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),

City of Holyoke
Department of Public Works

is authorized to discharge from a facility located at:

Water Pollution Control Facility
One Berkshire Street
Holyoke, Massachusetts 01040
And
Combined Sewer Overflow (CSO) discharges at 11 locations

to receiving water named: **Connecticut River (Segment MA 34-05)**

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

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

This permit and the authorization to discharge will expire at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit signed on July 1, 2009.

This permit consists of 24 pages in Part I including effluent limitations and monitoring requirements, **Attachment A (Discharge Outfall), Attachment B (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011)**, **Attachment C (Reassessment of Technically Based Industrial Discharge Limits), Attachment D (NPDES Permit Requirement for Industrial Pretreatment Annual Report),** and **Part II** (25 pages including NPDES Part II Standard Conditions).

Signed this 25th day of October, 2016

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

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

PART I

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

Effluent Characteristic	**Units**	**Discharge Limitation**			**Monitoring Requirement** [*3]	
Parameter		**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Effluent Flow [*2]	MGD	17.5 [*2]	—	Report	Continuous	Recorder
Effluent Flow [*2]	MGD	Report	—	—	Continuous	Recorder
BOD_5 [*4]	mg/l lbs/day	30 4,379	45 6,568	Report Report	5/Week 5/Week	24-Hour Composite[*5] 24-Hour Composite[*5]
TSS [*4]	mg/l lbs/day	30 4,379	45 6,568	Report Report	5/Week 5/Week	24-Hour Composite[*5] 24-Hour Composite[*5]
pH Range[*1]	Standard Units	6.0 – 8.3 (See Permit Part I.A.1.b.)			1/Day	Grab
Total Residual Chlorine [*1, *7] (April 1 – October 31)	mg/l	0.74	—	1.0	3/Day	Grab
Escherichia Coliform Bacteria [*1, *6] (April 1 - October 31)	cfu/100 ml	126	—	409	2/Week	Grab
Aluminum, Total Recoverable [*8]	ug/l	87	—	Report	1/Month	24-Hour Composite[*5]
Copper, Total Recoverable [*9]	ug/l	3.5	—	4.7	1/Month	24-Hour Composite[*5]
Lead, Total Recoverable [*10]	ug/l	0.73	—	Report	1/Month	24-Hour Composite[*5]

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirement[*3]	
Parameter		**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Total Ammonia Nitrogen[*11] (Apr 1-Oct 31) Total Ammonia Nitrogen[*11] (Nov1-Mar 31)	mg/l, lbs/day mg/l, lbs/day	Report Report	— —	Report Report	1/Week 1/Month	24-Hour Composite[*5] 24-Hour Composite[*5]
Total Kjeldahl Nitrogen[*11] (April 1-Oct 31) Total Kjeldahl Nitrogen[*11] (Nov 1-Mar 31)	mg/l, lbs/day mg/l, lbs/day	Report Report	— —	Report Report	1/Week 1/Month	24-Hour Composite[*5] 24-Hour Composite[*5]
Total Nitrate+Nitrite[*11] (Apr 1-Oct 31) Total Nitrate+Nitrite[*11] (Nov 1-Mar 31)	mg/l, lbs/day mg/l, lbs/day	Report Report	— —	Report Report	1/Week 1/Month	24-Hour Composite[*5] 24-Hour Composite[*5]
Total Nitrogen[*11] (Apr 1-Oct 31) Total Nitrogen[*11](Nov 1-Mar 31)	mg/l, lbs/day mg/l, lbs/day	Report Report	— —	Report Report	1/Week 1/Month	24-Hour Composite[*5] 24-Hour Composite[*5]
Whole Effluent Toxicity [*12,*13,*14,*15]	%	Acute LC_{50} $\geq$ 100%			4/Year	24-Hour Composite[*5]
Hardness[*15]	mg/l	Report			4/Year	24-Hour Composite[*5]
Ammonia Nitrogen as N [*15]	mg/l	Report			4/Year	24-Hour Composite[*5]
Total Recoverable Aluminum [*15]	mg/l	Report			4/Year	24-Hour Composite[*5]
Total Recoverable Cadmium [*15]	mg/l	Report			4/Year	24-Hour Composite[*5]
Total Recoverable Copper [*15]	mg/l	Report			4/Year	24-Hour Composite[*5]
Total Recoverable Nickel [*15]	mg/l	Report			4/Year	24-Hour Composite[*5]
Total Recoverable Lead [*15]	mg/l	Report			4/Year	24-Hour Composite[*5]
Total Recoverable Zinc [*15]	mg/l	Report			4/Year	24-Hour Composite[*5]

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 treated effluent that is discharged through outfall 001 and shall be collected at the discharge location. 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 is required for influent and effluent.

*5. A 24-hour composite sample 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 limit for *Escherichia coli (E. coli)* is expressed as a geometric mean. E. coli 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. For months when chlorine is not added to the treatment system a no data indicator (NODI) of C shall be reported on the monthly discharge monitoring report.

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 minimum level (ML) for aluminum is defined as 20 ug/l. An EPA-approved method with an equivalent or lower ML shall be used. Compliance will be determined based on the ML. Sampling results less than the detection limit shall be reported as "≤ [detection limit]" on the Discharge Monitoring Report.

See Part I.G., Special Condition 2 for a schedule of compliance.

*9. 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 another EPA-approved method with an equivalent or lower ML shall be used. Compliance will be determined based on the ML. Sampling results less than the detection limit shall be reported as "≤ [detection limit]" on the Discharge Monitoring Report.

See Part I.G., Special Condition 2 for a schedule of compliance.

*10. The minimum level (ML) for lead is defined as 0.5 ug/l. This value is the minimum level for lead using the Furnace Atomic Absorption analytical method (EPA Method 220.2). This method or another EPA-approved method with an equivalent or lower ML shall be used. Compliance will be determined based on the ML. Sampling results less than the detection limit shall be reported as "≤ [detection limit]" on the Discharge Monitoring Report.

See Part I.G., Special Condition 2 for a schedule of compliance.

*11. See Part 1.G. SPECIAL CONDITIONS for requirements regarding optimization and reporting for nitrogen removal.

*12. The permittee shall conduct acute toxicity tests four times per year. The permittee shall test the daphnid, Ceriodaphnia dubia, only. Toxicity test samples shall be collected during the same week each time during the months of March, June, September and December. The test results shall be submitted by the last day of the month following the completion of the test. The results are due April 30th, July 31st, October 31st, and January 31st, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment B** of this permit.

Test Dates during the month of:	**Submit Results By:**	**Test Species**	**Acute Limit** LC_{50}
March June September December	April 30 July 31 October 31 January 31	Ceriodaphnia dubia (Daphnid) See **Attachment B**	≥ 100%

*13. 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.

*14. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment B, Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required in **Attachment B**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") 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 the NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs) which is sent to all permittees with their annual set of DMRs and may also be found on the EPA, Region I web site at http://www.epa.gov/region01/enforcementandassistance/dmr.html. If this guidance is revoked, the permittee shall

revert to obtaining individual approval as outlined in **Attachment B**. Any modification or revocation to this guidance shall be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment B**. If the permittee has already received permission to use an alternative dilution water under the previous permit, the permittee does not need to repeat this approval process. If the permittee uses an alternative dilution water, the ambient water will still need to be tested.

*15. For each whole effluent toxicity test the permittee shall report on the appropriate discharge monitoring report, (DMR), the concentrations of the hardness, ammonia nitrogen as nitrogen, total recoverable aluminum, cadmium, copper, lead, nickel, and zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the minimum quantification level shown in **Attachment B**. 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 nor greater than 8.3 Standard Units (S.U.) 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 will maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand during dry weather. Dry weather is defined as any calendar day on which there is less than 0.1 inch of rain and no snow melt. The percent removal shall be calculated as a monthly average using the influent and effluent BOD_5 and TSS values collected during dry weather days.

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

g. The results of sampling for any parameter analyzed 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 [14 MGD], the permittee will submit a report to MassDEP by **March 31st** of the following calendar year describing its plans for further flow increases and describing how it will maintain compliance with the effluent 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 that 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 will 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) will not pass through the POTW or interfere with the operation or performance of the works.

4. Toxics Control

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

b. Any toxic components of the effluent will 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

a. 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. COMBINED SEWER OVERFLOWS (CSOs)

1. Effluent Limitations

During wet weather, the permittee is authorized to discharge storm water/wastewater from the CSO outfalls listed below:

CSO No.:	LOCATION:
002	Providence Hospital
007	Northampton St./Glen St.
008	Springdale Park
009	Berkshire St.
011	Jackson St.
016	Front St./Appleton St.
018	Walnut St.
019	Yale St.
020	Cleveland St.
021	River Terrace
023	Jefferson

2. The effluent discharged from these CSOs is subject to the following 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.D.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;

(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.D.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.

3. 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 shall be through direct measurement. The following information must be recorded for each combined sewer outfall for each discharge event, as set forth in Part I.B.5.b.:

- Duration (hours) of discharge;
- 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.

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:

WARNING:
CITY OF HOLYOKE
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 Spanish or add a universal wet weather sewage discharge symbol to existing signs.

The permittee shall continue to implement its enhanced public notification plan. The permittee shall provide the following information on the City's web site within 24 hours of the onset of any CSO discharges, or as soon as feasible after such discharges begin:

- CSO number and location
- Total volume discharged from the CSO
- Duration of the CSO discharge

This notification procedure shall be implemented no later than one (1) year after the effective date of the permit.

4. 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.

5. Combined Sewer Outfalls: 002, 007, 008, 011, 016, 018, 019, 020, 021, 013

a. Discharges from the following CSOs to their respective CSO outfall numbers: 002, 007, 008, 011, 011, 016, 018, 019, 020, 021, 023, are subject to monitoring requirements, as set forth in Part I.B.5.b. Additional monitoring and reporting requirements also apply.

CSO No.:	Location:
002	Providence Hospital
007	Northampton St./Glen St.
008	Springdale Park
011	Jackson St.
016	Front St./Appleton St.
018	Walnut St.
019	Yale St.
020	Cleveland St.
021	River Terrace
023	Jefferson

b. The permittee must monitor and report the CSO discharges listed above as follows:

	Reporting Requirements	**Monitoring Requirements**	
Parameters	**Total Monthly**	**Measurement Frequency**	**Sample Type**
Total Flow	Report Gallons	Daily, when discharging	Continuous
Total Flow (Duration of flow through the facility)	Report Hours	Daily, when discharging	Continuous
Number of CSO Events	Report Monthly Count	Daily, when discharging	Count

- For flow, measure total flow discharged, duration of discharge, and precipitation associated with the discharge for each CSO outfall and each calendar day when the discharge occurs during the month. Report the total monthly flow discharged from each CSO outfall on the appropriate Discharge Monitoring Report (DMR) and include as an attachment to each DMR the individual daily results for total flow discharged, duration of the discharge, and precipitation data measured during the month.

- For those months when a CSO discharge does not occur, the permittee must still complete the monthly DMR with the appropriate no discharge (NODI) code for each outfall.

6. Berkshire Street CSO Treatment Facility

   a. Discharges from the Berkshire Street CSO Treatment Facility to CSO outfall 009 are subject to water quality-based limits and technology-based numeric effluent limits as enhanced minimum controls for CSO Outfall 009, as set forth in Part I.B.6.b. Additional monitoring and reporting requirements also apply.

B.6.b. Outfall 009 , Berkshire Street CSO Treatment Facility, Effluent Limitations and Monitoring Requirements

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS		MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
E. Coli Bacteria[*1]	126 cfu/100 ml	409 cfu/100 ml	1 Event/Month, Hourly	Grab
Total Residual Chlorine[*2]	Report	0.24 mg/l	Hourly	Grab
pH Range	Report Maximum and Minimum, S.U.		1 Event/Month	Grab
BOD_5[*3]	Report mg/l and lbs/day	Report mg/l and lbs/day	2/Year	Event Composite[*4]
TSS[*3]	Report mg/l and lbs/day	Report mg/l and lb/day	2/Year	Event Composite[*4]
Total Kjeldahl Nitrogen, Nitrate, Nitrite, Ammonia as Nitrogen, and Total Nitrogen [*3,*5]	Report mg/l and lbs/day	********	2/Year	Event Composite[*4]
Whole Effluent Toxicity [*6]	Report LC_{50}		2/Year	Event Composite[*4]

Parameter	**Total Monthly**	**Measurement Frequency**	**Sample Type**
Total Flow (Treated Flow from Facility)[*7]	Report Gallons	Daily, when discharging	Continuous
Total Flow (Untreated Flow to River)[*7]	Report Gallons	Daily, when discharging	Continuous
Total Flow (Drained back to WPCD)[*7]	Report Gallons	Daily, when discharging	Continuous
Total Flow (Duration of flow through facility)	Report Hours	Daily, when discharging	Continuous
Number of CSO Events	Report Monthly Count	Daily, when discharging	Count

*Footnotes; Part B.6.b. Outfall 009:

*1. Hourly sampling for E. coli will be performed for a four-hour duration. If the event lasts longer than four (4) hours, no further sampling is required. If hourly sampling is started and the event does not last at least four hours, another event during that month will be used for the hourly testing. The limits for E. coli are expressed as a geometric mean.

*2. Monitoring shall be conducted for all events in which duration of flow from the facility exceeds 15 minutes. Hourly sampling for total residual chlorine will be performed for each hour up to a four-hour duration. If the event lasts longer than four (4) hours, sampling will be required every four hours after the fourth hour.

*3. The permittee shall collect BOD_5, TSS, total Kjeldahl nitrogen, nitrite, nitrate and ammonia samples two times per year in May and November.

*4. Event composite must represent an event duration of at least four hours. An event composite is considered to represent an event duration of at least four hours where (i) the composite represents at least four consecutive hours of flow through the facility; or (ii) the composite represents at least four hours of flow during a 24 hour period starting at approximately 8:00 AM each day (± 2 hours) coinciding with the permittee's composite sampling schedule, if flow through the facility is discontinuous.

*5. The total Kjeldahl nitrogen, nitrite, nitrate and ammonia samples shall be collected concurrently. The results of the total Kjeldahl nitrogen, nitrite, and nitrate analyses may be used to determine the concentration and mass loading of total nitrogen. The permittee shall report the monitoring results for each species of nitrogen as well as total nitrogen.

*6. The permittee shall conduct acute toxicity tests two times per year in May 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 June 30 and December 31, respectively. If weather does not permit collection of a four hour composite in these months, the tests may be delayed to the first available event of four hour or more duration. The permittee shall test the daphnid, Ceriodaphnia dubia, only. The tests must be performed in accordance with test procedures and protocols specified in **Attachment B** of this permit, except that the permittee may use an alternate dilution water.

*7. The permittee shall also submit a monthly operating report, as an attachment to their monthly DMR, for the Berkshire Street CSO Treatment Facility. The monthly operating reports shall contain:

(i) Total precipitation for each day (whether or not there was flow through facility);
(ii) Date on which flow through facility occurred;
(iii) Time in which the flow initiated;
(iv) Total Duration of flow through facility for each day (hours);
(v) Treated flow from facility (gallons);
(vi) Untreated flow to river (gallons);
(vii) Flow drained back to WPCD (gallons);
(viii) Concurrent flow rate at the WPCD (gallons);
(ix) Monitoring results for each event.

C. UNAUTHORIZED DISCHARGES

This permit authorizes discharges only from the outfall(s) listed on **Attachment A** and in Part I.A.1. of this permit.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 in accordance with Part II. Section D.1.e.(1) of the General Requirements of this permit (Twenty-four hour reporting).

Notification of SSOs to MassDEP will be made on its SSO reporting form (which includes MassDEP regional office telephone numbers). The reporting form and instructions for its completion can be found on-line at: http://www.mass.gov/eea/agencies/massdep/service/approvals/sanitary-sewer-overflow-bypass-backup-notification.html.

D. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system will 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 will 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 will be described in the Collection System O & M Plan required pursuant to Section D.5. below.

2. Preventative Maintenance Program

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

4. Collection System Mapping

Within 30 months of the effective date of this permit, the permittee shall prepare a map of each 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 goal, 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 all 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 the permit**. The Plan shall include:

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

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

(3) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;

(4) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;

(5) Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;

(6) A description of the permittee's programs for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an

inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts; and

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

(8) An Overflow Emergency Response Plan to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

6. Annual Reporting Requirement

The permittee shall submit a summary report of activities related to the implementation of its Collection System O & M Plan during the previous calendar year. The report shall be submitted to EPA and MassDEP **annually by April 30th**. 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 [14 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 its portion of the publicly owned treatment works[1] it owns and operates.

E. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR §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).

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

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 §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 - the placement of sewage sludge in a sludge only incinerator.

4. The requirements of 40 CFR §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 and vector attraction reduction requirements)
   - Management practices
   - Record keeping
   - Monitoring
   - Reporting

   Which of the 40 CFR §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), pathogen 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 than1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	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

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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

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

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

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

F. 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 (see **Attachment C –** Reassessment of Technically Based Industrial Discharge Limits) 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** (NPDES Permit Requirement for Industrial Pretreatment Annual Report) of this permit and shall be submitted no later than **March 1st** 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.

G. SPECIAL CONDITIONS

1. Nitrogen

a. The permittee shall continue to operate the WPCF to optimize nitrogen removal in accordance with its 2010 evaluation in order to maintain the mass discharge of total nitrogen less than the existing mass loading of total nitrogen. The baseline annual average total nitrogen load from this facility is estimated to be 696 lbs/day.

b. The permittee shall submit with its **next permit reapplication** a report evaluating the impact of CSO abatement projects on nitrogen loads discharged from the WPCF. The report shall include a comparison of 2004-05 conditions with conditions as of the date of the report with respect to the volume of sanitary sewage and of stormwater discharged through CSOs, through the WPCF and through the CSO treatment facilities. The report shall also include the expected change in volume and nitrogen load from the WPCF from sanitary sewage and stormwater flows in connection with CSO mitigation projects not included in the analysis of conditions as of the report date, but expected to be completed within the following permit term.

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

2. Aluminum, Copper and Lead

a. The permittee will meet a monthly average lead interim limit of 2.7 ug/l, a monthly average copper interim limit of 62.4 ug/l, and a maximum daily copper interim limit of 80.3 ug/l until the permittee is in compliance with the monthly average lead limit of 0.73 ug/l, the monthly average copper limit of 3.5 ug/l, and the maximum daily copper limit of 4.7 ug/l.

b. Within 24 months of the effective date of the permit, the permittee shall complete and submit to EPA and DEP an evaluation of alternatives, and an implementation schedule, for achieving the monthly average total recoverable aluminum limitation of 87 ug/l, the monthly average total recoverable copper limitation of 3.5 ug/l, the maximum daily total recoverable copper limitation of 4.7 ug/l, and the monthly average total recoverable lead limitation of 0.73 ug/l. At a minimum, the evaluation shall include the following:

i. An evaluation of alternative water treatment practices, including corrosion control, by the Holyoke Water District in order to reduce copper and lead concentrations in the water supply.

ii. An evaluation of pre-treatment requirements in order to ensure that all significant sources of aluminum, copper and lead from indirect dischargers are adequately controlled.

iii. An evaluation of all other potentially significant sources of aluminum, copper and/or lead in the sewer system and alternatives for minimizing these sources.

iv. An evaluation of alternative modes of operation at the wastewater treatment facility in order to enhance removal of aluminum, copper and lead.

c. Within 12 months of the effective date of the permit, the permittee shall submit to EPA and DEP a progress report relative to completing the evaluation of alternatives.

d. Within 36 months and 48 months from the effective date of the permit, the permittee shall submit to EPA and DEP progress reports relative to implementation of the alternatives identified as necessary to ensure attainment of the aluminum, copper and lead limits.

e. Within 60 months of the effective date of the permit, the permittee shall comply with the aluminum, copper and lead limits.

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 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.

The permittee may consolidate the Combined Sewer Overflows (CSOs) and Operation and Maintenance of the Sewer System (O & M) reporting information which are on the same reporting schedules, in order to reduce redundancy.

1. Submittal of DMRs and the Use of NetDMR

Beginning the effective date of the permit the permittee must submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and MassDEP no later than the 15th day of the month following the completed reporting period. On or before December 21, 2016, the permittee shall begin reporting monthly monitoring data using NetDMR, unless, in accordance with Part I.F.6, the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs. The permittee must continue to use the NetDMR after the permittee begins to do so. When a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs to EPA or MassDEP. NetDMR is a web-based tool that allows permittees to electronically submit DMRs and other required reports via a secure internet connection. NetDMR is accessed from: http://www.epa.gov/netdmr. NetDMR online training can be accessed at: www.epa.gov/netdmr/about/training.html.

2. Submittal of Reports as NetDMR Attachments

After the permittee begins submitting DMR reports to EPA electronically using NetDMR, the permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies, unless otherwise specified in this permit. Permittees shall continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP. (See Part I.F.5. 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 15th 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 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 WET dilution water / request for alternative dilution water.

These reports, information, and requests shall be submitted to EPA/OEP electronically at R1NPDESNotices.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

4. 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. Reports and DMRs submitted prior to the use of NetDMR
D. Reports and DMRs submitted prior to the use of NetDMR
E. Sludge monitoring reports

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

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

All sludge monitoring reports required herein shall be submitted only to:

U.S. Environmental Protection Agency, Region 7
Biosolids Center
Water Enforcement Branch
11201 Renner Boulevard
Lenexa, Kansas 66219

All Industrial Pretreatment Program reports required herein shall be submitted only to:

U.S. Environmental Protection Agency, Region 1
Pretreatment Coordinator
5 Post Office Square, Suite 100 (OEP 06-03)
Boston, MA 02109

5. 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.F.3 and I.F.4 also shall be submitted to the State at the following addresses:

MassDEP – Western Region
Bureau of Water Resources
436 Dwight Street, Suite 402
Springfield, MA 01103

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

Massachusetts Department of Environmental Protection
Watershed Planning Program
8 New Bond Street
Worcester, MA 01606

6. Submittal of NetDMR Opt Out Requests

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

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

And

Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
1 Winter Street, 5th Floor
Boston, MA 02108

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 CFR 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 will have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit will be effective only with respect to the Agency taking such action, and will 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 will remain in full force and effect under Federal law as an 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 will remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

Attachment A

Secondary Wastewater Treatment Plant Discharge Outfall
NPDES Permit No. MA0101630
Holyoke, MA

Outfall:	Description of Discharge:	Outfall Location/Receiving Water:
001	Secondary Wastewater Treatment Plant Effluent	Connecticut River

ATTACHMENT B

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

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

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

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

II. METHODS

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

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

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

III. SAMPLE COLLECTION

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

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

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

IV. DILUTION WATER

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

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

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

and

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

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

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

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

V. TEST CONDITIONS

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

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

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

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

Footnotes:

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

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

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

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

Footnotes:

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

VI. CHEMICAL ANALYSIS

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

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

Notes:

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

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

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

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

No Observed Acute Effect Level (NOAEL)

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

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

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

ATTACHMENT C

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 Local Limit Guidance Document (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		Columns (2A) (2B) Water Quality Criteria (Gold Book) From TBLLs Today	
	Maximum (ug/l)	Average (ug/l)	(ug/l)	(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) (2B) Biosolids Criteria From TBLLs New (mg/kg)	(mg/kg)
Arsenic			
Cadmium			
Chromium			
Copper			
Cyanide			
Lead			
Mercury			
Nickel			
Silver			
Zinc			
Molybdenum			
Selenium			
Other (List)			

ATTACHMENT D

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 02109-3912

FACT SHEET

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

NPDES PERMIT NUMBER: **MA0101630**

PUBLIC NOTICE START AND END DATES: **December 9, 2015 -January 22, 2016**

NAME AND MAILING ADDRESS OF APPLICANT:

City of Holyoke
Department of Public Works
63 Canal Street
Holyoke, MA 01040

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Water Pollution Control Facility
One Berkshire Street
Holyoke, Massachusetts 01040

And

Combined Sewer Overflow (CSO) discharges at 11 locations

RECEIVING WATER(S): **Connecticut River (Segment MA 34-05)**

RECEIVING WATER CLASSIFICATION(S): **Class B – Warm water fishery**

LATITUDE: 42°11′25″ N LONGITUDE: 72°36′43″ W

Table of Contents

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

The above named applicant has requested that the U.S. Environmental Protection Agency (EPA) reissue its NPDES permit to discharge from Outfall 001 and eleven combined sewer overflow (CSO) outfalls into the Connecticut River. The facility is a secondary wastewater treatment plant engaged in the collection and treatment of sanitary and industrial wastewater.

The current NPDES permit was issued on July 1, 2009 with an effective date of September 1, 2009 and expired on August 31, 2014. As of September 1, 2014, the expired permit (hereinafter referred to as the "current permit") was administratively extended because the applicant filed a complete application for permit reissuance as required by 40 Code of Federal Regulations (CFR) §122.6. The facility location and the locations of the eleven CSO outfalls are shown on Figure 1 of this fact sheet.

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters based on recent effluent monitoring data may be found in Table 1 of this fact sheet. Figure 1 of the fact sheet is a locus map of the Water Pollution Control Facility, Figure 2 is a locus map of the CSO outfalls, and Figure 3 is a flow process diagram of the facility.

III. Receiving Water Description

The Holyoke Water Pollution Control Facility (WPCF) and the CSO outfalls from the Holyoke system discharge to the Connecticut River Segment MA34-05. (One of the CSO outfalls (Front St/Appleton St. #16) discharges via the Holyoke Canal System to the Connecticut River; this CSO is considered a discharge to the Connecticut River). Connecticut River Segment MA34-05 runs from the Holyoke Dam to the Massachusetts/ Connecticut border, a length of 15.9 miles.

This segment of the Connecticut River has been designated as a Class B water, warm water fishery, with a CSO designator. The Massachusetts Surface Water Quality Standards (MA SQWS), 314 Code of Massachusetts Regulations (CMR) 4.05(3)(b) states that Class B waters are designated as habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. The waters should have consistently good aesthetic value. A warm water fishery is defined in the MA SWQS (314 CMR 4.02) as waters in which the maximum mean temperature over a seven day period generally exceeds 20° Celsius (68° Fahrenheit) during the summer months and are not capable of supporting a year-round population of cold water stenothermal aquatic life. The CSO designation indicates:

> 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. current uses and the level of water quality necessary to protect the current 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.

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

The 2012 Integrated List denotes this segment of the Connecticut River as category 5, "waters requiring a TMDL", with listed impairments cause by *E. coli*, PCB in fish tissue, and Total Suspended Sediment (TSS).[1] The 2003 MassDEP Water Quality Assessment Report for the Connecticut River watershed indicated that this segment did not support primary contact recreation or fish consumption uses, and that aquatic life use was in alert status due to "potential toxicity and habitat impacts of the coal tar deposits and the risk that fish tissue contaminants pose to fish-eating wildlife."

IV. Limitations and Conditions

The effluent limitations and all other requirements described in Part VII of this Fact Sheet may be found in the draft permit.

[1] Massachusetts Year 2012 Integrated List of Waters, Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 303(d) and 305(b) of the Clean Water Act, MassDEP, Division of Watershed Management

V. Permit Basis: Statutory and Regulatory Authority

Congress enacted the Clean Water Act (CWA) "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specified permitting sections of the CWA, one of which is Section 402. *See* CWA §§ 301(a), 402(a).

Section 402(a) established one of the CWA's principal permitting programs, the National Pollutant Elimination System (NPDES). Under this section of the CWA, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. *See* CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. *See* §§ 301, 304(b); 40 CFR §§ 122, 125, 131. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301(b) of the CWA. For publicly owned treatment works (POTWs), technology-based requirements are effluent limits based on secondary treatment as defined in 40 CFR 133.102.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where necessary to maintain or achieve federal or state water quality standards. 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, establish 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. *See* 314 CMR 3.11(3). EPA is required to obtain certification from the state in which the discharge is located that all water quality standards or other applicable requirements of state law, in accordance with Section 301(b)(1)(C) of the CWA, are satisfied, unless the state waives certification.

Section 401(a)(2) of the CWA and 40 CFR § 122.44(d)(4) require EPA to condition NPDES permits in a manner that will ensure compliance with the applicable water quality standards of a "downstream affected state," in this case Connecticut.

In addition, a permit may not be renewed, reissued or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of CWA Section 402(o) and 40 CFR §122.44(l). States are also required to develop antidegradation policies pursuant to 40 CFR § 131.12. No lowering of water quality is allowed, except in accordance with the antidegradation policy.

VI. Facility Information

The Holyoke WPCF serves a population of approximately 37,000 persons and seven Categorical Industrial Users including paper manufacturers, a sheet metal manufacturer, metals finishers (plating, etching and powder coating), and a medical device manufacturer. The collection system is 67% combined and 33% separate. The WPCF was upgraded to a secondary biological facility in 1979. The WPCF design flow (average) is 17.5 mgd, with a peak flow of 37.0 mgd. The facility uses a pure oxygen activated sludge process. The treatment process train includes mechanical screens, grit removal, influent submersible pumps, primary clarification, pure oxygen activated sludge biological treatment, secondary clarification, chlorine disinfection, sludge thickening and sludge dewatering. Effluent pumps are also included in the event of high water in the receiving stream (Connecticut River). A flow process diagram of the facility is shown as Figure 3. The facility is operated by United Water, Inc. under a long-term Operation and Maintenance contract with the City covering the treatment plant, collection system, CSOs and CSO treatment facility.

The City implemented a number of capital improvements, referred to as Initial Capital Improvements (ICIs) at the WPCF as part of its CSO program (which also included construction of the new CSO Abatement Facility, see description below). As part of the ICI projects the headworks operations and secondary treatment facilities were optimized hydraulically such that the influent design flow to the WPCF could reach and maintain the maximum peak flow of 37 mgd during high flow periods. One hundred percent of the 37 mgd peak design flow receives full secondary treatment. Elements of the secondary treatment plant that were renovated, upgraded or expanded include the following:

- The headworks facilities were retrofitted to include new grit removal equipment, modified influent pumping and odor control improvements;
- Aeration system improvements included new aeration mixers, oxygen supply piping, system controls, and liquid oxygen storage tanks;
- Sludge thickening equipment (rotary drum thickener) for waste activated sludge (WAS) was installed;
- Extensive odor control facilities were installed throughout the WPCF;
- The original chlorine gas system was abandoned and replaced with a new liquid sodium hypochlorite disinfection system;
- The former belt filter press operation was replaced with a Fournier Rotary Press.

The treatment plant discharges to the Connecticut River via a submerged outfall about 200 feet from the western bank of the river.

The Berkshire Street CSO 9 Facility, which is located adjacent to the WPCF, has the capability to screen and disinfect a flow rate of up to 103 mgd of CSO wastewater. The facility design included provisions for maximizing the flow to the WPCF from the Highland Park/Front Street (HP/FS) interceptor, transporting the overflow from regulator 009 to an area adjacent to the WPCF by means of the Berkshire Street outfall, diverting the flow into a CSO pump station, installing fine mechanical screens, installing a CSO chlorine disinfection system, dechlorinating

the effluent, then diverting the flow back to the Holyoke WPCF for full secondary treatment or to the Berkshire Street outfall below the pump station location.

The WPCF produces an average of 1,786 dry metric tons of sludge annually. Sludge is trucked to Synagro in Waterbury, CT for incineration.

VII. Derivation of Effluent Limits under the Federal CWA and the Commonwealth of Massachusetts Water Quality Standards

A. EFFLUENT FLOW

The 12 month rolling average effluent flow limitation of 17.5 MGD in the current permit has been maintained in the draft permit. This is the design flow of the facility found in Form 2A, Part A, Section A.6.of the permit application.

Sewage treatment plant discharge is encompassed within the definition of "pollutant" and is subject to regulation under the CWA. The CWA defines "pollutant" to mean, *inter alia*, "municipal . . . waste" and "sewage…discharged into water." 33 U.S.C. § 1362(6).

EPA may use design flow of effluent both to determine the necessity for effluent limitations in the permit that comply with the Act, and to calculate the limits themselves. EPA practice is to use design flow as a reasonable and important worst-case condition in EPA's reasonable potential and water quality-based effluent limitations (WQBEL) calculations to ensure compliance with water quality standards under Section 301(b)(1)(C). Should the effluent discharge flow exceed the flow assumed in these calculations, the instream dilution would decrease and the calculated effluent limits may not be protective of WQS. Further, pollutants that do not have the reasonable potential to exceed WQS at the lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying the Region's reasonable potential analyses and derivation of permit effluent limitations remain sound for the duration of the permit, the Region may ensure its "worst-case" effluent wastewater flow assumption through imposition of permit conditions for effluent flow. Thus, the effluent flow limit is a component of WQBELs because the WQBELs are premised on a maximum level of flow. In addition, the flow limit is necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQS.

Using a facility's design flow in the derivation of pollutant effluent limitations, including conditions to limit wastewater effluent flow, is consistent with, and anticipated by NPDES permit regulations. Regarding the calculation of effluent limitations for POTWs, 40 C.F.R. § 122.45(b)(1) provides, "permit effluent limitations…shall be calculated based on design flow." POTW permit applications are required to include the design flow of the treatment facility. *Id.* § 122.21(j)(1)(vi).

Similarly, EPA's reasonable potential regulations require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," 40 C.F.R. § 122.44(d)(1)(ii), which is a function of *both* the wastewater effluent flow and receiving water flow. EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. EPA accordingly

is authorized to carry out its reasonable potential calculations by presuming that a plant is operating at its design flow when assessing reasonable potential.

The limitation on sewage effluent flow is within EPA's authority to condition a permit in order to carry out the objectives of the Act. *See* CWA §§ Sections 402(a)(2) and 301(b)(1)(C); 40 C.F.R. §§ 122.4(a) and (d); 122.43 and 122.44(d). A condition on the discharge designed to protect EPA's WQBEL and reasonable potential calculations is encompassed by the references to "condition" and "limitations" in 402 and 301 and implementing regulations, as they are designed to assure compliance with applicable water quality regulations, including antidegradation. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of wastewater effluent is consistent with the overall structure and purposes of the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 C.F.R. § 122.41(e), the permittee is required to properly operate and maintain all facilities and systems of treatment and control. Operating the facilities wastewater treatment systems as designed includes operating within the facility's design effluent flow. Thus, the permit's effluent flow limitation is necessary to ensure proper facility operation, which in turn is a requirement applicable to all NPDES permits. *See* 40 C.F.R. § 122.41.

The draft permit requires continuous flow measurement, and also requires reporting of the average monthly and maximum daily flows.

7Q10 Data and Dilution Factor:

Water quality-based limitations are established with the use of a calculated available dilution factor. 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 7Q10 used in the development of the current permit was 1,775 cfs and was based on the *Connecticut River Basin 1998 Water Quality Assessment Report.* Beginning in 2002 a USGS streamgage has been maintained on the Connecticut River at the I-391 bridge, just upstream of the WPCF discharge. Analysis of flow from the period of record 2002 through 2013 at the I-391 bridge indicates the current 7Q10 is 1,850 cfs. The dilution flow, used for determining WET requirements and water quality based limits to meet chronic water quality criteria is:

$Q_{\text{design flow}}$ = Holyoke WPCF Design Flow = 17.5 mgd

$Q_{\text{7Q10 at outfall}}$ = Connecticut River$_{(7Q10)}$ = 1,850 cfs = 1,195 mgd

Dilution Factor = $(Q_{\text{7Q10 at outfall}} + Q_{\text{design flow}}) / Q_{\text{design flow}}$

= (17.5 + 1,195)/17.5 = 69

The WPCF has been upgraded to handle up to 37 mgd on a short-term basis as part of the City's CSO mitigation. Therefore, in determining water quality-based limits for acute criteria an acute dilution factor is used based on the 37 mgd peak flow. This is:

$Q_{peak\ design\ flow}$ = Holyoke WPCF Peak Flow = 37 mgd

$Q_{7Q10\ at\ outfall}$ = Connecticut River$_{7Q10}$ = 1,850 cfs = 1,195 mgd

Dilution Factor = $(Q_{s7Q10\ at\ outfall} + Q_{peak\ design\ flow}) / Q_{design\ flow}$ = (37 + 1,195)/37 = 33.3

B. CONVENTIONAL POLLUTANTS

Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)

The BOD_5 and TSS concentration limits in the draft permit are the same as the limits in the current permit and are based on the secondary treatment requirements of 40 CFR Part 133 (30 mg/l average monthly and 45 mg/l average weekly). The draft permit also contains percent removal requirements of ≥ 85% based on secondary treatment requirements. The monitoring frequency is maintained at five times per week.

Load limits are also included in the draft permit, 40 CFR § 122.45(f), and are calculated based on design flow (17.5 mgd). Average monthly and average weekly TSS mass limits (lbs per day) are required under 40 CFR §122.45(f).

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 Q 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.

Q = Design flow of facility = 17.5 mgd

8.34 = Constant: Factor to convert effluent concentration in mg/l and design flow in mgd to lbs/day.

(Concentration limit) [45] x 8.34 x 17.5 = 6,568 lbs/day
(Concentration limit) [30] x 8.34 x 17.5 = 4,379 lbs/day

There were no violations of the BOD_5 concentration and mass load limits during the period of September 2011 through August 2014, with a long term average of 9.3 mg/l and 761 lbs/day, respectively. See Table 1. There were two violations of the monthly average TSS concentration limit, one violation of the monthly average TSS load limit, and five violations each of the weekly

average TSS concentration and load limits in that time period. The long term average TSS discharges were 13.8 mg/l and 1,240 lbs/day. The BOD_5 and TSS removal percentages averaged 94.6% and 93.3%, respectively, with no violations of the percent removal requirement during this time period.

pH

Technology-based secondary treatment requirements for pH are a minimum of 6.0 and maximum of 9.0 SU. The MA SWQS set water quality criteria for pH with an allowable range from 6.5 to 8.3 SU. MassDEP generally requires that these criteria be met at the point of discharge, prior to dilution, as a state certification requirement. Prior to the issuance of the current permit, MassDEP agreed to reduce the minimum pH effluent limit for the Holyoke discharge to 6.0 based on influent concentrations and the nature of the treatment system. MassDEP has concurred with the continuance of a minimum pH effluent limit of 6.0. EPA agrees that a minimum pH limit of 6.0 is sufficiently protective of water quality, given the evidence of acceptable pH levels currently in the Connecticut River (from 7.4-7.6; see 2003 Connecticut River WQA, page B21) and the available dilution. The pH effluent limit therefore remains the same as in the current permit, at 6.0 to 8.3 SU. The monitoring frequency remains the same at once (1) per day. There were two violations of the pH limit in the period September 2011 through August 2014.

Bacteria

Limitations for bacteria (E. coli) in the current permit are based upon state water quality standards for Massachusetts, MA SWQS, 314 CMR 4.05(3)(b), approved by EPA in 2007. The monthly average limitation in the draft permit is 126 colony forming units (cfu) per 100 ml, and shall be expressed as a monthly geometric mean. The daily maximum limitation in the draft permit is 409 cfu/100 ml, which represents the 90^{th} percentile upper bound of the statistical distribution of bacteria values from EPA, *1986 Ambient Water Quality for Bacteria*, at 9. There were four violations of the E. coli limit in the period September 2011 through August 2014. The monitoring frequency is maintained at two times per week.

C. NON-CONVENTIONAL POLLUTANTS

EPA is required to limit any pollutant or pollutant parameter that is or may be discharged at a level that causes, has reasonable potential to cause, or contribute to an excursion above any water quality criterion. 40 CFR § 122.44(d). EPA therefore reviewed data from the permit application, effluent monitoring reports, whole effluent toxicity test reports, applicable TMDLs if any, treatment process information, and water quality monitoring in order to identify pollutants of concern identified as present in the effluent through monitoring or otherwise expected to be present in the discharge.

Total Residual Chlorine (TRC)

Chlorine and chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. Effluent limits are based on water quality criteria for total residual chlorine (TRC) which are specified in EPA water quality criteria established pursuant to Section 304(a) of the Clean Water Act. The most recent EPA recommended criteria are found in National

Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047). The fresh water aquatic life criteria for TRC are 11 ug/l for protection from chronic toxicity and 19 ug/l for protection from acute toxicity.

In its issuance of the current permit EPA determined that there is reasonable potential for TRC concentrations discharged in the effluent to cause or contribute to an exceedance of the water quality criteria given and that permit limits were required based on the dilution under 7Q10 conditions. New limits are calculated consistent with the new dilution factors discussed in Section VII.A., as set forth below.

Given:
Chronic freshwater criterion = 11 ug/l chlorine
Dilution factor = 69

Acute freshwater criterion = 19 ug/l chlorine
Acute dilution factor = 33.3

Therefore:
Chronic criterion x dilution factor = Monthly Average Limit
11 ug/l x 69 = 759 ug/l = 0.76 mg/l

Acute criterion x dilution factor = Daily Maximum Limit
19 ug/l x 33.3 = 632 ug/l = 0.63 mg/l

As the monthly average cannot be higher than the daily maximum, the 0.63 mg/l limit to meet the acute criterion is included in the Draft Permit as both the Daily Maximum and Monthly Average TRC limit.

There were no violations of the TRC limit in the period from September 2011 through August 2014. Monitoring frequency is maintained at once per day.

The draft permit continues the current permit's requirement that chlorination and dechlorination systems provide an alarm for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system may result in levels of chlorine that are inadequate for achieving effective disinfection, or interruptions and/or malfunctions of the dechlorination system may result in excessive levels of chlorine in the final effluent. The draft permit requires that all interruptions or malfunctions be reported with the monthly DMRs. The draft permit requires that the report 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.

Metals

The draft permit includes new monthly average effluent limits for aluminum, copper, lead, and a new daily maximum limit for copper.

Examination of effluent analyses conducted in connection with WET testing in the past five years indicates that the Holyoke WPCF discharges have included detectable levels of the metals aluminum, chromium, copper, lead, nickel and zinc. EPA therefore analyzed the available data on effluent and receiving water concentrations to determine whether these pollutants "are or may be discharged at a level that causes, has reasonable potential to cause, or contributes to an excursion above" the water quality standard. 40 CFR § 122.44(d)(1)(i).

Table 2 (attached) shows the concentrations of metals in the Holyoke WPCF effluent samples from March 2010 through December 2014. EPA bases its determination of "reasonable potential" on a characterization of the upper bound of expected effluent concentrations based on a statistical analysis of the available monitoring data. As noted in the *Technical Support Document for Water Quality Based Toxics Control* (EPA 1991) ("TSD"), "[a]ll monitoring data, including results for concentrations of individual chemicals, have some degree of uncertainty associated with them. The more limited the amount of test data available, the larger the uncertainty." Thus with a limited data set, the maximum concentration that has been found in the samples may not reflect the full range of effluent concentration. On the other hand, individual high data points may be outliers or otherwise not indicative of the normal range of effluent concentrations.

To account for this, EPA has developed a statistical approach to characterizing effluent variability. As "experience has shown that daily pollutant discharges are generally lognormally distributed," *TSD* at App. E, EPA uses a lognormal distribution to model the shape of the observed data, unless analysis indicates a different distributional model provides a better fit to the data. The model parameters (mean and variance) are derived from the monitoring data.

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

$$X_p = \exp(\mu_y + z_p \sigma_y), \qquad \text{where } \mu_y = \text{mean of Y}$$
$$\sigma_y = \text{standard deviation of Y}$$
$$Y = \ln[X]$$

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

$$X_{95} = \mu_y + 1.645\, \sigma_y$$

The 95th percentile value is used to determine whether a discharge has a reasonable potential to cause or contribute to an exceedance of a water quality standard. The combination of the upper bound effluent concentration with dilution in the receiving water is calculated to determine whether the water quality criteria will be exceeded. For this facility's analysis, nondetects were excluded from the dataset in determining the 95th percentile.[2]

The receiving water concentration is calculated taking into account dilution at 7Q10 conditions, through a mass balance equation that accounts for concentrations in the Connecticut River upstream of the discharge as reported in the facility's WET test reports:

$$\text{Receiving water concentration } (C_r) = \frac{(C_d * Q_d + C_s * Q_s)}{(Q_d + Q_s)}$$

Where:
C_d = upper bound effluent concentration data (95th percentile)
Q_d = Average Design flow of facility for chronic criteria; Peak design flow for acute criteria
C_s = Median concentration in Connecticut River upstream of discharge
Q_s = 7Q10 streamflow in Connecticut River upstream of discharge

The projected receiving water concentrations are compared to the water quality criteria from EPA, *National Recommended Water Quality Criteria 2002*, which have been incorporated into the Massachusetts SWQS, 314 CMR 4.05 (5)(e). For cadmium, nickel, lead and zinc the water quality criteria are hardness dependent. Because the reasonable potential analysis is performed using dilution under 7Q10 conditions, a projected hardness under 7Q10 conditions is calculated using the same mass balance equations and the median hardness of the effluent (81 mg/l) and upstream receiving water (31 mg/l), for a calculated hardness of 31.5 mg/l. See: Table 3.

[2] EPA notes that the *TSD* also includes a procedure for determine such percentiles when the dataset includes non-detect results based on a delta-lognormal distribution. This approach is not used here because the delta lognormal analysis is premised on nondetect levels that are lower than the measurement data. For the Holyoke data, detection levels vary widely, in most cases are not sufficiently stringent, do not meet the requirements for WET analytical testing, and are higher than some of the measured values. In this case any reasonable assumption for nondetects (use of detection limit, use of half of detection limit, or exclusion of data) leads to the same set of pollutants for which permit limits are required.

Table 3. Criteria calculations

7Q10	1850	cfs
Design flow	17.5	MGD
Hardness =	31.5	mg/L

Metal	m_A	b_A	m_C	b_C	CF acute	CF chronic	Dissolved Criteria		Total Recoverable Criteria	
							Acute Criteria (CMC) (ug/L)	Chronic Criteria (CCC) (ug/L)	Acute Criteria (CMC) (ug/L)	Chronic Criteria (CCC) (ug/L)
Hardness Dependent Metals										
Cadmium	1.0166	-3.9240	0.7409	-4.7190	0.992	0.957	0.65	0.11	0.7	0.11
Chromium III	0.8190	3.7256	0.8190	0.6848	0.316	0.860	221.04	28.75	699.5	33.4
Copper	0.9422	-1.7000	0.8545	-1.7020	0.960	0.960	4.52	3.33	4.7	3.5
Lead	1.2730	-1.4600	1.2730	-4.7050	0.959	0.959	17.98	0.70	18.7	0.73
Nickel	0.8460	2.2550	0.8460	0.0584	0.998	0.997	176.07	19.56	176.4	19.6
Zinc	0.8473	0.8840	0.8473	0.8840	0.978	0.986	44.00	44.36	45.0	45.0
Non-Hardness Dependent Metals										
Chromium VI					0.982	0.962	16.00	11.00	16.29	11.43
Aluminum					---	---	---	---	750.00	87.00

Source: National Recommended Water Quality Criteria 2002, http://www.epa.gov/waterscience/criteria/wqctable/

Table 4 shows the result of the mass balance equations.

Table 4. Mass Balance and comparison to water quality criteria

Pollutant	Qd (mgd)	Cd (ug/l)	Qs (mgd)	Cs (ug/l)	$(C_r) = \frac{(C_d * Q_d + C_s * Q_s)}{(Q_d + Q_s)}$	Criterion (expressed as total recoverable metal)
Al chronic	17.5	156	1195	145	145	87
Al acute	37				145	750
Cu chronic	17.5	46		3.6	4	3.5
Cu acute	37				5	4.7
Ni chronic	17.5	77		2.2	3	20
Ni acute	37				4	176
Pb chronic	17.5	3.3		0.80	0.84	0.73
Pb acute	37				0.9	18.7
Zn chronic	17.5	51.2		7.1	8	45
Zn acute	37				8	45

The results indicate that the aluminum, copper, and lead discharges have a reasonable potential to cause or contribute to exceedances of the chronic water quality criteria for these pollutants. The results also indicate exceedances of the acute water quality criteria for copper. Therefore,

effluent limits are included in the draft permit that will ensure that the discharge does not contribute to exceedances. Because the receiving water is already over the chronic water quality criteria, monthly average limits are set at the chronic criteria of 87 ug/l for aluminum, 3.5 µg/l for copper and 0.73 ug/l for lead. In addition, because the receiving water is already over the acute water quality criteria for copper, the daily maximum limit is set at the acute criteria of 4.7 µg/l.

Toxicity Testing

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

Based on the potential for toxicity resulting from domestic and industrial contributions, the level of dilution at the discharge location, water quality standards, and in accordance with EPA regulation and policy, the draft permit includes chronic and acute toxicity limitations and monitoring requirements. (See, e.g., "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 50 Fed. Reg. 30,784 (July 24, 1985); see also, EPA's *Technical Support Document for Water Quality-Based Toxics Control*). EPA Region I has developed a toxicity control policy. The policy requires wastewater treatment facilities to perform toxicity bioassays on their effluents. The MassDEP requires bioassay toxicity testing for state certification.

The MassDEP's Division of Watershed Management has a current toxics policy, *Implementation Policy for the Control of Toxic Pollutants in Surface Waters*, MassDEP 1990 (Implementation Policy) that requires toxicity testing for all major dischargers such as the Holyoke WPCF. In addition, EPA feels that toxicity testing is required to assure that the synergistic effect of the pollutants in the discharge does not cause toxicity, even though the pollutants may be at low concentrations in the effluent. The inclusion of whole effluent toxicity limitations in the draft permit will assure that the Holyoke WPCF does not discharge combinations of toxic compounds into the Connecticut River in amounts that would affect aquatic or human life.

Pursuant to EPA Region I Policy, and MassDEP's Implementation Policy, dischargers having a dilution factor between 20 and 100 are required to conduct acute toxicity testing four times per year unless there are passing results over an extended period of time. A dilution factor of 69 was calculated for this facility. In accordance with the above guidance, the draft permit includes an acute toxicity limit (LC50 of > 100%).

Toxicity testing shall be performed on the daphnid, *Ceriodaphnia dubia* in accordance with the EPA Region I Toxicity protocol found in the draft permit **Attachment A**, and the tests will be conducted four times a year. EPA has reduced the number of species to be tested based on the greater sensitivity of the daphnid as demonstrated by the facility's WET test results; there have been no violations of the WET effluent limits in the past three years.

EPA and MassDEP may use the results of the toxicity tests and chemical analyses conducted by the permittee, required by the permit, as well as national water quality criteria, state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants.

The draft permit adds requirements for the reporting of several selected parameters, including ammonia nitrogen (as N); hardness; alkalinity; and total recoverable aluminum, cadmium, copper, lead, nickel, and zinc, the results of which are determined through analyses conducted on samples of the 100 % effluent sample in conjunction with WET tests.

As discussed in the Metals section (Part VII.C.) of this fact sheet, limitations for total recoverable zinc, nickel, cadmium, and chromium are not included in the draft permit because the potential for the discharge of these metals from the Holyoke WPCF to cause or contribute to an excursion above water quality criteria does not exist. However, the draft permit does include limitations and monitoring requirements for total recoverable aluminum, copper and lead because potential does exist for the discharge of these metals to result in excursions above water quality criteria (see Metals section, supra). The results of the aluminum, copper and lead analyses conducted in conjunction with WET tests may be used to satisfy the monthly sampling requirement specified in Part I.A. of the draft permit for the particular month in which sampling is conducted.

Total Nitrogen

The draft permit continues the requirements in the current permit to optimize nitrogen removal consistent with the requirements of the Long Island Sound TMDL.

It has been determined that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen. In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL. See TMDL-*A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound* (CT DEP 2000).

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day respectively (see table below). The estimated 2004-05 point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers respectively are 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day, based on recent information and including all POTWs in the watershed. The following table summarizes the estimated baseline loadings, TMDL target loadings, and estimated current loadings:

Basin	Baseline Loading[3] (lbs/day)	TMDL Target[4] (lbs/day)	Existing Loading[5] (lbs/day)
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	26,211	19,657	17,002

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

Specifically, the current permit required an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. The permit also required implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load, and submittal of annual reports that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years. The permittee has implemented optimization methods, and the annual nitrogen loading has decreased over time since 2005. The draft permit continues those implementation and reporting requirements, in order to maintain the nitrogen load. The baseline annual average total nitrogen load from this facility (2004 – 2005) is 696 lbs/day. The more recent annual average total nitrogen load discharged from this facility was: 771 lbs/day in 2007, 608 lbs/day in 2010, and 538 lbs/day in 2014.

The agencies expect to update the estimate of all out-of-basin total nitrogen loads and may incorporate total nitrogen limits in future permit modifications or reissuances as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant the incorporation of numeric permit limits. There have been significant efforts by

[3] Estimated loading from TMDL (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998).
[4] Reduction of 25% from baseline loading.
[5] Estimated current loading from 2004 – 2005 DMR data – see Table 6.

the New England Interstate Water Pollution Control Commission (NEIWPCC) work group and others since completion of the 2000 TMDL, which are anticipated to result in revised wasteload allocations for in-basin and out-of-basin facilities. Although not a permit requirement, it is strongly recommended that any facilities planning that might be conducted for this facility should consider alternatives for further enhancing nitrogen reduction.

The draft permit continues the average monthly and maximum daily reporting requirements for total Kjeldahl nitrogen (TKN), nitrite, nitrate, ammonia and total nitrogen that are in the current permit, but increases the frequency from monthly to weekly monitoring in order to provide an improved baseline for assessing optimization of nitrogen removal.

VIII. 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 22, 1985 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 (technically-based 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 March 1, a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

IX. Combined Sewer Overflows

A. Holyoke's Combined Sewer System

Approximately 2/3 of Holyoke's sewer collection system consists of combined sewers that convey both sanitary sewage and stormwater runoff during rain events. During wet weather, the combined flow exceeds the capacity of the interceptor sewers and the wastewater treatment plant, and a portion of the combined flow is discharged to the Connecticut River through the City's combined sewer overflows (CSOs). CSOs have been identified as a significant source of pollution to the Connecticut River. See 2003 Connecticut River Water Quality Assessment. EPA has issued a series of administrative orders to the City requiring mitigation of CSO discharges, most recently in September 2012.

The City currently has eleven active CSO outfalls where the CSOs discharge to receiving waters, receiving flow from fifteen regulators. Figure 1. This is a reduction from the historic total of 23 combined sewer regulators within the system, and two fewer than in the current permit (due to the separation of sewers tributary to the Jones Ferry and Appleton Street CSO outfalls). One of the CSO outfalls, the Berkshire Street CSO Outfall 009, is by far the largest overflow and is the location of the Berkshire Street Treatment Facility. That facility provides screening and disinfection of up to 103 MGD of CSO flows as well as a small amount of storage for flows that can be pumped back to the WPCF for treatment.

The City's draft CSO Long Term Control Plan (LTCP) for minimizing and mitigating the discharge of CSOs dates from 2002. In addition to the Berkshire Street CSO Treatment Facility, considered by the City to be the cornerstone of the long term CSO management plan for the City, that document set forth a plan that included construction of an additional CSO abatement facilities (at CSO 018 – Highland Park); construction of detention basins on Day Brook, optimization of flows to the Holyoke WPCF from drainage basins tributary to CSOs 7, 9, 16, 19, 20, 21 and 23; sewer separation along the North and South Interceptors (CSOs 2, 3, 8, 11, 13 and 14); sewer separation tributary to the Essex Street/Beech area (CSO regulator 18A); and removal of Green Brook from the Bemis Heights – Highland Park combined system (CSO 21). See United Water, *City of Holyoke Annual CSO Report 2007*. Projects that have been completed to date are:

As of 2007:

- Construction of the Berkshire Street CSO 9 Treatment Facility
- Sewer separation tributary to the Mosher Street pump station, eliminating CSO 014 (this outfall is now stormwater only)
- Separation of Green Brook from the drainage area tributary to CSO 021
- Pump station improvements at the Springdale pump station (CSO 008)
- Modification of the regulator structure at Front and Appleton Streets (CSO 016)
- Modifications to the Holyoke WPCF to expand its hydraulic capacity to 37 MGD during wet weather periods, including provisions for pumping and treating up to 25 million gallons of captured and stored CSO flow from the new CSO Abatement Facility (2006-08).

Id.

Since 2007:

- Modification of the CSO 9 Treatment Facility to include a motorized slide gate to optimize capture of combined sewer flows (2009)
- Additional pump station improvements at the Springdale pump station - CSO 008 (2008)
- Automation of CSO flow monitoring at each of the active overflows; all CSO overflow locations now receive continuous electronic remote monitoring of flow volumes (2009-10)
- In connection with monitoring program, sharp crested weirs or weir extensions installed in overflow pipelines at CSOs 002, 003, 007, 008, 011, 013, 018A, 019, 020, and 023, increasing invert elevations.
- Installation of rain gauges in three separate regions of the City for better precipitation coverage (2010)
- Cleaning and CCTV (closed-circuit television) inspection of Highland Park interceptor, improving hydraulic capacity of the system from the CSO 020 - Cleveland Street regulator (2011)
- Sewer separation in drainage areas tributary to the Appleton Street (CSO 016) and Jones Ferry (CSO 003) regulators (2011-12).

Sevee & Maher Engineers, Inc., *Combined Sewer Overflow Annual Report and Infiltration/Inflow Annual Report for Year 2012, City of Holyoke, MA*; Sevee & Maher Engineers, Inc., *Combined Sewer Overflow Annual Report and Infiltration/Inflow Annual Report for Year 2010, City of Holyoke, MA.* These projects have resulted in a reduction in the overall volume of CSO discharges as well as treatment of the majority of remaining volume. For comparison, the draft LTCP indicated a typical annual volume of 516 MG of CSO discharges; in 2013 (a relatively wet year) the City's monitoring indicated a total of 139 MG of untreated discharges, and an additional 212 MG treated discharge from the Berkshire Street facility.

The City is currently engaged in updating and finalizing its Final LTCP. This document is overdue as its completion was required in July 2014 pursuant to the administrative order governing the City's CSO work. The City has not yet secured the funding necessary to complete this work.

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.E.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 30th of each year.

In addition, the permittee's operation of the Berkshire Street CSO Treatment Facility is subject to additional effluent limitations and monitoring requirements. The CSO Treatment Facility represents an enhancement of the Nine Minimum Controls, allowing greater use of the system for storage (control #2) and return of the flow to the POTW for treatment (control #3), removal of floatables and some solid materials (control #6), and reduction of bacteria through disinfection (and the related control of chlorine discharges) (control # 7). The facility was designed to provide screening and chlorine disinfection with dechlorination in order to meet water quality standards for bacteria and to avoid toxic discharges of chlorine compounds. Monitoring results from the facility operation in the period August 2013 to August 2014 are shown in Table 4a.

In determining effluent limits for CSO treatment facilities, EPA applies BCT/BAT effluent limitations using its best professional judgment (BPJ), considering the factors identified in 40 C.F.R § 125.3(d), including the cost and benefits of the facility (analyzed in connection with the development of the city's CSO control plan); the age of the facility, the design parameters that the facility was engineered to meet; and the performance of the facility. In this case the facility was designed to meet interim limits for bacteria (fecal coliform 200 fcu/100 ml average monthly (and total residual chlorine (0.74 mg/l average monthly). The draft permit supersedes the interim limits with water quality-based limits for bacteria and TRC as follows:

For bacteria, the indicator bacteria is changed from fecal coliform to E. Coli. Consistent with the interim limit, no dilution is provided with respect to bacteria. The Massachusetts SWQS standard for bacteria is:

E. Coli: 126 cfu/100 ml Maximum Daily
409 cfu/100 ml Maximum Daily

Total residual chlorine limits are calculated based on the design flow of the facility (103 MGD) under 7Q10 conditions. While this is a wet weather facility (and might therefore be expected to discharge under higher receiving water flows), facility records indicate frequent discharges in connection with high intensity summer storms when river flows are relatively low, so that 7Q10 conditions are appropriate for determining permit limits.

$Q_{\text{design flow}}$ = Berkshire Street CSO Facility Design Flow = 103 mgd

$Q_{\text{7Q10 at outfall}}$ = Connecticut River$_{(7Q10)}$ = 1,850 cfs = 1,195 mgd

Dilution Factor = $(Q_{\text{design flow}} + Q_{\text{7Q10 at outfall}}) / Q_{\text{7Q10 at outfall}}$ = (103 + 1,195)/103 = 12.6

Given:
Chronic freshwater criterion = 11 ug/l chlorine
Acute freshwater criterion = 19 ug/l chlorine
Acute dilution factor = 12.6

Therefore:
Chronic criterion x dilution factor = Monthly Average Limit
11 ug/l x 69 = 759 ug/l = 0.14 mg/l
Acute criterion x dilution factor = Daily Maximum Limit
19 ug/l x 12.6 = 239 µg/l = 0.24 mg/l

The facility monitoring results (Table 4a) indicate that the facility is capable of meeting these permit limits (which are more stringent than those contained in the Consent Order governing the facility construction).

The draft permit also requires reporting of flow (including treated flow, untreated flow diverted from the facility, and flow to the treatment plant), BOD_5, TSS, pH, Whole Effluent Toxicity, TKN, Nitrate, Nitrite and Ammonia. In order to allow a determination of whether the facility is meeting the design goal of reducing untreated discharges to no more than 4 per year in a typical year, the draft permit requires that the annual report include a comparison of annual precipitation to that in a "typical" year as assumed in the modeling of the CSO system and an assessment of whether the volume and frequency of untreated CSO discharges from CSO 009 is consistent with the assumptions underlying the modeling of the system.

X. 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[6]). I/I in a collection system can pose a significant environmental problem because it may displace wastewater flow and thereby cause, or contribute to causing, SSOs. Moreover, I/I could reduce the capacity and efficiency of the treatment plant and cause bypasses of secondary treatment. Therefore, reducing I/I will help to minimize any SSOs and maximize the flow receiving proper treatment at the treatment plant. MassDEP has stated that the inclusion in

[6] "Infiltration" is groundwater that enters the collection system through physical defects such as cracked pipes, or 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.

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 draft permit were not included in the current permit, including a collection system mapping requirement, 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.

XI. Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §1801 et seq. (1998)), EPA is required to consult with the National Fisheries Services (NOAA Fisheries) if EPA's action or proposed action that it funds, permits, or undertakes, may adversely impact any essential fish habitat (EFH). The Amendments broadly define essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. §1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 CFR § 600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences 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. Anadromous Atlantic salmon (*Salmo Salar*) is the only managed species believed to be present during one or more lifestages within the area which encompasses the discharge site. Although the last remnant stock of Atlantic salmon indigenous to the Connecticut River was believed to have been extirpated over 200 years ago, an active effort has been underway throughout the Connecticut River system since 1967 to restore this historic run (HG&E/MMWEC, 1997). Atlantic salmon may pass in the vicinity of the discharge either on the migration of juveniles downstream to Long Island Sound or on the return of adults to upstream areas. The area of the discharge on the river mainstem is not suitable for spawning, which is likely to occur in tributaries where the appropriate gravel or cobble riffle substrate can be found.

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

- This permit action does not constitute a new source of pollutants. It is the reissuance of an existing NPDES permit;
- The dilution factor (69; 33.3 under short term, peak flow conditions) is high;
- The Connecticut River is approximately 680 feet wide in the vicinity of the facility. The discharge plume is generally expected to hug the west bank of the river and not approach the midpoint of the river. This will allow for a large zone of passage for migrating Atlantic salmon that is unaffected by the discharge;
- WPCF limits specifically protective of aquatic organisms have been established for chlorine, based on EPA water quality criteria;
- The facility withdraws no water from the Connecticut River, so no life stages of Atlantic salmon are vulnerable to impingement or entrainment from this facility;
- Acute toxicity tests will be conducted four times per year to ensure that the discharge does not present toxicity problems;
- CSO discharges have been significantly reduced in accordance with permit requirements;
- Enhanced treatment of CSO discharges from regulator 9, Berkshire Street CSO Treatment Facility, includes dechlorination of the effluent;
- The draft permit prohibits the discharge of pollutants or combination of pollutants in toxic amounts;
- The effluent limitations and conditions in the draft permit were developed to be protective of all aquatic life; and
- The draft permit prohibits violations of the state water quality standards.

EPA believes that the draft permit limits adequately protect Atlantic Salmon EFH, and therefore additional mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for our conclusion, NOAA Fisheries will be notified and an EFH consultation will be initiated.

XI. Endangered Species Act

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

Section 7(a)(2) of the Act requires every federal agency in consultation with and with the assistance of the Secretary of the Interior, to ensure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The 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.

As the lead federal agency charged with authorizing the discharge from this facility, EPA has conducted a review in support of our consultation responsibilities under section 7 (a)(2) of the Endangered Species Act (ESA) for potential impacts to federally listed species. The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). For this action, the action area also includes the underwater areas where the effects of the discharge *(i.e.,* pollutants) may be experienced, as well as a two mile stretch of the west bank of the river, approximately one mile above and below the I-395 Bridge.

Two federally listed species have been documented to occur in the Connecticut River, the Atlantic sturgeon (*Acipenser oxyrinchus*) and the shortnose sturgeon (*Acipenser brevirostrum*). Based on the information available, EPA has determined that Atlantic sturgeon are not expected to occur in the action area. For completeness, the Atlantic sturgeon was included in EPA's analysis in Attachment A of this fact sheet.

Shortnose sturgeon, however, could potentially be influenced by the reissuance of this permit. It is EPA's preliminary determination that the operation of this facility and the discharge from the CSO outfalls, as governed by the permit action, are not likely to adversely affect the species of concern. It is our position that this permit action does not warrant a formal consultation under Section 7 of the ESA. The reasoning to support this position is set forth in Attachment A to this fact sheet. EPA is seeking concurrence from NMFS regarding this determination through the information in the draft permit, this fact sheet and Attachment A, as well as through a letter submitted to NMFS Protected Resources under separate cover.

XII. 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.

As noted on page 3 of the permit, a routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable Discharge Monitoring Report (DMR) that is submitted to EPA.

The draft permit includes new provisions related to DMR submittals to EPA and the State. The draft permit requires that the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR. NetDMR is a national web-based tool for regulated CWA permittees to submit 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. The permittee is currently submitting its DMRs using NetDMR.

All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR, unless otherwise specified in the permit. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

XIII. 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. EPA has requested permit certification by the State pursuant to 40 CFR §124.53 and expects the draft permit will be certified.

XIV. 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 U.S.EPA, Office of Ecosystem Protection, Att: Janet Deshais, Municipal Permits Unit (OEP06-1), 5 Post Office Square, Suite 100, Boston, MA 02109-3912 or to deshais.janet@epa.gov. 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.

XV. EPA Contact

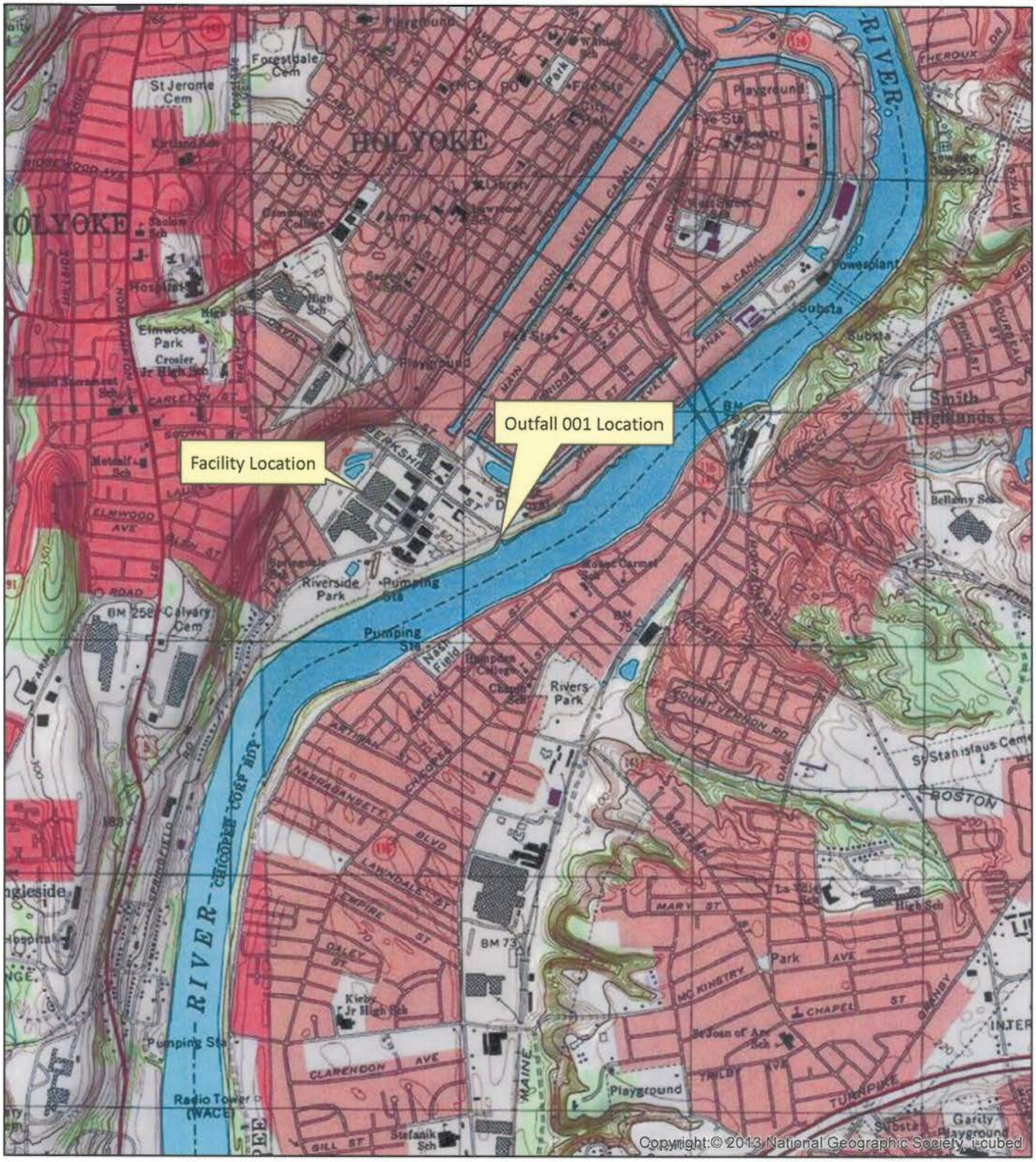
Requests for additional information or questions concerning the draft permit may be addressed Monday through Friday, between the hours of 9:00 a.m. and 5:00 p.m., to:

Janet Deshais
Chemical/Environmental Engineer
U.S. Environmental Protection Agency
Office of Ecosystem Protection (OEP06-1)
5 Post Office Square, Suite 100
Boston, MA 02109 – 3912
Telephone: (617) 918-1667
Fax: (617) 918-0534
E-mail: deshais.janet@epa.gov

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

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

November 2015



Scale 1 : 24,000

0 500 Meters

0 1,000 2,000 Feet

Regulated Facilities: EPA

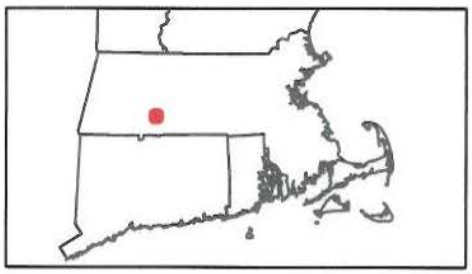
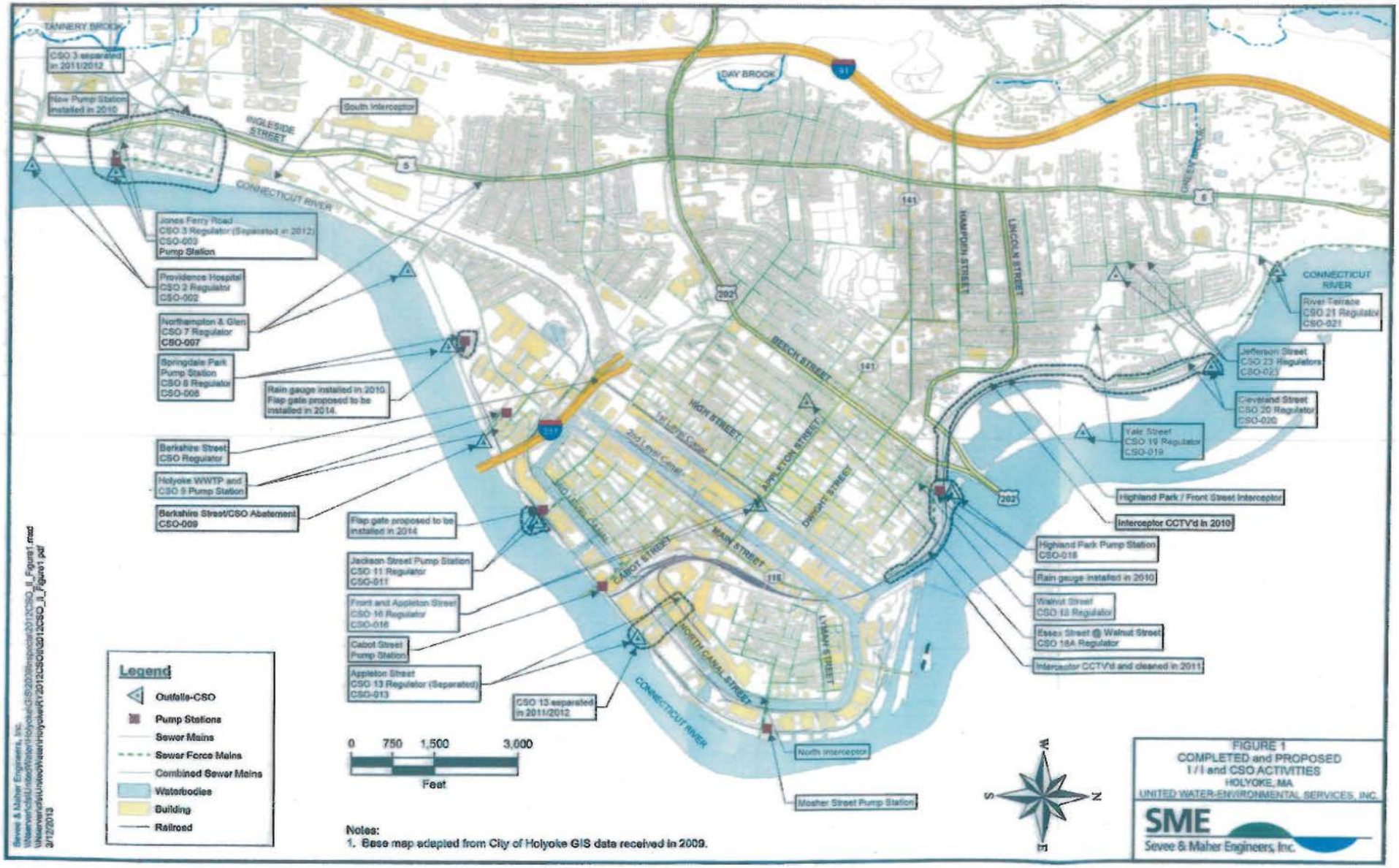


FIGURE 1
City of Holyoke
Water Pollution
Control Facility
NPDES Permit Renewal
Holyoke, MA

EPA

8/14/2015


TANNERY BROOK
CSO 3 separated in 2011/2012
New Pump Station installed in 2010
RIDGESIDE STREET
South Interceptor
CONNECTICUT RIVER
DAY BROOK
91
5
141
202
Jones Ferry Road CSO 3 Regulator (Separated in 2012) CSO-003 Pump Station
Providence Hospital CSO 2 Regulator CSO-002
Northampton & Glen CSO 7 Regulator CSO-007
Springdale Park Pump Station CSO 8 Regulator CSO-008
Rain gauge installed in 2010. Flap gate proposed to be installed in 2014.
Berkshire Street CSO Regulator
Holyoke WWTP and CSO 9 Pump Station
Berkshire Street/CSO Abatement CSO-009
Flap gate proposed to be installed in 2014
Jackson Street Pump Station CSO 11 Regulator CSO-011
Front and Appleton Street CSO 16 Regulator CSO-016
Cabot Street Pump Station
Appleton Street CSO 13 Regulator (Separated) CSO-013
CSO 13 separated in 2011/2012
BEECH STREET
HIGH STREET
1st Level Canal
2nd Level Canal
APPLETON STREET
DWIGHT STREET
MAIN STREET
CABOT STREET
NORTH CANAL STREET
LYMAN STREET
HAMPDEN STREET
LINCOLN STREET
GREEN RIVER
CONNECTICUT RIVER
River Terrace CSO 21 Regulator CSO-021
Jefferson Street CSO 23 Regulators CSO-023
Cleveland Street CSO 20 Regulator CSO-020
Yale Street CSO 19 Regulator CSO-019
Highland Park / Front Street Interceptor
Interceptor CCTV'd in 2010
Highland Park Pump Station CSO-018
Rain gauge installed in 2010
Walnut Street CSO 18 Regulator
Essex Street @ Walnut Street CSO 18A Regulator
Interceptor CCTV'd and cleaned in 2011
North Interceptor
Mosher Street Pump Station
Legend
Outfalls-CSO
Pump Stations
Sewer Mains
Sewer Force Mains
Combined Sewer Mains
Waterbodies
Building
Railroad
0 750 1,500 3,000
Feet
Notes:
1. Base map adapted from City of Holyoke GIS data received in 2009.
N
S
FIGURE 1
COMPLETED and PROPOSED
I / I and CSO ACTIVITIES
HOLYOKE, MA
UNITED WATER-ENVIRONMENTAL SERVICES, INC.
SME
Sevee & Maher Engineers, Inc.
Sevee & Maher Engineers, Inc.
3/12/2013

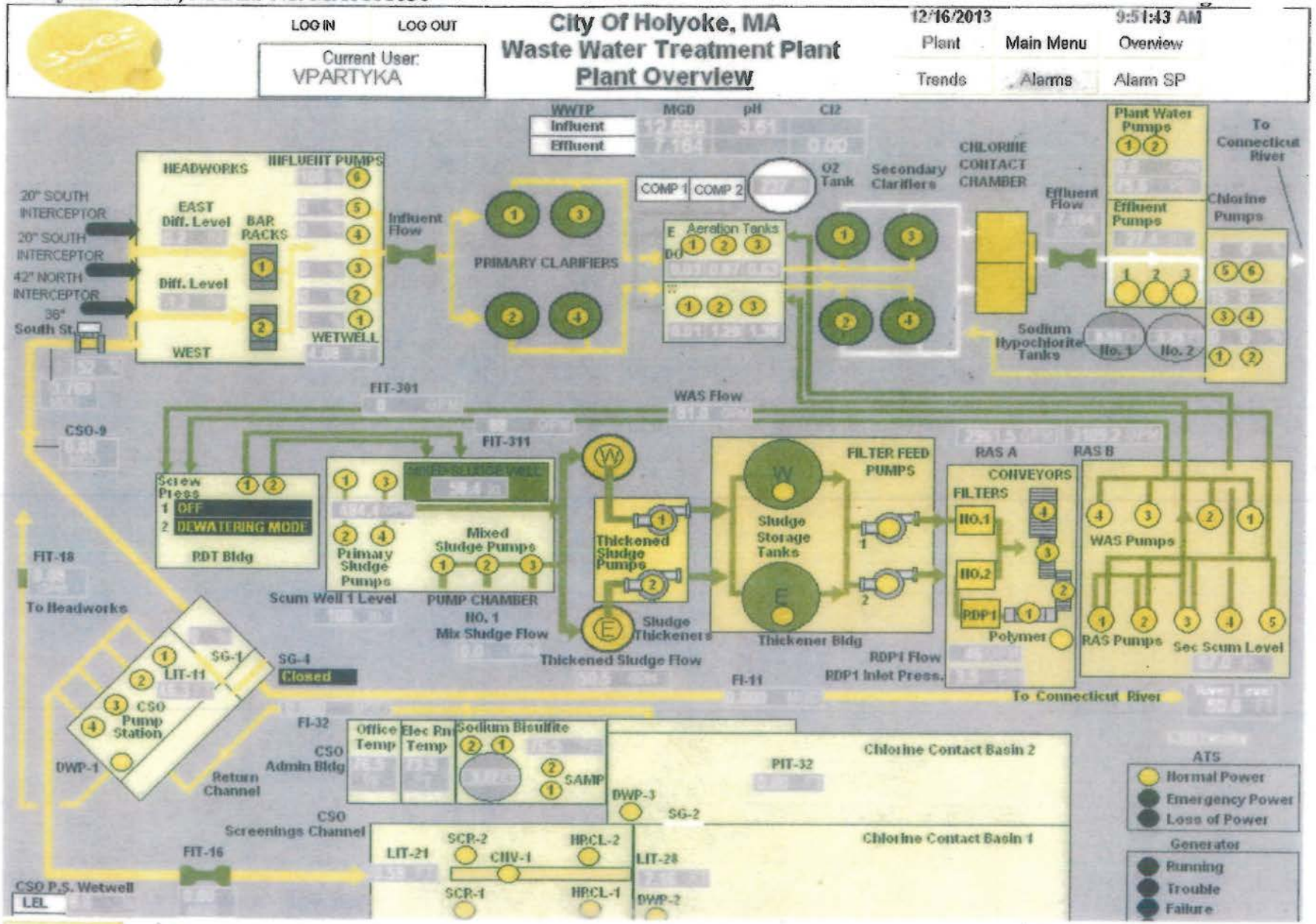


Figure 3. FLOW SCHEMATIC OF HOLYOKE WPCF

Table 1 - Effluent Monitoring Data

Fact Sheet, MA0101702

Monitoring Period End Date	BOD_5							TRC		E. coli		Flow			Ammonia Nitrogen	Total Kjeldahl Nitrogen	Total Nitrate+Nitrite
	Average Monthly	Average Weekly	Max Daily	Average Monthly	Average Weekly	Maximum Daily	Percent Removal	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily	12 Month Rolling Avg	Monthly Average	Maximum Daily	Average Monthly	Average Monthly	Average Monthly
	lb/day			mg/L			%	ug/L		cfu/100mL		MGD			mg/L	mg/L	mg/L
09/30/2011	906	1377	3603	9.3	13.8	36	94.3	0.3	0.62	8	54	8.9	10.8	21.1	4.5	6.47	0.817
10/31/2011	781	1116	3275	9.4	13.6	33	92.4	0.4	0.96	3	5	9.1	9.7	14	4.4	6.58	1.01
11/30/2011	736	1289	2153	9.2	15.2	29	94					9.3	9.2	14.5	4.4	6.39	0.926
12/31/2011	784	1293	2877	9	12.2	25	93.2					9.5	9.7	14.9	4.5	6.11	0.866
01/31/2012	494	954	2218	6.7	12.4	28	95					9.7	8.6	13.6	4.7	6.34	1.047
02/29/2012	328	368	563	5.3	6.2	9	97.1					9.8	7.6	11	4.9	7.24	0.849
03/31/2012	451	554	1144	6.5	7.6	14	96.3					9.4	8.4	11.6	5.7	7.4	1.145
04/30/2012	829	1402	3258	11.6	15.2	31	93.5	0.3	0.74	2	7	9.2	8	13.3	6.1	9.03	1.314
05/31/2012	1483	3494	6697	17.7	40.6	90	94.4	0.3	0.6	3	68	9.2	9.6	14.6	5.2	9.79	1.102
06/30/2012	709	1039	2806	10	13	29	93.7	0.3	0.78	19	111	9.1	8.2	14	5.8	8.9	1.056
07/31/2012	667	730	1001	10.2	11.6	16	94.6	0.3	0.76	109	880	9	7.7	14	7.2	10.28	1.121
08/31/2012	851	960	1636	11	13.2	22	92.8	0.4	0.9	21	1700	8.9		15.5	5.4	8.87	0.977
09/30/2012	748	934	1995	9.4	11.6	17	94	0.5	0.88	4	700	8.8	9.6	18.4	5.9	8.34	1.35
10/31/2012	637	760	2102	8.4	10.2	20	95.5	0.5	0.84	2	10	8.8	8.9	15	5.2	8.2	1.456
11/30/2012	516	859	934	8	10.4	14	96.2					8.6	7.7	10.1	5.4	7.78	1.499
12/31/2012	666	1453	3573	8	15.8	36	94.5					8.6	9	16	6.5	11.16	1.108
01/31/2013	642	560	2652	7.7	7	30	93.4					8.6	9.6	17.9	6.2	9.52	1.325
02/28/2013	1920	1297	27647	15.2	13.2	170	96.2					8.8	9.9	19.5	4.9	13.43	1.307
03/31/2013	716	6179	5215	6.8	41	37	95.2					9.1	11.5	16.9	4.1	5.5	1.02
04/30/2013	708	938	1336	9.7	13	18	94.9	0.3	0.57	2	5	9.2	9.1	14.3	5.6	8.02	1.345
05/31/2013	1304	2224	4624	15.3	24.8	36	93.3	0.4	0.89	28	199	9.2	9.8	18.3	7.5	11.51	0.304
06/30/2013	1332	2568	6939	11.9	23.4	64	88.6	0.4	0.69	2	5	9.7	14.2	23.5	3.6	6.34	0.143
07/31/2013	598	955	2227	7.2	10.6	21	95.3	0.4	0.66	5	30	9.9	9.7	17.8	5.1	8.46	0.251
08/31/2013	699	983	1668	9.6	12.2	20	95.1	0.5	0.89	7	825	9.8	8.7	17.7	6	9.04	0.314
09/30/2013	501	540	1031	7	7.6	13	96.4	0.4	0.65	2	14	9.7	8.5	12.3	8.7	8.98	0.484
10/31/2013	765	1149	2802	11.4	13.6	30	94.9	0.4	0.76	2	14	9.6	7.8	12.1	8.4	10.46	0.568
11/30/2013	820	2158	7446	9.7	20.2	48	96.8					9.6	7.8	18.6	9.3	11.1	0.299
12/31/2013	433	646	1852	6.2	7.6	15	97					9.5	7.5	14.8	7.9	9.19	0.393
01/31/2014	590		3573	7.5	12.4	36	94.2					9.4		16.9	5.5	7.39	0.274
02/28/2014	373		803	6.9	7.6	14	96.5					9.1		13.3	7.6	9	0.441
03/31/2014	1040		10719	10.5	15.4	63	92.6					8.9	8.6	22.9	4.6	6.01	0.213
04/30/2014	1295		13568	11.2	23.8	98	93.3	0.4	0.96	1	5	9		17.3	3.3	5.36	0.113
05/31/2014	422		694	5.8	10.4	9	94.8	0.4	0.6	4	13	9		18.4	4.6	5.69	0.135
06/30/2014	479		1009	8.9	13.6	22	94.9	0.4	0.58	55	234	8.4		11.2	6.6	9.56	0.189
07/31/2014	586		1741	9.4	13.2	24	94.8	0.4	0.63	6	47	8.1		10.3	6.2	8.51	0.134
08/31/2014	575		4569	8.7	12.4	33	95.7	0.4	0.61	2	19	7.9		16.6	6.4	8.7	0.394
Monitoring frequency	5/week							1/day		2/week		Continuous			1/month	1/month	1/month
Existing Permit Limit	4,379	6,568	Report	30	45	Report	≥85%	0.74	1	126	409	17.5	Report	Report	Report	Report	Report
Minimum	328	368	563	5.3	6.2	9	88.6	0.3	0.57	1	5	7.9	7.5	10.1	3.3	5.36	0.113
Maximum	1920	6179	27647	17.7	41	170	97.1	0.5	0.96	109	1700	9.9	14.2	23.5	9.3	13.43	1.499
Average	760.7	1385	3943.1	9.3	14.6	34.7	94.6	0.4	0.7	13.7	235.5	9.122	9.121	15.617	5.8	8.4	0.8
Standard Deviation	338.2	1159.3	4944.7	2.7	7.8	30.7	1.6	0.1	0.1	25.3	435.3	0.474	1.405	3.298	1.4	1.9	0.5
Number of Values	36	28	36	36	36	36	36	21	21	21	21	36	28	36	36	36	36
Number of Exceedences	0	0	N/A	0	0	N/A	N/A	0	0	0	4	0	N/A	N/A	N/A	N/A	N/A

= Test not required

Table 1 - Effluent Monitoring Data

Fact Sheet, MA0101702

Monitoring Period End Date	Total Nitrogen	pH		TSS							Ceriodaphnia dubia
	Average Monthly	Daily Min	Daily Max	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Percent Removal	Acute LC50
	mg/L	SU		lb/day			mg/L			%	%
09/30/2011	7.28	6.3	6.9	1651	3272	14011	17.1	34.6	140	91.5	100
10/31/2011	7.48	6.2	6.8	1344	2670	11910	14.8	28.4	120	87.6	
11/30/2011	7.31	6.2	6.7	1297	2615	6012	16.3	31.4	81	91.9	
12/31/2011	7	6.1	6.8	1923	3449	8090	21.1	30.8	100	87.1	100
01/31/2012	7.39	6.1	6.9	696	1508	4754	9.5	19.4	60	92.3	
02/29/2012	8.09	6.1	6.8	401	451	817	6.5	7.4	14	96.3	
03/31/2012	8.6	6.1	7	461	547	1308	6.6	7.4	16	96	1000
04/30/2012	10.35	6.2	6.8	805	2269	5254	9.8	23.4	50	94.6	
05/31/2012	10.89	6.2	6.5	3178	8750	23394	37.5	108.6	330	94.2	
06/30/2012	9.94	6.2	6.6	764	1145	2902	10.6	15.8	33	93.7	1000
07/31/2012	11.4	6.2	6.6	653	809	1299	10.2	12.2	20	94.4	
08/31/2012	9.84	6.1	6.6	879	1168	2000	11.5	17.6	22	93.5	
09/30/2012	9.69	6.1	6.7	746	927	1995	9.4	12.6	19	94.1	100
10/31/2012	9.66	6	6.8	532	620	2837	6.8	8.2	27	96.1	
11/30/2012	9.27	6.3	6.7	436	855	813	6.8	9.6	13	95.9	
12/31/2012	12.26	6.3	6.9	1420	4502	15879	16.1	45	160	87.3	100
01/31/2013	10.85	6.2	6.8	1283	683	12910	14.2	9.4	120	89.1	
02/28/2013	14.73	6.2	7.1	4796	3856	84568	33.1	37.6	520	95	
03/31/2013	6.52	6.3	6.8	1774	17730	25370	14.5	113	180	89.2	1000
04/30/2013	9.37	6.4	6.7	695	873	2802	9.5	12.4	40	95.3	
05/31/2013	11.81	6.2	7.2	2734	6869	29540	26.1	59.2	230	94.2	
06/30/2013	6.48	6.3	6.8	2089	5272	20600	19	49.6	190	89	1000
07/31/2013	8.71	6.2	6.6	812	1329	3763	9	14.2	32	95.1	
08/31/2013	9.35	6.3	6.7	595	831	1334	8.2	10.4	16	96.3	
09/30/2013	9.46	6.1	6.6	478	600	1128	6.6	8.2	15	96.8	100
10/31/2013	11	6.1	6.7	771	1743	6165	10.8	20	66	96.2	
11/30/2013	11.4	6	6.7	2195	7213	21097	25.1	75	220	94.1	
12/31/2013	9.58	6.1	6.9	607	834	2222	8.9	10.4	21	94.5	100
01/31/2014	7.66	5.7	7	1192		7344	14.6	24.2	74	87.8	
02/28/2014	9.44	5.7	6.7	560		1428	10.3	12	26	94.6	
03/31/2014	6.22	6.5	6.9	2590		40833	21.5	15.6	240	94.4	1000
04/30/2014	5.47	6.4	6.7	1395		11906	13	55.6	86	94	
05/31/2014	5.82	6.3	7	523		1081	7.3	25.2	18	94.6	
06/30/2014	9.74	6.1	6.6	608		1468	11.3	22.2	32	94.5	1000
07/31/2014	8.65	6.1	6.6	845		3120	13.2	16	43	93.3	
08/31/2014	9.11	6.2	6.8	917		12322	10.9	23.8	89	94.1	
Monitoring frequency	1/month	1/day		5/week							4/year
Existing Permit Limit	Report	6	8.3	4,379	6,568	Report	30	45	Report	≥85%	≥100%
Minimum	5.47	5.7	6.5	401	451	813	6.5	7.4	13	87.1	100
Maximum	14.73	6.5	7.2	4796	17730	84568	37.5	113	520	96.8	100
Average	9.1	6.2	6.8	1240.1	2978.2	10952.1	13.8	28.5	96.2	93.3	100
Standard Deviation	2	0.2	0.2	936.7	3663	15858.7	7.4	25.9	107.8	2.8	0
Number of Values	36	36	36	36	28	36	36	36	36	36	12
Number of Exceedences	0	0	0	1	0	N/A	2	5	N/A	0	0

Holyoke WPCF
NPDES Permit No. MA 0101630

Table 2
Metals Effluent Data and Criteria Calculations

	Effluent Analytical Data (ug/l_{tr})[2]								Receiving Water Analytical Data (ug/l_{tr})[2]							
Test dates[1]	Hardness	Al	Cd	Cr	Cu	Ni	Pb	Zn	Hardness	Al	Cd	Cr	Cu	Ni	Pb	Zn
	mg/l CaCO3	ug/l total recoverable							mg/l CaCO3	ug/l total recoverable						
3/10/2010	87.4	35	ND-0.5	2.4	10.3	17.6	1.2	36	27.6	152	ND-0.5		1.9	ND-1	0.68	6.7
6/8/2010	65.4	48.3	ND-0.5	5.65	11.6	45.3	1.85	36.7	30.1	107	ND-0.5		4.62	10.1	0.797	10.1
9/8/2010	56.5	46	ND-0.5	5.3	22.7	43.9	1.6	37.3	46.8	45			7	1.56	0.8	10.4
12/18/2010	74.7	56	ND-0.5	ND-2	116	4.95	1.7	41.7	26.6	127	ND-0.5	ND-2	3.6	ND-2	0.7	5.8
3/8/2011	66.3	161	ND-0.5	3.6	21.9	6.44	2.6	36.8	22.7	754	ND-0.5	1.4	6.2	2.22	2.3	12.6
6/10/2011	68.4	40	ND-0.5	1.1	9.1	4.97	2.6	30.6	39	109	ND-0.5		1.9	ND-1	0.7	ND-2.5
9/14/2011	91	73.4	ND-0.5	ND-1	6.2	3.4	2.9	28.8	30.1	640			3.2	1.6	1.6	4.8
12/7/2011	81.1	36.6	ND-0.5	ND-1	9.54	3.5	1	40.9	34	135	ND-0.5		1.0	ND-1	ND-0.5	ND-2.5
3/14/2012	96	47	ND-0.5	ND-1	11	4.4	1	36	28	1100	ND-0.5		3.8	2.2	1.1	6.5
6/12/2012	68	54	ND-0.5	1	8.4	4.9	1.2	29	29	72	ND-0.5		1.8	ND-1	ND-0.5	7.4
12/12/2012	66	ND-200	ND-0.5	5.1	13	35	ND-1	50	42	ND-200	ND-0.5		1.1	1	ND-1	ND-10
3/14/2013	97	ND-200	ND-0.5	3.1	12	45	1.3	32	38	1900	ND-0.5	2.2	3.9	3.2	1.8	ND-10
6/25/2013	94	ND-200	ND-0.5	4.7	12	25	1.9	28	32	ND-200	ND-0.5	ND-1.5	ND-1.9	ND-1	ND-1	ND-10
12/5/2013	82	ND-100	ND-0.5	10	14	81	ND-1.5	41	28	ND-100	ND-0.5	ND-1.5	ND-5	ND-5	ND-1.5	ND-20
3/13/2014	88	ND-100	ND-0.5	5.4	22	19	ND-1.5	41	38	170	ND-0.5		5.2	ND-5	ND-1.5	ND-20
5/29/2014	52	ND-100	ND-0.5	ND-5	11	12	ND-1.5	34	48	150	ND-0.5	ND-5	ND-5	ND-5	ND-1.5	ND-20
12/3/2014	88	200	ND-0.5	8.7	36	19	3.1	60	31	140	ND-0.5		ND-5	ND-5	ND-1.5	ND-20
Median	81	48	ND-0.5	4.9	12	18	1.7	37	31	145	ND-0.5	ND-1.5	3.6	2.2	0.8	7.1
95th percentile[3]		156	ND-0.5	13	46	77	3.3	51								
Chronic Criterion[4]		87	0.11	33.4	18.9	20	0.73	45								
Acute Criterion[4]		750	0.66	699.5	26.8	176	18.7	45								

[1] Results for 9/18/13 excluded due to evidence that samples may have been switched; metals results were not reported for October 2012 or September 2014 WET testing.

[2] Non-detects noted as " ND-[minimum detection level]"

[3] 95th percentile calculated from a lognormal distribution with mean and standard deviation derived from monitoring data; for Al, Cr and Pb nondetects are excluded from calculation; see discussion in Fact Sheet text.

[4] Expressed in Total Recoverable Metals for consistency with monitoring data. Criteria for Cd, Ni, Pb and Zn are hardness dependent and calculated using the formulas set forth in the National Recommended Water Quality Criteria 2002 (EPA 2002) at a hardness of 31.5, based on the median hardness of effluent and receiving water combined proportional to design flow and 7Q10 flow.

Table 3. Berkshire Street Treatment Facility Grab Sampling Results, August 2013 to August 2014

2014

Date	Fecal (colonies/ 100 ml)	e-Coli (colonies/ 100 ml)	TRC after dechlor (mg/l)	pH
8/13/2014	20	20	0.03	6
	18	0	0.04	6
	18	34	0.03	5.8
	6	18	0.1	6.3
	4	8	0.03	6.3
	0	0	0.05	6.2
7/27/2014	0	56	0.03	6.9
	0	2	0.03	6.4
7/23/2014	176	TNTC	0.0	6.2
7/16/2014	124	70	0.0	6.7
	98	34	0.09	6.6
7/14/2014	2	0	0.57	6.4
7/3/2014	6	6	0.0	7.4
	86	56	0.0	6.38
7/2/2014	145	2	0.00	7.6
6/13/2014	216	0	0.03	5.8
6/10/2014	82	290	0.65	7.1
5/23/2014			0.07	7.5
			0.05	7.2
			0.02	7.3
5/17/2014	32	106	0	6.8
	26	10	0	6.7
	4	16	0	6.8
5/1/2014	20	16	0.03	7.2
	156	124	0.01	7.4
	132	6	0.01	7.4
			0.01	7.3
			0.03	7.2
			0.45	7.3
			0.03	7.3
			0.03	7.4
4/30/2014	156	124	0	7.6
			0.04	7.3
			0.02	7.4
	132	6	0	6.2
			0.66	7.3
			0.02	7.2
	20	16	0.03	7.1
			0	7.3
			0.03	7.2
			0.01	7.4
			0.01	7.4
			0.02	7.3
			0.03	7.2
			0.45	7.3
			0.03	7.3
			0.03	7.4
4/15/2014	60	36	0.05	6.5
	0	76	0	6.9
	8	0	0	6.7
	0	8	0.07	6.8
	7	4	0.03	6.7
3/31/2014	6	1	0.15	7
3/30/2014	86	42	0	7
3/30/2014			0.09	6.9
			0.06	7
3/29/2014	40	170	0.13	7
			0.33	7.3
			0.03	7.2
			0.02	7.2
			0.08	7
3/19/2014	44	16	1.17	7
2/21/2014				
1/11/2014	10	16	0.57	6.4
	106	358	0.1	6.8
	8	16	0.12	
1/6/2014	4	0	0	6.5
	10	38	0	5.9
	0	10	0.01	
	4	56	0.15	
	4	4	0.02	

2013

Date	Fecal (colonies/ 100 ml)	e-Coli (colonies/ 100 ml)	TRC after dechlor (mg/l)	pH
12/29/2013	58		0.06	6.2
	4		0.07	6.1
	12		0.09	5.9
	20		0.08	6
12/23/2013				
11/27/2013	2	6	0.16	6.3
	30	6	0.39	6.8
	180	16	0.16	6.7
	150	58	0.32	6.5
	156	12	0.11	6.6
	138	6	0.69	6.6
	76	4		
10/7/2013	920	146	0	5.92
10/4/2013	44	36	1.65	7.18
	134	210	0	7.64
9/22/2014	210	266	0	6.7
			0.02	7.06
9/12/2014	14	18	0.18	6.52
8/27/2013	2	4	0.05	6.52
8/26/2013	4	4	0.07	5.52
			0.5	6.86
8/9/2013	74	534	0.03	7.28
	49	97	0.03	7.02
	63	69	0.03	6.94
	37	54	0	7.01
	6	29	0.01	6.9
	146	11	0.03	6.87
	100		0.09	6.81

Table 4a. Berkshire Street Treatment Facility Composite Sampling Results, August 2013 to August 2014

Date	BOD (mg/l)	TSS (mg/l)	NH3 (mg/l)	NO3 (mg/l)	NO2 (mg/l)	TKN (mg/l)	LC50
8/13/2014	21	98	0.98	1	0.057	4	>100%
1/6/2014	29	84	1.5	0.35	0.05	4.1	>100%
12/29/2013	25	72	1	0.2	0.05	3.1	>100%

Attachment A – NPDES Permit for the Holyoke Water Pollution Control Facility and the CSO outfalls from the Holyoke System, Holyoke, Massachusetts, Permit No. MA0101630
- Endangered Species Act Assessment, November 30, 2015

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.

In this case, the federal action is the issuance of a National Pollutant Discharge Elimination System (NPDES) draft permit regulating the discharge from the Holyoke Water Pollution Control Facility (WPCF) and eleven (11) associated Combined Sewer Overflow (CSO) outfalls. The outfalls discharge to the Connecticut River Segment MA34-05. As the lead federal agency charged with authorizing the discharge from this facility, EPA has conducted a review in support of our consultation responsibilities under section 7 (a)(2) of the Endangered Species Act (ESA) for potential impacts to federally listed species. Based on the location of the discharges, the proposed permit limits and an analysis of potential water quality impacts, EPA has made a preliminary determination that the discharges to be authorized at the facility and associated CSOs are not likely to adversely affect species listed by NMFS. The justification to support this determination is included below.

<u>Holyoke WPCF and Associated Discharges</u>
The Holyoke WPCF and the CSO outfalls from the Holyoke system are located on the west bank of the mainstem of the Connecticut River in the vicinity of the I-395 Bridge in the city of Holyoke, Massachusetts. The facility serves a population of approximately 37,000 persons and seven Categorical Industrial Users including paper manufacturers, sheet metal manufacturer and metals finishers (plating, etching and powder coating), and a medical device manufacturer. The collection system is 67% combined and 33% separate. The WPCF was upgraded to a secondary biological facility in 1979. The WPCF design flow (average) is 17.5 mgd, with a peak flow of 37.0 mgd. The facility uses a pure oxygen activated sludge process. The treatment process train includes mechanical screens, grit removal, influent submersible pumps, primary clarification, pure oxygen activated sludge biological treatment, secondary clarification, chlorine disinfection,

sludge thickening and sludge dewatering. Effluent pumps are also included in the event of high water in the receiving stream (Connecticut River). The treatment plant discharges to the Connecticut River through a submerged outfall about 200 feet from the western bank of the river. A flow process diagram of the facility can be found as Figure 3 of the fact sheet. The facility is operated by United Water, Inc. under a long term Operation and Maintenance contract with the City of Holyoke covering the treatment plant, collection system, CSOs and CSO treatment facility.

The City implemented a number of capital improvements, referred to as Initial Capital Improvements (ICIs) at the WPCF as part of its CSO program (which also included construction of the new CSO Abatement Facility, see description below). As part of the ICI projects the headworks operations and secondary treatment facilities were optimized hydraulically such that the influent design flow to the WPCF could reach and maintain the maximum peak flow of 37 mgd during high flow periods. One hundred percent of the 37 mgd peak design flow receives full secondary treatment. Elements of the secondary treatment plant that were renovated, upgraded or expanded include the following:

- The headworks facilities were retrofitted to include new grit removal equipment, modified influent pumping and odor control improvements;
- Aeration system improvements included new aeration mixers, oxygen supply piping, system controls, and liquid oxygen storage tanks;
- Sludge thickening equipment (rotary drum thickener) for waste activated sludge (WAS) was installed;
- Extensive odor control facilities were installed throughout the WPCF;
- The original chlorine gas system was abandoned and replaced with a new liquid sodium hypochlorite disinfection system;
- The former belt filter press operation was replaced with a Fournier Rotary Press.

The Berkshire Street CSO 009 Facility, which is located adjacent to the WPCF, has the capability to screen and disinfect a flow rate of up to 103 mgd of CSO wastewater. The facility design included provisions for maximizing the flow to the WPCF from the HP/FS interceptor, transporting the overflow from regulator 009 to an area adjacent to the WPCF by means of the Berkshire Street outfall, diverting the flow into a CSO pump station, installing fine mechanical screens, installing a CSO chlorine disinfection system, dechlorinating the effluent, then diverting the flow back to the Holyoke WPCF for full secondary treatment or to the Berkshire Street outfall below the pump station location.

The WPCF produces an average of 1,786 dry metric tons of sludge annually. Sludge is trucked to Synagro in Waterbury CT for incineration.

Receiving Water Description

The Holyoke WPCF discharges to the Connecticut River Segment MA34-05. (One of the CSO outfalls (Front St/Appleton St. #016) discharges via the Holyoke Canal System to the Connecticut River; this CSO's effluent is considered a discharge to the Connecticut River). Connecticut River Segment MA34-05 runs from the Holyoke Dam to the Massachusetts/ Connecticut border, a length of 15.9 miles.

This segment of the Connecticut River has been designated as a Class B water, warm water fishery, with a CSO designator. The Massachusetts Surface Water Quality Standards (MA SQWS), 314 Code of Massachusetts Regulations (CMR) 4.05(3)(b) states that Class B waters are designated as habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. The waters should have consistently good aesthetic value. A warm water fishery is defined in the Massachusetts Surface Water Quality Standards (314 CMR 4.02) as waters in which the maximum mean temperature over a seven day period generally exceeds 20° Celsius during the summer months and are not capable of supporting a year-round population of cold water stenothermal aquatic life. The CSO designation indicates:

> 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 Massachusetts 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.

Sections 305(b) and 303(d) of the CWA require that States complete a water quality inventory and develop a list of impaired waters. Specifically, Section 303(d) of the CWA requires States to identify those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of a Total

Maximum Daily Load (TMDL) for each pollutant that is prohibiting a designated use(s) from being attained. The results of the 305(b) assessments are used in the development of the Commonwealth of Massachusetts's 303(d) lists, which are published every two years and identify the water bodies which are not meeting (or are not expected to meet) water quality standards, identify the designated use(s) which is impaired and also the pollutant(s) causing the impairment(s).

The Massachusetts 2012 Integrated List of Waters lists this segment of the Connecticut River as category 5, "waters requiring a TMDL", with listed impairments cause by *E. coli*, PCB in fish tissue, and Total Suspended Sediment (TSS).[1] The 2006 MassDEP Water Quality Assessment Report for the Connecticut River watershed indicated that this segment did not support primary contact recreation or fish consumption uses, and that aquatic life use was in alert status due to "potential toxicity and habitat impacts of the coal tar deposits and the risk that fish tissue contaminants pose to fish-eating wildlife."

NMFS Listed Species In The Action Area

The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). For this action, the action area also includes the underwater areas where the effects of the discharge *(i.e.*, pollutants) may be experienced, as well as a two mile stretch of the west bank of the river, approximately one mile above and below the I-395 Bridge.

Atlantic Sturgeon

On January 31, 2012, NOAA's Fisheries Service announced a final decision to list five distinct population segments (DPSs) of Atlantic sturgeon under the Endangered Species Act. The Chesapeake Bay, New York Bight, Carolina, and South Atlantic populations of Atlantic sturgeon are listed as endangered, while the Gulf of Maine population is listed as threatened.
The following information was taken primarily from a NMFS letter[2] dated December 19, 2011:

> Atlantic sturgeon have some potential to travel up the mainstem of the Connecticut River into the state of Massachusetts. Atlantic sturgeon are a long-lived, late maturing, estuarine-dependent, anadromous species, feeding primarily on benthic invertebrates[3]. They have been historically reported in the Connecticut River as far

[1] Massachusetts Year 2012 Integrated List of Waters, Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 303(d) and 305(b) of the Clean Water Act, MassDEP, Division of Watershed Management.

[2] December 19, 2011, Letter from Patricia A. Kurkul, Regional Administrator, NOAA, National Marine Fisheries Service, Northeast Region, to John H. Nagle, EPA Region 1 ("NOAA's December 19, 2011, Chicopee WPCF Consultation Letter") (addressing ESA issues concerning EPA's proposed NPDES permit for the Chicopee, MA, WPCF).

[3] Atlantic Sturgeon Status Review Team (ASSRT). 2007. Status Review of Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus). Gloucester (MA): Report to National Marine Fisheries Service, Northeast Regional Office. Web address: http://www.nmfs.noaa. gov/pr/pdfs/statusreviews/atlanticsturgeon2007.pdf.

> upstream as Hadley, MA. However, significant evidence that Atlantic sturgeon moved past Enfield, CT into the upper Connecticut River was previously rare since this species tends to remain in the lower river in the range of the salt wedge (River Mile 6 – 16). In 2006, an adult Atlantic sturgeon was observed in the spillway lift at the Holyoke dam, providing some indication that this species may move further upstream into the freshwater reaches of the Connecticut River. However, extensive sampling and the lack of any strong evidence of Atlantic sturgeon spawning indicates that the presence of this species in the vicinity of the discharge is unlikely [Chicopee WPCF Discharge].

The downstream edge of the Holyoke WPCF action area is approximately two river miles further upstream from the Chicopee facility discussed in the paragraph above. According to this information, it is unlikely that any Atlantic sturgeon would be present in the action area of this discharge as well. Based on the analysis presented here, a consultation is not required for Atlantic sturgeon at this time.

Shortnose Sturgeon
Based on EPA's assessment, the only endangered species potentially influenced by the reissuance of this permit is the shortnose sturgeon (*Acipenser brevirostrum*). As stated earlier, it is EPA's preliminary determination that the operation of this facility, as governed by the permit action, is not likely to adversely affect the species of concern. It is EPA's position that this permit action does not warrant a formal consultation under Section 7 of the ESA. The reasoning to support this position follows.

Shortnose Sturgeon Information
Connecticut River
Updated information presented in this section on the life history and known habitat of shortnose sturgeon in the Connecticut River was obtained from, among other sources, "The Connecticut River IBI Electrofishing NMFS Biological Opinion, Connecticut and Merrimack River Bioassessment Studies" (NMFS BO, July 30, 2009) and the Draft Endangered Species Act Section 7 Consultation Biological Opinion (BO) for the Holyoke Hydroelectric Project (Federal Energy Regulatory Commission (FERC) Permit #2004), issued to FERC by NOAA Fisheries on January 27, 2005 (NMFS BO 2005). Information dealing with the potential effects of pollutants on shortnose sturgeon was obtained from, among other sources, a detailed ESA response letter from NMFS to EPA regarding the Chicopee WPCF, dated December 19, 2011 (Chicopee Letter).

A population of endangered shortnose sturgeon (Acipenser brevirostrum) occurs in the Connecticut River. This population is largely divided by the Holyoke Dam, although limited successful downstream passage does occur. Modifications to the facility are currently ongoing to ensure the safe and successful upstream and downstream passage of fish, including shortnose sturgeon, at the Dam.

The Holyoke Dam separates shortnose sturgeon in the Connecticut River into an upriver group (above the Dam) and a lower river group that occurs below the Dam to Long Island Sound. The abundance of the upriver group has been estimated by mark-recapture techniques using Carlin tagging (Taubert 1980) and PIT tagging (Kynard unpublished data). Estimates of total adult abundance calculated in the early 1980s range from 297 to 516 in the upriver population to 800 in the lower river population. Population estimates conducted in the 1990s indicated populations in the same range. The total upriver population estimates ranged from 297 to 714 adult shortnose sturgeon, and the size of the spawning population was estimated at 47 and 98 for the years 1992 and 1993, respectively. The lower Connecticut River population estimate for sturgeon >50 cm TL was based on a Carlin and PIT tag study from 1991 to 1993. A mean value of 875 adult shortnose sturgeon was estimated by these studies. Savoy (in press) estimates that the lower river population may be as high as 1000 individuals, based on tagging studies from 1988-2002. It has been cautioned that these numbers may overestimate the abundance of the lower river group because the sampled area is not completely closed to downstream migration of upriver fish (Kynard 1997). Other estimates of the total adult population in the Connecticut River have reached 1200 (Kynard 1998), and based on Savoy's recent numbers, the total population may be as high as 1400 fish. Several sections of the river have been identified as concentration areas. In the downriver segment, a concentration area is located in Agawam, MA which is thought to provide summer feeding and over-wintering habitat. Other concentration areas for foraging and over wintering are located in Hartford, Connecticut, at the Head of Tide (Buckley and Kynard 1985) and in the vicinity of Portland, Connecticut (CTDEP 1992). Shortnose sturgeon also make seasonal movements into the estuary, presumably to forage (Buckley and Kynard 1985; Savoy in press). Above the Dam, there are also several concentration areas. During summer, shortnose sturgeon congregate near Deerfield. Many overwinter at Whitmore. Successful spawning has been documented at two sites in Montague and this is thought to be the primary spawning site for shortnose sturgeon in the Connecticut River.

Although shortnose sturgeon early-life stages (ELSs) have been captured downstream of the Holyoke Dam, evidence indicates that only minimal spawning occurs. In the mid-1980s, a multi-year study tracked ripe, pre-spawning adults congregating just below the Holyoke Dam (Buckley and Kynard 1985b). At that time, the capture of ripe males and females together in the spring was believed to indicate imminent spawning. The Holyoke Dam area was systematically surveyed to determine depth, velocity, and substrate present under several hydro-power flow regimes during spawning (Buckley and Kynard 1985b). Because no efforts to capture shortnose sturgeon ELS were made, it is not known if successful egg release and fertilization had occurred. Recently, additional studies to identify shortnose sturgeon spawning downstream of the Holyoke Dam were conducted. In spring 2005 and 2006, ELS nets were set during known spawning temperatures at several sites between Hartford, CT (- river mile 52) and Springfield, MA (- river mile 94) for a total of 62,519 m3 of water sampled. No shortnose sturgeon ELS were captured as a result of these efforts; however, during unrelated ichthyoplankton sampling during the same years, three shortnose sturgeon larvae were captured (1 in 2005 and 2 in 2006; Kleinschmidt 2006, 2007).

One interpretation of these larval captures is that spawning may occur downstream of Holyoke Dam, perhaps at several sites. The low number of larvae captured downstream of Holyoke in 2005 and 2006 were consistent with the low numbers of ELS captured at the Montague site during the same years: 0 in 2005 (346,660 m^3 of water sampled) and 4 eggs in 2006 (106,689 m^3 of water sampled; Kieffer and Kynard in review-B). Because spawning success at Holyoke appeared to reflect success at Montague during the same years (Kynard et al. in review-C), few ELS may have been available downstream of Holyoke Dam during the 2005 and 2006 sampling resulting in the low number of ELS captures. In addition, mid-column net tows capturing ELS totaled 100 m^3 of sampled water, which is considered a very small amount of effort to capture larvae dispersed over a long distance. This suggests that increased sampling may have resulted in higher captures. The effort required to capture 13 embryos and larvae 3-15 km downstream of Montague in 1977 and 1978 was large in comparison, totaling 479.2 hours of effort (Taubert 1980). In addition, Whitworth (1996) states fall-line topography at Windsor Locks, CT (- river mile 62) as a possible historic spawning area.

Adult and juvenile shortnose sturgeon are likely to occur in the vicinity of the facility outfall and CSO discharges year round. However, ELS are less likely to be observed since spawning occurs further upstream in the Montague area near the confluence of the Deerfield and Connecticut Rivers.

<u>Pollutant Discharges Permitted and Potential Effects of the Action on Shortnose Sturgeon</u>
As noted above, over the 5-year term of the permit, discharges from the Holyoke WPCF and eleven (11) CSO outfalls will occur. As the constituents and treatment of discharges from these outfalls are different, the potential effects of the discharge from the WPCF will first be discussed. A review of potential effects of discharges from the CSO outfalls will follow the WPCF discharge analysis.

Regulatory Background
Limits on the concentration of pollutants in effluent are included when required for a specific type of facility (e.g., all WWTPs require certain technology based limits) or when a reasonable potential analysis indicates that there is a reasonable potential for an excursion from a water quality standard (then, a water quality based limit is required). Per EPA policy (59 FR 18688, April 19, 1994), CSO related discharges do not have technology or water quality based limits.

Water quality based limits are required when there is a reasonable potential for the discharge to cause the receiving water to fail to meet water quality standards. When a permit does not contain a limit for a particular pollutant, it does not necessarily mean that the pollutant is not present in the effluent, but rather that analyses have demonstrated that there is no reasonable potential, at the worst case conditions (i.e., highest design flows from the effluent into lowest water levels in the receiving water), for the discharge to result in an excursion from the water quality criteria. Water quality criteria are developed by EPA for protection of aquatic life. Both acute (short term exposure) and chronic (long term exposure) water quality criteria are developed by EPA

based on toxicity data for plants and animals. Often, both saltwater and freshwater criteria are developed, based on the suite of species likely to occur in the freshwater or saltwater environment. For aquatic life, the national recommended toxics criteria are derived using a methodology published in Guidelines for Deriving Numeric National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses. Under these guidelines, criteria are developed from data quantifying the sensitivity of species to toxic compounds in controlled chronic and acute toxicity studies. The final recommended criteria are based on multiple species and toxicity tests. The groups of organisms are selected so that the diversity and sensitivities of a broad range of aquatic life are represented in the criteria values. To develop a valid criterion, toxicity data must be available for at least one species in each of eight families of aquatic organisms. The eight taxa required are as follows: (1) salmonid (e.g., trout, salmon); (2) a fish other than a salmonid (e.g., bass, fathead minnow); (3) chordata (e.g., salamander, frog); (4) planktonic crustacean (e.g., daphnia); (5) benthic crustacean (e.g., crayfish); (6) insect (e.g., stonefly, mayfly); (7) rotifer, annelid (worm), or mollusk (e.g., mussel, snail); and, (8) a second insect or mollusk not already represented. Where toxicity data are available for multiple life stages of the same species (e.g., eggs, juveniles, and adults), the procedure requires that the data from the most sensitive life stage be used for that species.

The result is the calculation of acute (criteria maximum concentration (CMC)) and chronic (criterion continuous concentration (CCC)) criteria. CMC is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly (i.e., for no more than one hour) without resulting in an unacceptable effect. The CCC is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. EPA defines "unacceptable acute effects" as effects that are lethal or immobilize an organism during short term exposure to a pollutant and defines "unacceptable chronic effects" as effects that will impair growth, survival, and reproduction of an organism following long term exposure to a pollutant. The CCC and CMC levels are designed to ensure that aquatic species exposed to pollutants in compliance with these levels will not experience any impairment of growth, survival or reproduction.

EPA recognizes that few toxicity tests have been conducted with sturgeon species, and even fewer with shortnose sturgeon. In the absence of species specific chronic and acute toxicity data, the EPA aquatic life criteria represent the best available scientific information. Absent species specific data, EPA maintains that it is reasonable to consider that the CMC and CCC criteria are applicable to NMFS listed species as these criteria are derived from data using the most sensitive species and life stages for which information is available. As explained above, a suite of species is utilized to develop criteria and these species are intended to be representative of the entire ecosystem, including shortnose sturgeon. These criteria are designed to not only prevent mortality but to prevent all "unacceptable effects", which, as noted above, are defined by EPA to include not only lethal effects but also effects that impair growth, survival and reproduction.

For this permit, the relevant water quality criteria are the MA Water Quality Standards, which must be certified by EPA every three years. This certification process is designed to ensure that these water quality standards are consistent with, or more protective than, the EPA national recommended aquatic life criteria. Based on this reasoning, for the purposes of this consultation, EPA uses the approach that pollutants that are discharged with no reasonable potential to cause excursions in water quality standards will not cause effects that impair growth, survival and reproduction of listed species. Therefore, the effect of the discharge of these pollutants in compliance with MA Water Quality Standards, which by design are consistent with, or more stringent than, EPA's aquatic life criteria, will be insignificant on NMFS listed species. As such, the analysis below will focus on pollutants for which technology based and/or water quality based limits are required by the permit. As explained, water quality based limits are required when it has been determined that there is a reasonable potential for the discharge of a particular pollutant to cause an excursion from attainment of water quality standards in the receiving water.

The Draft Permit proposes water quality based effluent limitations on all pollutants for which the Holyoke WPCF has a reasonable potential to cause, or contributes to, an exceedance of water quality standards in the receiving water. These include effluent limitations on biochemical oxygen demand (BOD_5), total suspended solids (TSS), pH, fecal coliform bacteria and enterococcus bacteria. The derivation of these permit limits and more detailed information concerning these pollutants can be found in Section VII. of the Fact Sheet.

Conventional Pollutants

Biochemical Oxygen Demand (BOD_5)

The biological oxygen demand (BOD_5) water test measures the amount of oxygen used by aerobic microorganisms in the water column. If these aerobic bacteria use the majority of dissolved oxygen in the water, this limits the availability of dissolved oxygen for fish, invertebrates, and other aerobic aquatic organisms. TSS and BOD_5 have the potential to affect dissolved oxygen concentrations in the vicinity of and downstream from the facility's outfall. Shortnose sturgeon are known to be adversely affected by dissolved oxygen levels below 5.0 mg/L (NOAA Fisheries 1998). The Massachusetts Surface Water Quality Standards for Class B Inland Water Classes (which the Connecticut River is classified as) require that dissolved oxygen levels shall not be less than 5.0 mg/l.

The proposed BOD_5 limits in the Holyoke WPCF Draft Permit are the same as in the current permit, which are based on the secondary treatment requirements set forth at 40 CFR 133.102 (a)(1), (2), (4) and 40 CFR 122.45 (f). The limits are 30.0 mg/L monthly and 45.0 mg/L weekly, which are in accordance with the Massachusetts Surface Water Quality Standards and will not contribute to dissolved oxygen levels falling below 5.0 mg/L. Based on this information, EPA has made the preliminary determination that the BOD_5 criteria set at the Holyoke WPCF will be protective of shortnose sturgeon found in this segment of the Connecticut River.

Total Suspended Solids (TSS)
TSS may affect aquatic life by directly killing them, reducing growth rates, reducing resistance to disease, preventing the development of fish eggs and larvae, by altering natural migration and movement patterns, and by reducing their ability to forage or limiting the food supply (EPA 1976). The proposed permit carries forward the TSS limits from the current permit, namely a monthly average of 30.0 mg/L and a weekly average of 45.0 mg/L, which are based on the secondary treatment requirements set forth at 40 CFR 133.102 (a)(1), (2), (4) and 40 CFR 122.45 (f).

Studies of the effects of turbid waters on fish suggest that concentrations of suspended solids can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton 1993). The studies reviewed by Burton demonstrated lethal effects to fish at concentrations of 580 mg/L to 700,000 mg/L depending on species. Sublethal effects have been observed at substantially lower turbidity levels. For example, prey consumption was significantly lower for striped bass larvae tested at concentrations of 200 and 500 mg/L compared to larvae exposed to 0 and 75 mg/L (Breitburg 1988 in Burton 1993). 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 1993). While there have been no directed studies on the effects of TSS on shortnose sturgeon, shortnose sturgeon juveniles and adults are often documented in turbid water. Dadswell (1984) reports that shortnose sturgeon are more active under lowered light conditions, such as those in turbid waters. As such, shortnose sturgeon are assumed to be as least as tolerant to suspended sediment as other anadromous fish such as striped bass.

Shortnose sturgeon eggs and larvae are less tolerant to sediment levels than juveniles and adults. Observations in the Delaware River indicated that larval populations may be decimated when suspended material settles out of the water column (Hastings 1983). Larval survival studies conducted by Auld and Schubel (1978) showed that striped bass larvae tolerated 50 mg/1 and 100 mg/1 suspended sediment concentrations and that survival was significantly reduced at 1000 mg/l. According to Wilber and Clarke (2001), hatching is delayed for striped bass and white perch eggs exposed for one day to sediment concentrations of 800 and 100 mg/l, respectively. In a study on the effects of suspended sediment on white perch and striped bass eggs and larvae performed by the Army Corps of Engineers (ACOE) (Morgan et al. 1973), researchers found that sediment began to adhere to the eggs when sediment levels of over 1000 parts per million (ppm) were reached. No adverse effects to demersal eggs and larvae have been documented at levels of 50mg/L or below (above the highest limit proposed by this permit).

Based on this information, and the fact that the discharge limits for the permit are well below the levels recorded for lethal and sublethal effects to fish species and their eggs and larvae, EPA has made the preliminary determination that the effects, if any, of the proposed TSS limited discharge on shortnose sturgeon will be insignificant and/or discountable.

pH
Technology-based secondary treatment requirements for pH are a minimum of 6.0 and maximum of 9.0 SU. The Massachusetts SWQS set water quality criteria for pH with an allowable range from 6.5 to 8.3 SU. MassDEP generally requires that these criteria be met at the point of discharge, prior to dilution, as a state certification requirement. Prior to the issuance of the existing permit, MassDEP agreed to reduce the minimum pH effluent limit for the Holyoke discharge to 6.0 based on influent concentrations and the nature of the treatment system. MassDEP has concurred with the continuance of a minimum pH effluent limit of 6.0. EPA agrees that a minimum pH limit of 6.0 is sufficiently protective of water quality, given the evidence of acceptable pH levels currently in the Connecticut River (from 7.4-7.6; see 2003 Connecticut River WQA, page B21) and the available dilution. The pH effluent limit therefore remains the same as in the current permit, at 6.0 to 8.3 SU. The draft permit includes pH limitations which are required by state water quality standards, and are at least as stringent as pH limitations set forth at 40 C.F.R. §133.102(c). The pH of the effluent shall not be less than 6.0 or greater than 8.5 standard units at any time. The monitoring frequency is daily.

A pH of 6.0 – 9.0 is harmless to most marine organisms (Ausperger 2004). As such, EPA has made the preliminary determination that impacts to shortnose sturgeon are not likely to occur as a result of the proposed pH limits in the Draft Permit.

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

The Draft Permit's proposed limits are in accordance with the Massachusetts State Water Quality Standards for Class B Inland Waters (WQS): 126 cfu/100 ml for a geometric mean. A maximum daily limit of 409 cfu/100 ml has been determined by the Massachusetts Department of Environmental Protection (MassDEP) as appropriate for beach notification and closure decisions [314 CMR 4.04(3)(b)4.c].

The bacterial limits set for the Holyoke WPCF are designed to protect human health and also to insure that dissolved oxygen criteria are met in the receiving water body. As indicated above, the monthly dissolved oxygen level set for this receiving water (5.0 mg/L) is protective of shortnose sturgeon. As such, EPA has made the preliminary determination that the bacteria limits proposed in the Draft Permit are not likely to adversely affect shortnose sturgeon or contribute to an excursion above water quality criteria set for this portion of the Connecticut River.

Non-conventional Pollutants

Total Residual Chlorine

Based on the design flow of the Holyoke WPCF and the dilution calculations (dilution factor 69:1), EPA has determined that a monthly average limit and daily maximum limit of 0.63 mg/L of Total Residual Chlorine (TRC) would assure that the facility does not exceed the chronic and acute TRC standards (11 ug/L and 19 ug/L, respectively).

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 have examined the effects of TRC on shortnose sturgeon. EPA has set the Criteria Maximum Concentration (CMC or acute criteria; defined in 40 CFR 131.36 as the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (up to 96 hours) without deleterious effects) at 0.019 mg/L based on an analysis of exposure of 33 freshwater species in 28 genera (EPA 1986) where acute effect concentrations ranged from 28 ug/L (0.028 mg/L) for Daphia magna to 710 ug/L (0.710 mg/L) for the threespine stickleback. The CMC is set well below the minimum effect values observed in any species tested to ensure that the Lowest Observable Effect Level is near zero. As the water quality criteria levels have been set to be protective of even the most sensitive of the 33 freshwater species tested, EPA has judged that the criteria are also protective of shortnose sturgeon. The anticipated TRC level at the WPCF satisfies the EPA's ambient water quality criteria and is lower than TRC levels known to affect aquatic life. As such, EPA has made the preliminary determination that the effects of TRC levels on shortnose sturgeon proposed by the Draft permit will be insignificant.

Toxic Pollutants

Examination of effluent analyses conducted in connection with WET testing in the past five years indicates that the Holyoke WPCF discharges have included detectable levels of the metals aluminum, chromium, copper, lead, nickel and zinc. EPA therefore analyzed the available data on effluent and receiving water concentrations to determine whether these pollutants “are or may be discharged at a level that causes, has reasonable potential to cause, or contributes to an excursion above” the water quality standard. 40 CFR 122.44(d)(1)(i).

Section VII.C of the Fact Sheet contains the detailed “reasonable potential” analysis for these six metals. The results indicated that the aluminum, copper, and lead discharges have a reasonable potential to cause or contribute to exceedances of the chronic water quality criteria for these pollutants. Therefore, an effluent limit is included in the Draft Permit that will ensure that the discharges do not contribute to exceedances. Because the receiving water is already over the chronic water quality criteria, monthly average limits are set at the chronic criteria of 87 ug/l for aluminum, 3.5 ug/l for copper, and 0.73 ug/l for lead. In addition, because the receiving water is already over the acute water quality criteria for copper, the daily maximum limit in the Draft Permit is set at 4.7 ug/l.

Potential Impacts to Shortnose Sturgeon
The persistence of the effluent containing metals can vary, but typically, near field regions (i.e. the point of discharge/regulatory mixing zone) may experience some persistence in the environment, whereas far field locations tend to experience effluent decay (EPA Water Quality Based Toxics Control, 1991). With a moderate dilution factor (in this case, 69:1), the zone of initial dilution (ZID) is expected to be relatively small and complete mixing will occur through dispersion and advection, thus limiting any potential exposure routes for shortnose sturgeon. Additionally, with a moderate dilution factor in the near-field, persistence will be reduced and far-field areas will experience insignificant effects from these pollutants.

Heavy and trace metals may accumulate in the metabolically-active tissues of aquatic organisms, particularly in benthic feeders such as shortnose sturgeon, and may lead to lethal and sublethal effects including reduced fecundity, body malformation, inability to avoid predation, and susceptibility to infectious organisms (Post, 1987, Alam *et al.,* 2000). Alam *et al.* (2000) indicate that Gulf sturgeon from the Suwannee River (a threatened species) tend to accumulate iron and lead in their blood, although the direct toxicity of iron is unknown (Vuorinen, 1999).

Aluminum
Aluminum has been found to be toxic to aquatic life only in acidic conditions (<5.0 pH), where a level of 0.2 mg/L showed some reduction in growth for eggs and larvae in brook trout (Baker and Schofield 1981). Since the receiving water will not provide dilution of aluminum because of the high median receiving water concentration, the average monthly effluent limit for aluminum has been set at the criterion level of 0.87 ug/L. This limit is designed to protect against an excursion above water quality standards in the absence of adequate dilution and to provide protection to aquatic life.

The pH levels of the Connecticut River are not within the acidic pH range identified above. Also, aluminum levels at the facility have never been as high as levels where effects were seen in eggs and larvae of brook trout. Lastly, early life stages (ELS) have not been observed in this portion of the Connecticut River. Therefore, EPA has made the preliminary determination that impacts to shortnose sturgeon, if any, from the facility's discharge of aluminum will be insignificant and/or discountable.

Lead
The US Fish and Wildlife Service has reported that:

> Lead is an ubiquitous environmental contaminant commonly found in fish and wildlife tissues, particularly in species with habitats proximal to roads and urban or industrial developments. Lead is bioconcentrated, but does not appear to magnify through food chains (Eisler 1988). Exposure to Pb may cause neurological effects, kidney dysfunction, and anemia in vertebrates (Leland and Kuwabara 1985). Lead is known to inhibit δ-aminolevulinic acid dehydratase (ALAD) activity, an enzyme

> necessary for hemoglobin synthesis, and to elevate protoporphyrin concentrations (Henny *et al.* 1991, Schmitt *et al*. 1993). Adverse Pb effects on aquatic biota can include reduced survival, impaired reproduction, impaired function of the liver, kidney, and spleen, reduced growth, and spinal deformities (Holcombe *et al*. 1976, Eisler 1988). Lead accumulation varies among fish species, and concentrations do not appear to be related to size (Czarnezki 1985). Lead is concentrated at higher levels in calcified or hard tissue (i.e., bone, skin, scales) than in muscle and other soft tissues (Patterson and Settle 1976).
> (SPECIAL PROJECT REPORT, Maine Field Office – Ecological Services, FY09-MEFO-4-EC, December 2010)

EPA was unable to locate lead (Pb) toxicity testing data specifically related to shortnose sturgeon. However, Holcombe *et al*. (1976) exposed brook trout (a commonly used surrogate species for shortnose sturgeon in whole effluent toxicity testing) to 235 ug/L of lead for twenty weeks. Results indicate that metal accumulation occurred mostly in the gills, liver and kidneys and may reduce survival and impair reproduction and growth. Lead may also accumulate in hard tissues such as bones, skin and scales (Patterson and Settle, 1976). Data suggest that the uptake of contaminants in benthic feeders like sturgeon, and subsequent accumulation in tissues, could occur through water, sediments or food sources (Alam *et al.*, 2000).

An investigation of the Maximum Acceptable Toxicant Concentration (MATC) for lead was conducted on the eggs and fry of seven freshwater species (EPA-600/3-76-105, October 1976). In this study, the criteria used to determine the MATC were survival and/or growth of the tested life stages. Based on the MATC values estimated for 7 species of freshwater fish chronically exposed to lead, the study noted that the maximum lead in water concentration of 30 ug/l (National Academy of Sciences, 1973) appears to be adequate for the protection of most fish species in the aquatic environment. Since the limit proposed for lead in the Draft Permit is 0.73 ug/l, EPA has made the preliminary determination that impacts, if any, to shortnose sturgeon from the facility's discharge of lead will be insignificant and/or discountable.

Copper

In high doses, copper contamination can be lethal to shortnose sturgeon, acting as a fish neurotoxin. Copper may occur in certain fungicides, algaecides, and other common products (Gross *et al.*, 2003). Exposure to dissolved copper may impair sensory organs, and contribute to predator avoidance in juvenile fish (Hecht *et al.*, 2007, Sandahl *et al.*, 2007). Flynn and Benfey (2007) experienced mortality in their test individuals as a result of copper contamination (110 ug/L) in the experimental setup. Besser *et al*. (2005) reveal that chronic copper toxicity (i.e. sublethal effects) occurs in rainbow trout and fathead minnows (sturgeon surrogates) at concentrations of 11-23 ug/L. For fathead minnows, growth was inhibited at concentrations of 4.4 ug/L and for rainbow trout growth was inhibited at 12 ug/L.

The aquatic life criteria for copper concentrations are acute (4.64 ug/L) and chronic (3.43 ug/L). The copper limitations in the Draft Permit are set at 3.5 ug/l average monthly and 4.7 ug/l maximum daily to meet the aquatic life criteria. Therefore, effects to life stages of shortnose sturgeon from copper, if any, will be insignificant and/or discountable.

Nitrogen

EPA has determined that excessive nitrogen loadings into the Connecticut River and tributaries are causing significant water quality issues in Long Island Sound which is located approximately 75 miles downstream from the facility. Nitrogen causes impairment via excessive primary productivity and is not known to be directly toxic to aquatic life, including shortnose sturgeon. Elevated nitrogen levels, however, are associated with eutrophication and indicative of water quality problems that may include lowered dissolved oxygen levels. A TMDL has been developed that includes a Waste Load Allocation for Massachusetts, New Hampshire, and Vermont wastewater facilities discharging into receiving waters that empty into Long Island Sound (i.e. Connecticut River and tributaries). The WLA equates to 16,254 lbs/day and is set at the MA/CT border of the Connecticut River to include all facilities that empty into the River and its tributaries. Currently, the WLA is being met, as existing loads have been calculated at 13,836 lbs/day. Additionally, the Draft Permit contains conditions to ensure that the WLA continues to be met by requiring optimization of nitrogen removal, so that nitrogen loads do not increase over the 2004-2005 baseline of 1,618 lbs/day (average) at the WPCF.

Specifically, the current permit required an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. The permit also required implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load, and submittal of annual reports that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years. The Draft Permit continues those implementation and reporting requirements, in order to maintain the nitrogen load. The baseline annual average total nitrogen load from this facility (2004 – 2005) is 696 lbs/day.

The Draft Permit continues the reporting requirements for total Kjeldahl nitrogen, nitrite, nitrate, ammonia and total nitrogen that are in the current permit, but increases the frequency of reporting from monthly to weekly monitoring in order to provide an improved baseline for assessing optimization of nitrogen removal.

Monitoring for nitrogen levels and the establishment of methods to further reduce the loading of nitrogen into the Connecticut River will ensure the facility is not discharging nitrogen at a level that could impact dissolved oxygen levels that may affect shortnose sturgeon. EPA has made the preliminary determination that impacts to shortnose sturgeon from the facility's discharge of nitrogen are unlikely to occur.

Holyoke's Combined Sewer System

Approximately 67% of Holyoke's sewer collection system consists of combined sewers that convey both sanitary sewage and stormwater runoff during rain events. During wet weather, the combined flow exceeds the capacity of the interceptor sewers and the wastewater treatment plant, and a portion of the combined flow is discharged to the Connecticut River through the City's combined sewer overflows (CSOs). CSOs have been identified as a significant source of pollution to the Connecticut River. See 2003 Connecticut River WQA. EPA has issued a series of administrative orders to the City requiring mitigation of CSO discharges, most recently in September 2012.

The City currently has eleven active CSO outfalls where the CSOs discharge to receiving waters, receiving flow from fifteen regulators. This is a reduction from the historic total of 23 combined sewer regulators within the system, and two fewer than in the current permit (due to the separation of sewers tributary to the Jones Ferry and Appleton Street CSO outfalls). One of the CSO outfalls, the Berkshire Street CSO Outfall 009, is by far the largest overflow and is the location of the Berkshire Street Treatment Facility. That facility provides screening and disinfection of up to 103 MGD of CSO flows as well as a small amount of storage for flows that can be pumped back to the WPCF for treatment.

The Holyoke WPCF Fact Sheet details the improvement projects being undertaken by the City to reduce the impact of the CSOs to Connecticut River water quality. These projects have resulted in a reduction in the overall volume of CSO discharges as well as treatment of the majority of remaining volume. For comparison, the draft LTCP indicated a typical annual volume of 516 MG of CSO discharges; in 2013 (a relatively wet year) the City's monitoring indicated a total of 139 MG of untreated discharges, and an additional 212 MG treated discharge from the Berkshire Street facility.

In general, the "first flush" of storm water discharge is the most concentrated; however, as it occurs at the beginning of a storm event, before the capacity of the combined sewer system has been met, the first flush generally receives complete treatment as it is conveyed to and treated at the Holyoke WPCF and discharged through the main outfall for the facility. Additionally, since the Berkshire Street Treatment Facility can store overflow from CSOs during a wet weather event, additional water held in storage following the "first flush" will be treated at the WPCF once the wet weather subsides. Once the capacity of the combined sewer collection system has been exceeded, subsequent overflows are released from CSOs into the Connecticut River; however, after the first flushes these effluents are more dilute (i.e., most pollutants were removed in the first flush) and therefore, primary effluent constituents (e.g., TSS, bacteria) are significantly diluted and diluted further upon being discharged to the receiving waters that are already running at high flows and volumes as a result of the storm event. As noted above, TSS and bacteria are primary constituents of CSO discharges and may affect the concentration of dissolved oxygen in receiving waters. During non-storm events, the Connecticut River runs quickly at approximately 8400 cfs in the region near the Holyoke Dam. This increases during storm events and equates to potentially high dilution factors. A relatively high dilution factor is the next tier to dilute CSO discharges after the "first flush" that typically receives treatment at the

beginning of a storm event. The further dilution of TSS and bacteria during the storm event, the only time that CSOs would be discharging, will ensure that water quality criteria are met and dissolved oxygen levels are not reduced. As stated previously, CSO discharges are subject to specific conditions of the Draft Permit, including:

(i) Dry weather discharges from CSO outfalls are prohibited

(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 in the Fact Sheet, complying with the implementation levels as set forth in Part I.E.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.

EPA has made the preliminary determination that these protective measures, which are protective of aquatic life, including shortnose sturgeon, will ensure that any adverse impacts to listed species are insignificant or discountable.

Finding

Based on the analysis of potential impacts to shortnose sturgeon presented in this attachment, EPA has made the overall preliminary determination that impacts to shortnose sturgeon from the Holyoke WPCF and associated CSOs, 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 attachment, as well as supporting information contained in the Fact Sheet and the Draft Permit. In addition, a letter under separate cover will be sent to NMFS from EPA to request concurrence.

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.

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Response to Public Comments

In accordance with the provisions of 40 C.F.R. §124.17, this document presents EPA's responses to comments received on the draft National Pollutant Discharge Elimination System ("NPDES") Permit MA0101630. The response to comments explains and supports the EPA determinations that form the basis of the final permit. From December 9, 2015 to January 22, 2016, the United States Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("MassDEP") (together, the "Agencies") solicited public comments on a draft NPDES permit (MA0101630) developed pursuant to a permit application from the City of Holyoke, MA, for the reissuance of a NPDES permit to discharge secondary wastewater treatment plant effluent from outfall number 001 and 11 combined sewer overflows to the Connecticut River in Holyoke, Massachusetts.

EPA received comments from the City of Holyoke, from the Connecticut River Watershed Council, joint comments from the Connecticut Fund for the Environment and Save the Sound, from the Connecticut Department of Energy & Environmental Protection, and from the United States Department of Commerce National Oceanic and Atmospheric Administration National Marine Fisheries Service. EPA's decision-making process has benefitted from the public comments and additional information submitted. After a review of the comments received, EPA and MassDEP have made a final decision to issue this permit authorizing the discharge. The final permit is substantially identical to the draft permit that was available for public comment, with the exception of the following changes which are explained within this response to comments:

1. The total residual chlorine limitations for outfall 001 proposed in the draft permit have been changed from "0.63 mg/l monthly average and 0.63 mg/l maximum daily" to "0.74 mg/l monthly average and 1.0 mg/l maximum daily" in the final permit. See Response to Comment 1.

2. The final permit has been changed to include a schedule of compliance for aluminum. See Response to Comment 2.

3. The nitrogen species monitoring frequency in the final permit has been changed from "1/week" to "1/month" during the winter season. See Response to Comment 4.

4. The total residual chlorine limitation for the Berkshire Street CSO treatment facility's outfall 009 proposed in the draft permit has been changed from a "0.14 mg/l monthly average limitation" to "report the monthly average" in the final permit. See Response to Comment 5.

5. The whole effluent toxicity testing for CSO outfall 009 has been changed from using the fathead minnow, *Pimephales promelas* to the daphnid, *Ceriodaphnia dubia* in the final permit. See Response to Comment 18.

In addition, the final permit has been changed under Part I.H., Monitoring and Reporting to reflect the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, published in the Federal Register on October 22, 2015 and became effective on December 21, 2015. The rule requires all individual NPDES Permit holders to submit DMRs electronically after December 21, 2016. The start dates for electronic reporting are provided in 40 CFR Part 127.16. The City of Holyoke's draft permit proposed a six month period from the effective date of the permit to submit DMRs electronically using NetDMR. Since a six month period would not bring the permittee into compliance with the December

deadline, the final permit requires the permittee to report DMR information using NetDMR on or before December 21, 2016. Additional information about NetDMR can be found at: http://www.epa.gov/netdmr. In addition, EPA made a minor change on page 2 of the final permit by adding a flow reporting requirement for coding purposes.

A copy of the final permit and this response to comments document will be posted on the EPA Region 1 website: http://www.epa.gov/region1/npdes/permits_listing_ma.html.

A copy of the final permit may also be obtained by writing or calling Janet Deshais, United States Environmental Protection Agency, 5 Post Office Square, Suite 100 (Mail Code: OEP06-1), Boston, MA 02109-3912; Telephone: (617) 918-1667.

Comments submitted by the City of Holyoke

Comment 1:
The Fact Sheet uses an overly stringent dilution rate to determine the acute (or daily) concentration of total residual chlorine (TRC) that may discharge to the Connecticut River. The Fact Sheet calculates the acute dilution rate using the ratio of the peak discharge flow rate of 37 MGD to the 7Q10 river volume, which occurs during prolonged, extremely dry conditions. This calculation method results in an acute TRC limit that is more stringent than even the calculated chronic limit for TRC. Therefore, it is the City's opinion that using the 7Q10 flow rate and peak discharge flow rate for this ratio results in an impractical value. The City requests that the acute TRC limit remain at the pre-existing permit limit.

The Fact Sheet calculates the total chlorine residual chronic (or monthly average) limit to be 0.76 mg/L. However, since acute limits are typically higher than the chronic limit, the Fact Sheet states that the chronic limit should be lowered to the acute level, regardless of the calculations. This appears to be further evidence that the method of calculating the acute limit is overly conservative. Implementing this logic could further burden the City such that any exceedances would violate two limits rather than one. The City requests that the permit use the calculated chronic limit of 0.76 mg/L, and that EPA reconsider the method of calculating the acute limit.

Response to Comment 1:
The final permit has been changed from including an outfall 001 total residual chlorine acute limit that was calculated using the peak discharge flow rate of 37 MGD to a total residual chlorine acute limit that was calculated using the plant's design flow rate of 17.5 MGD. Since higher instream flows are expected to occur during high discharge flow events, this is expected to be protective of water quality standards in the receiving water, even though peak discharge flows are much higher than the design flow. Therefore, the calculated total residual chlorine maximum daily limitation and monthly average limitation of 0.63 mg/l has been changed to a calculated value of 0.76 mg/l as a monthly average limit and 1.0 mg/l as a maximum daily limit. The TRC permit limit calculations based on the dilution factor of 69 are shown below.

Chronic chlorine limit	11 µg/l * 69 (DF) = 759 µg/l = 0.76 mg/l
Acute chlorine limit	19 µg/l * 69 (DF) = 1,131 µg/l = 1.13 mg/l

However, the calculated average monthly limit of 0.76 mg/l is less stringent than the current permit limit of 0.74 mg/l. Based on anti-backsliding, the final permit maintains the average monthly limit of 0.74 mg/l. Similarly, the calculated maximum daily limit of 1.13 mg/l is less stringent than the current permit limit of 1.0 mg/l. Based on anti-backsliding, the final permit maintains the maximum daily limit of 1.0 mg/l.

Comment 2:
The immediate compliance with aluminum limits is unachievable especially since any issues with aluminum have only most recently been identified in this draft permit. The City has been unable to identify an economically feasible treatment technology capable of achieving the proposed reductions of aluminum, copper, and lead. The treatment technology that is available would be cost prohibitive and is not likely capable of providing the reductions desired by EPA and MassDEP. Typically, lowering heavy metal concentrations would be accomplished through prevention via the industrial pretreatment program and community education. However, even this may not be possible, as industrial point sources in the City are regulated and monitored and do not generally contribute to the copper or lead discharged. The concentrations of copper and lead are suspected to originate at the municipal water supply. Holyoke Water Works consumer confidence reports from 2012-2014 report the 90th percentile concentrations for copper and lead at 260 to 410 pg/L and 8.1 to 15 pg/L, respectively. Addressing heavy metals in the water supply would require treatment at a considerable expense to the City.

The City believes that the objectives of the EPA and MassDEP to improve water quality would be best served by provisions similar to those in the permit for the Chicopee WPCF (NPDES Permit No. MA0101508, issued August, 2012). The Chicopee WPCF is located less than three (3) miles downstream of the Facility and also discharges comparable volumes of effluent to the Connecticut River. The City recommends that the interim period in Part I.G.2 include a study characterizing the sources contributing to the WPCF. After the study is completed, EPA and MassDEP could use the information to develop achievable limits for the Facility.

Response to Comment 2:
The final permit has been changed to include a schedule of compliance for aluminum. The schedule includes the following elements: (1) a requirement to minimize the discharge of aluminum to the greatest extent practicable until the limit is met, (2) within 24 months after the final permit becomes effective, the permittee will provide an evaluation of alternatives and an implementation schedule for achieving the new limit, (3) the permittee will submit an annual progress report, and (4) the limit will become effective within 60 months after the final permit becomes effective. The Holyoke WPCF is not required to meet an interim aluminum limit. In addition to a schedule, permittees are allowed to collect data, perform studies, and submit their findings to the permitting agencies anytime for consideration. Permittees may also request a permit modification during the life of their permits. If new information becomes available that was not available during the public notice period that justifies modifying the permit's limits or conditions, the permit may be opened for public comment and modified in accordance with 40 CFR 122.62 or 122.63, as appropriate.

Comment 3:
The new limits for aluminum, copper, and lead present an undue burden on the City that EPA and MassDEP have not placed upon other wastewater treatment facilities in the area. As mentioned above, the Chicopee WPCF permit has no limits for copper or lead, and includes an allowance of four years to characterize sources of aluminum in their system, analyze alternatives, and establish a schedule for implementation of source reduction methods or an alternative treatment system. Further, the Chicopee WPCF is not subject to an interim aluminum limit during the evaluation period. The City requests that the conditions in the draft permit relating to metals be revised to be consistent with the conditions of the Chicopee WPCF permit. Otherwise, EPA and MassDEP should provide justification for the stricter standards being applied to the City.

Response to Comment 3:
The permitting agencies understand the City's concerns regarding the burden to implement the new limits. However, in accordance with federal regulations at 40 CFR 122.44, water quality-based effluent limits are derived to ensure that discharges do not cause or contribute to a violation of water quality criteria, regardless of cost or other challenges to meeting the limit. Cost or other practical implementation challenges may be considered in justifying a compliance schedule (see 40 C.F.R. §122.47), a state-adopted, time-limited variances (see 40 C.F.R. §131.14), or a state-adopted removal or modification of the designated aquatic life use from water quality standards (see 40 C.F.R. §131.10(g)). The final permit does incorporate a compliance schedule to meet the new aluminum, copper and lead limits. The Commonwealth of Massachusetts has not adopted any variances or removed any designated uses related to the City's discharge.

As permits are renewed, the Region has been considering the background concentration of metals when calculating metals permit limitations, in order to ensure that the discharge does not cause or contribute to a violation of the water quality criteria. As explained in the Fact Sheet, it is our best professional judgement that this approach is necessary to protect the receiving water from impacts due to state water quality criteria exceedances.

Comment 4:
The Facility already has a well-established baseline of analytical results for total Kjeldahl nitrogen (TKN), nitrite, nitrate, ammonia, and total nitrogen, which demonstrate relatively consistent concentrations of each parameter. Results have been reported consistently on a monthly basis in accordance with the 2009 NPDES permit. The draft permit increases the measurement frequency from monthly to weekly at expense to the City and local taxpayers without properly justifying the change in the Fact Sheet. The City believes this should be corrected in the draft permit Part I.A.1 to monthly monitoring.

Response to Comment 4:
The permitting agencies understand the City's financial concerns. However, the Region is in the process of applying a more consistent approach for monitoring requirements associated with nitrogen loading. This approach is being applied to Region I EPA NPDES permits in Massachusetts and New Hampshire, and to Vermont NPDES permits issued by the state. It is EPA's best professional judgment that wastewater treatment plants greater than 1.0 mgd design flow require more frequent monitoring of total nitrogen would provide better information than the past requirement of "1/month sampling" and EPA is in the process of proposing new monitoring requirements as each permit is reissued.

The annual nitrogen data reported from 2006 to 2015 indicates only a periodic lowering of total nitrogen, and this has typically been observed when the effluent flow is lower. For example, during the years 2011 and 2015 when effluent flow was 8.13 mgd and 7.16 mgd, corresponding annual average TN loadings were 569 lbs/day and 643 lbs/day, respectively. During 2006, 2012, and 2013 when effluent flows were higher, at 10.28 mgd, 9.09 mgd, and 9.39 mgd, annual average TN were also higher at 803 lbs/day, 741 lbs/day, and 779 lbs/day, respectively. A summary total nitrogen annual loading for outfall 001 using data from the permittee's discharge monitoring reports, are provided in Table 1.

Table 1: Total Nitrogen Annual Average Effluent Data

Year	Total Nitrogen Annual Loading	Effluent Flow, Annual Monthly Average
2006	803 lbs/day	10.28 mgd
2008	423 lbs/day	8.69 mgd
2009	645 lbs/day	8.39 mgd
2011	569 lbs/day	8.13 mgd
2012	741 lbs/day	9.09 mgd
2013	779 lbs/day	9.39 mgd
2015	643 lbs/day	7.16 mgd

Generally, if the permittee is able to demonstrate that all practicable steps have been taken to optimize the removal of total nitrogen, then EPA will consider, in a future permit action, the appropriateness of reducing nitrogen monitoring frequency during the summer, low flow season. Part I.G.1.a. of the draft and final permit requires the permittee to continue to operate the WPCF to optimize nitrogen removal in accordance with its 2010 evaluation in order to maintain the mass discharge of total nitrogen less than the existing mass loading of total nitrogen. The baseline annual average total nitrogen load from this facility is estimated to be 696 lbs/day. The goal of optimizing nitrogen removal to the greatest extent practicable is not limited to alternative methods of operating the existing wastewater treatment, but also includes evaluating source controls, septic management, and side-stream management. Additionally, the permittee should maximize ammonia removal. This optimization approach is also discussed within the Fact Sheet under Part VII.C. .

Based on the permittee's request, and since the winter season is a less critical period relative to nitrogen impacts, the monitoring frequency during the winter season in the final permit has been changed from a "1/week" to "1/month".

Comment 5:
Page 21 of the Fact Sheet includes a mathematical error. The proposed TRC chronic limit for the Berkshire Street CSO Treatment Facility should be corrected to 0.76 mg/I, not 0.14 mg/I as the calculations on the Fact Sheet demonstrate. This error should also be corrected in the Part 1.13.6.b of the draft permit.

Response to Comment 5:
The proposed TRC chronic limit for the Berkshire Street CSO Treatment Facility in the draft permit was 0.14 mg/l and was correct. The fact sheet included an error for the dilution factor. Using the dilution factor estimated for this outfall, the calculation is expressed as follows: "[chronic criterion x dilution factor = monthly average limit] = [(11 ug/l x 12.6) = 0.14 mg/l]. Since this treated CSO effluent is an intermittent discharge, it is the Region's best professional judgement that imposing an acute TRC limitation without imposing a chronic TRC limit would protect the receiving water from adverse water quality impacts. Therefore, the final permit has been changed from a "0.14 mg/l" monthly average limitation to a "report only" requirement. Since fact sheets cannot be changed, this response to comments document serves as clarification of this permit limitation for the administrative record.

Comment 6:
Increasing the TRC limits for the Berkshire Street CSO Treatment Facility is contrary to the objective of the Facility. The goal of the Berkshire CSO Treatment Facility is to disinfect prior to discharge into the Connecticut River when wastewater flow rates to the Facility exceed peak design flow and available storage.

On the rare occasions that it does receive flow, the volume can be as high as 103 million gallons per day (MGD). As the flow rate through the CSO treatment facility increases, the chlorine contact time decreases. In order to properly disinfect the CSO treatment facility effluent, the concentration of chlorine must be increased. After disinfection, the Facility performs dechlorination to the maximum extent practicable and discharges to the river.

The Fact Sheet cited the data in Table 4a as evidence that the proposed limit can be achieved. This is an erroneous conclusion. Table 4a includes TRC effluent concentrations from every CSO event in a one-year period. In that time, the Facility discharged chlorine at concentrations greater than the proposed limit on seven occasions.

It is the City's opinion that the limits from the pre-existing permit appropriately weighted disinfection limits as more critical to water quality than TRC. The City requests the TRC limits for the Berkshire Street CSO Treatment Facility remain the same as the existing permit and the approved facility design.

Response to Comment 6:
While the objective of the CSO treatment facility is to screen and disinfect, it is not acceptable under the Clean Water Act for the permit to allow potentially toxic levels of chlorine to be discharged from the facility. This total residual chlorine limitation is necessary to protect the receiving water from adverse water quality impacts. While receiving water flows may be higher than 7Q10 during CSO discharge events, the conservative calculation is appropriate given that the capacity to assimilate chlorine at 7Q10 flow conditions has already been fully allocated to the outfall 001 discharge. Furthermore, as pointed out in the fact sheet, the CSO facility frequently discharges in connection with high intensity summer storms when river flows are relatively low.

The difficulties of consistently achieving adequate disinfection of a minimally treated high flow discharge while also preventing toxic impacts from the added chlorine highlights the fact that these types of CSO remediation are interim solutions only. As an interim solution for CSO management, while the City works towards a more final solution, every effort should be made to comply with both the bacteria and chlorine

limits. To the extent the City is unable to consistently comply with both limits, an administrative order may be issued that establishes interim limits while the City pursues the necessary steps for full compliance with CSO requirements.

Comment 7:
Permit section I.G.2 includes provisions for an interim period during which the Facility would develop a plan to reduce copper and lead discharge concentrations. The interim provisions allow the Facility time to determine the sources of copper and lead and implement a plan to reduce concentrations. There is no treatment system currently in place at the Facility to control these constituents, and no means for the Facility to immediately meet the proposed interim limits. The City asks that the interim program be extended to 4 years.

Response to Comment 7:
The permit is currently written to allow an interim period during which the permit limits do not have to be met for 5 years. During the first 5 years of the permit, the City will be given time to develop a plan to reduce the aluminum, copper, and lead, and implement source reduction.

Comment 8:
The City requests that EPA and MassDEP include similar provisions for aluminum as included for copper and lead. This would permit the Facility to investigate sources of aluminum and present the findings to EPA and MassDEP. At that time, the City can work with EPA and MassDEP to develop a reduction plan during an interim time period. The Facility will require time to develop methods to control concentrations of aluminum in the WPCF influent and/or effluent.

Response to Comment 8:
The permit has been changed to include a schedule of compliance for aluminum, similar to the schedule of compliance for copper and lead, in order to investigate sources of aluminum, implement source reduction, and identify modifications at the treatment facility that will reduce and control concentrations of aluminum in the WPCF influent and effluent.

Comment 9:
The table of discharge limitations in Part I.A.1 contains the following errors and inconsistencies with the Fact Sheet:

- The measurement frequency for TRC should be corrected to "1/day" to be consistent with page 10 of the Fact Sheet;

- The average monthly and maximum daily discharge limitations for TRC should be reconsidered as discussed in earlier comments; and

- The measurement frequency for TKN, nitrite, nitrate, ammonia, and total nitrogen should be revised to "1/month".

If left as proposed, these changes to the NPDES permit will have profound financial impacts on the City of Holyoke. I appreciate your review and consideration of these comments and look forward to working out reasonable accommodations, within the City’s means, that attain benefits to the environment acceptable to all.

Response to Comment 9:
The 3/day measurement frequency for TRC in the draft permit was correct. The fact sheet was in error. Given that chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life and given the magnitude of the discharge flow, EPA finds that 3 times per day monitoring during the summer season is appropriate, as discussed also in Response to Comment 13. While fact sheets cannot be changed, this response to comments document will serve as documentation for the permit administrative record.

- The average monthly and maximum daily discharge limitations for TRC have been clarified in Response to Comment 1; and
- As discussed in the Response to Comment 4, the measurement frequency for TKN, nitrite, nitrate, ammonia, and total nitrogen has been changed during the winter months to "1/month".

Comments submitted by Connecticut River Watershed Council

Comment 10:
I am submitting comments on the draft National Pollutant Discharge Elimination System (NPDES) permit for the Holyoke Wastewater Treatment Plant (WWTP) on behalf the Connecticut River Watershed Council (CRWC). The Connecticut River, an American Heritage River and America's only National Blueway, is a regional resource that merits the highest level of protection. The Connecticut River downstream of the Holyoke Dam is listed as an impaired water body due to priority organics, pathogens, and total suspended solids. CRWC is particularly interested in improving water quality in the Connecticut River so that it can support existing primary and secondary contact uses, even during wet weather. CRWC believes that the Connecticut River can meet Class B water quality during wet weather and be made safe for swimming, if state and federal regulators work aggressively with other stakeholders to ensure compliance with Clean Water Act goals.

Response to Comment 10:
The permitting agencies agree that working aggressively and proactively with other stakeholders to ensure compliance with Clean Water Act goals needs to remain a high priority, even to address wet weather discharges. EPA-New England's application of the National Combined Sewer Overflow Policy strives to implement a results-oriented, flexible approach. For instance, the Region does not mandate a preferred set of technologies that a municipality should use to address CSO issues. Rather, through its enforcement actions, the Region allows a community to develop abatement programs tailored to its individual circumstances. Provided that communities are making solid progress within time frames the Region agrees make sense, the Region allows communities to select the most appropriate resolution to CSO problems from a variety of approaches. The Region also recognizes that a community's knowledge about its sewer system often develops through the course of abatement work. This is due not only to the fact that collection systems are underground and therefore not readily observed, but also because the systems in New England are old and historical mapping is often unavailable. As a result, the Region often phases work required under CSO enforcement actions so that communities can build upon knowledge gained about their systems during initial stages. The Region is amenable to communities recommending modifications to abatement plans based on new information as long as there are equivalent or better environmental protections. In order to ensure that tangible progress is made during the life of this permit, the City of Holyoke was recently issued an EPA order requiring the City to complete their CSO Long Term Control Plan. See Response to Comment 22.

Comment 11:
The protection of existing uses is required under 40 CFR 131.12(a)(1). Below is our understanding of existing uses in Holyoke along the Connecticut River.

A boat launch owned and operated by the City of Holyoke is located about a mile downstream of the City's main outfall pipe. This site, the Jones Ferry River Access Center, is the launching point for a group called Holyoke Rows (http://www.holyokerows.org/), which offers rowing, kayaking, and canoeing programs for children and adults. The general public uses this site as a launching point, mainly for canoes and kayaks. In addition, anglers use the wooden docks at this access point as a fishing spot. Holyoke has eliminated the CSO closest to this site.

Just downstream of the Holyoke dam is a peninsula of land nicknamed "Slim Shad Point" that is one of the best riverbank shad fishing locations in Massachusetts. This location is just downstream of one of the canal outflow points, which means it would be affected by CSO 016 and outfalls upstream of the dam. Riverbank angling and swimming takes place informally at other, scattered locations along Holyoke's shoreline.

A state-owned boat ramp (Medina Street) is located on the Chicopee side of the river approximately three miles downstream of outfall 001. This boat ramp is extremely busy with motor boat launching on most weekend days in the spring, summer, and fall. This is especially true during the height of the spring fish migration period. This section of the river, though urbanized, also contains important fish and wildlife habitat. As the Holyoke dam is the first substantial barrier to migratory fish between Long Island Sound and sites upstream, many fish congregate in the section of the River below the dam and either never make it upstream or wait for passage via the fish lifts and eel ladders. These fish include the endangered shortnose sturgeon. The dam is also a barrier to resident fish. Last summer, Holyoke Gas & Electric Department (HG&E) ran the fish lift all summer and identified 20 different species of fish that used the lift to move upstream (Report prepared by Kleinschmidt, dated March 2007).

Migratory fish such as American shad that do pass upstream via Holyoke Gas & Electric's fish lift in the Spring could potentially be affected by all or any of the CSO discharges located upstream of the dam on the same side of the river as the fish lift. In 2015, migratory fish numbers that passed above Holyoke are as follows: 13 Atlantic salmon; 412,656 American shad; 87 blueback herring; 21 striped bass; 1 shortnose sturgeon; 84 gizzard shad; and 22,245 sea lamprey. A total of 17 other species were lifted during the spring and American eel passage numbers were their third highest at 20,038, despite construction of sturgeon passage facilities at the dam during 2015.

Response to Comment 11:
The permitting agencies concur with your characterization of the existing uses in Holyoke along the Connecticut River and agree that 40 CFR 131.12(a)(1) requires the protection of the existing uses. In accordance with 40 CFR 131.12, the state has developed and adopted a statewide antidegradation policy that, at a minimum, maintains the necessary level of water quality in order to protect the instream existing uses. Your comment has been entered into the permit administrative record for clarification purposes.

Comment 12:
CRWC notes that the average monthly and maximum daily discharge limits for total residual chlorine (TRC) have been reduced, despite a higher 7Q10 used to calculate the dilution factor at the site. The new TRC limits are based on a calculation using a peak design flow dilution factor to calculate the acute criterion for TRC. Using the peak design flow is new for this permit, and was not used in other permits (Chicopee, for example). The permit sets an average monthly effluent flow limit based on the design flow of the water pollution control facility (WPCF), 17.5 million gallons per day (mgd). The Fact Sheet explains that the WPCF has been upgraded to handle up to 37 mgd on a short-term basis. CRWC believes that using the design flow of 17.5 mgd to calculate the dilution factor is appropriate and consistent with other permits. Though we understand EPA's rationale to calculate limits based on a reasonable worst-case scenario, we think that using the 7Q10 and the design flow does that. Using the peak design flow with the 7Q10 is not realistic – anytime the facility is at peak flow is during a significant rain event during which the Connecticut River will not be running at 7Q10 flows. Though we typically support lower limits, we also recognize lower limits require the use of additional dechlorination chemicals. In addition, setting limits using the peak design flow may be a disincentive for permittees to upgrade and expand the capacity of treating higher volumes on a short-term basis.

Response to Comment 12:
Please see Response to Comment 1.

Comment 13:
The draft permit in Part I, A.1 indicates the TRC measurement frequency has increased from 1/day to 3/day. However, the Fact Sheet on page 11 says that there were no violations of the TRC limit between 2011 and 2014, and the monitoring frequency "is maintained at once per day." Please clarify which frequency EPA intends to establish, and the rationale if changing to 3 times per day.

Response to Comment 13:
Chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. A total residual chlorine sampling frequency of 3/day is necessary for a treated wastewater discharge of this magnitude in order to provide a more comprehensive evaluation of the potential impacts associated with chlorine toxicity. As the fact sheet cannot be revised or corrected, this response to comments document serves as clarification for EPA's final permit decision.

Comment 14:
The draft permit establishes a discharge limit for total recoverable aluminum at 87 µg/L. This limit is the same that was set for the Chicopee permit in 2012. Chicopee uses aluminum in its treatment process; Holyoke apparently does not. Table 2 in the Fact Sheet indicates the Al concentration in the receiving water is typically much higher than in the effluent. We understand the calculation EPA used to establish the limit, but we don't necessarily see how the discharge will cause or contribute to an impairment when the discharge concentrations are less than the receiving water concentrations.

Response to Comment 14:
Permit limitations are calculated to meet state water quality standards instream. Even when discharge concentrations are less than receiving water concentrations, the discharge cannot contribute to further impacts to the receiving water. When the upstream water quality level exceeds the water quality criteria, for example, discharge permit limits are set at the criteria in order to protect the receiving water from further degradation.

Comment 15:
The draft permit sets only an annual load of nitrogen. The 2009 permit required an evaluation of alternate methods of operating the existing wastewater treatment plant to optimize the removal of nitrogen and annual reports on optimizing activities. Other than providing annual loading values for the years 2007, 2010, and 2014, no information was provided in the Fact Sheet as to what the permittee's evaluation consisted of, or what annual activities have been accomplished. What were the loading values of the years 2008, 2009, 2011, 2012, 2013? That would be helpful to evaluate if the trend is truly downward.

Response to Comment 15:
The permittee is required to meet a total nitrogen (TN) annual average limit and this cap is based on the 2004-2005 TMDL developed for this watershed. A new allocation will be developed, and a lower water quality-based TN limit may be required in a future permit action. The City has evaluated alternative methods of operating the wastewater treatment plant to optimize the removal of TN. Unfortunately, there are challenges and limitations associated with optimizing TN removal at this treatment facility. The maximum flow to the treatment plant, for example, needs to be balanced with maintaining solids at the plant in order to be able to reduce the nitrogen load. The City was able to achieve a 57% nitrogen reduction and a 31% ammonia reduction during the past couple of years, but, this requires the City to carry a higher solids concentration, resulting in increased sludge blankets. When the Berkshire Street CSO outfall 009 activates, there is 35 mgd peak flow entering the WWTP before excess flow is diverted to their Berkshire CSO facility. Under this scenario, there is a risk of washing out the sludge blankets when managing the higher flows. In summary, one of the challenges with optimization at this facility is finding a balance between nitrogen removal and preventing a plant upset.

The total nitrogen annual loading values for the years 2008, 2009, 2011, 2012, and 2013 were: 423 lbs/day, 645 lbs/day, 569 lbs/day, 741 lbs/day, and 779 lbs/day (See Response to Comment 4, Table 1).

Comment 16:
CRWC agrees with the comment letter submitted by the Connecticut Fund for the Environment on the subject of nitrogen limits.

Response to Comment 16:
The permitting agencies have entered your comment conveying that you agree with the Connecticut Fund for the Environment on the subject of nitrogen limits into the permit administrative record.

Comment 17:
CRWC supports testing and reporting of metals along with the Whole Effluent Toxicity testing.

Response to Comment 17:
These requirements have been retained in the final permit. The permitting agencies have entered your comment that CRWC supports testing and reporting of metals along with the WET testing into the permit administrative record.

Comment 18:
The draft permit requires toxicity testing using the daphnid *Ceriodaphia dubia* at outfall 001. The permit requires testing for the fathead minnow, *Pimephales promelas*, at CSO 9. We aren't sure why the different outfalls require different species. The Chicopee NPDES permit requires toxicity testing for the minnow and brook trout, *Salvelinus fontinalis*. Holyoke's discharge is not that far upstream from Chicopee's; CRWC requests that the Holyoke permit be made consistent with that of Chicopee.

Response to Comment 18:
Whether daphnia or fathead minnows are selected for testing depends on which one is expected to be the most sensitive to a particular discharge. While the data for outfall 001 indicates that daphnia is the more sensitive species, there is no data available for the CSO treatment facility. However, the final permit has been changed to require WET testing for the Ceriodaphnia dubia for CSO outfall 009, in order to provide consistent testing with outfall 001. Brook trout has been used as a test species in very rare occasions where a compelling reason has been established.

Comment 19:
The draft permit states in section Part I.B(3), footnote f. says that the permittee, "shall continue to implement its enhanced public notification plan." Neither CRWC nor the permittee is aware of what this plan is or what it entails. Nevertheless, CRWC is very eager to have public access to CSO activations, and we support the requirement to post information on CSO discharges on a website, so we welcome clarification as to what this plan is or should be. We would also like to see more information on EPA's databases about CSO discharges at facilities along the Connecticut River. We find EPA's DMR Pollutant Loading Tool close to impossible to use, so are requesting this information directly.

Response to Comment 19:
Currently, EPA does not have a database of MA facilities with CSO discharges along the CT River. However, the City of Holyoke currently provides, through its website, emergency notifications to any interested member of the public after they sign in with a user name and password by logging into the Citizen's Alert at http://www.holyoke.org/services/. The permit, after it becomes effective, will require the permittee to post public information of CSO activations and the amount of flow discharged from the City's CSOs directly on the City of Holyoke's website that is accessible to users without a password. This information will be available to anyone that visits the City's website, and this notification procedure is required to be implemented within one year after the permit becomes effective.

In addition to the permittee's website, the permit also requires the permittee to report their CSO discharge information on their monthly discharge monitoring reports (DMRs). After the permittee begins submitting its DMRs electronically, this information will become accessible by logging into the Enforcement and Compliance History Online (ECHO) data base at https://echo.epa.gov/?redirect=echo, If you are experiencing problems using EPA's DMR Pollutant Loading Tool, and would like assistance resolving a technical issue, you may contact Carey Johnston at EPA-HQ. He may be reached at: (202) 566-1014 or johnston.carey@epa.gov.

Comment 20:
The draft permit sets bacteria and chlorine limits on outfall 009 in section 1.B.6.b of the draft permit, as well as other monitoring and reporting requirements. CRWC requested this back in 2007 during the last permit renewal. However, at the time, EPA responded as follows: "It is EPA's intent to include interim limits for the Berkshire St. CSO facility in an enforcement order, and to not include numeric limits in the NPDES permit unless a UAA is completed and MAWQS are adjusted to allow the discharge." (Response H.13 on page 23 of 2009 response to comments document). As far as we know, there was never an enforcement action that set interim limits on the Berkshire Street facility. There have also not been any updates to the MAWQS. Page 4 of the Fact Sheet indicates no use attainability analysis has been submitted or approved. Other than being confused, we're pleased that EPA has inserted requirements this time around.

Response to Comment 20:
Although the commenter is correct that interim limits were not imposed by EPA in the past, the City of Holyoke has been required to meet effluent limits and requirements subject to their state permit (See Attachment A of this Response to Comments document). Additionally, EPA is now including effluent limits and other monitoring requirements for the Berkshire Street CSO facility's outfall 009 discharge in the permit.

Comment 21:
Upon our request, EPA provided information showing that in 2013, the Berkshire St. CSO facility discharged untreated water to the Connecticut River on 7 occasions, on days where precipitation amounts in the range of 0.9 inches to 3.85 inches occurred. In 2014, the Berkshire St. CSO facility discharged untreated water to the Connecticut River on 6 occasions, on days where precipitation amounts in the range of no precipitation to 3.4 inches occurred. The EPA stated in Response H.13 on page 23 of 2009 response to comments document that the Berkshire Street CSO facility "will provide screening, preliminary treatment, and disinfection for a 3-month storm." The 2000 Draft Long-Term CSO Control Plan (LTCP) for Holyoke also referred to a 3-month storm but we could not find information on what level of rainfall this is. The LTCP also referred to a "1-year design storm" of 2.5 inches. What is the 3-month storm, and is the Berkshire Street facility meeting the design requirements? How many times was it predicted to discharge untreated water into the Connecticut River, and how many times is it actually discharging for the years of operation 2009-2015? This information is vital for understanding how modelling assumptions are playing out in the real world.

Response to Comment 21:
The Berkshire Street CSO facility was designed to provide screening, preliminary treatment, and disinfection to treat discharge flows during a 3-month storm event and has been performing as intended, meeting its water quality limitations for total fecal coliform bacteria and total residual chlorine required in the City's state permit (See Attachment A).

Although the Berkshire Street CSO facility was designed to treat discharge flows during a 3-month storm event, direct comparisons of the resultant runoff patterns and CSO activations are not appropriate given that design storms and actual precipitation events can differ in the hourly precipitation levels, the antecedent rainfall and other conditions. Storm events are categorized by their recurrence interval in years, their probability of occurrence in any given year, their percent chance of occurrence in any given year (i.e., a 50-year rainfall event has a 1 in 50 or 2% chance of occurring in a year), and each locality has its own criteria for how much rain must fall within 24 hours to classify it as a particular rain event. This criteria is not comparable to flows that occur after a treatment facility is fully operational. There are many factors (weather-related variables are the most common) that lead to higher than expected flow rates. For example, higher than model-predicted flowrates often occur when heavy rain falls on frozen ground, or when snowmelt is greater than expected.

The number of untreated overflow discharge events that have occurred per year from the Berkshire Street CSO Treatment Facility (CSO Outfall 009) are listed below in Table 2 for informational purposes.

Table 2: Untreated CSO Discharges from Outfall 009

Year	Number of Untreated Overflows from Outfall 009
2009	5
2010	12
2011	15
2012	8
2013	9
2014	7

Comment 22:
CRWC is aware of Holyoke's inability to fund a final LTCP given the many fiscal constraints the City faces. Understanding that, we can only express extreme disappointment that 15 years has passed since the draft LTCP was submitted and there is still not a final document and overall plan to eliminate CSO discharges into the Connecticut River.

Response to Comment 22:
The permitting agencies understand your disappointment with the length of time since the City's draft LTCP was submitted and agree that working with other stakeholders to ensure compliance with Clean Water Act goals needs to remain a high priority in order to address wet weather discharges. The City of Holyoke was recently issued an EPA order in August 2016, requiring the City to complete their CSO Long Term Control Plan within three years. Please see Response to Comment 10.

Comment 23:
The Fact Sheet on page 3 states that the Holyoke WPCF and the CSO outfalls discharge to the Connecticut River segment MA34-05, which runs from the Holyoke Dam to the MA/CT border. We would like to point out that CSOs 18, 19, 20, 21, and 23 all discharge to the Connecticut River upstream of the Holyoke Dam. This segment, MA34-04, runs from the confluence with the Deerfield River to the Holyoke Dam and is also considered impaired for pathogens, mainly because of the Holyoke CSOs present in the lower end of the segment.

Response to Comment 23:
The permitting agencies agree with your statements and have entered your comment into the permit administrative record.

Comment 24:
The Fact Sheet in 2007 contained information about CSO activations and the amount of process wastewater coming from each of the significant industrial users. The information was helpful. None of that information was provided in the 2015 Fact Sheet. Please include this in the final version of the permit or response to comments document.

Response to Comment 24:
The 2015 Fact Sheet contains a detailed summary of CSO activities and the overall impacts associated with CSO discharges (See also Table 2). Going forward, this permit requires the permittee to provide detailed data on each CSO activation, including frequency, number of activations, and discharge volume reported in the permittee's DMRs. This will improve the flow of information, identify trends more easily, and provide more transparency for the public.

Please also see Response to Comment 21 for information about CSO activations.

Regarding process wastewater coming from each of the significant industrial users, see Table 3 below, which includes the amount of process wastewater coming from each of the significant industrial users (SIUs). Since the fact sheet is not being modified, this response to comments document serves as documentation for the permit administrative file.

Table 3: Process Wastewater from SIUs

Name Of Significant Industrial User (SIU)	Amount of Process Wastewater from each SIU	Intermittent or Continuous Discharge
Bay State Plating	7,000 gallons/day	Intermittent
D & S Plating	5,000 gallons/day	Intermittent
New England Etching Company	1,500 gallons/day	Intermittent
Sonco Products Company	500,000 gallons/day	Continuous
RR LeDuc Corporation	750,000 gallons/day	Intermittent
Hazen Paper Company	500 gallons/day	Intermittent
Marox Corporation	2,000 gallons/day	Intermittent

Comments submitted by the Connecticut Fund for the Environment & Save the Sound

Comment 25:
The Connecticut Fund For the Environment and its bi-state program Save the Sound submit the following comments on the draft National Pollutant Discharge Elimination System (NPDES) Permit for the Holyoke, MA Water Pollution Control Facility and Combined Sewer Overflow (CSC') discharges at 11 locations.

The segment of the Connecticut River where the Holyoke Water Pollution Control Facility (WPCF) discharges treated waste water and CSOs has been designated by the Commonwealth of Massachusetts as a Class B water, warm water fishery, with a CSO designator. The CSO designator for these waters indicates that these waters are impacted by the discharge of combined sewer overflows. The Fact Sheet that accompanies the draft permit acknowledges that no variance or use attainability analysis has been submitted or approved by the permitting authority for the Holyoke WPCF. Therefore, CSO discharges must comply with all applicable water quality standards.[1] NPDES permits must also insure compliance with applicable water quality requirements of any other state whenever such discharge will affect the quality of the waters of such other state.[2] It is also acknowledged in the Fact Sheet that Connecticut is the "downstream affected state" and that excess nitrogen loading is causing significant water quality problems in Long Island Sound.[3] Despite these requirements and the known impact of nitrogen loading in

Long Island Sound from out-of-basin sources, this draft permit, as well as the previous 2000 and 2009 permits issued by EPA to the Holyoke WPCF, contains no limit for nitrogen.

The Clean Water Act requires that NPDES permits establish effluent limitations necessary to meet Water Quality Standards[4], consider and ensure compliance with attainment and maintenance of Water Quality Standards of downstream waters[5], and when necessary, authorizes EPA to translate narrative Water Quality Standards into chemical specific limitations for the permit[6]. "EPA has developed nutrient criteria recommendations that are numeric values for both causative (phosphorus and nitrogen) and response (chlorophyll *a* and turbidity) variables associated with the prevention assessment of eutrophic conditions."[7] The draft permit like earlier permits requires only monitoring and reporting of the average monthly discharge. Monitoring and reporting requirements are not equivalent to effluent limitations. Water quality based limits (WQBLs) are required in a permit for pollutants that have the reasonable potential to cause or contribute to exceedances of water quality standards.[8] After 15 years of monitoring and reporting, EPA should have sufficient data to set numeric nitrogen effluent limitations for the Holyoke WPCF using the options provided in 40 C.F.R. § 122.44(d).

Recently, EPA Regions 1 and 2 have acknowledged that current and planned actions by four of the five New England states and New York will fall short of fully implementing the 2000 TMDL and will be insufficient to address other adverse impacts to water quality in Long Island Sound. Additionally, the Region 1 and 2 Administrators acknowledge that alternatives to control nitrogen sources such as ambient aeration or bioextraction have not been implemented to the scale needed and that the modeling and monitoring of Long Island Sound "give us a sense of urgency and also compel us to do more." Despite this, numeric limits on nitrogen concentration are not included in the permit and all that is required is continued monitoring and reporting of nitrogen with the requirement to optimize nitrogen consistent with the requirements of the Long Island Sound TMDL based on the assertion that the TMDL target 25 percent aggregate reduction from baseline loadings is currently being met. The Fact Sheet accompanying the draft permit justifies this lack of numeric limits with the assertion that the TMDL target 25 percent aggregate reduction from baseline loadings is currently being met. This justification for failing to incorporate numeric nitrogen limits in the draft permit conflicts with the above position of the EPA Region 1 Administrator and ignores the cumulative impact that out-of-basin nitrogen discharges continue to have on the health and environment of Long Island Sound. Based upon predictive modeling performed by NEIWPCC and recent EPA data on Massachusetts Point Source Nitrogen Loads", it is our estimate that nitrogen from Massachusetts point sources on the Connecticut River account for 29% of the daily nitrogen load in Long Island Sound. Given this, and based upon long accepted modeling, it is beyond question that such discharges cause or contribute to water quality violations in Long Island Sound.

Western Long Island Sound is exceeding water quality standards and will continue to do so despite current and planned actions in the 2000 TMDL, EPA has created a strategy to deal with this situation and has set forth a timeline in its strategy. If the agency is not going to impose numeric limits at this time, as we believe is required by law, we ask that the agency indicate when, within its strategy time frame, such limits will be imposed.

Response to Comment 25:
The permitting agencies understand and share your concern and agree that Massachusetts point sources may cause or contribute to water quality violations in Long Island Sound. In accordance with the permitting regulations, the permit is consistent with the existing TMDL. While the current TMDL has resulted in significant reductions and measureable water quality improvement, EPA recognizes more needs to be done and is fast tracking an evaluation of further reductions that may be necessary. It is

anticipated that this total nitrogen threshold will consider both the DO effects in Long Island Sound as well as the more localized effects of nitrogen loading in the Connecticut River Estuary. EPA is currently in the process of developing a total nitrogen allowable threshold for the Connecticut watershed.

EPA is committed to ensuring continuous progress on nitrogen reduction in Long Island Sound to meet water quality standards for dissolved oxygen and addressing other eutrophication-related impacts. In December 2015, EPA signed a letter detailing an EPA Nitrogen Reduction Strategy. EPA's strategy recognizes that more work must be done to reduce nitrogen levels, further improve dissolved oxygen conditions, and attain other related water quality standards in Long Island Sound. Over the next twelve months, EPA will work to establish thresholds for Western Long Island Sound and several coastal embayments, including the Connecticut River. Upon completion of establishing thresholds, an allocation of total nitrogen loadings will be conducted that determines where the necessary reductions will occur. If further reductions will be needed for the Holyoke discharge, a water quality-based limit will be added in a future permit action.

EPA is actively conducting outreach and seeking stakeholder participation regarding the LIS nitrogen reduction strategy. EPA's informational outreach for the Long Island Sound Nitrogen Reduction Strategy has included a letter to each state in the watershed, a public webinar on February 26, 2016, five individual meetings during the spring of 2016 with state environmental permitting agencies in CT, NY, MA, NH, and VT, and public meetings held on April 13, 2016 (Stamford, CT), April 15, 2016 (Huntington, NY), and May 12, 2016 (Springfield, MA). EPA is committed to continuing public outreach engagement with states, municipalities, monitoring groups, and other stakeholders, as EPA works to translate existing state narrative nutrient criteria into numeric nitrogen thresholds that are protective of designated uses of Long Island Sound.

Comment 26:
Finally, the Clean Water Act prohibits" backsliding", allowing a lesser standard in a renewed permit from what was required in the prior permit.[°] Because the draft permit again fails to set limits on nitrogen discharges, the prohibition against backsliding becomes an ineffective and inapplicable statutory and regulatory requirement for this permit.

Therefore, it is respectfully requested that the 2015 draft permit for the Holyoke WPCF be revised to include a numeric nitrogen limit.

Response to Comment 26:
The commenter is correct, the Clean Water Act prohibits "backsliding" (i.e., unless certain criteria are met). The final permit does not allow backsliding. In order to establish a new nitrogen effluent limit in the permit, a total nitrogen threshold needs to be developed. Please see Response to Comment 25.

References:
[1] EPA Fact Sheet for NPDES Permit No. MA0101630, p. 4.
[2] CWA § 401(a)(2), 33 U.S.C. § 1341(a)(2); 40 C.F.R. § 122.44(d)(4).
[3] EPA Fact Sheet for NPDES Permit No. MA0101630, pp.5, 16.
[4] CWA § 301(b)(1)(C), 33 U.S.C. §1311(b)(1)(C).

[5] CWA § 401(a)(2), 33 U.S.C. § 1341(a)(2); 40 C.F.R. § 122.44(d)(4).
[6] 40 C.F.R. § 122.44(d)(1)(vi).
[7] EPA's NPDES Permit Writers' Manual, September 2010, Sec.6-6.
[8] 40 C.F.R. § 122.44(d)(1)(vi).
[9] December 23, 2015 letter from Regional Administrators Spalding and Enck to the Connecticut. Massachusetts, Vermont, New Hampshire and New York commissioners of state environmental agencies.
[10] *Id.*, p. 2.
[11] NEIWPCC, *An Overview of the Long Island Sound Total Maximum Daily Load for Dissolved Oxygen and the Connecticut River Workgroup*, August 2010.
[12] LIS2014NELVT MAPointSourceNitrogenLoads.xlsx.

Comments submitted by the Connecticut Department of Energy & Environmental Protection

Comment 27:
The Connecticut Department of Energy and Environmental Protection (CTDEEP) is providing comment on the draft NPDES permit for the City of Holyoke's wastewater treatment plant (WWTP) and combined sewer outfall (CSO) discharges. The draft permit authorizes discharges of treated, untreated, and partially treated wastewater to the Connecticut River which subsequently flows through Connecticut to Long Island Sound (LIS).

As a downstream state, Connecticut has a keen interest in both the WWTP and CSO discharges and potential impacts to both the Connecticut River and LIS. LIS has been affected by hypoxic conditions, which occur annually in the summer, and have been well documented to result from excessive amounts of nitrogen. Discharges from wastewater treatment plants and combined sewer overflows contribute to the nitrogen loading to LIS. In response to hypoxic conditions, Connecticut and New York jointly developed a Total Maximum Daily Load (TMDL) for nitrogen which was approved by the Federal Environmental Protection Agency (EPA) in April, 2001.

Response to Comment 27:
The permitting agencies appreciate your information and your active role in reduction of nitrogen loading to Long Island Sound and CSO discharges to the Connecticut River. We entered your comment into the permit administrative record. As described in the Fact Sheet the nitrogen conditions in the draft and final permit are informed by the 2001 TMDL for nitrogen.

Comment 28:
In addition to a number of nitrogen reduction efforts, the TMDL specifies a 25% reduction in the estimated nitrogen load from states upstream of Connecticut (MA, NH, and VT). As a follow-up to the TMDL, the five watershed states (CT, NY, MA, NH, VT) and EPA agreed upon an Enhanced Implementation Plan in 2011 (EIP). The plan requires EPA and the tributary states to implement a tributary state wastewater treatment plant (WWTP) permitting strategy with a goal of essentially capping existing WWTP total nitrogen loads at or near existing levels until agreement is reached on final allocations and how they will be achieved.

Under the permit special conditions, the WWTP is to maintain a nitrogen load of approximately 696 pounds/day based on a 2004 and 2005 annual average. This section also requires the WWTP permittee "to optimize nitrogen removal in accordance with it 2010 evaluation in order to maintain the mass discharge of total nitrogen less than the existing mass loading of total nitrogen." The annual average load in 2014 was 538 pounds/day. The Holyoke WWTP has optimized to a nitrogen load which is lower than the 2004-

2005 cap of 696 pounds/day. CTDEEP believes this reduced load is the existing mass load of which the WWTP must now comply and not the 2004-2005 "cap". Very little to no attenuation occurs in the Connecticut River (Smith et al. 2008) so this entire load is essentially transported directly to LIS.
For comparison, Connecticut's Enfield WWTP is located approximately 15 miles south of the Holyoke WWTP and also discharges treated wastewater into the Connecticut River. The baseline nitrogen load for the Enfield WWTP was 763 pounds/day. However, the Enfield WWTP was given a target nitrogen load of 278 pounds/day and in 2015, achieved an average discharge of 243 pounds/day through nitrogen moderate reduction efforts. This plants discharge flow is about half (5.5 mgd) of Holyoke's current flow, yet it has been able to achieve a nitrogen reduction greater than 63% from the base load. CTDEEP believes that holding Holyoke's WWTP nitrogen discharge to 538 pounds/day is not an unreasonable action.

While we appreciate the EPA's work to increase collective efforts and broaden the lens through which we have been looking at the impact of nitrogen pollution in LIS, actions speak loudly. We feel this permit is an important step to advance the implementation of strategic nitrogen reductions throughout LIS and to demonstrate EPA's commitment to lead through example by EPA requiring a load limit of no more than 538 pounds/day in Holyoke's NPDES permit.

Response to Comment 28:
MA NPDES permits, must be consistent with an existing approved TMDL, and EPA has done this in the Holyoke permit. When and if the ongoing evaluation of the CT River watershed concludes that more stringent limits in permits are needed in order to ensure attainment of water quality standards and EPA concurs with this conclusion as a basis for permitting, then EPA will act to ensure permits in MA as well as CT, NH, and VT will be consistent with the new water quality evaluation and allocations. Until then, basing permit limits on the lowest levels achieved would be counterproductive as permittees will have a disincentive to optimize removals. Current progress is being made toward establishing thresholds under EPA's nitrogen strategy contract. EPA's contractor was hired two weeks ago and began working on this project. EPA intends to perform the analysis for developing an allocation of total nitrogen loadings as soon as the pertinent data and necessary information is available.

Comment 29:
Concerning the CSOs, we appreciate efforts by the City of Holyoke to reduce the impact from combined sewer overflows through retrofits and increased partial treatment capacity. We note however that completion of the Long Term Control Plan for CSOs is almost two years overdue. CTDEEP requests that EPA and Holyoke make completion of the plan a priority.

Response to Comment 29:
Reducing Combine Sewer Overflow (CSO) discharges to the Connecticut River is an EPA priority. The City of Holyoke has completed six CSO remediation projects from their 2000 CSO Long Term Control Plan (LTCP) (see Table 4 below, CSO Remediation Projects). In addition, EPA issued an Order to the City of Holyoke in August 2016 to complete a new LTCP and to undertake an additional CSO remediation project. The Order requires a new LTCP and elimination of the Jackson Street CSO by December 2019.

Table 4: CSO Remediation Projects (6 Completed + 9 Remaining)

Completed CSO Projects:
Berkshire Street Treatment Facility
Move Drainage Area 9 and 16 Flows to Treatment Facility
Green Brook Separation
Drainage Area 3 Separation
Drainage Area 13 Separation
Drainage Area 14 Separation
Future CSO Remediation Projects:
Move Drainage Area 7 Flows to South Interceptor
Highland Park Treatment Facility
Move Drainage Area 19, 20, 21 and 23 Flows to Treatment Facility
Day Brook Detention Basin
Drainage Area 18A Separation
Drainage Area 23 Separation
Drainage Area 2 Separation
Drainage Area 8 Separation
Drainage Area 11 Separation

Comment 30:
It should also be noted that a recent study of nitrogen loads to LIS from New England states found that approximately 50% of the nitrogen load to LIS comes from areas north of Connecticut (Mullaney and Schwarz, 2013). This study was based on 10 years (1999-2009) of data and compared computed nitrogen loads from four gaging stations located along the Connecticut-Massachusetts border to the total nitrogen load computer from gages (and estimates) within Connecticut. As Connecticut continues to achieve greater nitrogen reductions at its WWTPs, the load from Massachusetts and other upstream states (New Hampshire and Vermont) consequently becomes a greater portion of the load and will need to be more fully addressed.

Response to Comment 30:
EPA agrees that attaining water quality standards in Long Island Sound will require accounting for the contributions from four New England states: Massachusetts, Connecticut, New Hampshire and Vermont. See Response to Comment 25 for more information on plans to evaluation the nitrogen waste loads allocations in those states which is likely to affect nitrogen limits for Holyoke and other MA POTWs in future permits.

Comment 31:
In closing, we trust you are aware of the recent December 23, 2015 letter from the EPA Regional Administrator to CTDEEP and the other LIS watershed states indicating a strong desire to work in close collaboration with the states in development and application of a comprehensive Long Island Sound nitrogen reduction strategy. We agree that developing and implementing this strategy will require actions both at the state and federal level to protect Long Island Sound. The letter includes developing watershed

reduction plans, enhanced nonpoint source management plans, and stronger NPDES permits where warranted. It also indicates that EPA will use technical information developed as part of this strategy to inform its permitting activities in the upstream states where EPA issues permits. This approach is consistent with Section 30 1(b)(1)(C) of the Clean Water Act, which provides EPA with the independent authority to ensure that NPDES permits issued by it or by the authorized states it oversees comply with applicable water quality standards, which would include protection of downstream states waters.

Response to Comment 31:
EPA agrees and reiterates its strong desire to work in close collaboration with the states in development and application of a comprehensive Long Island Sound nitrogen reduction strategy. Also, please see Response to Comment 25 regarding this strategy and current evaluation.

Comments submitted by the United States Department of Commerce National Oceanic and Atmospheric Administration National Marine Fisheries Service, during the public comment period

Comment 32:
We have completed an Endangered Species Act (ESA) section 7 consultation in response to your letter received December 14, 2015, regarding the proposed reissuance of the National Pollutant Discharge Elimination System (NPDES) permit for the Holyoke Water Pollution Control Facility (WPCF) (Permit No. MA0101630). We concur with your determination that the proposed action may affect, but is not likely to adversely affect, any species listed by us as threatened or endangered under the ESA of 1973, as amended. Our supporting analysis is provided below.

Proposed Project
The Environmental Protection Agency (EPA) proposes to re-issue the NPDES permit for the Holyoke WPCF in Holyoke, MA. The permittee discharges treated domestic and industrial wastewater, and combined sewer overflow effluent through eleven combined sewer overflow (CSO) discharge points. The WPCF design flow average is 17.5 million gallons per day (mgd), with a peak flow of 37.0 mgd.

The facility serves a population of approximately 37,000 people and seven Categorical Industrial Users including paper manufacturers, sheet metal manufacturer and metal finishers, and a medical device manufacturer. The collection system is 6.7% combined and 33% separate. The WPCF was upgraded to a secondary treatment biological facility in 1979. The facility uses a pure oxygen activated sludge process. The treatment process includes mechanical screens, grit removal, influent submersible pumps, primary clarification, pure oxygen activation sludge biological treatment, secondary clarification, chlorine disinfection, sludge thickening and sludge dewatering. Effluent pumps are also included in the event of high water in the receiving stream (Connecticut River). The treatment plant discharges to the Connecticut River through a submerged outfall about 61 meters from the western bank of the river. The facility is operated by United Water, Inc. under a long term Operation and Maintenance contract with the City of Holyoke covering the treatment plant, collection system, CSOs and CSO treatment facility.

The draft permit includes numeric limits for biochemical oxygen demand (BOD5), total suspended solids (TSS), pH, total residual chlorine (TRC), bacteria, nitrogen and metals including aluminum, lead, and copper.

Description of the Action Area

The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). For this project, the action area includes the underwater areas where the effects of the discharge may be experienced in the receiving waterbody. In Massachusetts, mixing zones must be as small as feasibly possible, may not interfere with the migration or movement of fish, and must not occupy more than one-half of the waterbody's area. Holyoke WPCF and the CSO outfalls from the Holyoke system are located on the west bank of the mainstem Connecticut River, in the vicinity of the 1-391 Bridge in Holyoke, Massachusetts, approximately river kilometer (rkm) 136. The outfalls discharge into Connecticut River Segment MA34-05, which runs from the Holyoke Dam to the Massachusetts/Connecticut border, a length of 25.5 kilometers. Outfall #016 discharges into the Connecticut River via the Holyoke Canal System.
The Massachusetts 2012 Integrated List of Waters list this segment of the Connecticut River as category 5, "waters requiring a TDML," with listed impairments caused by E. coli, Polychlorinated biphenyl (PCB) in fish tissue and Total Suspended Sediment (TSS). The 2006 MassDEP Water Quality Assessment Report for the Connecticut River watershed indicated that this segment did not support primary contact recreation or fish consumption uses, and that aquatic life use was in alert status due to "potential toxicity and habitat impacts of the coal tar deposits and the risks that fish tissue contaminants pose to fish-eating wildlife."

NMFS Listed Species in Action Area

Atlantic Sturgeon

There are five Distinct Population Segments (DPSs) of Atlantic sturgeon *(Acipenser oxyrinchus oxyrinchus)* listed as threatened or endangered. Atlantic sturgeon originating from the New York Bight, Chesapeake Bay, South Atlantic and Carolina DPSs are listed as endangered, while the Gulf of Maine DPS is listed as threatened. The marine range of all five DPSs extends along the Atlantic coast from Canada to Cape Canaveral, Florida and includes the action area. Atlantic sturgeon spawn in their natal river, with spawning migrations generally occurring during February-March in southern systems, April-May in Mid-Atlantic systems, and May-July in Canadian systems (Murawski and Pacheco 1977; Smith, 1985; Bain 1997; Smith and Clugston 1997; Caron *et al.* 2002). Young remain in the river/estuary until approximately age 2 and at lengths of 30-36 inches before emigrating to open ocean as subadults (Holland and Yelverton 1973; Dovel and Berggen 1983; Dadswell 2006; ASSRT 2007).

After emigration from other natal estuaries, subadult and adult Atlantic sturgeon forage within the marine environment, typically in waters less than 50 meters in depth, using coastal bays, sounds, and ocean waters (ASSRT 2007). Subadult and adult Atlantic sturgeon may also occur in shallow waters (i.e., no less than 1 meter deep) while foraging (Dadswell 1984). Adult and subadult Atlantic sturgeon use the Connecticut River estuary for foraging during the spring, summer, and early fall (ASSRT 2007, Savoy and Pacileo 2003). There is only one modem record of an Atlantic sturgeon caught in the Massachusetts portion of the Connecticut River. On August 31, 2006, a 152.4 cm TL Atlantic sturgeon was observed in the Holyoke Dam spillway lift. Prior to this capture, Atlantic sturgeon were thought to occur only as far upstream as the fall line, located near Hartford, CT.

Most Atlantic sturgeon captured within tidal waters or freshwater in Connecticut are thought to be migrant subadults from the Hudson River (ASSRT 2007). Based on the lack of evidence of spawning adults, the Atlantic sturgeon status review team determined stocks of Atlantic sturgeon native to Connecticut waters are extirpated (ASSRT 2007). However, in June 2014, several presumed age-0 Atlantic sturgeon were captured in the Connecticut section of the Connecticut River (T. Savoy, CT DEEP, pers. comm.). These captures represent

the only contemporary records of possible natal Atlantic sturgeon in the Connecticut River. Capture of age-0 Atlantic sturgeon strongly suggests that spawning is occurring in that river (T. Savoy, CT DEEP, pers. comm.; Connecticut Weekly Diadromous Fish Report, May 20, 2014). Genetic analysis of tissues collected from these individuals is not yet available and will help to determine if these individuals represent a unique Connecticut River Atlantic sturgeon spawning population. The capture of these individuals follows the documentation of a dead adult Atlantic sturgeon in the river in May 2014.

Although there is no specific evidence that Atlantic sturgeon spawn in the Massachusetts section of the Connecticut River, the presence of age-0 sturgeon downriver strongly suggests that it is occurring somewhere in the river. If Atlantic sturgeon are spawning in this part of the river, it is likely that they would use the habitat within three kilometers of the Holyoke Dam, which has been identified as containing the requisite characteristics for spawning habitat for shortnose sturgeon (Kynard *et al* 2012, Buckley and Kynard 1985). No other spawning sites for Atlantic sturgeon have been identified in the Massachusetts section of the Connecticut River downstream of the Holyoke Dam. If spawning is occurring near the Holyoke Dam, spawning adults or early life stages (ELS) could be present within the action area, but their presence has not been confirmed.

Shortnose Sturgeon

Shortnose sturgeon occur in rivers and estuaries along the East Coast of the U.S. and Canada (SSSRT 2010). There are 19 documented populations of shortnose sturgeon ranging from the St. Johns River, Florida (possibly extirpated from this system) to the Minas Basin in Nova Scotia, Canada (NMFS 1998; Dadswell *et al.* 2013), and a population is present in the Connecticut River. Shortnose sturgeon are known to occur at a wide range of depths. It is assumed that a water depth of about 0.6 meters is needed for unimpeded swimming by adults (Crance 1986). Water depths of summer foraging areas used by shortnose sturgeon are highly variable. For example, Mcleave *et al.* (1977), tracked shortnose sturgeon adults in summer in areas with depths ranging from 1-27 meters. In the Kennebec River, shortnose sturgeon are known to forage in areas with depths less than 1 meter (Squiers *et al.* 1982). Additionally, shortnose sturgeon feed on a variety of benthic and epibenthic invertebrates including mollusks, crustaceans (amphipods, chironomids, isopods), and oligochaete worms (Vladykov and Greeley 1963, Dadswell 1979 *in* NMFS 1998). They prefer highly productive foraging habitat that includes tidal/mud flats and shellfish beds.

The Holyoke Dam divides the Connecticut River shortnose population as there is currently limited successful passage downstream of the Dam. No shortnose sturgeon have passed upstream of the Dam since 1999 and passage between 1975-1999 was an average of four fish per year. The number of sturgeon passing downstream of the Dam is unknown. Despite this separation, the populations are not genetically distinct (Kynard 1997, Wirgin *et al.* 2005, Kynard *et* a1.2012). Population estimates have been completed for shortnose sturgeon occurring both upstream and downstream of the Dam. Taubert (1980a) conducted the earliest population estimate: a Peterson mark-recapture model for sturgeon upstream the Dam resulted in an estimate of 370-714 adults. More recently, a Schnabel mark-recapture estimate upstream the Dam during the summer-fall foraging period of 1994 indicated an abundance estimate of 328 adults (CI = 188-1,264 adults; B. Kynard, USGS, unpubl. data). Lastly, during studies of spawning ecology upstream the Dam at the Montague spawning site, abundance of pre-spawning adults was estimated each spring between 1994-2001 at a mean of 142.5 spawning adults (CI = 14-360 spawning adults; Kynard *et al.* 2012). Downstream of the Dam (rkm 100-0), researchers conducted annual estimates of foraging and wintering adults using the Schnabel mark-recapture technique during 1989-2002: mean abundance was 1,042 adults, with the average estimates almost doubling between the sampling periods of 1989-1994 at 788 adults and 1996-2002 at 1,297 adults (Savoy 2004).

Shortnose sturgeon spawn in the spring at two distinct sites upstream of Holyoke Dam located within a two kilometer reach near Montague, MA (rkm 194-193; Kynard *et al.* 2012). The sites are both located approximately four kilometers downstream of the Turners Falls Dam (Kynard *et al.* 2012). Researchers refer to the main site as "Cabot Station" because it occurs in the tailrace of the Cabot Station Electrical Generation Facility (rkm 193). This site is approximately 2.7 hectares (ha) in area and receives water from above Turner's Falls Dam that has been diverted through a power canal for the Station. The secondary, smaller site (0.4 ha in area) is located at Rock Dam (rkm 194). Rock Dam is .a natural rock barrier located at the end of a.natural river reach also flowing from the Turner's Falls Dam.

Shortnose sturgeon ELS were captured below Holyoke Dam in a 1998-1999 (Kynard *et al.* 2012). Researchers used a similar evaluation as in 1993-1997 including ELS sampling. Eight unfertilized eggs (one in 1998 and seven in 1999) were captured along with mature males and females. Although ELS were captured with similar effort at Holyoke and Montague during the same years, low capture numbers of ELS below Holyoke Dam in 1999 (seven eggs) versus those found at Montague (113 eggs and 14 embryos) and the absence of spawning behavior (localization) by tracked Holyoke adults showed minimal spawning success.

Adults overwinter in several discrete areas upstream of Holyoke Dam (Kynard *et al.* 2012). In the study by Kynard *et al.* (2012), day length appeared to be the driving factor for the onset of wintering behavior. When decreasing day lengths fell below 11.0 h, adults began moving to winter concentration areas, By the time day length had diminished to 9.82-9.60 h, most (>80%) tagged individuals had stopped moving and formed several dense concentrations, corresponding to winter-period dates of roughly 15 November-15 April. Wintering sites have been identified below the Holyoke Dam as well. Buckley and Kynard (1985) identified four wintering sites in the downstream segment: Agawam (rkm 117), Holyoke (rkm 140), Hartford, CT (rkm 86-82) and the lower river reach (rkm 25-0). Several years later, in 1988, CT DEP began annual gillnetting and tracking surveys, confirming a wintering site at Hartford, CT (- rkm 85), and identifying a site at Portland, CT (- rkm 50) using telemetry tracking, gillnetting, and observations by SCUBA divers (Savoy 1991a and b).

We expect that juvenile and adult shortnose sturgeon will be present in the stretch of the river that contains the action area, foraging, migrating, and overwintering. The action area is located approximately 45 kilometers downstream from the known spawning grounds at Cabot Station, but may also be occurring below the Holyoke Dam, in the vicinity of the action area. If spawning is occurring near the Holyoke Dam, spawning adults or early life stages (ELS) may be present, but any observations of their presence has been limited thus far.

Effects of the Action

Water quality criteria are developed by EPA for protection of aquatic life. Both acute (short term exposure) and chronic (long term exposure) water quality criteria are developed by EPA based on toxicity data for plants and animals. Often, both saltwater and freshwater criteria are developed, based on the suite of species likely to occur in the freshwater or saltwater environment. For aquatic life, the national recommended toxics criteria are derived using a methodology published in *Guidelines for Deriving Numeric National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses.* Under these guidelines, criteria are developed from data quantifying the sensitivity of species to toxic compounds in controlled chronic and acute toxicity studies. The final recommended criteria are based on multiple species and toxicity tests. The groups of organisms are selected so that the diversity and sensitivities of a broad range of aquatic life are represented in the criteria values. To develop a valid criterion, toxicity data must be available for at least one species in each of eight families of aquatic

organisms. The eight taxa required are as follows: (1) salmonid (e.g., trout, salmon); (2) a fish other than a salmonid (e.g., bass, fathead minnow); (3) chordata (e.g., salamander, frog); (4) planktonic crustacean (e.g., daphnia); (5) benthic crustacean (e.g., crayfish); (6) insect (e.g., stonefly, mayfly); (7) rotifer, annelid (worm), or mollusk (e.g., mussel, snail); and, (8) a second insect or mollusk not already represented. Where toxicity data are available for multiple life stages of the same species (e.g., eggs, juveniles, and adults), the procedure requires that the data from the most sensitive life stage be used for that species.

The result of the above analysis is the calculation of acute (CMC) and chronic (CCC) criteria. CMC is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly (i.e., for no more than one hour) without resulting in an unacceptable effect. The CCC is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. EPA defines "unacceptable acute effects" as effects that are lethal or immobilize an organism during short term exposure to a pollutant and defines "unacceptable chronic effects" as effects that will impair growth, survival, and reproduction of an organism following long term exposure to a pollutant. The CCC and CMC levels are designed to ensure that aquatic species exposed to pollutants in compliance with these levels will not experience any impairment of growth, survival or reproduction.

Very few toxicity tests have been conducted with sturgeon. In the absence of species specific chronic and acute toxicity data, the EPA aquatic life criteria represent the best available scientific information. Absent species specific data, we believe it is reasonable to consider that the CMC and CCC criteria for pollutants are applicable to ESA listed species under our jurisdiction as these criteria are derived from data using the most sensitive species and life stages for which information is available. As explained above, a suite of species is utilized to develop criteria and these species are intended to be representative of the entire ecosystem, including shortnose and Atlantic sturgeon as well as their benthic prey. These criteria are designed to not only prevent mortality but to prevent all "unacceptable effects," which, as noted above, are defined by EPA to include not only lethal effects but also effects that impair growth, survival and reproduction. Therefore, discharges in compliance with water quality standards will result in effects to listed species that will be so small they would not be meaningfully detected. As such, effects are insignificant.

Biological Oxygen Demand (BOD5)
BOD5 is a measure of the amount of oxygen being used by aerobic microorganisms in the water to decompose organic matter and to ensure there remains sufficient oxygen for other aquatic life in the receiving water. The current and draft permit allows monthly average concentrations of 30 mg/l and weekly average concentrations of 45 mg/l. As discussed, effluent in compliance with these limitations will have insignificant effects on aquatic life, including shortnose and Atlantic sturgeon and their prey.

Total Suspended Solids
TSS can affect aquatic life by reducing growth rates, 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 food (EPA 1986). Studies on 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).

Atlantic and shortnose sturgeon eggs and ELS are less tolerant to sediment levels than juveniles and adults. Observations in the Delaware River indicated that larval populations may be decimated when suspended material settles out of the water column (Hastings, 1983). Larval survival studies conducted by Auld and Schubel (1978) showed that striped bass larvae tolerated 50 mg/1 and 100 mg/1 suspended sediment concentrations and that survival was significantly reduced at 1,000 mg/l. According to Wilber and Clarke (2001), hatching is delayed for striped bass and white perch eggs exposed for one day to sediment concentrations of 800 and 100 mg/1, respectively. In a study on the effects of suspended sediment on white perch and striped bass eggs and larvae performed by the Army Corps of Engineers (ACOE) (Morgan *et al.* 1973), researchers found that sediment began to adhere to the eggs when sediment levels of over 1 000 parts per million (ppm) were reached. No adverse effects to demersal eggs and larvae have been documented at levels of 45mg/L or below. The TSS levels permitted for the facility are monthly average concentrations of 30 mg/I and weekly average concentrations of 45 mg/1 which are well below those shown to have an adverse effect on fish (580.0 mg/L for the most sensitive species, with 1,000.0 mg/L more typical; see summary of scientific literature in Burton 1993) and benthic communities (390.0 mg/L (EPA 1986)), and are in compliance with your recommended water quality standards which are shown to have insignificant effects on aquatic life, including shortnose and Atlantic sturgeon and their prey. Therefore, effects of increased TSS on ELS shortnose and Atlantic sturgeon will not be able to be meaningfully measured or detected, and are insignificant.

pH

The draft permit limits the range of pH to 6.5 to 8.3 standard units (SU) consistent with water quality standards. A pH of 6.0 to 9.0 is harmless to most aquatic life; therefore, discharges in compliance with the permit limits will have insignificant effects to aquatic life, including both sturgeons and their prey.

Total Residual Chlorine

Based on the design flow of the Holyoke WPCF and the dilution calculations (dilution factor 69:1), EPA has determined that all discharge limits will be met at the end of the pipe, and a monthly average limit and maximum limit of 0.63 mg/L of Total Residual Chlorine (TRC) would assure that the facility does not exceed the chronic and acute TRC standards (11 gg/L and 19 µg/L, respectively).

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 have examined the effects of TRC on shortnose sturgeon. EPA has set the Criteria Maximum Concentration (CMC or acute criteria; defined for a short period of time (up to 96 hours) without deleterious effects) at 0.019 mg/L based on analysis of exposure of 33 freshwater species in 28 genera (EPA 1986) where acute effect concentration ranged from 28 µg/L (0.028 mg/L) for Daphia magnum to 710 gg/L (0.710 mg/L) for the threespine stickleback. The CMC is set well below the minimum effect values observed in any species tested to ensure that the Lowest Observable Effect Level is near zero. As the water quality criteria levels have been set to be protective of even the most sensitive of the 33 freshwater species tested, EPA has judged that the criteria are also protective of Atlantic and shortnose sturgeon. The anticipated TRC level at the WPCF satisfies the EPA's ambient water quality criteria and is lower than the TRC levels known to affect aquatic life. As such, EPA has made the preliminary determination that the effects of TRC levels on sturgeon proposed by the Draft permit will be insignificant.

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. Bacteria are not known to be toxic to aquatic life; however, overall water quality may be affected by increased concentrations of bacteria in the aquatic environment. Effluent limits for *E. coli* in the draft permit (monthly average limit 126 cfu/100 ml, maximum daily limit 409 cfu/100/ml) are in compliance with the Massachusetts State Water Quality Standards for Class B Inland Waters and bacteria limits will be met at the end of the pipe without a dilution factor. It has been determined that these limits have insignificant effects on aquatic life, including shortnose and Atlantic sturgeon and their prey.

Nitrogen
Nitrogen causes impairment via excessive primary productivity and is not known to be directly toxic to aquatic life, including shortnose sturgeon. Elevated nitrogen levels, however, are associated with eutrophication and indicative of water quality problems that may include lowered dissolved oxygen levels. The Draft Permit contains conditions, to ensure that the Waste Load Allocation continues to be met by requiring optimization of nitrogen removal, so that nitrogen loads do not increase over the 2004-2005 baseline of 1,618 lbs/day (average) at the WPCF. The Draft Permit continues the reporting requirements for total Kjeldahl nitrogen, nitrite, nitrate, ammonia and total nitrogen. Therefore, any effects are extremely unlikely to occur, and are discountable.

Metals
According to the reasonable potential analysis performed by you, and based on the maximum measured effluent concentrations from the facility, there is no reasonable potential (for chronic or acute conditions) that the discharge of aluminum, copper, or lead will cause or contribute to an exceedance of the applicable water quality standards. At the discharge point, combined with the high dilution factor, the applicable criteria are magnitudes larger than any potential in-stream concentrations of these metals. Monitoring and reporting for all metals will continue and be part of the annual Whole Effluent Toxicity (WET) tests that are required for the facility. Therefore, any effects are extremely unlikely to occur, and are discountable.

Summary of Effects
The effluent from the MTGS meets all applicable water quality standards at the end of the discharge pipe, before entering the Connecticut River. As discussed, the applicable water quality standards have been derived through toxicity tests using a suite of taxa, and the results indicate that no unacceptable effects will occur to aquatic life. These results are used as a surrogate to assess effects to listed species and their prey. Based on this information, we conclude that any effects to Atlantic and shortnose sturgeon or their prey in the action area would be so small they would not be able to be meaningfully detected, and are, therefore, insignificant.

Conclusions:
Based on the analysis that any effects to listed shortnose or Atlantic sturgeon will be insignificant or discountable, we are able to concur with your determination that the proposed projects are not likely to adversely affect any listed species under our jurisdiction. Therefore, no further consultation pursuant to section 7 of the ESA is required.

Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the actions 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 actions are 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 designated that may be affected by the identified actions. No take is anticipated or exempted. If there is any incidental take of a listed species, reinitiation would be required.

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Response to Comment 32:
The permitting agencies appreciate your thorough review and have entered your comments into the permit administrative record.

ATTACHMENT A
(Response to Comments)

Interim Limits for Berkshire Street CSO Treatment Facility
Holyoke, MA

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WESTERN REGIONAL OFFICE
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MITT ROMNEY
Governor

KERRY HEALEY
Lieutenant Governor

STEPHEN R. PRITCHARD
Secretary

ROBERT W. GOLLEDGE, Jr.
Commissioner

JB DEP Approval Permit Conditions

JUN 14 2006

Mr. William D. Fuqua, Superintendent
Holyoke Department of Public Works
63 North Canal Street
Holyoke, MA 01040

Re: Holyoke - WWM
Berkshire Street CSO Treatment Facility
Proposed Treatment Works: BRP WP 68
CW SRF # 2786

DEP Project # 137-002
Transmittal # W073302

Dear Mr. Fuqua

The Department of Environmental Protection- Western Regional Office has completed its review of the design plans and specifications referenced above, prepared on the City of Holyoke's behalf by Metcalf and Eddy, consisting of 101 sheets titled:

City of Holyoke, Massachusetts
Berkshire Street CSO Treatment Facility
CW SRF #2786
April 19, 2006

The overall project consists of treating the estimated peak flow rate of 128 million gallons per day (MGD) of combined sewer overflow (CSO) emanating from the Berkshire Street CSO regulator (CSO #09) during a 3 month design storm. This 3 month level of control will be accomplished by directing the first 25 MGD flow rate from CSO 09 to the Holyoke WWTP, and the subsequent 103 MGD to the Berkshire Street CSO Treatment Facility. The Berkshire Street CSO Treatment Facility is designed to meet the ***Interim Limits and Monitoring Requirements*** enclosed with this approval letter.

The Berkshire Street CSO regulator (CSO #09) has been identified in Holyoke's Draft CSO Long Term Control Plan as the largest CSO discharge in Holyoke, discharging approximately 290 million gallons per year of CSO to the Connecticut River. The project is supported by the Department as a Phase 1 CSO abatement project, as detailed in Attachment F of Holyoke's September 26, 2005 MEPA Notice of Project Change (NPC), and in the Department's October 28, 2005 NPC comment letter.

In accordance with G.L. c.21 §§ 26-53 and 314 CMR 12.03(1), the Department hereby approves the submitted design plans and specifications for the design plans and specifications for the above

referenced Berkshire Street CSO Treatment Facility. This approval is in addition to any approval to be issued by DEP Division of Municipal Services for CW SRF purposes.

If there are any questions regarding this project, please contact Kurt Boisjolie at (413)-755-2284.

Sincerely,

Mark A. Schleeweis
Program Chief
Wastewater Management

Enclosure: Interim Limits for Berkshire Street CSO Treatment Facility

cc: Metcalf and Eddy, Scott Thibault, 701 Edgewater Drive, Wakefield MA 01880
DEP-MS-Boston: Don St Marie and Mark Casella
EPA Region 1: Doug Koopman and Mike Wagner

CSO/KHolykBrkStCSOTrtFacilFA6.06

413-536-5213

Holyoke Berkshire Street CSO Treatment Facility (CSO 09) –Interim Limits and Monitoring Requirements
Explanation of Footnotes *1 and *2

*1: For the first 2 years of operation of this facility, hourly E. coli bacteria samples are required to be taken coincident with the hourly fecal coliform samples, for at least one bypass event per month (12 months per year). Results of the E. coli samples are to be reported side by side with results of fecal coliform samples. After 2 years of operation, the hourly E. coli bacteria samples can be eliminated, while the requirement for hourly fecal coliform samples will continue.

*2: LC 50 to use daphnid (Ceriodaphnia dubia). Outfall composite analysis, similar to those performed for the Holyoke Wastewater Treatment Plant toxicity tests, are also required for this Berkshire Street CSO Treatment Facility.

Holyoke Berkshire Street CSO Treatment Facility (CSO 09) –Interim Limits and Monitoring Requirements

Note: All effluent limits and monitoring requirements for all parameters are applicable year-round for this facility. Disinfection is required year-round for every wet weather event at this facility; chlorination will not be limited to a particular season.

Parameter	Effluent Limits Maximum Daily	Effluent Limits Monthly Average	Monitoring Requirements
Fecal Coliform	**200 fcu/100 ml** (if 1 day/month sampled) **400 fcu/100 ml** (if > 1 day/month sampled)	**200 fcu/100 ml** (geometric mean)	Once/month minimum for any month with a discharge from the facility. One grab sample every hour for duration of discharge.
Total Residual Chlorine (TRC) (after de-chlorination)	**0.74 mg/l** (if 1 day/month sampled) **1.00 mg/l** (if > 1 day/month sampled)	**0.74 mg/l**	Once/month. One grab sample/event within one hour of overflow, and one additional grab sample every 4 hours thereafter, or continuous chlorine analyzer.
The Parameters below are Report only			
Parameter	**Report**		**Monitoring Requirements**
Chlorine residual in CCT (before de-chlorination)	Report mg/l of total residual chlorine at discharge end of chlorine contact tank (CCT), prior to de-chlorination		Once/month. One grab sample/event within one hour of overflow, and one additional grab sample every 4 hours thereafter, or continuous chlorine analyzer.
E. coli *1	Report colonies/100 ml		Once/month, hourly during discharge event.
pH	Report		Once/month. One grab sample per event.
BOD	Report mg/l and pounds/day		Once/6 months. Time proportioned composite sample.
TSS	Report mg/l and pounds/day		Once/6 months. Time proportioned composite sample.
Ammonia Nitrogen, NO3, NO2, TKN	Report mg/l and pounds/day		Once/6 months. Time proportioned composite sample.
Acute Toxicity *2	LC 50, outfall composite, and receiving water		Once/6 months. Time proportioned composite sample.
Rainfall	Report inches of rainfall/day		Each rain event, as recorded at WWTP.
Flow: A. From Facility to River; B. Bypass around Facility; and C. From Facility back to Collection System	For A and B: Total daily flow (gallons per day), maximum hourly flow (gallons/minute) , and duration of flow (hours) For B: Include flow rate of CSO Pump Station during Bypass. No Bypass allowed unless CSO Pump Station flow rate is more than 113 MGD. For C: Total daily flow (gallons per day)		Each wet weather event. Continuous effluent flow recorder. (Note: Flow C, flow pumped from CSO facility back to WWTP, should only occur when WWTP flow rates are below 35 MGD).

See following page for explanation of footnotes # *1 and *2.