permitting obligations under the Act.

Although the Region adopted a co-permittee structure to deal I/I problems in the municipal satellite collection systems, that decision does nothing to foreclose a permitting authority from opting for alternative permitting approaches that are consistent with applicable law. Each permitting authority has the discretion to determine which permitting approach best achieves the requirements of the Act based on the facts and circumstances before it. Upon determining that direct regulation of a satellite collection system via an NPDES permit is warranted, a permitting authority has the discretion to make the owner or operator of the collection system a co-permittee, or to cover it through an individual or general permit. Nothing in EPA regulations precludes the issuance of a separate permit to an entity that is part of the larger system being regulated. As in the pretreatment program, there are many ways to ensure that upstream collection systems are adequately contributing to the successful implementation of a POTW's permit requirements.

[6] EPA has ―considerable flexibility in framing the permit to achieve a desired reduction in pollutant discharges." *Natural Resources Defense Council, Inc. v. Costle*, 568 F.2d 1369, 1380 (D.C.Cir.1977). (―[T]his ambitious statute is not hospitable to the concept that the appropriate response to a difficult pollution problem is not to try at all.").

NPDES authority limited to owners/operators of the POTW treatment plant, or does the authority extend to owners/operators of the municipal satellite collection systems that convey wastewater to the POTW treatment plant?

The scope of NPDES authority extends beyond the owners/operators of the POTW treatment plant to include the owners/operators of the municipal satellite collection systems conveying wastewater to the treatment plant for the reasons discussed below.

The CWA prohibits the ―discharge of any pollutant by any person" from any point source to waters of the United States, except, *inter alia,* in compliance with an NPDES permit issued by EPA or an authorized state pursuant to Section 402 of the CWA. CWA § 301, 402(a)(1); 40 C.F.R. § 122.1(b).

―Publicly owned treatment works" are facilities that, when they discharge, are subject to the NPDES program. Statutorily, POTWs as a class must meet performance-based effluent limitations based on available wastewater treatment technology. *See* CWA § 402(a)(1) (―[t]he Administrator may…issue a permit for the discharge of any pollutant….upon condition that such discharge will meet (A) all applicable requirements under [section 301]…"); § 301(b)(1)(B) (―In order to carry out the objective of this chapter there shall be achieved…for publicly owned treatment works in existence on July 1, 1977...effluent limitations based upon secondary treatment[.]"); *see also* 40 C.F.R. pt 133. In addition to secondary treatment requirements, POTWs are also subject to water quality-based effluent limits if necessary to achieve applicable state water quality standards. *See* CWA § 301(b)(1)(C). *See also* 40 C.F.R. § 122.44(a)(1) (―…each NPDES permit shall include…[t]echnology-based effluent limitations based on: effluent limitations and standards published under section 301 of the Act") and (d)(1) (same for water quality standards and state requirements). NPDES regulations similarly identify the ―POTW" as the entity subject to regulation. *See* 40 C.F.R. § 122.21(a) (requiring ―new and existing POTWs" to submit information required in 122.21(j)," which in turn requires ―all POTWs," among others, to provide permit application information).

The CWA and its implementing regulations broadly define ―POTW" to include not only wastewater treatment plants but also the sewer systems and associated equipment that collect wastewater and convey it to the treatment plants. When a municipal satellite collection system conveys wastewater to the POTW treatment plant, the scope of NPDES authority extends to both the owner/operators of the treatment facility and the municipal satellite collection system, because the POTW is discharging pollutants.

Under section 212 of the Act,

> ―(2)(A) The term ‗treatment works' means any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature to implement section 1281 of this title, or necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, outfall sewers, *sewage collection systems* [emphasis added], pumping, power, and other equipment, and their appurtenances; extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as

standby treatment units and clear well facilities; and any works, including site acquisition of the land that will be an integral part of the treatment process (including land used for the storage of treated wastewater in land treatment systems prior to land application) or is used for ultimate disposal of residues resulting from such treatment.

> (B) In addition to the definition contained in subparagraph (A) of this paragraph, ‗treatment works‘ means any other method or system for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste, including storm water runoff, or industrial waste, including waste in combined storm water and *sanitary sewer systems* [emphasis added]. Any application for construction grants which includes wholly or in part such methods or systems shall, in accordance with guidelines published by the Administrator pursuant to subparagraph (C) of this paragraph, contain adequate data and analysis demonstrating such proposal to be, over the life of such works, the most cost efficient alternative to comply with sections 1311 or 1312 of this title, or the requirements of section 1281 of this title."

EPA has defined POTW as follows:

> ―The term *Publicly Owned Treatment Works* or *POTW* [emphasis in original]…includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works."

See 40 C.F.R. §§ 403.3(q) and 122.2.

Thus, under the CWA and its implementing regulations, wastewater treatment plants and the sewer systems and associated equipment that collect wastewater and convey it to the treatment plants fall within the broad definition of ―POTW."

The statutory and regulatory definitions plainly encompass both the POTW treatment plant and municipal satellite collection systems conveying wastewater to the POTW treatment plant even if the treatment plant and the satellite collection system have different owners. Municipal satellite collection systems indisputably fall within the definition of a POTW. First, they are ―sewage collection systems" under section 212(A) and ―sanitary sewer systems" under section 212(B). Second, they convey wastewater to a POTW treatment plant for treatment under 40 C.F.R. § 403.3(q)). The preamble to the rule establishing the regulatory definition of POTW supports the reading that the treatment plant comprises only one portion of the POTW. *See* 44 Fed. Reg. 62260, 62261 (Oct. 29, 1979).[7] Consistent with Region 1‘s interpretation, courts have similarly

[7] ―A new provision…defining the term ‗POTW Treatment Plant‘ has been added to avoid an ambiguity that now exists whenever a reference is made to a POTW (publicly owned treatment works). …[T]he existing regulation defines a POTW to include both the treatment plant and the sewer pipes and other conveyances leading to it. As a result, it is unclear whether a particular reference is to the pipes, the treatment plant, or both. The term ―POTW

taken a broad reading of the terms treatment works and POTW.[8] Finally, EPA has long recognized that a POTW can be composed of different parts, and that sometimes direct control is required under a permit for all parts of the POTW system, not just the POTW treatment plant segment. *See Multijurisdictional Pretreatment Programs Guidance Manual,* Office off Water (4203) EPA 833-B-94-005 (June 1994) at 19. (―If the contributing jurisdiction owns or operates the collection system within its boundaries, then it is a co-owner or operator of the POTW. As such, it can be included on the POTW‘s NPDES permit and be required to develop a pretreatment program. Contributing jurisdictions should be made co-permittees where circumstances or experience indicate that it is necessary to ensure adequate pretreatment program implementation.”). The Region‘s interpretation articulated here is consistent with the precepts of the pretreatment program, which pertains to the same regulated entity, i.e., the POTW.[9]

Thus, under the statutory and regulatory definitions, a satellite collection system owned by one municipality that transports municipal sewage to another portion of the POTW owned by another municipality can be classified as part of a single integrated POTW system discharging to waters of the U.S.

(2) If the latter, how far up the collection system does NPDES jurisdiction reach, i.e., where does the "collection system" end and the "user" begin?

NPDES jurisdiction extends beyond the treatment plant to the outer boundary of the municipally-owned sewage collection systems, that is, to the outer bound of those sewers whose purpose is to transport wastewater for others to a POTW treatment plant for treatment, as explained below.

As discussed in response to Question 1 above, the term ―treatment works” is defined to include ―sewage collection systems.” CWA § 212. In order to identify the extent of the sewage collection system for purposes of co-permittee regulation—*i.e.*, to identify the boundary between the portions of the collection system that are subject to NPDES requirements and those that are not—Region 1 is relying on EPA‘s regulatory interpretation of the term ―sewage collection system.” In relevant part, EPA regulations define ―sewage collection system” at 40 C.F.R. § 35.905 as:

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treatment plant” will be used to designate that portion of the municipal system which is actually designed to provide treatment to the wastes received by the municipal system.”

[8] *See, e.g.*, *United States v. Borowski, 977 F.2d 27, 30 n.5* (1st Cir. 1992) (―We read this language [POTW definition] to refer to such sewers, pipes and other conveyances that are publicly owned. Here, for example, the City of Burlington's sewer is included in the definition because it conveys waste water to the Massachusetts Water Resource Authority's treatment works.”); *Shanty Town Assoc. v. Envtl. Prot. Agency, 843 F.2d 782, 785* (4th Cir. 1988) (―As defined in the statute, a ‗treatment work‘ need not be a building or facility, but can be any device, system, or other method for treating, recycling, reclaiming, preventing, or reducing liquid municipal sewage and industrial waste, including storm water runoff.”) (citation omitted); *Comm. for Consideration Jones Fall Sewage System v. Train,* 375 F. Supp. 1148, 1150-51 (D. Md. 1974) (holding that NPDES wastewater discharge permit coverage for a wastewater treatment plant also encompasses the associated sanitary sewer system and pump stations under § 1292 definition of ―treatment work”).

[9] The fact that EPA has endorsed a co-permittee approach in addressing pretreatment issues in situations where the downstream treatment plant was unable to adequately regulate industrial users to the collection system in another jurisdiction reinforces the approach taken here.

―... each, and all, of the common lateral sewers, within a publicly owned treatment system, which are primarily installed to receive waste waters directly from facilities which convey waste water from individual structures or from private property and which include service connection ―Y” fittings designed for connection with those facilities. The facilities which convey waste water from individual structures, from private property to the public lateral sewer, or its equivalent, are specifically excluded from the definition….”

Put otherwise, a municipal satellite collection system is subject to NPDES jurisdiction under the Region‘s approach insofar as it transports wastewater for others to a POTW treatment plant for treatment. This test (i.e., common sewer installed to receive and carry waste water from others) allows Region 1 to draw a principled, predictable and readily ascertainable boundary between the POTW‘s collection system and the users. This test would exclude, for example, single user branch drainpipes that collect and transport wastewater from plumbing fixtures in a commercial building or public school to the common lateral sewer, just as service connections from private residential structures to lateral sewers are excluded. This type of infrastructure would not be considered part of the collection system, because it is not designed to receive and carry wastewaters from other users. Rather, it is designed to transport its users‘ wastewater to such a common collection system at a point further down the sanitary sewer system.

EPA‘s reliance on the definition of ―sewage collection system” from the construction grants regulations for interpretative guidance is reasonable because these regulations at 40 C.F.R. Part 35, subpart E pertain to grants specifically for POTWs, the entity that is the subject of this NPDES policy. Additionally, the term ―sewage collection systems” expressly appears in the definition of treatment works under section 212 of the Act as noted above.

(3) Do municipal satellite collection systems "discharge [] a pollutant" within the meaning of the statute and regulations?

Yes, the collection system ―discharges a pollutant” because it adds pollutants to waters of the U.S. from a point source. This position is consistent with the definition of ―discharge of a pollutant” at 40 C.F.R. § 122. [10] The fact that a collection system may be located in the upper reaches of the POTW and not necessarily near the ultimate discharge point at the treatment plant, or that its contribution may be commingled with other wastewater flows prior to the discharge point, is not material to the question of whether it ―discharges” a pollutant and consequently may be subject to conditions of an NPDES permit issued for discharges from the POTW.[11]
40 C.F.R. § 122.2 defines ―discharge of a pollutant” as follows:

[10] This position differs from that taken by the Region in the *Upper Blackstone* litigation. There, the Region stated that the treatment plant was the discharging entity for regulatory purposes. The Region has clarified this view upon further consideration of the statute, EPA‘s own regulations and case law and determined that a municipal satellite collection system in a POTW is a discharging entity for regulatory purposes.

[11] As explained more fully below, non-domestic contributors of pollutants to the collection system and treatment plant do not require NPDES permits because they are regulated through the pretreatment program under Section 307 of the CWA and are specifically excluded from needing an NPDES permit. 40 C.F.R. § 122.3(c).

“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.

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.’”

POTW treatment plants as well as the municipal satellite collection systems that comprise portions of the larger POTW and that transport flow to the POTW treatment plant clearly add pollutants or combinations of pollutants to waters of the U.S. and to waters of the “contiguous zone” and are thus captured under sections (a) and (b) of this definition.[12]

(4) Are municipal satellite collection systems “indirect dischargers” and thus excluded from NPDES permitting requirements?

No, municipal satellite collection systems that convey wastewater from domestic sources to another portion of the POTW for treatment are not “indirect dischargers” to the POTW.

Section 307(b) of the Act requires EPA to establish regulatory pretreatment requirements to prevent the “introduction of pollutants into treatment works” that interfere, pass through or are otherwise incompatible with such works. Section 307 is implemented through the General Pretreatment Regulations for Existing and New Sources of Pollution (40 C.F.R. Part 403) and categorical pretreatment standards (40 C.F.R. Parts 405-471). Section 403.3(i) defines “indirect discharger” as “any non-domestic” source that introduces pollutants into a POTW and is regulated under pretreatment standards pursuant to CWA § 307(b)-(d). The source of an indirect discharge is termed an “industrial user.” *Id*. at § 403.3(j). Under regulations governing the

[12] Some municipal satellite collection systems have argued that the addition of pollutants to waters of the United States from pipes, sewers or other conveyances that go to a *treatment plant* are not a “discharge of a pollutant” under 40 C.F.R. § 122.2. This is erroneous. Only one category of such discharges is excluded: indirect discharges. For the reasons explained below in section 4, the satellite system discharges at issue here are not indirect discharges. It is correct that the discharge of wastewater that does not go to the treatment works is included as a discharge under the definition. However, interpreting the *inclusion* of such discharges under the definition as categorically *excluding* the conveyance of other discharges that do go to the treatment works is not a reasonable reading of the regulation. This argument is also flawed in that it incorrectly equates “treatment works,” the term used in the definition above, with “treatment plant.” To interpret “treatment works” as it appears in the regulatory definition of “discharge of a pollutant” as consisting of only the POTW treatment plant would be inconsistent with the definition of “treatment works” at 40 C.F.R. § 403.3(q), which expressly includes the collection system. *See also* § 403.3(r) (defining “POTW Treatment Plant” as “*that portion* [emphasis added] of the POTW which is designed to provide treatment (including recycling and reclamation) of municipal sewage and industrial waste.”)

NPDES permitting program, the term ―indirect discharger" is defined as ―a non-domestic discharger introducing ‗pollutants' to a ‗publicly owned treatment works.'" 40 C.F.R. § 122.2. Indirect dischargers are excluded from NPDES permit requirements at 40 C.F.R. § 122.3(c), which provides, ―The following discharges do not require an NPDES permit: . . . The introduction of sewage, industrial wastes or other pollutants into publicly owned treatment works by indirect dischargers."

Municipal satellite collection satellite systems are not indirect dischargers as that term is defined under part 122 or 403 regulations. Unlike indirect dischargers, municipal satellite collection systems are not a non-domestic discharger ―introducing pollutants" to POTWs as defined in 40 C.F.R. § 122.2. Instead, they themselves fall within the definition of POTW, whose components consist of the municipal satellite collection system owned and operated by one POTW and a treatment system owned and operated by another POTW. Additionally, they are not a non-domestic *source* regulated under section 307(b) that introduces pollutants into a POTW within the meaning of § 403.3(i). Rather, they are part of the POTW and collect and convey municipal sewage from industrial, commercial and domestic users of the POTW.

The Region's determination that municipal satellite collection systems are not indirect dischargers is, additionally, consistent with the regulatory history of the term indirect discharger. The 1979 revision of the part 122 regulations defined ―indirect discharger" as ―a non-municipal, non-domestic discharger introducing pollutants to a publicly owned treatment works, which introduction does not constitute a ‗discharge of pollutants'…" *See* National Pollutant Discharge Elimination System, 44 Fed. Reg. 32854, 32901 (June 7, 1979). The term ―non-municipal" was removed in the Consolidated Permit Regulations, 45 Fed. Reg. 33290, 33421 (May 19, 1980) (defining ―indirect discharger" as ―a nondomestic discharger…"). Although the change was not explained in detail, the substantive intent behind this provision remained the same. EPA characterized the revision as ―minor wording changes." 45 Fed. Reg. at 33346 (Table VII: ―Relationship of June 7[, 1979] Part 122 to Today's Regulations"). The central point again is that under any past or present regulatory incarnation, municipal satellite collection systems, as POTWs, are not within the definition of ―indirect discharger," which is limited to non-domestic sources subject to section 307(b) that introduce pollutants to POTWs.

(5) How is the Region's rationale consistent with the references to "municipality" in the regulatory definition of POTW found at 40 C.F.R. § 403.3(q), and the definition's statement that "[t]he term also means the municipality….which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works?"

There is no inconsistency between the Region's view that municipally-owned satellite collection systems fall within the definition of POTW, and the references to municipality in 40 C.F.R. § 403.3(q), including the final sentence of the regulatory definition of POTW in the pretreatment regulations.

The Region's co-permitting rationale is consistent with the first part of the pretreatment program's regulatory definition of POTW, because the Region is only asserting NPDES jurisdiction over satellite collection systems that are owned by a ―State or municipality (as defined by section 502(4) of the Act)." The term ―municipality" as defined in CWA § 502(4)

―means a city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes…" Thus, in order to qualify under this definition, a wastewater collection system need only be ―owned by a State or municipality." There is no requirement that the constituent components of a regionally integrated POTW, *i.e.*, the collection system and regional centralized POTW treatment plant, be owned by the same State or municipal entity.

Furthermore, there is no inconsistency between the Region's view that a satellite collection system is part of a POTW, and the final sentence of the regulatory definition of POTW in the pretreatment regulations. As noted above, the sentence provides that ―POTW" may ―also" mean a municipality which has jurisdiction over indirect discharges to and discharges from the treatment works. This is not a limitation because of the use of the word ―also" (contrast this with the ―only if" language in the preceding sentence of the regulatory definition).

(6) How does the Region's rationale comport with the permit application and signatory requirements under NPDES regulations?

―Any person who discharges or proposes to discharge pollutants"… must comply with permit application requirements set forth in 40 C.F.R. § 122.21 (―Application for a Permit"), including the duty to apply in subsection 122.21(a). It is the operator's duty to obtain a permit. *See* 40 C.F.R. § 122.21(b). An operator of a sewage collection system in a regionally integrated treatment works is operating a portion of the POTW and thus can be asked to submit a separate permit application pursuant to § 122.21(a) (requiring applicants for ―new and existing POTWs" to submit information required in 122.21(j)," which in turn requires ―all POTWs," among others, to provide permit application information). In the Region's experience, however, sufficient information about the collection system can be obtained from the treatment plant operator's permit application. The NPDES permit application for POTWs solicits information concerning portions of the POTW beyond the treatment plant itself, including the collection system used by the treatment works. *See* 40 C.F.R. § 122.21(j)(1). Where this information is not sufficient for writing permit conditions that apply to a separately owned municipal satellite system, EPA can request that the satellite system to submit an application with the information required in 122.21(j), or alternatively use its authority under CWA section 308 to solicit the necessary information. Because Region 1 believes that it will typically receive information sufficient for NPDES permitting purposes from the POTW treatment plant operator's application, the Region will formalize its historical practice by issuing written waivers to exempt municipal satellite collection systems from permit application and signatory requirements in accordance with 40 C.F.R. § 122.21(j).[13] To the extent the Region requires additional information, it intends to use its information collection authority under CWA § 308.

IV. Basis for the Specific Conditions to which the Municipal Satellite Collection Systems are Subject as Co-permittees

[13] EPA may waive applications for municipal satellite collection systems, when requiring such applications may result in duplicative or immaterial information. The Regional Administrator (―RA") may waive any requirement of this paragraph if he or she has access to substantially identical information. 40 C.F.R. § 122.21(j). *See generally*, 64 Fed. Reg. 42440 (August 4, 1999). The RA may also waive any application requirement that is not of material concern for a specific permit. *Id.*

Section 402(a) of the CWA is the legal authority for extending NPDES conditions to all portions of the municipally-owned treatment works to ensure proper operation and maintenance and to reduce the quantity of extraneous flow into the POTW. This section of the Act authorizes EPA to issue a permit for the ―discharge of pollutants" and to prescribe permit conditions as necessary to carry out the provisions of the CWA, including Section 301 of the Act. Among other things, Section 301 requires POTWs to meet performance-based requirements based on secondary treatment technology, as well as any more stringent requirements of State law or regulation, including water quality standards. *See* CWA § 301(b)(1)(B),(C).

The Region imposes requirements on co-permittees when it determines that they are necessary to assure continued achievement of effluent limits based on secondary treatment requirements and state water quality standards in accordance with sections 301 and 402 of the Act, and to prevent unauthorized discharges of sewage from downstream collection systems. With respect to achieving effluent limits, the inclusion of the satellite systems as co-permittees may be necessary when high levels of I/I dilute the strength of influent wastewater and increase the hydraulic load on treatment plants, which can reduce treatment efficiency (*e.g.*, result in violations of technology-based percent removal limitations for BOD and TSS due to less concentrated influent, or violation of other technology-based or water quality-based effluent limitations due to reduction in treatment efficiency). Excess flows from an upstream collection system can also lead to bypassing a portion of the treatment process, or in extreme situations make biological treatment facilities inoperable (*e.g.*, wash out the biological organisms that treat the waste).

By preventing excess flows, the co-permittee requirements will also reduce water quality standards violations that result from SSOs by lessening their frequency and extent. *See Exhibit B* (Analysis of extraneous flow trends and SSO reporting for representative systems). SSOs that reach waters of the U.S. are discharges in violation of section 301(a) of the CWA to the extent not authorized by an NPDES permit.

Imposing standard permit conditions on the satellite communities may be necessary to give full effect to some of the standard permit conditions applicable to all NPDES permits at 40 C.F.R. § 122.41 . To illustrate, NPDES permitting regulations require standard conditions that ―apply to all NPDES permits," pursuant to 40 C.F.R. § 122.41, including a duty to mitigate and to 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 the permit." *Id.* at § 122.41(d), (e). If the owner or operator of a downstream POTW treatment plant is unable, due to legal constraints for example, or unwilling to ensure that upstream collection systems are implementing requirements concerning the collection system, such as I/I requirements, making the upstream POTW collection system subject to its own permit requirements may be the only or best available option to give full effect to these permit obligations.

V. Conclusion

For all the reasons above, Region 1 has determined that it is reasonable to, as necessary, directly regulate municipal satellite collection systems as co-permittees when issuing NPDES permits for discharges from regionally integrated treatment works.

Exhibit A

Name	Issue Date
Massachusetts Water Resources Authority – Clinton (NPDES Permit No. MA0100404)	September 27, 2000
City of Brockton (NPDES Permit No. MA0101010)	May 11, 2005
City of Marlborough (NPDES Permit No. MA0100480)	May 26, 2005
Westborough Wastewater Treatment Plant (NPDES Permit No. MA0100412)	May 20, 2005
Lowell Regional Wastewater Utilities (NPDES Permit No. MA0100633)	September 1, 2005
Town of Webster Sewer Department (NPDES Permit No. MA0100439)	March 24, 2006
Town of South Hadley, Board of Selectmen (NPDES Permit No. MA0100455)	June 12, 2006
City of Leominster (NPDES Permit No. MA0100617)	September 28, 2006
Hoosac Water Quality District (NPDES Permit No. MA0100510)	September 28, 2006
Board of Public Works, North Attleborough (NPDES Permit No. MA0101036)	January 4, 2007
Town of Sunapee (NPDES Permit No. 0100544)	February 21, 2007
Lynn Water and Sewer Commission (NPDES Permit No. MA0100552)	March 3, 2007
City of Concord (NPDES Permit No. NH0100331)	June 29, 2007
City of Keene (NPDES Permit No. NH0100790)	August 24, 2007
Town of Hampton (NPDES No. NH0100625)	August 28, 2007
Town of Merrimack, NH (NPDES No. NH0100161)	September 25, 2007
City of Haverhill (NPDES Permit No. MA0101621)	December 5, 2007
Greater Lawrence Sanitary District (NPDES Permit No. MA0100447)	August 11, 2005
City of Pittsfield, Department of Public Works (NPDES No. MA0101681)	August 22, 2008

City of Manchester (NPDES No. NH0100447)	September 25, 2008
City of New Bedford (NPDES Permit No. MA0100781)	September 28, 2008
Winnipesaukee River Basin Program Wastewater Treatment Plant (NPDES Permit No. NH0100960)	June 19, 2009
City of Westfield (NPDES Permit No. MA0101800)	September 30, 2009
Hull Permanent Sewer Commission (NPDES Permit No. MA0101231)	September 1, 2009
Gardner Department of Public Works (NPDES Permit No. MA0100994)	September 30, 2009

Exhibit B

Analysis of extraneous flow trends and SSO reporting for representative systems

I. Representative POTWS

The **South Essex Sewer District (SESD)** is a regional POTW with a treatment plant in Salem, Massachusetts. The SESD serves a total population of 174,931 in six communities: Beverly, Danvers, Marblehead, Middleton, Peabody and Salem. The **Charles River Pollution Control District (CRPCD)** is a regional POTW with a treatment plant in Medway, Massachusetts. The CRPCD serves a total population of approximately 28,000 in four communities: Bellingham, Franklin, Medway and Millis. The CRPCD has been operating since 2001 under a permit that places requirements on the treatment plant to implement I/I reduction programs with the satellite collection systems, while SESD's existing permit does not include specific I/I requirements related to the satellite collection systems, in contrast to Region 1's current practice of including the satellite collection systems as co-permittees.

II. Comparison of flows to standards for nonexcessive infiltration and I/I

Flow data from the facilities' discharge monitoring reports (DMRs) are shown in comparison to the EPA standard for nonexcessive infiltration/inflow (I/I) of 275 gpcd wet weather flow and the EPA standard for nonexcessive infiltration of 120 gallons per capita per day (gpcd) dry weather flow; the standards are multiplied by population served for comparison with total flow from the facility. See *I/I Analysis and Project Certification*, EPA Ecol. Pub. 97-03 (1985); 40 CFR 35.2005(b)(28) and (29).

Figures 1 and 2 show the daily maximum flows (the highest flow recorded in a particular month) for the CRPCD and SESD, respectively, along with monthly precipitation data from nearby weather stations. Both facilities experience wet weather flows far exceeding the standard for nonexcessive I/I, particularly in wet months, indicating that these facilities are receiving high levels of inflow and wet weather infiltration.

Figure 1. CRPCD Daily Maximum Flow Compared to Nonexcessive I/I Standard

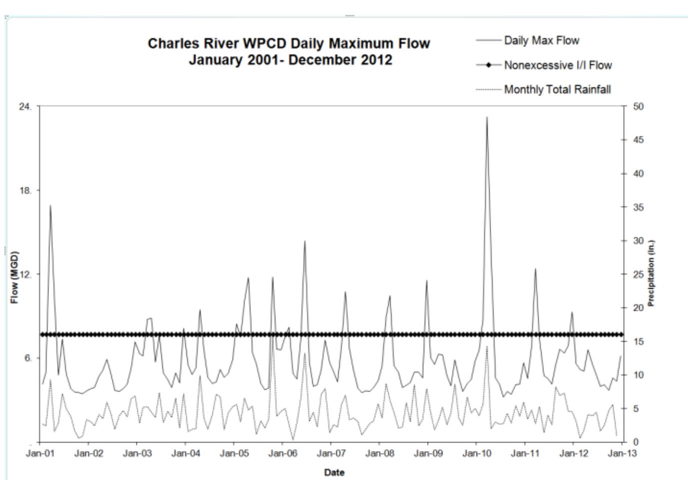
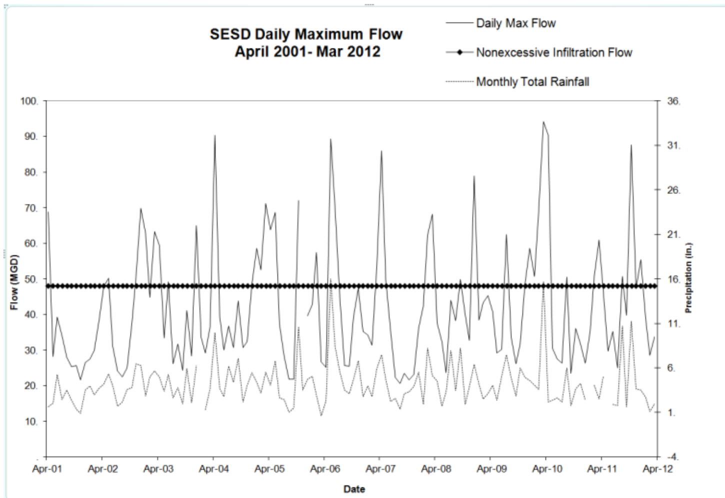


Figure 2. SESD Daily Maximum Flow Compared to Nonexcessive I/I Standard



Figures 3 and 4 shows the average flows for the CRPCD and SESD, which exceed the nonexcessive infiltration standard for all but the driest months. This indicates that these systems experience high levels of groundwater infiltration into the system even during dry weather.

Figure 3. CRPCD 12 Month Average Flow Compared to Nonexcessive Infiltration Standard

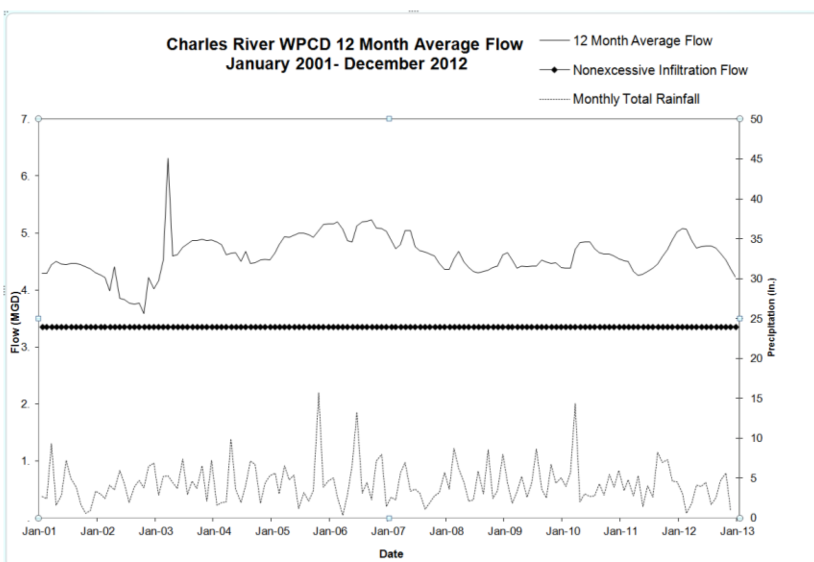
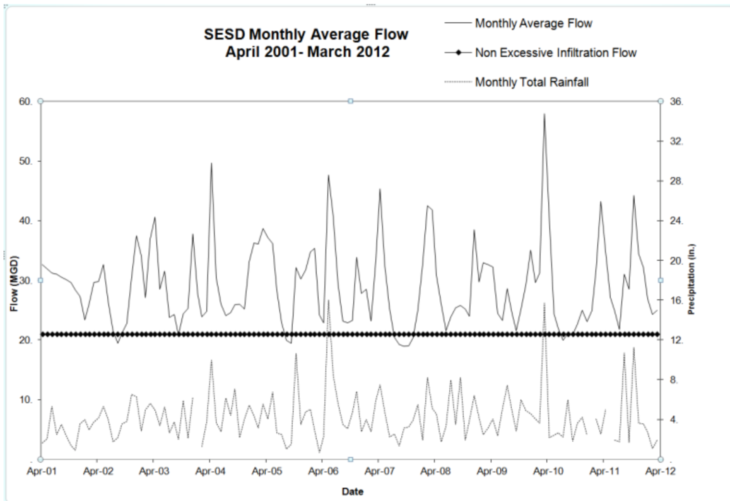


Figure 4. SESD Monthly Average Flow Compared to Nonexcessive Infiltration Standard

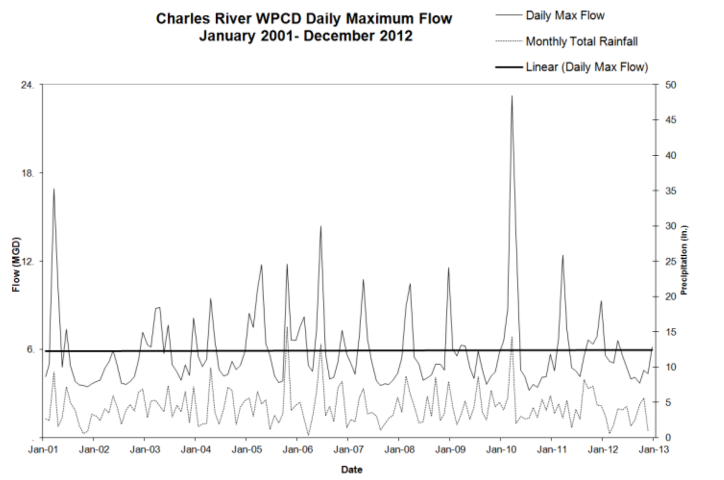


II. <u>Flow Trends</u>

Successful I/I reduction programs should result in decreases in wet weather flows to the treatment plant over the long term. Figures 5 and 6 show the trend in maximum daily flows since 2001. The maximum daily flow reflects the highest wet weather flow for each month. Charts are shown for both the reported maximum daily flow and for a one year rolling average of the maximum daily flow (provided to reduce the impact of seasonality on the regression results). The linear regressions indicates a weak trend over this time period of increasing maximum daily flow; while most of the variability from year to year is due to changes in precipitation, the trends are generally inconsistent with reduction in maximum daily flow over this time period. This indicates that I/I has not been reduced in either system.

Figure 5. CRPCD Daily Maximum Flow Trends

a. Reported Daily Maximum Flows



b. One Year Rolling Average of Daily Maximum Flows

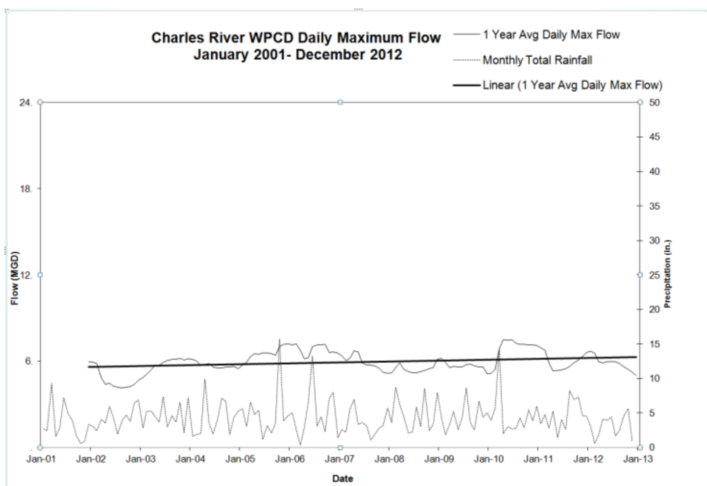
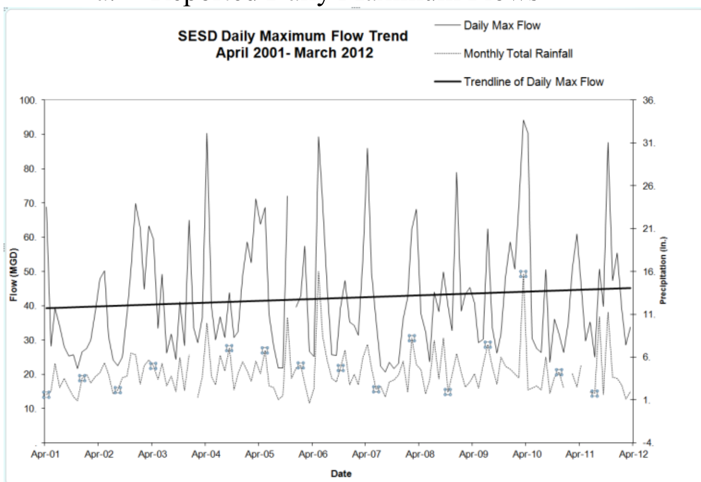
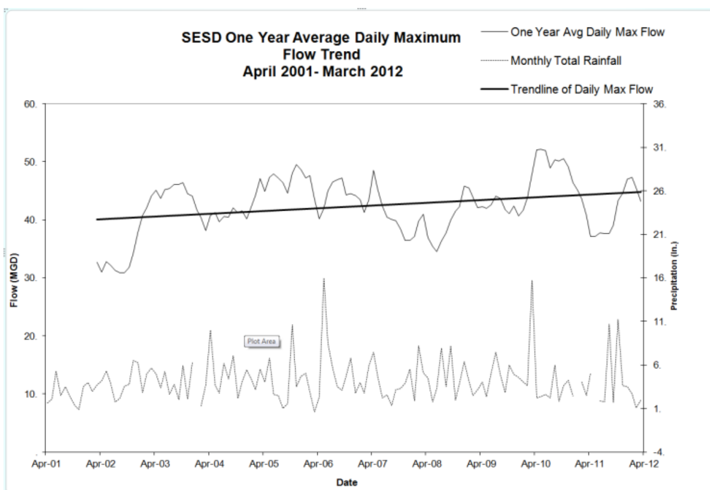


Figure 6. SESD Daily Maximum Flow Trend

a. Reported Daily Maximum Flows



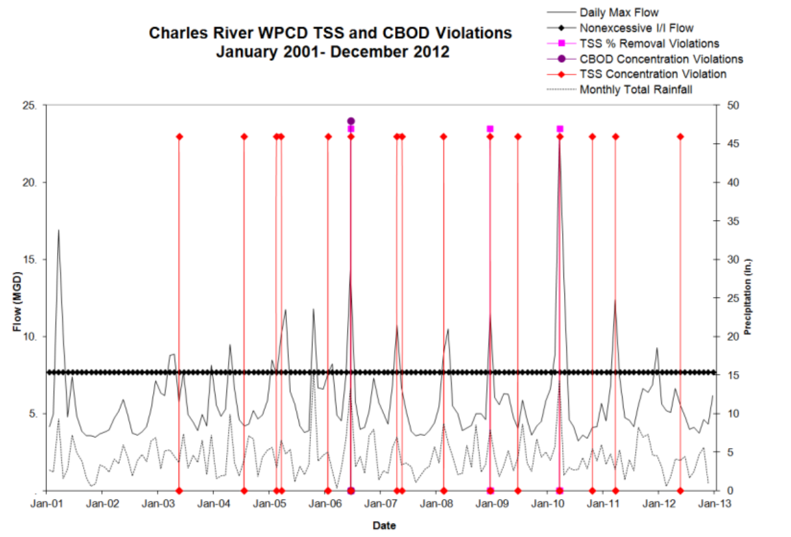
b. One Year Rolling Average of Daily Maximum Flows



III. Violations Associated with Wet Weather Flows

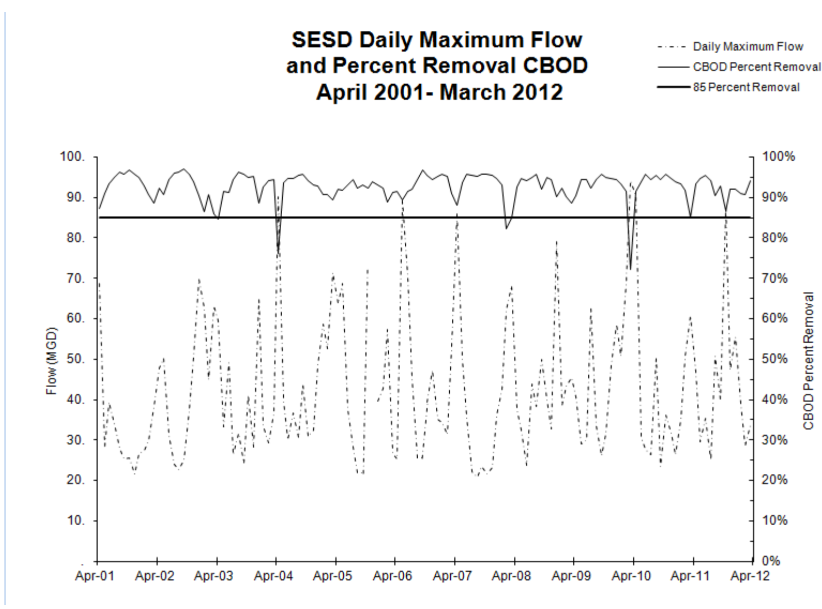
The CRPCD has experienced permit violations that appear to be related to I/I, based on their occurrence during wet weather months when excessive I/I standards are exceeded. Figure 7 shows violations of CRPCD's effluent limits for CBOD (concentration) and TSS (concentration and percent removal). Thirteen of the nineteen violations occurred during months when daily maximum flows exceeded the EPA standard.

Figure 7. CRPCD CBOD and TSS Effluent Limit Violations



In addition, SESD has been unable to achieve the secondary treatment requirement of 85% CBOD removal, also related to I/I. Figure 8 shows SESD‘s results for removal of CBOD, in percentage, as compared to maximum daily flow. SESD had three months where CBOD removal fell below 85%, all during months with high maximum daily flows. While SESD‘s current permit requires 85% removal in dry weather, so that these excursions did not constitute permit violations, SESD‘s proposed draft permit does not limit this requirement to dry weather. Relief from the 85% removal requirement is allowed only when the treatment plant receives flows from CSOs or if it receives less concentrated influent wastewater from separate sewers that is not the result of excessive I/I (including not exceeding the 275 gpcpd nonexcessive I/I standard). 40 CFR § 133.103(a) and (d).

Figure 8. SESD CBOD Percent Removal



IV. SSO Reporting

In addition, both of these regional POTWs have experienced SSOs within the municipal satellite collection systems. In the SESD system, Beverly, Danvers, Marblehead and Peabody have reported SSOs between 2006 and 2008, based on data provided by MassDEP. In the CRPCD system, Bellingham reported SSOs in its system between 2006 and 2009.

Exhibit C

Form of Regional Administrator‘s or Authorized Delegate‘s Waiver of Permit Application Requirements for Municipal Satellite Collection Systems

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

Re: Waiver of Permit Application and Signatory Requirements for [Municipal Satellite Sewage Collection System]

Dear ______:

Under NPDES regulations, all POTWs must submit permit application information set forth in 40 C.F.R. § 122.21(j) unless otherwise directed. Where the Region has “access to substantially identical information,” the Regional Administrator [or Authorized Delegate] may waive permit application requirements for new and existing POTWs. *Id.* Pursuant to my authority under this regulation, I am waiving NPDES permit application and signatory requirements applicable to the above-named municipal satellite collection systems.

Although EPA has the authority to require municipal satellite collection systems to submit individual permit applications, in this case I find that requiring a single permit application executed by the regional POTW treatment plant owner/operator will deliver “substantially identical information,” and will be more efficient, than requiring separate applications from each municipal satellite collection system owner/operator. Municipal satellite collection system owners/operators are expected to consult and coordinate with the regional POTW treatment plant operators to ensure that any information provided to EPA about their respective entities is accurate and complete. In the event that EPA requires additional information, it may use its information collection authority under CWA § 308. 33 U.S.C. § 1318.

This notice reflects my determination based on the specific facts and circumstances in this case. It is not intended to bind the agency in future determinations where a separate permit for municipal satellites would not be duplicative or immaterial.

If you have any questions or would like to discuss this decision, please contact [EPA Contact] at [Contact Info].

Sincerely,

Regional Administrator

Endangered Species Act Assessment

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and habitat of such species that has been designated as critical (a "critical habitat"). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, or plants to determine if any listed species might potentially be impacted by the re-issuance of this NPDES permit. The only listed species that have the potential to be present in the vicinity of the facility is the Atlantic sturgeon (*Acipenser oxyrinchus)*. Based on the analysis of potential impacts to Atlantic sturgeon presented below, EPA has determined that impacts to Atlantic sturgeon from the Taunton WWTP, if any, will be insignificant or discountable.

<u>Atlantic Sturgeon Information</u>

The following information was taken from the Status Review of Atlantic Sturgeon (Atlantic Sturgeon Status Review Team. 2007. Status Review of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Report to National Marine Fisheries Service, Northeast Regional Office. February 23, 2007.)

> Taunton River – Massachusetts and Rhode Island (page 11)
>
> "Historical records indicate that Atlantic sturgeon spawned in the Taunton River at least until the turn of the century (Tracy 1905). A gill net survey was conducted in the Taunton River during 1991 and 1992 to document the use of this system by sturgeon. Three subadult Atlantic sturgeon were captured but were determined to be non-natal fish (Burkett and Kynard 1993). In June 2004, a fisherman fishing in state waters noted that the first three fathoms of towed up gear held three juvenile Atlantic or shortnose sturgeon (Anoushian 2004). Trawlers fishing in state waters (less than three miles offshore) also occasionally report Atlantic sturgeon captures. Since 1997, only two sturgeon have been captured by the Rhode Island Department of Environmental Management Trawl Survey (RIDEM), one measuring 85 cm TL was captured in 1997 in Narragansett Bay, and another (130 cm TL) was captured in October 2005 in Rhode Island Sound (A. Libby, RIDEM, Pers. Comm. 2006). The NMFS observer program has also documented Atlantic sturgeon bycatch off the coast of Rhode Island in Federal waters. Since spawning adults were not

> found during the expected spawning period of May and June, it is likely that a spawning population of Atlantic sturgeon does not occur in the Taunton River, though the system is used as a nursery area for Atlantic sturgeon (Burkett and Kynard 1993)."

> New York Bight DPS [Distinct Population Segment]
> Taunton River – Rhode Island and Massachusetts (page 42)

> "Historic upstream migration of Atlantic sturgeon in the Taunton River is unknown. Currently, Atlantic sturgeon are restricted to the lower 70 km of the river as a result of the Town River Pond Dam, allowing access to 89% of the river. However, there has been no evidence of Atlantic sturgeon spawning in this river in recent years (last 15 years). Though spawning habitat is likely available, it is unlikely that water quality conditions are favorable for supporting nursery habitat as the river suffers from low DO (< 5 mg/L) and high ammonia-nitrogen levels (> 0.2 mg/L) (Taunton River Journal 2006). Surveys conducted in 1970 for American shad noted DO levels as low as 0.3 mg/L and ammonia-nitrogen levels as high as 1.22 mg/L (Taunton River Journal 2006). Low DO and excessive nutrient levels are still observed in the river, but water quality has slightly improved since 1970 (Taunton River Journal 2006). The river passes through several municipalities from which 23 million gallons of treated wastewater is added to the river daily; the majority of which is produced from a single treatment facility in the city of Brockton. In 2003, the EPA noted the Brockton facility was in violation of its discharge permit on many occasions, when it released water with excessive nutrient loads."

Ammonia-nitrogen discharges have been addressed through permit limits on ammonia-nitrogen for facilities on the Taunton River and its tributaries, including the Taunton WWTP. The permit violations at the Brockton facility referenced in the Status Review document have been addressed through an facility upgrade and Infiltration/Inflow reduction plan implemented at the Brockton facility, which have resulted in reduced wet weather-related high flows and improved permit compliance.

Based on the information included in the Status Review document, Atlantic sturgeon are present in the Taunton River, although it is unclear whether the range extends upstream to the location of the Taunton WWTP discharge. For purposes of this analysis, EPA assumes that Atlantic sturgeon may be present in the vicinity of the discharge. While spawning activity is not likely to take place in the river, the species is expected to use this habitat as a nursery.

Facility Description

The Taunton Wastewater Treatment Facility is engaged in the collection and treatment of municipal wastewater, including industrial wastewater from 12 non-categorical significant industrial users and 10 categorical industrial users (including a semiconductor manufacturer, battery manufacturer and metal finishers). The facility provides advanced treatment and single stage ammonia-nitrogen removal. Figure 2. The wastewater treatment processes are as follows:

At the headworks, wastewater passes through one of two mechanically cleaned bar screens or a bypass bar rack. Lime is added for pH control and flocculation. After screening, the wastewater passes through a distribution structure and then to one of three primary settling tanks. Grit is removed by pumping primary sludge to a cyclone degritter. After settling, the flow continues on through one of two parallel treatment trains. Each treatment train, or "Battery," consists of a bank of three aeration tanks and two secondary settling tanks. Battery 2 is twice the size of Battery 1 and the flow is split approximately 2/3 to 1/3, with adjustments depending on treatment performance. After settling, the recombined flow is sent to the chlorine contact chamber where it is disinfected with the flow paced addition of liquid hypochlorite and dechlorinated with bisulfate. Defoamer is added for suppression of foam at the discharge. The effluent passes through a reaeration cascade to a 36" pipe leading to a headwall on the bank of the Taunton River. Sludge is dewatered by centrifuge and is sent for co-disposal at the Taunton Municipal Sanitary Landfill.

The treatment process described reflects a treatment plant rehabilitation and upgrade project completed in 2004. The rehabilitation and upgrade included the construction of increased pumping capacity, conversion of the activated sludge aeration facilities from pure oxygen to air, addition of two new aeration tanks, replacement of the influent screens, and rehabilitation of the primary clarifiers.

The sewage collection system is partially combined, with over 150 miles of sewer and 20 pump stations in the municipalities of Taunton, Raynham, Dighton and Norton. Table 2 below shows the number of households served in each municipality.

Under this proposed action, the facility is permitted to discharge from two outfalls. Outfall 001 is the wastewater treatment plant outfall and is located on the west bank of the Taunton River at the end of West Water Street in Taunton. Outfall 004 is the single remaining combined sewer overflow (CSO), located north of the WWTP, behind the Taunton Municipal Light plant on West Water Street. Discharges from Outfall 004 are intermittent (i.e. 3 activations in 2010) and occur only in wet weather conditions. Pursuant to a 2008 Adminstrative Order from EPA, the City is required to work on improving its collection system and to evaluate its ability to eliminate the CSO outfall through the collection system improvements. If the collection system improvements by themselves will not eliminate the CSO outfall, the AO requires that the City submit and plan and schedule for additional options.

Receiving Water Description

The Taunton WWTP discharges to segment MA62-02 of the Taunton River, extending from the Rte 24 Bridge to the Berkley Bridge in Dighton/Berkley. The Massachusetts Surface Water Quality Standards (314 CMR 4.06 – Table 18) classify this segment of the River as Class SB-Shellfishing (R) and CSO.

> Class SB - These waters are designated as a habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. In approved areas they shall be suitable for shellfish harvesting with depuration (Restricted Shellfish Areas). These waters shall have consistently good aesthetic value. (314 CMR 4.05(4)(b))
>
> Restricted shellfishing areas are designated as "(R)". These waters are subject to more stringent regulation in accordance with the rules and regulations of the Massachusetts Division of Marine Fisheries pursuant to M.G.L. c. 130, § 75. These include applicable criteria of the National Shellfishing Sanitation Program. (314 CMR 4.06(4))
>
> CSO - (314 CMR 4.06(10)) These waters are identified as impacted by the discharge of combined sewer overflows in the classification tables in 314 CMR 4.06(3). Overflow events may be allowed by the permitting authority without a variance or partial use designation provided that:
>
> > a. an approved facilities plan under 310 CMR 41.25 provides justification for the overflows;
> > b. the Department finds through a use attainability analysis, and EPA concurs, that achieving a greater level of CSO control is not feasible for one of the reasons specified at 314 CMR 4.03(4);
> > c. existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected; and
> > d. public notice is provided through procedures for permit issuance and facility planning under M.G.L. c. 21, §§ 26 through 53 and regulations promulgated pursuant to M.G.L.c. 30A. In addition, the Department will publish a notice in the *Environmental Monitor*. Other combined sewer overflows may be eligible for a variance granted through permit issuance procedures. When a variance is not appropriate, partial use may be designated for the segment after public notice and opportunity for a public hearing in accordance with M.G.L. c. 30A.

The current permit incorrectly lists the Taunton River segment at the point of discharge as Class B (freshwater). The draft permit corrects this error. Effluent limitations for fecal coliform and total copper have been made more stringent based on the SB criteria.

The Massachusetts 2010 303(d) list (Category 5 of the Year 2010 Integrated List of Waters) lists this segment of the Taunton River, Segment MA62-02, as impaired due to pathogens. The segments of the River downstream of this segment, to the mouth of the River at the Braga Bridge in Fall River, are listed as impaired for pathogens and organic enrichment/low dissolved oxygen.

Mount Hope Bay, which receives the discharge of the Taunton River, is listed as impaired for fishes bioassessments, total nitrogen, dissolved oxygen, temperature, fecal coliform and chlorophyll-a.

Pollutant Discharges Permitted and Potential Effects on Atlantic Sturgeon

The draft permit includes water quality based effluent limitations on all pollutants for which the Taunton WWTP has a reasonable potential to cause, or contributes to, an exceedance of water quality standards in the receiving water. These include effluent limitations on carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), pH, DO, total residual chlorine, bacteria, total nitrogen, copper, and whole effluent toxicity. The derivation of these permit limits is discussed below.

Biochemical Oxygen Demand (BOD_5) and Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)

Limits for BOD_5 and $CBOD_5$ are the same as in the current permit. Publicly Owned Treatment Works (POTWs) are subject to the secondary treatment requirements set forth at 40 CFR Part 133. The permit alternates BOD_5 and $CBOD_5$ limits seasonally. For November through March the standard secondary treatment requirements for BOD_5 (30 mg/l avg monthly; 45 mg/l avg weekly) apply based on the requirements set forth at 40 C.F.R. § 133.102(a)(1), (2), (3), and 40 CFR § 122.45(f). For April through October, the permit contains more stringent water quality based limitations for $CBOD_5$. The limits are an average monthly concentration of 15 mg/l, and a weekly average concentration of 15 mg/l, with accompanying mass limitations. These were established by the MassDEP as a wasteload allocation for BOD_5. These limits are more stringent than those required in 40 CFR §133.102(a)(4).

EPA has determined that these effluent limits are sufficient to ensure that discharges from this facility do not cause an excursion below the Massachusetts water quality standard, which requires that Class B waters attain a minimum DO saturation of 5.0 mg/l. While information regarding the impact of DO levels on Atlantic sturgeon specifically are not available, the related species shortnose sturgeon are known to be adversely affected by DO levels below 5 mg/l (Jenkins et al. 1994, Niklitschek 2001), the same threshold established in the Massachusetts WQS. As such, the BOD criteria are protective of Atlantic sturgeon in the Taunton River.

Total Suspended Solids (TSS)

Limits for TSS are the same as in the current permit. The draft permit includes average monthly and average weekly TSS limitations that are based on secondary treatment requirements set forth at 40 C.F.R. §133.102(b)(1), (2), and (3), and 40 CFR § 122.45(f) for November through March. For April through October, the TSS limits are based on the wasteload allocation. The maximum daily concentration shall continue to be reported.

TSS can affect aquatic life directly by killing them or reducing growth rate or resistance to disease, by preventing the successful development of fish eggs and larvae, by modifying natural movements and migration, and by reducing the abundance of available food (EPA 1976). These effects are caused by TSS decreasing light penetration and by burial of the benthos. Eggs and larvae are most vulnerable to increases in solids, but this area is not considered spawning habitat for Atlantic sturgeon.

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

pH

The draft permit includes pH limitations required as a condition of state certification, that are protective of pH standards set forth at Title 314 CMR 4.05(4)(b)(3), for Class SB waters.

The biological nitrification process uses alkalinity, which tends to lower the pH of wastewater leaving the activated sludge process. Lime is added to supplement alkalinity during the nitrification season, but there are still occasional periods when the pH is depressed below 6.5 SU. The MassDEP has stated that a permitted pH range of 6.0-8.5 SU is protective of State water quality standards, and this range has been included in the draft permit. These pH limits are more stringent than those required under 40 C.F.R. §133.102(c). The monitoring frequency remains once (1) per day.

A pH of 6.0 – 9.0 is harmless to most marine organisms (Ausperger 2004) and is within the normal range of pH for freshwater. As such, no adverse effects to Atlantic sturgeon are likely to occur as a result of the discharge of this pH into the Taunton River.

Bacteria

The Massachusetts Water Quality Standards include criteria for two bacterial indicators for Class SB waters. Fecal coliform bacteria are applicable in water designated for shellfishing and enterococci criteria have been established to protect recreational uses.

Criteria for enterococci were first promulgated for Massachusetts coastal waters by EPA on November 16, 2004 (see 40 CFR 131.41). Massachusetts subsequently adopted enterococci criteria for marine waters into its water quality standards that were approved by EPA on September 19, 2007.

The fecal coliform criteria for SB water designated for shellfishing require that the median or geometric mean MPN not exceed 88 organisms/100 ml, and that no more than 10% of the samples may exceed an MPN of 260/100 ml. The draft permit includes a monthly average (geometric mean) effluent limit of 88 MPN and a maximum daily limit of 260 MPN.

The enterococci criteria require that no single sample exceed 104 colonies per 100 ml and that geometric mean of all samples taken within the most recent six months based on a minimum of five samples shall not exceed 35 colonies per 100 ml. MassDEP views the use of the 90% upper confidence level of 276 cfu/100ml as appropriate for setting the maximum daily limit for enterococci in the draft permit. Therefore EPA has established monthly average (geometric mean) effluent limit of 35 cfu/100ml and daily maximum effluent limit of 276 cfu/100ml for enterococci in the draft permit in order to ensure that the discharge does not cause or contribute to exceedances of Massachusetts Surface Water Quality Standards found at 314 CMR 4.05 (4)(a)4b.

Fecal bacteria are not known to be toxic to aquatic life and are expected to have no direct effect on Atlantic sturgeon.

Dissolved Oxygen

The instantaneous minimum effluent dissolved oxygen limit of 6.0 mg/l or greater is carried forward from the current permit. The limit ensures that dissolved oxygen levels depleted during wastewater treatment process are restored prior to discharge to the Taunton River. The limit is established to protect the dissolved oxygen minimum Water Quality Criteria of 5.0 mg/l for waters designated by the State as Class SB.

While information regarding the impact of DO levels on Atlantic sturgeon specifically are not available, the related species shortnose sturgeon are known to be adversely affected by DO levels below 5 mg/l. Therefore discharges from the Taunton WWTP with DO concentrations of at least 6.0 mg/l are not expected to have an adverse effect on Atlantic sturgeon.

Total Residual Chlorine (TRC)

Chlorine compounds resulting from the disinfection process can be extremely toxic to aquatic life. The instream chlorine criteria are defined in *National Recommended Water Quality Criteria: 2002*, EPA 822R-02-047 (November 2002), as adopted by the MassDEP into the state water quality standards at 314 CMR 4.05(5)(e). The criteria establish that the total residual chlorine in the receiving water should not exceed 7.5 ug/l (chronic) and 13 ug/l (acute). The following is a water quality based calculation of chlorine limits:

Acute Chlorine Salt Water Criteria = 13 ug/l

Chronic Chlorine Salt Water Criteria = 7.5 ug/l

(acute criteria * dilution factor) = Acute (Maximum Daily)
13 ug/l x 3.4 = 44.2 ug/l X 1000 = **0.044 mg/l Maximum Daily**.

(chronic criteria * dilution factor) = Chronic (Average Monthly)
7.5 ug/l x 3.4 = 25.5 ug/l X 1000 = **0.026 mg/l Average Monthly**

There are a number of studies that have examined the effects of TRC (Post 1987; Buckley 1976; EPA 1986) on fish; however, no directed studies that have examined the effects of TRC on Atlantic sturgeon. The EPA has set the Criteria Maximum Concentration (CMC or acute criteria; defined in 40 CFR 131.36 as equals the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (1 hour average) without deleterious effects) at 13 ug/l mg/L, based on an analysis of exposure of 24 saltwater animals in 21 genera (EPA 1986) where acute effect values ranged from 26 ug/L for the eastern oyster to 1,418 ug/l for a mixture of two shore crab species. The CMC is set well below the minimum effect values observed in any species tested. As the water quality criteria levels have been set to be protective of even the most sensitive of the 24 saltwater species tested, it is reasonable to assume that the criteria are also protective of Atlantic sturgeon. As such, the discharge of the permitted concentrations of TRC is likely to have an insignificant effect on Atlantic sturgeon.

Total nitrogen

EPA conducted an extensive analysis of the impact of nitrogen loads from the Taunton WWTP and other facilities in the Taunton River Watershed to cause or contribute to eutrophication-related water quality violations in the Taunton River Estuary and Mount Hope Bay and included a seasonal average total nitrogen limit of 3.0 mg/l (May to October) in the new draft permit.[1] The analysis is set forth in pages 12-35 of the Fact Sheet and is not repeated here. The seasonal limit shall be applied on a rolling basis (e.g. the average reported for June shall include May and June of the reporting year as well as July through October of the preceding year). Also, in accordance with 40 CFR 122.45(f), EPA is imposing a monthly average mass limit of 210 lbs/day, also applicable during the months of May through October. This mass limit is based on the monthly average concentration limit and the design flow of the facility, and represents the highest load that the facility can discharge consistent with achieving water quality standards.

[1] The May to October seasonal period is consistent with other Narragansett Bay-related nitrogen limits. See Upper Blackstone Water Pollution Abatement District, MA01002369. The Mount Hope Bay Monitoring Program did not include May and October sampling, so those months were not explicitly included in the loading analysis. However, the Narragansett Bay Fixed Site Monitoring Program extends through October and includes limited data at the end of May and supports the need for permit limits in those months. For example, in 2006 chlorophyll-a concentrations in the last week of May averaged 13 ug/l with a maximum of 25 ug/l, with an average DO at the surface sonde of less than 5.0 mg/l. In 2005, chlorophyll-a concentrations from October 1 through 5 averaged 15 ug/l, with a maximum of 45 ug/l; DO concentrations measured at the near-bottom datasonde were less than 5.0 mg/l for approximately 5% of that time.

The sampling frequency is three times per week. The permit contains a compliance schedule for meeting the nitrogen limits (See Permit Section 1.G).

The total nitrogen limits in the draft permit are designed to address a significant water quality issue and are expected to significantly improve Atlantic sturgeon habitat in the Taunton River and Mount Hope Bay.

Ammonia-nitrogen

The draft permit also carries over the ammonia-nitrogen limits of the current permit of 1 mg/l average monthly and average weekly, and 2 mg/l maximum daily, in the June to September period. EPA notes that the new 3 mg/l total nitrogen limits, once in effect, should be sufficient to ensure that ammonia-nitrogen concentrations are below these limits. The ammonia limits are based on DO impacts and are lower than would be required to meet water quality criteria for ammonia toxicity, While there is a lack of available literature on the impact of ammonia-nitrogen on Atlantic sturgeon, available data with respect to shortnose sturgeon, a related species, indicate that an acute LC50 of 151 mg/l, well above the permit limits. As such, the discharge of the permitted concentrations of TRC is likely to have an insignificant effect on Atlantic sturgeon

Copper

The current permit for this facility contains an effluent limit for total recoverable copper based on the freshwater criteria for class B waters. The correct criteria for SB waters is set forth below in terms of dissolved metals (form used for water quality standard) and total recoverable metals (used for permit limits). See 314 CMR 4.05(5)(e).

Dissolved Criteria CMC ug/l	Dissolved Criteria CCC ug/l	Translator	Total Criteria CMC ug/l	Total Criteria CCC ug/l
4.8	3.1	0.83	**5.8**	**3.7**

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.

Mass balance:

$$\frac{\text{(Upstream 7Q10 flow)*(Background) + (Taunton WWTP design flow)*(permit limit)}}{\text{(Upstream 7Q10 flow + Taunton WWTP flow)}} = \text{Criteria}$$

Where: Upstream flow = 31.6 cfs
Taunton flow = 13 cfs
Background copper = 2 ug/l(tr) (median of upstream concentration from WET reports)
Criteria = CCC (3.7 ug/l tr) for average monthly permit limit

CMC (5.8 ug/l tr) for daily maximum permit limit

The resulting permit limits are:

Average monthly = 8 ug/l
Maximum Daily = 15 ug/l

Average Monthly Mass Loading Limits = (constant)(chronic criteria mg/l)(design Q mgd)

(8.34)(0.008 mg/l)(8.4 mgd) = 0.56 lbs/Day

The average monthly limit for total recoverable copper based on the chronic water quality criteria will be 8 ug/l and the maximum daily limit, based on the acute criteria, will be 15 ug/l. These limits are made more stringen than those in the existing permit based upon the use of salt water criteria and revised dilution.

Very few toxicity tests have been conducted with Atlantic sturgeon. In the absence of species-specific chronic and acute toxicity data, EPA has identified the EPA aquatic life criteria as the best available scientific information in this case. The draft permit is designed to ensure that the Taunton WWTP discharge will not cause or contribute to conditions exceeding these criteria in the Taunton River. As such, the discharge of the permitted concentrations is likely to have an insignificant effect on Atlantic sturgeon.

Other metals

EPA also reviewed analytical data submitted in connection with the Taunton WET Reports to determine whether the facility discharges other toxic metals. Data from samples of the effluent and receiving water for the period February 2008 through August 2011 are set forth in Table 11 (attachment), along with the relevant water quality criteria for each parameter. The facility discharges none of these metals at concentrations above the water quality criteria, so no limits are required.

As noted above, in the absence of species-specific chronic and acute toxicity data, EPA has identified the EPA aquatic life criteria) as the best available scientific information in this case. As none of these metals are discharged at concentrations above the water quality criteria, these discharges are not expected to adversely affect Atlantic sturgeon.

Whole Effluent Toxicity – (WET)

In addition to analysis of specific toxic pollutants, EPA and MassDEP as a matter of policy include effluent limitations and monitoring requirements for toxicity bioassays (Whole Effluent Toxicity testing) in wastewater treatment facility permits. The principal advantages of such biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and

(3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. The draft permit therefore requires the permittee to conduct four chronic (modified acute) WET tests per year, using the species, Ceriodaphnia dubia, to ensure that the discharge does not present toxicity problems. The permit requires an acute LC_{50} limit of $\geq$100%. The chronic no observable effects concentration (C-NOEC) limit is calculated to be greater than or equal to the effluent concentration in the receiving water. The inverse of the receiving water concentration (chronic dilution factor) multiplied by one hundred is used to calculate the chronic C-NOEC as a percent limit. $(1/3.4)(100) \geq 29\%$.

The Taunton WWTP has had no violations of either WET limit in the past five years; in fact, while the CNOEC limit is 29%, the facility has achieved a CNOEC of 100% for every WET test in the past five years. These permit limits are designed to prevent toxicity of the effluent and therefore will avoid adverse effects on Atlantic sturgeon.

Dilution and Extent of Discharge Plume

The water quality based effluent limitations for total residual chlorine, copper and whole effluent toxicity discussed above were calculated using a dilution factor calculated based on 7Q10 conditions for the freshwater component of the Taunton River flow in the vicinity of the discharge. The 7Q10 flow is the lowest mean river flow for seven consecutive days to be expected once in ten years. EPA did not include in the calculation of available dilution the additional seawater component of the receiving water, which is transient depending on tidal conditions.

A CORMIX type dilution model or plume mapping study was not performed to characterize the discharge plume from the Taunton WWTP, but given the tidal nature of the receiving water transient plume conditions may develop in the receiving water. In the absence of specific discharge plume information at this facility, EPA reviewed a thermal plume characterization study from a nearby facility to assess the maximum potential extent of a discharge plume in the Taunton River.

The Taunton Municipal Lighting Plant – Clear Flood Power Generating Station is located approximately one mile downstream of the Taunton WWTP, also on the West Bank of the Taunton River. A thermal plume characterization was conducted for the Cleary Flood Station in 2011 in connection with the application for reissuance of its NPDES Permit. This study utilized the Flow-3D model and incorporated calibration data collected in September 2010 to assess the facility's operation at a flow of 18.7 mgd (twice the design flow from the Taunton WWTP) from a forty foot wide surface discharge channel. At low slack tide, determined to be "worst case" conditions, the plume extended across the surface of the river averaging two feet deep and approximately 400' in length, leaving a large zone of passage in the deeper portions of the river (approximately 12 feet deep in that location). While detailed results for non-"worst case" conditions were not presented, the charts presented in the report indicate that the maximum downstream or upstream distance of the plume from the discharge point under any condition studied was approximately 1500 feet. The report noted that 85% of the river's cross sectional area remained as a zone of passage under the "worst case" conditions. These "worst case" conditions were conservatively estimated and are transient, present only for slack tide conditions expected to last on the order of ten minutes.

In addition the Aquaria desalinization plant, located approximately two miles downstream in Dighton on the opposite bank of the Taunton River, conducted plume modeling in 2005 to support its proposed 33.2 mgd submerged discharge. That study found that under buoyant conditions the plume became laterally mixed at approximately 200 meters with a plume thickness on the order of 2 feet (although this study considered only high tide conditions). The Taunton WWTP discharge is expected to be buoyant because it has lower salinity and higher temperature than the receiving water.

As reported earlier in this letter, the design flow of the Taunton WWTP is 8.14 mgd, less than half that of the Cleary Flood Station and one-fourth that of the Aquaria discharge. While an exact correlation between these discharge plumes is not possible due to a number of variables that are not quantified, it is reasonable to assume that Taunton WWTP's discharge influences the river a distance less than an upstream or downstream distance of 1,500 feet and allows a zone of passage of at least 85% of the river's cross sectional area.

Finding

Based on the analysis of potential impacts to Atlantic sturgeon presented in this letter, EPA has determined that impacts to Atlantic sturgeon from the Taunton WWTP discharge, if any, will be insignificant or discountable. Therefore, EPA has judged that a formal consultation pursuant to Section 7 of the ESA is not required. EPA is seeking concurrence from NMFS regarding this determination through the information in this letter, as well as supporting information contained in the Fact Sheet and the Draft Permit.

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

Taunton Wastewater Treatment Plant - Response to Comments

On March 20, 2013, the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) public noticed a Draft Permit (MA0100897) for the Taunton Wastewater Treatment Plant. The 2013 public notice superseded a previous draft permit that was placed on public notice from February 23 to March 24, 2007; as stated in the 2013 Fact Sheet the 2013 draft permit was a comprehensive revision of the 2007 draft and comments received in 2007 were superseded by the new draft permit.[1] Only comments received in the 2013 public comment period are addressed in this document.[2] The public comment was extended once at the request of the City and closed on June 17, 2013.

EPA and MassDEP received comments from the City of Taunton, the Taunton River Watershed Association and Mass Audubon (joint comments), the Nature Conservancy, Save the Bay, the National Park Service, the Upper Blackstone Water Pollution Abatement District, the Town of Bridgewater, Mr. Tim Watts, and the Rhode Island Department of Environmental Management. The following are EPA and MassDEP's responses to all significant comments received, descriptions of any changes made to the public-noticed permit as a result of those comments, and descriptions of any other changes made in the final permit.

EPA also received a request for reopening of the public comment period on September 16, 2014 from Hall & Associates on behalf of the City of Taunton. Pursuant to 40 C.F.R.

[1] EPA notes that the comments on the 2007 draft permit were considered in the decision to issue a new draft permit. The new draft permit incorporates an entirely new analysis of the permit conditions and comments submitted in 2007 are superseded by the issuance of the new draft permit;

[2] On July 22, September 16, and November 25, 2014, and January 8, February 17, and March 20, 2015, Hall & Associates on the behalf of the City of Taunton emailed to EPA "supplemental comments" on the Draft Permit. These "supplemental comments" were submitted long after the close of the public comment period and are therefore not timely, and EPA does not respond to those comments here. The City's contention that "these supplemental comments should be considered timely filed" because the supplemental information "was not available at the time the public comment period closed and moreover, . . .the Agency has not issued a final permit," is without merit. Even if the comments are based on information unavailable during the public comment period, this does not render them timely. Under applicable federal regulations, EPA is only required to respond to materials submitted during the public comment period. See 40 C.F.R. § 124.17(a)(2). "That is, within the interval of time between the beginning and end of the public comment period, not before, not after." *In re Avon Custom Mixing Servs., Inc.*, 10 E.A.D. 700, 706 (EAB 2002); *see also, In re City of Phoenix, Arizona Squaw Peak and Deer Valley Water Treatment Plants*, 9 E.A.D. 515, 524-31 (EAB 2000); *In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 194 n.32 (EAB 2000) ("Permitting authorities are under no obligation to consider comments received after the close of the public comment period."). The City had the opportunity to comment on the revised draft permit beyond the ordinary 30-day period required by regulation and submitted lengthy and voluminous comments on the permit (the City's original comment document is over 600 pages including attachments). The "supplemental comments," which the Region has reviewed, relate generally to the subject matter of the City's timely submitted comments, which have been duly considered, with the exception of the new, purely legal argument presented in the February 17, 2015 submittal regarding EPA's authority with respect to the permit flow limit and the several new issues raised in the March 20, 2015 submittal. Given the foregoing, and the fact that the existing permit is long expired, the evidence of ongoing water quality impairments, and the need in EPA's assessment for timely imposition of more stringent nutrient controls, EPA rejects the "supplemental comments" as untimely and accordingly does not respond to them in this Response to Comments.

124.14, EPA finds that such a reopening would not expedite the decision-making process and that the public comments do not appear to raise substantial new questions concerning the permit, and therefore denies the request.

The City of Taunton submitted comments by letter dated June 18, 2013, consisting of three parts: (A) A cover letter from Mayor Thomas C. Hoye, Jr.; (B) Attachment 1: Comments Submitted by the City of Taunton; and (C) Attachment 2: Comments Submitted by Hall & Associates on Behalf of the City of Taunton.

A. City of Taunton cover letter from Mayor Thomas C. Hoye, Jr

Comment A1. The City of Taunton ("Taunton" or the "City") submits the comment herein on the proposed modification of Taunton's NPDES Permit No. MA0100897 that were published for comment by EPA on March 20, 2013. The deadline for filing comments was extended at the request of the City, by EPA, to June 20, 2013. This new nitrogen limit for the Taunton permit is reflective of EPA's and the Massachusetts Department of Environmental Protection's (MassDEP) concern about nutrient loadings to the Taunton River and ultimately Mount Hope Bay. Taunton shares the concern of the federal and state governments about the health of Mount Hope Bay and acknowledges that it and other point sources discharge nitrogen from its wastewater treatment facilities (WWTF) into the Taunton River. Taunton also recognizes that there are significant non-point sources of nitrogen contributing to the Taunton River Watershed. We appreciate that upgrades to the Taunton WWTF, and others, may be necessary to ensure compliance with applicable standards.

> **Response A1.** EPA appreciates the recognition by the City that nutrient loadings from wastewater treatment facilities and other sources are impacting the health of Mount Hope Bay and the Taunton River, and that upgrades to the Taunton WWTF may be necessary for compliance with water quality standards. In developing the draft permit EPA performed a thorough analysis of the available data, including the contribution of point and nonpoint sources, and established loading targets and permit limits that will ensure the health of this system. EPA looks forward to working with the City as it comes into compliance with these requirements.

Comment A2. The comments filed today by the City indicate that it is not possible to reliably identify the degree of nitrogen control required to ensure compliance with applicable standards using the methodology employed by EPA. Many changes in plant performance have been implemented in this and other basins since 2004/2005. Moreover, the conditions governing dissolved oxygen concentrations in Mount Hope Bay differ significantly from those in the Taunton River. This reality impacts the degree to which the City and other municipal wastewater treatment plants discharging into Taunton River must reduce their nitrogen loading. The question is whether the nitrogen limit included in the draft permit (a monthly average concentration of 3 mg/l) is supported by the current data and analyses. The data used in the Fact Sheet for the Draft NPDES Permit is from 2004-2005. Since that time, water quality in Mount Hope Bay has improved markedly due to the CSO deep tunnel project in Fall River, the construction of cooling towers at the Brayton Point Station and improvements to some upstream wastewater treatment plants. The beneficial effect of these changes on the Taunton River and Mount Hope Bay is apparent in more recent data, but was not assessed by EPA in rendering this permit decision. Therefore, more recent data should be used for analysis of nitrogen loading for the WWTP point source discharges to the Taunton River.

Response A2. EPA has carefully considered the information provided in the comment and has concluded that the comments do not raise issues that would lead EPA to change its conclusions regarding the nitrogen limit. The specific criticisms of EPA's analysis are incorrect in that they rely on selective use of data (see Responses C23 and C24); comparison of dissimilar datasets (see Response C13); misleading analyses that adjust some, but not all, relevant parameters (see Response B4); and mischaracterization of relevant literature (see Response C18). EPA relied on the best available data (the only comprehensive dataset, collected in accordance with a MassDEP approved program) in performing its analysis.

EPA is encouraged that the investments made in CWA compliance by the Brayton Point Power Plant, the City of Fall River, and the City of Brockton, among others, are perceived to have resulted in water quality improvements in Mount Hope Bay. However, monitoring of specific eutrophication-related indicators indicate that this specific aspect of Mount Hope Bay water quality issues has not been solved. While chlorophyll concentrations were somewhat lower in 2010-12 than in the prior four years, see Comment C29, they were still above the levels indicative of eutrophication impacts, and 2013 concentrations were among the highest ever recorded. See Response C29. Dissolved oxygen (DO) monitoring also indicates continued impacts of algae blooms on DO (supersaturated conditions at surface and bottom DO depletion) and violations of the DO water quality standards. See Responses C12 and C29. This is not unexpected; the specific water quality improvements implemented by Brayton Point and the City of Fall River would not be expected to have a substantial impact on eutrophication in this system, and while there have been load reductions since 2004-05 they are not as substantial as the comments claim. See Response C13. EPA's load analysis predicts that the load reductions to date would not be sufficient to control eutrophication, and that has proven to be the case, as adverse nutrient-related water quality impacts continue based on the limited more recent data.

EPA did in fact asses more recent data in its original analysis, see Fact Sheet at 25-26, and concluded that water quality violations have continued consistent with the prediction of EPA's loading model. EPA did not base its baseline analysis on the more recent available data because the recent data do not provide a comprehensive dataset suitable for analysis of nitrogen loading for the WWTP point source discharges to the Taunton River Estuary. The 2004-06 dataset, which was the product of a monitoring program approved by MassDEP and consistent with Massachusetts Estuaries Program (MEP) procedures, includes estuarine monitoring for both nutrients and eutrophication indicators (DO and chlorophyll-a) at 22 stations within Mount Hope Bay and the tidal rivers contributing to the bay, while the more recent estuarine water quality monitoring for DO and chlorophyll-a is limited to a single site in Mount Hope Bay. The 2004-06 dataset also includes nutrient monitoring at stations in the freshwater sections of the Taunton River and four other contributing streams, which can be used in combination with flow records to determine river loadings to the estuary. In contrast the recent river loading sampling is limited to a single site in the Taunton River Estuary, is not directly comparable to freshwater sampling and is limited in parameters monitored.

In sum, EPA rejects the comment's suggestion that it must reanalyze the entire system rather than use the 2004-05 baseline because there have been some load reductions and other water quality projects since that time, even where (1) model predictions indicate eutrophication impacts will continue; (2) the available evidence indicates that EPA's predications are correct and eutrophication impacts are in fact continuing; and (3) such an update would require initiation of a new multi-year intensive monitoring effort similar to that done in 2004-06, delaying permit issuance for a minimum of two years. Nitrogen limits consistent with the Fact Sheet analysis are necessary to ensure that water quality standards are met and are included in the Final Permit.

Comment A3. The City has committed to begin promptly planning for an upgraded WWTF that will achieve appropriate total nitrogen concentrations in its discharge. A "Draft Environmental Impact Report and Final Comprehensive Wastewater Management Plan" was submitted to MassDEP in July 2009. Although discussions of nitrogen removal technologies were presented in the plan, it was never finalized as permit limitations for Total Nitrogen had not been developed by regulating authorities. Work to complete the plan will commence as soon as all comments regarding the draft NPDES permit are considered and the final permit is issued.

Response A3. EPA acknowledges the City's commitment to begin planning but notes that other facilities in the watershed have continued their planning process prior to issuance of a final permit and that the City has had notice of the expected permit limits since at least 2012. The City should be prepared to act expeditiously to finalize its plan so that upgrades can be completed within a reasonable schedule of compliance. See Response B8 regarding compliance schedules.

(B) Attachment 1: Comments Submitted by the City of Taunton

Comment B1. Inappropriate Interpretation of the Massachusetts Narrative Criteria
There remains significant uncertainty with respect to appropriate numeric nutrient criteria that should be used to establish discharge limits for treatment facilities in the Taunton River, Mount Hope Bay, and Narragansett Bay systems. The MassDEP and the Rhode Island Department of Environmental Management have not adopted numeric nutrient criteria for these surface water bodies and existing Surface Water Criteria in both states

rely on narrative criteria, only. (See comments by Hall & Associates, provided in Attachment 2, also addressing this issue).

To include the proposed nitrogen limit in the draft NPDES permit, EPA has relied on interim, unadopted numeric criteria serving as a translator of the narrative criteria established in State's Surface Water Quality Standards. The numeric criteria used were presented in an interim report (Massachusetts Estuaries Project – Site Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators) prepared by the School for Marine Science and Technology at the University of Massachusetts Dartmouth. However these numeric thresholds, which were developed for three Cape Cod embayments in the Town of Falmouth, MA, were never subject to public comment and may not be applicable to the Taunton River, Mount Hope Bay and Narragansett Bay.

Relying on data from dissimilar water bodies brings a high level of uncertainty with respect to the numeric criteria needed to protect the Taunton River, Mount Hope Bay and Narragansett Bay. The report states: "it is not possible at this time to put quantitative nitrogen levels on each Water Quality Class. In fact, initial results of the Massachusetts Estuary Project (Chatham Embayment Report 2003) indicate that the total nitrogen level associated with a particular ecological response can vary by over 1.4 fold". The report goes on to conclude that "before final criteria are established, several habitat quality classification issues need to be resolved, including, but not limited to: variation in multiple indicators, embayments versus salt marsh habitat, upper versus lower embayment thresholds, and stable versus transitional habitat quality." Since such activities have not occurred, reliance on the Critical Indicators report to classify the Taunton River as nutrient impaired or to set ambient water quality targets is inappropriate and unsupported.

> **Response B1.** EPA disagrees with the characterization of its permit limit analysis. As stated in the comment, the relevant water quality standards for nutrients in the receiving waters for Taunton's discharge include the Commonwealth's narrative nutrient water quality criteria. In setting the effluent limits in the draft permit EPA followed the process established in 40 CFR 122.44(d)(vi)(A), under which EPA:
>
>> Establish[es] effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such a criterion may be derived using a proposed State criterion, or an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information which may include: EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data, information about the pollutant from the Food and Drug Administration, and current EPA criteria documents.

EPA's reliance in part on the interim report, Howes et al, *Massachusetts Estuaries Project – Site Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators* (2003) ("*Critical Indicators Report")*, is consistent with the directive of 40 CFR § 122.44(d)(vi)(A). That regulation permits the use of a range of "relevant information." While MassDEP has not adopted the *Critical Indicators Report* as a specific policy, it has afforded the document technical and scientific weight, has explicitly relied on the report in numerous Massachusetts Total Maximum Daily Load (TMDL) Reports interpreting the narrative nutrient criterion, see, e.g. *Final West Falmouth Harbor Embayment System TMDLs for Total Nitrogen* (2007) at 4; *Final Pleasant Bay System TMDLs for Total Nitrogen* (2007) at 4, and refers to the critical indicator process in the 2012 *Massachusetts Consolidated Assessment and Listing Methodology* ("*2012 CALM*"). EPA therefore properly considered this document as containing "relevant information", along with the other information sources cited in the Fact Sheet including EPA guidance documents, national and site specific studies of nutrients and eutrophication, and comparison to other state materials. EPA notes that 40 CFR § 122.44(d)(vi)(A) does not limit "relevant information" to documents that have undergone a public comment process; however, the various TMDL Reports and *2012 CALM* were subject to public comment, as was Taunton's draft permit.

EPA agrees that the specific numeric nitrogen thresholds established for the three Cape Cod embayments in Falmouth, MA were not intended to be directly applicable to the Taunton River estuary and Mount Hope Bay, and EPA did not simply apply those thresholds in establishing the effluent limit for the Taunton WWTP. Rather, EPA applied the process set forth in that document in assessing the condition of the receiving water in terms of eutrophication indicators and deriving site-specific nitrogen targets for the receiving waters impacted by the Taunton discharge. EPA also compared the results from the Taunton analysis to the site-specific criteria reported in the *Critical Indicators Report* and subsequent TMDLs (along with criteria applied in other states) to gauge whether the results fell within the same general zone of those values. They did, which provided EPA additional assurance that the target it derived for the Taunton River did not markedly differ from similarly (though of course not identically) situated water bodies.

EPA's approach is consistent with the language from the *Critical Indicators Report* quoted in the comment. The *Critical Indicators Report* states that the data therein are not sufficient to establish numeric criteria for "each Water Quality Class" (i.e. the state classification system for water bodies such as SA and SB) and that further work on habitat classification is necessary before "final criteria" (i.e. numeric nitrogen criteria promulgated as part of the state's water quality standards) can be established. This language describes the obstacles to establishing statewide numeric nutrient criteria for estuaries. The document supports the type of site-specific analysis performed by EPA; indeed the *Critical Indicators Report* contains site-specific analyses for several embayments and the process therein has been used in multiple TMDLs. EPA's reliance, in part, on this report in its determinations under 40 C.F.R. § 122.44(d) was appropriate and consistent with state approaches. See also Response C4.

Although EPA acknowledges some unavoidable level of scientific and technical uncertainty in this permitting action, the existence of uncertainty does not excuse EPA from its obligation to set permit limits where a discharge "causes, has a reasonable potential to cause, or contributes to an excursion above a narrative criterion." 40 CFR § 122.44(d)(1)(i). EPA also agrees that there is some uncertainty with respect to the precise numeric water quality criterion for nitrogen that "will attain and maintain applicable narrative water quality criteria and fully protect the designated use" as required pursuant to 40 CFR § 122.44(d)(1)(vi)(A), although such uncertainty is within a relatively narrow zone. As set forth in 40 CFR 122.44(d)(1)(vi):

> Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority **must** establish effluent limits using one or more of the following options . . ."

This obligation exists even where there is incomplete or uncertain information concerning the precise target that will meet the narrative criterion. As stated by the Environmental Appeals Board:

> The Board has specifically held that "[i]n the face of unavoidable scientific uncertainty, the Region is authorized, if not required, to exercise reasonable discretion and judgment." *In re Dominion Energy Brayton Point, LLC,* 13 E.A.D. 407, 426 (EAB 2007). The federal courts in reviewing Agency decisions have similarly recognized that scientific uncertainty is not a bar to administrative decision making: "We do not demand certainty where there is none. There may be no strong reason for choosing [a particular numerical standard] rather than a somewhat higher or lower number. If so, we will uphold the agency's choice of a numerical standard if it is within a 'zone of reasonableness.'" *Small Refiner Lead Phase-Down Task Force v. EPA,* 705 F.2d 506, 525 (D.C. Cir. 1983) (citation omitted); *see also Hercules, Inc. v. EPA,* 598 F.2d 91, 116-17 (D.C. Cir. 1978). More than three decades ago, the D.C. Circuit aptly described the CWA's balance when confronted with a difficult situation and the obligation to eliminate water quality impairments: ". . . EPA may issue permits with conditions designed to reduce the level of effluent discharges to acceptable levels. This may well mean opting for a gross reduction in pollutant discharge rather than the fine-tuning suggested by numerical limitations. *But this ambitious statute is not hospitable to the concept that the appropriate response to a difficult pollution problem is*

> *not to try at all.*" *Natural Resources Defense Council, Inc. v. Costle,* 568 F.2d 1369, 1380 (D.C. Cir. 1977) (emphasis added) (finding unlawful a rule that would have exempted certain discharges from permitting requirements based on the difficulty in setting limits).

Upper Blackstone Water Pollution Abatement District, NPDES Appeal Nos. 08-11 to 08-18 & 09-04, 14 E.A.D. 577, 606 (May 28, 2010).

Comment B2. Proposed Nitrogen Limits are Unattainable
As stated above, Taunton does not believe EPA has a sound scientific basis to impose a limit of technology nitrogen limit. Even if EPA had sound reason to establish a limit of technology limit, the EPA has insufficient basis to establish that limit at 3 mg/l for several reasons. The first is that limits of technology need to be discussed in the context of a time period. What is achievable on an annual or seasonal average basis is different than what is achievable on a monthly average basis. EPA has inappropriately taken average seasonal limit of technology expectations and applied them as monthly limits. Section VI B. 5 of the Fact Sheet states: "The permit limit is 3.0 mg/l total nitrogen as a seasonal average, and a mass limit of 210 lbs/day….". Attachment D to the Fact Sheet (Page 8) also refers to the Total Nitrogen limit as seasonal and specifically states "The seasonal limit shall be applied on a rolling basis (e.g. the average reported for June shall include May and June of the reporting year as well as July through October of the preceding year)". However, the concentration and mass limits in the permit are identified as monthly averages not seasonal averages. Seasonal (May thru October/6-month rolling average) total nitrogen limit are the more appropriate permit basis.

EPA's Municipal Nutrient Removal Technologies Reference Document (2008, p. 2-80) references several factors that affect nitrogen removal efficiency. One factor that can influence how low the TN can be reduced is the dissolved organic nitrogen (DON) concentration. At this point, the DON concentration in Taunton's wastewater is not known and its impact on water quality is anticipated to be negligible. This will be explored in more depth as part of the Final Comprehensive Wastewater Management Plan. Effluent DON concentrations reported in various literature sources range from 0.4 mg/l to 2.2mg/l with an average concentration of approximately 1.3 mg/l. EPA's reference document also states that "The DON concentration is a critical variable for determining TN standards because the chemicals have limited availability for biological removal". Likewise, this parameter is not shown to have a stimulatory effect on plant growth in the River.

Absent this data, EPA cannot set the standard at the limit of technology with certainty or claim control of DON is necessary to protect the River. In the absence of DON data, EPA should consider a total inorganic nitrogen limit consisting of nitrite and nitrate nitrogen plus ammonia since these are the forms of nitrogen that are biologically available. This concept is further supported by an EPA publication entitled " An Urgent Call to Action Report in the State-EPA Nutrient Innovations Task Group" (August 2009) that discusses technology based limits for nitrogen in terms of nitrate and nitrite, only (see Attachment

1.A). We have included ammonia (ammonium) in the nitrogen standard because of its bio-availability.

Over the past few years, Connecticut communities have had to upgrade treatment facilities with state of the art technology to reduce nitrogen levels to the limits of technology in order to meet the requirements of the Long Island Sound total maximum daily load. The table below is a compilation of the 2010 data from ten of the recently upgraded plants in Connecticut.

Although these plants are producing low total nitrogen concentrations, individual monthly data (maximum month) from April through October indicates that the 3 mg/l limit cannot be achieved at all times. This also holds true for the average monthly concentration over the same April through October period. Setting a permit concentration at the limit of technology, requires a treatment facility to achieve discharge concentrations below that limit. By definition, this cannot be accomplished on a consistent basis and will result in persistent permit violations.

At a minimum, the EPA should consider defining total nitrogen as the sum of nitrite-N, nitrate-N and ammonia. Additionally, the permit limit for total nitrogen should be established as a rolling average seasonal limit over the May through October period.

CONNECTICUT WWTFs 2010 DATA
MONTHLY AVERAGE TOTAL NITROGEN CONCENTRAION (mg/l)

Town	Process	Average 12-month	Average Apr. – Oct.	Max. Month Apr. – Oct.
Branford	4-stage Bardenpho	3.4	3.1	4.7
Cheshire	Denite Filters	1.8	2.0	2.9
Jewett City	Phased Oxidation Ditch	2.3	2.1	3.0
Southington	Trickling Filter/Denite Filter	5.4	5.2	7.7
Suffield	MLE Oxidation Ditch	2.1	1.9	2.9
Stamford	4-Stage Bardenpho	3.5	2.8	3.2
New Canaan	MLE Oxidation Ditch	3.1	2.4	3.1
Milford Housatonic	4-Stage Bardenpho	4.7	4.4	5.1
Westport	4-Stage Bardenpho	2.6	2.1	2.6
Waterbury	4-Stage Bardenpho	4.1	3.7	5.4

* Reference **Attachment 1.B** for complete 2010 data.

Response B2. The comment appears to misapprehend the technology aspect of EPA's permit limit analysis. The permit limit for total nitrogen is not a "technology-based limit" within the meaning of the CWA. It is a water quality based limit and is not based on technological or financial feasibility. 40 C.F.R. § 122.44(d). In allocating the available nitrogen load among the contributing facilities, EPA in its discretion considered a number of factors, including size of facility, proximity to estuarine waters, and the limits of available nutrient-removal technology to determine an appropriate permit limit for each facility. One possible permitting scenario was to uniformly impose a limit of less than 3.0 mg/l on all facilities. EPA's determination to include limits of 3 mg/l on the largest facilities and slightly higher (5-5.5 mg/l) on the smaller facilities was an appropriate allocation approach that accounted for the relative water quality impact of the various discharges.[3]

In EPA's experience since 2008, dissolved organic nitrogen (DON) has not proven to prevent attainment of a 3.0 mg/l TN permit limit. For example, the TN limits for Wareham, MA and Scituate, MA were increased from 3.0 mg/l to 4.0 mg/l based on issues raised relative to potentially high levels of DON in the discharges that might prevent attainment of the 3.0 mg/l limits and claims that the DON is not as bioavailable as the inorganic forms of nitrogen. The concern that high DON might prevent attainment of a 3.0 mg/l limit has since proven to be unfounded, while concerns with the bioavailability of DON have increased (see below). In 2010, Scituate's effluent TN during the period from April through October averaged 2.7 mg/l (with a maximum monthly average of 4.9 mg/l) and Wareham's TN during the months of April through October averaged 2.8 mg/l (with a maximum monthly average of 5.16 mg/l). See Facility DMR data, available from Envirofacts (www.epa.gov/enviro). Both of these facilities averaged less than 3.0 mg/l TN despite only being required to achieve a limit of 4.0 mg/l.[4]

EPA has considered defining the nitrogen limit in terms of a subset of nitrogen species as suggested in the comment, but has determined that such a definition would not be sufficiently protective as it does not address all the components of nitrogen that contribute to organic enrichment and eutrophication. Consistent with recommendations in EPA's *Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Waters* (2001), because of the recycling of nutrients in the environment it is best to limit total concentrations (i.e. total nitrogen) as opposed to fractions of the total. In addition, recent research has documented that forms of nitrogen considered unavailable for plant growth are substantially more bioreactive than previously thought, further supporting the need to control total nitrogen rather than just the dissolved inorganic components suggested in the comment. (Wiegner et al., (2006); Sedlak et al (2011) (portion of dissolved organic nitrogen (DON) that is not bioreactive is only 10 – 29% of the effluent

[3] When setting water quality based limits EPA is not restricted to the limit of technology; limits lower that a current limit of technology may be set, if necessary to achieve water quality standards. That was not required here, as the load reduction was achievable with limits at or above the limit of technology; however should future information indicate that more stringent limits are necessary (i.e. if nonpoint source reductions are not achieved), future permit limits could be set that are more stringent than the limit of technology.

[4] EPA notes that the City could readily have analyzed its effluent and provided data concerning DON concentrations during the 90 day comment period but chose not to do so, relying instead on a speculative concern that is not supported by the data from other facilities.

DON); Filippino et al., (2010) (between 31% and 96% of the effluent derived organic nitrogen (EON) was removed during biotic bioassays within the first 2 days)).[5]

The City's claim that Connecticut treatment facilities have had to upgrade with "state of the art technology to reduce nitrogen levels to the limits of technology in order to meet the requirements of the Long Island Sound" TMDL is not accurate. The permits, which were consistent with available WLAs for the discharge in EPA-approved TMDLs, set mass limits for these facilities. *See* CTDEP, General Permit for Nitrogen Discharges (2011) http://www.ct.gov/deep/lib/deep/water/municipal_wastewater/2011_2015_nitrogen_gp.pdf. The mass-only requirements in the TMDL equate to concentration limits at design flows ranging from 3.3 mg/l - 4.7 mg/l, and since the actual average flow at these facilities is significantly lower than the design flow, the concentration they must achieve is significantly higher (see table below); facilities may also engage in trading under the Connecticut Nitrogen Credit Exchange if they do not meet their load limit.

Facility	Total Nitrogen Limit in lbs/day (TMDL)	Design Flow (MGD)	Total Nitrogen Concentration Required to meet Load Limit at Design Flow (mg/l)
Branford	192	4.9	4.7
Cheshire	103	3.5	3.5
Jewett	15	0.5	3.6
Southington	204	7.4	3.3
Suffield	45	1.5	3.6
Waterbury	1049	27.0	4.7
Westport	87	2.85	3.7
Stamford	926	24.0	4.6
New Canaan	64	1.7	4.5
Milford Housatonic	307	8.0	4.6

Despite not being required to achieve limits as low as is feasible, seven of these facilities achieve a seasonal average (April – October) of less than 3.0 mg/l (Branford's 2010 seasonal average was 2.8 mg/l and not 3.1 mg/l as indicated in

[5] Wiegner et al., "Bioavailability of dissolved organic nitrogen and carbon from nine rivers in the eastern United States, 43 *Aquatic Microbial Ecology* 277-87 (2006); Sedlak, D.L., J. Jeong and H.D. Stensel. 2011. Bioavailability of Dissolved Organic Nitrogen in Wastewater Effluent as Determined by Resin Separation. *Nutrient Recovery and Management 2011*. Water Environment Federation; Filippino, K.C., M. Mulholland, P. Bernhardt, G. Boneillo, R. Morse, M. Semcheski, H. Marshall, N. Love, Q. Roberts, D. Bronk. The Bioavailability of Effluent-derived Organic Nitrogen along an Estuarine Salinity Gradient, *Estuaries and Coasts* (2010), 34(2): 269-280.

the comment due to a calculation error in the table presented in Attachment 1B) and four of these facilities achieve a year round average of less than 3.0 mg/l. Although not included in the table provided with the comment, the Town of Simsbury, Connecticut had a 2010 seasonal average of 2.2 mg/l and an annual average of 2.6 mg/l.

A 2007 study of Florida facilities found 40 facilities meeting effluent TN limits of 3.0 mg/l (as determined by the 95th percentile of monthly average concentrations), with 58% of them below 2.5 mg/l. The study concluded that "Currently, there is industry agreement that the LOT ["limit of technology"] for current technologies is on the order of TN and TP of 3.0 mg/L and 0.10 mg/L respectively. However, based on the information presented herein, "conventional" BNR facilities can actually consistently meet lower effluent requirements, particularly for TN." Jiminez et al., *Full Scale Operation of Large Biological Nutrient Removal Facilities To Meet Limits of Technology Effluent Requirements: The Florida Experience"* (WEFTEC 2007). Such results are not limited to facilities in warm climates; a 2011 WEF/WERF report indicates that the Tahoe, California wastewater treatment facility achieves a median TN concentration of 2.5 mg/l (95% are less than 3.37 mg/l). Parker et al., *WEF/WERF Cooperative Study of Nutrient Permit Limits: Achievable Technology Performance Statistics for Low Effluent Limits* (2011).

While the above confirms EPA's conclusion that a TN concentration of 3.0 mg/l is achievable, as stated in the Fact Sheet EPA concurs with the commenter that the available information on effluent variability indicates that an effluent limit of 3.0 mg/l may not be consistently achievable on a monthly basis in colder climates using currently available nitrogen removal technologies and may only be achievable over a longer seasonal period. The permit limit is a seasonal (six month) rolling average; EPA agrees that the Draft Permit language was unclear as to the seasonal aspect of the limit and Footnote 12 of the Final Permit has been modified to clarify this as follows:

> The nitrogen limit is a rolling seasonal average limit, which is effective from May 1 – October 31 of each year. The first value for the seasonal average will be reported after an entire May – October period has elapsed following the effective date of the permit (results do not have to be from the same year). For example, if the permit becomes effective on December 1, 2014, the permittee will calculate the first seasonal average from samples collected during the months of May through October 2015, and report this average on the October 2015 DMR. For each subsequent month that the seasonal limit is in effect, the seasonal average shall be calculated using samples from that month and the previous five months that the limit was in effect.

EPA has also reviewed its basis for including both a mass limit and concentration limit for total nitrogen. As set forth in the Fact Sheet, loads from the various facilities were allocated using an assumed effluent limit, in order to provide a basis for comparison as to the level of treatment that would be required from facilities of different size and distance from the estuary. The nitrogen analysis itself, however, is based on analysis of total loads to the estuary and is not dependent on any assumptions regarding concentration and flow from this facility. In this context, a mass-only limit equal to that in the Draft Permit is protective of water quality standards in the estuary, without any corresponding concentration-based limit.

Concentration-based limits are authorized but not mandated under EPA's regulations, and EPA has regularly imposed them in other permits for a variety of water quality-based rationales. In this case, mass-only limits are expected to be sufficient to meet the water quality requirements described in the Fact Sheet, and will provide some flexibility to the facility to operate in a more cost-efficient manner even in the absence of trading.[6] Therefore EPA has eliminated the concentration limit for Total Nitrogen from the Final Permit in favor of a mass-load only limit. EPA notes that if in the future further analysis or data indicates that concentration-based limits are necessary to meet water quality requirements (such as if predicted reduction in nonpoint source and stormwater loads do not occur), EPA will include such limits in future permit reissuance. The Final Permit contains a seasonal average mass limit of 210 lb/day.

Comment B3. Proposed Mass Limit Restricts the City's Ability to Expand Sewer Service

The proposed mass limit for total nitrogen effectively caps future plant flow rates to the current permitted flow of 8.4 mgd. Since the permit, as written, sets the total nitrogen concentration in the effluent at the limit of treatment technology, no further reduction in total nitrogen is possible and therefore no increase in flow is possible to prevent the mass limit from being exceeded. Given the lack of current data or analyses (see Attachment 2 for further information), it is not reasonable or appropriate to impose the equivalent of a growth moratorium on the City.

In Section VI.A of the Fact Sheet, EPA acknowledges that in the Draft Environmental Impact Report (DEIR) for the Comprehensive Wastewater Management Plan, the City

[6] Mass-only limits have been implemented in certain state-delegated NPDES programs, involving watershed-wide loading analyses of nitrogen load reductions. For example, the Long Island Sound TMDL nitrogen load allocations (see NYSDEC and CTDEP, *A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound* (December 2001)) have been implemented in Connecticut through a mass load-based *General Permit for Nitrogen Discharges* from POTWs. This approach facilitates the trading of nitrogen load credits under Connecticut's Nitrogen Credit Exchange. See http://www.ct.gov/deep/cwp/view.asp?A=2719&Q=325572. Similarly in the Chesapeake Bay Watershed, EPA encouraged a permitting approach based on annual mass loads and promoted watershed permits and trading programs. See Chesapeake Bay Program, *NPDES Permitting Approach for Discharges of Nutrients in the Chesapeake Bay Watershed (*December 2004). Load based permit limits facilitate trading programs, although no such programs have been proposed in the Taunton watershed.

has identified 14 priority areas currently served by on-site wastewater disposal systems to which sewer system expansion has been proposed. Subsequent to the completion of the DEIR, the City has initiated planning to redevelop the Dever School property as an industrial park to enhance the City's economic base. Other future development opportunities are present in existing industrial zoned areas likely to contribute wastewater to the wastewater collection system. The proposed design flow rate to Taunton's wastewater treatment facility, in the DEIR, increases from 8.4 mgd to 10.2 mgd. This flow rate will be re-evaluated in the Final Environmental Impact Report.

Septic systems in general contribute a significant nitrogen load to the Taunton River watershed. By expanding the wastewater collection system to encompass the sewer needs areas, this will transfer treatment of wastewater to the WWTF and reduce the non-point nitrogen load to the River.

Establishing a mass total nitrogen limit in the discharge would effectively prohibit expansion of the wastewater collection and treatment system beyond its present design capacity. Antidegradation provisions in the clean water act could restrict future expansion of the wastewater treatment facility. Therefore, the mass limit should be removed from the permit.

> **Response B3**. EPA disagrees with the City's assumption that it is entitled to continue to add additional wastewater flows to a clearly impaired system pending the collection of more current data or development of additional analyses. See Responses A2, C12-13 and C29 for further discussion of current data. EPA also disagrees that the permit limit will function as a "growth moratorium." EPA agrees that septic systems contribute a significant nitrogen load to the Taunton River watershed, and that transfer of septic system flows to the WWTF has potential to reduce nitrogen loading to the River, particularly once the WWTF has been upgraded to achieve the permit load of 210 lbs/day. In considering requests for increased flow under an antidegradation analysis, the load reduction from transferring septic system flows to the WWTF will be considered in determining the overall impact of a flow increase. (For example, a load reduction from septic systems may be determined to offset load increases from new development in order to allow for tie-in of new development.)
>
> EPA also disagrees with the City's assumption that removing the mass limit would alleviate its concerns about restriction on future increased loads. The comment misapprehends the impact of a mass limit in this permit.
> The City is correct that "Antidegradation provisions in the clean water act could restrict future expansion of the wastewater treatment facility", in that any increase in the authorized discharge of pollutants is subject to the antidegradation provisions of the Massachusetts Water Quality Standards, whether or not a mass limit based on the current flow of 8.4 mgd is placed in the permit. The Massachusetts antidegradation provisions require that existing water quality and uses be maintained, a requirement that is in practice satisfied by maintaining the

same mass loading under an increased flow as was allowed under the prior effluent flow limit, whether or not a mass limit is included in the permit.

EPA recognizes that the City of Taunton has been engaged in a planning process that includes consideration of increased flows, although EPA notes that the planned increases are not limited to within the City of Taunton but extend to other communities currently connected to the Taunton WWTF. EPA also notes that the City's efforts to reduce inflow and infiltration (I/I) into its system pursuant to previous permits and compliance orders has dramatically reduced flows into the system and may reduce or eliminate any flow increase at the WWTF required to meet its planned needs. The City's planning documents indicate a significant amount of flow from tying in septic systems in needs areas, resulting in watershed load reductions that may well be sufficient to offset nitrogen impact of the increased flows under consideration. This is based on a preliminary review of the City's documents, which are not final, and EPA looks forward to working with the City as its planning process moves forward.

Comment B4. Allowable Total Nitrogen Load
Section VI.B.f.ii of the Fact Sheet develops an allowable total nitrogen load from the watershed, and more specifically point sources that would result in a concentration at or below the 0.45 mg/l threshold that was derived in other sections of the fact sheet. That validity of that threshold is questioned in other comments offered by the City but is used here for illustrative purposes.

The analysis performed by USEPA in the Fact Sheet relies on sampling performed by SMAST as part of the Mount Hope Bay Estuarine Monitoring Program, during the months of June, July and August of 2004 through 2006. Under that program, samples were collected on two occasions from 22 sampling stations each month for a total of 18 sampling events. In USEPA's analysis of allowable total nitrogen loading, data from 2006 was not used due to significant wet weather events that occurred in June. Although flows in the Taunton, Three Mile and Segreganset Rivers were elevated during that month, the 3-year average flow for June through August is more indicative of historic flows over the entire 6-month seasonal permitting period of May through October. The analysis should not be limited to selected low flow periods only.
Assuming EPA's approach is valid, we have recalculated the allowable total nitrogen load following the procedures established by USEPA and incorporating the 2006 monitoring data. The calculation is provided in **Attachment 1.C** for consideration and a brief summary of the results is provided as follows:

• The average total freshwater flow was 881 cfs
• Ocean flow was determined as 1,458 cfs based on an average salinity of 18.7 ppt.
• Based on a target TN concentration of 0.45 mg/l, the targeted nitrogen load was 5,672 pounds per day (ppd)
• The allowable load from watershed sources was determined as 3,472 ppd
• The required nitrogen load reduction was 756 ppd
• Based on a 20-percent reduction in nitrogen from non-point sources, the available nitrogen load from wastewater discharges was 2,187 ppd.

• Applying a uniform nitrogen concentration to wastewater discharges, the allowable total nitrogen concentration is 8.8 mg/l.

Based on the above, establishing a total nitrogen limit of 8.0 mg/l for all identified wastewater treatment facilities discharging to the Taunton River is warranted.

> **Response B4.** The analysis presented in the comment is fundamentally flawed in its calculation of the required nitrogen load reduction of 756 ppd if 2006 is included in the period of analysis. That figure is based on an assumption that the watershed load in 2006 is the same as the amount calculated for 2004-05 (see Comment Attachment 1.C, using an assumed watershed load of 4,228 ppd). In fact nonpoint source and stormwater loads would be expected to be higher in wetter periods such as 2006, so this is an erroneous assumption. By accounting for the higher flows (higher dilution) in a wetter period, while ignoring the higher loads that accompany those higher flows, the comment presents a skewed analysis that does not reflect actual loading conditions in wet periods.
>
> A corrected estimate for 2006 is presented below, which demonstrates that even if 2006 is included the allowable nitrogen concentration from wastewater discharges does not differ significantly from that presented in the Fact Sheet. EPA notes, however, that even if a higher allowable load were calculated using the extreme wet weather conditions of 2006 that would not change EPA's conclusions concerning the appropriate permit limit. 2006 was an extraordinarily wet year, with the highest average annual streamflow ever recorded at the Taunton River USGS gage at Bridgewater (period of record 1930-present). The comment's claim that the 2006 June to August period is "more indicative of the six month permit season" is false; for example flows at the USGS Bridgewater gage[7] averaged 839 cfs in June to August 2006, compared to a long term (1930-2012) May to October average of 288 cfs. EPA rejects the contention that it was required to include an extreme weather period in its analysis if the resulting permit limits would clearly be insufficiently protective in most years.
>
> To estimate a more accurate nonpoint source load for 2006, EPA examined the available load data for 2004 and 2005 at flows comparable to those in 2006. (SMAST stream monitoring did not continue through 2006 so a direct calculation of 2006 loads is not available.) Figure R1 shows loads on the Taunton River at Weir Village[8] calculated from 2004 and 2005 monitoring data plotted against flow at the Bridgewater gage, along with the average summer flows in 2004, 2005 and 2006.

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[7] The USGS Bridgewater gage measures flow from just over half of the overall watershed.

[8] Load = measured concentration * flow at USGS Bridgewater gage * 1.37 (flow correction factor for watershed area)

Figure R1

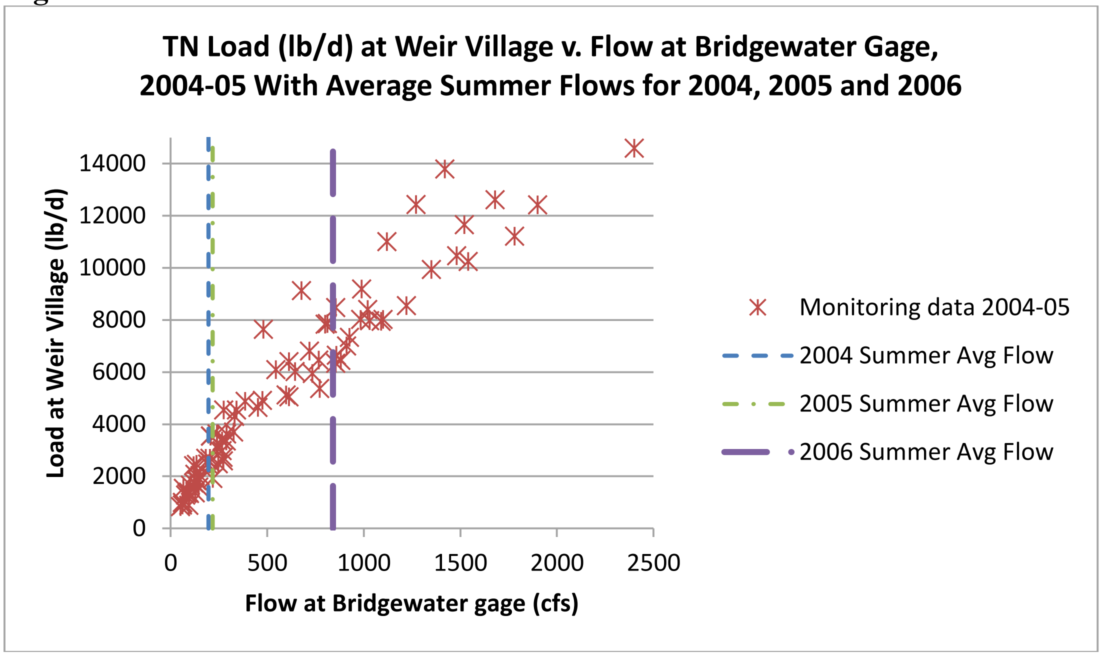

Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

Loads under average flow conditions range between 2,100-2,800 lbs/d, consistent with EPA's initial calculation using the LOADEST load estimation software of 2,474 lbs/d. In 2006 however, the average summer (June to August) flow was four times the 2004-05 average summer flow.[9] The corresponding loads are in the range of six to eight thousand lbs/day, or 140-220% higher than the load under 2004-05 average flow.

While this is merely an estimate, it is consistent with other references for the impact of wet weather flows. For example, the Narragansett Bay Commission ("NBC") (operator of the major POTWs for the City of Providence, RI) has conducted streamflow monitoring of major tributaries to the Narragansett Bay system since 2005 (Taunton River monitoring began in 2006). The NBC has concluded, "Rivers become a larger contributor to total nitrogen loading during wet weather when NBC data indicates that nutrient loading from the rivers increases by 88 to 152% over dry weather levels on average." Narragansett Bay Commission, snapshot.narrabay.com/app/MonitoringInitiatives/NutrientMonitoring (accessed November 15, 2013).

EPA therefore corrected the calculation in the comment by using a wet weather load for 2006 of 9,301 lb/day, an increase of 120% over the 2004-05 average load (the midpoint of the 88-152% range cited by NBC, and lower than the loads at

[9] This calculation is reasonably consistent with the comment calculation; the comment indicates that the 2004-2006 average freshwater flow is 881 cfs as compared to EPA's 2004-05 figure of 408 cfs. This would mean that 2006 freshwater flow is 1,827 cfs, or 4.5 times the 2004-05 value.

2006 flows indicated in Figure R1). Including that figure gives an average load over the three year period of 5,919 lbs/d. The remainder of the calculation is as follows [strikethrough and bold mark corrections from the comment calculations; a corrected version of the comment attachment is included as Attachment A to this document]:

• The average total freshwater flow was 881 cfs
• Ocean flow was determined as 1,458 cfs based on an average salinity of 18.7 ppt.
• Based on a target TN concentration of 0.45 mg/l, the targeted nitrogen load was 5,672 pounds per day (ppd)
• The allowable load from watershed sources was determined as 3,472 ppd
• The required nitrogen load reduction was ~~756~~ **2,447** ppd
• Based on a 20-percent reduction in nitrogen from non-point sources, the available nitrogen load from wastewater discharges was ~~2,187~~ **977** ppd. *[Compared to 939 ppd in the Fact Sheet analysis.]*
• Applying a uniform nitrogen concentration to wastewater discharges, the allowable total nitrogen concentration is ~~8.8~~ **3.58** mg/l. *[Compared to between 3.4 and 3.5mg/l in the Fact Sheet analysis.]*

This calculation would still require the largest dischargers, including the Taunton WWTP, to achieve a 3 mg/l TN effluent concentration in order to reach the loading target. The permit limit would not change if 2006 were included in the loading analysis, and the TN limit based on a 3 mg/l effluent concentration remains in the Final Permit.

Comment B5. Use of year round CBOD analyses
The City finds the permit language pertaining to CBOD5 analyses and nitrogen removal requirements to be contradictory and could put the City at risk for unwarranted violations. The permit utilizes CBOD5 as the measure of oxygen demand due to high nitrogenous oxygen demand in the effluent during the summer nitrifying season, as allowed under 40 CFR 103.102(a)(4). Page 9 of the Fact Sheet states: "The use of CBOD instead of BOD is not necessary in the colder season as the facility discontinues the nitrifying process, making the use of CBOD tests unnecessary. The City disagrees with this general premise. The fact that the facility is not fully nitrifying does not mean that such organisms are not present in the effluent in sufficient numbers to provide a misleading BOD reading. In addition, the City finds Footnote 12 on Page 6 contradictory as it requires the City to operate the treatment facility to reduce the discharge of total nitrogen during the months of November through April to the maximum extent possible even though there are no permit limitations for ammonia or total nitrogen during this period. If some degree of total nitrogen removal must be attempted in the colder season, the use of year round CBOD analyses would be necessary and appropriate to minimize the impacts from nitrogenous oxygen demand.

The statement in the Fact Sheet indicates that the nitrification process can be ceased from November through April. Therefore, Footnote 12 should be deleted in its entirety.

In the event that Footnote 12, takes precedent over the Fact Sheet in regard to the need to remove nitrogen from November through April, the City takes exception to the following statement:

"All available treatment equipment in place at the facility shall be operated unless equal or better performance can be achieved in a reduced operational mode"

This sentence appears to give EPA and MassDEP the authority to dictate to the City means and methods of complying with its NPDES permit or to dictate more restrictive operation even when unnecessary to meet applicable standards. Neither EPA nor MassDEP have such authority. We do not want to be subject to a violation in an instance where a regulator demands a particular piece of equipment be activated even though it does not improve the quality of the discharge, particularly in a situation where there is no established numerical standard.

The City retains licensed and experienced wastewater operators who will make the determination as to what equipment must be operated to meet permit conditions. To illustrate this point, the provision allowing discontinued use of a supplemental carbon source from November through April may warrant that some equipment such as denitrification filters, be removed from service as they would provide little, if any, water quality benefit. Removing the filters from service would result in significant energy savings and reduce the carbon footprint of the WWTF during this period. The subject permit statement appears to give EPA and MassDEP the authority to challenge this prudent and viable decision and impose a permit violation where none is warranted.

The first sentence in Footnote 12 requiring the facility to be operated to reduce the discharge of total nitrogen to the maximum extent possible during this period is sufficient.

> **Response B5**. EPA agrees that the continuation of nitrogen removal pursuant to the optimization requirement will likely involve the continuation of nitrification processes from November to April and that $CBOD_5$ will therefore be a more appropriate measure of whether technology-based biological oxygen demand limits are achieved. As requested, therefore, the Final Permit includes $CBOD_5$ limits in lieu of BOD_5 limits on a year-round basis. EPA agrees that the Fact Sheet language regarding use of BOD rather than CBOD was unclear; the permit language in all cases takes precedence over any arguably inconsistent or unclear language in the Fact Sheet. See also Response B6.
>
> The permittee's interpretation of the quoted sentence of footnote 12 as allowing EPA or MassDEP to "dictate more restrictive operation even when unnecessary" is inconsistent with the actual language of the sentence. As stated in Footnote 12, the requirement to operate all available treatment equipment does not apply if "equal or better performance can be achieved in a reduced operational mode." The City's operators may remove equipment from service if it does not provide a water quality benefit. The permit does not, however, allow equipment to be

removed from service based on an operator's judgment that energy costs outweigh the value of water quality benefits. This permit condition is an essential part of the nitrogen limit in order to keep annual loads low and limit the recycling of winter discharges in the system in the critical summer period, and is imposed pursuant to EPA's authority under the Act and implementing regulations.[10]

Comment B6. Inconsistent pH Limitations
Section VI.B.3 of the Fact Sheet states that: "MassDEP has stated that a permitted pH range of 6.0 to 8.5 SU is protective of State water quality standards, and this range has been included in the draft permit". This range is more restrictive than the range of 6.0 to 9.0 set forth in 40 CFR 133.102(c). However, the allowable range for pH in the Taunton WWTF discharge, as written in the permit, is 6.0 to 8.3 SU. There, does not appear to be any valid reason for the upper limit for pH being set at 8.3 SU instead of 8.5 SU.

Response B6. EPA agrees that the Draft Permit and Fact Sheet were inconsistent as to the upper pH limit and EPA has revised the limit in the final permit to be consistent with the language in the Fact Sheet.

Comment B7. 7Q10 River Flow
Based on a review of the sections pertaining to the 7Q10 established in the Draft NPDES Permit (MA0100897) for the Taunton Wastewater Treatment Facility that was issued on March 20, 2013, the following comments were generated:

In the 2001 NPDES Permit Reissuance, the 7Q10 flow was defined as 30.4 cfs at Station No. 01108000, Taunton River near Bridgewater gauge and 41.85 cfs at the point of discharge. In the present draft NPDES permit, the 7Q10 flow has been revised downward by EPA to 22.9 cfs at the gauge and 31.6 cfs at the point of discharge using EPA's in-house DFLOW analysis of USGS stream flow data for, for the years 1931 through 2002.

It is difficult to understand why the 7Q10 in the Taunton River at the Bridgewater gauge would drop by nearly 25-percent from one used in a permit issued in 2001 and a calculation performed on data through 2002. A review of daily flow data at gauging station 01108000 for the years 2003 through 2012 shows that the lowest 7 day flow during this 10-year period was 47 cfs, which occurred twice; once in August 2005 and again in September 2007. Therefore, we request that the 7Q10 flow be re-evaluated through 2012, as inclusion of the recent flow data will likely alter the statistical analysis.

[10] *See* CWA §§ 402(a)(2) ("The Administrator shall prescribe conditions for such permits to assure compliance with the requirements of paragraph (1) of this subsection, including conditions on data and information collection, reporting, and such other requirements as he deems appropriate."); 301(b)(1)(C) (requiring "any more stringent limitation, including those necessary to meet water quality standards …or required to implement any applicable water quality standard established pursuant to this Act"); 40 C.F.R. §§ 122.4(a) (no permit may be issued, "When the conditions of the permit do not provide for compliance with the applicable requirements of the CWA, or regulations promulgated under CWA"); 122.43 ("In addition to conditions required in all permits (122.41 and 122.42), the Director shall establish conditions, as required on a case by case basis, to provide for and assure compliance with all applicable requirements of the CWA and regulations."); 122.44(d)(5) (requiring inclusion of "any more stringent limitations…in accordance with section 301(b)(1)(C) of the Act).

In fact, a printout from DFLOW provided by USEPA that was done after the 2007 draft permit was issued (using flow data from 1931 through 2008 rather than 2002) indicates that the 7Q10 is 23.7 CFS. This value is slightly higher than that used in the draft permit, although it is still much lower than the value used in the 2001 final permit. It does however provide justification that flow data through 2012 should be used in the evaluation.

The 7Q10 flow directly impacts the dilution factor at the discharge of the WWTF, which in turn impacts the allowable copper and chlorine residual concentrations established by the permit. EPA correctly reclassified the Taunton River at the point of discharge as a salt water body, immediately places more restrictive limits on total copper. Lowering the dilution factor places further restrictions on the discharge. These stringent standards, if enforced as they are, will require Taunton to treat its wastewater for copper. This does not appear to be justified, as Taunton's wastewater discharge has been in compliance with whole effluent toxicity testing.

> **Response B7.** EPA has been unable to confirm the derivation of the 30.4 cfs value for 7Q10 at the Bridgewater gage that was used in the 2001 reissuance. The 7Q10 for that gage, for the period of 1930-75, as reported in the USGS *Taunton River Gazetteer*,[11] was 24.6 cfs. The value calculated for data through 2002 was 22.9 cfs. As noted in the comment, the 7Q10 calculated through 2008 was 23.7 cfs. The 7Q10 calculated on data through 2012 is 24.1 cfs. These values are relatively consistent. EPA notes some variability is to be expected, particularly for a gage that is known to be regulated by diversions upstream for municipal water supplies and upstream wastewater treatment plant discharges.
>
> As the City requests, EPA has recalculated permit limits based on the 7Q10 calculated using data through 2012. The 7Q10 at the gage is 24.1 cfs, giving a 7Q10 at the point of discharge of 33.2 cfs (24.1 x 360/261).
>
> This results in a dilution factor of 3.6 (versus 3.4 in the Fact Sheet) and the following changes to permit limits:
>
> > Total residual chlorine: Avg monthly: 0.027 mg/l; Max daily: 0.047 mg/l
> > Copper: Avg monthly: 8 ug/l (no change); Max daily: 16 ug/l
>
> The discharge's compliance with whole effluent toxicity testing requirements does not obviate the need to comply with water quality criteria for copper. These numeric criteria are applicable independent of toxicity test results. See also Response C30.

[11] Wandle, et al., *Gazetteer of Hydrologic Characteristics of Streams in Massachusetts – Taunton and Ten Mile River Basins and Coastal River Basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound.*

Comment B8. Schedule in ACO not Permit
The Compliance Schedule included in the Draft permit is too restrictive and does not take into account the existing Administrative Order that the City of Taunton has with the EPA, Administrative Order Docket No. 08-042. The City of Taunton has applied for State Funding through the Clean Water State Revolving Fund and is listed on the Intended Use Plan for $15 million for three more projects. It is at the end of these projects that we believe the City will have completed elimination of all known cross connections between the sewer system and the storm drain system and removed sources of infiltration and inflow that are cost-effective. In addition to Sewer Separation and Infiltration/Inflow removal projects, the City is scheduled to complete its Comprehensive Wastewater Management Plan (CWMP) and Final Environmental Impact Report (EIR). As part of the CWMP and final EIR pilot testing will be required for determination of the most cost-effective and reliable means of achieving nitrogen reduction. Therefore, we are requesting that the compliance schedule be removed from the permit and negotiated through a separate Administrative Consent Order. The negotiated schedule must be more realistic in its duration and consider the long term economic needs of the City. The City believes that deferral of major Total Nitrogen reduction should occur until we know what improvements are necessary under current conditions. The City cannot afford to spend resources on multiple plant improvements as occurred in Upper Blackstone or to extend all of its resources on a “limit of technology facility” only to find that such a treatment requirement was not actually needed.

Response B8. EPA recognizes that the City is engaged in other projects required under an existing Administrative Order, in addition to the upgrades required to meet the new permit limits, and that these requirements need to be prioritized and managed within the financial capability of the City’s ratepayers. EPA therefore has included a revised compliance schedule in the final permit as described in Response B9.

The compliance schedule in the permit is solely to allow for sufficient time to come into compliance with the permit conditions within the financial capability of the City. It is not a mechanism for deferring pollutant reductions until the City “knows [they] are necessary under current conditions.” However EPA recognizes that the City intends to pursue further study of this system and hopes to present additional information that would indicate a less stringent limit is sufficiently protective; EPA will continue to consider all new information regarding nutrient and eutrophication conditions in this system and take any appropriate action based on such information in accordance with applicable regulations. The commenter does not specifically explain its rationale for removing the compliance schedule from the permit and moving the locus of compliance to enforcement. Inclusion of the compliance schedule in the permit rather than through an administrative compliance order is reasonable and makes sense from the standpoint of administrative efficiency. The public has had an opportunity to comment on the permit, inclusive of a compliance schedule. Additionally, the permit writer is already well familiar with the facility, including affordability data and other relevant information, and is in a position to craft an appropriate compliance schedule.

With respect to the City's concern about multiple plant improvements, EPA's intent has been precisely to avoid that situation. The Taunton WWTP is a direct discharger of nitrogen to the least diluted and most impaired portion of the Mount Hope Bay/Taunton River Estuary system and as a result is subject to the most stringent nitrogen limits applied to any facility in the basin. The permit limits are designed to be protective under foreseeable future conditions including increases in flow up to the design flow for all POTWs. If for some reason EPA were to agree to a less stringent limit now, based on cost concerns, the City would most likely be facing a more stringent limit later, based on water quality considerations, leading to multiple plant improvements, an outcome both the City and EPA wish to avoid. The City's desire for a permit limit at 8 mg/l, based on what their consultants consider achievable with limited investment, is inconsistent with meeting water quality objectives. Other facilities in the watershed are planning, designing and have even constructed facilities to meet permit limits of 5 mg/l or lower.

Comment B9. Economic Impact

The City has spent a significant amount of money related to wastewater utility improvements since the WWTF was upgraded in 2000. As a result of past projects and the existing CMOM Program, the average sewer rate for FY2014 is estimated to be $516. We are concerned that further large expenditures, as would be required to again upgrade the WWTF to meet limit of technology nitrogen limits, will bear a great financial burden on our users.

The City has several Environmental Justice (EJ) areas in various census tracts within its sewer district boundary (refer to **Attachment 1.D**). We are duly concerned that rising sewer rates will adversely affect these populations. The EJ population actually makes up about 35 percent of the total sewered population. The median household incomes in the various EJ areas range from $21,440 to $39,632.

As stated in EPA's *Interim Economic Guidance for Water Quality Standards*: "if the average annual cost per household (sewer rate) exceeds 2.0 percent of median household income, then the project may place an unreasonable financial burden on many households within the community." Based on the estimated sewer rate for FY2104 and applying EPA's screening criteria of 2 percent results in a median household income of $25,800 below which there would an unreasonable financial burden.

The table provided below identifies future wastewater related projects that need to be completed in Taunton. These projects include those required to complete the sewer separation and infiltration/inflow reduction program, to generally improve the collection system, and upgrade the WWTF for nitrogen removal. As a result of these projects, the annual sewer rate is expected to increase to more than $1,000. Based on an annual sewer rate of $1,000 all households with a median income of less than $50,000 would be adversely affected, which represents about 50% of the sewered households.

The City is requesting relief from the schedule so we can properly plan the required work and protect the economic viability of the City and the sewered population. The City is also requesting another analysis with more recent water quality data before upgrading the WWTP to achieve Technology Based Limits for nitrogen reduction. Pursuant to 40 CFR 131.01(g), we request EPA's determination on whether the current cost impact of EPA's "limit of technology" standard may be considered "substantial and widespread economic impact" , which would allow deferral of the high cost total nitrogen reduction measures or the approval of a variance by MassDEP.

Future Wastewater Related Design and Construction Projects		
Project	**Timeframe**	**Opinion of Project Cost**
Phase 10 SSES	By 2016	$5,500,000
Phase 11 SSES	By 2018	$5,500,000
Phase 12 SSES	By 2018	$5,500,000
New Main Lift Pump Station	By 2018	$11,500,000
CSO Mitigation Facility	------	$9,000,000
Wastewater Treatment Facility Improvements	------	$45,000,000
Total Project Costs		**$82,000,000**
Anticipated User Fee Increase Due to Debt Service [1]		**$495**

1. User rate increases by $6 per $1,000,000 of expenditure. Does not include increases in operations and maintenance costs associated with nitrogen removal. All costs to be redefined during the preparation of the Final CWMP and Environmental Impact Report.

Response B9. EPA has reviewed the financial information provided by the City as well as additional supporting data (FY13 billing database, property information and debt schedules) requested from the City by EPA. On the basis of these data EPA agrees that a compliance schedule longer than five years is warranted by the City's financial capability. In making this determination, EPA considers cost and other factors (Hanlon, *Memorandum re Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits*, May 10, 2007).

The *Interim Economic Guidance for Water Quality Standards* (EPA 1995) provides the framework for financial capability analysis for compliance with water quality based requirements. Under that guidance, financial capability analysis is based on the Annual Cost per Household for Pollution Control Costs (current plus future) compared (as a percentage) to the Median Household Income (MHI) of the sewered community. The City of Taunton has provided a calculation of the MHI for the sewered portion of its community of $48,230. The guidance also provides a methodology for assessing a particular community's financial strength pursuant to secondary indicators. See *Interim Economic Guidance* Table 5-1.

TABLE 5-1

SECONDARY INDICATORS

	Secondary Indicators		
Indicator	**Weak**	**Mid-Range**	**Strong**
Bond Rating	Below BBB (S&P) Below Baa (Moody's)	BBB (S&P) Baa (Moody's)	Above BBB (S&P) or Baa (Moody's)
Overall Net Debt as Percent of Full Market Value of Taxable Property	Above 5%	2%-5%	Below 2%
Unemployment	More than 1% above National Average	National Average	More than 1% below National Average
Median Household Income	More than 10% below State Median	State Median	More than 10% above State Median
Property Tax Revenues as a Percent of Full Market Value of Taxable Property	Above 4%	2%-4%	Below 2%
Property Tax Collection Rate	< 94%	94% - 98%	> 98%

Based on publicly available information, EPA determined that the City of Taunton was in the mid-range of secondary indicators based on Net Debt, Unemployment, MHI and Property Tax Revenues and strong with respect to Bond Rating. EPA was unable to determine the Property Tax Collection Rate, but based on other indicators the City falls in the mid-range (between 1.5 and 2.5) secondary score for purposes of substantial impacts analysis. See *Interim Economic Guidance* Table 5-2.

TABLE 5-2

ASSESSMENT OF SUBSTANTIAL IMPACTS MATRIX

	Municipal Preliminary Screener		
Secondary Score	**Less than 1.0 Percent**	**Between 1.0 and 2.0 Percent**	**Greater than 2.0 Percent**
Less than 1.5	?	X	X
Between 1.5 and 2.5	✓	?	X
Greater than 2.5	✓	✓	?

Taunton's projected cost estimate presented in the comment indicates a total cost of treatment plant upgrades and planned collection system work of $82 million, with an annual debt service increase of $495 per user, increasing the average fee to over $1,000. Upon review of additional information submitted by the City in response to requests for documentation by EPA, EPA does not agree that the calculations provided by the City accurately characterize the average cost per household according to the *Interim Economic Guidance* methodology. The City's cost-per-user is not based on the number of households receiving sewer service but on the number of "5/8-inch equivalent meters", which is a significantly smaller number. Thus, while there are 11,000 "5/8-inch equivalent meters" according to the City, there are approximately 13,000 households receiving sewer service (NPDES Application Form 2A; City of Taunton FY2013 billing database and analyses thereof[12], provided by Beta Group on March 5, 2104 and May 15, 2014) which pay 77.8% of the total sewer fees.

EPA does not use number of meters for affordability analysis (see *Interim Economic Guidance*, Worksheet C ("Do not use number of connections")). In accordance with the EPA guidance, EPA calculated an adjusted figure for households and household equivalents (nonresidential users) of [13,000 / 77.8% =] 16,710. EPA notes that Beta Group provided an alternative calculation of household and household equivalents based on flow[13] of 14,921 household equivalents (Email and attachment from Mike Andrus, Beta Group, to Susan Murphy, EPA, May 15, 2014); EPA considers the impacts with respect to both the EPA calculation and the Beta alternative calculation in this Response.

However, while EPA disagrees with the details of the City's calculations, EPA does agree that the impact on the City's ratepayers warrants an extended compliance schedule based on financial capability. More detailed cost and debt burden information provided by the City's consultants indicates that the total cost of WWTF improvements and planned collection system projects would be $95.3 million, with a resulting debt burden to Taunton ratepayers of $5,170,000 after accounting for contributions by the satellite communities pursuant to Intermunicipal Agreements. Beta Group, *EPA NPDES Draft Permit Economic Impact Analysis*, Updated May 6, 2014.[14] The resulting per household increase is calculated by dividing that amount by the number of household equivalents, for a per-household increase of $309 (EPA) to $346 (alternative calculation). EPA also recalculated the current household average cost to reflect actual number of households, giving approximately $430[15]. Total pollution control costs on an average household basis would therefore be:

Current total cost:	$430		
Projected increased debt cost:	$309	to	$346
Projected increased O&M:	$ 19		

[12] Beta Group's calculations based on a linked billing and property data analysis indicated that there 13,984 housing units connected to the sewer. Assuming a 6% vacancy rate (http://www.census.gov/housing/hvs/data/q414ind.html) there would be 13,115 households receiving sewer service, close to the Application Form data.
[13] Total billed flow divided by 75 hcf, which is the approximate average single family home usage.
[14] The City provided additional calculations in March 2015 that increased this cost to $98.3 million, but did not provide detailed debt burden impacts for this figure. EPA estimates the potential impact as approximately $10/household; this change would not impact the conclusions in this response.
[15] The City's FY13 database indicates total residential billings of $4,597,178, divided by 13,000 gives $353; this was increased by $76 to account for the FY14 rate increase.

Total: $758 to $795

This results in an average household cost of about 1.6% of the MHI, before consideration of MS4 compliance or other potential system capital needs. Consistent with the *Interim Economic Guidance* this indicates that there may be a substantial burden to the community. EPA also considers the CSO financial capability guidance (EPA, *Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development*, 1997), as much of the City's existing debt burden, and a substantial portion of future costs, is addressed at eliminating the West Water Street CSO. That guidance indicates that a schedule up to ten years is appropriate for communities in this mid-range of cost impacts. See *CSO Guidance*, Tables 3 and 4.

FINANCIAL CAPABILITY MATRIX
Table 3

Permittee Financial Capability Indicators Score (Socioeconomic, Debt and Financial Indicators)	**Residential Indicator** (Cost Per Household as a % of MHI)		
	Low (Below 1.0 %)	Mid-Range (Between 1.0 and 2.0%)	High (Above 2.0 %)
Weak (Below 1.5)	Medium Burden	High Burden	High Burden
Mid-Range (Between 1.5 and 2.5)	Low Burden	Medium Burden	High Burden
Strong (Above 2.5)	Low Burden	Low Burden	Medium Burden

FINANCIAL CAPABILITY GENERAL SCHEDULING BOUNDARIES
Table 4

Financial Capability Matrix Category	Implementation Period
Low Burden	Normal Engineering/Construction
Medium Burden	Up to 10 years
High Burden	Up to 15 Years*
	*(Schedule up to 20 years based on negotiation with EPA and state NPDES authorities)

In examining the appropriate schedule, EPA notes that the five year schedule in the Draft Permit was based on Normal Engineering and Construction concerns and does not provide any relief from the cost impacts identified here. A ten year schedule, however, would allow a portion of the work to phase in after a portion of the City's existing debt burden expires. As set forth in schedules provided by the City, while the existing debt burden as of FY2015 is $4,171,000, portions of the City's debt are being paid off in subsequent years so that by 2021 the burden from existing debt falls to $3,691,000; by 2024 it is $3,003,000. Beta Group, *EPA NPDES Draft Permit Economic Impact Analysis*, Updated May 6, 2014. This allows additional debt to be assumed by the City with less increase to ratepayers. EPA's analysis of economic impact analyses provided by the City indicates that under a ten year schedule the average cost per household (not per 5/8" meter) falls to between 1.3 and 1.4% of MHI; this is a reasonable impact consistent with the guidance documents and provides room for additional costs for MS4 and other projects before a threshold of 1.5% of MHI is reached. If at any time actual average household sewer rates are shown to be significantly higher than EPAs projected rates, the City can seek a revised schedule based on affordability considerations. Similarly, if EPA determines that actual average household sewer rate increases are significantly less than EPAs projections, EPA may pursue an accelerated schedule for achieving the final total nitrogen limit.

The schedule in the final permit allows for two years to initiate design of a treatment plant upgrade to achieve an interim monthly average 5 mg/l total nitrogen limit or less ("Phase 1 Upgrade"), three years to initiate construction of the Phase 1 Upgrade and five years to complete construction and optimize total nitrogen removal. The two years allowed for completing facilities planning is designed to allow ample time for the City to evaluate the effect of peak wet weather flows and other factors relative to design considerations in order to ensure that the waste water treatment facility upgrade will be able to attain all permit limits.

A permit proceeding is not the appropriate venue for a determination pursuant to 40 CFR 131.10(g)[16] regarding "substantial and widespread economic impact." 40 CFR Part 131 governs state water quality standards, and the specific provision provides that:

> (g) States may remove a designated use which is *not* an existing use, as defined in § 131.3, or establish sub-categories of a use if the State can demonstrate that attaining the designated use is not feasible because:
> . . .
> (6) Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

Such changes must be pursued through a water quality standards proceeding by MassDEP subject to EPA approval. Similarly, as noted in the comment, a variance is a matter of Massachusetts Water Quality Standards that must be brought before MassDEP. If the City wishes to pursue such avenues it must do in the proper venue with MassDEP.

Although environmental justice issues are considered in permitting proceedings, nevertheless, the City's reference to environmental justice obligations is misplaced in this instance. Executive Order 12898 instructs federal agencies to address, as appropriate, "disproportionately high and adverse *human health or environmental effects* of [their] programs, policies, and activities on minority and low-income populations * * *." Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, Exec. Order 12898, 59 Fed. Reg. 7629 (Feb. 11, 1994). The Executive Order, thus, speaks to human health and environmental effects; it does not require federal agencies to consider issues regarding cost or rate changes as the City argues. Here, the City does not allege any facts showing a "disproprotionately high" impact on environmental justice populations, and the City's comments do not allege "adverse human health or environmental effects" on those populations. Thus, the City has not raised an environmental justice issue cognizable under Executive Order 12898. While we are mindful of cost impacts to communities in the City, the Region is also are mindful that the environmental justice populations in this area are affected by water quality degradation to the point that designated uses such as swimming and fishing have been impaired.

Comment B10. Ambiguity in the Reporting of Unauthorized Discharges
The permit identifies the towns of Dighton and Raynham as co-permittees "for specific activities required in Sections I.B – Unauthorized Discharges and I.C – Operations and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the collection system owned and operated by the Towns". Comments on the draft permit submitted on April 18, 2013 by the Upper Blackstone Water Pollution

[16] The comment refers to 40 CFR 131.01(g); there is no such regulation and the correct citation, given the context, appears to be 40 CFR 131.10(g).

Abatement District (UBWPAD) specifically question the legal basis through which the EPA has authority to regulate Towns as co-permittees. The City of Taunton concurs with the comments issued by the UBWPAD (refer to **Attachment 1.E**) and they are included herein as Taunton's comments also.

EPA Region 1 does not possess legal authority to add or amend the existing NPDES rules *(Pennsylvania Mun. Authorities Ass'n v. Horinko, 292 F.Supp.2d 95 (D.D.C. 2003))*. EPA has never adopted the co-permittee requirements that the Region is seeking to impose. That such requirements may have been imposed on others is not relevant to their legality. Therefore, we request that the co-permittee provisions be stricken from this permit as arbitrary and capricious and otherwise not in accordance with law.

In addition, Section I.B of the permit states that "Discharges of wastewater from any other point source, including sanitary sewer overflows (SSOs), are not authorized by this permit and must be reported to EPA and MassDEP orally within 24-hours of the time the permittee becomes aware of the circumstances and a written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances". The City of Taunton, who is designated as the permittee, in no way has control over the operation of wastewater collection systems in satellite communities and is not responsible for its functionality. Accordingly, the permittee (City of Taunton) will not be responsible for reporting SSOs that occur outside its municipal boundary and legal jurisdiction.

Taunton's inter-municipal agreements with contributing communities only regulate the quantity and character of the wastewater that enters the Taunton collection system to ensure that the integrity and performance of its wastewater infrastructure are protected. Taunton assumes no further responsibility.

> **Response B10**. EPA disagrees with the arguments made by the UBWPAD with respect to the legal authority to include satellite collection systems operators as copermittees and responds to those arguments in detail at Response I1-I14.
>
> EPA's inclusion of the satellite communities as copermittees is consistent with existing NPDES regulations and does not involve adding to or amending NPDES rules. See Responses I1 to I14. EPA has discretion under the regulations with respect to treatment of multiple entities responsible for a POTW or other discharge and its determination to adopt a copermitting framework is a valid exercise of that discretion.
>
> The importance of the collection system component of treatment works has been the subject of increasing attention for a number of years, and EPA's approach would apply the same requirements to satellite systems as are being routinely applied to collection systems that are owned by POTW owners. The need for such an approach is particularly important where, as here, the treatment plant owner and operator has denied any responsibility for those portions of the treatment works on the grounds that they are owned and operated by the contributing communities.

EPA agrees that under the Permit language it is the satellite collection system operator that it responsible for reporting of SSOs from the satellite collection system. The City of Taunton is responsible only for reporting SSOs that occur within its jurisdiction and/or from its system (although this would include interceptors owned by the City that extend into other communities, if any).

Comment B11. Wet Weather Limits
Taunton is requesting that consideration be given to providing a higher concentration limit during wet weather events. Maximizing wet weather flow treatment and simultaneously minimizing effluent nitrogen loads can be competing goals and provisions should be made in the permit to acknowledge different limits during wet weather events. Although the final plan to reduce the frequency and volume discharged from the West Water Street CSO, it is likely that more wastewater/stormwater will be directed to the WWTF during significant wet weather events.

USEPA Region I has acknowledged this issue and issued "two tiered" permit limits to account for wet weather events in many locations including, New Haven, CT, Bangor ME, and Boston MA. New York City, in Region II, has similar accommodations for wet weather in their permits, as does Ohio, in Region V.

40 CFR 122.44(d) and CWA Section 301(b)(1)(C) only require more restrictive limitations as “necessary to attain water quality standards…”. The permit’s various water quality-based limits are not necessary under high flow conditions as the wastewater facility has basically no meaningful impact on ambient water quality when such flows occur. Therefore, the discharge should not have to meet the more stringent limitations under these conditions – only technology-based requirements should apply (e.g., secondary treatment). The permit should be modified to specify that continued operation of all facilities is required under these conditions but the more restrictive water quality-based limits are suspended under these conditions.

Response B11. The City has not provided any basis for concluding that more wastewater/stormwater will be directed to the WWTF under the final plan for the West Water Street CSO. To date the approach for that CSO has involved mitigation of I/I that has reduced the overall flow to the treatment plant significantly.

Region 1 has not issued “two tiered” wet weather permit limits for water quality based limits. Most of the permits referred to were not issued by EPA (Maine and Connecticut have received delegation of the NPDES program in Region 1, and New York and Ohio also have NPDES-delegation), and EPA can identify no tiering of water quality-based limits in any of these permits, as discussed below:

- The Bangor, Maine permit involved a CSO-related bypass variance to secondary treatment effluent limits only; that approach is permissible only when a CSO Long Term Control Plan has been completed and approved and is not in any case applicable to the water quality-based limits for which the City seeks relief. *See*, EPA, Approval Letter from David Fierra to John L. Murphy. That letter notes that approval requires the bypass to meet the criteria of 40 C.F.R. § 122.41(m) and the CSO Control Policy, including (1) the bypass is unavoidable to prevent loss of life, personal injury, or severe property damage; (2) there are no feasible alternatives to the bypass; and (3) the bypass will not cause exceedances of water quality standards.

- The permit issued to MWRA for the Boston Deer Island treatment facility does not contain any tiered concentration limits, either for technology- or water quality-based effluent limitations. The MWRA permit does define the flow limit of 436 mgd in terms of "dry day flow" and excludes CSO storage facility flows from the reported flow. See NPDES No. MA0103284, http://www.epa.gov/region1/eco/mwra/pdf/mwrafpm1.pdf. This approach has been adopted in recognition of the increased flows from the CSO storage facilities and to encourage maximization of flows to the treatment facility during wet weather events. This approach does not involve any tiering of water quality based effluent concentration limitations. In any case it is not an applicable approach to the Taunton system where CSO flows are being reduced through a program of I/I reduction that is reducing the overall volume of flow to the facility.

- The Greater New Haven WPCS permit is issued by CTDEEP, not EPA Region 1, and as in Bangor, ME includes CSO-related bypass provisions for secondary treatment percent removal requirements as well as maximum daily limits that are not water quality based. See Permit CT0100366 at 27 ("no water quality based limits were included in the permit at this time"). Nitrogen loads from this facility are covered under the Long Island Sound TMDL and related permit and do not exclude high flow periods.

EPA does not view vague references to permits issued by states outside Region 1 to be relevant to the Taunton WWTP. However, EPA has attempted to review the referenced permits and has not found any model that would support the City's position.

- EPA's review of the fourteen New York City SPDES permits, which are issued by the New York State Department of Environmental Conservation, not EPA Region 2, does not reveal relevant tiering of water quality-based effluent concentration limits. See Draft Permits and Fact Sheets for the NYC POTWs at http://www.dec.ny.gov/permits/92038.html. For example, the 2013 Draft Permit for the Bowery Bay WWTP provides that calendar days influenced by wet weather flows as defined in the permit shall not be considered in calculation of BOD_5 and TSS percent removal. Draft Permit No. NYS0026158, http://www.dec.ny.gov/docs/permits_ej_operations_pdf/bowseryspdes.pdf. This approach is consistent with regulations at 40 CFR 133.103(a) that allow relief from the percent removal requirements of secondary treatment for treatment works with combined sewers. The permit also suspends the TSS daily maximum limit on "days when wet weather influent flow is twice the design flow or on the succeeding day"; this limit is not supported by a water quality analysis but is described in the fact sheet as an operational control measure. See Fact Sheet at 14. ("This limit ensures good WPCP performance on a daily basis in addition to the 30 day and 7 day total suspended solids secondary treatment limits.") The Bowery Bay WWTP permit does not provide wet weather relief for total nitrogen limits, which are expressed in terms of mass loading and not effluent concentrations. In fact, the permit specifically provides loading limits for CSO discharges as well as WWTP discharges and requires additional reductions from WWTPs above that required by the Long Island Sound TMDL in order to make up for the expectation that CSO loadings will exceed the TMDL target.

• EPA was unsuccessful in determining which of the more than 100 major POTW NPDES permits issued by the State of Ohio the comment might be referring to.

The commenter has not provided any support for its assertion that "under high flow conditions as the wastewater facility has basically no meaningful impact on ambient water quality when such flows occur," or explained how such an approach would comply with applicable state water quality standards. *See* Letter from James Pendergast, EPA, September 20, 1996, to Gary Stenhouse, City of Rochester New Hampshire (discussing considerations relating to permit limits based on seasonal flows, including critical low flow requirements under state water quality standards). The comment's argument, however, appears to be only that Taunton WWTP discharges are a relatively smaller component of the total load under wet weather conditions. While this may be the case, the POTW discharges are not negligible under wet weather conditions. The analysis provided in Response B4 of the 2006 wet year indicates that total loads during that year were approximately 9,300 lb/day, of which 2,800 lb/day or 30% are from wastewater treatment plants. While this is less than the contribution from treatment plants in an average summer it is still a substantial contribution to nitrogen loads. It is also clear that water quality standards are violated under wet weather conditions; as noted in material provided by the City at Comment C29, 2006 saw the highest reported chlorophyll-a concentrations in any year from 2006 to 2010.

Comment B12. Comments from Hall and Associates
Attachment 2, prepared by Hall & Associates, provides further comments on the reasonableness of the proposed nitrogen and copper limitations. Based on those comments the City requests that both limitations by stricken from this permit. At a minimum, the present need for nitrogen limitations must be based on an assessment that

fully accounts for effluent reduction requirements presently enacted or anticipated in this watershed and the watersheds affecting Mount Hope Bay.

These include actions affecting CSO, organic loadings and nutrient loadings that all affect the dissolved oxygen regime. Moreover, a rational connection between nutrient levels, algal growth and dissolved oxygen conditions must be developed (at least for the Taunton River) to allow for the identification of actions that will ensure minimum dissolved oxygen compliance. Lastly, it is apparent that the dissolved oxygen water quality criterion for the estuary is out of date and inconsistent with those adopted for Narragansett Bay. It would seem most reasonable to ensure that the updated standards are adopted and to reassess the need for total nitrogen reduction given the best available science, using current standards.

> **Response B12.** The specific comments prepared by Hall & Associates are addressed below. As set forth in more detail in those responses, the analysis performed by EPA was based on the only comprehensive dataset available and was designed to project and account for the impact of reduction in nitrogen discharges on conditions in the Taunton River Estuary and Mount Hope Bay – indeed the primary purpose is to project conditions under a reduced discharge condition (permit limits). Hall & Associates contention that EPA should redo its nitrogen analysis because some incremental nitrogen reductions have been achieved since those data were collected is unpersuasive, particularly since the small amount of more recent data available is not inconsistent with EPA's original analysis and does not indicate any error in EPA's approach.
>
> The connection between nutrient levels, algal growth and DO conditions is not only rational but is well understood in the scientific community and is supported by the data for this system. The DO water quality criteria discussed in the Fact Sheet remain the current criteria in Massachusetts water and are not expected to change in the foreseeable future. Different criteria apply in Rhode Island waters, but this is simply a facet of addressing interstate waters and does not impact the conclusions in the Fact Sheet, particularly since the RI criteria have also been violated in Mount Hope Bay.

Comment C1. Attachment 2: Comments Submitted by Hall & Associates on Behalf of the City of Taunton.

The draft effluent limitation for total nitrogen ("TN") is based on EPA's determination of a "protective" threshold nitrogen concentration for the Taunton River Estuary to preclude an impairment. The basis for this determination is presented in the Fact Sheet. (*See* Fact Sheet, at 12 – 34). Over these 23 pages, EPA presents an alleged impairment threshold of 0.45 mg/L TN, estimates the TN loads from point and non-point sources entering the receiving waters, and concludes that the Taunton Wastewater Treatment Facility ("WWTF") must meet the limits of technology (3 mg/L TN) to mitigate exceedances of the dissolved oxygen ("DO") water quality standard in the Taunton River Estuary and Mount Hope Bay.

The basis for the TN threshold determination is limited to a consideration of water quality monitoring data collected over a three year period (2004 – 2006) from a single location in Mount Hope Bay. EPA determined this threshold by identifying a location, outside the Taunton River Estuary, where water quality standards for DO are not violated in order to identify a nitrogen concentration consistent with unimpaired conditions. EPA asserts that this approach is consistent with EPA guidance regarding the use of reference conditions for the purposes of developing nutrient water quality criteria. (Fact Sheet, at 29). Based on an examination of the available data, EPA determined that Station MHB16 was an appropriate sentinel site because DO standards were met at this site. This site had a growing-season average total nitrogen concentration of 0.45 mg/L for the 2004-2005 period. Therefore, EPA selected 0.45 mg/L TN as the threshold protective of the dissolved oxygen water quality standard of 5.0 mg/L and claimed that the Taunton River Estuary must meet this same TN concentration at Station MHB19 to achieve compliance with the DO water quality standard.

> **Response C1.** The characterization of EPA's analysis is inaccurate. The basis for the TN threshold is not "a single location" in Mount Hope Bay, but consideration of data from a full dataset of twenty-two monitoring stations in the Mount Hope Bay and the Taunton River Estuary system, along with information from scientific literature and research in other estuarine systems. These sources of information are appropriately considered by EPA in interpreting narrative criteria in accordance with 40 CFR § 122.44(d)(1)(vi).
>
> Using the full suite of data from this comprehensive monitoring of the Taunton River Estuary/Mount Hope Bay system, EPA was able to characterize the transition from unimpaired to impaired conditions associated with increasing TN concentrations, expressed in terms of a location in Mount Hope Bay which represented the highest TN concentration where impairments were not identified. This analysis is supplemented by consideration of TN thresholds identified in other systems (a range of 0.39 to 0.50 mg/l identified for SB waters in Massachusetts). Specifically, the frequency of DO violations and elevated chlorophyll-a concentrations at TN concentrations above 0.45 mg/l at multiple sites throughout Mount Hope Bay and the Taunton River Estuary provided a strong indication that the upper end of the range (0.39 to 0.50 mg/l) identified in the *Critical Indicators Report* is not sufficiently protective in this system and that a threshold of 0.45 mg/l is necessary to achieve dissolved oxygen and nutrient water quality standards.[17] EPA therefore used that threshold to calculate allowable loads to the system and associated permit limits to meet that load.

[17] EPA also notes that a probable range of criteria for total nitrogen "in the vicinity of 0.35 to 0.40 mg/l" is suggested in Deacutis & Pryor, *Nutrient Conditions in Narragansett Bay & Numeric Nutrient Criteria Development Strategies for Rhode Island Estuarine Waters* (2011). This document was provided by the City as Attachment D to their comments. While this range is lower than the endpoint identified by EPA for this analysis EPA believes the site specific information supports the 0.45 mg/l target. See Response C24 for further discussion.

Comment C2. Organic enrichment is not a nutrient impairment designation, therefore, there is no demonstration that a nutrient requirement under 40 C.F.R. § 122.44(d) is triggered for the Taunton River.
In the Fact Sheet, the Region concludes that an organic enrichment impairment designation is equivalent to designating that waters as nutrient impaired. (Fact Sheet, at 19). Based on this assumption, the Region concludes that nutrients and chlorophyll a levels are excessive and that stringent TN reduction is needed to address low DO occurring in the estuary pursuant to 40 C.F.R. § 122.44(d).[1] However, the Region's assessment addresses the wrong impairment in the draft permit; the Taunton River is impaired for *organic enrichment* which is *not* equivalent to a nutrient impairment. Because EPA has regulated an impairment that was not determined to exist by the agency that is given statutory authority to render such decisions (*i.e.,* MassDEP), EPA's proposed permit limitations for TN should be withdrawn as it is inconsistent with the adopted, EPA-approved impairment listing.

[FN1] *See* discussion on nutrients and chlorophyll a levels in DEP/SMAST Massachusetts Estuaries Project report, *Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators – Interim Report* (Howes *et. al.*, 2003) ("Critical Indicators Interim Report").

Response C2. First, EPA disagrees with the main thrust of the comment, that water quality-based limits for a pollutant may only be included in an NPDES permit when the discharge's receiving water is listed on the state's list of impaired waters for that pollutant. There is no regulatory support for this contention. A 303(d) listing of impairment may require a TMDL for that pollutant in that receiving water, but absence of such a listing does not preclude a reasonable potential determination under 122.44(d), because of the differing standards applicable to these determinations. While the State includes in the list "the specific cause(s) of the impairment (if known)", see *Massachusetts Year 2012 Integrated List of Waters* at 18, effluent limits are based on a determination that pollutant discharges "cause, have a reasonable potential to cause, or contribute" to a violation. 40 CFR 122.44(d)(1)(vi). Even if the evidence is unclear that a pollutant is currently causing an impairment, a limit may be required if the pollutant has the reasonable potential to cause, or contribute to an exceedance of a water quality standard (i.e., the permit limit may be preventative). Similarly, the pollutant need not be the sole cause of an impairment before an NPDES limit may be imposed; an effluent limit may still be required, if the pollutant "contributes" to a violation. *See In re Town of Newmarket, NH*, NPDES Appeal No. 12-05, 16 E.A.D. __ (2013), slip op. at 54 n.23 ("The plain language of the regulatory requirement (that a permit issuer determine whether a source has the 'reasonable potential to cause or contribute' to an exceedance of a water quality standard) does not require a conclusive demonstration of "cause and effect.")

Second, the comment misstates both the conclusions set forth in the Fact Sheet and the actual impairment designation. The Fact Sheet's conclusion that nutrient and chlorophyll-a concentrations in the Taunton River estuary are excessive are based on (1) monitoring data for multiple sites in the Taunton River Estuary showing extremely high TN concentrations, elevated chlorophyll-a concentrations and widespread DO depletion; (2) extensive scientific literature documenting the relationships among nutrient levels, primary production (evidenced by chlorophyll-a concentrations) and DO depletion; (3) thresholds for nutrient concentrations identified in guidance documents; (4) proposed and adopted criteria from other states; (5) thresholds identified in other Massachusetts estuaries; and (6) conclusions from research within the Taunton River estuary and Mount Hope and Narragansett Bays. The Region did not base its conclusions regarding nitrogen and chlorophyll-a, and the need for nitrogen reductions, on any "assumption" arising from the impairment designation.

The actual impairment designation is not "organic enrichment" but rather "organic enrichment/low DO", which is a broad category designation applicable to all DO-related impairments that has since been superseded by more specific listing categories. (See Response C3 with respect to the transition to more specific impairment designations and the revised 2012 impairment designation for these waters.) The Fact Sheet does not state that an organic enrichment impairment[/low DO] designation is equivalent to a designation of nutrient impairment. Rather, the Fact Sheet cites the impairment designation for "organic enrichment/low DO", among other evidence, in support of EPA's conclusion that dissolved oxygen standards are violated in the Taunton River estuary.

EPA disagrees that its conclusion regarding the need for nitrogen reductions is in any way inconsistent with or unsupported by the 2010 impairment designation for "organic enrichment/low DO". While EPA has not assumed that an "organic enrichment/low DO" impairment is equivalent to a nutrient impairment, such an impairment is certainly not inconsistent with nutrient impairments (indeed, the mechanism by which nutrients cause DO depletions is through increased organic matter). The State's 2010 "organic enrichment/low DO" designation does not amount to a conclusion that nutrients were *not* the cause of low DO conditions, or that the State has determined that something *other than* nutrient enrichment had been identified as the cause of DO violations in the water body. Furthermore in the 2012 303(d) list, not cited in the Fact Sheet as it had not yet been approved by EPA, the impairment designation does not refer to "organic enrichment" at all but has been revised to state simply "Oxygen, dissolved." (See discussion regarding transition in coding of cause designation in Response C3 below). EPA's conclusion that nitrogen discharges "cause, have the reasonable potential to cause, or contribute to" dissolved oxygen and nutrient impairments is amply supported by the record and does not address the "wrong impairment."

While Massachusetts in its 303(d) listing process has not yet designated the Taunton River estuarine segments for nutrient impairments, this does not control permitting decisions. The State does not have the "statutory authority to render . . . decisions" regarding the need for water quality-based effluent limits under 40 CFR § 122.44(d). That authority is specifically given to "the permitting authority," and EPA is the permitting authority for NPDES permits in Massachusetts.

Finally, even if the State disagreed with the need for water quality-based limits (which is does not) this would not control EPA's permitting decision. Where EPA is the permitting authority the State's formal role under NPDES permitting regulations is through the process for State certification under 40 CFR § 124.53 and 124.55, which do not allow a State to overrule EPA's determinations regarding the need for water quality-based effluent limits. *See* 40 CFR 122.55(c) ("A State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition."). Nor do EPA's regulations require that determinations on water quality-based effluent limits be consistent with, or even consider, state 303(d) listing designations. 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)(1)(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)(1)(vi)(A). It should also be noted that 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.

Further, it is likely that the impairment designations for the Taunton River watershed simply are not up to date. MassDEP commonly defers revisions in impairment designation until completion of new assessments of a particular watershed in connection with its rotating watershed monitoring and assessment schedule. As stated in MassDEP's responses to comments on the 2012 Integrated List:

> MassDEP follows a rotating watershed monitoring and assessment schedule that does not allow for new assessments to be completed for every watershed in each listing cycle. For example, since the time the 2010 Integrated List was prepared, new assessments have been completed for the Blackstone, Boston Harbor (including Mystic, Neponset and Weymouth/Weir), Merrimack and Parker watersheds and the Cape Cod coastal drainage areas, and these assessments furnished the majority of new information in support of the 2012 listing decisions.

Final Massachusetts Year 2012 Integrated List of Waters at 301. The last Taunton River Watershed Assessment Report was completed in 2001. *See* http://www.mass.gov/eea/agencies/massdep/water/watersheds/water-quality-assessment-reports.html. EPA, it its role approving the Integrated List of Waters, recognizes the resource constraints of the state agencies and accommodates MassDEP's rotating watershed assessment cycle.

Comment C3. EPA's action violates Clean Water Act ("CWA") procedures and requirements.

The Massachusetts 2010 § 303(d) list ("MA § 303(d) list" or "MA § 303(d) report") has the Taunton River, Segment MA62-02 listed as impaired due to pathogens.[2] The segments downstream of MA62-02 from the mouth of the River at the Braga Bridge in Fall River, are listed as impaired for pathogens and organic enrichment/low dissolved oxygen.[3] Further downstream, in Mount Hope Bay, a "nutrient" impairment is designated. An "organic enrichment" impairment designation is *not* equivalent to a "nutrient" impairment designation as evidence by MassDEP having two separate impairment designations for the pollutant causes. If MassDEP believes waters are "nutrient" impaired then such waters are designated as such. (*See, e.g.,* designations for certain sections of Mount Hope Bay). Thus, the state does not presently identify the Taunton Estuary as impaired by nutrients regardless of any potential "indicators" discussed in the Critical Indicators Interim Report. It is clear, EPA has unilaterally amended the state's published, EPA-approved impairment designation via this permit action. EPA had the opportunity to follow specific statutory procedures (discussed below) to amend the Massachusetts impairment listing; however, no such action was ever undertaken by EPA. EPA never notified MassDEP that the impairment designation was in error as required by Section 303(d)(2). Thus, EPA's action violates the requirements of the Act regarding designation and determination of impairments and their causes.

[FN2] Fact Sheet, at 4-5.
[FN3] *Id.*

Response C3. The comment correctly cites the impairments listed in the 2010 MA § 303(d) list for the Taunton River; however, these impairments have been updated in the 2012 MA § 303(d) list as follows: Taunton River, Segment 62-02 is no longer listed on the 303(d) list but has been moved to category 4a of the *2012 Integrated List of Waters* due to the completion and approval of a TMDL addressing the identified fecal coliform impairment (updated from the 2010 reference to "pathogen" impairment); and the segments downstream of MA 62-02 are currently listed as impaired for fecal coliform and "Oxygen, dissolved". One of the downstream segments, 62-04, is additionally listed as impaired for "Fishes bioassessment." The comment does not correctly cite the listed impairments in the Mount Hope Bay segments; while the 2008 MA § 303(d) list included a "nutrients" impairment, this was revised as of the 2010 MA § 303(d) list to impairments for "Nitrogen (total)" and "Chlorophyll-a".

The change in characterization of the impairments is consistent with an ongoing process to transition from the broad categories of impairment available for designations in an early EPA database (WDB) to more specific categories available in the current Assessment Database. This process is described in the *2010 Massachusetts Integrated List of Waters* as follows:

> For earlier listing cycles, up to and including 2002, MassDEP stored assessments in EPA's Water Body System (WBS). For each segment in

> the WBS a use-support determination was made and, whenever possible, causes and sources of impairment were specified. In doing so, MassDEP analysts could select from a list of approximately 30 pre-existing "causes" available from the WBS program.
>
> The EPA discontinued its support of the WBS after the 2002 listing cycle. Instead, the newly developed "Assessment Database" (ADB) was introduced as the preferred database application for tracking water quality assessment data, including use attainment, and causes and sources of impairment. . . . One of the many enhancements offered by the ADB is the availability of over 400 different "causes" that can be specified as contributing to the non-attainment of designated uses. This allows for more detail to be presented in the Integrated List with respect to the nature of the impairments. For example, the non-specific "nutrients" cause used by the WBS is further resolved in the ADB through the use of such causes as "Phosphorus (Total)", "Nitrogen (Total)", or even Nutrient/Eutrophication Biological Indicators". Likewise, specific metals available to ADB users, such as copper or nickel, now replace the general term "metals" used by the WBS.

2010 Massachusetts Integrated List of Waters at 17.

As discussed in Response C2, EPA agrees that an "organic enrichment/low DO" impairment is not automatically equivalent to a nutrient impairment, and EPA did not make such an assumption in developing the nitrogen limit in the Draft Permit.

EPA disagrees with the comment's suggestion that the lack of a specific impairment listing for nutrients reflects a considered state judgment that the available indicator evidence does not support a nutrient impairment listing in these segments. As noted in Response C2, impairment listings are updated in connection with the state rotating watershed monitoring and assessment schedule, and the updates have not included the Taunton watershed since completion of indicator monitoring in connection with the Mount Hope Bay assessment (2004-06). *See Massachusetts Year 2008 Integrated List of Waters* ("Featuring new water quality assessments for the Charles, Connecticut, Hudson, Housatonic and Ten Mile watersheds and the North Coastal Drainage Area"); *Massachusetts Year 2010 Integrated List of Waters* ("Featuring new water quality assessments for the Chicopee, French, Quinebaug and Nashua watersheds and the Narragansett Bay and Mount Hope Bay Coastal Drainage Areas"); and *Massachusetts Year 2012 Integrated List of Waters* ("Featuring new water quality assessments for the Blackstone, Boston Harbor (including Mystic, Neponset and Weymouth/Weir), Merrimack and Parker watersheds and the Cape Cod coastal drainage areas"). EPA's review of the 303(d) list recognizes the rotating nature of these updates. *See EPA New England's Review of Massachusetts' 2012 CWA Section 303(d) List* ("Massachusetts developed its 2012 Section 303(d) list (Category 5) by updating its 2010 Section 303(d) list using all Section 305(b) water quality assessments that have been completed since the 2010 Section 303(d) list was published.")

Further, even if the State had made a specific judgment that the available evidence did not support a listing for impairment caused by nitrogen this would not imply inconsistency with the permit determination, because of the differing standards applicable to these determinations. See Response C2. Thus, while EPA believes it likely that water quality assessments for the Taunton watershed, and future 303(d) listings incorporating such assessments, will support a nitrogen impairment listing for these segments, an explicit listing is not required to support the draft permit nitrogen limit.

Given the differing substantive standards governing listing and permit decisions, the entirely different regulatory processes, and the separate authority given to the permitting authority (EPA) as opposed to the entity responsible for listing (MassDEP), it is clear that this permit decision does not in fact "unilaterally amend the state's published, EPA-approved impairment designation," as claimed in the comment. EPA has not sought to amend the impairment listing, and has approved the state's 303(d) list updates with specific recognition of the use of rotating watershed assessments. The commenter's attempt to conflate two separate CWA processes with differing standards does not demonstrate any error in EPA's permitting determination.

Comment C4. EPA's action is inconsistent with adopted state procedures for narrative criteria implementation.

As the MA § 303(d) report makes evident, "organic enrichment" is linked to low dissolved oxygen impairment instead of a nutrient impairment. (*See* MA § 303(d) report, at 15-16, Table listing Water Body System cause codes with the accompanying Assessment Database cause code and "organic enrichment/low DO" is paired with "[d]issolved oxygen saturation; dissolved oxygen; and organic enrichment (sewage) biological indicators" while "nutrients" is paired with "nitrogen (total); phosphorus (total) and nutrient/eutrophication biological indicators").

There are no indications in the state's section 303(d) procedures that the low nutrient or chlorophyll a levels identified in the Critical Indicators Interim Report control whether or how organic enrichment designations are interpreted or nutrient impairment designations are rendered. According to Massachusetts impairment listing procedures, state waters are only identified as nutrient impaired where excessive algal growth *causes* DO related violations. *These procedures constitute the Department's methodology for interpreting it narrative criteria with respect to nutrients. In determining that Taunton was nutrient impaired, EPA abandoned those procedures and created a new approach to identifying nutrient impairments, presuming that nitrogen levels were excessive. Specifically, EPA's new approach assumed that elevated nutrients directly impair dissolved oxygen levels, which has no basis in state or federal law or the state's published approach to evaluating nutrient impacts via its narrative standard. Thus, EPA's action effectively amends existing state law, which is patently illegal.*[4] [Emphasis in original]

[FN4] *See, e.g., Iowa League of Cities v. EPA*, __ F.3d __, No. 11-3412, 2013 U.S. App. LEXIS 5933 (8th Cir. Mar. 25, 2013).

Response C4. EPA agrees that the specific impairment listing in Massachusetts current and previous 303(d) lists reflects a dissolved oxygen impairment, and that the State has not (yet) specifically listed nutrients as a cause of impairment in the Taunton River estuary. EPA has independently determined that nitrogen discharges "cause, have a reasonable potential to cause, or contribute to" violations of water quality standards, with respect to both dissolved oxygen criteria and narrative nutrient criteria. Dissolved oxygen impairments are not always related to nutrients and therefore are not automatically mapped directly to nutrient impairments; however the potential for nutrients to cause dissolved oxygen impairments is well-documented, and EPA's determination regarding nutrients is in no way inconsistent with a listing for dissolved oxygen impairments.

The comment is incorrect in stating that (1) the nitrogen and chlorophyll-a levels in the *Critical Indicators Interim Report* are not used in nutrient impairment designations; and (2) that waters are only identified as nutrient impaired where excessive algal growth *causes* DO related violations. Examination of the *2012 CALM* http://www.mass.gov/dep/water/resources/2012calm.pdf, refutes both of these claims. First, while the *2012 CALM* does not specifically cite the *Critical Indicators Interim Report,* nutrient assessments under the *2012 CALM* do utilize the MEP indicators process set forth in that document:

> For embayments in Southeastern Massachusetts the MEP has also generated a significant amount of enrichment indicator data based on a weight-of-evidence approach that includes several response variables (e.g., eelgrass, infauna, macroalgae, chlorophyll *a*, DO, Secchi disk, TN concentrations). Since this project is intended to develop site-specific nutrient (nitrogen) thresholds for these systems, their overall analysis of habitat health are utilized to make *Aquatic Life Use* attainment decisions.

Id. at 21. Second, the *2012 CALM* does not require a demonstration that "algal growth *causes* DO violations." Rather, the *2012 CALM* states:

> Nutrient enrichment is not considered to be problematic when indicators, as described above, are absent even if nutrient concentrations exceed their recommended criteria. However, when the multiple, supporting indicators show nutrient enrichment to be problematic and concentration data exceed their criterion, the nutrient is also identified as a cause of impairment.

Id. Under this procedure, the conjunction of multiple indicators and elevated nutrient concentrations is sufficient to support the designation of a nutrient impairment, without any specific causal demonstration. This interpretation of the state narrative standard, albeit in a different context involving the identification of "specific cause(s)" for listing purposes as opposed to the standard of "cause, reasonable potential to cause, or contribute" for permitting purposes, is consistent with EPA's approach in development of the draft permit limits.

The comment's characterization of a "new approach" by EPA that abandons the state interpretation and "assume[s] that elevated nutrients directly impair dissolved oxygen levels" has no basis in the record. The Fact Sheet describes the relationship between nutrients, primary production and dissolved oxygen as follows:

> When nutrients exceed the assimilative capacity of a water body, the ensuing eutrophic cycle can negatively impact in-stream dissolved oxygen levels. Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce instream dissolved oxygen concentrations to levels that could negatively impact aquatic life. During the day, primary producers (*e.g.*, algae, plants) provide oxygen to the water as a by-product of photosynthesis. At night, however, when photosynthesis ceases but respiration continues, dissolved oxygen concentrations decline. Furthermore, as primary producers die, they are decomposed by bacteria that consume oxygen, and large populations of decomposers can consume large amounts of dissolved oxygen. Many aquatic insects, fish, and other organisms become stressed and may even die when dissolved oxygen levels drop below a particular threshold level.

Fact Sheet at 15-16. As the Fact Sheet clearly indicates, the mechanism of the impact of nutrients on dissolved oxygen is through an increase in algae and plant growth. DO is one of the indicators used by MassDEP in its interpretation of its narrative criteria. *See 2012 CALM* at 21.

Further, even if the process set forth in the *2012 CALM* differed significantly from that utilized in the development of the draft permit limits, this would not indicate error in the permit decision or an attempt to amend State law. As discussed in the Responses C2 and C3, impairment assessment and listings are subject to an entirely different standard than permit determinations; there is no regulatory requirement that permit water quality determinations be consistent with § 303(d) listings; and EPA as the permitting authority has authority to make determinations with respect to water quality-based limits even where the State disagrees with the need for such limits.

Comment C5. EPA failed to adhere to applicable statutory and regulatory requirements.

EPA's action compounds a series of legal and regulatory errors. EPA never adhered to its statutory responsibility of notifying Massachusetts and/or the public of its decision to reject the "organic enrichment" impairment determination made by the state and instead list the Taunton River as nutrient impaired. *See* 40 C.F.R. § 303(d)(2). Similarly, contrary to statutory procedures, EPA never notified Massachusetts or the public of its decision that Massachusetts' impairment identification procedures, as they pertain to nutrients, were insufficient or deficient in any matter. *Id.* Likewise, EPA never informed MassDEP that their application of state narrative criteria was misplaced and should instead allow for a *presumption*, rather than an actual demonstration, that nutrients are causing excessive algal growth or low DO based on the Critical Indicators Interim Report. This theory was specifically challenged by the New England Interstate Water Pollution Control Commission as technically flawed. (*See* Attachment A- the Commonwealth of Massachusetts is part of the New England Interstate Water Pollution Control Commission).

Under the CWA, EPA must review and either approve or disapprove a state's § 303(d) list. 33 U.S.C. § 1313(d)(2); 40 C.F.R. § 130.7(d)(2). If EPA disapproves the list, then it must, amongst other things, identify the deficiency and propose a proper revision. *Id.* EPA is only authorized to modify a state listing after it expressly disapproves of a state determination. *Id.* Therefore, in this case, if EPA believed that the Taunton River was impaired for nutrients it should have rejected the MA § 303(d) list. It is improper for EPA, after approving the MA § 303(d) list to later, in a draft NPDES permit, attempt to change an impairment listing by creating a water quality criterion for nutrients when the waters are impaired for organic enrichment/low dissolved oxygen. Likewise, if EPA disagreed with the MassDEP approach to narrative criteria implementation with respect to nutrients, EPA should have raised that objection pursuant to procedures under CWA Section 303(c). The Critical Indicators Interim report, cited by EPA as a basis to indicate the water quality that would constitute nutrient impairment, is not even referenced in the MassDEP 303(d) procedures for rendering nutrient impairment determinations.

Section 122.44(d) plainly indicates that state regulatory interpretation regarding narrative criteria compliance need to be respected (unless obviously incorrect). *See Kentucky Waterways Alliance v. Johnson*, 540 F.3d 493, 469 n.1 (6th Cir. 2008) ("In interpreting a state's water quality standard, ambiguities must be resolved by consulting with the state and relying on authorized state interpretations."); *Marathon Oil Co. v. EPA*, 830 F.2d 1346, 1351-1352 (5th Cir. 1987) (EPA is merely an "interested observer" as to how a state interprets its WQS provisions); *American Paper Inst. v. EPA*, 996 F.2d 346, 351 (D.C. Cir. 1993) ("Of course, that does not mean that the language of a narrative criterion does not cabin the *permit writer's* authority at all; rather, *it is an acknowledgement that the writer will have to engage in some kind of interpretation to determine what chemical-specific numeric criteria--and thus what effluent limitations--are most consistent with the state's intent as evinced in its generic standard.*") (emphasis added)). EPA's entire permitting approach discards those technical and regulatory findings.

Adherence to the state's current procedures for confirming whether a nutrient impairment exists or that excessive algal growth is the cause of low DO readings is required by federal law. EPA has violated federal law and misapplied 40 C.F.R. § 122.44(d) by creating (or assuming) a nutrient impairment exists where one has not been determined to exist by the agency statutorily responsible for such determinations. *See, e.g., Ass'n of Pac. Fisheries v. EPA*, 615 F.2d 794, 811-812 (9th Cir. 1980) (As these records confirmed that EPA ignored the relevant information and "proceed[ed] upon assumptions that were entirely fictional or utterly without scientific support" EPA's action is not legally defensible). EPA has also violated federal law by substituting assumptions, unadopted numeric nutrient and chlorophyll a thresholds as the basis for presuming a nutrient impairment exists in Massachusetts waters to trigger permit requirements under § 122.44(d). (*See infra* note 9). As the NPDES regulations provide no such authority to EPA, this permit action must be withdrawn pending a demonstration that (1) algal growth levels are excessive and (2) such excessive plant growth is the cause of low DO conditions in the Taunton Estuary.

> **Response C5.** The statutory and regulatory requirements the comment refers to are simply inapplicable to this permitting action. EPA has not rejected any Massachusetts impairment identification or related procedures through this permit action, which is an independent proceeding subject to a different substantive standard. This permit action does not indicate any disagreement with EPA with respect to MassDEP's application of state narrative criteria; the permit is consistent with the state's interpretation (including the use of critical indicators for nutrient impairment designations, see Response C4) and the regulatory standard.[18]
>
> EPA does not believe the New England Interstate Water Pollution Control Commission (NEIWPCC) position paper supports the comment. EPA understands the NEIWPCC objection to pertain to the "imposition of independent applicability of numeric nutrient criteria", see Comment attachment A at 2; the Commission expressed its concern by stating that "a waterbody that is meeting environmental response criteria should be listed as attaining standards even it if exceeds a numeric nutrient criterion." Id. The Taunton River/Mount Hope Bay system does not meet environmental response criteria and the permit analysis is response-based, as recommended in that document. ("We understand that EPA has concerns about implementing response-based criteria, but we feel that this is a question that is dealt with in permitting, not standards development. Further, the Northeast states have solid experience in crafting defensible and robust permits with effluent limits derived from these same response-based criteria.") Id.
>
> Nor is this a case of differences in resolving ambiguities in the meaning of a state narrative standard. Rather, the commenter attempts to supplant the clearly applicable regulatory burden of proof (that a pollutant discharge "causes, has reasonable potential to cause, or contributes" to a water quality violation) with a standard more to its liking – that a state must have already made a determination that the pollutant in question is actually causing a specific water quality impact. As this simply is not the applicable standard, and EPA's analysis meets the standard actually applicable to permit issuance, EPA rejects the comment.

Comment C6. EPA provides no rational or substantive demonstration of a DO-related, nutrient impairment occurring in the Taunton River.
As noted above, state and federal law require a demonstration that the nutrient is in fact causing the impairment to demonstrated that more restrictive water quality-based limitations are necessary. (*See e.g.,* CWA § 301(b)(1)(C) and 40 C.F.R. § 122.44(d) where both use the word "necessary" in authorizing the imposition of water quality-based

[18] Nor did EPA employ a "presumption"; see Response C8.

limitations). The federal Administrative Procedure Act also requires technical conclusions to be based on substantial evidence.[5] EPA's Fact Sheet (at 26), simply concludes that excessive nutrients are the cause of DO impairments in the Taunton River. The entire analysis is nothing more than a series of unsupported assumptions that nowhere demonstrates that (1) the nutrients are causing excessive plant growth in the Taunton River or (2) that periodic low DO occurring in the Taunton Estuary is significantly related to algal growth and not some other factor unrelated to algal growth (*e.g.,* organic loadings from wastewater or CSO discharges known to exist in the system, periodic system stratification, natural deposition of organic materials from the watershed, or low DO entering the estuary from Mount Hope Bay). Without consideration of these conditions, it is simply impossible to determine whether or how nutrients could possibly be responsible for any low DO conditions.

[FN5] 5 U.S.C. § 706(2)(E); *see Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 414 (1971) ("the agency action is to be set aside if the action was not supported by 'substantial evidence.'").

Response C6. This comment misstates the legal standard applicable to permit proceedings. Neither state nor federal law require a determination that a pollutant "is in fact causing the impairment"; the standard is whether the pollutant discharge "causes, has reasonable potential to cause, or contributes" to an impairment. 40 CFR § 122.44(d)(1)(i). *In re Town of Newmarket, NH,* NPDES Appeal No. 12-05, 16 E.A.D __ (2013). Further, while EPA's conclusions and determinations in this proceeding are amply supported by evidence, it is simply not the case that the APA "substantial evidence" standard of review on appeal applies to this proceeding; that standard of review applies to formal rule-making and adjudications with trial-like proceedings, not to administrative actions such as permit issuance. 5 U.S.C. § 706.

EPA provided a detailed description of both the well-established connection between nutrient, algal levels and DO, and the specific evidence indicating the problem in this system, including TN concentrations in the Taunton River Estuary well in excess of any recognized thresholds for nitrogen impairments, elevated chlorophyll-a concentrations consistently exceeding the range of concentrations considered acceptable for SB waters in Massachusetts, and widespread violations of water quality criteria for DO. See further discussion at Responses C23 to C29.

EPA notes that in complex systems such as estuaries, DO conditions are affected by a number of interacting factors and it is generally not the case that algal growth (or any other single condition) is the *only* factor influencing DO concentrations. Nor is it ever possible to establish actual causation to a scientific certainty, as that can be achieved only through controlled experiments that are impossible to conduct in a natural system. Despite these limitations, the consistent pattern of high TN concentration, elevated chlorophyll-a and depleted DO provide strong evidence that the well understood mechanism of nutrient overenrichment is operative in this system. EPA is not required to indefinitely defer permit limits to await the possibility of better quantifying the extent to which other factors are also contributing to the impairment.

Comment C7. Missing technical assessments preclude a determination that EPA's approach is rational and scientifically based.
Missing technical assessments needed to render a defensible permit evaluation include: (a) how TN affects algal growth in this part of the system; (b) how algal growth affects DO; (c) the form of nitrogen controlling plant growth; (d) where the algae found in the estuary are growing (upstream in fresh waters, in the Bay or in the tidal river); (e) the degree to which non-algal factors control DO in the system; (f) whether low DO is caused by SOD, diurnal DO variation or stratification; (g) how system hydrodynamics affect the occurrence of low DO; and (h) whether natural factors are responsible for the DO condition. Without such evaluations of these factors, which are well documented as affecting DO of any tidal river, EPA's contention that nutrients are the cause and, therefore, the solution to the DO condition is all presumption, pure speculation, and guesswork. In short, as there is no substantial evidence supporting this scientific conclusion and therefore is no objective way to know that it is scientifically correct, EPA's proposed TN limitation is arbitrary and capricious.[6]

[FN6] As noted before, a central presumption of EPA's effluent limit determination is that station MHB16 defines the level of nutrients (and presumably algal growth) that would be protective of the Taunton Estuary. *See supra,* at 1. It should be obvious to all that these open waters in a bay, highly influenced by the ocean, bear no objective resemblance to the physical setting occurring at Taunton River station (MHB19) where EPA chose to apply the Mount Hope Bay nutrient concentration. At a minimum, EPA would need to demonstrate that the conditions influencing TN dynamics and the DO regime at MBH16 are similar to the Taunton River site to support its position. No such demonstration is made because the physical conditions are radically different and there is no rational basis to believe that TN effects at MHB16 are similar in any way to TN effects at MHB19. Had EPA even conducted a cursory analysis it would have been obvious that (1) the algal growth in the Taunton River is *less than that occurring at MHB16* and (2) stratification, not algal growth, is the primary factor influencing DO levels in MHB16.

Response C7. This comment, like the previous comment, is premised on the misconception that EPA must rule out all other possible explanations for the observed water quality responses before it can include a nutrient limit. This is not the case. The need for permit limits is not restricted to situations where the pollutant is the single cause of a water quality issue and all other factors can be discounted or eliminated. Rather, a permit limit is required whenever a pollutant discharge "causes, has reasonable potential to cause, or contributes" to an impairment. 40 CFR § 122.44(d)(1)(i). EPA is not required to show that there are no other factors influencing DO in the Taunton River Estuary and indeed that would be impossible, as DO conditions are the result of interaction of a number of factors. The question for permit limits is whether the nutrient discharges and the accompanying elevated algal population (clearly seen in the Taunton River Estuary) contribute to the problem or have reasonable potential do so. Given the well understood effect of nutrients on algal and DO and the indicators that this mechanism is operative in this system, EPA's conclusion is amply supported and is neither presumption, speculation nor guesswork.

The comment footnote clearly overstates its case with the insistence that there "is no objective resemblance" between Mount Hope Bay and the contiguous Taunton

> River Estuary, and that they are "radically different" with "no rational basis to believe [they] are similar in any way." Despite the hyperbole, these are in fact a series of segments of the same estuarine system, characterized by different levels of mixing of the same two source waters, continual exchange of waters among the estuarine segments, the same sources for sediment, the same climatic conditions, minor difference in depth range (Taunton River depths range from 4 to 10 meters; Mount Hope Bay from 3.5 to 12 meters) and different widths (the Taunton River is one-third to one-half mile across; while Mount Hope Bay is over 2 miles across at its widest point). More specifically, chlorophyll-a concentrations are not less at station MHB 19 than at MHB 16 in a normal year, see Response C21, and the hypothesis that stratification is the primary factor influencing DO in Mount Hope Bay, but not in the Taunton River, is entirely unsupported. See Responses C18 and C23.

Comment C8. EPA's claim that an impairment exists without demonstrating causation violates federal and state law.
EPA's approach (presuming a pollutant is causing a specific adverse ecological effect or causing a narrative criteria violation) is precisely what the CWA does not allow. *See* 40 C.F.R. § 131.11 (criteria determinations must be based on scientifically defensible information); 40 C.F.R. § 122.44(d) (demonstrating that limitations are necessary must be based on all available scientific information); *see also Natural Res. Def. Council v. EPA*, 16 F.3d 1395, 1398 (4th Cir. Va. 1993) ("The court agrees with EPA that its duty, under the CWA and the accompanying regulations, is to ensure that the underlying criteria which are used as the basis of a particular state's water quality standard, are scientifically defensible . . ."); *Chem. Mfrs. Ass'n v. EPA,* 28 F.3d 1259, 1265 (D.C. Cir. 1994) (stating, when challenged, EPA must provide a "full analytical defense of its model" and show "there is a rational relationship between the model and the known behavior of the… pollutant to which it is applied."); *Columbia Falls Aluminum .v EPA,* 139 F. 3d 914, 923 (D.C. Cir 1998) (EPA "retains the duty to examine key assumptions as part of its affirmative burden of promulgating a non-arbitrary, non-capricious rule."). Likewise, EPA may not rely on a flawed or inaccurate study to render decisions under the Act. *Texas Oil & Gas Ass'n v. EPA*, 161 F. 3d 923, 935 (5th Cir. 1998). In this case as basic information is missing to determine that EPA's approach is in fact necessary, the decision is *per se* flawed and unsupported.

EPA decisions may not be based on "sheer guess work". *Leather Indus. of Am. v. EPA*, 40 F.3d 392, 408 (D.C. Cir. 1994) (citing *Am. Petroleum Inst.,* 665 F. 2d 1176, 1186-87 (D.C. Cir. 1981)). EPA may not regulate based on "probabilistic evidence" or "correlations" without proving causation. *Tex Tin Corp. v. EPA*, 992 F. 2d 353, 356 (D.C. Cir. 1993). Likewise, EPA may not claim that nitrogen is the cause of impairment in the Taunton River because it has caused impairment in other waters. The CWA and applicable state law require a site-specific demonstration of an impairment and its cause. (*See, e.g.*, § 303(d), 40 C.F.R. § 130; 314 CMR 4.05(5)(c)). Consequently, evidence that a TN level in a remote section of Mount Hope Bay is apparently not associated with DO violations at that location does not provide any credible evidence that the same TN level is necessary for the Taunton River, a physically distinct area. Without an assessment of the major factors known to affect DO in tidal estuaries and a demonstration of the degree to which TN is causing excessive algal growth and causing DO violation in the Taunton estuary, EPA's approach is pure guesswork and therefore, arbitrary and capricious. *Leather Industries of Am., 40 F.3d 392.* Consequently, EPA lacks a credible, objective scientific basis for imposing the stringent TN limitations proposed in the draft NPDES permit.

> **Response C8.** The contention that a demonstration of actual causation is necessary before instituting permit limits is simply wrong; that argument has been specifically rejected by the Environmental Appeals Board. *In re Town of Newmarket, NH*, NPDES Appeal No. 12-05, 16 E.A.D. __ (2013), slip op. at 54 n.23 ("The plain language of the regulatory requirement (that a permit issuer determine whether a source has the 'reasonable potential to cause or contribute' to an exceedance of a water quality standard) does not require a conclusive demonstration of 'cause and effect'."). EPA again emphasizes that the setting of NPDES limits, including the interpretation of narrative criteria and assessment of reasonable potential, is governed by the specific provisions of the NPDES regulations and CWA § 402 and not by regulations governing the adoption of water quality standards, 303(d) listing or other provisions. Thus (and although EPA's analysis is not inconsistent with state approaches), caselaw under other CWA sections are only relevant to the extent they are consistent with NPDES requirements.
>
> In any case, EPA did not rely on any presumptions; the available evidence regarding TN concentrations, algal levels and DO depletions strongly supports EPA's conclusion that the well-understood mechanism of nutrient enrichment and cultural eutrophication is operative in the Taunton River/Mount Hope Bay system. See Fact Sheet at 19-26; Responses C19 to C25. EPA disagrees that thresholds developed for other waters are irrelevant to the setting of permit limits under 40 CFR 122.44(d), but in any case performed a site-specific analysis using extensive data within this system. The Taunton River Estuary section is an integral part of the overall system, and the available evidence indicates that area is equally vulnerable to dissolved oxygen impacts from nutrient enrichment as other portions of the estuary. See Responses C18 and C23 regarding the role of specific physical conditions the commenter claims may vary within this system.

Comment C9. EPA's approach is inconsistent with accepted scientific methods for assessing nutrient and DO impacts in flowing waters.

The Fact Sheet indicates that EPA chose an area of Mount Hope Bay that was meeting DO criteria as a "reference station" and simply presumed that whatever TN level that existed at that station would be the necessary TN level to be achieved in the Taunton River. (Fact Sheet, at 30). This was a form of truncated "stressor-response" evaluation the likes of which have been previously expressly rejected by EPA's Science Advisory Board and EPA's own published guidance on nutrient criteria derivation. The claim that the method is appropriate is thoroughly unsupported, not scientifically defensible, objectively irrational and without any known basis in accepted scientific methods for choosing necessary and appropriate nutrient controls for estuarine waters.[7] As such, this method for setting the nitrogen limit in the permit is arbitrary and capricious.

[FN7] Based on the Supreme Court's decision in *Daubert v. Merrell Dow Pharms*., no agency may base an analysis on scientific information that fails to meet minimum standards of reliability. 509 U.S. 579, 590 n.9 (1993). Daubert incorporates the administrative law principle that an agency cannot disregard the advice of its own experts or take action inconsistent with the facts demonstrated in the record. *Id.* at 593. Thus, for scientific evidence to be considered reliable for agency decision making, it must be based on an analysis that is accepted in the scientific community.

> **Response C9.** EPA's approach examined the continuum of water quality conditions in the Taunton River Estuary and Mount Hope Bay to identify a transition point to from impaired to unimpaired conditions. It is not a stressor-response approach, "truncated" or otherwise, and the cited guidance documents on stressor-response analyses and criteria development are not applicable to reference-based approaches to site-specific analyses for permit limits.[19] Rather this approach is a form of reference-based approach and a similar approach has been widely applied in TMDLs developed under the MEP and approved by MassDEP and EPA. The results are consistent with ranges and thresholds for acceptable TN concentrations found in other estuaries within and outside of Massachusetts. Although this is a simplified approach that does not attempt to quantify individual subprocesses involved in eutrophication, it is entirely appropriate for assessing large scale nutrient load reductions over relatively long averaging periods. This is a scientifically defensible approach that is neither arbitrary nor capricious.

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[19] The Supreme Court decision in *Daubert v. Merrell Dow Pharms*., 509 U.S. 579 (1993), is not applicable to this proceeding. In *Daubert*, the Supreme Court established the standard by which judges must determine the admissibility of expert scientific testimony in federal trials. 509 U.S. at 592-93. The Court listed four factors for federal trial judges to consider when evaluating the reasoning or methodology underlying the expert testimony, including: (1) whether the theory or technique can be tested, (2) whether the theory or technique has been subject to peer review, (3) whether the technique has a high known or potential rate of error, and (4) whether the theory has attained general acceptance within the scientific community. *Id.* at 593-94. On its face, *Daubert* is inapposite to these permit proceedings, which involve not a trial, but an expert agency establishing an effluent limit under a statute it was charged by Congress with administering. Indeed, the Environmental Appeals Board has expressly concluded elsewhere that the "*Daubert* factors are not controlling principles" for administrative agencies, even in cases involving testimony. *In re Solutia Inc.,*10 E.A.D. 193, 211-12, n.22 (EAB 2001); *see Sierra Club v. Marita*, 46 F.3d 606, 621-22 (7th Cir. 1995) (rejecting the use of the *Daubert* test in determining whether to defer to agency decisions where petitioner asserted that the agency employed "bad" science); *see also Edison Elec. Inst. v. EPA*, 391 F.3d 1267, 1269 n.2 (D.C. Cir. 2004) (holding that *Daubert* standard for scientific evidence was inapplicable to EPA rulemaking and stating "Evidentiary rules govern the admissibility of evidence at trial, not the establishment of the processes whereby such evidence will be created"); *Sierra Club v. Marita*, 46 F.3d 606, 621-22 (7th Cir. 1995) (rejecting the use of the *Daubert* test in determining whether to defer to agency decisions where petitioner asserted that the agency employed "bad" science). Unlike a trial where a lay trier of fact must assess the expert testimony presented, a court must afford great deference to EPA decisions that involve technical analyses and scientific judgments within the Agency's expertise under the Act. *See Envtl. Def. Ctr., Inc.* v. *U.S. EPA*, 344 F.3d 832, 869 (9th Cir. 2003); *Am. Iron & Steel Inst.* v. *U.S. EPA,* 115 F.3d 979, 1006 (D.C. Cir. 1997) (per curiam). The comment's contention that Daubert (at page 593) incorporates an "administrative law principle" is simply untrue and there is no such statement in that opinion.

Comment C10. EPA ignored its own relevant guidance and procedures identifying the necessary analyses to establish a defensible nutrient criteria.
EPA has numerous documents showing how to relate nutrients to algae to DO in flowing waters. *See* EPA, *Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Marine Waters*, (Oct. 2001) ("Estuaries Guidance Document"); EPA, *Nutrient Criteria Technical Guidance Manual: Rivers and Streams* (July 2000).[8] Each of these documents requires EPA to account for the particular physical conditions influencing nutrient dynamics in the estuary to reasonably determine how the DO regime is impacted. These approaches all require detailed scientific data assessments and modeling. Likewise, EPA's 2010 document entitled "Using Stressor-Response Relationships to Derive Numeric Nutrient Criteria" ("Stressor Response Guidance") stresses that a proper assessment must account for the factors that could influence the endpoint of concern (*e.g.,* DO) to ensure that nutrient criteria are necessary and properly established. For estuarine settings, that means that the evaluation must account for the physical setting, water column transparency, hydrology, hydrodynamics (in particular stratification), factors affecting algal growth rate, temperature, and detention time. EPA's Fact Sheet did not present a single data plot or analysis to show any relationship exists between DO, chlorophyll a and TN for either the Taunton Estuary or Mount Hope Bay. Thus, there is nothing that shows the presumed conceptual model (TN caused excessive algal growth and low DO) is applicable to this estuary.

There is no evidence in the record showing that achieving a 0.45 mg/L TN level is required in the Taunton River is necessary or sufficient to achieve DO standards. No information showing that TN reduction is required to correct a 0.5 mg/L DO deficit occurring in frequently in the Taunton River. Finally, there is nothing in the record to show that other options, such as adding DO to Taunton and Brockton effluent would be insufficient to offset low DO in the River if the impairment in fact still exists.

[FN8] *See also infra* note 31.

> **Response C10**. EPA's permitting regulations authorize and require EPA to interpret narrative water quality standards in terms of calculated numeric criteria in establishing permit limits, even where there is not sufficient data to permit the detailed scientific data assessment and modeling of all possible parameters influencing water quality conditions that the commenter contemplates. EPA's approach is not inconsistent with the nutrient criteria guidance documents, which recognize reference-based approaches as well as mechanistic models and stressor response analysis (EPA 2010). The guidance regarding stressor-response analyses is not applicable to the completely different approach used by EPA here. EPA notes that the data collected in the SMAST survey was intended for a MEP analysis and was not designed for stressor-response analyses. EPA therefore did not apply the data in that manner, and does not expect the dataset to support statistically significant analyses when used for that purpose. However dataplots that EPA developed in response to comments only support EPA's application of the conceptual model to this system, with correlations consistent with EPA's interpretation of the data. See Response C24.

> The evidence supports EPA's determination that 0.45 mg/l TN concentration, which is the midpoint of acceptable TN loadings in the Massachusetts *Critical Indicators Report*, is associated with the transition from impaired to unimpaired conditions within the Taunton River Estuary/Mount Hope Bay system. This approach does not attempt to model details in physical conditions. While there are variations in the physical settings within this system, there is no indication that the Taunton River Estuary is less sensitive than Mount Hope Bay in terms of DO response. See Response C24. EPA does not agree with the characterization of DO deficits as infrequent; while continuous monitoring is not available for characterization of the frequency and duration of DO deficits, the fact that violations are seen at all sites in the Taunton River Estuary and in all years, based on six monitoring dates per year, indicates a pervasive impairment. Where continuous monitoring is available in Mount Hope Bay, DO deficits are frequent and well-documented. See Response C29.
>
> Finally the proposal that the problem might also be addressed other ways, such as adding DO to effluent, is creative but unrealistic (treatment facilities' ability to add DO to effluent is limited by the saturation capacity of water and would not add appreciably to downstream DO levels given the level of dilution). In any case it does not indicate any error in EPA's implementation of a permitting program designed to reduce and eliminate pollutant discharges.

Comment C11. EPA's simplified method is not accepted in the scientific community. It is not accepted within the scientific community that stressor-response analyses used to identify numeric criteria, can be based on mere assumption. EPA has been harshly admonished by its own Science Advisory Board in drawing broad-based, unsupported and unverified conclusions with respect to nutrient control in similar circumstances:

> In order to be scientifically defensible, empirical methods must take into consideration the influence of other variables.

EPA, *SAB Stressor Response Review*, at 24 (Apr. 27, 2010).

> The statistical methods in the Guidance require careful consideration of confounding variables before being used as predictive tools…. *Without such information, nutrient criteria developed using bivariate methods may be highly inaccurate.*

Id. EPA's latest approach is fundamentally flawed because EPA seeks to compare areas with radically different ecological settings- enclosed tidal rivers and well flushed open bay waters, without any analysis of the relevant factors influencing nitrogen impacts and other related factors influencing DO at these different locations.[9] There is no treatise or EPA guidance manual that indicates such an assessment is scientifically defensible or in any way accepted in the scientific community. In fact, in April 2010, EPA's SAB has expressly stated the opposite- that only similar ecological settings should be evaluated when developing nutrient criteria and conducting stressor/response analyses based on empirical evidence.

> For criteria that meet EPA's stated goal of "protecting against environmental degradation by nutrients," the underlying causal models must be correct. *Habitat condition is a crucial consideration in this regard (e.g., light [for example, canopy cover], hydrology, grazer abundance, velocity, sediment type) that is not adequately addressed in the Guidance.* Thus, a major uncertainty inherent in the Guidance is accounting for factors that influence biological responses to nutrient inputs. *Addressing this uncertainty requires adequately accounting for these factors in different types of water bodies.*

Id. at 36, 37.

> *Numeric nutrient criteria developed and implemented without consideration of site specific conditions can lead to management actions that may have negative social and economic and unintended environmental consequences without additional environmental protection*.

Id. at 37. The analytical approach used by EPA to derive the required nutrient criteria and permit limits is also directly at odds with EPA's own 2010 Stressor Response Guidance[10] on proper derivation of nutrient criteria:

> "…, in the first step of the analysis, *classification*, the analyst attempts to control for the possible effects of other environmental variables by identifying classes of waterbodies that have similar characteristics and are expected to have similar stressor-response relationships."

Id. at 32.

> "… prior to estimating the stressor-response relationships, classes of waterbodies identified that are as similar as possible, except with regard to nutrient concentrations."

Id. at 56.

> "Beyond the possible effects of confounding variables, one should also consider whether assumptions inherent in the chosen statistical model are supported by the data."

Id. at 67. EPA completed none of these necessary evaluations for producing a defensible nutrient objective for the Taunton River Estuary, assuming that the system even exhibits a nutrient-induced DO impairment.

As noted earlier, EPA itself has put out different guidance manuals for rivers, lakes (bays) and estuaries because of the need to consider the effects of such different settings on nutrient impacts and criteria assessment.[11] None of these documents indicate it is acceptable to plot data from these different settings on the same chart to predict the impact of nitrogen or any other nutrient.

Because EPA has used procedures that are not demonstrated to be scientifically defensible in any published treatise, are directly at odds with the Science Advisory Board admonitions and are contrary to EPA's own published guidance on how to properly evaluate a claimed nutrient related DO impairment in an estuarine water, EPA's proposed approach is not scientifically defensible and cannot be ascribed to agency expertise. Consequently, these unproven and arbitrary procedures may not be used as a basis to establish water quality-based limitations under § 122.44(d).

[FN9] This is the same error Dr. Steven Chapra informed EPA was fundamentally flawed when reviewing the EPA supported approach to generate nutrient criteria for Great Bay. (Attachment B- Dr. Chapra Declaration). His expert affidavit is applicable here because the same error is made in this instance and is even more egregious as EPA did not even attempt to show that the TN level caused excessive algal growth or that such algal growth was the likely cause of low DO conditions when proposing the Taunton permit.

[FN10] EPA, *Using Stressor-Response Relationships to Derive Numeric Nutrient Criteria* (Nov. 2010).

[FN11] EPA, *Technical Guidance Manual for Developing Total Maximum Daily Loads Book 2: Rivers and Streams; Part 1: Biochemical Oxygen Demand/ Dissolved Oxygen and Nutrients/Eutrophication*, at 4-27 (Mar. 1997).

Response C11. This comment is misdirected, as EPA did not perform a stressor response analysis in the development of these permit limits. Stressor response is a process of formal statistical analysis that is one of three "scientifically defensible empirical approaches [recommended by EPA] for setting numeric criteria to address nitrogen/phosphorus pollution," EPA, *Using Stressor-response Relationships to Derive Numeric Nutrient Criteria* (2010); the others are reference condition approaches and mechanistic modeling. EPA, *Nutrient Criteria Technical Guidance Manual: Rivers and Streams* (2001); EPA, *Nutrient Criteria Technical Guidance Manual: Lakes and Ponds* (2001). Stressor response analysis requires a substantial quantity of data to provide statistically significant results; the SMAST data collection was not designed for such an approach and more recent data collection is extremely limited, and EPA therefore did not apply such an approach. Therefore the comment's criticism regarding purported deficiencies in EPA's stressor response analysis are simply inapplicable.[20,21]

[20] Indeed it appears that portions of this comment may have been intended for another proceeding entirely. E.g. the statement "[n]one of these documents indicate it is acceptable to plot data from these different settings on the same chart to predict the impact of nitrogen" is confounding, as the Taunton Fact Sheet contains no such dataplots (a fact noted and criticized in the prior comment).

[21] Dr. Chapra's affidavit, referenced in the comment footnote, is "an expert review of the New Hampshire Department of Environmental Services (DES) approach to nutrient criteria development for the Great Bay Estuary" and was "specifically directed at addressing whether the . . . use of the 'stressor-response' methodology in that document . . . employed scientifically defensible methods." Comment Attachment B at 1. The document addresses a different system in a different state analyzed using a different methodology and does not provide any specific support for the contentions in this comment.

Nor is the fact that EPA has put out "different guidance manuals for rivers, lakes (bays)[22] and estuaries" of any relevance. All of the settings for which nitrogen analysis was performed are in the estuary and fall under the same guidance manual. EPA presumes that the commenter's intent was to point out variability within this estuarine system as noted in other comments; variability does exist but the evidence does not support the contention that a different TN threshold would be necessary to meet SB criteria in the Taunton River as opposed to Mount Hope Bay.

In contrast, the approach taken by EPA is a form of reference-based approach that is consistent with the approach used in multiple TMDLs developed through MEP, and supported by the consistency of the results with published concentration ranges and thresholds in other systems. EPA acknowledges that it is a "simplified" approach in comparison to the extensive analysis and/or modeling of data (that in this case does not exist) that the commenter suggests should be pursued. This does not render it "not scientifically defensible".

Comment C12. EPA failed to account for existing treatment affecting Taunton River DO.

When determining the need for and level of nutrient control, EPA based all of its analysis on data and conditions occurring 8-9 years ago and did not account for any changed conditions occurring since then. (Fact Sheet, at 19 - 26). The Taunton River and tributaries to Mount Hope Bay have had extensive reduction of organic discharge due to CSO corrective measures and nutrient reduction since 2004. Effluent CBOD and nutrient levels have decreased dramatically from all discharges in the past 8 years. EPA's failure to account for these federally mandated actions impacting the need for TN reductions in the Taunton River, is a facial violation of applicable NPDES rules and the requirements of the Act.

It is axiomatic that an agency's permitting decisions should be based upon the latest available scientific information regarding the receiving water conditions and related regulatory efforts to address water quality. *See* 40 C.F.R. § 122.44(d)(1)(ii) (states in determining the need for permit limitations "the authority *shall* use procedures that account for *existing* controls on point and non-point sources…") (emphasis added); *see also Nw. Ecosystem Alliance v. Rey*, 380 F. Supp. 2d 1175, 1195-1996 (W.D. Wash. 2005) (finding an agency may not "simply rest on the previous EIS or [supplemental] EIS if there is new information that may alter the environmental analysis" and ultimately finding the agencies improperly relied upon outdated data in determining the supplemental EIS). Nowhere in EPA's analysis has the agency accounted for the extensive changes in facility operations that have reduced nutrients and CSO discharges impacting this estuary as well as Mount Hope Bay. Thus, EPA's proposed permit asserting a need for stringent TN limitations at the Taunton facility is plainly in violation

[22] EPA notes the parenthetical in the second to last paragraph of the comment is inaccurate, while a lake may have an embayment "bays" are not "lakes"; certainly the "bay" at issue here (Mount Hope Bay) falls within the scope of the estuarine criteria guidance document.

of federal law because it is not based on the latest available scientific information or even remotely current water quality information for either Mount Hope Bay or the Taunton River.[12]

FN12 As the preamble to § 122.44(d) states, when developing a defensible water quality based limitation the "permitting authority should use all available scientific information on the effect of a pollutant on human health and aquatic life." 54 Fed. Reg. 23,868, 23,876 (June 2, 1989). EPA Region 1 has admitted that NPDES permits must be based on "all available scientific information." *See* EPA Response to Newmarket EAB NPDES Appeal 12-05, at 47. If the information used is not based on current conditions and fails to reflect known improvements in water quality occurring in the past 8 years, the analysis is neither "reliable" nor "scientific".

Response C12. EPA did include information about current conditions in the Fact Sheet, including data that elevated chlorophyll-a concentrations and persistent DO depletion below 5 mg/l continue in Mount Hope Bay based on the most recent available monitoring data. Fact Sheet at 25-26. Data published subsequent to the Fact Sheet issuance also show continued impairments. For example, the datasonde data for 2011 show the same pattern of supersaturated daytime surface DO during algae blooms, accompanied by DO deficits in bottom waters – the same pattern EPA noted in the Fact Sheet for 2010 data.

Figure R2.

Figure R2a. Surface Chlorophyll and DO percent at MHB sonde, 2011

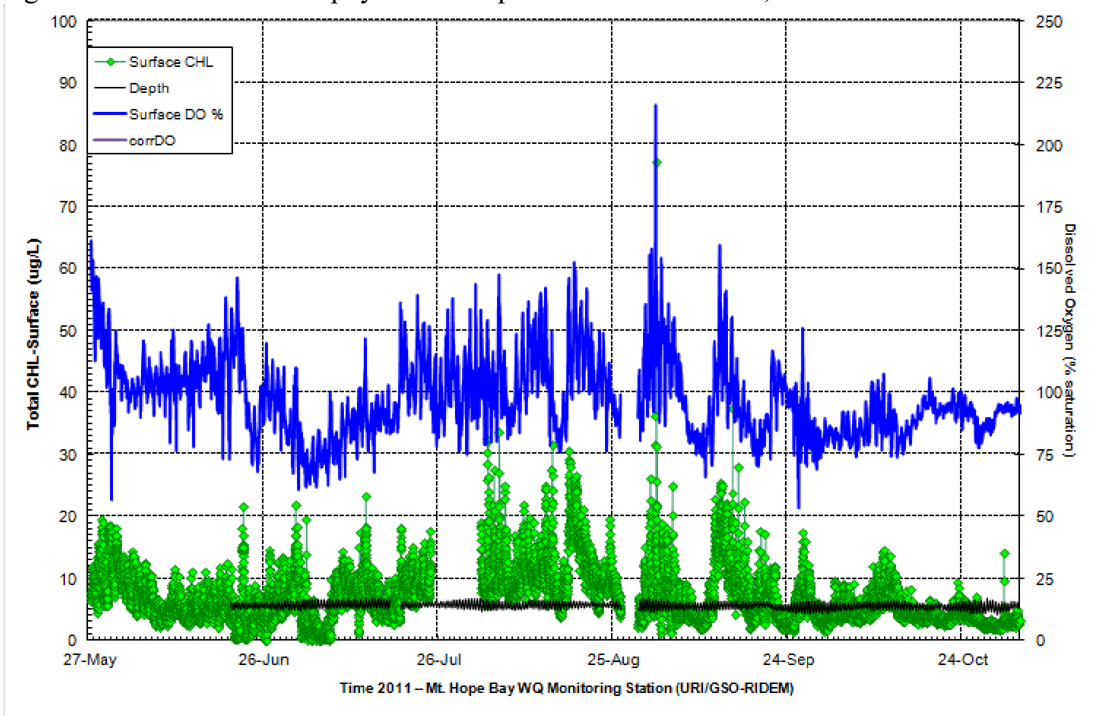

Chart by URI/GSO-RIDEM. Chart and data available at www.dem.ri.gov/bart

Figure R2b. DO concentration at surface and bottom, MHB sonde, 2011

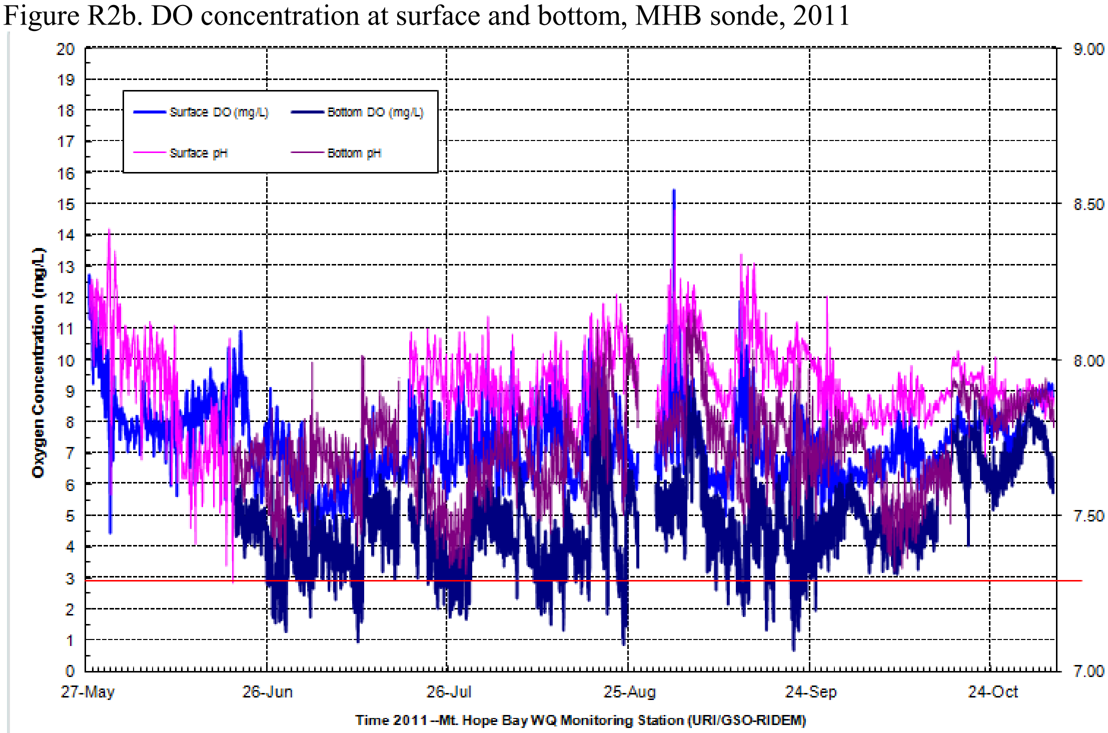

Chart by URI/GSO-RIDEM. Chart and data available at www.dem.ri.gov/bart

For 2013 only daily average data has been published, but these show long periods of daily average DO below the Massachusetts water quality standard of 5.0 mg/l, and among the highest chlorophyll concentrations on record. See further discussion at Response C29.

These recent data indicate that any reductions in pollutant loads that have been achieved through improved treatment have not been sufficient to achieve water quality standards, a result that is consistent with the prediction from EPA's analysis that a substantially greater reduction in nitrogen loadings would be necessary in order for water quality standards to be achieved. The reductions that have been achieved are neither as "extensive" nor "dramatic" as characterized in the comment, see Response C13 (CSO reductions have not significantly reduced organic and nutrient loads to critical areas, and reduction in nitrogen loads from treatment plants is smaller than characterized), and water quality continues to be impacted as reflected in the chlorophyll-a and DO indicators of eutrophic condition.

The analysis performed by EPA was based on the only comprehensive dataset available for determination of system-wide nutrient impacts; the recent data (from URI and the Narragansett Bay Commission) is limited both in location and in parameters monitored (one site in Mount Hope Bay with datasonde and sampling data; one site in Taunton River with no indicator data, and sampling for DIN/TDN and PO4 only until 2012). See Responses C13 and C29.

The commenter has provided references to additional data that EPA did not have in its possession in development of the permit limits (particularly unpublished data collected by the University of Rhode Island) and EPA agrees that these data should also be considered. This is an important aspect of the public comment process, and EPA appreciates this aspect of the commenter's input. The specific recent data sources are discussed where they are commented on individually below, see Responses C13 and C29, and as discussed in those responses the new data do not change EPA's conclusions regarding nitrogen impacts and necessary load reductions in the watershed. As noted above the more recent data are too limited to provide a basis for a new analysis (the data used by EPA continues to be the only comprehensive dataset available that is usable to determine watershed loads and reductions), but EPA's analysis is consistent with the recent data indicating continued water quality impacts.

Comment C13. Major improvements in water quality have occurred since 2004/5 that must be accounted for in setting permit limitations.

Under the structure of the Act and its implementing regulations, it is plainly inappropriate to exclude consideration of current information that provides insight on whether or not historical water quality has significantly improved and the proper derivation of a narrative translator. *See, e.g.,* CWA Section 304(a) (requiring EPA to use the latest scientific information); 40 C.F.R. Part 130 (requiring impaired waters list be updated every 2 years in order to be based on current information for the estuary).[13]

In this case, EPA relied upon data from 2004/5 to conclude that major nutrient reductions were required to address DO concerns in both the Taunton River and, indirectly Mount Hope Bay. (Fact Sheet, at 29-30). Since 2004/5 there has been dramatic reductions in organic and nutrient loadings to these waters, therefore, the readings from 2004/5 cannot possibly reflect current conditions.[14] The reports entitled *Spatial and Temporal Patterns in Nutrient Standing Stock and Mass-Balance in Response to Load Reductions in a Temperate Estuary* (Attachment C)[15] and *Draft Nutrient Conditions in Narragansett Bay & Numeric Nutrient Criteria Development Strategies for Rhode Island Estuarine Waters* (Attachment D)[16], discuss the extent of nutrient reduction measures implemented by both Rhode Island and Massachusetts. From October 2003 to June 2008, at least eight Rhode Island wastewater treatment facilities, including the bay's second largest, upgraded to tertiary sewage treatment to remove excess nitrogen.[17] The largest, Field's Point WWTF, plans to complete its tertiary treatment system by December 2013 which will further reduce the bay's nitrogen levels.[18] In fact, it is expected that once the Field's Point WWTF upgrades are complete, the bay will meet the nitrogen target goal set by Rhode Island General Law § 46-12-3(25).[19]

Between the years 2000 and 2010, both the Taunton River and Narragansett Bay experienced significant reductions in TN loads. In the Taunton River, the average annual load of TN dropped from 1.64×10^6 kg to 5.28×10^5 kg from the periods 2003-2004 to 2008-2010. Adjusting for the difference in average annual flow, this represents a TN concentration reduction of 48%.[20] These reductions have greatly decreased total nitrogen levels in Mount Hope Bay and such levels are now well below the level EPA has indicated would be protective for Mount Hope Bay – 0.45 mg/L. *Infra* at 37-40.

A comparison of nutrient and organic loadings for the Taunton River demonstrates that major reductions in both parameters have occurred since 2004/5. The City of Brockton is in the process of undertaking additional modifications that will reduce its nitrogen loading even further. Overall point source nitrogen loadings to the estuary have decreased by approximately 25% since 2005 (excluding the CSO related TN reductions).

WWTF	Design Flow (MGD)	Receiving Stream	EPA Calculation Average 2004-05 Summer TN Discharge (lb/day)	May to October BETA Calculation Avg. 2004-05 Summer Discharge (lb/day)		May to October BETA Calculation Avg. 2011-12 Summer Discharge (lb/day)	
				BOD	TN	BOD	TN
Taunton[2]	8.4	Taunton River Estuary	610	474	681	116	502
Somerset[1]	4.2	Taunton River Estuary	349.5	244	412	160	398
MCI Bridgewater	0.55	Taunton River	37	202	No Data	341	24
Brockton[2]	18	Salisbury River	1303	358	1,434	117	618
Bridgewater	1.44	Town River	137.5	43	164	43	208
Mansfield	3.14	Three Mile River	375.5	24	431	19	383
Middleboro[2]	2.16	Nemasket River	207.5	11	282	11	397
		Total Load:	3,020	1,355	3,404	807	2,530

Notes:

1: Nitrogen data provided was monthly maximum day value.
2: CBOD measured during summer reporting period.
3: Values calculated with reported monthly averages unless otherwise noted.

The algal levels have also dropped in Mount Hope Bay by approximately 25%. Moreover, the Cities of Taunton and Fall River (at the mouth of the estuary) have implemented extensive wet weather controls that have reduced organic loadings to the river since 2004. *See* chart below detailing the degree of CSO reduction occurring. (Personal communication between Joe Federico, Beta Inc. and Nancy Beaton, CDM Smith).

Description	Pre-CSO Program	Current	Reduction
Estimated Annual CSO Volume	1293 MG/year	278 MG/year (Overall) <65 MG/year (South/Central)	78% (Overall) >94% (South/Central)

EPA's analyses, frozen in time failed to account for how these changes would alter the DO conditions in the Taunton River, 8 years later. Finally, the Brayton Point generating facility (at the mouth of the estuary) has implemented two new cooling towers that will lower temperatures in the Bay and Taunton River. (*See* Attachment E- Brayton Point Station Fact Sheet). The lower temperature will have a direct impact on promoting higher DO by (1) increasing DO saturation and (2) reducing the organic deoxygenation rates of the system. EPA's failure to account for the impact of these changes in treatment affecting algal growth and the DO regime is contrary to the requirements of 40 C.F.R. § 122.44(d).[21] The effect of these measures since 2004/5 on DO in the Taunton River would be profound, assuming EPA's position regarding the factors controlling low DO is correct. The Bay delivers the vast majority of the water entering the Taunton River every day. EPA itself estimates that the salt water contribution is triple the fresh water component. (Fact Sheet, at 31). Improved DO would now be associated with these tidal flows as well as reduced algal levels. Likewise millions of gallons of untreated wastewater have been reduced since 2004 via CSO control. This would reduce the organic enrichment of the estuary and reduce the low DO load associated with those combined sewer overflows. Given the scope of pollution reduction efforts occurring since 2004/5, it is inappropriate for EPA to claim that nutrient controls are necessary based on data reflecting 2004/5 conditions. It is certainly possible, if not likely, that the minor DO violations found to occur in the Taunton River based on 2004/5 conditions, no longer exist. In any event, the failure to account for these changes influencing the need for and extent of TN reduction is contrary to applicable rules and norms of administrative agency decision making.

In summary, to support its claim that Taunton's nutrient discharge is the cause of narrative or DO criteria violation, EPA must utilize current data since numerous changes promoting improved DO have occurred since 2005. Therefore, EPA must update its analyses to reflect the known water quality improvements occurring since 2005 and determine, based on current data, whether or not the Taunton River Estuary is actually still impaired for DO and, if so, what factors are controlling that impairment.

[FN13] The 11th Circuit Court of Appeals stated:
The CWA requires that states identify all waterbodies within their boundaries that do not meet or are not expected to meet water quality standards. *See* 33 U.S.C. § 1313(d)(1)(A); 40 C.F.R. §§ 130.2(j), 130.7(b)(1). EPA regulations require states to "assemble and *evaluate all* existing and readily available water quality-related data and information to develop [their impaired waters lists]." 40 C.F.R. § 130.7(b)(5) (emphasis added).
While § 130.7(b)(6)(iii) implies that Florida has a right to decide not to *use* certain data, it does not obviate the requirement in § 130.7(b)(5) that Florida *evaluate* all existing and readily available data. By taking the hard-line approach of not considering any data older than 7.5 years--even when there is no more current data for a particular waterbody--Florida has not fulfilled § 130.7(b)(5)'s evaluation requirement. Moreover, states are required by the CWA to identify *all* waterbodies that fail to meet water quality standards, 33 U.S.C. § 1313(d)(1)(A); states cannot shirk this responsibility simply by claiming a lack of current data. The district court misinterpreted the CWA's statutory and regulatory scheme when it held to the contrary, and we must therefore remand this issue for an analysis under the correct legal standard. *Sierra Club v. Leavitt*, 488 F.3d 904, 913 (11th Cir. 2007).
[FN14] After the 2003 fish kill in the Providence River, the Rhode Island legislature directed facilities to achieve a 50% reduction in nitrogen discharges. Tom Uva of the Narragansett Bay Commission indicated that the present TN discharges from Rhode Island have decreased by 48% and that ambient TN levels are the lowest measured to date. (Personal communication with John C. Hall on June 11, 2013).
[FN15] Jason Seth Krumholz, *Spatial and Temporal Patterns in Nutrient Standing Stock and Mass-Balance in Response to Load Reductions in a Temperate Estuary,* (2012).
[FN16] Christopher Deacutis and Donald Pryer, *Draft Nutrient Conditions in Narragansett Bay & Numeric Nutrient Criteria Development Strategies for Rhode Island Estuarine Waters* (June 2011).
[FN17] *Id.* at 2, 28.
[FN18] Krumholz, *supra* note 15, at 286.
[FN19] *Id.* at 97.
[FN20] *Id.* at 167.
[FN21] EPA was responsible, in part for mandating that nutrient reduction occur broadly in the Narragansett Basin and CSO reduction in Massachusetts. Those and other changes have produced major improvements in water quality such that the 2004/5 conditions referenced by EPA are no longer relevant.

Response C13. EPA did not "exclude consideration of current information" as claimed in the comment. EPA included charts and references to the 2010 published indicator data in Mount Hope Bay documenting continued nutrient impacts and water quality impacts in the Bay. Fact Sheet at 25-26. These impacts continue through 2013 as discussed in Responses C12 and C29. The most recent 303(d) lists, updated every two years, continue to cite impairments to these waters for dissolved oxygen in the Taunton River (MA 2012 Integrated List of Waters), nitrogen (total) and chlorophyll-a in MA segments of Mount Hope Bay, (id.) and nitrogen (total) and oxygen (dissolved) in the RI segments of Mount Hope Bay.

The references to reductions by Rhode Island treatment plants are not relevant to this system as those treatment plants discharge to Narragansett Bay proper and not to Mount Hope Bay.[23] The actual reduction in total nitrogen loads to Narragansett

[23] While Narragansett Bay proper and Mount Hope Bay are connected and part of a larger system, research indicates that Mount Hope Bay is a net transporter of nitrogen to Narragansett Bay proper, rather than vice

Bay achieved to date, as described in Krumholz (2012) (H&A Comment Attachment C) has been "only about 17% of the annual ecosystem budget," *id.* at 25, although it is expected to reach about 50% when all the larger plants have upgraded to tertiary treatment. *Id.* at 25 and 38. Krumholz concluded that there was no observable response in chlorophyll or primary productivity from the reduction to date but that a 50% reduction would warrant a reanalysis. *Id* at 25.

The comment's claim that TN concentrations in the Taunton River have decreased 48% is simply untrue. The comment cites to a Table in the Krumholz Ph.D dissertation comparing loads from the period 2003-04 and 2008-2010, but the comment does not include the information from the document text indicating that these loads were not calculated in comparable ways:

> The discrepancy in measurement comes in part from the fact that Nixon et al. (1995, 2008) scaled up the flow of the Taunton to account for the large un-gauged area between the measurement station, at State Farm in Bridgewater MA, and the mouth of the river. By land area, slightly more than half of the watershed is un-gauged because the river has tidal influence for about 10 miles from its mouth. This results in increasing the flow from the Bridgewater gauge by about 40%, as calculated by (Boucher 1991). We elected not to scale this flow up primarily because the Taunton River at Bridgewater, where it was sampled both for flow and for concentration, during low flow periods is more than half sewage effluent by volume. Even during high flow periods, the effluent from the Brockton WWTF, at a relatively constant 17-20 million gallons per day, is close to 10% of the total flow of the river. Therefore, we feel it may not be accurate to apply concentration data taken at the Bridgewater gauge, and assume that it will hold constant as the volume essentially doubles with 300 square miles of ungauged area below this station. This is much less of a concern for other rivers, where the volume of effluent is small compared to the volume of water, and the ratio of gauged to un-gauged area is small (for most of the other rivers, the ratio of gauged to total area is <1.2).
>
> When we calculate the Taunton River using Boucher's (1991) coefficient, we get 82 million moles TN and about 1.22 million moles TP. This TN estimate is still **a 30% reduction** over Nixon et al. and the phosphorus reduction is still about 77% of the earlier estimate. These numbers are probably a more accurate representation of the change which has gone on over time in that system. We expect the large phosphorus reduction, since Nixon et al.'s values are from data collected in the 1980's, before large scale reductions in phosphorus load became mainstream (Litke 1999). However, for the purpose of attempting to quantify as accurately as possible the total flows into and out of the system, we believe that adding

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versa, so that reductions to loads in Narragansett Bay proper are not expect to result in discernible improvement in Mount Hope Bay. SMAST, *Framework for Formulating the Mt. Hope Bay Natural Laboratory: A Synthesis and Summary* (2003) at 99.

> the un-gauged portion of the Taunton River to our 'unmeasured drainage' term, and representing it with the average load per acre across the entire system provides a more accurate picture of the actual contribution from the Taunton, though we admit there is a fair amount of uncertainty either way on this matter. [emphasis added]

Thus the dissertation calculates a 30% reduction in loads through 2010; even this however, is an overestimate because the location of sampling is different between the 2003-04 and 2008-2010 surveys. While the 2003-04 data was taken at the Bridgewater gauge (as indicated in the dissertation), the 2008-10 NBC data was collected at the Berkley Bridge in Dighton (snapshot.narrabay.com/app/MonitoringInitiatives/NutrientMonitoring), which is subject to dilution by both the flow from ungauged areas of the watershed (about 40% of total watershed) and by ocean water (this site is located in the estuary). Given the large contribution of the Brockton discharge, upstream of the Bridgewater gage, it would be expected that concentrations would be lower further downstream and that comparing loads calculated from the two sites would result in a spurious "reduction", although the presence of the Taunton discharge between these two sites complicates attempts to calculate what the true reduction might be.

This is not to say that there have not been reductions to nitrogen loads in connection with improved treatment, but just that they are not as substantial as the comment contends. In particular EPA agrees that the City of Brockton's upgrade to its treatment plant, completed in 2010, has resulted in a significant decrease in total nitrogen loads of about 700 lb/d as of 2010, although that reduction is not sufficient to meet the target thresholds in the estuary. EPA agrees that the total reduction in WWTP loads has been approximately 25%, although the reduction in total TN load (including nonpoint sources) is only about 17%.[24] These reductions would not be predicted to be sufficient to achieve the target TN concentration or achieve water quality standards, and in fact the available data indicates that elevated chlorophyll concentrations and DO depletions continued through 2010 consistent with EPA's analysis. See Response C29. EPA's analysis did in fact consider the impact of reductions in nitrogen discharges from Brockton and other WWTPs; indeed, the 3 mg/l TN permit limit is premised on new permit limits at all the other major dischargers in the Taunton River watershed, which will result in further reductions below those already achieved at those facilities.

The CSO reductions cited in the comment, while important in addressing other pressing water quality problems, are not expected to have a significant impact on DO conditions in the upper Taunton River estuary where the Fact Sheet analysis

[24] EPA notes that the comment contains estimates of TN loading in 2004-05 which are higher than those used by EPA in its loading analysis; this is because EPA's loads were calculated for June to September to match the data in the rest of the loading analysis (the period for which receiving monitoring data was collected), while the comment loads include May and October. The scale of reduction due to Brockton's treatment upgrade is approximately 25% of point source loads for either time period.

was conducted. While the comment portrays a lump sum of "1,293 MG/year" as being reduced by "the Cities of Taunton and Fall River," this volume, and the associated reductions, are related essentially entirely to reductions in Fall River CSO discharges and not to City of Taunton discharges. Within the Fall River system almost the entire reduction has occurred in discharges from the South/Central regions which discharge to the Quequechan River and Mount Hope Bay in connection with the South Tunnel construction.[25] *See* City of Fall River, *CSO Abatement Program North System Plan and Program Update Report – Supplemental Report* (2011). These Fall River CSOs are located more than 6 miles downstream of the station used as the locus for the loading analysis and discharge only during wet weather, when flows from the Taunton River are at their highest and flows move most strongly away from the mouth of the estuary. In addition, most of these CSO discharges addressed occur primarily in wet months and therefore have limited effect on the summer conditions that are analyzed in the Fact Sheet.

Moreover these CSO reductions did not eliminate organic and nutrient loadings from these flows. The flows did not disappear; the CSO reduction plan implemented by the City of Fall River involves primarily increased capacity at the treatment plant (particularly increased capacity for primary treatment of wet weather flows), storage, and satellite disinfection and screening. Thus a proportion of the flow (and the only treatment for CSO discharges in the North region) receive only screening and disinfection, which would not be expected to substantially reduce nutrient and BOD loads. Another portion of the flow receives only primary treatment, providing no substantial nutrient removal and limited BOD removal. Even for those flows now receiving secondary treatment it is unclear that any organic and nutrient reduction is being provided due to the dilute nature of the CSO discharges; based on monitoring provided in connection with the Cove Street screening and disinfection facility, the influent to that facility has quite low BOD (12-16 mg/l) and TN (3.4 to 3.8 mg/l) concentrations that are lower than the effluent from the WWTP. City of Fall River, *CSO Abatement Program North System CSO Control Plan and Program Update Report – Supplemental Report* (2011) at 1-1 to 1-3 and Table 2-2 Thus, while wet weather controls are providing important reductions in pathogen loads and other pollutants, there does not seem to be evidence that a substantial reduction in organic and nutrient loads can be expected from the CSO mitigation efforts to date.

Brayton Point thermal discharges may also have contributed incrementally to dissolved oxygen depletion in Mount Hope Bay, although the limitations on thermal discharges were not based on DO impacts, see EPA, *Clean Water Act NPDES Permitting Determinations for Thermal Discharge and Cooling Water*

[25] While not stated in the comment's table, of the 1,293 MG prior to the tunnel, 1,032 MG was from the South/Central sewer areas. Of the total reduction of 1,015 MG the vast majority (967 MG) was in the South Central area, with a much smaller amount (approximately 45 MG/yr or 0.12 mgd) was in the lowermost portion of the Taunton River.

Intake from Brayton Point Station in Somerset, MA (2002), and extensive modeling efforts in connection with the Brayton Point permit proceedings were unable to quantify the impact of those thermal discharges on DO concentrations. See EPA, *Response to Comments, Brayton Point Station NPDES Permit No. MA0003654* at III-10 (http://www.epa.gov/region1/braytonpoint/pdfs/finalpermit/sectionIII.pdf). However, the influence of the thermal plume is negligible in the Taunton River Estuary portion of the system, where temperatures are naturally higher than in Mount Hope Bay. Furthermore, while thermal loads have been dramatically reduced since 2011, DO depletions have continued within Mount Hope Bay as shown by continuous datasonde measurements from 2011 through 2013. See Responses C12 and C29.[26] This conclusion is also supported by ongoing monitoring performed by the Brayton Point Station, which found that the proportion of DO readings below 5 mg/l (indicating violation of the MA SWQS for DO in SB waters) is greater than the long-term mean in both the most recent year (2013) and in the most recent four year period (2010-2013). Brayton Point Energy, LLC, *Brayton Point Station Hydrographical and Biological Monitoring Program, 2013 Annual Report* (August 26, 2014). The commenter's theory that reduction in thermal loads from Brayton Point have resolved the DO issue in the upper Taunton Estuary is unsupported by any evidence at all.

In sum, EPA relied on the best available data (the only comprehensive data set and one collected through a MassDEP approved program) in performing its analysis. While there have been reductions in nitrogen loads since 2004-05 they are not as significant as the comments state, and nutrient-related water quality issues continue based on the limited more recent data. The draft permit limits are necessary both to reduce present loads and to address loadings as treatment plants reach their design flows in future years, when all available data from all time periods are considered.

Comment C14. EPA failed to provide a cause and effect demonstration as required by state and federal law.

As noted earlier, the Fact Sheet is bereft of analyses confirming that nutrients are the actual cause of low DO measured in the Taunton River in 2004/5. This is a fatal deficiency of EPA's proposed permit action. Rather, EPA has employed a simplified form of "reference waters" assessment to select the "protective" TN concentration that must be achieved in the Taunton River. (Fact Sheet, at 30). As noted earlier, EPA's selection of a TN end point for Mount Hope Bay was not based on a demonstrated impairment threshold needed to produce a minimum DO of 5.0 mg/L in the Taunton River. Moreover, the selection of the TN level failed to identify the relevant algal growth

[26] Results from monitoring done under the Brayton Power Plant NPDES permit are consistent with these results, with DO measurements in 2011, 2012 and 2013 below their long term mean in summer months with frequent results below 5 mg/l. *Brayton Point Station Hydrographical and Biological Monitoring Program – 2013 Annual Report* at 3-1 to 3-86; *Brayton Point Station Hydrographical and Biological Monitoring Program – 2012 Annual Report* at 3-1 to 3-85; *Brayton Point Station Hydrographical and Biological Monitoring Program – 2011 Annual Report* at 3-1 to 3-83.

response which is necessary to produce the specific level of DO improvement to meet applicable numeric standards (assuming that the algal component is significant in controlling DO in the Taunton River) as required by state law.[22] Choosing a TN level without confirming that it is (1) necessary to produce the protective algal level and (2) that it can ensure DO compliance violates the requirement that the approach is sufficient to ensure standards compliance. (*See* 40 C.F.R. § 122.44(d)(1)(vi)(A) (requiring a narrative standard-based effluent limitation to "fully protect the designated use")). This plainly fails to meet regulatory prerequisites.

[FN22] When EPA recently proposed estuarine nutrient criteria for Florida, EPA proposed chlorophyll a levels that were deemed sufficient to protect beneficial uses.
EPA is proposing this [reference] approach to derive numeric chlorophyll *a* criteria for Florida's coastal waters because the scientific data and information available were insufficient to establish accurate quantifiable relationships between TN and TP concentrations and harmful, adverse effects due to the limited TN and TP data available. Therefore, EPA is proposing to rely upon the reference condition approach to identify numeric chlorophyll-a criteria concentrations that protect the designated uses, and avoid any adverse change in natural populations of aquatic flora or fauna in Florida's coastal waters. EPA*, Water Quality Standards for the State of Florida's Estuaries, Coastal Waters, and South Florida Inland Flowing Waters* (2012), at 87.

Response C14. The commenter again ignores the regulatory standard governing imposition of water quality-based limits. The governing standard is not that EPA "confirm[] that nutrients are the actual cause of low DO measured" in the receiving water. Rather, the regulations require an effluent limit if a pollutant discharge "causes, has reasonable potential to cause, or contributes" an exceedance of a water quality standard.§122.44(d); 40 C.F.R. *In re Town of Newmarket, NH,* NPDES Appeal No. 12-05, 16 E.A.D __ (2013). In the absence of detailed mechanical models EPA is obligated to rely on the best available information to derive an impairment threshold and has done so here. There is inevitably some scientific uncertainty associated with the analysis of complex systems, even when detailed models are available, and EPA has appropriately moved forward with permit limits in the face of uncertainty here. See *In re Upper Blackstone Water Pollution Abatement Dist.*, NPDES Appeal Nos. 08-11 to 08-18 & 09-06, at 40 (EAB May 28, 2010) ("scientific uncertainty is not a basis for delay in issuing an NPDES permit."). EPA disagrees with the contention, unsupported by any citation, that it is required under state law to identify a specific algal growth response that is associated with a specific level of DO improvement prior to instituting permit limits. EPA notes that TMDLs developed under MEP and approved by MassDEP do not engage in that sort of analysis.

Comment C15. The Clean Water Act requires a causal demonstration.
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 community diversity, productivity and stability…" 33 U.S.C. § 1314(a)(1); *accord*, 40 C.F.R. § 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". *Id.* § 131.11 (a).[23] Impairment listings only occur where it is demonstrated that the

applicable criteria are exceeded. *See* 33 U.S.C. §1313(d).[24] 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." *See Nat'l Metal Finishers Ass'n*, 719 F.2d. at 640; *Ark. Poul. Fed. v. EPA*, 852 F. 2d 324, 328 (8th Cir. 1988) (stating the discharge must at least be "a cause" of the violation).

[FN23] The Agency's guidance on nutrient criteria development broadly discusses the need to address how causal (nutrients) and response (algal growth) is documented for particular water bodies.
[FN24] It is a general principle of the CWA, or any environmental statute for that matter, that pollutants be regulated if, and only if, they are causing harm or impairment. In generating numeric water quality criteria, EPA must abide by the same principle. *See* 33 U.S.C. §§ 1313(c)(2)(A), 1314 (a); 40 C.F.R. § 131.3(b); *Leather Indus. of Am.*, 40 F.3d at 401 ("EPA's mandate to establish standards "adequate to protect public health and the environment from any reasonably anticipated adverse effects of each pollutant," does not give the EPA blanket one-way ratchet authority to tighten standards.").

Response C15. This comment relies on a variety of inapplicable standards. First, while EPA's analysis is based on sound science and the best available information, this is not a process for approval of water quality criteria under 40 CFR § 131.3(c) or 131.11(a). Second, the determination to include a water quality based effluent limit is not an impairment listing; permit limits are included not "only . . . where it is demonstrated that applicable criteria are exceeded" but whenever a discharge "causes, has reasonable potential to cause, or contributes" to an excursion. 40 CFR § 122.44(d); see Responses C1 to C5. Third, this permit action concerns the establishment of protective permit limits, not establishing liability. The cases cited by the commenter, *Nat'l Metal Finishers Ass'n*, 719 F.2d. at 640; *Ark. Poul. Fed. v. EPA*, 852 F. 2d 324, 328 (8th Cir. 1988), disapproved an EPA regulation that imposed liability for interference with POTW operations on indirect dischargers without any evidence that the indirect discharge caused the interference. The cases did not overturn the limit-setting aspect of the pretreatment regulations, which do not require a showing of causation; i.e. 40 CFR 403.8(f)(4) requires POTWs with pretreatment programs to set local limits unless the POTW "demonstrate[s] that they are not necessary."

The actual legal and regulatory standard governing this action is discussed in detail in Response C17.

Comment C16. The state narrative criteria required cause and effect and excessive plant growth demonstrations.

The state narrative criteria require a "cause and effect" demonstration that nutrients actually caused excessive plant growth and such growth caused the low DO condition to claim a narrative violation exists. The Critical Indicators Interim Report specifies that nutrients "shall not exceed site-specific limits *necessary* to control accelerated or cultural eutrophication." (Critical Indicators Interim Report, at 9) (emphasis added).[25] However, nowhere does EPA present an analysis showing the Taunton River is subject to "cultural eutrophication" or that the specific values chosen from station MHB16 are "necessary" to ensure control of such unacceptable conditions in the Taunton River. As no such analysis is presented in the fact sheet, it is apparent that EPA has not properly interpreted or applied state law. Moreover, the Fact Sheet should have contained some demonstration that a specific reduction in algal level is needed to produce a specific improvement in DO in the Taunton River as state law is expressly intended to control excessive eutrophication (*i.e.,* excessive algal growth). No such analysis presented in this fact sheet. However, state rules do not regulate or prohibit "elevated nutrient levels" the applicable rules only prohibit such nutrient levels to the degree that they are the cause of "cultural eutrophication".[26] These are the required demonstrations under state law and EPA's analysis failed to provide them to support the proposed limitations.

[FN25] *See also* 314 CMR 4.05(5)(c) (Nutrients –"unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses …").
[FN26] This "reference station" approach was also used by EPA to develop numeric nutrient criteria for streams in Florida based on a narrative standard and was struck down by the Court (*Fla Wildlife Fed'n, Inc., et. al. v. Jackson*, Case 4:08-cv-00324-RH-WSC, Doc. 351; N.D. Fla., Feb. 18, 2012) as insufficient to show that the criteria were necessary to maintain designated uses.

Response C16. EPA properly implemented the state narrative criteria for nutrients. EPA's conclusion that nitrogen discharges are causing cultural eutrophication in the Taunton River Estuary and Mount Hope Bay is clearly described in the Fact Sheet:

> The Taunton River Estuary and Mount Hope Bay have reached their assimilative capacity for nitrogen and are suffering from the adverse water quality impacts of nutrient overenrichment, including cultural eutrophication. They are, consequently, failing to attain the water quality standards described above. The impacts of excessive nutrients are evident throughout the Taunton River Estuary and Mount Hope Bay.

The Fact Sheet goes on to describe the extensive evidence supporting EPA's conclusion that nitrogen is causing water quality standards violation, including extensive monitoring evidence indicating elevated chlorophyll-a concentrations and DO depletions and the conclusion of the SMAST technical report that recommended implementation of the MEP nitrogen loading approach focusing on restoration of the Taunton River Estuary. EPA did not base its permit limit approach on elevated nutrient levels in isolation but based on an analysis of impairment thresholds using indicators that have been accepted by the state for determining cultural eutrophication. The state has not required "demonstration that a specific reduction in algal level is needed to produce a specific improvement in DO" in determining cultural eutrophication and the comment cites no state document containing such an interpretation.

The development of the specific numeric TN threshold associated with nutrient impairment, for purpose of setting a water quality based permit limit, is not specifically addressed by the Massachusetts SWQS narrative nutrient criterion. Rather, that process is governed by EPA's permitting regulations regarding narrative criteria, which state:

> **(vi)** Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits using one or more of the following options:
> **(A)** Establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such a criterion may be derived using a proposed State criterion, or an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information which may include: EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data, information about the pollutant from the Food and Drug Administration, and current EPA criteria documents; or
> **(B)** Establish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under section 304(a) of the CWA, supplemented where necessary by other relevant information; or
> **(C)** Establish effluent limitations on an indicator parameter for the pollutant of concern, provided . . .

In this case EPA applied 40 CFR 122.44(d)(1)(iv)(A) and established the effluent limit based on threshold receiving water concentration that would comply with the narrative criterion for nutrients, based on a comprehensive evaluation of the entire Taunton River Estuary/Mount Hope Bay system to identify the transition point from impaired to unimpaired conditions. The state narrative standard does not impose a higher standard of causation for purposes of permit limits, and such an interpretation, if it existed, would not override the requirements of 40 C.F.R. § 122.44(d).[27]

Comment C17. Federal rules and guidance require a demonstration of causation. A "cause and effect" (*e.g.,* cause or contribute)[27] demonstration is necessary under 40 C.F.R. § 122.44(d) to regulate nutrients (*i.e.*, setting limits based on specific information confirming such effects actually occurred rather than generalizations regarding nutrient effects).[28] On its face, § 122.44(d) itself indicates that more restrictive limits only apply if the discharge "causes" a water quality criteria excursion.[29] The *Upper Blackstone* decisions repeatedly refer to the fact that nutrients were demonstrated to be "causing" extensive "cultural eutrophication" as the basis for imposing more restrictive limitations. Both the MERL model and the field measurements demonstrated that as nitrogen loadings increase, dissolved oxygen decreases and chlorophyll *a* increases, with both becoming less stable and subject to greater swings at higher levels of nitrogen. The EPA concluded that the basic causal relationship demonstrated in the MERL experiments "corresponds to what is actually occurring in the Providence/Seekonk River system." *Upper Blackstone v. EPA,* 690 F.3d 9, 25-26 (1st Cir. 2012).[30]

[27] With respect to the footnote regarding the Florida court decision, see Response C.19.

The Rhode Island narrative criteria at issue in *Upper Blackstone* were also based on preventing "cultural eutrophication" as evidenced by nutrients causing excessive algal growth, low DO and related effects. In that case, the court first looked to see if the effects of "cultural eutrophication" existed and were documented to be caused by nutrients: "An influx of nitrogen and phosphorus from sewage treatment plants is causing serious problems for the River's waters and those downstream. The Blackstone, Seekonk, and Providence Rivers, and Narragansett Bay, *all suffer from severe cultural eutrophication*." *Id.* at 11 (emphasis added). The court observed "[h]ere, the EPA states, and the record reflects, that the MERL *model demonstrated the relationship between nitrogen loading, dissolved oxygen, and chlorophyll a production* for a range of loading scenarios *in a water environment similar to the Bay's*." *Id.* at 27 (emphasis added). Further, the court noted:

> *Subsequently,* in order to address the severe and ongoing phosphorus-driven cultural eutrophication in the Blackstone River, the EPA incorporated a more stringent phosphorus limit into the 2008 permit. In formulating this limit, the EPA considered the national and regional guidance criteria and recommended values it had recently published.

Id. at 31 (emphasis added).

The April 2010 SAB Report on EPA's stressor–response evaluations underscored the need for science-based "cause and effect" demonstrations when regulating nutrients: "Without a mechanistic understanding and a *clear causative link* between nutrient levels and impairment, there is no assurance that managing for particular nutrient levels will lead to the desired outcome." *Id.* at 4 (emphasis added). For criteria that meet EPA's stated goal of "protecting against environmental degradation by nutrients," the underlying *causal models* must be correct." *Id.* at 37 (emphasis added). As noted earlier, EPA's 2010 Stressor Response guidance issued in response to the SAB concerns recognized the need to establish the "cause and effect" relationship when regulating nutrients. No such analyses were presented in this permit action.

Because the proposed limits are not based on any demonstrated "cause and effect" relationship for the Taunton Estuary regarding "cultural eutrophication" and its current impact on the DO regime, the analysis is facially deficient and therefore, arbitrary and capricious and otherwise not in accordance with law. As discussed later in these comments, had EPA attempted to show a causal relationship between increasing nutrients, increasing algal levels and low DO for the Taunton River data, such an assessment would have shown those relationships do not exist in this estuary.

[FN27] The Region's claim that § 122.44(d) requires that *no* discharge cause or contribute to a violation is a facial misreading of the provision.

[FN28] EPA's latest position seems to be that it may impose nutrient requirements without such a demonstration. This, however, is a major reinterpretation of 40 C.F.R. § 122.44(d), without rulemaking and contrary to the structure of the Act. It is therefore illegal and may not be applied in this instance. *U.S. Telecom. Ass'n v. Fed. Commc'ns Comm'n*, 400 F.3d 29, 35 (D.C. Cir. 2005) ("a substantive change in the regulation," requires notice and comment) (*quoting Shalala v. Guernsey Mem'l Hosp.*, 514 U.S. 87, 100 (1995)).

[FN29] The "or contributes" language means it is contributing to the "cause" of the violation. The structure of the rule and "relevant" preamble discussion confirms this approach. Under §122.44(d)(1)(ii), the permit writer first determines if "a discharge… causes or contributes to an instream excursion". 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, under § 122.44(d)(1)(iii) "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 an 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 confirmed this sequence:

> 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. 1,303, 1,304 (Jan. 12, 1989) (emphasis added).

[FN30] *Upper Blackstone*, 690 F.3d at 14 ("State water quality standards generally supplement these effluent limitations, so that where one or more point source dischargers, otherwise compliant with federal conditions, are nonetheless *causing a violation of state water quality standards*, they may be further regulated to alleviate the water quality violation. [30 U.S.C.] § 1311(b)(1)(C) …") (emphasis added).

Response C17. EPA's NPDES regulations do not require cause-and-effect proof between a pollutant discharge and an existing 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 comment simply misstates the plain text of 40 C.F.R. § 122.44(d)(1). *See In re Town of Newmarket, NH*, NPDES Appeal No. 12-05, 16 E.A.D. __ (2013), slip op. at 54 n.23 ("The plain language of the regulatory requirement (that a permit issuer determine whether a source has the 'reasonable potential to cause or contribute' to an exceedance of a water quality standard) does not require a conclusive demonstration of "cause and effect.") Under this 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." *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) 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).

In addition, EPA specifically found that nitrogen discharges are in fact causing cultural eutrophication in the Taunton River Estuary and Mount Hope Bay. The Fact Sheet states:

> The Taunton River Estuary and Mount Hope Bay have reached their assimilative capacity for nitrogen and are suffering from the adverse water quality impacts of nutrient overenrichment, including cultural eutrophication. They are, consequently, failing to attain the water quality standards described above. The impacts of excessive nutrients are evident throughout the Taunton River Estuary and Mount Hope Bay.

The Fact Sheet goes on to describe the extensive evidence supporting EPA's conclusion that nitrogen is causing water quality standards violation, including the conclusion of the SMAST technical report that recommended implementation of the MEP nitrogen loading approach focusing on restoration of the Taunton River Estuary.

The comment's reference to stressor-response documents is not applicable, as the permit limit analysis was not based on stressor-response relationships. However, the causal relationship among nitrogen, chlorophyll-a and dissolved oxygen is in fact well understood and is supported by data in this system. See Response C29.

Comment C18. Natural conditions are not regulated as impairments and EPA lacks information confirming that DO conditions are anything but natural in the Taunton River.

The Fact Sheet confirms that natural conditions are not considered to be in violation of either numeric or narrative criteria (Fact Sheet, at 17). It is widely understood that low DO conditions may exist naturally in estuarine waters. Such low DO conditions due to natural factors have been confirmed in the Great Bay estuary (*see* Attachment F-Pennock, 2004 Lamprey River Dissolved Oxygen Study) due to periodic stratification of such waters. The studies of the Squamscott River (another Great Bay tidal river) also determined that low DO was not caused by elevated algal growth. (*See* Attachment G- letter from University of New Hampshire Professors to Mayors of Great Bay communities and Attachment H- Hydroqual assessment). It is apparent that the Taunton River may be performing similarly to these other tidal rivers in the nearby estuary that have undergone detailed scientific assessment. There is no information in the record showing that the periodic low DO is not natural, given the stratification that occurs in this system which causes low DO to occur.

The existing analysis of DO and chlorophyll a and its relationship to TN concentrations confirms that the minor, infrequent low DO is not apparently algal driven (*i.e.,* this is not a situation where diurnal DO changes are causing the occurrence of low DO). The low DO is produced by stratification and the condition is influenced by (1) the low DO entering from the Bay and (2) the deoxygenation of stratified waters due to sediment oxygen demand in the tidal river.

Given the dramatic CSO reductions that have taken place over the past 10 years, SOD would have been reduced. There is no reason to know whether or not the remaining DO condition (to the degree that it exists) is anything other than natural. Therefore, there is no basis at this time to assert that the discharge is presently causing or contributing to either a violation of the DO criteria for the Taunton River or any narrative criteria related to nutrients. As in the Great Bay tidal rivers, the stratification condition is a natural occurrence that, under certain conditions, will inevitably produce lower DO conditions. However, until EPA can demonstrate that the existing DO still fails to meet applicable criteria and that the remaining DO condition is a result of man induced factors related to excessive algal growth, it is not reasonable to presume that nutrient regulation is necessary.

> **Response C18.** The evidence supports EPA's conclusion that the low DO in the Taunton River Estuary and Mount Hope Bay do not represent a natural condition. The documented DO impacts are consistent with the algae enrichment that has also been documented in this system, and where data concerning the diel pattern of DO is available (continuous datasonde monitoring in Mount Hope Bay), periods of depleted and supersaturated DO coincide with elevated chlorophyll levels, consistent with the expected impact of algae on DO impairment. See Response C23. EPA notes that the state listing of a DO impairment in Category 5 of the 303(d) list indicates the state's conclusion that DO violations are pollutant-related; impairments that are not caused by a pollutant are listed in a different category (4C) of the 303(d) list.
>
> The comment misstates the conclusions of the cited documents, which in any case concern an entirely different system; the comment provides no evidence that it provides an appropriate analog for the Taunton River Estuary/Mount Hope Bay system.
>
> - The Pennock, 2004 Lamprey River Dissolved Oxygen Study (H&A Comment Attachment F), while documenting the impact of stratification

on DO conditions, **did not** conclude that DO conditions in the Lamprey were natural. That report states, "These results suggest that low dissolved oxygen is a concern for the upper tidal reaches of the Lamprey River. Whether this is a long-term (and natural?) characteristic of this system or whether human perturbation (e.g. historic dam building, dredging/deepening of the basin, enrichment of oxygen consuming organic or inorganic runoff/waste, etc. . . .) would require a detailed study of the biological and chemical oxygen demand in the system."

• The letter from certain UNH professors (H&A Comment Attachment G) similarly did not state that "studies of the Squamscott River . . . determined that low DO was not caused by elevated algal growth." Rather, the letter simply cited two studies that "did not reveal any extensive low (<5 mg/l) levels, and low DO levels that did occur were not correlated with chlorophyll a levels." One of the studies cited, Jones 2007, specifically addresses this question. While the study did not find a clear link between DO levels and nutrient and chlorophyll-a concentrations based on the specific dataset, the study states that this may be due to the complexity of the system and the potential for the "oxygen demanding processes that are stimulated by nutrients" to take place in areas other than the immediate vicinity of the outfall pipe. The report specifically states that "the widespread low DO levels on 8/19/05 downstream of the WWTF may have been caused by discharged nutrients, as well as the more confined low DO levels observed on 8/5/05. The elevated chlorophyll *a* levels observed downstream of the Exeter WWTF on two dates also supports this scenario." (Jones, 2007 at 37).

• Even the Hydroqual study (H&A Comment Attachment H) did not state that "low DO was not caused by elevated algal growth." Rather, Hydroqual claimed that in a specific figure used by NHDES to show diurnal DO variability in the tidal portion of the Squamscott River, measured diurnal variation was due to tidal translation rather than primary productivity. Hydroqual concluded that "[a]dditional data collection and the development of a mechanistic water quality model are required for the estimation of the DO balance components." As noted by EPA in the Great Bay permit proceedings in which this document was first generated, the relevant figure in fact shows a superposition of tidal and productivity-related diurnal variation, with a consistent pattern of lowest DO saturation at early morning low tides.

At most these studies call for more detailed analysis of the various components driving DO in an entirely different system located nearly 100 miles away. The comment's characterization of them as proof that DO violations are "natural" in the Taunton River is unpersuasive.

The comment's claim that low DO is not algal driven is based on selective use of data and is not accurate when the entire dataset is considered. See Response C24. The comment's alternative conjecture that "low DO is produced by stratification and the condition is influenced by (1) the low DO entering from the Bay and (2) the deoxygenation of stratified waters due to sediment oxygen demand in the tidal river" is conjectural at best. There are no data presented regarding stratification in the Taunton River Estuary (indeed the comments argue elsewhere that stratification is an issue in Mount Hope Bay and not the Taunton River, see Comment C23); further, while stratification is often a contributing factor to low DO, it is a physical attribute that tends to make the system more susceptible to nutrient-induced DO violations and does not eliminate the need for nutrient controls. The hypothesis that low DO is driven by waters entering from the Bay is contradicted by the fact that DO is consistently lower in the Taunton River than in Mount Hope Bay.

While SOD is generally a factor influencing low DO it is not independent of eutrophication impacts (decaying algae may contribute to SOD), and the comment's theorizing about sediment oxygen demand is unsupported by any data whatsoever. Similarly, the comment fails to provide any data, from this system or elsewhere, in support of the notion that "[g]iven the dramatic CSO reductions that have taken place over the past 10 years, SOD would have been reduced." Most of the CSO reduction to the system presented earlier in these comments (see Comment C13) relate to Fall River discharges. Reduction in Fall River CSO discharges are not likely to impact Taunton River SOD, as discussed in Response C13. With respect to the City of Taunton's CSO discharges, while EPA commends the City's progress in reducing CSO discharges, it is evident that impacts on sediment oxygen demand are not a significant water quality concern from the Taunton CSOs. Even in 2006, an extremely wet year prior to major reductions in CSO discharges, total CSO discharges were about 15 million gallons. This would average over the year to only 0.04 MGD compared to the 8.4 MGD design flow of the treatment plant, and those discharges took place under the highest flow conditions in the Taunton River, when there tends to be a net transport of sediment out of the river system rather than the settling of pollutants that would contribute to SOD. See also Response C13.

In sum, the comment's contention that EPA is barred from imposing permit limits unless it disproves every conjectural hypothesis that is presented without a scintilla of evidence from this specific system, despite extensive evidence that cultural eutrophication is occurring in these waters consistent with the well understood mechanism of nutrient enrichment, is incorrect and in conflict with the clear directive of EPA's permitting regulations.

General Technical Comments on TN Limits

Comment C19. The TN endpoint used to derive the TN effluent limit is not scientifically defensible.

The "sentinel station" approach is not a rational or scientifically defensible basis for establishing a water quality standard because:

- It is contrary to EPA's own guidance[31], and,
- It presumes, without any demonstration, that the factors influencing DO conditions at station MHB16 are the same factors that influence DO in the Taunton River Estuary.

EPA likens the selection of a sentinel station as being consistent with the use of reference conditions to establish water quality criteria for nutrients. The "reference station" approach was used by the EPA to develop numeric nutrient criteria for streams in Florida and was struck down by the Court (*See Florida Wildlife Federation, Inc., et. al. v. Jackson*, Case 4:08-cv-00324-RHWSC, Doc. 351) as insufficient to show that the criteria were necessary to maintain designated uses. As in Florida, the "reference" approach is also insufficient for use in Massachusetts. In this case, EPA cannot make a scientifically justified claim that the TN endpoint is necessary to meet a minimum DO concentration of 5.0 mg/L because EPA has not demonstrated that a TN concentration of 0.45 mg/L is a threshold, above which the DO criterion will be violated at station MHB16.

EPA's guidance documents on the development of numeric nutrient criteria and the development of wasteload allocations for dissolved oxygen in estuaries confirm that the primary effect of nutrients is to stimulate algal growth, which may influence DO in the estuary. However, many other factors influence DO levels and EPA presents no assessment to determine to what extent TN is causing the observed affects. Consequently, establishing a wasteload allocation for TN to address DO impairments in the estuary is arbitrary and capricious. Moreover, EPA has not demonstrated that DO at the Bay station (MHB16) responds in the same way as DO in the Taunton River Estuary (MHB19) or that the physical/chemical/hydrodynamic conditions at station MHB16 make it an appropriate reference site for the Taunton River Estuary. Consequently, the draft TN effluent limit based on this TN endpoint is arbitrary and capricious. EPA has not made any demonstration that the observed DO concentration is caused by the observed TN concentration. Without such a cause-and-effect demonstration, there is no reasonable assurance that controlling for TN will have any influence on minimum DO.

In developing the proposed TN endpoint, EPA noted that Massachusetts has not adopted numeric criterion for TN. (Fact Sheet, at 17). Rather, MassDEP uses a number of indicators to interpret its narrative nutrient standard. EPA asserts that MassDEP developed the Critical Indicators Interim Report for this purpose. However, the Critical Indicators Interim Report notes that the recommended ranges of appropriate TN thresholds must be further refined based on the specific physical, chemical, and biological characteristics of the system being evaluated. (*See* Critical Indicators Interim Report, at 20). No such consideration was made for the Taunton River

Estuary. Instead, EPA identified a threshold TN concentration for a site in *Mount Hope Bay* furthest from the Taunton River Estuary and assumed that this threshold concentration was appropriate in the Taunton River Estuary without any demonstration that the two locations behave in the same manner. In fact, the physical, chemical, and biological characteristics of the two areas are dramatically different. Station MHB16 is one of the deepest stations in the bay and is closest to the Ocean and Narragansett Bay while the Estuary consists of a very narrow channel of variable depth. These and other critical characteristics that dramatically affect how TN could possibly contribute to low DO via excessive algal growth were not considered in EPA's highly simplistic analysis. Thus, EPA's approach is not consistent with the methods described in the Critical Indicators Interim Report or with EPA's own guidance.

[FN31] *See* Estuaries Guidance Document; EPA, *Technical Guidance Manual for Performing Wasteload Allocations:Book III – Estuaries* (Part 1) (1990) ("WLA Guidance Document").

Response C19. The comment mischaracterizes the Florida court decision regarding reference based approaches. That decision struck down only nutrient criteria that were based on a statistical characterization of a set of unimpaired waters (the 90th percentile for four of the regions and at the 75th percentile for the fifth region), because the threshold had not been tied to actual impairment. *See Florida Wildlife Federation, supra* at 63. As the court stated:

> [T]he Administrator set the stream criteria based on naturally occurring ambient conditions—those that exist now, on average, in unimpaired streams—without building in an adjustment for increases in nutrients that are not harmful. Instead, a stream is deemed impaired—in four of the regions—if a nutrient level exceeds that of 90% of the sample set. This is the criterion even though the other 10% are apparently unimpaired at a higher nutrient level. The Administrator explained the 90% mark in terms that make sense if the target is a criterion that identifies *any* increase in nutrients and thus *any* change in flora and fauna: one can say with some confidence that a stream with a nutrient level that exceeds that of 90% of the sample set probably has suffered an increase in nutrients and a resulting change in flora and fauna. But if the target is a criterion that identifies a *harmful* increase in nutrients, there is an unexplained disconnect. The Administrator has not explained how the 90% mark correlates with a *harmful* increase in nutrients.
>
> . . . The stream criteria thus cannot be upheld as an appropriate means of identifying nutrient levels that will cause harmful effects.

Id. at 65-66.

In contrast, the type of reference approach applied by EPA here is specifically designed to identify the threshold concentration associated with a transition from impaired to unimpaired conditions. This approach is a rational and scientifically defensible basis for establishing a target TN threshold that is consistent with numerous TMDLs and related studies in Massachusetts and with approved reference-based approaches to numeric nutrient criteria guidance. The approach uses a continuum of stations in the Taunton River Estuary/Mount Hope Bay system to establish the transition to unimpaired conditions in these subareas of a connection system and is the best available information for establishing a target threshold in this system. This type of analysis is consistent with the Florida court decision analyses because it is tied to actual impairment. Reference based approaches based on impairment thresholds are also being applied currently in Florida nutrient criteria analyses by Florida DEP. See Florida DEP Workshop Presentation: *Development of Numeric Nutrient Criteria for Florida's Estuaries* (April 2013) (http://www.dep.state.fl.us/water/wqssp/nutrients/)

The comment confirms that nutrients have a primary effect of stimulating algal growth that may influence DO. This confirmed relationship supports EPA's finding of reasonable potential for the Taunton WWTP nutrient discharge to cause or contribute to violation of the narrative nutrient criterion. EPA is not in fact required to determine to what extent TN, as opposed to other factors, is actually causing observed effects. Rather, EPA is charged with determining an effluent limit that is "necessary . . . [t]o achieve water quality standards," 40 CFR 122(d)(1) and "will attain and maintain applicable narrative water quality criteria and will fully protect the designated use."

The comment also mischaracterizes the *Critical Indicators Report*. The cited section of the report regarding classification refers to establishing generalized TN criteria that would apply to systems based on their particular physical, chemical and biological characteristics. The quoted section does not address site specific analysis of a single integrated system, which are appropriately addressed through the type of site specific analysis performed by EPA here.

While the comments repeatedly cite the "dramatic difference" between the sites in the Taunton River Estuary and Mount Hope Bay, the contention that the differences should result in significantly different TN criteria is entirely conjectural. These sites are all part of a continuous estuarine system characterized by different levels of mixing of the same two source waters, continual exchange of waters among the estuarine segments, the same sources for sediment, and the same climatic conditions. See Response C7. The areas differ physically in that the Taunton River Estuary is a linear feature, although characterizing this 2000 foot wide estuary as "very narrow" is questionable; depth variability is actually similar between the two areas at 4-10 meters for the Taunton and 3.5-12 meters for Mount Hope Bay. This would be expected to lead to higher tidal velocities in the Taunton River Estuary, although high velocities are also associated with the Sakonnet River inlet to Mount Hope Bay (this is the narrowest point in the estuary, while termed a "River" the Sakonnet is actually a main source of marine waters to Mount Hope Bay). How this would impact factors such as SOD is not indicated in the comment (in general sources of sediment to the system are the same since the Taunton River is by far the largest freshwater source); and the comments are inconsistent about the level of stratification in the Taunton River Estuary. *Compare* Comment C18 ("It is apparent that the Taunton River may be performing similarly to these other tidal rivers in the nearby estuary that have undergone detailed scientific assessment. There is no information in the record showing that the periodic low DO is not natural, given the stratification that occurs in this system which causes low DO to occur.") *with* Comment C23 ("Far less stratification occurs in the Taunton River for a shorter period and far less frequently").

More importantly, there is simply no evidence that a higher target TN concentration would be sufficiently protective in the Taunton River Estuary. While some variability in response can be seen in dataplots, see Comment C24, the evidence indicates that the Taunton River Estuary is just as sensitive to eutrophication from nutrient enrichment in terms of DO depletion. Comparison to other tidal rivers would not lead to a different threshold. Tidal rivers leading to Narragansett Bay have not had numeric criteria set for nitrogen, but the Narragansett Bay Estuary Project document provided as Attachment D to the H&A comments, analyzes the gradient from the Providence/Seekonk River through lower Narragansett Bay and states that "if RI were to develop estuarine nutrient criteria, it is likely that Total Nitrogen would be the most useful nutrient measure, and target TN concentrations would probably be in the vicinity of 0.35-0.40 mg/l." Comment Attachment D at 27. (See Response C24 for discussion of impacts on permit limits under alternative TN thresholds).

Comment C20. EPA completely ignores the conceptual model of significant factors that affect DO.

As described above, EPA identified a sentinel station (MHB16) and merely assumed, without any analysis, that the average TN concentration at the station should equal the allowable TN endpoint. This approach does not demonstrate that the conceptual model identified in the Fact Sheet is applicable to the Taunton River. (*See* Fact Sheet, at 14). This conceptual model is based on a well-recognized progression of symptoms that begins with the excessive growth of phytoplankton and macroalgae. As discussed in the Fact Sheet, the "primary" symptoms of nutrient over enrichment include an increase in the rate of organic matter supply (*e.g.,* phytoplankton), changes in algal dominance, and the loss of water clarity. These primary symptoms are followed by one or more secondary symptoms such as the loss of submerged aquatic vegetation, nuisance/toxic algal blooms, and low dissolved oxygen. While such conditions *may* occur, the presented analysis in the Fact Sheet nowhere demonstrates that they are occurring in the Taunton River.

Response C20. The Fact Sheet specifically discusses the indicators of cultural eutrophication present in the Taunton River consistent with the conceptual model, including elevated chlorophyll-a concentrations (well above levels identified as acceptable for SB waters) indicating increased primary production, algal blooms as indicated by high (>30 ug/l) maximum chlorophyll-a, and low dissolved oxygen. Loss of submerged aquatic vegetation was identified as an issue in Mount Hope Bay but not the Taunton River portion of the estuary, as historical records indicate that eelgrass was limited to Mount Hope Bay proper. Water clarity is also impacted in the Taunton River and Mount Hope Bay, see SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007) at 25 (secchi depths fair/poor to moderate) although not specifically discussed in the Fact Sheet. These symptoms are clearly occurring in the Taunton River and support the conceptual model applied by EPA. This evidence is discussed in a separate subsection of the Fact Sheet analysis (B.5.b-d, pages 16-26) and is independent of the process for determining the specific TN threshold to be used in determining the permit limit (Fact Sheet B.5.f, pages 29-30).

EPA also disagrees with the characterization of its TN threshold analysis, which is not based on a single site, see Responses C9 and C21.

Comment C21. Algal growth is *not* demonstrated to be excessive.
The primary effect of nutrient over enrichment is excessive algal growth. If algal growth is not excessive the secondary symptoms, particularly low DO, do not occur due to nutrient enrichment. Consequently, EPA must show that nutrients are stimulating algal growth (measured as chlorophyll-a), the levels of chlorophyll-a in the water column are excessive, and that the excessive levels of algae are, in fact, causing the observed low DO. In making this demonstration, EPA needs to identify a level of chlorophyll-a that is excessive and it must also include an evaluation showing that the nutrient reduction target selected will reduce algal growth to non-excessive levels that will raise DO levels to comply with the MassDEP water quality standards. The analysis presented in the Fact Sheet establishing the TN endpoint did not address *any* of these considerations. Rather, EPA identified a sentinel station that meets the DO standard and presumed that the annual average TN concentration at this station was the reason such compliance occurred. However, the average chlorophyll-a level found at this station (*i.e.,* the factor EPA presumes controls the occurrence of low DO) is 10.3 – 14.1 µg/L. (*See* Fact Sheet at 23, Table 5). This average algal level is *higher* than that present in the Taunton River at MHB19, which ranges from 5.5 – 10.5 µg/L. *Id.* Therefore, based on the DO response to algal growth at MHB16, it is apparent that excessive algal growth is (1) *not* occurring in the Taunton
River Estuary and (2) some other factor *must* be causing the DO to drop below 5.0 mg/L in that area.[32]

[FN32] This is the same conclusion reached by technical studies evaluating similar tidal rives in the Great Bay estuary. *See* Attachment G.

Response C21. Algal growth is excessive in the Taunton River Estuary and Mount Hope Bay. Average chlorophyll-a concentrations at all the Taunton River Estuary sites are above the range identified in the *Critical Indicators Report* for unimpaired SB waters (3-5 ug/l) and include high peak chlorophyll-a concentrations, associated with blooms that can result in greatest DO depletions. See *Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators - Interim Report* (Howes et al., 2003) at 22.

The comment's contention that EPA "must show that nutrients are stimulating algal growth" and that the algae levels "are, in fact, causing the observed low DO" is not, in fact, the standard set forth in the CWA regulations. The actual test is whether the discharge of pollutants "causes, has the reasonable potential to cause, or contributes to" a violation of water quality standards. 40 CFR 122.44(d). This test does not require the strict proof of causation the commenter wishes to apply. If nutrient discharges are one of a number of identified contributors to low DO violations, 122.44(d)(1) applies and a permit limit must be set. If nutrient discharges are not currently causing or contributing to water quality violations but have the reasonable potential to do so in the future - such as where a facility is operating below its design flow and would be expected to cause water quality violations as its flow increases – 122.44(d)(1) applies and a permit limit must be set.

Nor do EPA's regulations require that EPA analyze with precision each step in a chain of impacts on water quality. The type of analysis the commenter suggests is often a goal of stressor-response approaches to nutrient criteria, although not specifically necessary even in those analyses. That is not the type of analysis that EPA needs to perform to determine reasonable potential to cause or contribute to an impairment in order to issue a NPDES permit. Rather, EPA examined the entirety of system data in order to identify a threshold associated with the transition to unimpaired conditions. EPA acknowledges that this is not a precise calculation but is intended to identify the scale of nutrient reductions required.

The contention that algal levels are higher at MHB16 is based on 2006 monitoring results. 2006 was an extremely wet year that was not used by EPA in its permit limit analysis. Examination of the monitoring data for 2006 indicates that MHB16 chlorophyll-a was indeed quite high (14.1 ug/l) but that TN concentrations were also high (0.50 mg/l). Fact Sheet Table 5. On the other hand chlorophyll-a concentrations at MHB19 were relatively low in 2006 (5.5 ug/l) despite high TN (0.99 mg/l), but orthophosphate concentrations were relatively low (0.047 mg/l, compared to the 2004-05 average of 0.63 mg/l) and the DIN/DIP molar ratio was 28, indicative of phosphorus limitation rather than nitrogen limitation. SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D. This indicates that the system was simply behaving differently under those wet weather conditions and that high flows and the resulting reduced salinity may have shifted the transition point of phosphorus- to nitrogen-limitation further down the estuary, so that in 2006 MHB 16 would not be a comparable site of MHB 19. EPA anticipates that the system might well respond differently under those extreme wet weather conditions, but has based its loading and permit limit analysis on the more typical years. These data are entirely consistent with EPA's permit analysis.

Comment C22. The conceptual model does not support the sentinel station approach.

This "sentinel station" approach is not scientifically defensible for numerous reasons. First and foremost, the sentinel station approach presumes that the observed DO is caused by the observed TN. However, the proposed limits on TN have not been demonstrated to be necessary to attain the dissolved oxygen water quality standard. Many non-nutrient factors influence dissolved oxygen in the receiving waters, including natural and man-made conditions. EPA did not provide any assessment to evaluate the cause of low DO or to assess what fraction of the DO deficit is attributed to TN versus those other factors. Consequently, the proposed effluent limit is merely a guess. The "sentinel station" approach is demonstrably incorrect based on a consideration of the conceptual model, as illustrated in EPA's Estuaries Guidance Document. TN has no direct impact on DO. Figure 2-4 (below) from the Estuaries Guidance Document illustrates the role of nutrients in phytoplankton growth:

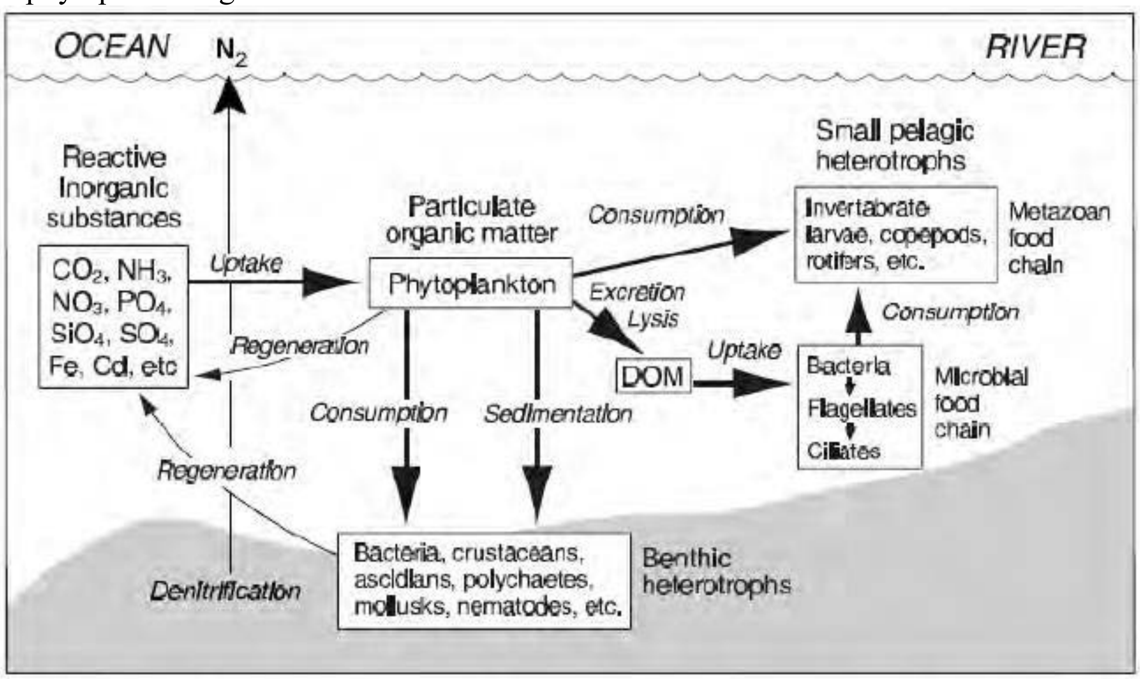


Figure 2-4. Schematic illustrating the central role of phytoplankton as agents of biogeochemical change in shallow coastal ecosystems. Phytoplankton assimilate reactive inorganic substances and incorporate these into particulate (POM) and dissolved organic matter (DOM) which support the production of pelagic and benthic heterotrophs. Arrows indicate some of the material fluxes between these different compartments. Denitrification has been added to the figure. Source: Cloern 1996.

Figure 2-9 (below) from the Estuaries Guidance Document illustrates the relationship between nutrients, phytoplankton and deep-water DO:

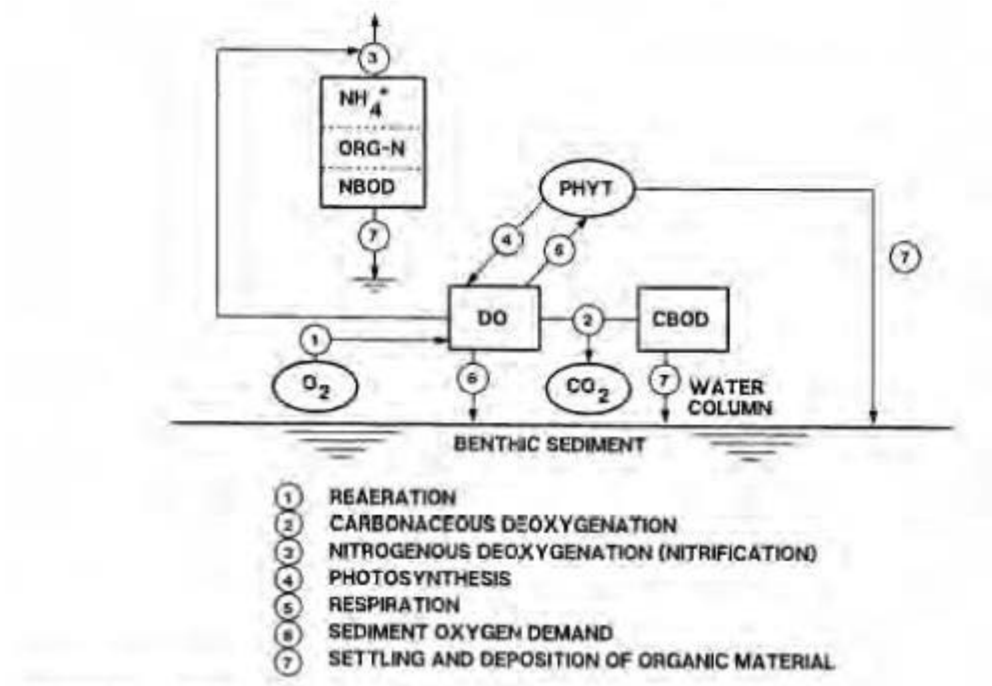


Figure 2-6. Basic variables and processes for dissolved oxygen.

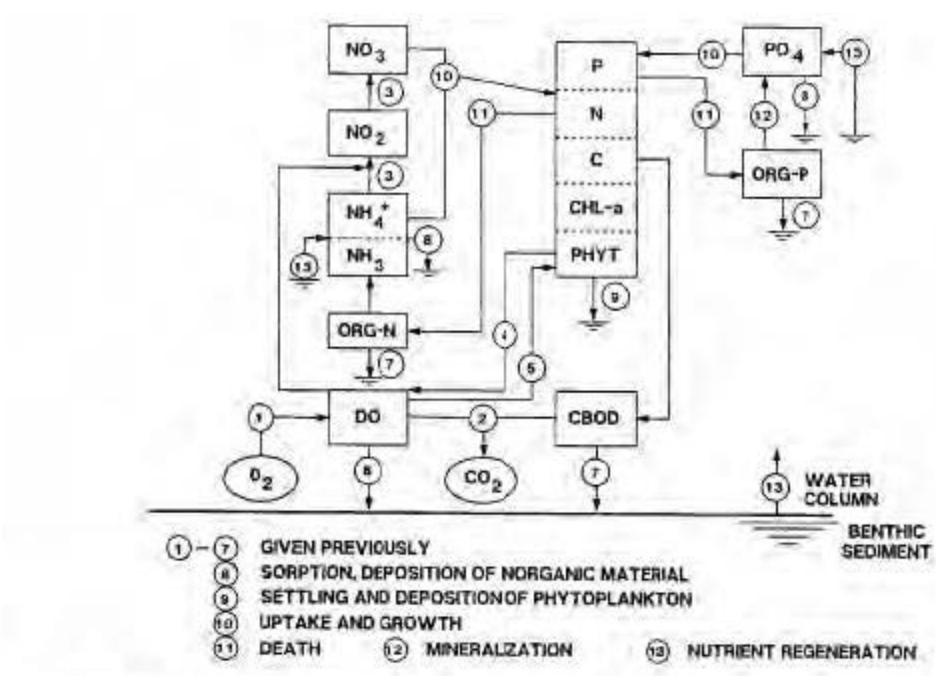


Figure 2-7. Standard variables for eutrophication and DO.

Together, these figures illustrate the complex relationship between nutrients, numerous other factors, and DO that must be address to competently determine what is causing a particular DO condition to occur. TN does not directly affect DO. Rather, any influence of TN is mediated through the growth of algae. Algae influences DO through photosynthesis (in the upper, photic zone), respiration, and decay (typically after settling). The influence of sediment oxygen demand on DO may be exacerbated by stratification which limits mixing between the upper and lower layers of water. System DO is also influenced by the decay of organic substances entering the system and the DO entering the system. However, the Fact Sheet presents no evaluation to determine the degree to which each of these factors influence DO in the Taunton River Estuary or Mount Hope Bay. Consequently, it is not possible to determine whether TN reduction is necessary or appropriate to address DO conditions in the Estuary.

> **Response C22.** The comment mistakenly presumes that a reference based approach must be able to specifically determine the factors influencing a particular DO condition at a high level of complexity in order to be "scientifically defensible" for the purpose of setting permit limits. This is not the case.
>
> The highly detailed modeling the comment appears to contemplate is generally associated with mechanistic modeling, an approach that represents ecological systems using equations that represent ecological processes and parameters for these equations that can be calibrated empirically from site-specific data. These models can then be used to predict changes in the system, given changes in nitrogen and phosphorus concentrations. The mechanistic modeling approach requires sufficient data to identify the appropriate equations for characterizing a waterbody or group of waterbodies and sufficient data to calibrate parameters in these equations. While such complex models are sometimes preferable, they are not without drawbacks. A danger in complex mathematical models is that error propagation is difficult to explicitly measure, and there is a tendency to use a more complex model than required, which drives costs up substantially and unnecessarily. Another consideration that is gaining acceptance is that mathematical models need to be appropriately scaled to spatial and temporal processes, or they may suffer problems similar to empirical models when one extrapolates the results of scaled experiments to full-sized systems. Also, empirical coefficients introduced into equations often hide the degree of uncertainty concerning the fundamental nature of processes being represented. EPA, *Nutrient Criteria Technical Guidance Manual – Estuarine and Coastal Waters* (2001) at 9-1 to 9-2.
>
> The comment does not, and cannot, contend that there is an existing model available to represent this system at this level of complexity, or even that there is actually sufficient data available for development of such a model. Rather, the comment seeks to characterize any less complex analysis as insufficient, so that permit limits would be deferred until a complex model can be developed. This is a recipe for inaction that is inconsistent with CWA requirements. As stated by the Environmental Appeals Board:
>
>> The District has cited no law, regulation, or Agency policy that would allow a permit application to remain pending for an indefinite, unlimited extension of time to allow additional scientific data or analysis to be developed to support the applicant's claim that its discharges will not

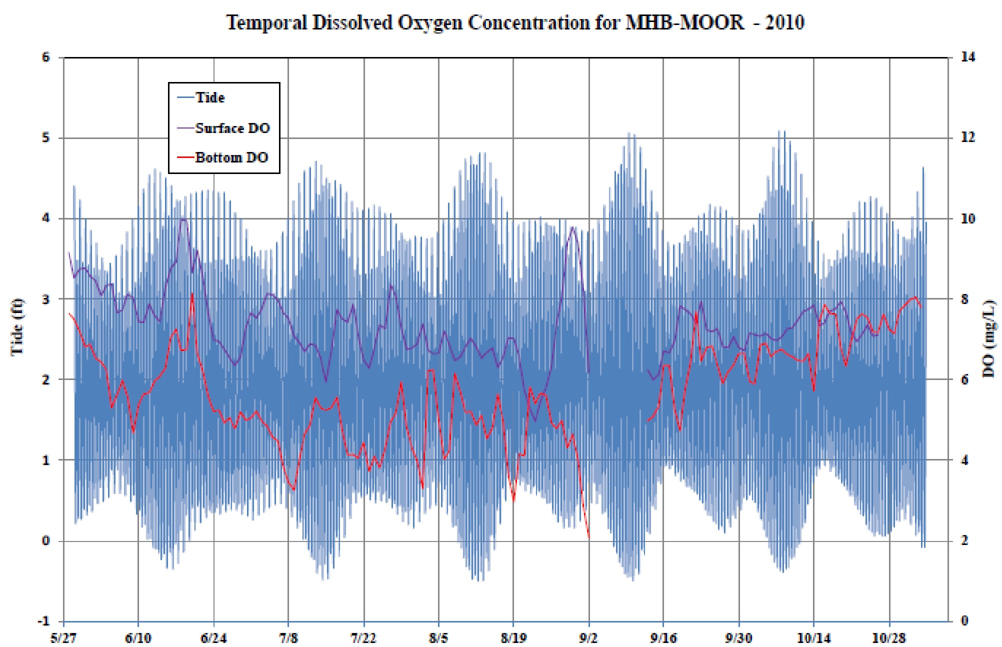
> violate the water quality standards of affected states. To the contrary, scientific uncertainty is not a basis for delay in issuing an NPDES permit. The Board has specifically held that "[i]n the face of unavoidable scientific uncertainty, the Region is authorized, if not required, to exercise reasonable discretion and judgment." *In re Dominion Energy Brayton Point, LLC,* 13 E.A.D. 407, 426 (EAB 2007).
>
> The federal courts in reviewing Agency decisions have similarly recognized that scientific uncertainty is not a bar to administrative decisionmaking: "We do not demand certainty where there is none. There may be no strong reason for choosing [a particular numerical standard] rather than a somewhat higher or lower number. If so, we will uphold the agency's choice of a numerical standard if it is within a 'zone of reasonableness.'" *Small Refiner Lead Phase-Down Task Force v. EPA,* 705 F.2d 506, 525 (D.C. Cir. 1983) (citation omitted); *see also Hercules, Inc. v. EPA,* 598 F.2d 91, 116-17 (D.C. Cir. 1978). More than three decades ago, the D.C. Circuit aptly described the CWA's balance when confronted with a difficult situation and the obligation to eliminate water quality impairments: "* * * EPA may issue permits with conditions designed to reduce the level of effluent discharges to acceptable levels. This may well mean opting for a gross reduction in pollutant discharge rather than the fine-tuning suggested by numerical limitations. *But this ambitious statute is not hospitable to the concept that the appropriate response to a difficult pollution problem is not to try at all.*" *Natural Resources Defense Council, Inc. v. Costle,* 568 F.2d 1369, 1380 (D.C. Cir. 1977) (emphasis added) (finding unlawful a rule that would have exempted certain discharges from permitting requirements based on the difficulty in setting limits). Here, the District's "wait and see" approach would allow the District to continue discharging without any limit on total nitrogen discharges – effectively abdicating the responsibility to set permit limits when faced with difficulty establishing the limit.

UBWPAD, 14 E.A.D. 577, 606.

Comment C23. EPA ignored the influence of stratification.
All of EPA's guidance and SAB-issued commentary, as well as MassDEP guidance, states that the physical conditions of the receiving water must be evaluated to determine whether or how nutrients may cause adverse impacts. Stratification is particularly important with regard to the development of minimum DO conditions in the Estuary and Bay. When fresh and saline waters interact, they may become stratified with the denser, cold bottom saline water isolated from the less saline and warmer surface water. This situation is demonstrated to occur in the Bay and to be the primary factor triggering low DO conditions where the waters are deeper and less subject to turbulent mixing. Under stratified conditions, oxygen exchange with the surface waters is reduced and the effect of sediment oxygen demand (affected by algal and non-algal particulates) is pronounced, particularly when stratified conditions are prolonged. Thus, (1) the depth of the water, (2)

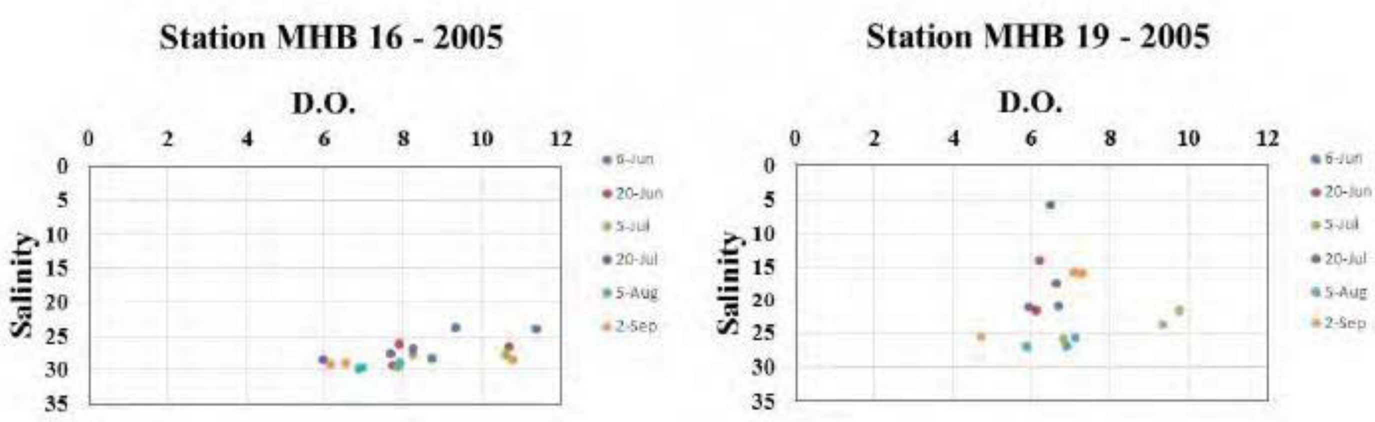
the duration of the stratification event, and (3) the degree of the SOD all act to control the resultant DO condition in the stratified segment. Figure 1 (below) illustrates the pattern of temporal DO at the MHB-"Data Sonde" station operated by the Narragansett Bay Water Quality Monitoring Network (near MHB13) in relation to the tidal cycle.[33] Based upon the figure, periods of low DO in the bottom waters and maximum difference in surface-to-bottom-water DO appear to coincide with neap tides, when tidal displacement in the Bay is at a minimum and stratification is prolonged.

Figure 1 – Tidal Stage versus Dissolved Oxygen in Mt. Hope Bay



Further upstream in the Estuary, stratification is far less intense and primarily caused by the tides. During the flood tide, marine waters rush in to the estuary with denser saline waters flowing below the less-dense fresh water. When the tide ebbs, these marine waters flow back into the bay. One consequence of this movement is that stratified conditions do not persist in the estuary because mixing and tidal exchange is much greater than at station MBH16 (the "sentinel station"). Consequently, the DO differences between the surface and bottom waters are far less than in the Bay and minimum DO concentrations tend to be associated with saline bay water that moves upstream during the flood tide. This means that DO in Mount Hope Bay has a *primary* control on the DO condition present in the Taunton estuary, *not* algal growth occurring in the Taunton River. Figure 2 (below) illustrates the differences in DO and salinity for the sentinel station in Mount Hope Bay (MHB16) and the upper Taunton River Estuary (MHB19) showing the physical condition are *not* comparable based on the 2005 database.

Figure 2 – Salinity and D.O. variability in Mt. Hope Bay and the Upper Taunton River Estuary



As discussed above, the conditions that create minimum DO conditions in the Bay are not the same as the conditions causing low DO in the Taunton River Estuary. Far less stratification occurs in the Taunton River for a shorter period and far less frequently. Consequently, the Taunton River station (MHB19) has a maximum DO variation of 0-3 mg/L (top to bottom). MHB16 has a variation of 1-5 mg/L. Therefore, unlike the Bay, the low DO condition and stratification in the Taunton River is very infrequent and far less intense. Consequently, the use of the Bay sentinel station to project the effect of TN on DO in the Taunton River estuary is arbitrary and capricious as the physical conditions controlling DO are markedly different at these two sites.

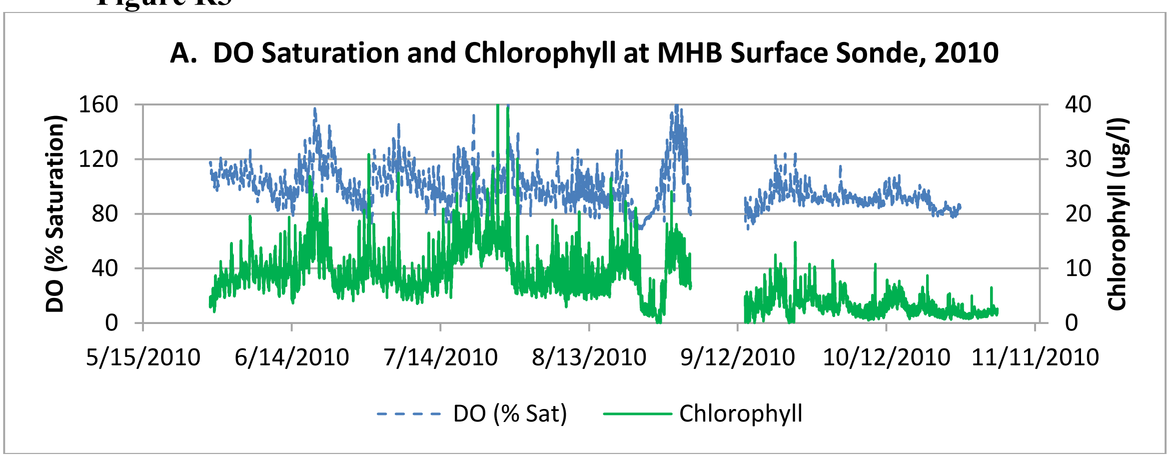
[33] Tidal stage data were obtained from NOAA for the Wickford gauging station. (Station I.D.: 8454538).

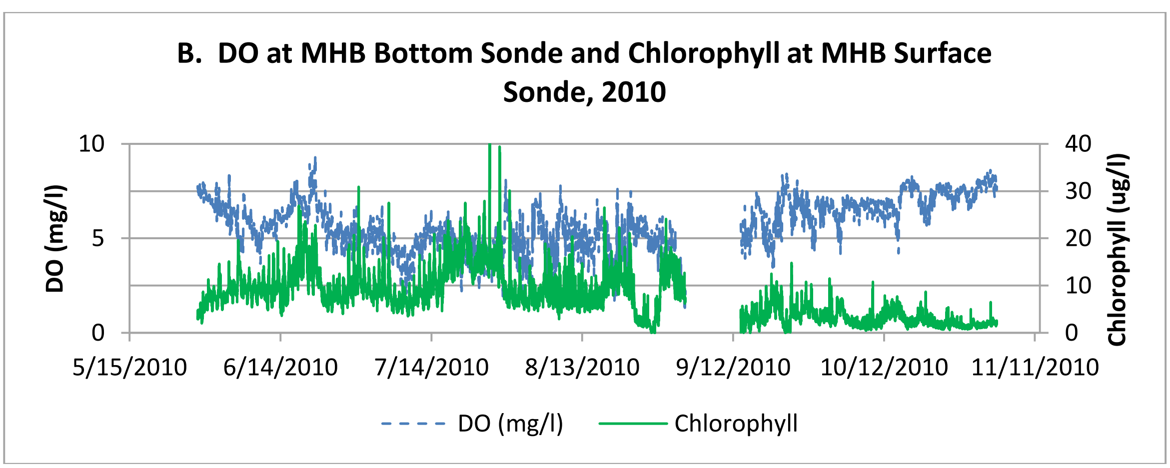
Response C23. EPA agrees that stratification is a factor in the development of minimum DO conditions, but disagrees with the commenter's contention that this factor plays a role in Mount Hope Bay but *not* the Taunton River Estuary, a contention unsupported by any evidence. EPA notes that in Comment C18 this commenter makes the contrary claim that stratification is actually the cause of DO depletion in the Taunton River. In general the available research indicates that stratification increases as you move up the estuary (i.e. from Mount Hope Bay into the Taunton River Estuary), consistent with the greater salinity-driven density differences, although stratified conditions appear in both Mount Hope Bay and the Taunton River Estuary.

While EPA agrees that stratification and SOD are also factors influencing DO in estuarine waters, the commenter's hypothesis that stratification is "the primary factor triggering low DO" is unsupported by any evidence (and clearly not "demonstrated" as claimed in the comment). Stratification does exacerbate other processes that deplete DO, including algal blooms. High algae levels result in large diel swings between supersaturated and undersaturated conditions due to photosynthesis during the day and excess respiration at night (these are not apparent in the comment figure because it is based on average daily DO data), and result in DO depletions in bottom waters as dead algae sink to the bottom and decompose (this occurs in the water column as well as potentially adding to sediment oxygen demand). Where waters are stratified bottom water depletion is intensified due to the lack of exchange with surface waters.

The comment's Figure 1 does not appear to demonstrate a consistent relationship with neap tides, as the September neap tides do not coincide with large differences in surface-to-bottom-water DO. In contrast, the full dataset from this datesonde provides evidence for DO impacts from high algae populations, as shown in Figure R3. Periods with chlorophyll consistently above 5 ug/l (mid June, mid-late July and early September) are accompanied by highly supersaturated DO peaks (over 120% saturation), and the elevated chlorophyll levels are also accompanied by depletion of DO in bottom waters. After September 13, when chlorophyll concentrations are low, no relationship to neap tide appears and DO is not supersaturated at the surface or depleted in bottom waters. While stratification may well be a factor in intensifying DO depletions at this site, the primary control appears to be algae.

Figure R3





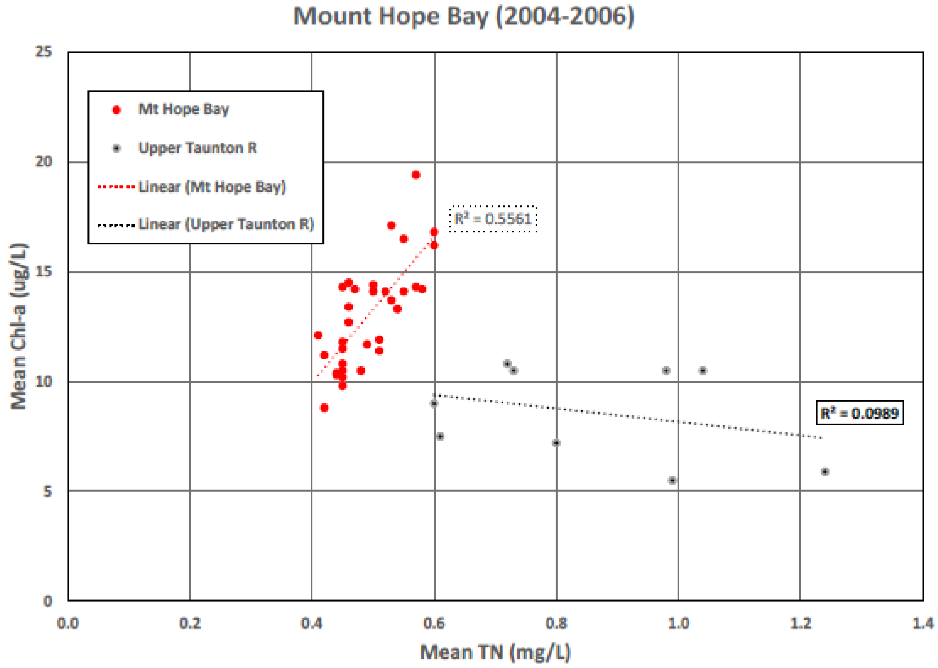
Charts by EPA. Source data: Narragansett Bay Fixed-Site Monitoring Network (NBFSMN), 2010. 2010 Datasets. Rhode Island Department of Environmental Management, Office of Water Resources. Data available at www.dem.ri.gov/bart

> The charts presented as Figure 2 in the comment also do not support the commenter's claims. First, the comment argues that the magnitude of DO variation is much higher at MHB16 (1-5 mg/l) than at MHB19 (0-3 mg/l); however this argument relies entirely on a single date of monitoring at MHB16, where DO concentration varied by 4.63 mg/l. Without that single data point the range of DO variation at MHB16 is between 1 and 3 mg/l, comparable to that at MHB19. No general conclusions can be drawn from a single monitoring datum – for example, the larger variation at MHB16 could be explained by the fact that the site was sampled two hours earlier in the morning (9:15 am, versus 11:30 am for MHB19), closer to the predawn hours generally recognized as the critical time for DO minima. Second, as noted by the commenter, stratification in estuaries is generally related to salinity differences; the charts show little salinity difference between surface and bottom waters at MHB16, while significantly more salinity variation at MHB19. This is consistent with the available research literature that indicates stratification is more prevalent in the upper estuarine waters. Finally, it should be noted that MHB19 also shows indications of stratification on the same date that MHB16 has the maximum DO variation; on September 2, 2005 the MHB19 station had a salinity variation of 10 ppt between surface and bottom (compared to 0.7 ppt at MHB16); both stations have very high surface chlorophyll-a concentration (31.5 ug/l at MHB19 and 33.3 ug/l at MHB16); and it is at MHB19 that a violation of the water quality criteria for DO (5 mg/l) occurred.

Comment C24. The response to TN differs in the Taunton River Estuary as compared to Mount Hope Bay.
EPA took the sentinel TN concentration at station MHB16 to prepare a mass balance analysis for the Taunton River Estuary at station MHB19. In doing so, EPA presumed, without any demonstration, that the conditions responsible for the DO readings in Mount Hope Bay are the same as in the Taunton River Estuary. Using the data presented in the Fact Sheet on Table 5 (Fact Sheet, at 23) it is apparent that Bay stations and Estuary stations do not respond in a similar manner. (*See* below Figure 3 and Figure 4). Figure 3 illustrates the apparent response of mean chlorophyll a to mean TN in the Mount Hope Bay stations in comparison with the response in the upper Taunton River stations (stations MHB18, MHB19, and MHB21). The apparent response in the Taunton River is flat over a wide range of TN concentrations while the response in Mount Hope Bay suggests a significant influence of inorganic nitrogen on plant growth.

Based on this comparison, it should be apparent that these systems behave very differently and the response at the sentinel station cannot be superimposed to predict how TN concentrations affect waters in the Taunton River estuary or the acceptable level of TN for the Taunton River.

Figure 3 – Mean Chlorophyll-a Concentration versus Mean TN in Mt. Hope Bay and Upper Taunton River (Stations 18, 19, 21)



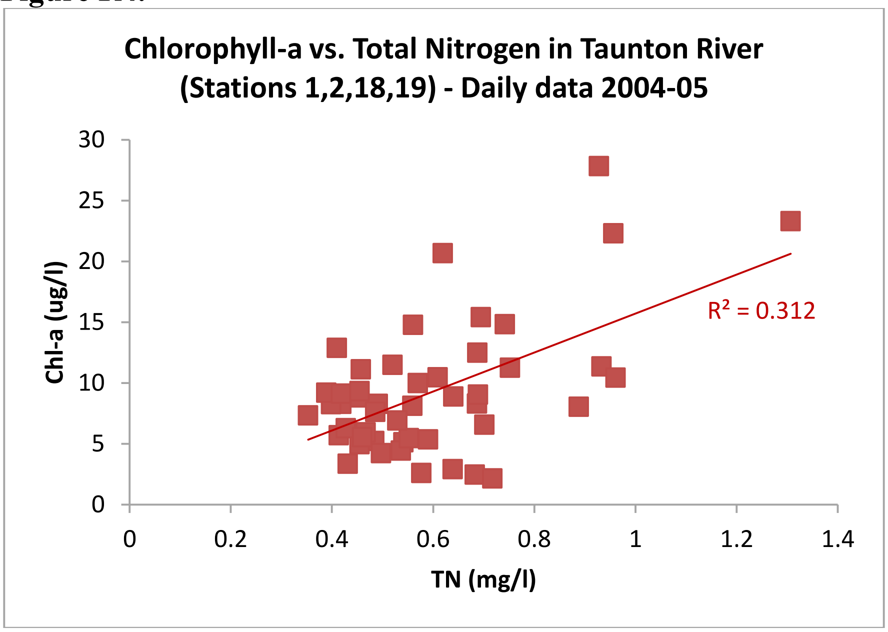
As these analyses indicate that EPA's conceptual model does not apply in the Taunton River, application of that model to derive more restrictive TN limitations is inappropriate. (*See* EPA Stressor Response Guidance, at 37).

> **Response C24.** EPA disagrees that the available data indicates that Mount Hope Bay relationships are inapplicable in the Taunton River Estuary or that the response in the Taunton River is "flat". EPA performed its own analysis of the data in light of these comments and concluded that the contentions set forth in the comments are based on a selective use of the available data and are not supported by a more thorough statistical analysis. The results of EPA's analysis are shown below; however EPA notes that the data collection effort for this dataset was not designed for the type of stressor-response analysis performed by the commenter and is generally expected to be insufficient to support statistically significant correlations. This is the reason EPA did not perform this type of analysis in its original permit development. EPA therefore emphasizes that the following analysis, while generally supporting EPA's conclusions when all appropriate data are considered, is not expected to provide statistically significant results for determining TN criteria for these waters.
>
> First, EPA notes that the chart supplied in the comment includes data from Station MHB21, which was specifically excluded from EPA's analysis on the grounds that the location did not appear to be nitrogen limited based on the available data. In addition, the chart excludes data from Stations MHB1 and MHB2 that are located lower down on the Taunton River. This selection of data would be expected to (1) produce a flat response to nitrogen enrichment as Station 21 is

expected to be unresponsive to nitrogen and (2) create the illusion of a stark data gap between the Mount Hope Bay and Taunton River conditions.

EPA's own analysis of the available data does not indicate a "flat" response in the Taunton River. Examination of daily water quality data for stations other than MHB21 in the Taunton River in 2004 and 2005 (the period used in EPA's loading analyses) indicates an upward trend in chlorophyll-a with increasing total nitrogen concentrations, consistent with the conceptual model underlying EPA's analysis.

Figure R4.



Charts by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

Further, while EPA does not expect strong statistical results from the available DO data because of its limited nature and the sampling conditions (collected at different times of day rather than under critical near dawn conditions), the data appears to support the relationship between chlorophyll-a and DO, as shown in Figure R5 below.

Figure R5.

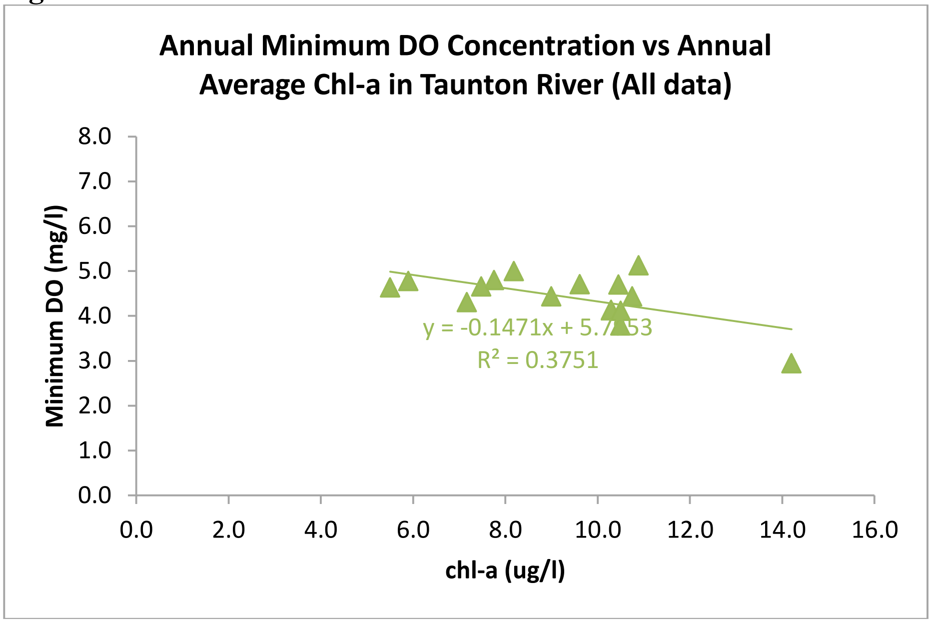


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

Again, EPA cautions against drawing firm conclusions based on such low power statistical relationships (particularly for these specific DO data), and did not use such regression analyses as the basis for its permit limits. However, to the extent that such data is informative as to processes operating in Mount Hope Bay and the Taunton River, these regression analyses support EPA's conceptual model regarding the relationship between TN and DO depletion through increases in primary productivity.

However, EPA agrees that there are differences between the Taunton River and Mount Hope Bay in these relationships; the differences appear to be related to other water quality conditions that differ in the two locations. As noted in other comments, the Taunton River appears to be more sensitive to oxygen depletion than Mount Hope Bay, likely due to the presence of other oxygen demands in the Taunton River. A comparison of regressions between the two locations, as shown in Figure R6, appears to support this conclusion (again, to the extent any conclusions can be drawn from such low power statistical relationships based on small datasets).

Figure R6.

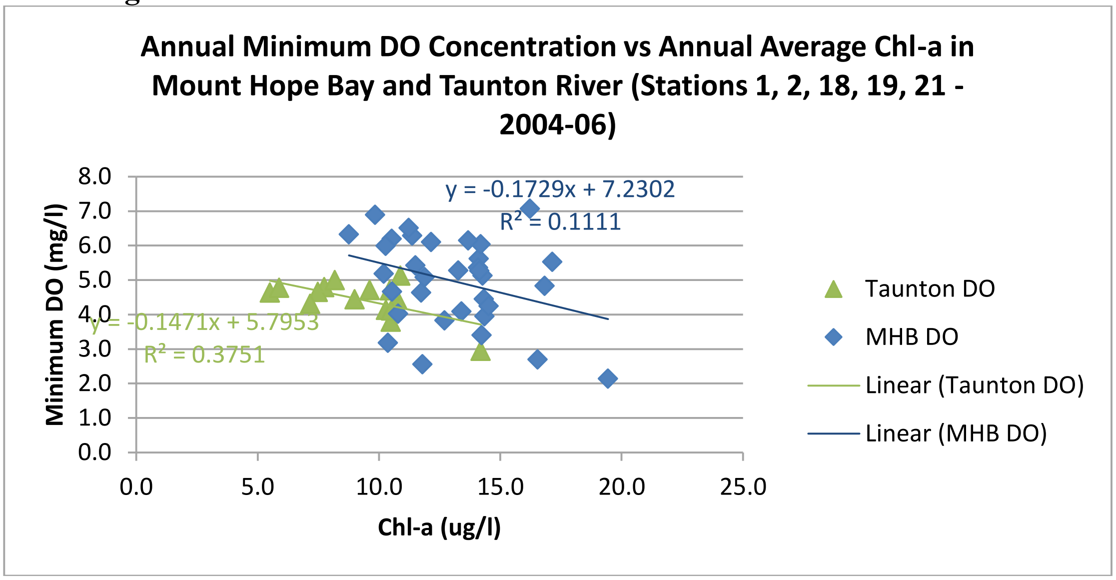


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

The chart appears to support a similar nature of response to increases in chlorophyll-a (the slopes of the two regression lines are similar), but with the Taunton River starting from a lower DO baseline.[28] On the other hand, Figure R7's comparison of TN/Chlorophyll-a relationships also shows a similar slope of response, but with chlorophyll-a concentrations in the Taunton River below that in Mount Hope Bay for a given nitrogen concentration. These results do indicate some difference in the detailed response, with a somewhat subdued response in terms of algal growth, but an offsetting greater sensitivity of DO to algal growth.

[28] Station 21 and 2006 is included in this dataplot because chlorophyll-a/DO relationships are not expected to differ significantly based on the difference in limiting nutrient (phosphorus v. nitrogen), while Station 21 and 2006 are excluded from nitrogen plots.

Figure R7.

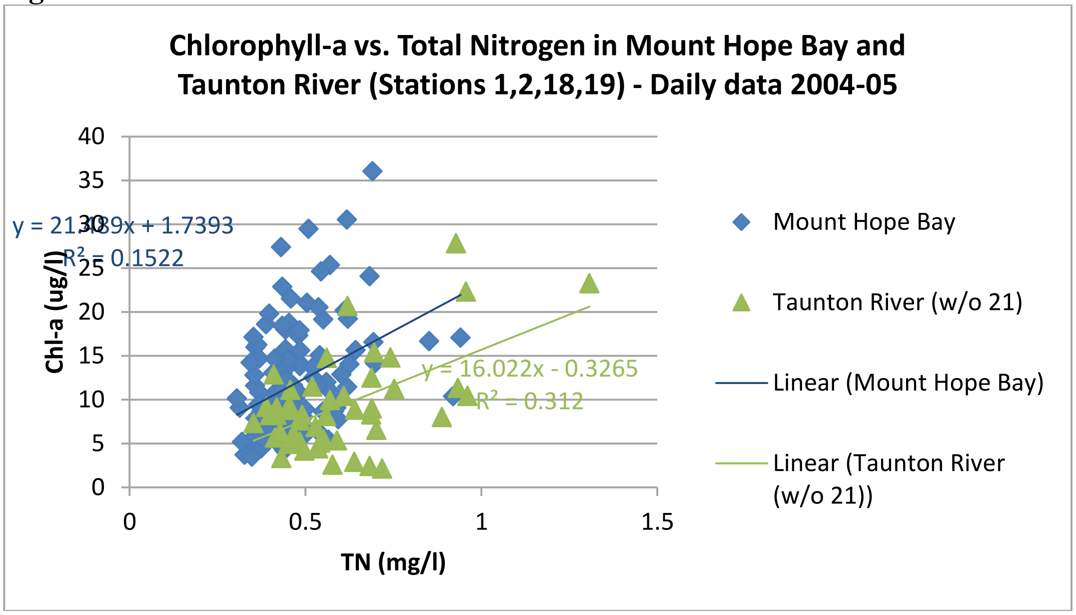


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

While clearly it would be preferable to have reference points within the Taunton River Estuary to determine the target nitrogen concentration at which standards would be met, it is unfortunately the case that the monitoring data indicates no station with the Taunton River Estuary where water quality standards were met. Indeed a significant challenge to establishing an appropriate water quality target is that nitrogen concentrations so greatly exceed the range associated with healthy ecosystems, with average concentrations over the three year monitoring period ranging from 0.6 to over 1.0 mg/l among the five Taunton River stations. This raises concerns about the extent to which relationships that currently exist in the Taunton River can be extrapolated to lower concentrations, such as the possibility that the system is nutrient-saturated and therefore may be unresponsive to increased nutrient concentrations once they reach a saturation threshold. A similar issue was raised in Deacutis and Pryor (2011), which was included in the commenter's submittal as attachment D; it notes that at high concentrations seasonal patterns in DIN "are effectively obliterated . . . as nutrient loads appear to overwhelm assimilative capacity." *Id.* at 23.

While EPA is reluctant to put much weight on simple regression relationships using a small dataset, EPA notes that the comment charts did not accurately reflect the data used in that Fact Sheet analysis. As noted above, the comment figure excludes two Taunton River monitoring stations (MHB1 and MHB 2) while including a Taunton River station (MHB21) that EPA indicated was not clearly nitrogen limited based on DIN/DIP molar ratios. See Fact Sheet at 30. The chart below sets forth data from the revised set of stations (1, 2, 18 and 19) in the Taunton River and in Mount Hope Bay in 2004-05 (the period used in the Fact

Sheet analysis). This analysis suggests that the comment is incorrect and that within the range of data used in the Fact Sheet analysis the response in the Taunton River is not "flat," and in fact appears to be responsive to TN concentrations, to the extent any conclusions can be drawn from relationships with such low R^2 (0.26 for Mount Hope Bay and 0.27 for Taunton River).

In contrast a "flat response" would be expected for stations that are saturated with respect to nitrogen and therefore not nitrogen limited. That appears to be the case not only for Station 21 for the entire monitoring period, but also under 2006 conditions for Station MHB19 (DIN/DIP ratio average > 15 over monitoring period) and Station MHB18 (DIN/DIP ratio > 15 for two out of five months) as well. The comment's conclusion is dependent entirely on the exclusion of certain Taunton River stations, while including data where conditions are not expected to be nitrogen limited and that were not used in the Fact Sheet analysis.

This is not to say that differences do not exist between Taunton River and Mount Hope Bay conditions that may impact eutrophication indicators. In general the Taunton River Estuary mean chlorophyll-a concentrations are less variable than in Mount Hope Bay and the range was lower than at the Mount Hope Bay stations. On the other hand, to the extent any conclusions can be drawn from these simple regression relationships it appears that DO may be impacted at lower chlorophyll-a concentrations in the Taunton River than in Mount Hope Bay proper, as shown below (note this is three year data consistent with the reporting of 20% low DO).

Figure R8.

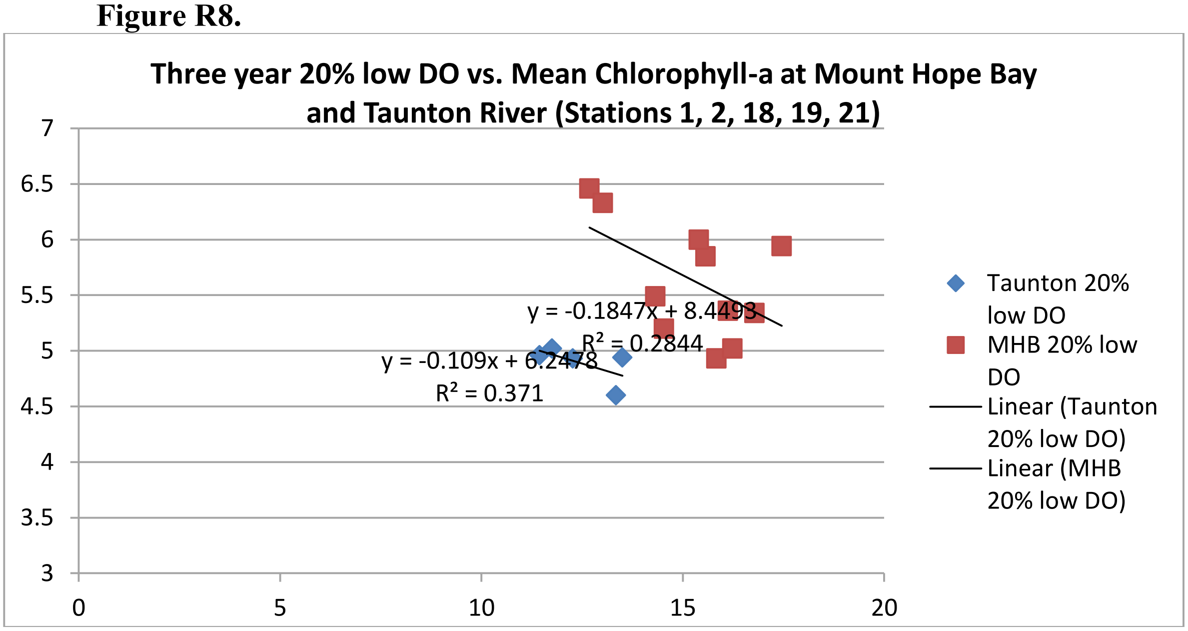


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

EPA emphasizes that it did not base its permit analysis on stressor-response relationships such as those set forth here, which are based on small datasets and have low statistical significance. Indeed these simple regression analyses demonstrate the ease with which statistical analyses of small datasets can be interpreted to support a range of positions. They certainly do not undermine EPA's analysis.

While EPA disagrees with the comment's interpretation of the statistical data, EPA is conscious of the fact that the use of a reference location in Mount Hope Bay to determine the target nitrogen concentration in the Taunton River estuary is simplified approach that nonetheless represents the best information available for determining a target nitrogen concentration. As noted above, EPA is required to include an effluent limit where discharges "cause, have reasonable potential to cause, or contribute to" an excursion from water quality standards, and in selecting a calculated numeric criteria must "demonstrate" that it "will attain and maintain applicable narrative water quality criteria and will fully protect the designated use." 40 CFR § 122.44(d)(1)(vi). To do so, EPA applied the reference location approach in the context of examining the range of applicable concentrations, comparison to other estuaries, and EPA guidance.

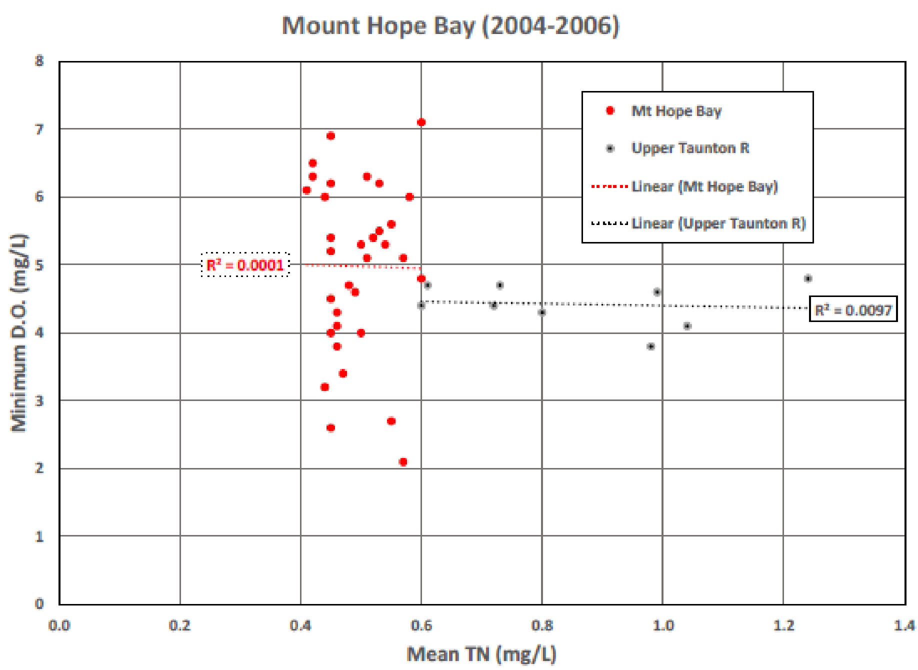
In applying the regulatory standard and examining all the available data EPA cannot conclude that a target concentration significantly higher than 0.45 mg/l will be sufficiently protective. There is strong evidence that TN concentrations just over 0.47 are associated with extensive algae blooms and DO deficits based on the single fixed monitoring station (the best source of information regarding DO conditions), which is located in Mount Hope Bay. There are numerous DO violations at stations with average TN concentrations just above 0.45 mg/l. While there is inherently some uncertainty with respect to the precise concentration there is no persuasive evidence that the threshold should be higher, and no evidence at all that a higher TN threshold would be protective of water quality standards in this system.

EPA also notes that the calculated permit limit for the Taunton WWTP would change little, if at all, under any remotely plausible calculated TN criteria. For example, if a target of 0.47 mg/l were used the allowable watershed load would be 2,253 lb/day with an allowable POTW component of 1,111 lb/day (compared to 2,081 and 939 lb/day under a 0.45 mg/l target); this would raise the average concentration allowable from all discharges to only 4.1 mg/l (from 3.4 mg/l in the original analysis). As the second largest discharge and a direct discharger to estuarine waters the Taunton WWTP would still be required to achieve a limit of technology 3.0 mg/l effluent concentration in this scenario, so that the permit limit of 210 lb/day would remain the same. Even under a 0.50 mg/l criterion, which is higher than the concentration at stations where clear eutrophication indicators occur and the high end of the *Critical Indicators* Report range, the average concentration allowable from all discharges would be 5.0 mg/l, with the allocation for the Taunton WWTP likely based on a lower effluent concentration. On the other hand, lower target concentrations are also within the range of uncertainty; in those cases EPA would allocate reductions to other sources before reducing the Taunton WWTP permit limit to a load below that associated with the 3.0 mg/l limit of technology.

Comment C25. Unique conditions which exist in Mount Hope Bay are not relevant to Taunton River Estuary.

EPA is regulating TN in the Taunton NPDES Permit under the belief that such control will "cure" low DO conditions in the Taunton River Estuary. This presumption is plainly incorrect based on the available monitoring data. Figure 4 (below) illustrates the apparent response of minimum DO to mean TN in the Mount Hope Bay stations in comparison with the response in the upper Taunton River stations. Again, the apparent response in the Taunton River is flat over a wide range of TN concentrations while the response in Mount Hope Bay suggests no relationship between TN concentration and minimum DO. In Mount Hope Bay, minimum DO levels range from 2 – 7 mg/L for essentially identical TN levels, ranging from 0.4 – 0.6 mg/L, with an R2 = 0.0001. This exceedingly low R2 indicates that minimum DO varies randomly with regard to TN concentration (*i.e.,* the two parameters are unrelated). The Taunton River Estuary shows a much smaller range in minimum DO levels (3.8 – 4.8 mg/L) over a far *larger* TN range of 0.6 – 1.2 mg/L, with an R2 = 0.0097. This exceedingly low R2 means there is no apparent relationship between TN and minimum DO (*i.e.,* TN explains less than 1% of the variation in minimum DO in the Taunton River Estuary). EPA's failure to analyze such available data was itself, arbitrary and capricious.

Figure 4 – Minimum DO Concentration versus Mean TN in Mt. Hope Bay and Upper Taunton River (Stations 18, 19, 21)



This complete lack of any meaningful relationship between TN and minimum DO in the Mount Hope Bay stations confirms that other factors, unrelated to TN, are strongly influencing minimum DO and nitrogen control is not likely to achieve compliance with the DO standard. The data assessment also confirms it is improper to presume that the Taunton River Estuary would respond to TN inputs in the same manner that Mount Hope Bay does, as one data set (Mount Hope Bay) indicates vertical response while the Taunton River has a horizontal response.

EPA, itself, has noted that nutrient criteria should not be developed if the impairment is insensitive to changes in nutrient concentration. Endpoints that were found to be insensitive to changes in nutrient concentrations in a particular estuarine system were not considered further in deriving numeric nutrient criteria for a system. 77 Fed. Reg. 74,924, 74,950 (Dec. 18, 2012).

Site-specific data for Mount Hope Bay and for the Upper Taunton River Estuary show that the minimum DO concentration does not show a response to increasing TN concentration. Since the purpose of this TN endpoint is to significantly mitigate exceedances of the minimum DO criterion in the Taunton River Estuary, consistent with EPA's approach to numeric nutrient criteria development in Florida, the proposed endpoint for TN should be deleted from the permit. Consequently, the proposed effluent limit, which is based on restoring a use that is insensitive to increasing TN concentration, is arbitrary and capricious.

> **Response C25.** As noted in Response C24 above, the SMAST data collection efforts were not designed for stressor-response analysis and are not sufficient to produce statistically significant results. See Response C24. Further, minimum DO in particular is difficult to use for statistical analysis; without continuous DO monitoring the dataset clearly does not reflect actual "minima" and in this case was not even collected in a manner that would be expected to correspond to DO minima, since samples were collected at different times a day and not at critical predawn conditions. See Response C23. The commenter is confusing the lack of evidence of a relationship with proof of the lack of a relationship. This is a statistical fallacy.
>
> The comment is also internally inconsistent in stating that the statistical analysis shows no meaningful relationship, but then arguing that the analysis shows different relationships in Mount Hope Bay and the Taunton River (vertical vs. horizontal). There is no vertical or horizontal "pattern" to the data presented; as expected minimum DO concentrations are variable and the Taunton River data covers a much broader range of TN concentrations (with uniformly low DO concentrations).
>
> The comment's citation of 77 Fed. Reg. 74,924, the supporting document for the most recent proposed nutrient criteria for Florida waters, is inapposite. That document states the unexceptionable premise that, for those waters where a stressor response statistical analysis was used to develop relationships between

nutrient concentrations and specific endpoints, and the endpoints were "not sufficiently sensitive to increases in TN or TP concentrations . . ., then the statistical models were not used to derive candidate criteria for the particular nutrient." Here, however, EPA did not use a stressor response approach in determining the target nitrogen concentration. See Responses C9 and C11.

Moreover, the commenter's conclusions rely on a selective use of data. As discussed in Response C24, the commenter excluded two Taunton River stations from the analysis, essentially creating the illusion of a large break between the two datasets by omitting the stations located between the two areas. The comment chart also includes data from Station MHB21, which EPA determined not to use in its analysis because it appears that station may not be nitrogen-limited. See Fact Sheet at 30. Figure R9 below corrects those errors, and also removes the 2006 data points for Stations MHB18 and MHB19, which also appear do not appear (based on DIN/DIP ratios) to be nitrogen limited under the very wet conditions prevailing in that year. See Response C24. In the corrected analysis, the Taunton River data is a reasonable extension of the Mount Hope Bay data, while showing a stronger suggestion of the impact of TN concentrations on DO concentrations (albeit still at a low statistical significance).

Figure R9.

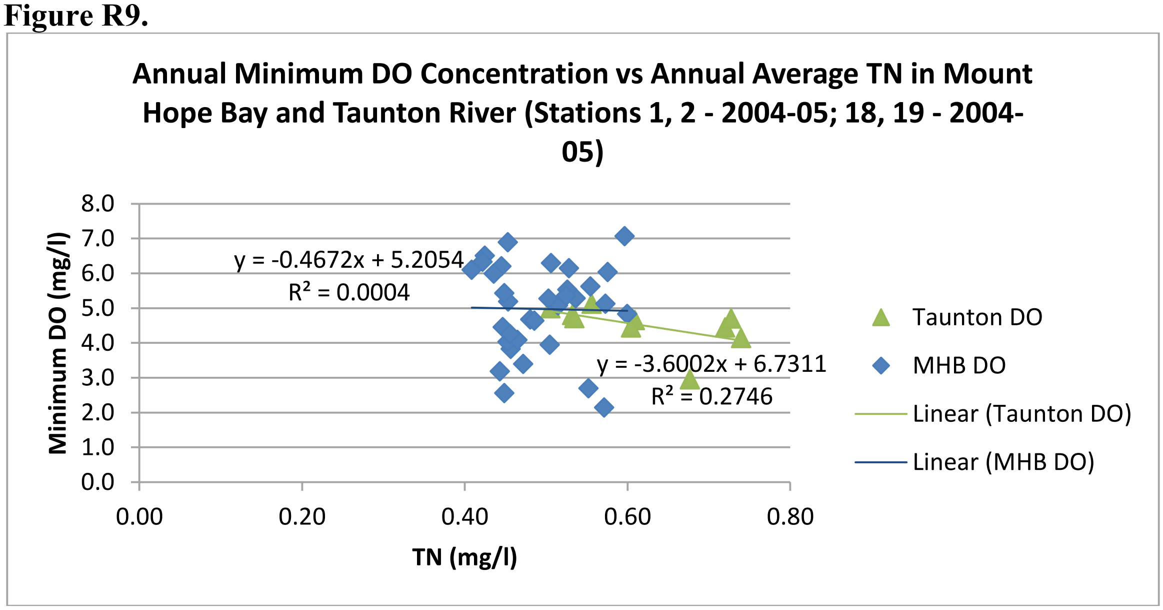


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

The comment's suggestion that EPA was arbitrary and capricious in failing to analyze the data in the manner suggested in the comment is without merit. EPA did not rely on a stressor-response statistical analysis in developing the nitrogen limit in the Draft Permit. Rather, EPA performed a reference location analysis that was consistent with the MEP process that the available data was designed to support. It was, and remains, EPA's opinion that the available data is not sufficient to establish statistically significant stressor-response relationships, both because of the small dataset (three years of data) and because of the nature of the monitoring program (no continuous monitoring (fixed network data limited to a single site from a different program) and not designed to measure critical DO conditions). However, to the extent conclusions can be drawn from the statistical evidence, the data does not contradict – indeed tends to support – EPA's conclusions, and the comment's attempt to show otherwise is based on flawed analysis.

Other Technical Comments on TN Limit Derivation

Comment C26. The TN endpoint was miscalculated.
Assuming, arguendo, that the sentinel station method is appropriate for establishing a TN threshold, EPA miscalculated the appropriate TN endpoint. The purpose of the calculation was to establish a TN concentration to ensure compliance with the applicable DO water quality standard. The selected TN endpoint, 0.45 mg/L, corresponds with a minimum DO concentration of approximately 6.0 mg/L, but the actual criterion target is 5.0 mg/L. (*See* Fact Sheet, at 23, Table 5). The data for MHB16 in 2006 show a minimum DO of 5.3 mg/L with a mean TN of 0.50 mg/L. Using these data, the TN endpoint necessary to achieve the DO criterion of 5.0 mg/L is a TN concentration *greater than* 0.50 mg/L, assuming that the Taunton River Estuary responded to TN in the same manner as observed in Mount Hope Bay. If a sentinel approach is defensible, it requires adjustment to reflect the TN load required to meet applicable standards (5 mg/L DO), not a 6.0 mg/L DO criteria.

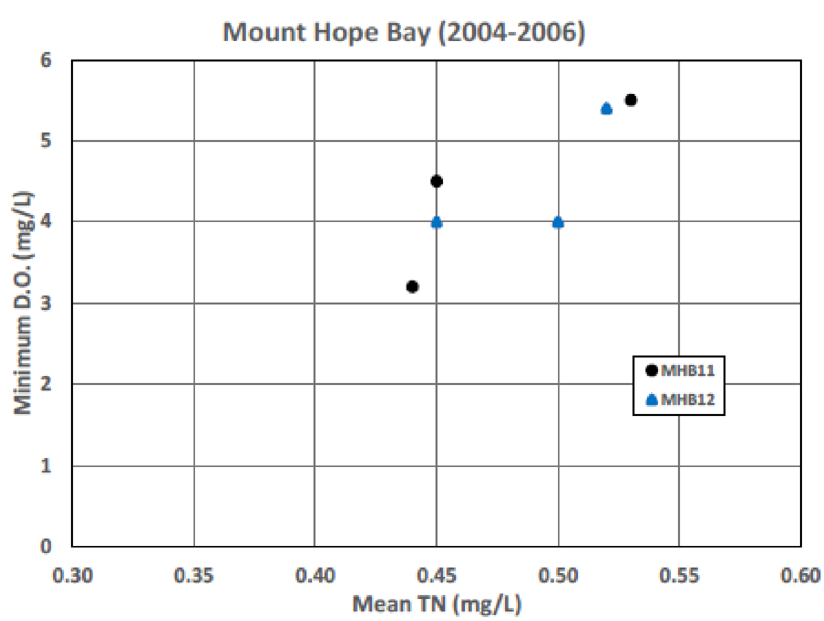
Response C26. The comment mischaracterizes the Fact Sheet analysis. The selected endpoint of 0.45 mg/l was selected based on the minimum DO criterion for SB waters of 5.0 mg/l. As described in the Fact Sheet, examination of the 2004-05 data showed numerous stations with DO results below the 5.0 mg/l criterion with average TN concentrations below 0.48 mg/l. FS at 29. The Fact Sheet specifically notes results from MHB13, a monitoring station close to the fixed monitoring data buoy that recorded numerous periods of DO below 5.0 mg/l in 2005-06; TN concentrations at that site averaged 0.473 mg/l in 2004-06, indicating that the target TN concentration must be below 0.473 mg/l. *Id.* at 30. Indeed, "minimum DO concentrations of less than 5.0 mg/l were encountered at all but one site (MHB16) during the three year monitoring program." *Id.* at 29.

The comment's suggestion that an incorrect criterion of 6.0 mg/l was used appears to be based on the fact that minimum DO concentrations at MHB16 were above 6.0 mg/l in 2004-05 (although not in 2006). The comment further suggests that a TN target of greater than 0.5 mg/l is appropriate because minimum DO less than 5.0 mg/l was not measured at this specific site in a year when TN concentrations averaged 0.50 mg/l. The comment thus ignores that fact that EPA's analysis is *not* based on results from a single station considered in isolation, but on the spectrum of monitoring results throughout the system. *See* Response C1. The comment simply ignores EPA's thorough discussion of results from *all* the monitoring sites in Mount Hope Bay and the Taunton River Estuary, which clearly indicate that the appropriate criterion of 5.0 mg/l was used and that violations of the 5.0 mg/l criterion are encountered at concentrations between 0.45 and 0.50 mg/l at numerous stations throughout the estuary. EPA did not establish a numeric target criterion based on a single station where water quality standards are being met. EPA's approach is designed to identify the threshold between impaired and unimpaired conditions by comparison of conditions representing the range of impairment conditions.

Comment C27. The proposed TN endpoint is insufficient to achieve the DO criterion.

Water quality data presented in Table 5 of the Fact Sheet (at 23) show that several Mount Hope Bay stations do not achieve the DO criterion while in compliance with the proposed "protective" TN endpoint. These stations, MHB 11 and MHB 12, are illustrated in Figure 5 (below). Station MHB11 achieved the TN endpoint in 2004 and 2005, but was significantly below the minimum DO water quality standard in both of those years. Conversely, in 2006 this station exceeded the TN endpoint by a significant margin but was in full compliance with the minimum DO criterion. Similarly, station MBH12 was below the TN endpoint in 2004, but was also well below the DO criterion. In the subsequent years, this station exceeded the TN endpoint but alternatively failed (2005) and then exceeded (2006) the DO criterion.

Figure 5 – Minimum D.O. Concentration versus Mean TN (Stations 11, 12)



These data indicate that the selected TN endpoint is not needed to be protective of the applicable water quality standard. Moreover, the trend exhibited by the data indicates that the minimum DO *improves* with increasing TN concentration, contrary to EPA's conceptual model. This discrepancy with the conceptual model is a clear indication that other factors control the DO response. It is arbitrary and capricious for EPA to ignore this data confirming the simplified sentinel approach is not effective in controlling low DO conditions and chose a single "sentinel" location that fits EPA's regulatory theory.

Response C27. The commenter's selective use of two out of twenty-two data stations as somehow establishing a different "trend" does not demonstrate a meaningful discrepancy with the overall causal model. There are of course other factors that influence DO, including in this case variability in sampling conditions relative to critical DO time periods as well as physical factors such as stratification, wind mixing, tidal variation (e.g. neap vs. spring tide), etc. It is quite likely that small selected subsets of data can be found that appear to support any number of theories. A defensible statistical approach, on the other hand, includes all data unless a clear basis exists for its exclusion. As shown in Response C24, the available data supports EPA's conceptual model of increased algal growth in response to TN and resulting low DO.

EPA disagrees with the comment's contention that the proposed TN endpoint is insufficient. EPA's analysis was based on 2-year average concentrations. EPA acknowledges that a slightly different result may be reached if annual average TN is used as suggested by the comment's Figure 5. The use of a 2-year averaging period is intended to ensure that steady state conditions apply, consistent with the assumption of the loading model, and is a reasonable approach to balancing the need for a simplified model against the objective to achieve a load that is protective under all conditions.

Further, even if there were merit to the claim that the TN endpoint is "insufficient", it would not change the TN permit limit for this facility. If the analysis were done based on a lower TN threshold, for example 0.435 mg/l, the target watershed load would be approximately 6% lower (1,952 lb/d) and would require a 3 mg/l permit limit from all facilities along with 21% NPS reduction (vs 20% NPS reduction in the fact sheet analysis). This would not impact the permit limit for the Taunton WWTF, which would still be based on the 3 mg/l limit of technology.

Comment C28. TN is the wrong parameter to regulate for DO control in short detention systems such as the Taunton River Estuary.

EPA selected TN as the parameter to regulate without any demonstration that TN control is the appropriate form of nitrogen to achieve compliance with the DO water quality standard. As discussed above, the conceptual model for eutrophication in estuaries and coastal waters utilizes loads of dissolved inorganic forms of nitrogen as the basis for limiting algal growth and subsequently improving benthic DO levels. Notwithstanding the fact that EPA ignored its own guidance (*e.g.,* the Estuaries Guidance Document and the WLA Guidance Document) regarding selection of the nitrogen form to regulate, a consideration of the system hydrodynamics confirms that TN regulation is not appropriate. Assuming the Taunton River Estuary actually exhibited excessive algal growth, the form of nitrogen to control is DIN, not TN because of the systems short detention time. If the permit limit was based on DIN, it would completely alter the degree of treatment that would be required to reduce algal growth, since the background concentration of DIN in the ocean is negligible.

By regulating TN, EPA assumes that particulate and dissolved organic forms of nitrogen are available for stimulating algal growth in the Taunton River Estuary. The conversion of these organic forms to the form used by algae, DIN, requires that the residence time in the Taunton River Estuary and Mount Hope Bay is sufficient to allow this conversion. Based on the information presented in the Fact Sheet, Mount Hope Bay covers an area of 13.6 square miles, with a volume of 53.3 billion gallons at mean low water and a tidal range averaging approximately 4.5 feet. (*See* Fact Sheet, at 13). Assuming a tidal cycle of 12.3 hours, the total volume in the Bay is exchanged in 2.1 days. The exchange time in the Taunton River Estuary, itself, is projected to be less than one day based on the mean tidal exchange. This amount of time is insufficient to convert a significant amount of particulate and organic forms of nitrogen to DIN and EPA has provided no evaluation suggesting that such conversion occurs in the estuary or Bay to a significant extent. (*See* EPA, *Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling* (1985)).

If the regulated form of nitrogen is changed to the form controlling algal growth (*i.e.,* DIN), the necessary load reduction to meet DO standards would be significantly relaxed because the ocean boundary concentration of DIN is close to zero and the tidal exchange from the ocean provides significant dilution to the system.

> **Response C28.** EPA did not "ignore its own guidance." Neither document cited in the comment recommends using any form other than total nitrogen for regulation. See, e.g., EPA, *Nutrient Criteria Technical Guidance – Estuarine and Coastal Waters* at 2-24 ("If concentrations of nutrients are to be used as criteria, the total concentration is most likely to reflect the short-term phytoplankton growth potential (Boynton and Kemp 2000).")
>
> In addition, recent research has documented that forms of nitrogen once considered unavailable for plant growth are far more bioreactive than previously thought, further supporting the need to control total nitrogen rather than just the dissolved inorganic components suggested in the comment. (Wiegner et al., 2006; Sedlak, 2011 (portion of dissolved organic nitrogen (DON) that is not bioreactive is only 10 – 29% of the effluent DON); Filippino et al., 2010 (between 31% and 96% of the effluent derived organic nitrogen (EON) was removed during biotic bioassays within the first 2 days)).[29]

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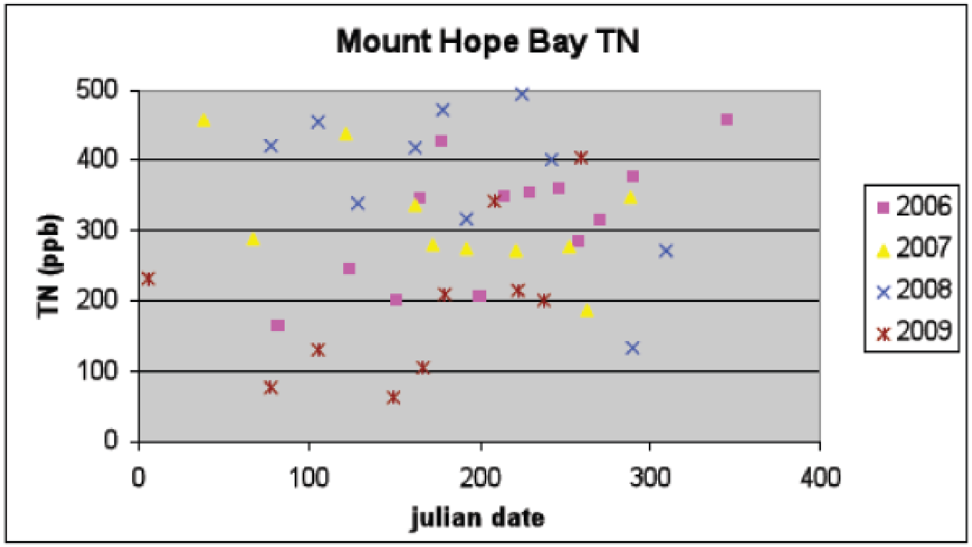
[29] Wiegner et al., "Bioavailability of dissolved organic nitrogen and carbon from nine rivers in the eastern United States, 43 *Aquatic Microbial Ecology* 277-87 (2006); Sedlak, D.L., J. Jeong and H.D. Stensel. 2011. Bioavailability of Dissolved Organic Nitrogen in Wastewater Effluent as Determined by Resin Separation. *Nutrient Recovery and Management 2011*. Water Environment Federation; Filippino, K.C., M. Mulholland, P. Bernhardt, G. Boneillo, R. Morse, M. Semcheski, H. Marshall, N. Love, Q. Roberts, D. Bronk. The Bioavailability of Effluent-derived Organic Nitrogen along an Estuarine Salinity Gradient, *Estuaries and Coasts* (2010), 34(2): 269-280.

The actual exchange time in Mount Hope Bay and the Taunton River Estuary is much longer than the comment's estimate, which is based on a simple tidal prism analysis. More detailed studies have calculated significantly longer exchange times. See MacDonald, D.G., "Estimating an estuarine mixing and exchange ratio from boundary data with application to Mt. Hope Bay (Massachusetts/Rhode Island)," *Estuarine, Coastal and Shelf Science* 70 (2006) (exchange rate in Mount Hope Bay ranging from one week to two months during spring tide); Boucher, *Nutrient and Phosphorus Geochemistry in the Taunton River Estuary*, U.R.I. Ph.D. Thesis (1991) at 31 (freshwater residence times in Taunton River Estuary of about 3 days at low flows). Thus exchange times are sufficiently long for effluent derived organic nitrogen to be bioreactive, even for discharges directly to the Estuary, see Filippino et al., 2010. EPA notes that much of the load is from more distant points in the watershed with even longer detention times.

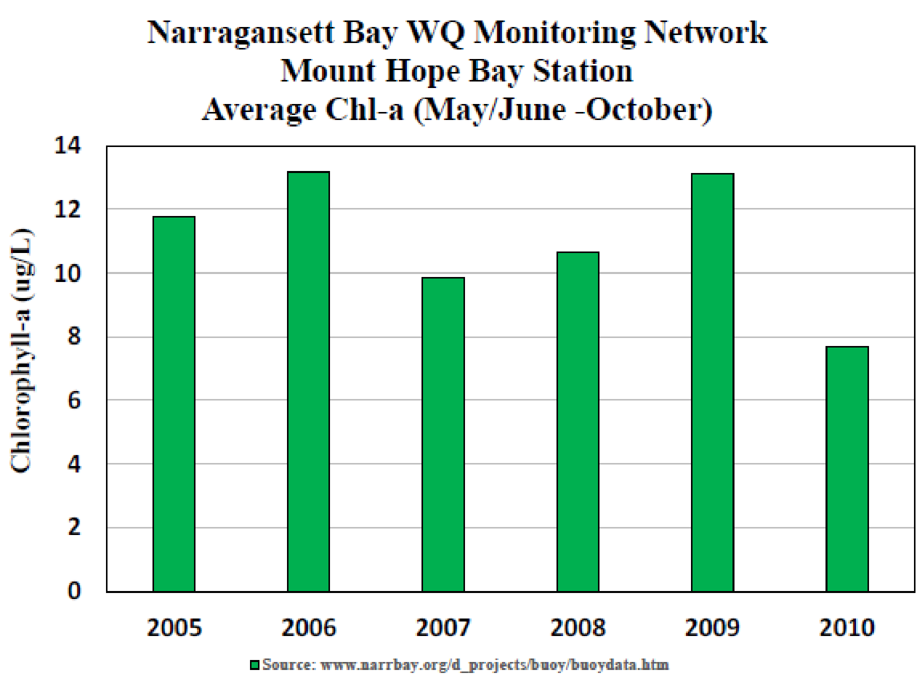
Nor is there any evidence that use of DIN as the parameter for regulation would reduce the degree of treatment required. A DIN-based threshold concentration would be much lower than the TN threshold concentration. For example, a dissolved inorganic nitrogen threshold of 0.15 mg/l is cited in EPA's Nutrient Criteria Technical Guidance Manual (EPA, 2001) and the dissolved inorganic nitrogen water quality standard for the State of Delaware is 0.14 mg/l. The commenter provides no citation in support of its contention that the background concentration of DIN in the ocean is negligible. DIN concentrations in ocean waters that have been reported for the Gulf of Maine (0.069 mg/l, NHDES, 2009) and Rhode Island Sound (approximately 0.05 mg/l summer average, NBERR 2011) are not insignificant relative to a threshold of 0.14-0.15 mg/l.

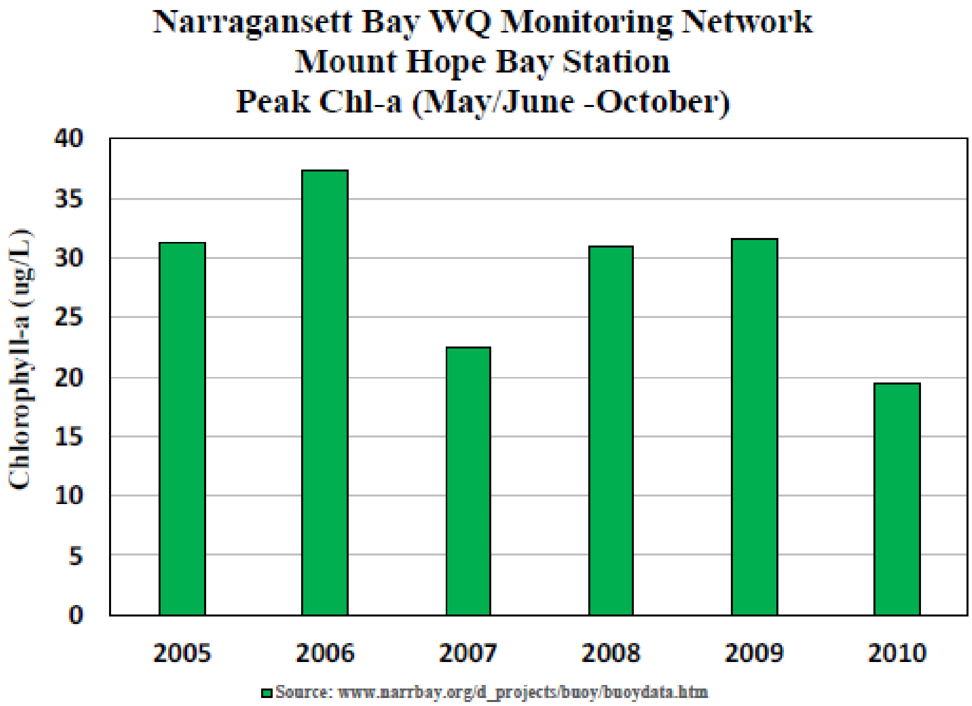
Comment C29. EPA's analysis is based on outdated information.
EPA relied on water quality data collected by The School for Marine Science and Technology (SMAST) at the University of Massachusetts – Dartmouth to develop the TN endpoint of 0.45 mg/L. These data were collected from 2004 – 2006, but EPA only used the data from 2004 –2005 for station MHB16 to calculate its protective threshold concentration. (*See* Fact Sheet, at 30). At the same time, SMAST collected data from 21 other stations that were summarized in Table 5 of the Fact Sheet (at 23). One of those stations, MHB-MOOR, centrally located in Mount Hope Bay, reported an average TN concentration of 0.48 mg/L over the same period.

The TN endpoint for this draft NPDES permit is based on data that are seven to eight years old and fail to reflect current conditions regarding TN and chlorophyll a levels in this system. Since 2004/5, many facilities that discharge to Narragansett Bay have implemented nutrient control and reduced the overall concentration of nitrogen and organic loadings to the Bay. Additional extensive reductions in nutrient load are associated with CSO controls being implemented by the City of Taunton and Fall River.[34] Ongoing monitoring data at Station MHB-MOOR, contained in a report by the Narragansett Bay Estuary Program[35], demonstrate that annual average nutrient concentrations ranged from 0.3 – 0.4 mg/L from 2006 – 2009 (illustrated in the following figure on page 35 of the report). The May – October average concentration (approximately, Julian date 120 – 304) are even lower, particularly in 2009. The 2009 TN concentration at the MHB-MOOR station was only 0.22 mg/L for the period from May – October. Thus, TN concentrations are within the range EPA has asserted reflect "excellent" water quality for Bay systems. (Fact Sheet, at 18). Under EPA's own characterization, TN levels should be considered "excellent." (Fact Sheet, at 28 - citing a 0.3 – 0.39 TN level as "excellent").



Algal levels in Mount Hope Bay have dropped significantly since 2004/5, as illustrated in the charts below based on daily data collected by the Narragansett Bay Water Quality Monitoring Network near MHB-13 over the period from 2005 - 2010.





Peak and average algal levels are at all-time lows. Assuming the algal levels are controlling system SOD and causing low system DO, these changes would produce far better DO conditions in the Bay, which greatly influences DO in the Taunton River. As noted earlier, the TN levels in the Taunton River have also dropped dramatically over this period of time. *Supra*, at 15. Significant TN reductions have been achieved by facilities tributary to the river. These data indicate at least a 25% reduction in direct point source TN loadings. BOD discharge, which affects DO, has also improved. CSO reductions have also reduced TN and organic loads. These changes in nitrogen loading have produced about a 50% reduction in the Taunton system TN concentrations based upon a recently published PhD thesis. (Krumholtz, *supra* note 15).[36] Based on this information, the Taunton River likely meets EPA's suggested TN objective of 0.45 mg/L at MHB19, since the average TN concentration at this location was 0.70 mg/L TN. A 50% reduction in TN concentration would place TN concentration levels well below the 0.45 mg/L target EPA has chosen. Therefore, the need for further reduction at Taunton is not evident based upon current data.

These data demonstrate that significant improvements in TN and algal concentration have occurred since the earlier SMAST study, with present annual average TN concentration of approximately 0.3 mg/L and average chlorophyll a less than 8 µg/L in the Bay. The conditions in the Bay will improve DO levels in the Taunton River Estuary because so much of the flow in the estuary originates from the Bay. At a minimum, the more-relevant new data must be used to assess current conditions in the Taunton River Estuary and the need for TN reductions at the Taunton WWTF.

[34] *See* Attachment I– Excerpts from: City of Taunton Infiltration/Inflow Summary Report Jan 1, 2012- Dec. 31, 2012.
[35] Deacutis and Pryor, *supra* note 16.
[36] The concentration of TN in the Taunton River has decreased from 1.74 mg/L in 2003-2004 to 0.91 mg/L in 2008-2010. Krumholtz, *supra* note 15, at 167, Table 3-2.

Response C29. EPA used the SMAST data for its analysis because it is the only complete and consistently collected dataset available, was collected in accordance with MassDEP quality assurance procedures, and represents the best available information for this system. More recent data are limited in scope and have issues with intercomparability (as discussed below), and do not provide the comprehensive data for all aspects of the system that is provided by the SMAST data. Table R1 shows a comparison of the SMAST with the more recent datasets and indicates the relative strength of the SMAST data set in terms of scope of data collected, number of monitoring sites, and parameters monitored.

EPA did not disregard more recent data; EPA's Fact Sheet includes a discussion of the 2010 monitoring data from the Narragansett Bay Water Quality Network fixed monitoring site in Mount Hope Bay, which indicates continued conditions of DO depletion, extended periods below 5.0 mg/l DO, and elevated chlorophyll at that location. The comment's general argument, that the load reductions achieved to date have resulted in some improvement in Mount Hope Bay, is not inconsistent with EPA's analysis for the permit limits. EPA would expect some improvement in conditions in connection with reduced loads, but the analysis indicates that the scale of load reductions achieved to date would not be expected to eliminate water quality violations (which has proven to be the case). See Responses A2, C12 and C13.

Table R1. Mount Hope Bay/Taunton River Estuary and lower Taunton River monitoring programs

Dataset	SMAST	URI GSO	NBC	NBWQN	TRWA
Period covered	2004-06	2006-present	2006-present	2005-2010	?-present
Type of monitoring	Sampling	Sampling	Sampling	Datasonde	Sampling
Number of stations in MHB	11	1	0	1	0
Number of stations in Taunton River Estuary below Berkley Bridge	5	0	0	0	0
Number of stations in Taunton River, Berkley Bridge and above[1]	1	0	1	0	2
Monitor both DIN and TN?	Yes	Yes	No[2]	No	No
Monitor chlorophyll and DO?	Yes	No[3]	No	Yes	No
Monitor watershed loads?	Yes	No	Yes[1]	No	No
Monitor Taunton River Estuary conditions?	Yes	No	No[1]	No	No
Monitor Mount Hope Bay conditions?	Yes	Yes	No	Yes	No

[1] Sampling at Berkley Bridge is collected by NBC for determination of watershed loads; however this site is downstream of the Taunton WWTP in estuarine waters so that nutrient concentrations are influenced by seawater dilution.

[2] Began monitoring for TN in 2013; TDN and DIN before that.

[3] MHB site located at NBWQN datasonde site so allows comparison to NBWQN chlorophyll and DO data.

EPA did not previously have in its possession the data collected by the URI Graduate School of Oceanography (URI-GSO) that was included in the *Draft Nutrient Conditions in Narragansett Bay & Numeric Nutrient Criteria Development Strategies for Rhode Island Estuarine Waters* (June 2011) provided with the comments; EPA has therefore reviewed these data carefully to determine whether they provide a basis for reconsidering or modifying EPA's analysis.

EPA notes that the URI-GSO data do indicate significantly lower TN concentrations than those reported by the SMAST, including for the one year (2006) that the monitoring programs overlapped. EPA does not agree with the conclusions set forth in the comment based on those results, however. While the comment argues that these data indicates a trend toward lower concentrations, that is not in fact the case. While the data through 2009 might appear to reflect a lowering trend because 2009 had the lowest concentration of those four years, the full URI-GSO dataset shows that concentrations in 2010 and 2011 were similar to those in 2006 and 2007, so there is no actual decline shown in the URI-GSO data.

See Figure R10. There also clearly has not been a real drop in concentrations from the SMAST levels (in the 0.55 mg/l range) to the URI-GSO levels (in the 0.35 range), since the two datasets show the same discrepancy for the year of overlap between the two datasets, 2006. While EPA expects there will be some improvement in concentrations at this station from the reduction in loads to the Taunton River achieved to date, such reductions are not readily apparent from these data (they may be mitigated by the influence of the Sakonnet River or the Fall River discharge in this area). Nor does EPA agree that the recent monitoring indicates "excellent" conditions at the MHB station. As discussed in the Fact Sheet, see Reponses A2 and C23 and discussion below, the data from the Narragansett Bay Water Quality Network fixed monitoring site indicates continued elevated chlorophyll and depletion of DO through 2013.

Figure R10.

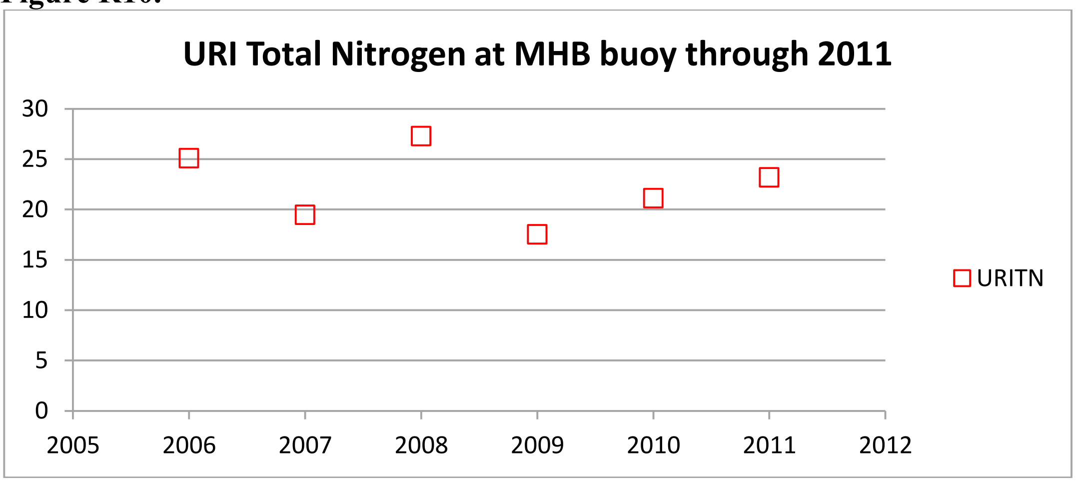


Chart by EPA. Source data: Krumholz, J. 2012. Spatial and temporal patterns in nutrient standing stock and mass-balance in response to load reductions in a temperate estuary. PhD Dissertation in Oceanography, University of Rhode Island, Kingston, RI. 380p; Data collected pursuant to NOAA Award Number: NA05NOS4781201 from 2005 to 2012; provided electronically by Dr. Candace Oviatt, personal communication, June 27, 2013.

EPA is however concerned that there is such a large discrepancy between SMAST data and URI-GSO data for the Mount Hope Bay buoy site for the one year overlap data, and EPA has attempted to determine the source of the problem. EPA notes that the issue of comparability among different datasets has been recognized and commented up by researchers in this system. Deacutis and Pryor (Comment Attachment D), at 39, quote the following discussion from Krumholtz (2011):

> [A] serious problem for interstudy data usage is that there is not a regular series of intercalibrations between labs. Each lab operates with its own sets of standards, which are handmade, and rarely checked against anything with a truly known concentration, and there is no standardized methodology for collecting, processing, and running samples (with respect to preservation, holding time, handling requirements, etc.) plus, many of

> us use different methodologies and chemical reactions depending on our instruments or the type of samples we run . . . . At a minimum, we should be doing regular (yearly) intercalibrations to ensure that these variations don't impact results.

EPA notes that the monitoring stations for the SMAST and URI data are not at precisely the same location. The SMAST station was located at 41° 41.142' N, 71° 12.198' W, while the URI databuoy is located 41° 40.808' N, 71° 12.913' W (NBERR, *NBFSN Final Report on Activities during 2005-2008* at 10. URI data also includes a third station location at 41° 40.84' N, 71° 12.45' W. While a half kilometer to kilometer difference in location might not be expected to produce such difference in concentration, in this area of Mount Hope Bay there may be variability in conditions due to the proximity to the Fall River discharge and to the Sakonnet River, which is known to create unusual flow patterns and reversals under some tidal conditions.

Another possible explanation might be differences in sampling conditions. For example, the reported SMAST data represents an average of surface, middle, and bottom sample concentrations, while the URI GSO data were all surface samples (Krumholz, H&A Comment Attachment C at 9). To test this explanation, EPA eliminated non-surface samples in the SMAST data for comparison. This did not eliminate the discrepancy; the average of the SMAST surface samples for 2006 is 0.58 mg/l TN, compared to the URI-GSO average of 0.35 mg/l TN (June-September 2006). (Interestingly, the DIN concentrations are very similar between the two datasets, at 0.057 mg/l DIN for SMAST and 0.054 mg/l DIN for URI-GSO). See Figure R11.

Figure R11.

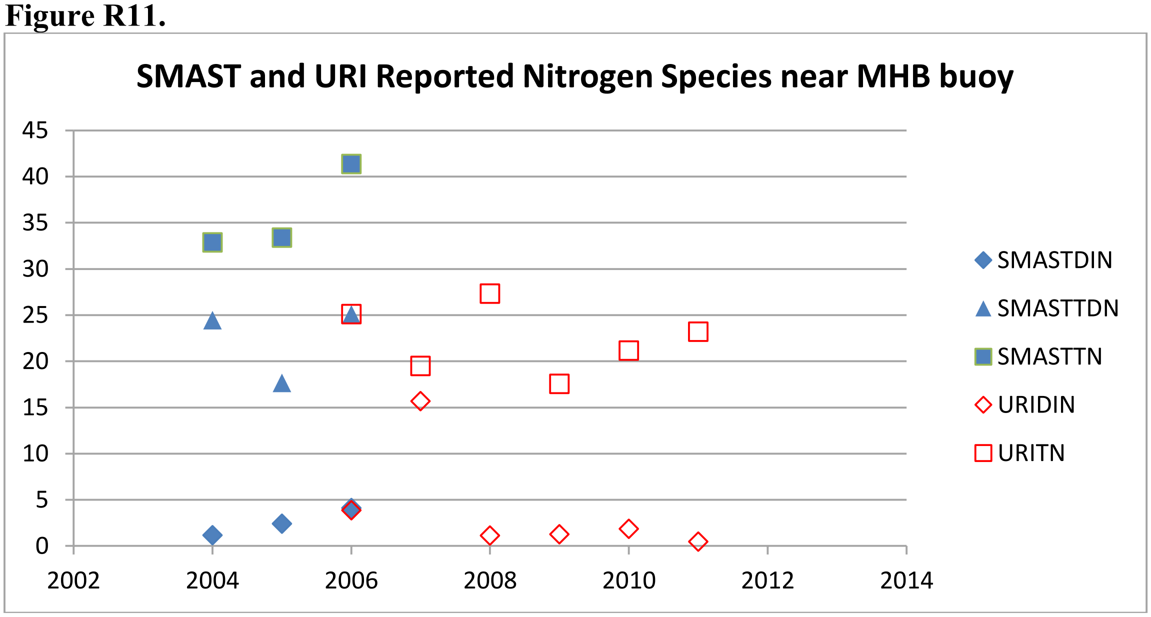


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007); Krumholz, J. 2012. Spatial and temporal patterns in nutrient standing stock and mass-balance in response to load reductions in a temperate estuary. PhD Dissertation in Oceanography, University of Rhode Island, Kingston, RI. 380p; Data collected pursuant to NOAA Award Number: NA05NOS4781201 from 2005 to 2012; provided electronically by Dr. Candace Oviatt, personal communication, June 27, 2013.

EPA also noted that the samples were taken under different tidal conditions and therefore different levels of dilution of the freshwater inputs by ocean water. SMAST data collection was timed to take place within two hours of mid-ebb tide, while the URI-GSO data was not limited to specific tidal conditions and may have taken place over a range of conditions. Figure R12 shows that salinity at mid ebb tide is in fact lower than average salinity, as expected, which would indicate less dilution by marine waters and thus potentially higher TN concentrations. However, the average salinity range over a single tidal cycle at the MHB buoy was 2.6 ppt in the 2006 datasonde monitoring period, so the difference from average conditions should be on the order of 1.3 ppt. This magnitude of variation would not be expected to result in a 0.2 mg/l difference in TN concentration.[30]

Figure R12

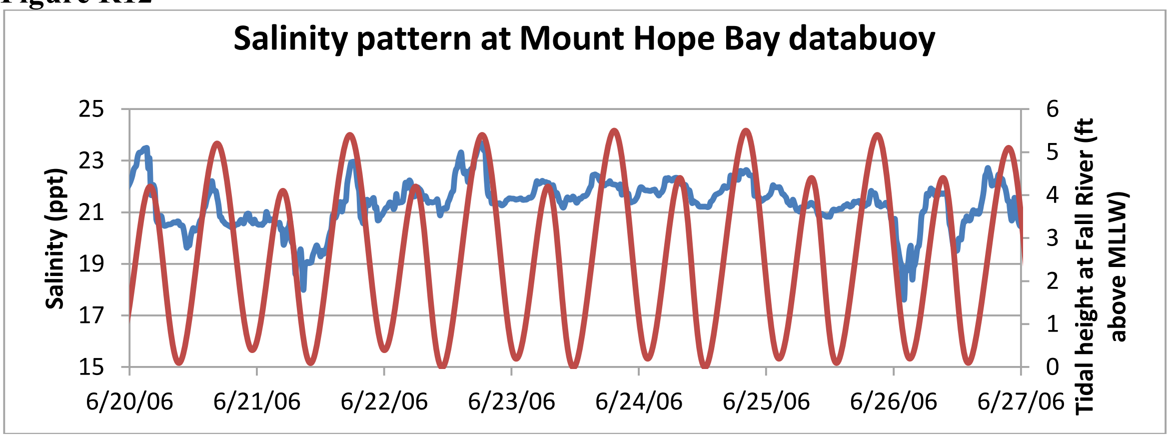


Chart by EPA. Salinity data from http://www.narrbay.org/d_projects/buoy/buoydata.htm; tide data from NOAA (http://old.tidesandcurrents.noaa.gov/get_predictions.shtml?year=2006&stn=2660+Newport&secstn=Fall+River,+Massachusetts&thh=%2B0&thm=18&tlh=%2B0&tlm=3&hh=*1.25&hl=*1.21)

EPA also notes that the low TN concentrations in some time periods appear questionable in light of other data. For example, the comment states that TN concentrations averaged 0.22 mg/l TN in May to October 2009, a period in which average chlorophyll concentrations measured at the datasonde were 13 ug/l. Information provided in the Comment Attachment D indicates that particulate organic nitrogen concentrations, a subset of TN, are generally 20 to 50 times the chlorophyll concentration. The expected PON in 2009 therefore should be at least 0.26 mg/l – higher than the reported TN concentration even without accounting

[30] While detailed dilution calculations for this site are not available, the Fact Sheet approach for analyzing salinity impacts in the Taunton River Estuary indicates that for a given freshwater flow, a salinity change of 1.3 ppt would result in a change in TN concentration of approximately 0.026 mg/l.

for dissolved organic nitrogen or inorganic components. Comment Attachment D at 25. Also in 2009, both URI and the Narragansett Bay Commission took samples near Conimicut Point. The average TN of the URI data was 0.29 mg/l, while NBC, which analyzed only for TDN, has an average of 0.33 mg/l. The data appears more consistent with an exclusion of certain nitrogen species, and in fact the URI data closely matches the total dissolved nitrogen reported by SMAST (as well as having similar DIN results). EPA notes again that the SMAST Mount Hope Bay data was collected under a MassDEP approved monitoring program in connection with the Massachusetts Estuaries Program under approved quality assurance procedures.

For these reasons EPA has concerns about the comparability of these data and is not revising its conclusions on this basis. However, EPA notes that elevated chlorophyll-a concentrations and dissolved oxygen violations have persisted, despite the claim of low (0.3 mg/l) TN concentrations in the URI data. If concentrations are as low as the comment claims, this would indicate that target TN concentrations should be set far lower than the 0.45 mg/l identified by EPA in this permit proceeding. This was the conclusion of the authors of Attachment D to the Comment, which suggests that total nitrogen criteria in the Narragansett Bay system would be "in the vicinity of 0.35 to 0.40 mg/l." While EPA does not believe the evidence supports such a lower threshold due to the data concerns described above, it clearly would not provide any relief from the 3 mg/l TN permit limit here. See Response C24 for discussion of permit limits under alternate TN threshold assumptions.

EPA disagrees with the contentions that the data presented demonstrate "[a]lgal levels in Mount Hope Bay have dropped significantly since 2004/5" and "[p]eak and average algal levels are at all-time lows." The comment attempts to draw conclusions from a single year of variation in the chart presented (2010, while 2009 was the highest year on record for average chlorophyll-a concentrations). Further, the 2010 chlorophyll-a average concentrations of 8 ug/l, while lower than those seen in 2004-05, are still significantly higher than the levels identified in the *Critical Indicators Report* as reflecting unimpaired conditions in SB waters (3-5 ug/l). While some reduction in algal levels might be expected given the moderate reduction in TN loads that has occurred, the data presented does not indicate compliance with water quality standards, even for 2010. The failure to meet water quality standards is also indicated by dissolved oxygen data from the same datasonde, which was presented in the Fact Sheet (see Fact Sheet Figure 6b, reproduced below), showing extensive periods with DO below the 5 mg/l Massachusetts water quality standard.

Fact Sheet Figure 6b.

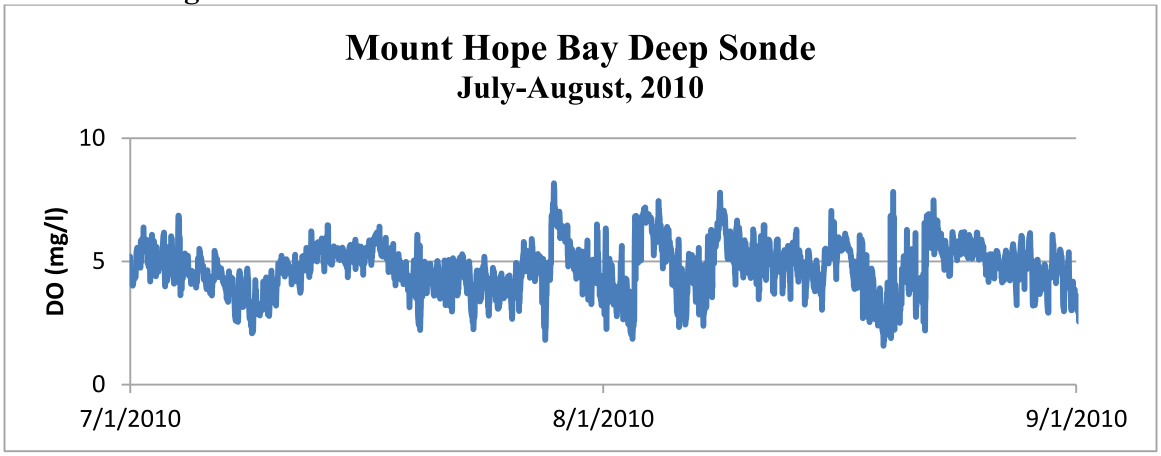


Chart by EPA. Source data: Narragansett Bay Fixed-Site Monitoring Network (NBFSMN), 2010. 2010 Datasets. Rhode Island Department of Environmental Management, Office of Water Resources. Data available at www.dem.ri.gov/bart.

In fact, more recent data is available from the same datasonde and indicates that in 2013 average chlorophyll was 10.53 mg/l over the entire monitoring season and 12.28 mg/l in the July to September period[31], while the highest daily average chlorophyll was 32.65 mg/l. URI/GSO, *B12.GSO Mt. Hope Bay Water Column Time-Series 2013* (data available at http://www.narrbay.org/d_projects/buoy/buoydata.htm). These values are comparable to earlier periods; in fact the 32.65 mg/l maximum is higher than any year recorded other than 2006. (See daily average data for all years at http://www.narrbay.org/d_projects/buoy/buoydata.htm). DO depletion is also evident in the 2013 data, with extensive periods again below the 5 mg/l Massachusetts water quality standards. See Figure R13. Thus the most recent data confirms continued water quality violations despite some inconsistent indications of improvements.

[31] EPA notes that the full season data are not strictly comparable from year to year as the starting and ending dates vary – from May 14 to June 29 for start dates and October 14 to November 9 for ending dates.

Figure R13.

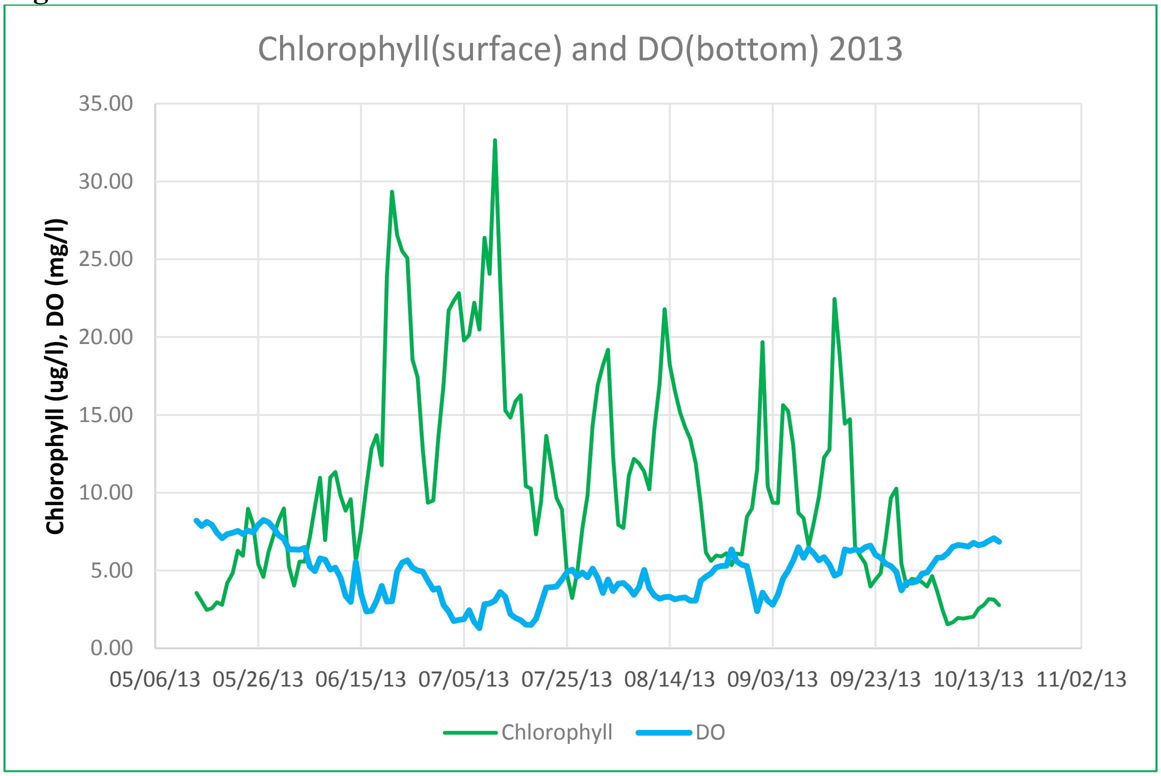


Chart by EPA. Source data: URI/GSO, *B12.GSO Mt. Hope Bay Water Column Time-Series 2013*. Data available at http://www.narrbay.org/d_projects/buoy/buoydata.htm.

Comment C30. Copper Limits not Necessary/Miscalculated.
The draft NPDES permit includes revised water quality-based effluent limits for copper of 0.008 mg/L (monthly average) and 0.015 mg/L (daily maximum). The rationale for these effluent limits is presented in the Fact Sheet (at 36).

> The current permit for this facility contains an effluent limit for total recoverable copper based on the freshwater criteria for class B waters. The correct criterion for SB wasters is set forth below in terms of dissolved metals (form used for water quality standard) and total recoverable metals (used for permit limits). See 314 CMR 4.05(5)(e).
>
> Permit limits are calculated based on the [sic] meeting the criteria in the receiving water under 7Q10 conditions after accounting for the background concentration in the receiving water.

The final limits were determined based on compliance with the SB criteria using a mass balance equation:

$$Limit = \frac{Criteria\ x\ (7Q10 + Taunton\ WWTP\ Design\ Flow) - Background\ x\ 7Q10}{Taunton\ WWTP\ Design\ Flow}$$

This approach is premised on the assumption that the copper present in the effluent is in a toxic dissolved form such that an exceedance of the effluent limitation could adversely affect aquatic life. (*See* EPA Streamline Water-Effect Ratio Procedure for Discharges of Copper (Mar. 2001)). However, research confirms that copper from municipal effluents is chelated with dissolved organic carbon present in the treated wastewater such that is it not present in a toxic form. Consequently, there is no basis to claim an ecological concern with the discharge. This is further confirmed through consideration of whole effluent toxicity testing performed by the facility. The facility conducts whole effluent toxicity testing using organisms that are very sensitive to copper (*i.e., Ceriodaphnia dubia*). The results of this testing confirms that the copper in the effluent is not present in a toxic form given that no acute effects are found at concentrations that would produce such effects if copper were in a toxic forms. Consequently, the existing copper discharge cannot cause an impairment of designated uses and the proposed limits are not necessary. Moreover, even if the copper was present in a toxic form, the limits were calculated using the wrong mixing flow.

Copper is not in a toxic form in the Taunton River Estuary.
Performance data provided in Table 1 of the Fact Sheet (at 48-51) shows that the effluent is not toxic to *C. dubia*. These data, along with the corresponding copper concentration present in the test water, are summarized in the table below.

Date	Acute WET	Chronic WET	Copper (Average) (mg/L)	Copper (Max) (mg/L)
08/31/2010	100	100	0.0058	0.007
11/30/2010	100	100	0.0102	0.012
02/28/2011	100	100	0.012	0.014
05/31/2011	100	100	0.006	0.008
08/31/2011	100	100	0.009	0.011
11/30/2011	100	100	0.009	0.012
02/29/2012	100	100	0.01	0.012
05/31/2012	100	100	0.0063	0.0063

In every case, the whole effluent toxicity test indicated no toxicity in 100% effluent, with copper concentrations ranging from 0.006 – 0.014 mg/L. These results confirm that the copper present in the effluent is in a non-toxic state and should not be regulated as if it was toxic. Given these results, it is arbitrary and capricious for EPA to propose effluent limits assuming that the discharge has the reasonable potential to cause toxicity. The proposed limits for copper should be withdrawn.

Response C30. The comment mischaracterizes the premise of the copper limit analysis. It is not the case that the approach "is premised on the assumption that the copper present in the effluent is in a toxic dissolved form." Rather, the approach is based directly on numeric water quality criteria that have been adopted by the Commonwealth of Massachusetts. Where such criteria are in effect they are independently applicable – that is, they are applied without site-specific analysis of toxicity. The permit limits are based on numeric water quality criteria for copper that have been adopted by the Commonwealth of Massachusetts and incorporated in to the Massachusetts surface water quality standards (MA SWQS). EPA does not have authority in a permitting action to reject a duly adopted and approved numeric water quality criterion. The numeric water quality criteria are independent of any narrative standards for toxic discharges and must be applied independently of any analysis of toxicity in a particular location to determine permit limits.

Numeric criteria are also independent of whole effluent toxicity testing results, which are intended to provide a gross assessment of the toxicity of the overall makeup of the effluent. Therefore the facility's general compliance with WET permit limits does not obviate the need for permit limits based on the water quality criteria. However EPA notes that it is untrue that "no acute effects are found at concentrations that would produce such effects if copper were in a toxic forms [sic]." In fact the facility's copper concentrations are relatively low (the facility generally complies with its current copper limits which are only slightly higher than the Draft Permit limits) and are below the concentrations determined to be toxic for *C. dubia* in the EPA copper criteria documents, so that toxicity to *C. dubia* would not be expected.[32] See http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/copper/upload/2009_04_27_criteria_copper_2007_criteria-full.pdf, Table 1 at 24 and Table 2a at 34.

If the permittee wishes to present an argument that these water quality criteria are overly stringent for this receiving water, it must present such arguments to MassDEP in a water quality standards proceeding (e.g. development of a site-specific criteria). EPA notes that MassDEP has adopted site-specific criteria for copper for a number of inland (freshwater) water bodies and has not done so for any marine waters. Should MassDEP revise the copper criteria for this receiving water in the future, the permittee may request a modification to the permit, subject to antibacksliding and antidegradation requirements.

[32] EPA also notes that table provided in the comment gives only the monthly monitoring copper results and not the specific copper concentration found in the sample used for toxicity testing, which the permittee provides with its WET reports (for example the August 2010 copper concentration was 0.003 mg/l in the WET testing, as opposed to the 0.0058 monthly average and 0.007 daily maximum given in the table).

With respect to the mixing flow, see Response C31.

Comment C31. Effluent limits were calculated improperly.
As described above, the water quality-based effluent limits in the current permit were calculated under the assumption that the facility discharged to Class B (fresh) waters. If this was the case, it would be appropriate to calculate the WQBEL using the 7Q10 flow as the dilution flow since this is the only flow into which the effluent mixes. However, EPA notes in the Fact Sheet, that the effluent actually discharges into saline (SB) waters. (Fact Sheet, at 16). Saline water is tidal and the dilution flow includes a tidal component of the flow that also provides dilution. This tidal flow was estimated to be 1,192 cfs (Fact Sheet, at 31). If copper limits are required for this discharge, the calculated limits must include the tidal dilution flow as well as the 7Q10 flow, and the WQBEL must also factor in the water effect ratio associated with the effluent.

A revised average monthly limit was calculated to account for this additional dilution flow, assuming that the dissolved copper concentration present in the ocean is negligible.

$$Limit = \frac{Criteria\ x\ (7Q10 + Ocean\ Flow + \ Taunton\ WWTP\ Design\ Flow) - Background\ x\ 7Q10}{Taunton\ WWTP\ Design\ Flow}$$

$$Limit = \frac{\frac{3.7\mu g}{L} x\ (31.6\ cfs + 1{,}192\ cfs + \ 13\ cfs) - \frac{2\mu g}{L} x\ 31.6\ cfs}{13\ cfs}$$

$$Limit = 347\ \mu g/L$$

Given this limit is far greater than existing effluent quality no reasonable potential exists to exceed the saline copper criteria and this limitation should be deleted from the permit.

Response C31. The comment is incorrect in attempting to apply the dilution analysis done for nitrogen loads, which is based on a location several miles downstream of the discharge and a long term average concentration, to copper discharges.

First, the analysis of copper concentrations in the receiving water must be applied in the area of the discharge, where salinities are low and saltwater mixing is much lower. This is different from nitrogen load analysis, which was performed at a downstream point in order to address the portions of the receiving water where nitrogen was the limiting nutrient. While the salinity in the area of the nitrogen analysis averaged 22.35 ppt, at the point of discharge the salinity of the receiving water is in the range of 5 ppt. Using the same load balance equation that was applied for the nitrogen analysis in the correct location, and under the correct (7Q10) conditions, gives a tidal flow component of 6 cfs, not the 1,192 cfs cited in the comment:

Average salinity at ocean boundary (Rhode Island Sound) = 30 ppt
Average salinity at point of discharge = ~ 5 ppt
7Q10 flow = 31.6 cfs

(30 ppt * X cfs + 0 ppt * 31.6 cfs)/(31.6 cfs + X) = 5 ppt

X = 6 cfs ocean water

A revised calculation using this approach would result in a monthly average limit of 9.5 ug/l, not 347 ug/l as calculated in the comment. (The limit in the Draft Permit is 8 ug/l).

Second, EPA disagrees that the discharge should be presumed to undergo complete mixing with the tidal component of flow for the purposes of the copper analysis. While nitrogen loads were considered to be fully mixed on the long term (seasonal average) time scale under which nitrogen concentrations and loads were analyzed, the copper criteria are applicable at much shorter times scales of one hour (for the acute criterion) and four days (for the chronic criterion). At these time scales the potential for short term stratification of the fresh and salt water components and the tidal nature of the receiving water (flood, ebb and slack tides) may act to prevent full mixing with the (very small) ocean component of flow, so that it would not be correct to include that flow in the dilution calculation.

Therefore, EPA rejects the comment’s contention that the copper limit was incorrectly calculated. The copper limit analysis remains the same except, as noted in Response B7, a modification to reflect an updated 7Q10 value of 33.2 cfs.

D. The Nature Conservancy submitted comments by letter dated May 23, 2013

Comment D1. The Nature Conservancy supports the draft NPDES permit, and we agree with EPA that these limits are necessary to achieve water quality standards in the Taunton River and are justified by the best available science. Requiring the City of Taunton and other upstream dischargers to meet these new limits will help to protect and improve water quality in the Taunton River watershed and associated estuary. We view this permit as a key piece of a comprehensive and watershed-wide approach to restoring the environmental conditions of the Taunton River estuary.

The Taunton River is the longest free flowing coastal river in New England, with tidal influence reaching nearly 20 miles inland from Narragansett Bay. This extent of tidal influence maintains large, high quality, and globally rare brackish and freshwater tidal marshes. The river supports populations of environmentally-sensitive species such as river otters and freshwater mussels; three globally rare species of plants and two globally rare fish, bridle shiner and Atlantic sturgeon, inhabit the watershed.

The river provides important habitat for one of the largest spawning populations of river herring in New England and populations of other fish that play a critical role in supporting marine food webs. The River was designated Wild and Scenic in 2009, to protect six outstanding resource values: agriculture, ecology and biodiversity, estuary, fisheries, history and archaeology, and recreation.

Nutrient pollution from wastewater is widely recognized as a major source of impairment for Narragansett Bay and other estuaries throughout the region. The Conservancy is committed to efforts to reduce reactive nitrogen levels in this region because of persistent problems related to excessive nitrogen including widespread algal blooms causing shellfish harvest closures, low dissolved oxygen levels, and loss of eelgrass.

From Nantucket Sound to Block Island Sound to Great South Bay, NY, The Nature Conservancy is investing in estuarine restoration focused on salt marsh, seagrass, oysters, bay scallops, hard clams, and diadromous fish habitat. However, monitoring and research have shown that to be truly effective at scale, restoration success requires improved water quality to support a diversity and abundance of native species and habitats. Limiting nitrogen from wastewater treatment facilities is a high priority for the Conservancy in our efforts to improve water quality and thus ecosystem health in the region's estuaries.

The Conservancy strongly supports the scientifically-derived 3.0 mg/l total nitrogen seasonal limit described in the draft permit. As the draft permit describes, recent monitoring by the University of Massachusetts School for Marine Science and Technology (SMAST) has shown elevated total nitrogen concentrations in the Taunton River Estuary and Mount Hope Bay. SMAST and Narragansett Bay Water Quality Network monitoring data have also shown other indicators of eutrophic condition, including low dissolved oxygen and elevated chlorophyll-a concentrations. Based on these data, EPA has concluded that excess nitrogen in the Taunton River Estuary and Mount Hope Bay has reached the level of a violation of state water quality standards for nutrients and aesthetics, and has subsequently determined a nitrogen limit is necessary to meet water quality requirements. The Taunton WWTP currently constitutes 14% of the total watershed nitrogen load; a 51% reduction in nitrogen from the watershed, allocated among several sources, is needed. We agree that a numerical limit on total nitrogen should be included in the permit, and commend the use of recent local data to determine the limit. The Nature Conservancy is also supportive of other source reductions and limits needed to reach the overall required load reduction, including reductions in nonpoint source pollution.

> **Response D1.** EPA acknowledges the support of the Nature Conservatory for the permit limits on total nitrogen and the Conservancy's agreement with EPA's findings regarding the presence of eutrophication and violations of state water quality standards in this system. EPA agrees that other source reductions and limits are need to reach the overall required load reduction, including reductions in nonpoint source pollution. EPA is pursuing such reductions through its permitting processes. See, e.g., *Final NPDES Permit for MFN Regional Water Pollution Control Facility (formerly Mansfield WPAF), NPDES No. MA0101702*

(131 lbs/day TN limit); *Final NPDES Permit for Middleborough WPCF, NPDES No. MA0101591* (90 lbs/day TN limit).

Comment D2. The Conservancy is supportive of measures to protect and restore the water balance in the Taunton River watershed, consistent with goals of the 2008/2011 Taunton River Watershed Study and the 2004 Massachusetts Water Policy. We encourage careful consideration of flow limits for wastewater treatment plants in the watershed, to restore water balance and promote groundwater recharge, as well as to maintain consistency with anti-degradation regulations to prevent increased discharge of pollutants to already impaired waters. Therefore, we support maintaining the current flow limit of 8.4 MGD for the Taunton WWTP. We are also supportive of eliminating the Combined Sewer Overflow at West Water Street through collection system improvements or additional options.

Response D2. EPA acknowledges the comment and the valuable goal of protecting and restoring the water balance in the Taunton River watershed, but notes that the terms of this permit are designed to meet Clean Water Act requirements and that NPDES permit terms are not aimed at water balance and are not governed by the state documents referenced in the comment. As stated in the Fact Sheet, EPA will not permit any flow increase unless it meets CWA requirements, including antidegradation. Necessary state antidegradation review procedures have not been initiated. Without the requisite antidegradation justifications made under 314 CMR 4.04 and State authorization for an increased pollutant discharge obtained, EPA is not in a position to grant a flow increase request. See MassDEP, *Implementation Procedures for the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards* (2009). State approval processes such as Environmental Impact Report (EIR) proceedings also provide opportunity for public input and consider issues broader in scope than those addressed through NPDES permitting, and EPA encourages stakeholders to participate in those proceedings as well.

EPA acknowledges the Conservancy's support for elimination of the Combined Sewer Overflow at West Water Street; collection system improvements are ongoing and additional options shall be considered upon completion of the planned improvements, pursuant to the City of Taunton's administrative order.

Comment D3. In coalition with associations representing municipalities and water suppliers, The Nature Conservancy has supported public policy and funding for municipal infrastructure related to water quality including leading the legislative advocacy efforts to create a $20 million loan fund for dam removal and repair and advocating for capital funding legislation to implement the recommendations of the Water Infrastructure Financing Commission. The Conservancy will continue to help ensure public funding and incentives are available to help communities protect clean water to benefit people and the environment.

Response D3. EPA acknowledges the comment.

E. The Taunton River Watershed Alliance and Mass Audubon submitted joint comments by letter dated June 13, 2013

Comment E1. On behalf of the Taunton River Watershed Alliance, Inc. and Mass Audubon we submit the following comments on the Draft National Pollution Discharge Elimination System (NPDES) Permit #MA 0100897 for the Taunton Wastewater Treatment Plant (WWTP). Our organizations are committed to the protection and restoration of the water quality and natural ecosystems of the Taunton River. For the reasons explained below, we support the proposed effluent limits in the draft permit, including the proposed limit for Total Nitrogen (TN) of 3.0 mg/l and 210 lbs/day (monthly average), in effect for the period of May through October.

The Taunton River is the largest freshwater source to Mount Hope Bay. It supports habitat for 45 species of fish, globally rare freshwater and brackish tidal marshes and, together with its tributary the Nemasket River, the largest alewife run in Massachusetts. It was added to the National Wild and Scenic Rivers System in 2009. The Taunton Wastewater Treatment Plant discharges 8.4 million gallons per day of effluent to a saltwater portion of the Taunton River that is considered part of the Taunton River Estuary. This segment is classified under the Massachusetts Surface Water Quality Standards, 314 CMR 4.00 as SB waters with Restricted Shellfish Areas and impacted by discharge of Combined Sewer Overflows (CSOs). As such, it is designated as "habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation…" Under Section 303(d) of the Clean Water Act, the reach of the river immediately below the facility discharge is considered "impaired" for pathogens. Downstream reaches are impaired for organic enrichment/low dissolved oxygen as well as for pathogens. Mount Hope Bay is impaired for TN, dissolved oxygen (DO), temperature, fecal coliform and chlorophyll-a.

Information provided in the Fact Sheet that accompanied the draft permit demonstrates the scientific basis for the proposed discharge limits for TN. It describes a three-year water quality monitoring study conducted by the School for Marine Science and Technology at UMass- Dartmouth (SMAST). The study involved monthly sampling at 22 sites across Mount Hope Bay and the Taunton River Estuary from 2004 to 2006. The results showed pervasive low DO conditions in violation of the state standard throughout the Estuary and Bay, pervasive elevated concentrations of chlorophyll-a and elevated TN concentrations throughout the system. To determine the contribution of the Taunton WWTP and other facilities to the water quality violations, EPA analyzed nitrogen loading to the Taunton River Estuary and major tributaries using the USGS LOADEST program and focusing on the Estuary because "that area shows the greatest eutrophication impacts and greatest nitrogen concentrations." 40 CFR 122.44 (d)(1)(i) of the federal Clean Water Act states, "Limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause or contribute to an excursion above any state water quality

standard." Because nitrogen loading is well recognized as a major cause of nutrient enrichment, eutrophication and subsequent oxygen depletion, it is EPA's responsibility to establish TN effluent limits for facilities discharging to the Taunton River Estuary.
For these reasons, we support the EPA's proposed effluent limits, including the proposed discharge limit for TN. We urge you to retain the effluent limits in the draft permit.

> **Response E1.** EPA acknowledges the support of the Taunton River Watershed Association and Mass Audubon for the permit limits on total nitrogen and the organizations' agreement with EPA's findings regarding the presence of eutrophication and violations of state water quality standards in this system. EPA agrees that it must include TN effluent limits for this facility because of the well-recognized causal connection between nutrient enrichment, eutrophication and oxygen depletion and the extensive evidence of such eutrophication occurring in the Taunton River Estuary. EPA's findings were based on a mass loading analysis and the nitrogen mass limit has been retained in the Final Permit; the concentration limit has been removed from the permit as discussed in Response B2.

Additional issues we would like to address include:

Comment E2. Phosphorus (P) discharge.
We commend EPA for including a requirement to report average monthly phosphorus discharge from the WWTP in pounds per day and concentration. On page 35 of the Fact Sheet EPA notes that salinities in the Taunton River in the vicinity of the WWTP discharge are "quite low" even though this segment is classified as marine waters and that P may cause or contribute to water quality violations under low-salinity conditions. We urge you to continue to review all future monitoring data regarding concentrations of P and other indicators of eutrophic conditions in the receiving waters in the vicinity of this discharge to determine whether an effluent limit for P for this facility should be developed.

> **Response E2.** EPA agrees with the importance of tracking both phosphorus concentrations and indicators of eutrophic conditions in the receiving water to determine whether an effluent limit for phosphorus should be developed. As noted in the Fact Sheet, phosphorus is recognized to be the primary nutrient of concern in freshwater and can be a concern in estuarine waters as well, although specific concentrations associated with impairments in transitional waters such as in the area of the discharge have not been established. While current information does not show reasonable potential for phosphorus discharges to cause, or contribution to, nutrient related impairments, further data or changes in conditions (e.g. nitrogen reductions leading to change in limiting nutrient) may in the future indicate the need for permit limits for phosphorus. EPA will continue to review future data and has encouraged the permittee to incorporate the potential for adding treatment for phosphorus in the future, should it prove necessary.

Comment E3. Flow limit. We urge EPA to maintain the existing flow limit of 8.4 mgd. We understand that the City has requested that the flow limit be increased to 9 mgd. Absent a demonstration that the requested increase in flow would not result in increased discharge of regulated pollutants, increased flow from the WWTP would violate the antidegradation requirement of the Clean Water Act (Section 303(d)(4)(B)).

> **Response E3.** As stated in the Fact Sheet, EPA defers consideration of a request for an increase in flow until completion ofState antidegradation review procedures, which have not been initiated. Fact Sheet at 8. EPA agrees that any requested increase cannot be authorized unless it meets the antidegradation requirements of the Clean Water Act and Massachusetts SWQS.

Comment E4. West Water Street Combined Sewer Overflow (CSO).
The West Water Street CSO is located in a section of the city where runoff from a large watershed drains to low-lying areas during heavy rainstorms, resulting in major flooding of streets and other areas. The draft permit allows continued discharge of storm water/wastewater from this CSO subject to several technology-based effluent limitations including implementation of EPA's "Nine Minimum Controls." The permit requires that the CSO discharges "shall not cause or contribute to violations of federal or state water quality standards." It also requires that the permittee record all discharges including estimated duration and volume and National Weather Service precipitation data from the nearest gages.

We commend the City for making progress in recent years on reduction of inflow and infiltration to the storm/sewer conveyance system. We understand that wet weather overflows from the West Water CSO have occurred in the last three years (2010 – 2012), with the most prolonged discharges occurring during the heavy rains in March and April of 2010 (5-20-13 phone conversation between Priscilla Chapman and Susan Murphy). The draft permit does not establish a limit on number of discharge events, total volume or duration of discharges, or a specific calculation of whether federal or state water quality standards were violated. We urge you to require the City to assess whether violations of water quality standards are occurring as a result of discharges, and the frequency and severity of such violations; also to include benchmarks in the permit to determine whether acceptable progress is being made on reducing discharges from this CSO, and if not, what additional steps must be taken. We would welcome the opportunity to work with the City to identify low-impact development techniques that would increase infiltration of stormwater and reduce flooding impacts city wide, at a reasonable cost.

> **Response E4.** EPA also commends the City's progress in reduction of stormwater flow to the combined sewer system and notes that three additional phases of work have received funding commitments from the SRF program. EPA has not required the City to assess whether violations of water quality standards are occurring, but has made such a finding of violation itself as the basis for issuing compliance orders to the City that have required ongoing measures to reduce CSO discharges. EPA believes that evaluations by the City regarding the extent to which water quality violations are occurring are not as useful as

objective analyses performed by independent observers and agencies and therefore is not adding such a requirement to the Final Permit. With respect to the request for benchmarks in the permit, the frequency and estimated volume of overflows is tracked pursuant to the permit and the City's compliance order. EPA does not believe it would be useful to include monitoring of pollutant parameters of CSO discharges or set benchmarks, due in part to the high variability of CSO discharges with precipitation, which makes discharge benchmarks of little value in assessing short term progress. As EPA's current approach, requiring implementation of a program of collection system improvements, has been effective to date EPA is continuing this approach for this permit term.

EPA acknowledges the commenters' willingness to work with the City on low-impact development techniques to address stormwater and flooding and refers them to contact the City directly with respect to those issues.

F. Save the Bay submitted comments by letter dated June 14, 2013

Save The Bay is writing to support the draft discharge permit for the City of Taunton's wastewater treatment plant. This permit will protect the health of the Taunton River and Narragansett Bay by decreasing nitrogen inputs to the estuary. We support the change in water classification to from B to SB, given that the Taunton River is tidal at this point, and is influenced by salt water. We also support the flow limit being maintained at 8.4 mgd. This wastewater treatment plant represents only one of several sources of nutrients to this watershed, and any increase in pollutant discharge would further impair water quality.

Save The Bay strongly supports a total nitrogen limit of 3 mg/l because the case for this limit was well articulated in the draft permit through the discussion of existing data. Low dissolved oxygen and high chlorophyll readings continue to impair the Taunton River estuary. In the absence of a TMDL and numeric criteria for total nitrogen, these other data represent important indicators of estuary health.

The compliance schedule of five years for nitrogen upgrades to the treatment plant seems reasonable. These upgrades should also take into consideration future needs for expansion of the sewer system as described in Taunton's Comprehensive Wastewater Management Plan. Additional flow limits should not be permitted until they can be adequately treated to ensure compliance. We continue to support this approach for the Brockton facility as well, and look forward to seeing a new permit for that plant.

As the largest source of fresh water to Narragansett Bay, the Taunton River is an important regional ecosystem supporting rare habitats and aquatic species. Habitat quality has increased significantly in Mount Hope Bay and Upper Narragansett Bay since the elimination of once-through cooling at Brayton Point Power. We are now seeing shellfish beds reopened in Swansea, the returning of bay scallops, and an increase in fish habitat. If eelgrass and other native species are to be restored in the Upper Bay, algae blooms need to be reduced (as evidenced by high chlorophyll readings), and dissolved oxygen needs to maintain higher levels. Reduction in nitrogen from the Taunton River will allow this to happen.

> **Response F**. EPA acknowledges the support of Save the Bay for the permit limits on total nitrogen and its agreement with EPA's findings regarding the presence of eutrophication and violations of state water quality standards in this system.
>
> The compliance schedule for nitrogen upgrades to the treatment plant has been modified in the final permit in order to achieve the required nitrogen limits as soon as possible, having taken into account affordability as well as other considerations related to design (see Response B8 and B9 above).

G. The National Park Service and the Taunton River Stewardship Council submitted joint comments by letter dated June 17, 2013

Comment G1. Thank you for the opportunity to submit comments on the Draft NPDES permit for the City of Taunton (MA0100897). As you know, 40 miles of the Taunton River, from its headwaters to Mt. Hope Bay, have been designated as a National Wild and Scenic River. The River has been recognized because of its unique resource values including ecology and biological diversity, fisheries, estuarine resources, recreation, and history. The National Park Service, working with the Taunton River Stewardship Council, is responsible for protecting these resource values and the river in general. NPS has reviewed the Draft Taunton permit with the Stewardship Council, and submits the following comments for consideration as a joint comment of the NPS and Taunton River Stewardship Council.

Generally we believe that this draft permit strengthens the protection of water quality and dependent river resources and is an improvement over the current permit. The draft permit corrects and clarifies the water quality standard as Class SB – Shellfishing(R) and CSO. Class SB waters are designated as a habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation – these are all resource values identified in the Wild and Scenic River Stewardship Plan.

> **Response G1.** EPA agrees with the description of the Taunton River and its resource values and the commenter's support for the changes from the current permit.

Comment G2. We commend EPA and DEP for not increasing the permitted design flow until a thorough antidegradation review is completed. The Fact Sheet recognizes that The Taunton River is an effluent dominated river, that effluent has contributed to violations in water quality standards and that these violations (especially of nitrogen) have resulted in impacts on the river and in Mt. Hope Bay. All efforts should be placed on improving water quality to avoid these violations in the future. Perhaps with improved storm water management and reduction of inflow and infiltration, additional flow capacity will not be needed.

> **Response G2.** EPA acknowledges the commenters' support for a thorough antidegradation review of any increase in permitted design flow, as discussed in the Fact Sheet. EPA agrees that improvements to the City of Taunton's system have potential to limit the amount of additional flow capacity that will ultimately be requested.

Comment G3. In addition we support the inclusion of a nitrogen limit in order to move towards meeting water quality standards. These limits will be beneficial both in the river and in Mt. Hope Bay. We recommend that ambient monitoring continue in order to assess the impact of these limits on the River and Bay. It would be helpful to have monitoring through the winter months as well when there will not be a limit imposed to confirm that the nitrogen moves through the system as expected. In order to fully address nitrogen issues, local communities must also address nonpoint sources of pollution.

> **Response G3.** EPA acknowledges the commenters' support for the nitrogen limit. EPA agrees that a continued ambient monitoring program will assist in assessing the impacts of these limits and EPA supports the monitoring efforts of MassDEP, the Taunton River Watershed Association and other parties. EPA notes that effluent monitoring for nitrogen is required during winter months, although at a lesser frequency.

Comment G4. Although phosphorus is not generally the limiting factor in nutrient enrichment of marine systems, the Taunton River at the point of discharge is only slightly saline, and phosphorus could in fact have an influence on eutrophication. We support the monitoring requirement for phosphorus and encourage this monitoring to be done year round. Data in other parts of Massachusetts indicates that phosphorus may remain in the water system through the winter months, so it would be important to track this.

> **Response G4.** EPA agrees that future data may show that phosphorus discharges could have an influence on eutrophication in the less saline portions of the Taunton River and has included monitoring requirements to assist in future assessment of the role of phosphorus discharges.

Comment G5. Addressing combined sewer overflows is another important part of helping to reach water quality standards. We support the added focus on working with the City of Taunton to minimize inflow and infiltration within the sewer system. System mapping and development of a maintenance plan may also help to decrease outfall flows, and may lessen the need for a permitted increase in design flows in the future.

We commend EPA and DEP for putting forth a permit that contributes to the attainment of water quality standards in the Taunton River. Good water quality helps to support the ecology, fisheries, biological diversity and recreational opportunities for which the river is so highly valued.

Response G5. EPA acknowledges the comments support for the operation and maintenance and other aspects of the permit.

H. The Rhode Island Department of Environmental Management (RIDEM) submitted comments by letter dated June 17, 2013

RIDEM supports the majority of the permit as drafted. However, RIDEM offers the following comments that we would like to formally submit as part of the record.

Comment H1. Given that the Rhode Island portion of the downstream receiving waters of Mt. Hope Bay are listed on RIDEM's 2012 303d list (Category 5 waters) as impaired for nitrogen and dissolved oxygen and that the discharge of nitrogen from the Taunton WWTP contributes to the unacceptably high nitrogen load to these waters, DEM strongly supports the Taunton WWTP TN limit of 3.0 mg/l.

Response H1. EPA acknowledges the support of RIDEM for the TN limit. EPA notes that the Final Permit limit is a load limit of 210 lb/day (calculated based on a 3 mg/l effluent concentration at design flow) as discussed in Response B2.

Comment H2. The draft permit authorizes the discharge from one Combined Sewer Overflow (CSO), located at West Water Street, and requires the implementation of Nine Minimum Controls for this CSO. Part I.F.1.c of the permit also requires that the discharge from this CSO "not cause or contribute to violations of federal or state Water Quality Standards." Page 7 of the permit Fact Sheet indicates that the City of Taunton (City) is working under an Administrative Order (AO) to evaluate its ability to eliminate discharges from the CSO through collection system improvements and that, if collection system improvements will not result in the elimination of CSOs, the AO requires the City to submit a plan and schedule for additional options by October 2013. Although the City is currently working towards elimination of CSOs and the permit requires that CSOs not cause or contribute to violations of Water Quality Standards, the permit does not include any CSO monitoring. Therefore, the permit does not allow a determination to be made if the CSO is causing or contributing to a violation of Water Quality Standards. As indicated in the permit Fact Sheet both the Massachusetts and Rhode Island downstream waterbodies are designated for primary and secondary recreation and shellfishing. In addition the permit Fact Sheet indicates that the Taunton River is impaired due to pathogens. Based on this information, if similar monitoring is not already in the AO, the permit should include requirements for 1) monitoring of the CSO discharge that include a) bacteria ambient water sampling up and downstream of the discharge point(s) as well as the combined sewage discharge itself, and b) flow measurements of the combined sewage discharge to determine the total volume of combined sweater, and 2) analysis of the collected data to document that the discharge is not impacting shellfishing use in downstream Massachusetts and Rhode Island waters.

Response H2. The comment is correct that the permit does not require sampling of the CSO discharge. EPA's view is that the nature of CSO discharges is generally well understood, particularly with respect to bacteria content. EPA has previously determined that the City's CSO discharges cause or contribute to a violation of water quality standards and current efforts are appropriately aimed at eliminating the conditions leading to discharges.

Comment H3. The draft permit has been updated to reflect the fact that the discharge from the WWTP is to a saltwater waterbody. However, the toxicity testing requirements in the permit are still based on freshwater species. Since the discharge is to a saltwater waterbody, with a salinity of 22.35 ppt (see page 31 of the permit Fact Sheet), the permit should either use saltwater species for toxicity testing or the fact sheet should further explain the basis for conducting toxicity testing using freshwater versus saltwater species. Since the permittee can obtain its dilution water from another source, the DEM does not believe that the source of the dilution water should dictate what species is used in the toxicity testing.

Response H3. The comment is incorrect about the salinity in the vicinity of the discharge, which has ranged between 0 and 5 ppt in water quality monitoring by the TRWA. The higher salinity is cited in the Fact Sheet in connection with the loading analysis for total nitrogen, which is based on a location downstream of the discharge. Freshwater toxicity testing is more directly applicable to waters of the salinities in the vicinity of the discharge; in fact saltwater toxicity testing would require adjusting the salinity of the receiving water upwards in order to be in the range required for testing. See EPA, *Marine Acute Toxicity Test Procedure and Protocol* at 4, 6 (2012) (requiring testing at 25 ppt ± 10% for all dilutions by adding dry ocean salts).

Continued use of freshwater toxicity testing has been requested by MassDEP to allow for comparability in results over the entire period of record. Changing testing protocols at this date would result in the inability to effectively compare results over the long term. Continued use of the freshwater protocol also allows for a continuous record of water quality parameters at the site used for collection of receiving water samples. On the other hand, while there may be some differences in response of saltwater organisms, the dilution of the discharge in the more saline portions of the estuary is much higher than in the more freshwater segment. For example, in the area where the salinity was 22.35 ppt EPA calculated average ocean flow of 1,192 cfs, which when combined with the freshwater flow would provide a dilution factor of about 100 (compared to about 3 in the vicinity of the discharge). Therefore freshwater toxicity is more critical for this discharge.

For these reasons, EPA is maintaining the requirement for freshwater toxicity testing in the Final Permit.

Comment H4. Finally, RIDEM noted some minor clerical errors that should be corrected. Specifically, Page 11 of the permit Fact Sheet indicates that bacteria "sampling is required three times per week", but page 2 of the permit includes a frequency of "2/week". This discrepancy should be corrected. Also, Table 11 of the permit Fact Sheet lists the median receiving water analytical data for nickel as 24.0 ug/l. At these levels a permit limit would be required. However, based on the data presented in Table 11, it appears that the correct median should be non-detect, which would result in a permit limit not being required as reflected in the draft permit. This typographical error should also be corrected to avoid confusion.

> **Response H4.** EPA apologizes for the typographical errors in the Fact Sheet. Bacteria sampling is required two times per week and the median receiving water nickel concentration is "non-detect". The Fact Sheet is a final document that is not subject to change after its release, but EPA notes these errors and corrections for the record.

I. The Upper Blackstone Water Pollution Abatement District submitted comments by letter dated April 18, 2013

Comment I1. The Upper Blackstone Water Pollution Abatement District (the "District") hereby comments on the co-permittee provisions of the draft National Pollution Discharge Elimination System ("NPDES") Permit No. MA0100897 issued on March 20, 2013 to The City of Taunton, for discharges from the Taunton Wastewater Treatment Plant ("Taunton"). The draft permit names the Towns of Raynham and Dighton (the "Towns") as co-permittees "for specific activities required in Sections I.B -Unauthorized Discharges and I.C- Operation and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the collection systems owned and operated by the Towns."

The District was a party to, and challenged similar co-permittee provisions in its NPDES permit, in the matter of *Upper Blackstone Water Pollution Abatement District,* NPDES Appeal Nos. 08- 11 to 08-18 & 09-04, 14 E.A.D. _*(Order denying review in part and remanding in part,* EAB, May 28, 2010 *("Upper Blackstone* EAB Remand Order") in which the U.S. EPA Environmental Appeals Board ("EAB") remanded to Region 1 permit provisions that sought to regulate sewer lines owned, operated and maintained by separate municipalities as "co-permittees." In the *Upper Blackstone* EAB Remand Order, the EAB found that "[t]he Region has not sufficiently articulated in the record of this proceeding a rule-of-decision, or interpretation, identifying the statutory and regulatory basis for expanding the scope of NPDES authority beyond the treatment plant owner and operator to separately owned and operated collections systems that discharge to the treatment plant." Remand Order, at 18.

In the draft permit issued to Taunton, the Region again fails to identify a legal basis for its position that it has authority to regulate the Towns as co-permittees. While the draft Taunton permit fact sheet and document entitled *Analysis Supporting EPA Region I*

NPDES Permitting Approach for Publicly Owned Treatment Works that include Municipal Satellite Sewage Collection Systems ("Region 1 's Analysis") seeks to respond to questions raised by the EAB in the Remand Order concerning EPA's legal authority to regulate separately owned municipal collection systems, the Region simply sets forth a series of old and new arguments to justify the regulatory position it previously staked out: that satellite systems can be included in the POTW permit. At footnote 10 of Region I 's Analysis, the Region acknowledges that its "position differs from that taken by the Region in the *Upper Blackstone* litigation. There, the Region stated that the treatment plant was the discharging entity for regulatory purposes." Now, according to the Region, it "has clarified this view upon further consideration of the statute, EPA's own regulations and case law and determined that a municipal satellite collection system in a POTW is a discharging entity for regulatory purposes."

The Region makes this change with no basis to justify it. In the *Upper Blackstone* matter, and before the EAB, the satellite collection systems were not "discharging," but the Region could nonetheless regulate them. In the face of EAB's rejection of this argument, and in light of the Region's "clarified view," the Region now says satellite collection systems are "dischargers."

The Region's explanation for its change in position is insufficient and contrary to law. "[A]n agency changing its course must supply a reasoned analysis." Motor Vehicle Manufacturers Association v. State Farm Mutual Automobile Insurance Co., 463 U.S. 29, 57 (1983). In Region l's Analysis, it says only that it has "clarified [its] view." The Region, however, must "explain the evidence which is available" supporting that change and "must offer a 'rationale connection between the facts found and the choice made."' Id. at 52. The Region does not, and cannot, identify new evidence or facts. The discharge point, at Outfall 001, has not changed. The owners or operators of the POTW and satellite collection systems have not changed.

In sum, the fact sheet and the Region 1's [sic] Analysis fail to demonstrate that EPA has legal authority under the Clean Water Act ("CWA") or any NPDES regulation or sound factual basis to include the Towns as "copermittees" to a NPDES permit. For the reasons set forth in this letter, EPA should strike the co-permittee provisions from the draft Taunton permit.

> **Response I1.** Region 1's Analysis ("Analysis") provided is in response to the remand order of the EAB. *See* Upper Blackstone 18-20. This fact is a sufficient basis for the Region's clarification of the legal basis for its permitting practice. Furthermore, any changes in the Region's position are only changes to the legal basis for its action, not a change to the action itself. *Motor Vehicle Manufacturers Association* deals with multiple changes to agency regulations instead of merely clarifications of the legal basis for action; therefore, the case is inapplicable here. 463 U.S. at 37-38.
>
> It is not clear why the commenter considers the EAB's rejection of one of the Region's previous arguments as an "insufficient" basis for EPA to reconsider and

clarify the legal basis for its policy. In light of the EAB's remand, the Region reexamined its policy and performed a thorough and reasoned analysis of the legal and policy bases for its determination that co-permitting is an appropriate and necessary approach to the issues raised by satellite collection systems. That Analysis has been documented in a 16 page explanation with supporting exhibits that was included at Attachment C to the Fact Sheet.

EPA agrees that the facts have remained the same, and that indeed that is why its determination that satellite collection systems should be regulated as co-permittees has also remained the same. EPA has simply proffered an alternative legal theory in light of the EAB remand. This is not an agency "changing its course" as suggested in the comment, but a revised legal analysis. That legal analysis demonstrates that EPA has legal authority to include the Towns as "copermittees". There is no change in substantive law or policy. Since it started imposing specific collection system requirements EPA has consistently expressed its view that satellite collection systems were in the scope of NPDES jurisdiction and that permit coverage could be required.

On February 4, 2015, the Environmental Appeals Board (EAB) upheld a Region 1 NPDES permit issued to a POTW treatment plant. *In re: Charles River Pollution Control District*, NPDES Appeal No. 14-01, February 4, 2015. The permit had included municipal satellite sewer collection systems conveying wastewater to the plant as co-permittees and subjected them to operating and maintenance requirements despite their opposition to inclusion on the permit.

The Towns of Bellingham, Franklin, Medway and Millis, and the Upper Blackstone Water Pollution Abatement District are the owners of satellite collection systems that convey wastewater to a wastewater treatment plant owned by the Charles River Pollution Control District. The Towns appealed the permit. They argued principally that the municipal collection systems (1) did not discharge pollutants to U.S. waters under the Act given their distance from the ultimate outfall point, as well as the existence of an intervening point source providing treatment (that is, the POTW treatment plant) and, (2) they did not, in any event, apply to be covered under the NPDES permitting program.

The Board disagreed and found that the Region has authority under the CWA and EPA's regulations to include the Towns as co-permittees on the permit, and the administrative record supports the Region's decision to include the Towns as co-permittees. In rejecting the Petitioners' claims, the Board upheld each of the Region's legal arguments and factual justifications on a range of interesting and important CWA issues. It found that the Region reasonably construed the NPDES regulatory definition of "publicly owned treatment works" to include the Towns' municipal satellite sewer collection systems. Because the Towns' sewer collection systems are components of the treatment plant that discharges into waters of the United States, the Towns are subject to NPDES regulation. Additionally, it held that under NPDES regulations pertaining to a discharger's "duty to apply," where there are multiple dischargers responsible for the same discharge, then an application from one of the dischargers constitutes an application from all.

The decision confirms EPA's authority under the Clean Water Act to require independently owned systems discharging to a centralized POTW to obtain an NPDES permit, and adequately encompasses the objections raised by commenters on the permit's co-permittee provisions. The decision, along with EPA's Response to Petition are incorporated herein as they pertain to the legal authority to include portions of the collection systems as co-permittees.[33]

Comment I2. In Section III, Legal Authority, of its Analysis, EPA seeks to justify the imposition of co-permittee requirements upon the Towns based upon the definition of "publicly owned treatment works" or "POTW." Citing to the broad definition of "POTW" which includes the term "sewage collection systems," EPA contends that a POTW includes not only the treatment works, owned and operated by Taunton, but also the miles of sewers, pipes, equipment, and other systems owned, operated and maintained by the Towns. Based on the definition of POTW at 40 CFR 122.2, EPA concludes, "... a satellite collection system owned by one municipality that transports municipal sewage to another portion of the POTW owned by another municipality can be classified as part of a single POTW system discharging to waters of the U.S." Analysis, p. 10. "Under this approach, the POTW in its entirety will be subject to NPDES regulation as a point source discharger under the Act." Attachment I, p. 1.

Missing from EPA's Analysis is any acknowledgement of or reference to the operative terms of the CWA that trigger NPDES permitting: "discharge of any pollutant by any person" from a point source. CWA § 301(a). It is the act of discharging a pollutant from a point source that gives rise to NPDES permitting. The ownership of a collection system, as part of a greater POTW, does not require a NPDES permit under the CWA. The Towns' collection systems have no point source. The Towns do not own, operate or control any point source. Instead, the Towns send waste water to a separately owned treatment plant for treatment and discharge at a point source. Taunton, not any Town, is a person who discharges from a point source. Consequently, the reach of EPA's authority to regulate "dischargers" is limited to Taunton.

The CWA at Section 301(a) provides that "except in compliance [with a NPDES Permit] the discharge of any pollutant by any person shall be unlawful." The term "discharge of a pollutant" means "any addition of any pollutant to navigable waters from any point source." CWA § 502(12). The CWA authorizes EPA to "issue a permit for the discharge of any pollutant." CWA § 402(a)(I). Thus, under the CWA it is only those persons who

[33] These the Board's decision is available at http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/F89699D1A0710BCF85257DE200717A93/$File/Denying%20Review....pdf and the Region's Response to the Petition is located at http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Filings%20By%20Appeal%20Number/C158D222DA78251E85257D63004CC1EA/$File/Region%201%20Response%20to%20CRPCD%20Petition%20(092614).pdf.

discharge a pollutant from any point source to navigable waters who are subject to NPDES permitting requirements. CWA § 502(14) (defining point source as "any discernible, confined and discreet conveyance ...to which pollutants are ... discharged").

EPA incorrectly states that the "NPDES regulations ... identify the "POTW" as the entity subject to regulation," citing to 40 C.F.R. § 122.21 (a). Analysis, p. 8. The "entity" subject to regulation is the "person who discharges or proposes to discharge." 40 C.F.R. § 122.21 (a)(l). Such persons are required make application for a permit and "[a]pplicants for new or existing POTWs must submit information required" by 40 C.F.R. § 122.21(j), using Form 2A. 40 C.F.R. § 122.2l(a)(2)(B).

EPA says "[w]hen a municipal satellite collection system conveys wastewater to the POTW treatment plant, the scope of NPDES authority extends to both the owner/operators of the treatment facility and the municipal satellite collection system, because the POTW is discharging pollutants. Analysis, p. 8. According to the permit, at Part I.A. I., "the permittee *[i.e.* Taunton] is authorized to discharge treated industrial and sanitary wastewater from outfall serial number 001 to the Taunton River," and at B, "[t]his permit authorizes discharge only from the outfall listed in Part I. A.1." The Towns do not own or operate outfall 001.

The Towns are not persons who discharge from a point source. The Towns do not "discharge a pollutant" as the term is defined under CWA. No doubt, the Towns "discharge"- as that term is commonly used- wastewater via conveyance systems to a point source. The CWA, however, is specific: persons who discharge pollutants from a point source need a NPDES permit to do so. The Towns have no "direct discharge." See 40 CFR 122.2 (defining "direct discharge" to mean "discharge of a pollutant").

At footnote 12 of the Analysis, EPA states that some municipal satellite collection systems have erroneously "argued that the addition of pollutants to waters of the United States from pipes, sewer or other conveyances that go to a treatment plant are not a "discharge of a pollutant" under 40 CFR § 122.2." See 40 CFR 122.2 (persons who "discharge[] through pipes, sewers, or other conveyances owned by a ... municipality which do not lead to a treatment works" are persons who "discharge of a pollutant" under 40 CFR 122.2. (emphasis supplied)). In support of this position, EPA says that there is "[o]nly one category of such discharges ...excluded: indirect discharges" and that "the satellite system discharges at issue here are not indirect discharges."

While it is true that the definition of "discharge of a pollutant" at 40 CFR 122.2 excludes pollutants from "indirect discharges," that does not mean that only "indirect dischargers" fall outside the scope of "discharge of a pollutant" or that an interpretation of the definition of "discharge of a pollutant" which excludes wastewater from separately owned collection systems to a treatment plant is not reasonable in light of the definition of other terms, described above, that require permitting from point sources. The use of the term "treatment works" as it appears in the regulatory definition of "discharge of a pollutant" does not preclude this interpretation.

EPA seeks to conflate the term "discharge" used in "discharge of a pollutant" with the "transfer of flow" or "conveyance" from a municipal conveyance system to the POTW treatment plant or works that has a point source "from which pollutants are discharged." The word "discharge" is a defined term: "when used without qualification [it] means the "discharge of a pollutant." 40 CFR § 122.2. There is no "discharge" from a municipal conveyance system. And in this case, there is but one discharge point from a POTW. See draft permit Part I.A. I. and B. It is that point source "from which pollutants are discharged" that triggers NPDES permitting, and only those persons who own or operate that point source are subject to such permitting. That point source is not owned by the Towns. In short, the jurisdictional reach under the CWA does not include persons, such as the Towns that own, operate and maintain sewer lines, that provide a conveyance for waste waters for treatment and discharge by another person from its point source.

> **Response I2.** The commenter's objection relies on an overly narrow interpretation of "point source" that would restrict Region 1's permitting authority only to Outfall 001. However, a point source is "*any* discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit . . " 40 C.F.R § 122.2. "The definition of a point source is to be broadly interpreted." *See Dague v. City of Burlington*, 935 F.2d 1343, 1354 (2d. Cir. 1991) (*rev'd on other grounds, see City of Burlington v. Dague*, 505 U.S. 557 (1992)). The pipes and other conveyances comprising the satellite collection systems operated by the Towns fall within this broad definition of point source,[34] and the satellite collection systems that comprise a portion of the POTW discharge pollutants into the waters of the United States.[35] Under EPA's regulations, a POTW "means a treatment works as defined by section 212 of the Act, which is owned by a State or municipality (as defined by section 502(4) of the Act)." 40 C.F.R. § 403.3(q) (incorporated by reference in 40 C.F.R. 122.2).
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> The Towns may be subjected to NPDES permitting requirements because they operate portions of the POTW that discharges to U.S. waters. Section 212(2)(A) of the Act defines treatment works to mean, *inter alia*, "intercepting sewers, outfall sewers, sewage collection systems, pumping, power and other equipment, and their appurtenances." POTW also "includes *any* devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant." 40 C.F.R. § 403.3(q). Courts have upheld this broad interpretation of POTW:
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>> Section 1292 . . . gives a broad definition to the term 'treatment works' to include various appurtenances to a municipal sewage treatment plant . . . the EPA has defined the term 'publicly-owned

[34] *See* 40 C.F.R. § 403.3(q) ("POTW . . . includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant[.]").
[35] *United States v. City of Monominee*, 727 F. Supp. 1110, 1114 (W.D. Mich. 1989) ("The CWA recognizes two classes of direct dischargers: publicly owned treatment works (POTW), and point sources other than POTW's").

> treatment works' consistently with the statute. Specifically, the term 'means a treatment works as defined by section 212 of the Act, which is owned by a state or municipality. . . .' That definition goes on to provide that the term 'includes sewers, pipes and other conveyances only if they convey waste water to a POTW treatment plant,' . . . . Here, for example, the City of Burlington's sewer is included in the definition because it conveys waste water to the Massachusetts Water Resource Authority's treatment works.

United States v. Borowski, 977 F.2d 27, 30 n.5 (Oct. 7, 1992). The fact that the pollutants discharged pass through further portions of the POTW operated by others is immaterial to the status of the satellite collection facilities as point sources. *See Dague*, 935 F.2d at 1354-55; Analysis at 11. Dischargers do not need to own, operate or control the actual point source (outfall) to be subject to Clean Water Act jurisdiction. EPA has authority to require permits even when the discharge goes through a conveyance owned or operated by another discharger. *See, e.g.,* 40 C.F.R. § 122.44(m) (contributors to privately owned treatment works) and 122.26(a)(4)–(6) (stormwater associated with industrial activity that is discharged through a municipal or non-municipal separate storm sewers). Therefore, the Towns may be regulated as co-permittees because the satellite collection facilities constitute point sources that discharge pollutants under the CWA.[36]

The Towns are "persons" who "discharge" within the meaning of the Act and implementing regulations because they own or operate portions of the POTW and add pollutants to the waters of the United States. As discussed *supra*, the satellite collection systems constitute portions of a point source (the POTW) that discharges to U.S. waters; this interpretation is consistent with the definitions of "point source," "treatment works," "POTW" and "discharge" in the CWA and its regulations.[37] The commenter argues that the Towns merely "provide a conveyance for waste waters for treatment and discharge by another person from its point source." According to this comment, only the POTW Treatment Plant, and not other portions of the integrated treatment works, discharges pollutants from a point source. However, this claim relies on an overly narrow definition of point source that would exclude large portions of the POTW without any principled basis, as well as an overly restrictive definition of discharge. The Towns' "collection" and "conveyance" via connecting pipes and sewers of "waste

[36] This has been EPA's consistent position, applied in contexts other than co-permitting, *see, e.g.*, *EPA 2008 Construction General Permit,* and is essential to the effectiveness of the Clean Water Act. If dischargers were able to sidestep the requirements of the CWA by virtue of transferring ownership of the outfall to another entity, the CWA would be rendered ineffective. Indeed under the argument presented in the comment, it does not matter whether the co-permitted towns' sewage even receives treatment – they would be outside CWA jurisdiction so long as they do not own the last section of pipe where the raw sewage entered the water body.

[37] The Towns plainly fall within the definition of "municipality," as public bodies with jurisdiction over disposal of sewage and other wastes, and as such also fall within the express definition of "person," under 40 C.F.R. § 122.2.

waters" from one portion of the treatment works (the collection system) to another (the POTW Treatment Plant) before its ultimate discharge into the Taunton River is an addition of any pollutant or combination of pollutants to water of the US from a point source. *See* 40 C.F.R. § 122.2 (defining "Discharge" and Discharge of a pollutant"); *Id.* at 403.3(r) (defining POTW treatment plant as a subset of the POTW). *See supra* at Response #34.

Under the Act, a party does not cease to discharge pollutants merely because the pollutants pass through a third-party conveyance before reaching the waters of the United States. *See, e.g., Dague* 935 F.2d at 1355 (holding that leachate from a landfill constituted a discharge from a pollutant even though it passed through railroad culvert owned by a third party to reach the waters of the United States); *Puerto Rico Campers' Association v. Puerto Rico Aqueduct and Sewer Authority*, 219 F. Supp. 2d 201, 217 (D. Puerto Rico 2002) (holding that conveyance of pollutants from one waste water treatment plant to another constituted a "discharge" under the CWA); *United States v. Velsicol Chemical Corp.*, 483 F. Supp. 945, 947 (D.C. Tenn. 1976) (holding that discharges into a municipal sewer system are covered under the CWA because "[d]efendant knows or should have known that the city sewers lead directly into the Mississippi River and this is sufficient to satisfy the requirements of discharging into 'water of the United States,'"). *See generally Pepperell Assocs. v. United States EPA*, 246 F.3d 15 (1st Cir. 2001) (factory owner fined for oil that spilled from a boiler gasket, into an industrial drain, through a conduit, and eventually into a creek). EPA thus rejects the commenter's attempt to impose an arbitrary limitation on the reach of the Act and NPDES permitting, *i.e.*, that the permitted entity must own the actual outfall pipe. The municipal satellite collection systems are themselves operators of point sources that discharge pollutants to U.S. waters, even if their contribution to the combination of pollutants in the final discharge from the outfall at the POTW treatment plant operated by the City of Taunton cannot be easily distinguished.

Region 1 retains the option to treat a POTW comprised of a treatment plant and municipal satellite collection systems as a single, integrated discharger and to impose protective permit conditions on the several operators of satellite collection facilities, as appropriate to assure compliance with the Act, including but not limited through the prevention or minimization of SSOs, as explained more fully in the Analysis. The Region's decision to condition the permit for the discharge in this manner falls within its authority under the Act and implementing regulations. *See* CWA §§ 402(a)(2) ("The Administrator shall prescribe conditions for such permits to assure compliance with the requirements of paragraph (1) of this subsection, including conditions on data and information collection, reporting, and such other requirements as he deems appropriate."); 301(b)(1)(C) (requiring "any more stringent limitation, including those necessary to meet water quality standards …or required to implement any applicable water quality standard established pursuant to this Act"); 40 C.F.R. §§ 122.4(a) (no permit may be issued, "When the conditions of the permit do not provide for compliance with the applicable requirements of the CWA, or regulations

> promulgated under CWA"); 122.43 ("In addition to conditions required in all permits (122.41 and 122.42), the Director shall establish conditions, as required on a case by case basis, to provide for and assure compliance with all applicable requirements of the CWA and regulations."); 122.44(d)(5) (requiring inclusion of "any more stringent limitations…in accordance with section 301(b)(1)(C) of the Act.)[38]
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> The comment appears to imply that the Towns should be treated as indirect dischargers. However, an indirect discharge is "the introduction of pollutants into a POTW from any *non-domestic* source" that is regulated by EPA's pretreatment regulations. 40 C.F.R. § 403.3(i). Non-domestic discharges are regulated separately because "Congress recognized that the pollutants which some indirect dischargers release into POTWs could interfere with the operation of the POTWs." *Environmental Protection Agency v. City of Green Forest*, 921 F.2d 1394, 1398 (8th Cir. 1990). Because of this, indirect dischargers are subject to separate pretreatment standards in order to avoid interfering with the operation of POTWs. *See Natural Resources Defense Council, Inc. v. Environmental Protection Agency*, 790 F.2d 289, 293 (Apr. 30, 1986). Unlike indirect dischargers, municipal satellite collection systems are not a non-domestic discharger "introducing pollutants" to POTWs as defined in 40 C.F.R. § 122.2. Instead, they themselves fall within the definition of "POTW," whose components consist of the municipal satellite collection system owned and operated by one entity and a treatment system owned and operated by another entity.

Comment I3. The Region's rationale for seeking to impose co-permittee requirements upon the Towns is not consistent with the references to "municipality" in the definition of POTW found at 40 C.F.R.§ 403.3(q), and the definition's statement that "[t]he term also means the municipality ... which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works." The final sentence of the regulatory definition of POTW in the pretreatment regulations at 40 C.F.R.§ 403.3(q), refers to municipalities that have "jurisdiction over . .. the discharges from such a treatment works." The term "municipality" as defined in CWA § 502(4) "means a city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes .. .. " (emphasis is supplied). The Towns have jurisdiction over only their collection systems. They have no jurisdiction over the treatment plant or point source of discharge. Thus, the Region's view that a satellite collection system is part of a POTW is inconsistent with the final sentence of the regulatory definition of POTW in the pretreatment regulations. That that sentence provides that "POTW" may "also" mean a municipality has no bearing on this limitation.

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[38] This approach is analogous to EPA practice with respect to stormwater permits where multiple entities are treated as co-permittees when operating different portions of a storm sewer system. *See* National Pollutant Discharge Elimination system Permit Application Regulations for Storm Water Discharges, 55 Fed. Reg. 47,990, 48,044 (Nov. 16, 1990).

Response I3. Here the commenter relies on an overly restrictive interpretation of POTW. As stated *supra* at Response I2, these collection systems are point sources and constitute a portion of the POTW. Therefore, the Towns meet the CWA's definition of municipality because they have jurisdiction over a portion of the system for disposal of sewage.[39] *See also* Analysis at 12-13.[40]

The Region, in addition, does not interpret the word "also" to be a statement of limitation or exclusion.[41] It is immaterial to the question at hand that the Towns have no jurisdiction over the POTW treatment plant if they fall within other portions of the definition of POTW; as one example, the POTW "includes sewers, pipes and other conveyances . . . if they convey wastewater to a POTW Treatment Plant." 40 C.F.R. § 403.3(q). The Towns clearly operate their own collection systems, which expressly fall within the definition of "treatment works," s*ee* CWA § 212(2)(A), and are moreover encompassed by CWA § 212(2)(B) as well ("any other method or system for preventing, abating reducing, storing….separating, or disposing of municipal waste").

Comment I4. The absence of EPA authority to make the Towns co-permittees is borne out by the permitting process and EPA's regulations at 40 CFR § 122.21, Subpart1 B, Permit Application Requirements. 40 CFR § 122.2 l(a), entitled "Duty to Apply,"

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[39] "Disposal of sewage" is not limited to final discharge from the Treatment Plant outfall. "Disposal" is defined as the "the act or process of disposing" and an "orderly placement or distribution." *Webster's Ninth New Collegiate Dictionary* (1983). The Towns' collection system, or "the common lateral sewers, within a publicly owned treatment system, which are primarily installed to receive waste waters directly from facilities which convey waste water from individual structures or from private property," *see* 40 C.F.R. § 35.905, clearly fall within this definition. They are part of a method, process or system designed to receive sewage ("orderly placement") and convey it ("distribution") to the Treatment Plant.

[40] The Region's co-permitting rationale is consistent with the first part of the pretreatment program's regulatory definition of POTW, because the Region is only asserting NPDES jurisdiction over satellite collection systems that are owned by a "State or municipality (as defined by section 502(4) of the Act)." Again, the term "municipality" as defined in CWA § 502(4) "means a city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes…" Thus, in order to qualify under this definition, a wastewater collection system need only be "owned by a State or municipality." There is no requirement that the constituent components of a regionally integrated POTW, *i.e.*, the collection system and regional centralized POTW treatment plant, be owned by the same State or municipal entity. EPA does not believe that the commenter intends to argue that the copermittee Towns are not "municipalities" within the meaning of CWA § 502(4). To the extent that is the commenter's argument, it is not reasonable to suggest that Towns with sewer commissions and sewer departments running sewage collection systems under local sewer bylaws somehow do not have "jurisdiction over disposal of sewage" simply because they do not own the outfall. This is consistent with EPA's interpretation of the term "municipality" in other CWA contexts; for example, "grants for the construction of treatment works" under CWA § 201(g)(1) were available only to a "State, municipality, or intermunicipal or interstate agency."

[41] This sentence ensures that the municipality that owns the outfall, or has jurisdiction over the indirect discharges, shall be considered within the definition of POTW even if it is not responsible for the "devices and systems . . . or . . . sewers, pipes and other conveyances" referenced in the rest of the definition. This is the clear meaning of the word "also" (contrast this with the "only if" language in the preceding sentence of the regulatory definition), and the comment's argument that the use of the word also "has no bearing" is unpersuasive.

provides that "[a]ny person who discharges or proposes to discharge pollutants ... must submit a complete application . . . in accordance with this section [122.21] and part 124 of this chapter." 40 CFR § 122.2 l(a)(i). (emphasis supplied). Consistent with the CWA, EPA regulations require persons "who discharge pollutants" have a NPDES Permit. See CWA § 30l(a)("except in compliance with this section and [other sections] of this title, the discharge of any pollutant by any person shall be unlawful"), and CWA § 402(a) (authorizing EPA to issue a permit "for the discharge of any pollutant"). Throughout, the permit application regulations at 40 CFR § 122.21 contemplate that it is the "person" who discharges pollutants who must obtain a NPDES Permit. Nowhere in 40 CFR § 122.21 is there any reference to "co-permittee" or any suggestion that separately owned and operated conveyance systems are subject to NPDES permitting. Consistent with CWA, it is the person who discharges a pollutant from a point source who is subject to NPDES permitting requirements.

While 40 CFR § 122.21(a)(l) requires an application only from those persons who discharge from a point source, the regulations anticipate circumstances when a facility may be owned or operated by separate entities. The permit application regulations provide that "[w]hen a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit." 40 CFR § 122.2 l(b). Thus, it is operator of the "point source" that must have the permit. "Owner or operator" means "the owner or operator of any "facility or activity" subject to regulation under the NPDES program." 40 CFR § 122.2. "Facility or activity" means "any NPDES "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program." 40 CFR § 122.2. (emphasis supplied).

Nothing in 40 CFR § 122.21 requires or suggests that "satellite collection systems" need to make application for a NPDES permit. While the regulations contemplate that "[m]ore than one application form may be required from a facility," multiple applications are only required where there may be multiple point sources, not multiple owned parts of a POTW. See, 40 CFR § 122.21(a)(2)(i) ("More than one application form may be required from a facility depending on the number and types of discharges or outfalls found there."). Again, the regulations require persons who discharge from point sources to have the NPDES permit.

> **Response I4.** The Towns are owners and operators of the collection systems, which as portions of the POTW are facilities or activities subject to regulation under the NPDES program within the meaning of 40 CFR § 122.2. As municipalities (*i.e.*, public bodies with jurisdiction over disposal of sewage and other wastes), they are also “persons” within the meaning of that regulation. The Region’s decision to impose NPDES conditions on these point source dischargers relies on statutory authorities underlying the NPDES permitting program—Section 301(b)(1)(C), 402(a)(1)-(2) and implementing NPDES regulations, *e.g.*, §§ 122.4, .44 and .43—and is in keeping with overall objectives of the Act to restore and maintain the integrity of the Nation’s waters, including through the prevention and minimization of SSOs. EPA does not view the lack of any explicit reference to “co-permittees” or similar label in 40 C.F.R. § 122.21, or to “satellite

collection systems," to preclude it from framing an NPDES permit based on these authorities to encompass owners and operators of portions of the POTW that are "up system" of the ultimate outfall point but that nevertheless are point sources that add pollutants to U.S. waters.[42] It is sufficient that the Act and implementing regulations make reference to discharges of pollutants from point sources to U.S. waters, terms that encompass discharges from the POTW's collection systems. Accordingly, the permit application requirements are not dispositive of the question of whether the Region is legally authorized to impose NPDES permit requirements on portions of the treatment works beyond the POTW treatment plant.

Federal regulations implementing the NPDES program require that any person who discharges pollutants must submit a complete permit application to the NPDES permitting Director. Specifically, 40 C.F.R. § 122.21(a) applies to the Towns because they are a point source dischargers discharging pollutants through portions of the POTW operated by them. *See supra* at Response I2. The commenter claims that "multiple applications are only required where there may be multiple point sources. However, regulations only state that "[m]ore than one application form may be required from a facility depending on the number and types of discharges or outfalls found there;" there is nothing to indicate that EPA is barred from permitting each of the several operators of a regionally integrated POTW, where the combined discharge flows through a single outfall. *See* 40 C.F.R. § 122.21(a)(2)(i).

EPA regulations do not specifically address how NPDES permit coverage is to be obtained by satellite collection system components of POTWs. As explained in the Analysis, ordinarily the treatment plant operator applies for the POTW's NPDES permit, and discharges from the POTW, including those from the collection systems operated by others, are covered by the permit issued to the treatment plant. Satellite collection system operators have generally not submitted separate permit applications for coverage under the POTW permit, because the treatment plant operator generally submits the information necessary for the permit writer to write terms and conditions in the permit applicable to all components of the POTW on the basis of the treatment plant's application. Whether or not to require additional information from a satellite collection system by way of an application is separate and apart from whether the collection system should be named as a co-permittee on the POTW permit. Both are case-by-case decisions, one based on the information available to the permit writer; the second based on whether the permit writer determines that specifying co-permittees on

[42] The fact that standard forms do not precisely address the specific circumstances of one type of potential permittee is not indicative of the scope of CWA requirements, particularly where EPA has indicated its intent not to require separate permit applications from satellite collection systems. EPA notes that specifically tailored applications are not provided for other small subsets of facilities that do not have treatment plants, for example, the CSO discharges from the Cities of Cambridge, Somerville and Worcester.

the POTW permit is necessary for all terms and conditions of the permit to be implemented. Here, with respect to information, the Region determined that there was no need for any information from the satellite systems because it anticipated receiving substantially identical information from the City as it would from the Towns.. As a separate matter, the Region determined that naming the Towns as co-permittees was necessary for implementation of the POTW permit.[43]

Similarly, 40 C.F.R. § 122.21(b) has no bearing on whether satellite collection systems are subject to NPDES permitting requirements. That provision specifically addresses "a facility or activity [that] is owned by one person but is operated by another person." *Id.* Here, the City of Taunton does not own *or* operate the satellite collection systems. Instead, like the satellite communities, the City operates a component of the POTW. Contrary to the commenter's assertion, as operators of components of the POTW, the satellite collection systems – as well as the Taunton WWTP - are "a facility or activity" subject to NPDES permitting requirements.

This approach is similar to the approach applicable to contributors to privately owned treatment works. See 40 CFR §122.3 and §122.44(m). As with outlying jurisdictions contributing to a POTW, the NPDES regulations do not describe the process by which the contributors to the privately owned treatment works must apply for a permit or how to issue a permit to the treatment works if contributors do not apply.[44] Nothing in EPA regulations bars EPA from issuing a permit or requiring application information from more than one owner or operator of a point source. For example, in the case of the general permit that covers discharges of stormwater from certain construction sites, EPA requires both the owner and the operator of the site to be covered by the permit. While this situation is not expressly addressed in the regulation, EPA determined that both the operator and owner needed permit coverage to control discharges from construction sites where different entities have control over different aspects of the operations necessary to comply with the NPDES permit.

The Towns have had an opportunity to express their views during the public comment process on whether they should be co-permittees on this permit. EPA has not changed its conclusion that permit coverage is necessary in order to implement the NPDES permit requirements related to the collection system and ultimately to achieve the effluent limitations applicable to the integrated POTW system.

[43] This comment as a whole reflects a flawed understanding of the Act. The commenter uses permit the application requirements as the basis for deeming satellite collection systems point source dischargers. The satellite collection systems are subject to permit application requirements because they are point source dischargers, not vice versa.

[44] But the regulations are clear that, as a point source that is discharging through a treatment system that they do not own or operate, the contributor's discharge may be addressed either in a permit issued to the Privately Owned Treatment System or in a permit issued to the contributor.

Comment I5. Nowhere in Application Form 2A is there any reference to a "co-permittee" or suggestion that a person may make application, with a treatment works applicant, as co-permittee. See http://www.epa.gov/npdes/pubs/fina l2a.pdf. At page 1 of 21 of Form 2A, applicants "must complete questions A.8. through A.8. A treatment works that discharges effluent to surface waters of the United States must also answer questions A.9. through A. l 2." Part A.1 through A.8. of Form 2A asks for information about the facility and applicant, and asks " is the applicant the owner or operator (or both) of the treatment works?" (A.l ., A.2.). Form 2A asks for collection system information; specifically, "information on municipalities and areas served by the facility ... type of collection system (combined vs. separate) and its ownership (municipal, private, etc.)." (A.4.). Form 2A asks for information about the "collection system(s) used by the treatment plant." (A.7.). If the NPDES regulations contemplated permitting of collection systems, one would expect to see in each of these parts of the NPDES Application Form 2A some reference to the owners or operators of collection systems as "copermittees." There is none. Form 2A also requires information on discharges. At Part A.8.a., Form 2A asks "Does the treatment works discharge effluent to waters of the U.S.?_ Yes_ No." Form 2A obviously contemplates "discharges" from a "treatment works," not a POTW. Finally, at Patt A. 1.8.a.(i)-(v), Form 2A seeks information on the "types of discharge points the treatment works uses." No "collection system" or "satellite collection system" is listed here. This should be no surprise; collection systems and satellite collection systems do not have "discharge points" under the NPDES regulations.

Response I5. The comment here erroneously presumes that Form 2A defines the scope of EPA’s authority to require an operator of a point source to submit information and determines all situations for which a permit is necessary. Comments I6 and I7 further elaborate on this same theme. Form 2A is intended for gathering the requisite information, on a routine basis, in order to effectively issue NPDES permits; it is not designed to determine the scope of the NPDES program or to limit the information EPA is authorized to collect. *See* NPDES Application Requirements for POTWs and other TWTDSs [Other Treatment Works Treating Domestic Sewage], 64 Fed. Reg 42,434, 42,434 (Aug. 4, 1999) (“EPA is revising these regulations to ensure that permitting authorities obtain the information necessary to issue permits which protect the environment in the most efficient manner,”). As noted in response to the previous comment, requiring a satellite collection system to be a co-permittee is not the routine or usual situation. Therefore, the comment’s reliance on Form 2A to define the scope of Region 1’s authority in implementing the NPDES program is misplaced.

The commenter claims Form 2A “obviously contemplates ‘discharges’ from a ‘treatment [plant],’ not a POTW.” This is unpersuasive. Form 2A requires information on the collection system beyond the POTW treatment plant. *See* Form 2A at A.4, A.7. This implies that a permitting interest more extensive than merely the POTW treatment plant. Furthermore, the regulations creating Form 2A state that it is applicable to POTWs instead of using the more restrictive term “POTW treatment plant.” NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42,434; *see also* 40 C.F.R. 403.3(r) (“[t]he term POTW

> Treatment Plant means that portion of the POTW which is designed to provide treatment,").[45]
>
> The commenter's next claims that the failure of Form 2A to discuss the potential status of satellite collection systems as co-permittees implies that the NPDES program is not intended to cover satellite collection systems as co-permittees. Again, Form 2A is not intended to define the scope of the NPDES permitting program, or to deal with all possible permitting variations or configurations that may be necessitated by site-specific information or circumstances relative to a discharge in order to address compliance with the Act. Here, the Region has determined that it is important to frame the permit to include requirements on the POTW's collection systems in order to address, *inter alia*, SSOs resulting in part from poorly maintained and operated collection systems and in so doing to assure compliance with the requirements of Section 301 of the Act and applicable water quality standards.
>
> The commenter finally claims that Form 2A's inquiries into the discharge points of a POTW treatment plant imply that it is not intended to cover operators of satellite collection facilities as co-permittees. Such an inference is misplaced. Form 2A requires information regarding many portions of the POTW including both the treatment plant and the satellite collection facilities.

Comment I6. In its Analysis, EPA would "waive" the Towns' permit applications and all requirements of 40 CFR § 122.21. In its effort to justify including the Towns as co-permittees, EPA both misapplies and takes 40 CFR § 122.21 (j) entirely out of context. First, waivers can only be granted to those persons who have submitted applications. Nothing in the fact sheet suggests that the Towns applied for any NPDES permit. § 122.21(j) provides that:

> Permit applicants must submit all information available at the time of permit application. ... The Director may waive any requirement of this paragraph if he or she has access to substantially identical information. (emphasis supplied).

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[45] *See also* NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42,443:

> "The permit writer needs to know what areas are served and the actual population served in order to calculate the potential domestic sewage loading to the treatment plant. The information on the community served by the NPDES permittee is also useful for providing notice and public comment for permit reissuance and for public education. One commenter requested clarification of the term "population served." By this term, EPA means the number of users of the system. EPA has expanded this requirement from the proposal in order to obtain a more complete picture of the area served by the POTW. The additional information on the satellite systems will be used by the permit writer to identify areas where there is a potential for unpermitted discharges in the collection system prior to the treatment plant. The identified areas may necessitate further investigation."

40 CFR § 122.21(j) does not support the EPA's proposed waiver of any application by the Towns; it allows only for the waiver of certain information in a permit application submitted by the applicant.

> **Response I6.** The Region has not waived the application requirement relative to the POTW in its entirety (a facility or activity, or "point source" that is subject to regulation under the NPDES program") under 40 C.F.R. § 122.21, only as to the operators of the satellite collection systems. The Region still required and received an application for the POTW discharge by the City of Taunton. Receiving a single application from the operator of a portion of the discharging POTW is a reasonable way to structure the permit application process, particularly in the case of a regionally integrated treatment works where there is a centralized administrative entity responsible for operating the POTW Treatment Plant and coordinating wastewater flows from the multiple satellite collection system operators. The Region has determined that "requiring a single permit application executed by the regional POTW treatment plant owner/operator will deliver 'substantially identical information'" to any application submitted by the Towns. Exhibit C at 26**.** Therefore, Region 1 decided to "waiv[e] NPDES permit application and signatory requirements applicable to the . . . municipal satellite collection systems." *Id.* These requirements—including signatory requirements—are present at 40 C.F.R. § 122.21(j); therefore, the Region may waive any or all of these requirements as to the municipal satellites. *See* NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42440. The purpose of the waiver provision is to "allow the Director to waive *any requirement in paragraph (j)* if the Director has access to substantially identical information." NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42440 (emphasis added). This broad waiver authority is intended to reduce the inefficiency of redundant information submissions by regulated entities. *Id* at 42,435. The Towns' interpretation of the waiver process would undermine this goal by requiring that the Region receive either an incomplete or redundant application before stating that the application is unnecessary. See Response I7.

Comment I7. Second, EPA cannot unilaterally waive requirements of an application without a request to do so; the person must seek a waiver and that waiver must be approved by EPA. 40 CFR § 122.21 (e) requires a complete application before EPA may issue a permit "([EPA] shall not issue a permit before receiving a complete application for a permit"), and a "waiver application" must be made, and approved, or not acted upon by EPA. 40 CFR § 122.21(e)(2) provides:

> A permit application shall not be considered complete if a permitting authority has waived application requirements under paragraphs (j) or (q) of this section and EPA has disapproved the waiver application. If a waiver request has been submitted to EPA more than 210 days prior to permit expiration and EPA has not disapproved the waiver application 181 days prior to permit expiration, the permit

application lacking the information subject to the waiver application shall be considered complete.

Nothing in the fact sheet suggests that the Towns have made application for a waiver from the application requirements. 40 CFR § 122.21(j) says only that the "Director may waive any requirement of this paragraph if he or she has access to substantially identical information." This provision, in context, is obviously designed to allow waiver of some of the detailed and often duplicate information required under Section 122.21 and in EPA's permit application forms. As noted above, Form 2A consists of 21 pages and requires detailed information about the "treatment works." See Form 2A at http://www.epa.gov/npdes/pubs/final2a.pdf. Nothing in Section 122.21(j) suggests EPA may waive the requirement at 40 CFR § 122.21(a)(J) mandating an application from those persons who discharge from a point source. Likewise, nothing in Section 122.21(j) suggests EPA may waive the requirement for application signatures and certifications and authorizations required by 40 CFR § 122.22, none of which the Towns have provided. EPA seeks to ignore its own regulations and to issue a permit to Towns who have not applied for an NPDES permit.

Response I7. "The goal of the application requirements is to provide the permit writer with the information necessary to develop appropriate NPDES permits consistent with requirements of the CWA." *See* NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42440. In this case, a timely re-application for an NPDES permit for the discharge from the POTW has been received, signed and certified by operator of the POTW Treatment Plant. As the recipient of contributing discharges from outlying portions of the POTW for ultimate discharge into the receiving water as well as the primary coordinator of the member communities, the City is uniquely positioned to provide information regarding the wider treatment works. EPA has the necessary information relative to the POTW's collection system and system-wide I/I from the City of Taunton's application and the City's Annual I/I Report (a summary of all actions taken to minimize I/I and includes flow data, I/I trend analysis and unauthorized discharges from the collection system) to process the permit.

The commenter claims that Region 1 may only waive permit application requirements after receiving a waiver application from the permit applicant. EPA disagrees, as 40 C.F.R. § 122.22(j) states, "The director may waive *any requirement of this paragraph* if he or she has access to substantially identical information." The phrase "any requirement of this paragraph" includes the requirement to submit a waiver application in the first place. The commenter further argues that the waiver provisions of part 122.21(j) are "obviously designed to allow waiver of some of the information required" but may not be used to waive the signatory and certification requirements. However, the signatory requirement is intended to certify that the information provided is—to the best of the signatory's knowledge—complete and accurate. 40 C.F.R. § 122.22(d). Such a certification and signature have been received from the operator POTW

Treatment Plant. The information receiving certification adequately characterizes data and operations relative the wider treatment works, and EPA has deemed this sufficient to process the permit. In the case of permitting municipal satellite collection systems where the Region is not requesting any information from a contributing discharger, the Region has determined that certification and signature of the POTW Treatment Plant operator is sufficient. The signatory and certification requirement serves no purpose if the preceding information has been waived.

As a general matter, EPA does not foresee the need to require individual permit applications from each municipal satellite collection system operator, and anticipates that information in the POTW Treatment Plant operator's permit application and other information in the administrative record will be sufficient to establish permit terms for the entire treatment works. As EPA moves forward with its practice of co-permitting, as appropriate, municipal satellite collection facilities, it will indicate whether it requires additional material from those entities operating the outlying portions of the treatment works to render the permit application "complete" under 40 C.F.R. § 124.3(c) after receiving and reviewing the re-application for the permit from the primary permittee, typically the operator of the POTW Treatment Plant.

Comment I8. EPA would further seek to cause the Towns to "consult and coordinate with the regional POTW treatment plant operators to ensure that any information provided to EPA about their respective entities is accurate and complete." Exhibit C to Analysis. EPA would then use its authority, under CWA § 308, to compel information from the Towns, should EPA deem information provided by the permit applicant incomplete. CWA § 308, however, applies to "the owner or operator of any point source." CWA § 308(a) (A). Information may be obtained only from such owner or operator of the "point source," the "effluent source" or "the owner or operator of such source." CWA § 308(a)(B)(i) and (ii). Again, because the Towns do not own or operate any point source, CWA § 308 would not apply to them. Under EPA's Analysis, it would read out of the regulations the entire Section 122.21. EPA's cobbled approach and legal analysis toward finding authority where there is none is not supported by its own regulations.

Response I8. The Towns are operators of a point source because the POTW itself is a point source and the Towns operate portions of that point source. *See* Response I2. Therefore, the Region may use its § 308 authority to request information.

Comment I9. Nothing in the EPA's permit writers' manual evidences any authority to permit satellite collection systems as part of a greater POTW. Indeed, EPA's pennit writers' manual make no reference to permitting of satellite collection systems or to the owner of such systems being subject to a NPDES permit as a co-permittee. See EPA NPDES Permit Writers ' Manual, September 2010 http://www.epa.gov/npdes/pubs/pwm 2010.pdf.

Instead, the Permit Writers' Manual supports the analysis provided above. It says: "Under the national program, NPDES permits are issued only to direct dischargers." Permit Writers' Manual Section 1.3.4. (emphasis supplied). As noted above, a "direct discharge" means the "discharge of a pollutant" and "discharge of a pollutant" means "any addition of any pollutant to navigable waters from any point source." CWA § 502(12). 40 CFR 122.2. Section 4.1 of Permit Writers' Manual addresses "Who Applies for a NPDES Permit?" No mention is made in this section to satellite collection systems or to the owners of such systems. Instead, the Permit Writers Manual states:

> The NPDES regulations at Title 40 of the *Code of Federal Regulations* (CFR) 122.2 1(a) require that any person, except persons covered by general permits under § 122.28, who discharges pollutants or proposes to discharge pollutants to waters of the United States must apply for a permit. Further, § 122.21 (e) prohibits the permitting authority from issuing an individual permit until and unless a prospective discharger provided a complete application. This regulation is broadly inclusive and ties back to the Clean Water Act (CW A) section 301 (a) provision that, except as in compliance with the act, " ... the discharge of any pollutant by any person shall be unlawful." In most instances, the permit applicant will be the owner (e.g., corporate officer) of the facility. However, the regulations at§ 122.2 1(b) require that when a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit. The regulations also require the application to be signed and certified by a high-ranking official of the business or activity. The signatory and certification requirements are at § 122.22. Permits (and applications) are required for most discharges or proposed discharges to waters of the United States; however, NPDES permits are not required for some activities as specified under the *Exclusions* provision in § 122.3.

Section 4.3. of the Permit Writers' Manual addresses what forms must be submitted and at Exhibit 4-3 describes "the types of dischargers required to submit NPDES application forms, identifies the forms that must be submitted, and references the corresponding NPDES regulatory citation." Again, in Section 4.3 there is no mention of satellite collection systems or need for the owners of such systems to have a NPDES permit.

> **Response I9.** The commenter's attempt to read the quoted language from the Manual as some sort of limitation on permit coverage, or the extent of EPA's legal authority under Section 301 and 402, is unconvincing. The Permit Writers Manual does not address every permitting scenario. For example, it does not address the procedures by which dischargers into privately owned treatment systems may be designated as needing permits. Nor does it discuss the permitting of industrial discharges into a separately permitted municipal storm system. Moreover, the Permit Writers' Manual (the "Manual") is a guidance document and does not contain legally binding standards concerning the issuance of NPDES permits:

> CWA provisions and regulations contain legally binding requirements. This document does not substitute for those provisions or regulations. Recommendations in this guidance are not binding; the permitting authority may consider other approaches consistent with the CWA and EPA regulations. When EPA makes a permitting decision, it will make each decision on a case-by-case basis and will be guided by the applicable requirements of the CWA and implementing regulations, taking into account comments and information presented at that time by interested persons regarding the appropriateness of applying these recommendations to the situation. This guidance incorporates, and does not modify, existing EPA policy and guidance on developing NPDES permits. EPA may change this guidance in the future.

U.S. EPA, *NPDES Permit Writers' Manual*, at inside cover page (Sept. 2010) (*available at* http://cfpub.epa.gov/npdes/writermanual.cfm). Therefore, the discussion of EPA regulations at Response I2 takes precedence over any inferences drawn from the Manual. Furthermore, the Manual's discussion of POTWs makes clear that it intends to cover the entirety of the POTW and not merely the treatment plant:

> The federal regulations at § 403.3 define a POTW as a treatment works . . . that is owned by a state or municipality [as defined in CWA section 502(4)]. The definition includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It *also includes sewers, pipes, and other conveyances* only if they convey wastewater to a POTW.

NPDES Permit Writers' Manual at § 2.3.1. The Permit Writers Manual's discussion of the definition of "point source" also demonstrates that the term has a broad reach and includes the POTW:

> Pollutants can enter water via a variety of pathways including agricultural, domestic and industrial sources. For regulatory purposes, these sources generally are categorized as either point sources or nonpoint sources. The term point source is defined in CWA section 502(14) and § 122.2 to include *any* discernible, confined, and discrete conveyance from which pollutants are or may be discharged. *Point source discharges include discharges from publicly owned treatment works (POTWs)*, industrial process wastewater discharges, runoff conveyed through a storm sewer system, and discharges from concentrated animal feeding operations (CAFOs), among others (see Exhibit 1-2). Return flows from irrigated agriculture and agricultural stormwater runoff specifically are excluded from the definition of a point source.

NPDES Permit Writers' Manual at § 1.3.4 (emphasis added). The preceding passages demonstrate that, to the extent that inferences may be drawn from the Permit Writer's Manual, any inferences ultimately support the Region's approach.

Comment I10. EPA's position that the collection system is part of the POTW does not advance its argument that "satellite collection systems" should be deemed "co-permittees" in NPDES permits. If the collection system is part of the POTW, it should matter not who owns what part or portions as it is the "person" who owns or operates that portion of the POTW that "discharges a pollutant" from a point source who is required to have a permit for that discharge. EPA acknowledges that the Towns do not own or operate the entire POTW. While EPA seeks "to refashion permits issued to regionally integrated POTWs to include all owners/operators of the treatment works *(i.e.,* the regional centralized POTW treatment plant and the municipal satellite collection systems)," permit conditions "pertain only to the portions of the POTW collection system that the satellites own." Analysis, p. 7. See Permit I.l.C. Because the Towns do not own or operate the point source - Outfall 001 -they are not a person who may be subject to a NPDES permit.

Response I10. The comment relies on an overly restrictive definition of point source. The point source in question here is not merely Outfall 001, it is the entire POTW. See Response I2.

Comment I11. While the Analysis addresses generic problems associated with municipal sanitary sewer collection systems, including SSO's and I/I, nothing in the fact sheet or Analysis indicates that SSO's or I/I are not being appropriately addressed by the Towns or is a problem that requires or calls for the Towns to be identified as a copermittee in this permit, or that co-permittee status may advance any I/I or SSO problem. Exhibit B of the Analysis, entitled" Analysis of extraneous flow trends and SSO reporting for representative systems," has nothing to do with Taunton or the Towns. EPA improperly seeks to use information not material to Taunton or the Towns to justify imposition of co-permittee requirements.

Nor does the fact sheet or Analysis explain why operation and maintenance of the Towns' sewer systems are not being adequately regulated by under State regulations at 310 CMR 12.00. 312 CMR 12.02 defines "Sewer Systems" to mean "pipelines or conduits, pumping stations, force mains, and all other structures, devices, appurtenances, and facilities used for collecting and conveying wastes to a site or works for treatment or disposal" The purpose of 314 CMR 12.00 is to insure "proper operation and maintenance of ... sewer systems within the Commonwealth," and sets forth numerous requirements for the proper operation and maintenance of such systems. See 314 CMR 12.03(4), (10), and (11); 12.04(4); 12.05(5), (6) and (12); and 12.07(7).

Response I11. In the case of the Taunton WWTP, the satellite communities represent approximately 25% of the population served. Fact Sheet Table 2. The City of Taunton states that it has no power to address operation and maintenance and I/I in this extensive portion of the POTW collection system; the City's Comment B10 states: "Taunton's inter-municipal agreements with contributing communities only regulate the quantity and character of the wastewater that enters the Taunton collection system to ensure that the integrity and performance of its wastewater infrastructure are protected. Taunton assumes no further responsibility." In this case, copermitting is a necessary tool to meet EPA's objective of establishing a comprehensive and preventative POTW-wide approach to a POTW operated by multiple persons that does not necessarily turn on the performance of any particular Town:

> Because ownership/operation of a regionally integrated POTW is sometimes divided among multiple parties, the owner/operator of the treatment plant many times lacks the means to implement comprehensive, system-wide operation and maintenance ("O & M") procedures. Failure to properly implement O & M measures in a POTW can cause, among other things, excessive extraneous flow (*i.e.*, inflow and infiltration) to enter, strain and occasionally overload treatment system capacity. This failure not only impedes EPA's national policy goal concerning preservation of the nation's wastewater infrastructure assets, but also frustrates achievement of the water quality—and technology-based requirements of CWA § 301 to the extent it results in sanitary sewer overflows and degraded treatment plant performance, with adverse impacts on human health and the environment.

Analysis at 1. Given that the sewer system is interconnected, and in order to address I/I issues before they worsen and result in adverse impacts on the receiving waters, EPA has determined that this protective, comprehensive approach makes sense.

EPA's experience with other collection systems and satellite collection systems in the state are material to its assessment of the relative strength of alternative approaches to operation and maintenance requirements for satellite collection systems in general through permit requirements. EPA again notes that the City itself is not arguing that operation and maintenance of satellite systems is or can be adequately addressed through requirements placed on it as owner of the treatment plant.

Similarly, EPA's analysis does not depend on the sufficiency or insufficiency of State regulations. State regulations, while welcome, are not subject to EPA enforcement and are not a substitute for permit requirements.

EPA notes that its treatment of satellite collection systems is a subpart of a much larger effort to ensure adequate operation and maintenance of collection systems in general through permit requirements. The importance of the collection systems components has been the subject of a great deal of attention, and progressively more stringent standard permit requirements, over the last decade. The majority of collection systems are owned by the treatment plant owner and are subject to the same operation and maintenance requirements that EPA seeks to impose here, due to the importance of these systems in overall treatment works performance. The pertinent question therefore is not whether there is a specific reason that Towns are subject to these requirements, but why a simple division of ownership should excuse important portions of the treatment works from these requirements.

Comment I12. In its Determination on Remand issued to the District on July 7, 2010, the Region indicated it would "coordinate broadly within EPA in developing a response" to the *Upper Blackstone* EAB Remand Order. Nothing in Region I's Analysis indicates this was done. Because EPA's authority to permit satellite collection systems impacts not only the Region, but is of national significance, and because the issues raised by the EAB concerning EPA's legal authority to regulate co-permittees were limited to those raised by the District, the Region's effort to permit satellite collection systems as co-permittees or otherwise through separate permits should be presented to the public for review and comment on a national level.

In June 2010, EPA did seek through "listening sessions" information from the public concerning permitting of satellite collection systems. See 75 Fed. Reg. 30395 (June 1, 201 0) ("EPA is considering whether to propose modifying the (NPDES] regulations as they apply to municipal sanitary sewer collection systems"). In contemplating a potential regulatory change, EPA asked specifically for input on the question: *Should EPA propose to require permit coverage for municipal satellite collections systems?* Because EPA was "considering clarification of the framework for regulating municipal satellite collection systems under the NPDES program," and doing so via a regulatory change, the Region should not include at this time, and based on unsupported legal authority outlined above, the Towns as co-permittees in this permit. Until such time as EPA addresses this issue on a national level and gives the public the opportunity review and comment on the legal Analysis set forth by the Region, it should not include co-permittee provisions in this permit.

Response I12. The Analysis does not signify a binding change in EPA national policy and does not require comment on the national level. First, the Analysis merely interprets existing legal authority; it neither changes nor purport's to change EPA's power with respect to NPDES permitting. *See* Analysis at 1 ("This interpretative statement provides an explanation to the public of *EPA Region 1's* interpretation of the Clean Water Act," (emphasis added)). Second, the Analysis does not establish binding changes to EPA's permitting practice in the future. The Analysis explicitly provides that "Region 1's decision will be made by applying the law and regulations to the specific facts" and not by automatically regulating operators of satellite collection systems through the co-permittee system." *Id.* Third, the Analysis is distinguishable from EPA's previous inquiries into permitting satellite collection facilities. In 2010, EPA inquired into whether it should "propose to *require* permit coverage for municipal satellite collection systems." National Pollutant Discharge Elimination System (NPDES) Permit

> Requirements for Municipal Sanitary Sewer Collection Systems, Municipal Satellite Collection Systems, Sanitary Sewer Overflows, and Peak Wet Weather Discharges From Publicly Owned Treatment Works Treatment Plants Serving Separate Sanitary Sewer Collection Systems, 75 Fed. Reg. 30, 395, 30,401 (June 1, 2010). The Analysis, however, makes no binding changes to national NPDES regulations. Finally, even if Region 1's analysis of its legal authority is of national significance, the Towns cite no authority for the proposition that this significance alone should subject Region 1's analysis to national commentary if such commentary is not required by the Administrative Procedure Act. *See infra* response to comment I13 for discussion of the APA.
>
> The Region coordinated within EPA, including with EPA Headquarters, in developing a response to the remand. EPA did not at any time state that it would defer this issue to a national rulemaking, and the Region has a strong basis for determining that a specific local approach is required in the two states for which EPA is the permitting authority. New England states are unusual nationwide for the strong level of local control exercised by relatively numerous cities and towns (351 in Massachusetts), leading to at times to extensive collection systems controlled by local authorities but discharging via a regional or semi-regional treatment plant such as Taunton's. EPA Region 1 also has extensive experience in permitting of these facilities as the direct permitting authority in two states. In this context this issue is both distinctive and a high priority for the Region, apart from any national rulemaking.

Comment I13. EPA's attempt to change the legal requirements applicable to satellite systems is a legislative rule that EPA is issuing without formal notice and comment rulemaking in violation of the Administrative Procedure Act ("APA"). In trying to distinguish between legislative rules and policy statements, courts have found that "if a document expresses a change in substantive law or policy the agency intends to make binding, or administers with binding effect, the agency may not rely upon the statutory exemption for policy statements, but must observe the APA's legislative rulemaking procedures." *Gen. Elec. Co. v. E.P.A.,* 290 F.3d 377,383-84 (D.C. Cir. 2002. *See also Appalachian Power Co. v. EPA,* 208 F.3d I 015 (D.C. Cir. 2000) (finding that an EPA guidance document that imposed new monitoring requirements relating to the operation of permit programs under the Clean Air Act was a legislative rule because it was treated as binding), *Nat'/ Mining Ass 'n v. Jackson,* 816 F. Supp. 2d 3 7, 42-49 (D.D.C. 2011) (finding a violation of the Administrative Procedure Act where EPA sought to impose a new process for obtaining section 404 permits without notice and comment rulemaking), *New Hope Power Co. v. US. Army Corps of Eng'rs,* 746 F. Supp. 2d. 1272, 1283-84 (S.D. Fla. 2010) (striking Corps guidance purporting to amend the prior converted croplands exclusion because it amounted to new legislative rules that created a binding norm and the Corps failed to comply with the APA).

In the case of the draft Taunton permit, there is no question that EPA intends its new position regarding satellite system to have binding effect. Moreover, it is telling that in 2001, EPA began a rulemaking that purported to give the agency direct authority over satellite systems, in the context of a propose rule pertaining to sanitary sewer systems. *See* National Pollutant Discharge Elimination System (NPDES) Permit Requirements for Municipal Sanitary Sewer Collection Systems, Municipal Satellite Collection Systems, and Sanitary Sewer Overflows (proposal signed Jan. 4, 2001) (formerly available at http://cfpub.epa.gov/npdes/regresult.cfm?program id=4&view=all&tvpe=3, but now withdrawn from EPA's website). EPA later withdrew that proposed rule.

Response I13. The commentor claims that the Region's Analysis is a legislative rule that ought to be subject to notice and comment under the Administrative Procedure Act ("APA"). Under the APA, there are no procedural requirements when an agency promulgates "interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice." 5 U.S.C. § 553(b). The Analysis here is an interpretative statement utilized by the Region in the context of NPDES permit proceedings. The decision of whether to include co-permittees in any given NPDES permit is adjudicated on a case-by-case basis in light of the facts and circumstances surrounding the discharge and receiving waters. Therefore, it is not subject to the "notice and comment" requirements of the APA. *See* Approach at 1.

The D.C. Circuit has identified four factors that that may render an ostensibly interpretive rule legislative: "(1) whether in the absence of the rule there would not be an adequate legislative basis for enforcement action or other agency action to confer benefits or ensure the performance of duties, (2) whether the agency has published the rule in the Code of Federal Regulations, (3) whether the agency has explicitly invoked its general legislative authority, or (4) whether the rule effectively amends a prior legislative rule." *Syncor International Corp. v. Shalala*, 127 F.3d 90, 96 n. 8 (D.C. Cir. 1997) (citing *American Mining Congress v. Mine Safety & Health Admin.*, 995 F.2d 1106, 1112 (D.C. Cir. 1993)). However, "[t]he critical distinction between legislative and interpretative rules is that, whereas interpretative rules 'simply state what the administrative agency thinks the statute means, and only 'remind' affected parties of existing duties,' a legislative rule 'imposes new rights or duties.'" *Iowa League of Cities v. Environmental Protection Agency*, 711 F.3d 844, 873 (8th Cir. Mar. 25, 2013).

Determining whether a document is binding depends on the specific language used and tends to be a highly fact-specific inquiry. *See Iowa League of Cities*, 711 F.3d at 863-64; *South Dakota v. Ubbelohde*, 330 F.3d 1014, 1028 (8th Cir. 2003). In *Iowa League of Cities*, the Eighth Circuit found that a letter to Senator Grassley constituted a binding rule because it purported to state "the EPA's position" and spoke in mandatory terms that certain actions "should not be permitted." 711 F.3d at 864. Similarly, in *South Dakota v. Ubbelohde*, the Eighth Circuit found that the Corps' manual for implementing the Flood Control Act was binding because it "speaks of what 'is' done or 'will' be done." 330 F.3d at 1028. However, in *Catawba County v. Environmental Protection Agency*, the D.C. Circuit found that an EPA memorandum was non-binding because it left the Agency free to exercise discretion; the memorandum spoke of the Agency's "current views," but left those views open to revision. 571 F.3d 20, 33-34 (D.C. Cir. 2009).

Based on its language, the Analysis constitutes an interpretative statement and not a legislative rule. The Analysis describes the process of listing municipalities as "EPA Region 1's practice" and not as an immutable, binding rule for all permitting authorities. Analysis at 1. This statement is similar to the memo at issue in *Catawba County* because it describes only the Region's current practices and views of the law; it is not a change to the Agency's underlying regulatory/statutory structure. *See* 571 F.3d at 33-34. Furthermore, the Analysis does not signify a change in the Region's regulatory practices, it merely "details the legal and policy bases" for prior practices. Analysis at 2; *see also* Exhibit A (showing 25 permits since September 25, 2000 where the municipality operating a satellite collection facility was made a co-permittee on a NPDES permit).

While the key factor in whether a rule is interpretative or legislative is whether the rule is binding, the four *Syncor* factors are still informative on this question. *See Syncor*, 127 F.3d at 96l. Factor one asks whether the absence of a rule would take away the legal basis for agency action. Here, the absence of the analysis would not affect Region 1's authority to regulate municipal operators of satellite collection systems because the rule merely interprets existing statutes and regulations. *See e.g.*, Analysis at 7 ("Region 1 has decided to supply a clearer, more detailed explanation regarding its use of a co-permittee structure when issuing NPDES permits,"). Furthermore, the Analysis explicates the legal basis for a permitting practice that Region 1 has generally employed since 2005. Analysis at 7. Factor two, whether the rule has been published in the CFR, does not apply to the Analysis. Factor three, whether Region 1 has invoked its legislative rulemaking authority, also does not apply here. Finally, factor four, whether the rule amends a prior legislative rule, does not apply because the Agency has never fully promulgated any rules on permitting practices for separately owned satellite collection facilities. Furthermore, response to comment I12 provides further discussion of proposed rules on satellite collection facilities by the Agency. In sum, the practice of including municipal satellite collection system owners/operators as co-permittees on the NPDES permit issued to the POTW Treatment Plant is simply one way that a permit can be framed to assure compliance with the Act. The Analysis merely outlines the legal and technical bases for this approach, which the Region undertakes at its discretion on a case-by-case basis, and does not mandate either Region 1 (or other Regions) to follow it.

Comment I14. For these reasons, the co-permittee provisions of the draft Taunton permit should be stricken.

Response I14. EPA has maintained the co-permittee provisions in the Final Permit.

J. The Town of Bridgewater submitted comments by letter dated June 10, 2013.

The Town of Bridgewater hereby submits comment on the draft National Pollutant Discharge Elimination System (NPDES) Permit, No. MA0100897, for the Taunton Wastewater Treatment Plant (WWTP), as issued by EPA for public comment. The draft permit fact sheets and attachments discuss nutrient loading and permit conditions for wastewater treatment facilities with NPDES discharges to the Taunton River, including the Bridgewater WWTF. Based on past discussions with EPA, and as described by the information presented in the Taunton permit fact sheets, the current round of NPDES permitting will include new total nitrogen effluent limits for WWTFs in the based that have not had total nitrogen limits in the past (including Bridgewater).

The Bridgewater WWTF treated the least flow of the facilities proposed for a total nitrogen limit in the fact sheet, with the facilities discharging less than one million gallons per day being considered "de minimium." The Bridgewater WWTF is designed for nitrification, but not for dentrification, and based on the WWTF process, nitrogen removal will be difficult and costly to implement. Because other WWTFs with discharges to the Taunton River are larger than Bridgewater, we believe it is critical to address the nitrogen issues in those discharge permits before issuing a new permit for the Bridgewater WWTF. Therefore, we request that the Bridgewater draft permit be held for issuance until permits for the larger plants are final.

> **Response J.** EPA agrees that the nitrogen analysis in the Draft Permit and Fact Sheet includes nitrogen limits for WWTFs in the Taunton River basin, including Bridgewater. EPA notes that the size of facility is one of a number of factors impacting prioritization of permits for issuance. While EPA makes no commitments regarding timing of Bridgewater's draft permit and believes it would be inappropriate to do so, EPA notes that the draft permit for Bridgewater has not yet been issued.

K. Mr. Tim Watts submitted comments by undated letter.

Comment K1. We are submitting the following comments in regard to Draft NPDES Permit MA0100897.

In regard to phosphorus, phosphorus limits as we pointed out in our comments on the previous draft permit which was scraped are required for this permit. Our concerns in regard to phosphorus are not limited to the immediate vicinity of the plant. Our concerns and the responsibility of EPA are to achieve water quality standards throughout the watershed. Phosphorus is a pollutant being discharged by the Taunton WWTP. It is a pollutant being discharged to an "effluent dominated river", a river which is clearly, both by simple on the water observation and by way of water quality sampling suffering from eutrophication. System wide eutrophication brought about primarily by excessive nutrients discharged into it by wastewater treatment plants up and down the river.

EPA attempts to justify their non action on phosphorus.

1. "However, upstream facilities have implemented permit limits on their phosphorus discharges since 2005."

Is this referenced upstream facility the Brockton WWTP? Please be specific on this question. If EPA is going to reference a site and use it to help justify non action in regard to a discharged pollutant at Taunton WWTP, EPA at the bare minimum has the responsibility of specificity so that commenters can address the issue directly.

What does the above quoted #1 statement mean and what data does EPA have which demonstrates that these limits at "upstream facilities" have been effective in achieving water quality standards in the respective receiving waters?

The following information is from the MA DEP 2012 list Massachusetts Category 5 Waters "Waters requiring a TMDL"

Salisbury Plain River MA62-06 From the Brockton Advanced Water Reclamation Facility (A WRF) discharge, Brockton to the confluence with Beaver Brook forming the Matfield River, East Bridgewater.
2.262 MILES
(Debris/Floatables/Trash*)
Aquatic Macroinvertebrate Bioassessments
Excess Algal Growth
Fecal Coliform 40308
Oxygen, Dissolved
Phosphorus (Total)
Taste and Odor
Turbidity

Matfield River MA62-32 Confluence of Beaver Brook and the Salisbury Plain River, East Bridgewater to the confluence with the Town River and the Taunton River, Bridgewater.
6.662 MILES
Aquatic Macroinvertebrate Bioassessments
Excess Algal Growth
Fecal Coliform 40308
Oxygen, Dissolved
Phosphorus (Total)

If as EPA implies these "upstream facilities" upgrades have in fact had a positive and significant impact on improved water quality, and if in fact the referenced upgrades are relevant in regard to this permit they are not demonstrated in this the most recent MA DEP assessment of the respective waters! The Matfield River simply is the dominant contributor of effluent/water to the Taunton River, especially during low flow periods. If the Matfield is still in the sorry state that the most recent MA DEP 2012 list of Category 5 Waters claims then so goes the Taunton. The two are one, inseparable.

The following is also troubling.
"The Taunton River Watershed Association (TRWA) monitors sites upstream (Plain Street, Taunton) and downstream (Center Street/Berkley Bridge). TRWA phosphorus data for April to October 2010 averaged 0.12 mg/1 at both the upstream and downstream sites. In 2011, the average concentration was 0.08 mg/1 at both sites.[13] The 2011 concentration is below the EPA –recommended Gold Book concentration of 0.1 mg/1, which has been used by EPA as the basis for permit limits in numerous permit proceedings as an interpretation of the Massachusetts narrative water quality standard for nutrients."

It seems not 'protective' of the receiving water to average the P data over the sampling season- what is pertinent are the concentrations in the vegetation peak growing months. It seems best not to average in March/ April/May/Oct and November data (though these can sometimes be high because there is less uptake of the dissolved fraction in the water outside prime growing times/biomass though the spring months having lots more dilution probably compensates). Seems far more important to consider the June-July-August concentrations when plants are maximizing their use of available P. If the water column concentration is high, despite plants maxing out their annual uptake of nutrients, than it seems best to consider P an issue. Furthermore, TRWA is not collecting data under an approved QAPP, the checks and balances needed to make sure the data results meet a minimum of quality control are not in place. Without blank and duplicate samples one cannot be sure of the accuracies of the results- the results may be under reporting the concentrations in the river. Furthermore the 2012 TRWA sampling data for the referenced sites are as follows

TNT 01 TP ..... March 0.14/ April 0.09/ May 0.11/ June 0.12/ July 0.22/Aug 0/ Sept 0.14/ Oct 0.06/Nov 0.12

TNT 02 March 0/ April 0/ May 0.08/ June 0.09/ July 0.13/ Aug 0.13/ Sept 0.111
Oct 0.09/ Nov 0.11

TNTO1 readings going from .22 mg/1 in July to 0 in August. This zero is likely either a typo (did not finish typing in that entry) or a sampling or lab error. I would not believe a concentration of P in the mainstem Taunton falling to zero. This again raises the issue of data quality and assurance. If it is quality data then it appears that the 2011 data was an aberration because 2012 reflects elevated phosphorus which appeared as the norm previous to the 2011 data.

"While the Taunton WWTP does not monitor phosphorus discharges under its current permit, these data do not indicate discernable increases in total phosphorus concentrations attributable to the Taunton WWTP." The 2012 data demonstrating the higher phosphorus values appears to come from sample site TNT01 which is downstream of the Taunton WWTP outfall.

"Receiving water quality data is limited with respect to other indicators of eutrophic conditions in the immediate vicinity of the discharge."

Why does EPA in the fact sheet insist on using the phrase "immediate vicinity of the discharge?" Since when and where in the CWA do NPDES only apply to the "immediate vicinity" of a discharge?

Once again the whole mainstem river system from the outfall of the Brockton WWTP to Mount Hope Bay is suffering the effects of being "effluent dominated." The river being eutrophic both upstream and downstream of the Taunton WWTP is a reliable indicator that the river in between at the Taunton WWTP site is also eutrophic. The most reliable indicator and data being a simple walk or paddle along the river to observe the discolored water and over abundant filamentous algae. These opening comments in addition to discussing the phosphorus issue also serve to demonstrate that many of our comments on the previous draft permit that was scrapped remain relevant and have yet to be addressed. It appears that EPA is attempting to sidestep the whole phosphors issue by drawing from one season of questionable sampling at 2 sites and at best using anecdotal, unsupportable assumptions that "upstream facilities" are doing a swell job.

As EPA correctly states and demonstrates in the fact sheet for this permit, "It is clear that this is an effluent dominated watershed". As such the quality of the water in the river can be no better than the quality of effluent which dominates it. Currently and for many years water quality data gathered from the Taunton River has demonstrated that the quality of effluent dominating it is not of sufficient quality to allow attainment of its water quality standard. We offer the simple proposition that there are two solutions to this ongoing dilemma.

1.) Reduce volume of effluent discharged.
2.) Improve quality of effluent discharged.

Unfortunately this draft permit addresses neither option# 1, nor, option #2 in regard to phosphorus. In fact it does little more than require the permittee to monitor an illegal discharge of pollutants into an already polluted waterbody. Therefore, this draft permit as written violates the United States Clean Water Act, 33 U.S.C. § 1251, Section 301(b)(1)(C), Massachusetts Clean Water Act, M.G.L.c.21, § 26, 314 CMR 4.05(5)(c), 314 CMR 4.04. This is not good.

Although the segment discharged too is tidal, it is primarily freshwater tidal at and above the point of discharge. Therefore EPA must establish phosphorus limits in this permit. In the decision of MWRC dated 8/4/2003 regarding the Aquaria desalinization plant on the Taunton River in Dighton the commission states that under 7Q10 conditions modeled salinity at the plant site ranges from 0 ppt to 23ppt depending on tidal cycle. In fact because of a lack of salinity at the desal plant site the reverse osmosis process will only be needed to remove saltwater for drinking water between the months of July and November. The desal plant is approximately one mile downstream from the discharge of the Taunton WWTP therefore there is likely to be less saltwater intrusion one mile upstream of the desal plant. Furthermore, in the fact sheet for the Taunton Municipal Light Plant NPDES permit # MA0002241 EPA states the following regarding salinity at that discharge site, "The salinity of the Taunton River as measured at the cooling water intake is dominated by freshwater. The highest salinity is found in the salt wedge at the river bottom. The salinity as measured on July 30, 1991 was 1 part per thousand (based on conductivity equivalence)". The site of the TMLP is approximately one half mile downstream of the Taunton WWTP therefore there is likely to be less if any saline water there.

Plume studies undertaken regarding the discharge of TMLP demonstrate that because of tidal influence the discharge of TMLP does what one expects in a tidal zone, it migrates upstream during the incoming tide cycle. We expect the same to be true of the Taunton WWTP discharge. That during incoming tides the discharge of Taunton WWTP will migrate upstream impacting an even greater segment of the freshwater tidal system.

We believe the available data clearly indicates that despite the sb classification the Taunton WWTP discharges to freshwater. Therefore phosphorus limits are not only appropriate but required to attain/maintain/protect water quality standards in the receiving waters.

EPA clearly establishes in other NPDES permits which discharge into the Taunton River and its tributaries that excessive phosphorus is a limiting factor in regard to attaining, maintaining and protecting water quality standards in the Taunton and its tributaries. For example, draft Brockton WWTP, 0.2 mg/1 average monthly P, Bridgewater WWTP, average monthly summer 1.0 mg/1 P, Middleboro WWTP, average monthly summer 0.2 mg/1 P.

The 2004 NPDES permit for Oak Point development which discharges to the Taunton River segment upstream of Taunton WWTP segment is instructive; here average monthly phosphorus has been limited to a 1mg/l and 0.7 kgs/day summer limit. In the fact sheet for this permit EPA states the following regarding phosphorus.

Instream water quality information for this segment of the Taunton River is scarce. In 2001 and 2002, the Taunton River Watershed Alliance (TRWA) collected water quality samples throughout the Taunton River Watershed. The nearest downstream site was at the Sturtevant Bridge, Green Street, Middleborough/Bridgewater. Results of the sampling can be found in the documents: Annual Water Quality Report for the City of Taunton, Taunton River and Tributaries, 2001 (Domingos, January 2002) and Annual Water Quality Report for the City of Taunton, Taunton River and Tributaries, 2002 (Domingos, January 2003). Instream total phosphorus concentrations ranged from 0.09 mg/1 to 0.39 mg/1. All of the samples exceeded the ecoregion criteria of 0.024 mg/1 and all but one sample exceeded the less stringent "Gold Book" criteria of 0.1 mg/1. The draft permit includes a monthly average limit of 1 mg/1. At this concentration the discharge would be expected to contribute about 1 0 ug/1 to the instream concentration of phosphorus (1mg/l!DF= l/95+0.01 mg/1). If, in the future, the state should adopt numeric criteria, or water quality monitoring should show the need for a more stringent limit, this permit may be re-opened and modified.

If EPA is establishing phosphorus limits for a discharge of less than 1 mgd and putting language such as this in that same permit "If, in the future, the state should adopt numeric criteria, or water quality monitoring should show the need for a more stringent limit, this permit may be re-opened and modified." Why does EPA refuse to establish phosphorus limits for the Taunton WWTP which discharges 8.4 mgd?

Furthermore, The Commonwealth's water quality standards include a narrative criterion which provides that nutrients "shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication." 314 CMR 4.05(5)(c). Massachusetts' standards also require that "any existing point source discharges containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practicable treatment to remove such nutrients." 314 CMR 4.04.

The Taunton WWTP discharge without limits on phosphorus will clearly encourage further eutrophication of this river segment therefore we recommend monthly average total phosphorus limit of 0.2 mg/L which is based on the "highest and best" practical treatment as defined by the MA WQS.

In addition to the above it should be noted that in NPDES permit #MA0101893 for the Wareham WWTP EPA establishes a summer phosphorus limit of 0.2 mg/1. The Wareham WWTP discharges to the Agawam River which is classified as sb at the point of discharge. In fact the discharge point of Wareham WWTP displays higher salinity levels than at the site of the TMLP on the Taunton River, which is one half mile downstream of the Taunton WWTP discharge. Therefore it appears that phosphorus limits have and can be established for waterbodies classified sb. Does EPA agree that P limits can be established in waters which are class sb?

> **Response K1.** EPA agrees that phosphorus limits are required if there is reasonable potential for a discharge to cause or contribute to a water quality violation. As discussed in the Fact Sheet, EPA's review of the evidence does not show reasonable potential with respect to phosphorus discharges from this facility.
>
> EPA's discussion of the imposition of phosphorus permit limits on upstream facility did not specify individual facilities because nearly all of the upstream facilities have implemented phosphorus reductions. The upstream facilities are listed on pages 9 and 33 of the Fact Sheet; their respective total phosphorus limits are shown below.

Discharger	River or Tributary	TP limit (mg/l)	Design Flow (mgd)
BROCKTON AWRF	SALISBURY PLAIN RIVER	0.2	18.0
MANSFIELD WPCF	THREE MILE RIVER	0.2	3.14
MIDDLEBOROUGH WPCF	NEMASKET RIVER	0.2	2.16
BRIDGEWATER WWTF	TOWN RIVER	1.0	1.44
MCI-BRIDGEWATER WPCF	SAW MILL BROOK TO TAUNTON	1.0	0.55
WHEATON COLLEGE	RUMFORD RIVER	0.2	0.12
OAK POINT HOMES	TAUNTON RIVER	1.0	0.185
EAST BRIDGEWATER SCHOOLS	TRIBUTARY BROOK TO TAUNTON	none	0.012

In addition, more stringent limits are being implemented on several of these facilities in connection with their permit reissuances. Final Permits have been issued for the Mansfield and Middleborough WPCFs with total phosphorus limits of 0.17 and 0.15 mg/l respectively. The Brockton AWRF permit is due for reissuance and the City of Brockton has been informed that they should expect a total phosphorus limit lower than their current 0.2 mg/l limit based on conditions in the Salisbury Plain River, and the Bridgewater WWTP has been issued a draft permit with a limit of 0.2 mg/l.

EPA has not stated that "these limits at "upstream facilities" have been effective in achieving water quality standards in the respective receiving waters" as suggested in the comment. Rather, EPA is engaged in a continuing process of revisiting such limits and, where necessary, establishing more stringent limits to meet water quality requirements in the tributaries to which these facilities discharge. These tributaries are free flowing freshwater, to which the Gold Book standard of 0.1 mg/l can be directly applied. Limits designed to achieve a 0.1 mg/l target at upstream locations will result in far lower concentrations downstream where dilution is higher, so that more stringent limits designed to eliminate water quality violations upstream are expected to improve conditions in the downstream area affected by the Taunton WWTP discharge.

EPA did not limit its analysis to the immediate vicinity of the discharge, but emphasizes that the region of concern is the area impacted by the Taunton discharge. The comment's citation of conditions well upstream of this discharge (Salisbury Plain and Matfield River) do not establish reasonable potential as the Taunton WWTP discharges clearly do not reach those impaired segments. Downstream from the Taunton WWTP (clearly the Taunton discharges reach downstream areas) are estuarine areas that have been documented as nitrogen-limited. Thus there is a limited area of transition from phosphorus to nitrogen related eutrophication that is the focus of analysis for reasonable potential, and it is this area that was considered by EPA. The facts remain that there is limited data available in this transitional area, that EPA does not have target thresholds for phosphorus in these estuarine waters, and that there are substantial reductions in phosphorus discharges being implemented at upstream facilities that are expected to result in improvements to conditions along the entire Taunton River, so that the potential for the Taunton WWTP phosphorus discharges to contribute to impairments is uncertain at best. In this context further monitoring, but no permit limit, has been required in this permit.

The inclusion of both total nitrogen and total phosphorus limits in the permit for the Wareham, MA WPCF was based on a specific study identifying both nitrogen and phosphorus as contributing to water quality degradation in the Agawam River Estuary. See Fact Sheet, NPDES No. MA0101893 at 8-9 (http://www.epa.gov/region1/npdes/permits/2008/finalma0101893fs.pdf). Phosphorus limits are appropriate in SB waters where evidence indicates that such discharges are causing or contributing to nutrient related impairments. That evidence is not available here.

Comment K2. Nitrogen discussion:
The Fact Sheet does not mention this watershed importance as an anadromous fishery- one of the strongest remaining in the Commonwealth. The needs of the spawning adults and juveniles must be considered- the resource can't afford any further decreases in numbers.

In the SMAST Data there does seem to be a strong correlation between high N levels (of almost all the species of N, too) and lower salinity samples. Just look at the dissolved to particulate N ratio versus salinity. The lower salinity samples also have depressed DO but interestingly some of the lower Chlor A concentrations. All this seems to indicate it is the fresh water inputs coming down the river contributing the nutrients and the incoming tide offering some modest dilution. This all strengthens the argument for lower nutrient levels in the permit.

A N limit of 2 mg/1 is a good start but it needs to be recognized (and stated) that the allowable load may need to be revisited as more information and more progress toward meeting WQS to see if the crude calculations are proving to be good enough estimates to make a difference in receiving water conditions.

Also will there be some potential legal posturing associated with the EPA's approach to give the smallest treatment plants (less than 1 mdg) a complete bye on limits and the smaller ones a less stringent 5.5 mg/limit? Would not want to see these limits abandoned on appeal because of perceived inequities.

EPA imposing a mass daily limit of 210 pounds. We like that there is an actual daily max (THOUGH THEY ARE ONLY TESTING 3X PER WEEK) so the rolling average EPA is imposing will not be abused. It is not that much higher than the max loading if they maintained the 3 mg/1 and had a max flow rate. If they increased flow this number (daily max) should not be allowed to go up under anti-deg so getting it as low as possible is important.

The claim that Nitrogen Nov- March is not especially critical given there is often a fairly large phytoplankton bloom in early spring or late winter. This timing should be justified - are there papers on Narragansett Bay that address the plankton cycle?

In looking at the N numbers, Taunton WWTP is going to have a tough time meeting the permit limit. EPA must not build in some contingency should Taunton need to ratchet the concentrations down even more. There needs to be a stronger statement that the 3 mg/1 is the target but the target is a moving one based on the true goal of reaching acceptable water quality in the receiving waters.

> **Response K2.** The importance of the Taunton River Estuary as an anadromous fishery is part of the Endangered Species Act discussion at pages 41-42 and Attachment D of the Fact Sheet. The total nitrogen limit is expected to provide improved conditions for all aquatic life, including juvenile and spawning anadromous fish.
>
> EPA agrees that the data indicates that the freshwater inputs have higher concentrations of nutrients and that the marine water is providing dilution, and that this supports the imposition of permit limits for total nitrogen on dischargers to the Taunton River. The pattern of chlorophyll-a concentrations is discussed at Responses C23-24 and C29.
>
> The permit limit based on 3 mg/l TN (not 2 mg/l) is designed to ensure that discharges from the Taunton WWTP do not cause or contribute to nutrient-related water quality impairments. EPA does not view this as simply "a good start" but as a nitrogen loading level that is stringent enough based on current data when coupled with reductions from other sources as discussed in the Fact Sheet. EPA does agree that there is a need for continuing monitoring and that the understanding of allowable loads may be revisited as these load reductions are implemented. Such new data will be considered in connection with every permit reissuance and could result in a modification of the permit limit in future permits.
>
> The commenter is incorrect in stating that the draft permit includes a maximum daily TN limit of 210 lbs/day. The mass limit of 210 pounds is imposed as a rolling seasonal average. The Draft Permit expressed this limit as a monthly average (not a daily maximum limit) but was unclear as to the rolling seasonal average; this has been clarified in the final permit. A maximum daily limit is not appropriate due to the seasonal averaging periods used in the nitrogen threshold and loading analyses.
>
> The seasonal nature of the permit limit is consistent with the time frame for the analysis performed by EPA and is consistent with all other permit limits for the Narragansett Bay system. A 2009 general review of phytoplankton dynamics for Narragansett Bay in general concluded:

> Phytoplankton primary production is also highly variable both within and among years, and different results are reported from different studies—in part a reflection of different methods of measuring production. For example, Durbin et al. (1975) reported that primary production was highest during the winter-spring bloom as well as during the summer nanoplankton (tiniest plankton) blooms. Later, Durbin and Durbin (1981) found that compared to summertime values, production was relatively low even during the winter-spring bloom due to the effects of low temperatures (Durbin and Durbin, 1981). More recently, Oviatt et al. (2002) found that production was generally highest during the summer but differences in timing were apparent depending on location within the Bay. A review of all available data at the time, however, concluded that production is generally highest during mid- to late summer, while lowest production values occur from November through January and are approximately an order of magnitude lower than summer values (Hinga et al., 1989).

Narragansett Bay National Estuarine Research Reserve. 2009. *An Ecological Profi le of the Narragansett Bay National Estuarine Research Reserve.* K.B. Raposa and M.L. Schwartz (eds.), Rhode Island Sea Grant, Narragansett, R.I. 176pp, at 110. This review indicates that conditions are critical in mid- to late summer; this is also the period of time when wastewater treatment plant discharges are most significant because of lower freshwater flows.

EPA acknowledges that the Taunton WWTP is not currently capable of meeting the permit limit and that a substantial upgrade will be required. EPA is not clear on the intent of the statement that "EPA must not build in some contingency should Taunton need to ratchet the concentrations down even more," or what sort of contingency the commenter believes should not be built in. In any case, EPA has imposed a permit limit that it has determined, based on the best available information, will ensure that the Taunton WWTP discharges do not cause or contribute to nutrient-related water quality impairments. As noted above there is a need for ongoing water quality monitoring to determine the response of the Taunton River Estuary and Mount Hope Bay, and that given the complexity of the system there is potential for changes in the understanding of the correct TN concentration or loading thresholds for this system that may ultimately effect the permit limit. Given the lengthy time frame required to implement upgrades and assess responses EPA expects that any such changes may be incorporated upon reissuance of the permit on the usual five year cycle. However, the 3 mg/l is not a "target" but an enforceable permit limit. It is not a "moving target" but is in effect until reissuance of this permit.

Comment K3. Why, in 2006, did the city go and drill holes in all its manhole covers? Was there any action taken by regulators for this step backward to a mini-combined sewer state? It is interesting that the max flow was in 2005 which was before the manhole drilling.

Response K3. The City did not drill holes in manhole covers in 2006. The commenter appears to have misunderstood the Fact Sheet statement: "**As of 2006**, at least 300 manhole covers in the system had holes drilled in them so that they act as catch basins during storm events . . .." This statement presents the number of such manhole covers existing in the system as of the year 2006; the actual drilling of holes occurred prior to that time. The current number is smaller than 300 due to the City's ongoing I/I remediation work.

Other Changes to the Final Permit

The Final Permit revises the Monitoring and Reporting requirements to reflect the fact that the Taunton WWTP is already using NetDMR for filing of its DMRs and to clarify the requirements for submittal of hard copies of DMR attachments and other reports and notices. Also in the Monitoring and Reporting section (Section I.G.), EPA has become aware that the requirement to submit reports as electronic attachments to DMRs using NetDMR has created confusion as to report due dates, as report due dates generally differ from the DMR due date (the 15th of each month) and NetDMR does not allow submission of a report without a concurrently submitted DMR. Therefore, to assist in electronic reporting, EPA has added language to the Final Permit (Section I.G.1.a) stating that such reports shall be considered timely so long as they are electronically submitted with the next DMR submitted by the permittee no later than the next DMR due date following the permit report deadline.

The MassDEP website at which the sanitary sewer overflow (SSO) reporting form and instructions are found has changed. The final permit now lists the correct website location.

The final permit clarifies the whole effluent toxicity testing requirements and incorporates the most current test protocols. The draft permit had inadvertently included two separate acute testing requirements.

Attachment 1.C Calculation of Allowable Total Nitrogen Load/Concentration Using June-August 2004-2006 Data

Corrected by EPA to use 2004-06 loads; original used 2004-06 flows but 2004-05 loads

I. DATA

Taunton River Flow at Bridgewater Gauge (CFS)	Estimated Taunton River Flow at Mouth (CFS)	Three Mile River Flow at North Dighton Gauge (CFS)	Three Mile River Flow at Mouth (CFS)	Segreganset River Flow at Dighton Gauge (CFS)	Segreganset River Flow at Mouth (CFS)	Assonet River based on Segreganset (CFS)	QuequechanRiver based on Segreganset (CFS)	Total Fresh Water Flow (CFS)
417.3	655.5	129.6	131.1	14.9	20.9	30.8	42.9	881.3

II. Calculations

Salinity	18.7	ppt	(from 2007 SMAST report)	
Ocean Flow	1458.4	CFS		
Target N Conc.	0.45	mg/l		
Target N Load	5672.4	lb/day		
N Conc. At Sea Boundary.	0.28	mg/l		
Ocean N Load	2200.0	lb/day		
Allowable Load from Watershed Sources	3472.3	lb/day		
Actual Load from Watershed Sources	~~4,228~~	lb/day	(EPA)	5,919 lb/d if 2006 loads are included
Required Load Reduction	~~755.7~~	lb/day		2,447 lb/d required load reduction
Required Percent Reduction	~~17.9~~	percent		41.3% required reduction
Non Point Source Load	~~1428.0~~	lb/day	(EPA)	3,119 lb/d NPS [= 5,919 lb/d – 2,800 lb/d WWTP load from Fact Sheet]
Assumed reduction from non-point sources	20	percent		[results in 2,495 lb/d NPS load in allowable total load]
Available load for Wastewater Discharges	~~2329.9~~	lb/day		977 lb/d available for WWTP discharges
Uniform N Concentration	~~8.8~~	mg/l		3.58 mg/l if uniform N limit for all WWTPs

Note: [yellow box] Calculated Value