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),

Governor's Academy
Elm Street
Byfield, Massachusetts 01922

is authorized to discharge from the facility located at

Governor's Academy Wastewater Treatment Facility
Elm Street
Byfield, Massachusetts 01922

to receiving water named

unnamed intermittent freshwater tributary to the Mill River
(Parker River Watershed, MA91-09)

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

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

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

This permit supersedes the permit issued on December 10, 2003.

This permit consists of **Part I (**14 pages including effluent limitations and monitoring requirements); **Attachment A** (Freshwater Chronic Toxicity Procedure and Protocol, May 2007, 7 pages); and **Part II (**25 pages including Standard Conditions).

Signed this 28th day of September, 2011

/S/SIGNATURE ON FILE

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

David Ferris, Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

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

EFFLUENT CHARACTERISTIC	**EFFLUENT LIMITS**			**MONITORING REQUIREMENTS[3]**	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
FLOW [2] FLOW (ANNUAL AVE) [2]	52,000 gal/day Report gal/day	********* *********	Report gal/day *********	CONTINUOUS	RECORDER
BOD_5 [4]	5.8 mg/l 2.5 lbs/day	5.8 mg/l 2.5 lbs/day	Report mg/l Report lbs/day	1/WEEK	24-HOUR COMPOSITE[5]
TSS [4]	5.8 mg/l 2.5 lbs/day	5.8 mg/l 2.5 lbs/day	Report mg/l Report lbs/day	1/WEEK	24-HOUR COMPOSITE[5]
pH RANGE[1]	6.5 - 8.3 SU (See I.A.1.b.)			1/WEEK	GRAB
AMMONIA-NITROGEN AS N	1.0 mg/l	1.0 mg/l	1.5 mg/l	1/WEEK	24-HOUR COMPOSITE[5]
FECAL COLIFORM BACTERIA[1,6]	14 cfu/100 ml	**********	28 cfu/100 ml	1/WEEK	GRAB
ENTEROCOCCI[1,6]	35 cfu/100 ml	**********	104 cfu/100 ml	1/WEEK	GRAB
COPPER, TOTAL[7]	13 ug/l	**********	20 ug/l	1/MONTH	24-HOUR COMPOSITE[5]
LEAD, TOTAL[7]	5 ug/l	**********	**********	2/YEAR[8]	24-HOUR COMPOSITE[5]
DISSOLVED OXYGEN (April 1st-October 31st)	NOT LESS THAN 5.0 mg/l			1/WEEK	GRAB
WHOLE EFFLUENT TOXICITY [9, 10, 11, 12]	Acute $LC_{50} \geq 100\%$ Chronic C-NOEC $\geq 100\%$			2/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE ALUMINUM[13]	**********	**********	Report	2/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE CADMIUM[13]	**********	**********	Report	2/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE COPPER[13]	**********	**********	Report	2/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE LEAD[13]	**********	**********	Report	2/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE NICKEL[13]	**********	**********	Report	2/YEAR	24-HOUR COMPOSITE[5]
TOTAL RECOVERABLE ZINC[13]	**********	**********	Report	2/YEAR	24-HOUR COMPOSITE[5]

* See footnotes on pages 3 through 5

Footnotes:

1. Required for State Certification.

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

3. All required effluent samples shall be collected after UV disinfection and prior to discharge at end of outfall pipe. Any change in sampling location must be reviewed and approved in writing by EPA and MADEP. All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

4. Sampling required for influent and effluent.

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

6. Fecal coliform discharges shall not exceed a geometric mean of 14 colony forming units (cfu) per 100 ml, nor shall the daily maximum discharge exceed 28 cfu per 100 ml. Enterococci discharges shall not exceed a geometric mean of 35 colony forming units (cfu) per 100 ml, nor shall the daily maximum discharge exceed 104 cfu per 100 ml. Fecal coliform and enterococci grab samples shall be taken at the same time during the 2 hour period of maximum diurnal flow.

   The permittee shall comply with the enterococci limits in accordance with the facility upgrade schedule contained in Section E below. In the interim, the facility shall be operated in order to minimize the enterococci in the effluent to the extent practicable while meeting the fecal coliform limits.

7. The minimum level (ML) for total copper and lead are defined as 3 ug/l. This value is the minimum detection level for copper and lead using EPA approved Furnace Atomic Absorption Method 220.2 for copper and 239.2 for lead respectively.

8. Lead samples shall be collected during the second week of the months of March and December. The test results shall be submitted to EPA with the corresponding discharge monitoring report (DMR) no later than the 15th day of the month following the completed reporting period.

9. The permittee shall conduct chronic (and modified acute) toxicity tests two times per year. The chronic test may be used to calculate the acute LC_{50} at the 48 hour exposure interval. The permittee shall test the daphnid, Ceriodaphnia dubia, only. Toxicity test samples shall be collected during the second week of the months of May and September.

The test results shall be submitted by the last day of the month following the completion of the test. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**	**Chronic Limit C-NOEC**
May September	June 30 October 31	Ceriodaphnia dubia (daphnid) See Attachment A	≥ 100%	≥ 100%

10. 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.

11. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction, based on a statistically significant difference from dilution control, at a specific time of observation as determined from hypothesis testing. As described in the EPA WET Method Manual EPA 821-R-02-013, Section 10.2.6.2, all test results are to be reviewed and reported in accordance with EPA guidance on the evaluation of the concentration-response relationship. The "100% or greater" limit is defined as a sample which is composed of 100% effluent.

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

When using alternate dilution water, the permittee shall continue to submit the results of chemistry tests for all controls (i.e., site water controls and lab water controls) unless

there is no upstream flow due to intermittent tributary.

13. For each Whole Effluent Toxicity test the permittee shall report on the appropriate Discharge Monitoring Report, (DMR), the concentrations of total recoverable aluminum, cadmium, copper, lead, nickel, and zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the Minimum Quantification Level shown in **Attachment A** on page 4 of 7, or as amended. 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 6.5 or greater than 8.3 at any time.

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

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

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

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

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

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

a. Any new introduction of pollutants into the WWTF 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 WWTF by a source introducing pollutants into the WWTF at the time of issuance of the permit.

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

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

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

3. Toxics Control

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

b. Any toxic components of the effluent shall not result in any demonstrable harm to

aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

4. Numerical Effluent Limitations for Toxicants

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

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall(s) listed in Part I.A.1.of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit and shall be reported to EPA and MassDEP in accordance with Section D.1.e. (1) of the Standard Conditions of this permit (Twenty-four hour reporting).

Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes DEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at http://www.mass.gov/dep/water/approvals/surffms.htm#sso.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Preventative Maintenance Program

The permittee shall maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

3. Infiltration/Inflow Control Plan:

The permittee shall continue to implement a plan for controlling infiltration and inflow (I/I) to the separate sewer system. The plan shall be updated and submitted to EPA and MassDEP **within six months of the effective date of this permit** (see page 1 of this permit for the effective date) and shall describe the permittee's program for preventing infiltration/inflow related effluent limit violations, and all unauthorized discharges of wastewater, including overflows and by-passes due to excessive infiltration/inflow.

The plan shall include:

- An ongoing program to identify and remove sources of infiltration and inflow. The program shall include the necessary funding level and the source(s) of funding.

- An inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts. Priority should be given to removal of public and private inflow sources that are upstream from, and potentially contribute to, known areas of sewer system backups and/or overflows

- Identification and prioritization of areas that will provide increased aquifer recharge as the result of reduction/elimination of infiltration and inflow to the system.

Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year shall be submitted to EPA and MassDEP annually, **by March 31**. The summary report shall, at a minimum, include:

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

- Expenditures for any infiltration/inflow related maintenance activities and corrective actions taken during the previous year

- A map with areas identified for I/I-related investigation/action in the coming year.

- A calculation of the annual average I/I and the maximum month I/I for the reporting year.

- A report of any infiltration/inflow related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Unauthorized Discharges section of this permit.

4. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall continue to provide an alternative power source with which to sufficiently operate its treatment works (as defined at 40 CFR §122.2).

D. SLUDGE CONDITIONS

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

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

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

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

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

   c. Sewage sludge incineration in a sludge only incinerator

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

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

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

   Which of the 40 C.F.R. Part 503 requirements apply to the permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the permittee to

assist it in determining the applicable requirements.[1]

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

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

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

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

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

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

E. COMPLIANCE SCHEDULE FOR ENTEROCOCCI

1 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

1. **For a period of one year from the effective date of the permit**, the Academy shall conduct enterococcus sampling at the frequency required by the permit (1/week). The Academy shall submit a report to EPA and MassDEP **at the end of those 12 months** describing the effectiveness of the existing disinfection system in achieving the limits and make a recommendation regarding any improvements to the disinfection system necessary to achieve the limits.

2. If the Academy determines no upgrades are necessary in order to comply with the limitations, **the limitations will become effective one month following the submittal of the report** (i.e., **13 months following the effective date of the permit**).

3. If the Academy determines that compliance with the proposed permit limitations cannot be consistently achieved by the existing disinfection facilities, the report should include a schedule for completing the necessary improvements and attaining the limits within 12 months (i.e., **the limitations will become effective within 24 months following the effective date of the permit**). No later than fourteen (14) days following the required date of compliance, the Academy shall notify EPA in writing of its compliance or noncompliance with this requirement.

F. MONITORING AND REPORTING

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

a. Submittal of Reports Using NetDMR

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

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

other than DMRs to MassDEP until further notice from MassDEP.

b. Submittal of NetDMR Opt-Out Requests

Opt-out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under 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
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

c. Submittal of Reports in Hard Copy Form

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

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

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

MassDEP – Northeast Region
Bureau of Resource Protection (Municipal)
205B Lowell Street
Wilmington, MA 01887

And

Commonwealth of Massachusetts
Division of Marine Fisheries
Shellfish Management Program
30 Emerson Avenue
Gloucester, MA 01930

Copies of toxicity reports required by this permit shall also be submitted to the State at:

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

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

d. The following agencies shall be notified within 12 hours when a permit excursion or plant failure occurs:

MassDEP – Northeast Region
Bureau of Resource Protection (Municipal)
205B Lowell Street
Wilmington, MA 01887

And

Commonwealth of Massachusetts
Division of Marine Fisheries
Shellfish Management Program
30 Emerson Avenue, Gloucester, MA 01930
phone number: (978) 282-0308 extension 160
email address: shellfish.newburyport@state.ma.us

G. STATE PERMIT CONDITIONS

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

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

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

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

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

FACT SHEET

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

NPDES PERMIT NUMBER: MA0030350

PUBLIC NOTICE START AND END DATES: April 29, 2011 – May 28, 2011

NAME AND MAILING ADDRESS OF APPLICANT:

Governor's Academy
Elm Street
Byfield, Massachusetts 01922

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Governor's Academy Wastewater Treatment Facility
Elm Street
Byfield, Massachusetts 01922

RECEIVING WATER(S): unnamed intermittent freshwater tributary to the Mill River (Parker River Watershed, MA91-09)

RECEIVING WATER CLASSIFICATION(S): B

SIC CODE: 8211 School

Table of Contents

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

The above named applicant has applied to the U.S. Environmental Protection Agency ("EPA") for the reissuance of its NPDES permit to discharge into the designated receiving water. The facility is a private school that operates a system for the collection and treatment of domestic wastewater. The discharge from this secondary wastewater treatment facility is via Outfall 001 to an unnamed intermittent tributary to the tidal portion of the Mill River. The Mill River flows into the Parker River, and then to Plum Island Sound. See **Attachment A** for location of facility, Outfall 001 and receiving water.

II. Description of Discharge

A quantitative description of significant effluent parameters based on discharge monitoring data from March 2005 to August 2010 is shown in **Attachment B**.

III. Receiving Water Description

The receiving water is an unnamed intermittent freshwater tributary to the tidal portion of the Mill River and immediately adjacent to Governor's Academy. This unnamed stream, classified as a Class B water according to Massachusetts Water Quality Standards. The tidal portion of the Mill River receiving the flow from the unnamed stream is classified as a Class SA water body.

The Massachusetts Surface Water Quality Standards designate Class B waters "as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value." The unnamed stream receiving the treatment plant discharge is not specifically listed in Tables of the Massachusetts Surface Water Quality Standards or in the 2008 Massachusetts Integrated List of Waters.

The Massachusetts Surface Water Quality Standards designate Class SA waters as "an excellent habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. In certain waters, excellent habitat for fish, other aquatic life and wildlife may include, but is not limited to, seagrass. Where designated for shellfishing, these waters shall be suitable for shellfish harvesting without depuration (Approved and Conditionally Approved Shellfish Areas). These waters shall have good aesthetic value." The segment of the Mill River receiving the flow from the unnamed stream is designated for shellfishing and as an outstanding resource water in the Massachusetts Surface Water Quality Standards (see Table 21 in 314 CMR 4.06), and is listed in the 2008 Massachusetts Integrated List of Waters as impaired for pathogens.

IV. Limitations and Conditions

The effluent limitations of the draft permit, the monitoring requirements, and any implementation schedule (if required) may be found in the draft permit.

V. Permit Basis: Statutory and Regulatory Authority

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301 (b) of the Clean Water Act. For publicly owned treatment works (POTWs), technology based requirements are effluent limitations based on secondary treatment requirements of Section 301(b)(1)(B) of the Clean Water Act (CWA) as defined in 40 CFR 133.102.

Under Section 301(b)(1)(c) of the CWA, discharges are subject to effluent limitations based on water quality standards. EPA regulations at 40 CFR 122.44(d)(1) require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve federal or state water quality standards. Pursuant to 40 CFR Part 122.44(d)(2), permits must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality criterion. An excursion occurs if the projected or actual instream concentration exceeds the applicable criterion.

The Massachusetts Surface Water Quality Standards (314 CMR 4.00) 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. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained, or attained.

According to 40 CFR 122.44(l), when a permit is reissued, effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards or conditions in the previous permit unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued.

VI. Explanation of the Permit's Effluent Limitation(s)

A. Facility Information

The Governor's Academy is an independent secondary boarding school located in the Town of Byfield, MA. The school's facilities include classrooms, administrative buildings, cafeteria and sporting facilities, and residential units. These facilities occupy approximately 800 acres and serve about 600 students and employees. The remainder of the Academy's 540 acres of land is comprised of woodlands, marshlands and a golf course. The wastewater treatment facility (WWTF) is located at the southeast corner of the campus and has a design flow of approximately 52,000 gallons per day (gpd). The location of the treatment facility, Outfall 001 and the receiving water are unchanged from when the current permit was issued and are shown in Attachment A.

The State of Massachusetts Department of Environmental Protection (MassDEP) issued the permittee an Administrative Consent Order (ACOP-98-NE-1006a) on June 1, 1999 to address, among other matters, necessary renovation of the WWTF. The WWTF was extensively modified to bring it into

compliance with this enforcement agreement. Full operation of the new facility began in August of 2000. Biological treatment is now completed using membrane bioreactor technology (MBR) units, which consist of one 27,000 gallon biological reactor holding 14 membrane modules. Wastewater is added to the biological reactor, which contains high concentrations of microorganisms, which provide biological treatment. Dissolved oxygen is provided through diffusers, which also maintain the biological solids in suspension. Effluent is withdrawn through hollow fiber strand membranes by permeate pumps. The membrane modules can be removed separately and cleaned or replaced. The biological process is operated to provide a high degree of nitrification, thereby minimizing effluent ammonia concentrations..

Effluent from the MBR process is pumped directly to the existing ultraviolet (UV) disinfection units. The sand bed filters are no longer used and this area has been re-graded. The effluent from the UV units is piped to a nearby outfall that discharges to an unnamed intermittent stream, a tributary to the Mill River. Sludge is removed from the facility and trucked by hauler to the Fitchburg WWTF or Upper Blackstone WWTF for final disposal.

The sewerage collection system serving the campus includes gravity sewers and five pump stations. The order issued by MassDEP also required the removal of excessive infiltration and inflow flows from the sewer system. In response, the permittee completed repairs to its sewer system. Based on influent flow and precipitation/wet weather records maintained by the facility's staff, infiltration and inflow to the sewer system appear to be minimal.

B. Permitted Outfalls

The Facility's outfall 001 is located at Latitude 42° 44' 53" and Longitude 70° 53' 47", and the discharge location into the unnamed intermittent freshwater tributary of the Mill River is shown in **Attachment A**.

C. Derivation of Effluent Limits under the Federal CWA and/or the Commonwealth of Massachusetts' Water Quality Standards

Although EPA has not promulgated effluent guidelines for these privately owned treatment plants, the secondary treatment requirements set forth at 40 CFR Part 133 for Publicly Owned Treatment Works (POTWs) will serve as a guide for establishing technology-based permit limits for this permit. This rationale is consistent with procedures for establishing case-by-case technology-based limits (Best Professional Judgment), as described at 40 CFR Section 125.3. Following the rationale above, water quality-based effluent limitations for fecal coliform bacteria as well as the pH range are based upon State Certification requirements for POTWs under Section 401(d) of the CWA, 40 CFR 124.53 and 124.55.

1. Flow and Available Dilution

The 2003 permit includes a flow limit of 52,000 gallons per day (gpd) expressed as an annual average limitation, to be reported on a 12 month rolling basis. During the review period of March 2005 through August 2010 the WWTF recorded average monthly discharge flow from 23,700 to 36,900 gpd. The current annual average daily flow is approximately 27,500 gpd. The flow limit in the draft permit will remain at **52,000 gpd**. Since this flow is discharged into an intermittent tributary

of the Mill River, **no dilution** is assumed.

2. BOD_5 and TSS

The BOD_5 and TSS limits for "Average Monthly" and "Average Weekly" in the draft permit are water quality-based limits established to achieve dissolved oxygen criteria and narrative criteria regarding benthic deposits and aesthetics. The monthly and weekly average limits of **5.8 mg/l** (**2.5 lbs/day**) for both BOD_5 and TSS are consistent with the 2003 permit. The derivation of these limits can be found in Attachment C.

During the review period, effluent BOD_5 ranged from 0 to 8 mg/l (monthly average) and 0 to 18 mg/l (weekly average). The monthly average limit was exceeded 3% of the time (2 of 65 samples) and the weekly average limit was exceeded 17% of the time (11 of 65 samples). For the same period, the TSS ranged from 0 to 2 mg/l (monthly average) and 0 to 5 mg/l (weekly average) with no permit violations.

A monitoring frequency of once per week using a 24-hour composite sample is carried forward into the draft permit. See Attachment C for calculations used to convert from concentration-based limits to mass-based limits.

3. pH

The pH shall be in the **range of 6.5 through 8.3** standard units and not more than 0.2 standard units outside of the normally occurring range to be consistent with the Massachusetts Water Quality Standards for Class B waters [314 CMR 4.05(3)(b)(3)]. There shall be no change from background conditions that would impair any use assigned to this class. The permittee has had no pH violations of the permit during the review period.

4. Fecal Coliform and Enterococci

The 2003 permit includes bacteria limits to ensure that water quality standards are met instream both at the discharge and in downstream receiving waters. Numerical limitations for bacteria are state certification requirements. Due to the proximity of the discharge to Class A waters designated for shellfishing, the 2003 permit reflects stringent limits for fecal coliform bacteria of 14 cfu/100 ml (monthly average) and 43 cfu/100 ml (daily maximum). Fecal coliform sampling results over the review period ranged from 0 to 12 colony forming units per 100 ml (monthly average) and 0 to 35 colony forming units per 100 ml (daily maximum) with one exception (a daily maximum of 4200 cfu/100 ml, believed to be the result of sample contamination) as the only fecal coliform violation. The Massachusetts Surface Water Quality Standards (which were updated in 2006, after the 2003 permit issuance) now include more stringent criteria for fecal coliform for Class SA receiving waters designated for shellfishing [314 CMR (4)(a)(4)]. Specifically, the 10 % exceedance criteria has been reduced from 43 cfu/100 ml to 28 cfu/100 ml. Accordingly, the maximum daily effluent limitation in the draft permit has been reduced to 28 cfu/100 ml. The monthly average (geometric mean) limitation of 14 cfu/100 ml is retained form the 2003 permit. These limits ensure that the discharge will not cause or contributing to the impairments of the Mill River noted in the 2008 Integrated List of Waters. Monitoring data from the review period demonstrate the ability for the Governor's Academy WWTF to consistently meet these limits (see Attachment B).

In addition, to protect recreational uses, including swimming areas according to 314 CMR 4.05(4)(a)(4), enterococci limitations are included in the draft permit. These limitations are **35 cfu/100 ml** (monthly average) and **104 cfu/100 ml** (daily maximum) to be monitored once per week, as specified in the draft permit.

5. Ammonia-Nitrogen as N and Dissolved Oxygen

Ammonia can impact the receiving water dissolved oxygen and also be toxic at elevated levels. The recommended criteria in the 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-014, December 1999 and 64 Federal Register 71973-71980) are based on the pH and temperature of the receiving waters. The 1999 update also stipulates a warm season instream goal of 3.0 mg/l for ammonia. Because there is no dilution of the discharge under 7Q10 conditions, ammonia limits were included in the 2003 permit to ensure that the discharge did not cause or contribute to instream toxicity and to also ensure that oxygen demand due to instream nitrification of ammonia did not cause or contribute to exceedances of dissolved oxygen criteria. The draft permit limits for ammonia are an **Average Monthly of 1.0 mg/l**, **Average Weekly of 1.0 mg/l** and a **Maximum Daily of 1.5 mg/l**. During the review period, the facility was able to achieve the permit limits approximately 94% of the time (183 of 195 samples, see Attachment B). These limits are consistent with anti-backsliding regulations.

Massachusetts Water Quality Standards for Class B waters include criteria requiring that the dissolved oxygen level be at or above 5.0 mg/l. An effluent limit of 5 mg/l for the months of April through October was included in the 2003 permit to ensure that the discharge did not cause or contribute to an exceedance of this criterion. This limit has been retained in the draft permit. During the review period, the dissolved oxygen ranged from 5.16 to 7.65 mg/l with no violations of the permit limit.

6. Metals

Certain metals in water can be toxic to human and aquatic life. The Massachusetts Water Quality Standards at 314 CMR 4.05(5)(e) require that "all surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife", and that "for pollutants not otherwise listed in 314 CMR 4.00, the *National Recommended Water Quality Criteria:2002* published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the allowable receiving concentrations for the affected waters unless the Department either establishes a site-specific criterion or determines that naturally occurring background concentrations are higher."

The present permit contains water quality-based limits for copper (average monthly and maximum daily) and lead (average monthly). The table below shows the concentration of other metals in the discharge as reported from samples collected in conjunction with whole effluent toxicity tests from May 2007 to August 2010.

Test Date	Aluminum	Cadmium	Chromium	Nickel	Zinc
	mg/l	mg/l	mg/l	mg/l	mg/l
5/15/2007	0.	0.	0.	0.004	0.056

8/14/2007	0.	0.	0.003	0.007	0.041
5/13/2008	0.	0.	---	0.004	0.039
8/12/2008	0.	0.	---	0.003	0.023
5/12/2009	0.01	0.	---	0.002	0.025
8/4/2009	0.	0.	---	0.003	0.03
5/11/2010	0.023	0.	---	0.	0.022
8/17/2010	0.	0.	---	0.003	0.018
Average	0.0041	0.0	0.0015	0.0033	0.032
Minimum	0.	0.	0.	0.	0.018
Maximum	**0.023**	**0.**	**0.003**	**0.007**	**0.056**
Standard Deviation	0.01	0.	0.	0.	0.01
# Measurements	8	8	2	8	8
Water Quality Criteria (WQC)					
Acute Criteria (dissolved, mg/l)*	---	0.0026	0.016	0.5846	0.1464
Acute Criteria (total recoverable, mg/l)	0.75	0.0028	0.01629	0.5858	0.1496
Dilution Factor	1	1	1	1	1
Allowable Conc. with Dilution (mg/l)	0.75	0.003	0.016	0.586	0.150
Reasonable Potential (acute)?	**No**	**No**	**No**	**No**	**No**
Chronic Criteria (dissolved, mg/l)*	---	0.0003	0.011	0.0649	0.1476
Chronic Criteria (total recoverable, mg/l)	0.087	0.00033	0.01143	0.0651	0.1496
Dilution Factor	1	1	1	1	1
Allowable Conc. With Dilution (mg/l)	0.087	0.00033	0.0114	0.0651	0.150
Reasonable Potential (chronic)?	**No**	**No**	**No**	**No**	**No**

* Inverse conversion factor is used to determine total recoverable metal. EPA Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA-823-B-96-007) is used as the basis for using the criteria conversion factor. National guidance requires that permit limits be based on total recoverable metals and not dissolved metals. Consequently, it is necessary to apply a translator in order to develop a total recoverable permit limit from a dissolved criterion. The translator reflects how a discharge partitions between the particulate and dissolved phases after mixing with the receiving water. In the absence of site specific data on how a particular discharge partitions in the receiving water, a default assumption that the translator is equivalent to the criteria conversion factor is used in accordance with the Translator Guidance.

The effluent metals data was compared to the water quality criteria (with conversion factors) found in EPA's National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047). Converting the criteria from dissolved concentrations to total recoverable (using site-specific median hardness of 130 mg/l as $CaCO_3$) and applying the dilution factor of 1 (for intermittent tributary), results in the maximum allowable effluent concentration (with dilution) which would not cause an exceedence in the water quality criteria. Reasonable potential is then determined by comparing this allowable concentration (for both acute and chronic conditions) with the maximum reported concentration for each metal (in bold). As indicated in the chart above there is no reasonable potential (for both acute and chronic conditions) for the discharge of aluminum, cadmium, chromium, nickel or zinc to cause or contribute to exceedances of the applicable criteria.

A similar reasonable potential analysis was done for lead and copper using the DMR data found in Attachment B. The lead and copper limits in the 2003 permit are based on a hardness of 100 mg/l as $CaCO_3$. Review of effluent data submitted by the permittee shows that the median hardness of the discharge is 130 mg/l, greater than the value used to establish the limit in the 2003 permit. This

greater hardness value has been used to determine the reasonable potential for lead and copper in the following analysis.

Lead

The freshwater chronic criterion for total recoverable lead at a hardness of 130 mg/l as $CaCO_3$ is 4.4 ug/l, and the acute criterion is 114 ug/l. The salt water chronic criterion for lead is 8.1 ug/l and the acute criterion is 210 ug/l. Because the freshwater criteria are more stringent than the marine criteria, the limit developed to protect the unnamed Class B stream will also be protective of the downstream Class A water.

The effluent monitoring data for lead (see Attachment B) shows that effluent concentrations during the review period ranged from 0 ug/l to 11 ug/l.

Because the receiving water provides no dilution, effluent concentrations must not exceed the applicable water quality criteria in order to ensure that the discharge does not cause or contribute to an exceedance of water quality standards. As can be seen from the effluent concentrations, the highest effluent concentration exceeded the chronic criteria, so the discharge has the reasonable potential to cause or contribute to an exceedance of the chronic water quality criteria for lead. Accordingly, a **monthly average total recoverable lead limit of 4.4 mg/l** has been included in the draft permit, which is slightly greater than the 2003 permit limit.

This adjustment is in accordance with the anti-backsliding exception found in CWA Section 402(o)(2)(B)(i) which explains that a limit may be made less stringent based upon information (site-specific hardness) which was unavailable in the previous permit issuance. The adjustment is also consistent with antidegradation requirements in that water quality standards will be attained and there will be no impact on uses.

In addition, the monitoring requirement for lead is being reduced to twice per year based upon recent data showing compliance with the lead limit (no permit violations since June 2006). Sampling will be required during the second week of the months of March and December as described in the draft permit. This monitoring will supplement the lead monitoring which is required in WET tests, performed in May and September, resulting in lead monitoring once per quarter.

Copper

Based mainly upon the failure to consistently meet the copper limits in the existing permit, MassDEP entered into an Administrative Consent Order (No. ACO-NE-05-1N001) with Governor's Academy on December 21, 2005. The ACO documented violations of NPDES permit limits for BOD, Ammonia, and Copper. Among other requirements, the ACO required the Academy to submit a Copper Optimization Engineering Report, and laid out a detailed scope for the analysis, which included identifying copper sources, and potential treatment options.

On June 13, 2006, Governor's Academy submitted the Copper Optimization Engineering Report. The Report found that a significant source of the copper is the drinking water at the Academy (from the Town of Byfield) which measured at 60 ug/l. They also found a number of copper sources from process activities (e.g. photodeveloping) which they have since disconnected. Further, they

concluded that the existing treatment plant effectively removes on average about 89% of the influent copper, though it was not designed for copper removal. The Report included a number of recommendations:

1. Continue to monitor, and identify and eliminate any on-site sources of copper.
2. "Future" implementation of more efficient ultrafiltration membranes (UF), which have a far smaller pore size than the existing MBR facilities.
3. Modify treatment operations to transform a higher percentage of influent copper into an insoluble form.

MassDEP did not formally "approve" the Report and its recommendations, since there were ongoing discussions on a site-specific limit for the receiving stream. However, since 2009, the monthly copper averages have ranged from 0 – 25 ug/l, with an average concentration of 12.35 ug/l. Other than copper violations in January, May, July and August, there were no other NPDES violations in 2010.

The freshwater chronic criterion for total recoverable copper at a hardness of 130 mg/l is 11.7 ug/l and the acute criterion is 17.9 ug/l. The freshwater chronic criterion for dissolved copper at a hardness of 130 mg/l is 11.2 ug/l and the acute criterion is 17.2 ug/l. The salt water chronic criterion for dissolved copper is 3.1 ug/l and the acute criterion is 4.8 ug/l. Because the salt water criteria are more stringent than the freshwater criteria, it must be confirmed that the limits calculated to protect the unnamed Class B stream are also protective of the downstream Class SA waters.

Because the receiving water provides no dilution, effluent concentrations must not exceed the applicable water quality criteria in order to ensure that the discharge does not cause or contribute to an exceedance of water quality standards. As can be seen from the effluent concentrations in Attachment B, the effluent concentrations have exceeded both the acute and chronic criteria, so the discharge has the reasonable potential to cause or contribute to an exceedance of the acute and chronic fresh water criteria for copper. Accordingly, a total recoverable copper monthly average limit of 11.7 mg/l and a daily maximum limit of 17.9 mg/l were determined to be protective of the freshwater segment. See Attachment C for the details of the permit limit calculations for copper. In addition, MassDEP is still considering a site-specific copper limit for this discharge. Pending a decision and approval of these limits, a permit modification may be issued.

An analysis was also done to ensure that these copper limits are protective of downstream marine waters. As mentioned previously, the receiving water feeds into the Mill River, which has a 7Q10 just downstream of this confluence of 0.35 cfs (calculated using USGS StreamStats regression analysis). The dilution factor for the mixing of the receiving water (estimated as the plant design flow under 7Q10 conditions) with the Mill River was calculated to be 5.34 (Mill River 7Q10+ plant flow / plant design flow). The copper criteria (dissolved) using site-specific hardness of 130 mg/l as shown in Attachment C are 17.21 ug/l (acute) and 11.23 ug/l (chronic). Dividing these copper criteria by this dilution factor gives the highest potential dissolved copper concentration in the Mill River after mixing. These concentrations are 3.22 ug/l (acute) and 2.1 ug/l (chronic). The marine copper criteria (dissolved) are 4.8 ug/l (acute) and 3.1 ug/l (chronic). Since the marine criteria are greater than the projected Mill River concentration after mixing, the proposed copper limits are protective of downstream marine waters. Accordingly, the draft permit includes a **monthly average total recoverable copper limit of 11.7 ug/l** and a **maximum daily limit of 17.9 ug/l**.

7. Whole Effluent Toxicity

Under Section 301(b)(1) of the CWA, discharges are subject to effluent limitations based on water quality standards. The State Surface Water Quality Standards [314 CMR 4.05(5)(e)], include the following narrative statements and require that EPA criteria established pursuant to Section 304(a)(l) of the CWA be used as guidance for interpretation of the following narrative criteria:

All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife. For pollutants not otherwise listed in 314 CMR 4.00, the National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002 published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the allowable receiving water concentrations for the affected waters, unless the Department either establishes a site specific criterion or determines that naturally occurring background concentrations are higher. Where the Department determines that naturally occurring background concentrations are higher, those concentrations shall be the allowable receiving water concentrations. The Department shall use the water quality criteria for the protection of aquatic life expressed in terms of the dissolved fraction of metals when EPA's 304(a) recommended criteria provide for use of the dissolved fraction. The EPA recommended criteria based on total recoverable metals shall be converted to dissolved metals using EPA's published conversion factors. Permit limits will be written in terms of total recoverable metals. Translation from dissolved metals criteria to total recoverable metals permit limits will be based on EPA's conversion factors or other methods approved by the Department. The Department may establish site specific criteria for toxic pollutants based on site specific considerations. Site specific criteria, human health risk levels and permit limits will be established in accordance with 314 CMR 4.05(5)(e)(1)(2)(3)(4).

National studies conducted by the EPA have demonstrated that domestic sources can contribute toxic constituents to wastewater treatment facilities. These pollutants include metals, chlorinated solvents, aromatic hydrocarbons and other constituents. The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analysis; (2) bioavailability of pollutants after discharge is measured by toxicity testing including any synergistic effect of pollutants; and (3) pollutants for which there are inadequate analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in connection with pollutant specific control procedures to control the discharge of toxic pollutants.

The frequency and the type of WET test are determined by dilution ratio and risk factor. The dilution factor for this discharge is one. Pursuant to EPA Region I policy and the *Massachusetts Implementation Policy for the Control of Toxic Pollutants, dated February 23, 1990*, discharges having dilution factors between less than ten require acute and chronic toxicity testing four times per year with an acute LC-50 limit of 100% and a chronic NOEC limit equal to the receiving water concentration. The receiving water concentration is calculated by dividing one by the dilution factor. In this case, the dilution factor is one, so the chronic NOEC is 100%.

In the 2003 permit, the limits are consistent with the MassDEP toxics policy, but the frequency of testing was reduced to twice per year based on the consistent compliance with the effluent limits. The number of species required to be tested was also reduced from two to one based on the compliance record.

Whole effluent toxicity (WET) tests were reviewed for the period of March 2005 through August 2010. During the review period, 12 tests were performed, and showed no violations of the acute LC_{50} limit and one violation of the chronic C-NOEC limit (see Attachment B). These WET testing results indicate that the receiving stream was not adversely affected by the discharge. Based on these results the draft permit will carry forward the frequency of WET testing as semi-annually, in May and September, with results to be submitted by the 30th day of the following month. The draft permit also carries forward the WET testing requirements of one test organism, the daphnid, Ceriodaphnia dubia only. In the 2003 fact sheet, it was noted that the C. dubia has been the more sensitive test species in all but one test event and has generally been found to be more sensitive than the fathead minnow in WET testing. WET testing shall be conducted in accordance with EPA Region I's protocol found in Attachment A of the draft permit.

EPA-Region I has adopted a species-specific, self-implementing policy for switching to an alternate dilution water during the life of the NPDES permit for WET tests where the receiving water is documented to be toxic or unreliable. The policy authorizes alternate dilution water use: (1) in any WET test repeated due to site water toxicity. No prior notification to EPA is required for any current test that needs to be repeated due to site water toxicity; and (2) in future WET tests where there are two previously documented incidents of site water toxicity associated with a particular test species. Written notification to EPA is required before switching to alternate dilution water testing for the duration of the life of the permit. The details of this policy are provided in the DMR instructions that are sent out annually.

VII. Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat," 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity," 16 U.S.C. § 1802(10). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH, 50 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Essential fish habitat is only designated for fish 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.

EPA's review of available EFH information indicates that the facility does not discharge into a river system designated as essential fish habitat by NMFS. No "habitat area of particular concern" as defined under Section 600.815(a)(9) of the Magnuson-Stevens Act, has been designated for this site. In addition, the Massachusetts Division of Fish and Wildlife does not consider Atlantic salmon to be present in the Mill River. Therefore, EFH consultation with NMFS is not required.

VIII. Endangered Species Act

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

EPA has reviewed the federal endangered or threatened species of fish and wildlife to see if any listed species might potentially be impacted by the re-issuance of this NPDES permit. Based on the normal distribution of these species, it is highly unlikely that they would be present in the vicinity of this discharge. Therefore, consultation under Section 7 of the ESA with USFWS is not required.

IX. Monitoring and Reporting

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

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

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

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

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

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

copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

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

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

X. State Certification Requirements

EPA may not issue a permit unless the state water pollution control agency with jurisdiction over the receiving waters certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the MassDEP has reviewed the draft permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the draft permit will be certified.

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

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to **Mr. Michael Cobb**, U.S. EPA, Office of Ecosystem Protection, Municipal Permits Branch, 5 Post Office Square, Suite 100, Mail Code: OEP06-1, Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the Draft Permit, the EPA 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 any public hearings, if such hearings are held, the EPA will issue a Final Permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

XII. EPA Contact

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

Michael Cobb
U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square, Suite 100 (OEP06-1)
Boston, Massachusetts 02109-3912
TEL: (617) 918-1369
FAX: (617) 918-0369
Cobb.Michael@epa.gov

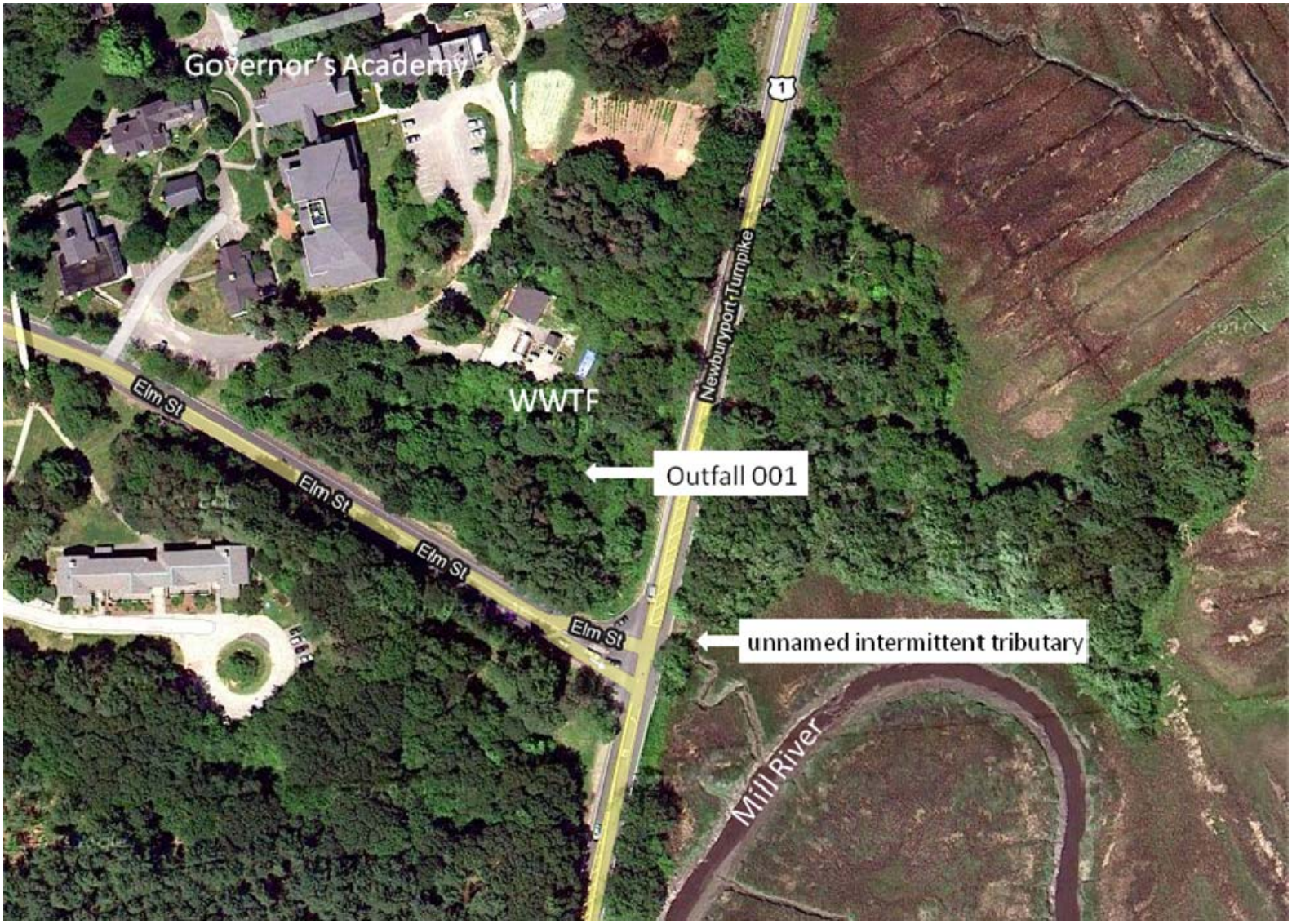
Kathleen Keohane
Massachusetts Department of Environmental Protection
627 Main Street, 2nd Floor
Worcester, MA 01608
TEL: (508)-767-2856
FAX: (508) 791-4131
Kathleen.Keohane@state.ma.us

April 25, 2011

Date

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

ATTACHMENT A – LOCATION OF GOVERNOR'S ACADEMY WWTF



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

ATTACHMENT B - DMR DATA SUMMARY (OUTFALL 001)

Monitoring Period End Date	BOD5						TSS					
	Monthly Ave		Weekly Ave		Daily Max		Monthly Ave		Weekly Ave		Daily Max	
	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L
3/31/2005	0.52	2.	1.2	**6.5**	1.2	6.5	0.	0.	0.	0.	0.	0.
4/30/2005	0.62	2.	2.46	**8.**	2.46	8.	0.	0.	0.	0.	0.	0.
5/31/2005	2.38	**8.**	**5.36**	**18.**	5.55	18.	0.	0.	0.	0.	0.	0.
6/30/2005	0.	0.	0.	0.	0.	0.	0.09	---	0.09	2.7	0.49	2.7
7/31/2005	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8/31/2005	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9/30/2005	0.54	3.	2.16	**12.**	2.16	12.	0.	0.	0.	0.	0.	0.
10/31/2005	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11/30/2005	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
12/31/2005	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1/31/2006	0.17	0.75	0.69	3.	0.69	3.	0.	0.	0.	0.	0.	0.
2/28/2006	0.2	0.8	1.	3.1	1.	3.1	0.	0.	0.	0.	0.	0.
3/31/2006	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4/30/2006	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5/31/2006	0.2	0.6	---	2.4	0.8		0.	0.	0.	0.	0.	0.
6/30/2006	0.4	2.2	---	5.1	0.9	5.1	0.	0.	0.	0.	0.	0.
7/31/2006	0.2	1.2	0.6	3.5	0.6	3.5	0.15	0.9	0.76	4.5	0.76	4.5
8/31/2006	0.4	2.9	1.2	**6.9**	1.2	6.9	0.	0.	0.	0.	0.	0.
9/30/2006	0.2	1.	0.9	3.9	0.9	3.9	0.	0.	0.	0.	0.	0.
10/31/2006	0.3	1.5	0.8	3.2	0.8	3.2	0.	0.	0.	0.	0.	0.
11/30/2006	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
12/31/2006	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1/31/2007	0.2	0.7	0.8	2.8	0.8	2.8	0.	0.	0.	0.	0.	0.
2/28/2007	0.4	1.4	1.6	5.7	1.6	5.7	0.	0.	0.	0.	0.	0.
3/31/2007	0.4	1.6	0.9	2.9	0.9	2.9	0.	0.	0.	0.	0.	0.
4/30/2007	0.9	3.5	1.9	**9.**	1.9	9.	0.	0.	0.	0.	0.	0.
5/31/2007	1.7	**6.9**	**2.8**	**11.**	---	11.	0.	0.	0.	0.	0.	0.
6/30/2007	0.5	3.2	0.8	**6.3**	0.8	6.3	0.	0.	0.	0.	0.	0.
7/31/2007	0.4	2.9	0.7	4.8	0.7	4.8	0.17	1.	0.7	4.	0.7	4.
8/31/2007	0.1	1.1	0.2	2.2	0.2	2.2	0.	0.	0.	0.	0.	0.
9/30/2007	1.	4.8	2.3	**8.9**	2.3	8.9	0.	0.	0.	0.	0.	0.
10/31/2007	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11/30/2007	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
12/31/2007	---	---	---	---	---	---	---	---	---	---	---	---
1/31/2008	0.6	2.3	1.5	5.7	1.5	5.7	0.1	0.58	0.4	2.3	0.4	2.3
2/29/2008	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3/31/2008	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4/30/2008	0.4	1.7	0.9	3.6	0.9	3.6	0.	0.	0.	0.	0.	0.
5/31/2008	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6/30/2008	0.2	1.7	0.4	3.9	0.4	3.9	0.	0.	0.	0.	0.	0.
7/31/2008	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8/31/2008	0.4	1.8	0.9	5.2	0.9	5.2	0.	0.4	0.	2.	0.1	2.
9/30/2008	0.	0.	0.	0.	0.	0.	0.1	0.58	0.6	2.3	0.6	2.3

10/31/2008	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11/30/2008	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
12/31/2008	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1/31/2009	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2/28/2009	0.5	1.7	1.2	3.5	1.2	3.5	0.	0.	0.	0.	0.	0.
3/31/2009	0.7	2.1	**2.8**	**8.4**	2.8	8.4	0.	0.	0.	0.	0.	0.
4/30/2009	0.4	1.2	1.5	4.9	1.5	4.9	0.	0.	0.	0.	0.	0.
5/31/2009	0.5	1.8	1.8	**7.**	1.8	7.	0.	0.	0.	0.	0.	0.
6/30/2009	0.1	0.9	0.4	3.6	0.4	3.6	0.1	0.5	0.3	2.	0.3	2.
7/31/2009	0.3	1.	1.1	4.	1.1	4.	0.2	0.75	0.8	3.	0.8	3.
8/31/2009	0.1	1.	0.3	4.	0.3	4.	0.2	2.	0.4	3.	0.4	3.
9/30/2009	0.	0.	0.	0.	0.	0.	0.1	0.5	0.5	2.	0.5	2.
10/31/2009	0.2	0.6	0.8	3.	0.8	3.	0.3	1.	1.3	5.	1.3	5.
11/30/2009	0.3	1.5	0.7	4.	0.7	4.	0.1	0.5	0.5	2.	0.5	2.
12/31/2009	0.7	2.	1.7	5.	1.7	5.	0.	0.	0.	0.	0.	0.
1/31/2010	0.3	1.	1.1	4.	1.1	4.	0.	0.	0.	0.	0.	0.
2/28/2010	0.5	2.	0.8	3.	0.8	3.	0.	0.	0.	0.	0.	0.
3/31/2010	0.2	1.	0.9	3.	0.9	3.	0.	0.	0.	0.	0.	0.
4/30/2010	0.	0.	0.	0.	0.	0.	0.3	0.5	1.1	2.	1.1	2.
5/31/2010	0.3	1.	1.4	5.	1.4	5.	0.	0.	0.	0.	0.	0.
6/30/2010	0.2	1.	0.9	3.	0.9	3.	0.	0.	0.	0.	0.	0.
7/31/2010	0.	0.	0.	0.	0.	0.	0.1	0.4	0.5	2.	0.5	2.
8/31/2010	0.	0.	0.	0.	0.	0.	0.2	1.	0.2	4.	0.9	4.
Permit Limit	**2.5**	**5.8**	**2.5**	**5.8**	**Report**	**Report**	**2.5**	**5.8**	**2.5**	**5.8**	**Report**	**Report**
Average	0.29	1.22	0.79	3.28	0.76	3.29	0.03	0.17	0.13	0.66	0.14	0.66
Minimum	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Maximum	2.38	8.	5.36	18.	5.55	18.	.3	2.	1.3	5.	1.3	5.
Standard Deviation	0.4	1.56	0.97	3.57	0.94	3.6	0.07	0.37	0.28	1.3	0.3	1.3
# Measurements	65	65	63	65	64	64	65	64	65	65	65	65
# Exceedences	0	2	3	11	N/A	N/A	0	0	0	0	N/A	N/A
% Exceedences	0%	3%	5%	17%	N/A	N/A	0%	0%	0%	0%	N/A	N/A

Monitoring Period End Date	pH		Ammonia Nitrogen as N			Fecal Coliform		Copper		Lead
	Min	Max	Monthly Ave	Weekly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave
	SU	SU	mg/L	mg/L	mg/L	#/100mL	#/100mL	ug/L	ug/L	ug/L
3/31/2005	6.9	7.42	0.7	**1.5**	1.5	0.	0.	**13.**	14.	0.
4/30/2005	6.85	7.32	0.2	0.3	0.3	0.	0.	**21.**	**21.**	0.
5/31/2005	6.87	7.39	0.7	1.	1.	0.	0.	9.1	9.1	0.
6/30/2005	6.54	7.56	0.2	0.53	0.53	8.	35.	**15.**	**15.**	0.
7/31/2005	6.98	7.65	0.2	0.4	0.4	12.	12.	**13.**	13.	0.
8/31/2005	7.04	7.68	0.4	0.73	0.73	0.	0.	**19.**	**19.**	0.
9/30/2005	6.7	7.68	0.6	**1.2**	1.2	0.	0.	**9.6**	9.6	0.
10/31/2005	6.67	7.67	0.4	0.7	0.7	0.	0.	**16.**	**16.**	0.
11/30/2005	6.91	7.61	0.5	**1.1**	1.1	0.	0.	**11.**	11.	0.
12/31/2005	7.03	7.65	0.39	0.89	0.89	0.	0.	**12.**	12.	0.
1/31/2006	6.89	7.53	0.84	**1.6**	**1.6**	0.	0.	**15.**	**15.**	0.
2/28/2006	7.03	7.43	0.8	**1.4**	1.4	7.1	**4200.**	**14.**	14.	0.
3/31/2006	6.87	7.57	0.06	0.24	0.24	0.	0.	**16.**	**16.**	0.
4/30/2006	6.9	7.44	0.44	0.68	0.68	0.	0.	**12.**	12.	0.
5/31/2006	6.95	7.73	0.3	0.46	0.46	0.	0.	9.	9.	0.
6/30/2006	6.96	7.43	0.17	0.49	0.49	0.	0.	**19.**	**19.**	**11.**
7/31/2006	6.62	7.67	0.39	0.83	0.83	0.	0.	**16.**	**16.**	0.
8/31/2006	7.05	7.61	0.07	0.28	0.28	1.1	19.	**12.**	12.	0.
9/30/2006	7.06	7.55	0.27	0.66	0.66	0.	0.	**21.**	**21.**	0.
10/31/2006	6.88	7.49	0.3	0.41	0.41	0.	0.	**12.**	12.	0.
11/30/2006	6.6	7.53	0.27	0.52	0.52	0.	0.	**13.**	13.	0.
12/31/2006	6.75	7.66	0.24	0.46	0.46	0.1	1.	**11.**	11.	0.
1/31/2007	6.88	7.54	0.65	0.98	0.98	0.7	8.	8.	8.	0.
2/28/2007	7.02	7.69	0.41	0.55	0.55	0.	0.	**14.**	14.	1.2
3/31/2007	6.52	7.49	0.64	**1.7**	**1.7**	0.	0.	**21.**	**21.**	1.7
4/30/2007	6.67	7.29	0.44	0.93	0.93	1.	0.	**13.**	13.	1.5
5/31/2007	6.79	7.27	0.33	0.47	0.47	1.	0.	**13.5**	13.5	1.6
6/30/2007	7.11	7.58	0.4	0.82	0.82	1.	0.	**16.7**	**16.7**	0.
7/31/2007	7.02	7.69	0.35	0.57	0.57	1.	0.	**22.3**	**22.3**	0.
8/31/2007	7.19	7.65	0.43	0.54	0.54	1.2	2.	**14.7**	**14.7**	1.4
9/30/2007	6.85	7.52	0.7	**1.3**	1.3	1.	1.	**21.2**	**21.1**	0.
10/31/2007	6.98	7.55	0.48	0.8	0.8	1.	0.	**14.5**	**14.5**	0.
11/30/2007	7.11	7.66	0.27	0.44	0.44	1.	0.	**10.2**	10.2	1.
12/31/2007	---	---	---	---	---	---	---	---	---	---
1/31/2008	6.96	7.46	0.21	0.26	0.26	1.	0.	8.	8.	0.
2/29/2008	6.81	7.31	0.3	0.37	0.37	1.	0.	**10.4**	10.4	0.
3/31/2008	6.83	7.38	**2.74**	**2.1**	**2.1**	1.	0.	**11.**	11.	0.
4/30/2008	6.93	7.39	0.38	0.58	0.58	1.	0.	**13.9**	13.9	0.
5/31/2008	7.1	7.44	0.3	0.43	0.43	1.	0.	**13.6**	13.6	0.
6/30/2008	7.16	7.48	0.3	0.43	0.43	1.	0.	**15.3**	**15.3**	0.
7/31/2008	7.06	7.65	0.26	0.37	0.37	1.	0.	**16.8**	**16.8**	0.
8/31/2008	7.3	7.63	0.09	0.18	0.18	1.	0.	**11.7**	11.7	0.
9/30/2008	7.03	7.57	0.36	0.54	0.54	1.	0.	**12.2**	12.2	0.
10/31/2008	7.06	7.5	0.45	0.86	0.86	1.	0.	6.	6.	0.
11/30/2008	7.07	7.52	0.24	0.37	0.37	1.	0.	8.1	8.1	0.

12/31/2008	7.	7.57	0.26	0.33	0.33	1.	0.	**9.7**	9.7	0.
1/31/2009	7.6	7.6	0.83	1.	1.4	1.	0.	7.6	7.6	0.
2/28/2009	6.85	7.37	0.36	0.75	0.75	1.	0.	8.	8.	0.
3/31/2009	6.79	7.48	0.38	0.95	0.95	1.	0.	8.1	8.1	0.
4/30/2009	6.99	7.52	0.42	0.78	0.78	1.	0.	**17.**	**17.**	0.
5/31/2009	6.83	7.52	0.24	0.48	0.48	1.	0.	8.3	8.3	0.
6/30/2009	7.12	7.7	0.16	0.25	0.25	1.	0.	9.	9.	0.
7/31/2009	7.04	7.61	0.1	0.2	0.2	1.	0.	7.	7.	0.
8/31/2009	7.22	7.65	0.05	0.2	0.2	1.	0.	8.	8.	0.
9/30/2009	7.03	7.64	0.1	0.2	0.2	1.	0.	**10.**	11.	0.
10/31/2009	6.59	7.48	0.2	0.3	0.3	1.	0.	9.	9.	0.
11/30/2009	7.09	7.66	0.1	0.1	0.1	1.	0.	9.	9.	0.
12/31/2009	6.88	7.68	0.3	0.4	0.4	1.	0.	**11.**	13.	0.
1/31/2010	6.89	7.44	0.3	0.4	0.4	1.	0.	**10.**	10.	0.
2/28/2010	6.7	7.32	0.3	0.5	0.5	1.	0.	7.	8.	0.
3/31/2010	6.6	7.47	0.3	0.6	0.6	1.	0.	0.	0.	0.
4/30/2010	6.75	7.49	0.2	0.4	0.4	1.	0.	4.	4.	0.
5/31/2010	6.96	7.42	0.1	0.3	0.3	1.	0.	**25.**	**38.5**	0.
6/30/2010	7.01	7.59	0.2	0.2	0.2	1.	0.	8.	8.	0.
7/31/2010	6.89	7.55	0.2	0.4	0.4	1.	1.	**10.**	10.	0.
8/31/2010	7.09	7.69	0.2	0.3	0.3	1.	0.	**12.**	13.	0.
Permit Limit	**6.5**	**8.3**	**1.0**	**1.0**	**1.5**	**14**	**43**	**9.3**	**14**	**3.2**
Average	6.93	7.54	0.38	0.63	0.64	1.06	65.83	12.35	12.64	0.30
Minimum	6.52	7.27	0.05	0.1	0.1	0.	0.	0.	0.	0.
Maximum	7.6	7.73	2.74	2.1	2.1	12.	4200.	25.	38.5	11.
Standard Deviation	0.19	0.12	0.35	0.41	0.42	1.88	520.82	4.66	5.44	1.41
# Measurements	65	65	65	65	65	65	65	65	65	65
# Exceedences	0	0	1	8	3	0	1	46	19	1
% Exceedences	0%	0%	2%	12%	5%	0%	2%	71%	29%	2%

Monitoring Period End Date	Flow		Dissolved Oxygen	LC50	C-NOEC
	12 Month Rolling Ave	Daily Max	Min	Acute 48hr, Daphnid	Chronic 7d, Daphnid
	gal/d	gal/d	mg/L	%	%
3/31/2005	34439.	81736.	---	---	---
4/30/2005	36898.	83484.	6.1	---	---
5/31/2005	35652.	55996.	5.68	100.	100
6/30/2005	34440.	42764.	6.74	---	---
7/31/2005	32392.	37952.	5.78	---	---
8/31/2005	29920.	21828.	5.88	100.	100
9/30/2005	28995.	32464.	5.16	---	---
10/31/2005	29136.	69568.	5.21	---	---
11/30/2005	28928.	44500.	---	---	---
12/31/2005	28807.	42196.	---	---	---
1/31/2006	28604.	42548.	---	---	---
2/28/2006	28480.	56628.	---	---	---
3/31/2006	27728.	38596.	---	---	---
4/30/2006	26892.	35636.	5.68	---	---
5/31/2006	27467.	174544.	7.31	100.	100
6/30/2006	27939.	77192.	6.63	---	---
7/31/2006	27755.	26804.	6.99	---	---
8/31/2006	27768.	26852.	6.66	100.	100
9/30/2006	24706.	36280.	6.51	---	---
10/31/2006	27777.	36704.	5.98	---	---
11/30/2006	27959.	61000.	---	---	---
12/31/2006	27519.	36240.	---	---	---
1/31/2007	27159.	37032.	---	---	---
2/28/2007	26447.	33308.	---	---	---
3/31/2007	26623.	48904.	---	---	---
4/30/2007	27322.	106288.	7.65	---	---
5/31/2007	25810.	48884.	7.02	100.	100
6/30/2007	25007.	43120.	7.05	---	---
7/31/2007	25045.	29864.	7.02	---	---
8/31/2007	24929.	24784.	6.3	100.	**6.25**
9/30/2007	24935.	30948.	6.92	---	---
10/31/2007	24758.	33656.	5.82	---	---
11/30/2007	24015.	28144.	---	---	---
12/31/2007	---	---	---	---	---
1/31/2008	23791.	45492.	---	---	---
2/29/2008	24522.	52136.	---	---	---
3/31/2008	24712.	55828.	---	---	---
4/30/2008	24179.	44724.	7.01	---	---
5/31/2008	24096.	40604.	6.9	100	100
6/30/2008	23705.	20892.	6.86	---	---
7/31/2008	23731.	38624.	6.76	---	---
8/31/2008	23948.	29408.	7.04	100.	100
9/30/2008	24387.	52164.	5.93	---	---

10/31/2008	24609.	36280.	7.03	---	---
11/30/2008	24923.	34164.	---	---	---
12/31/2008	26846.	85136.	---	---	---
1/31/2009	25908.	40872.	---	---	---
2/28/2009	26904.	45472.	---	---	---
3/31/2009	25869.	40840.	---	---	---
4/30/2009	26608.	46104.	7.4	---	---
5/31/2009	26011.	37812.	6.43	100	100
6/30/2009	26314.	45348.	7.48	---	---
7/31/2009	26752.	64900.	7.35	---	---
8/31/2009	27026.	35220.	6.37	100	100
9/30/2009	26548.	33195.	6.52	---	---
10/31/2009	26760.	47036.	6.55	---	---
11/30/2009	27405.	61260.	---	---	---
12/31/2009	27339.	57936.	---	---	---
1/31/2010	27481.	48464.	---	---	---
2/28/2010	27372.	61211.	---	---	---
3/31/2010	33736.	157400.	---	---	---
4/30/2010	30354.	84732.	6.77	100	100
5/31/2010	30543.	39860.	6.93	---	---
6/30/2010	30757.	37696.	6.88	---	---
7/31/2010	30311.	32240.	6.03	---	---
8/31/2010	30564.	46992.	6.74	100.	100
Permit Limit	**52000**	**Report**	**5**	**100**	**100**
Average	27481	49638.25	6.58	100.00	92.19
Minimum	23705	20892.	5.16	100.	6.25
Maximum	36898	174544.	7.65	100.	100.
Standard Deviation	2975	26860.31	0.61	0.	27.06
# Measurements	65	65	40	12	12
# Exceedences	0	N/A	0	0	1
% Exceedences	0%	N/A	0%	0%	8%

ATTACHMENT C – EFFLUENT LIMIT CALCULATIONS

CALCULATION OF CONCENTRATION-BASED LIMITS IN 2003 PERMIT WITH NEW DESIGN FLOW

First, the mass limits were calculated using the 1996 permit limits of 10 mg/l and the 1996 permitted design flow of 0.030 mgd. Then the concentration limits specified in the 2003 permit were determined by back calculating from the mass limits using the new design flow of 0.052 mgd. See calculations below:

Previous Mass Loading (lbs/day) =
Previous Concentration Limit (mg/l) x Previous Design Flow (MGD) x 8.34
Previous Mass Loading (lbs/day) = 10 mg/l x 0.03 MGD x 8.34
Previous Mass Loading (lbs/day) = 2.5 lbs/day

Current Concentration Loading (mg/l) =
Previous Mass Loading (lbs/day) / (Current Design Flow (MGD) x 8.34)
Current Concentration Loading (mg/l) = 2.5 lbs/day / (0.052 MGD x 8.34)
Current Concentration Loading (mg/l) = 5.76 mg/l = 5.8 mg/l

Note that the "Maximum Daily" limit for BOD and TSS of 15 mg/l in the existing permit is no longer a state certification requirement and was changed to "report only".

CALCULATION OF MASS-BASED LIMITS

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

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

where:

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

CALCULATION OF METALS PERMIT LIMITS

Lead

The limits for lead are calculated based on EPA's National Recommended Water Quality Criteria: 2002, using a hardness of 130 mg/l in the conversion factor calculations and a dilution factor of 1.

Acute limit for lead (dissolved) = 85.8 ug/l
CF = 1.46203 – [ln(hardness)(0.145712)] = 0.753
Chronic limit (total recoverable) = Chronic limit (dissolved) / (CF) = 85.8 / 0.753 = 114 ug/l

Therefore the acute (**maximum daily**), water quality-based limitation for total recoverable lead is **114 ug/l**. This is **not a permit limit** because there is no reasonable potential to exceed.

Chronic limit for lead (dissolved) = 3.34 ug/l
CF = 1.46203 – [ln(hardness)(0.145712)] = 0.753
Chronic limit (total recoverable) = Chronic limit (dissolved) / (CF) = 2.5 / 0.791 = 4.4 ug/l

Therefore the chronic (**average monthly**), water quality based limitation for Total Recoverable Lead is **4.4 ug/l**. This is a **permit limit** because there is reasonable potential to exceed.

Copper

The limits for copper are calculated based on EPA's National Recommended Water Quality Criteria: 2002 with a hardness of 130 mg/l and a dilution factor of 1, as described below:

Acute Criteria (dissolved) = $\exp\{m_a[\ln(\text{hardness})] + b_a\}$ (CF)

Where: m_a = pollutant-specific coefficient (acute)
b_a = pollutant-specific coefficient (acute)
hardness = 130 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor used to convert total recoverable to dissolved

For calculation of acute limit for copper:

m_a = 0.9422
b_a = - 1.7
CF = 0.96

Acute Criteria (dissolved) = exp{0.9422[ln(130)] - 1.7} (0.96) = 17.21 ug/l

Dilution Factor = 1
Effluent Limitation = 1 x 17.21 ug/l = 17.21 ug/l (dissolved)
Total Recoverable = 17.21 / CF = 17.21 / 0.96 = 17.9 ug/l

Therefore the acute (**maximum daily**), water quality based limitation for total recoverable

copper is **17.9 ug/l**. This is a **permit limit** because there is reasonable potential to exceed.

Chronic Criteria (dissolved) = $\exp\{m_c[\ln(\text{hardness})] + b_c\}$ (CF)

Where: m_c = pollutant-specific coefficient (chronic)
b_c = pollutant-specific coefficient (chronic)
hardness = 130 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor used to convert total recoverable to dissolved metal

For calculation of chronic limit for copper:

m_c = 0.8545
b_c = - 1.7
CF = 0.96

Chronic criteria (dissolved) = $\exp\{0.8545[\ln(130)] - 1.7\}$ (0.96) = 11.23 ug/l

Dilution Factor = 1
Effluent Limitation = 1 x 11.23 ug/l = 11.23 ug/l (dissolved)
Total Recoverable = 11.23 / CF = 11.23 / 0.96 = 11.7 ug/l

Therefore the chronic (**average monthly**), water quality based limitation for Total Recoverable Copper is **11.7 ug/l**. This is a **permit limit** because there is reasonable potential to exceed.

RESPONSE TO COMMENTS – SEPTEMBER 14, 2011
REISSUANCE OF NPDES PERMIT NO. MA0030350
GOVERNOR'S ACADEMY WASTEWATER TREATMENT FACILITY
BYFIELD, MASSACHUSETTS

From April 29, 2011 through June 18, 2011 the U.S. Environmental Protection Agency (EPA-New England) and the Massachusetts Department of Environmental Protection (MassDEP) solicited public comments on the draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to the Governor's Academy Wastewater Treatment Facility in Byfield, MA.

EPA-New England and MassDEP received comments from the Governor's Academy (dated June 13, 2011) and the Commonwealth of Massachusetts Division of Marine Fisheries (dated May 27, 2011). The following are joint responses on behalf of EPA-New England and MassDEP to those comments and descriptions of any changes made to the public-noticed permit as a result of those comments.

A summary of the changes made in the final permit is listed below. The analyses underlying these changes are explained in the responses to individual comments. Each change is followed by a number that correlates to a specific response.

1. The total recoverable copper limits have been relaxed to 13 ug/l average monthly and 20 ug/l maximum daily. The total recoverable lead limit has been relaxed to 5 ug/l average monthly. (See Comment A2 from the Governor's Academy)

2. A compliance schedule for enterococci has been included in the final permit. (See Comment A7 from the Governor's Academy)

3. The notification period for a permit excursion or plant failure has been changed from 24 hours to 12 hours and more detailed contact information has been included. (See Comment B1 from the Commonwealth of Massachusetts Division of Marine Fisheries)

A copy of the final permit may be obtained by writing or calling Michael Cobb, United States Environmental Protection Agency, 5 Post Office Square, Suite 100 (Mail Code: OEP06-1), Boston, Massachusetts 02109-3912; Telephone (617) 918-1369. Copies may also be obtained from the EPA Region 1 web site at http://www.epa.gov/region1/npdes/index.html.

A. COMMENTS FROM THE GOVERNOR'S ACADEMY

COMMENT A1:

Discharge Location

"The Draft NPDES Permit and Fact Sheet state that the treatment plant effluent is discharged into an unnamed intermittent tributary to the Mill River. As a result of this intermittent designation, no dilution factor was used in the calculation of permit limitations. On Page 16 of the Fact Sheet, the unnamed tributary is noted on the east side of Route 1. In fact, there is a small stream which runs along Elm Street on the west side of Route I and receives the treatment plant discharge before flowing under Route I to the unnamed tributary. This stream originates from a culvert adjacent to the campus entrance closest to the treatment plant and flow has been observed in this stream year round.

The Academy believes that this stream may provide dilution that should be accounted for in the calculation of permit limitations. We will therefore continue to monitor the stream and document the occurrence of flow in it. If as a result of this monitoring the Academy determines that a flow study is warranted, such a study will be completed and the findings submitted to the EPA. The Academy requests that the final permit provide for the consideration of the results of any such flow study in the calculation of permit limitations, either through a permit modification or amendment."

RESPONSE A1:

If the results of a flow study indicate that the 7Q10 flow of the receiving water is higher than zero, this would be considered new information pursuant to 40 CFR 122.62 (a)(2), which could be used to support a request for permit modification.

COMMENT A2:

Hardness Based Copper Limitations

"The copper limitations in the draft permit have been modified from the 2003 permit to reflect the elevated hardness documented in the plant effluent. The Academy appreciates the EPA's willingness to take into account this site specific information.

Pages 8 and 9 of the Fact Sheet indicate that a hardness value of 130 mg/L was used, but do not include information regarding the calculation of that value. The Academy has been unable to recreate the EPA's calculation of effluent hardness from the results of toxicity testing it provided from 2005 to the present. Using hardness data from 2005 to 2010, the Academy calculates a median hardness for plant effluent of 150 mg/L. This would yield criteria of chronic and acute exposure of 12.7 and 19.7 ug/L respectively, and correspond to recoverable copper effluent limitations of 13.2 ug/L monthly average and 20.2 ug/L maximum daily.

Use of hardness data from this time period is consistent with the time period from which analytical data for other parameters was used in the calculation of effluent limitations. Additionally, there have been no changes in plant operations or the quality of the public water supply between 2005 and the present that would warrant the exclusion of any data. The Academy therefore requests that the EPA incorporate all of the data from 2005 to the present into its hardness calculations and recalculate the copper limitations accordingly."

RESPONSE A2:

EPA agrees that using hardness values from 2005 to 2010 is appropriate in deriving the copper limit. The relevant reported hardness values for that time period are shown below:

Test Date	Hardness (mg/l)
5/9/2005	150
8/8/2005	160
5/8/2006	170
8/14/2006	140
5/15/2007	120
8/14/2007	180
5/13/2008	120
8/12/2008	180
5/12/2009	130
8/4/2009	120
5/11/2010	130
8/17/2010	160
Median	145

Based upon this analysis, the median hardness for the effluent is 145 mg/l. This would yield **total recoverable copper** effluent limitations of **13 ug/L average monthly** and **20 ug/L maximum daily**. In addition, it was confirmed that this slight increase in the copper limits would remain protective of downstream marine waters, as described in section VI. C. 6 of the fact sheet.

Correspondingly, using 145 mg/l hardness would also affect the lead limit. The resulting **total recoverable lead** effluent limitation would be **5 ug/L average monthly**.

These revised limitations have been included in the final permit.

The calculations for both the copper and lead limits are provided below.

Copper

The limits for copper are calculated based on EPA's National Recommended Water Quality Criteria: 2002 with a hardness of 145 mg/l and a dilution factor of 1, as described below:

Acute Criteria (dissolved) = $\exp\{m_a[\ln(\text{hardness})] + b_a\}$ (CF)

Where: m_a = pollutant-specific coefficient (acute)
b_a = pollutant-specific coefficient (acute)
hardness = 145 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor used to convert total recoverable to dissolved

For calculation of acute limit for copper:

m_a = 0.9422
b_a = - 1.7
CF = 0.96

Acute Criteria (dissolved) = $\exp\{0.9422[\ln(145)] - 1.7\}$ (0.96) = 19 ug/l

Dilution Factor = 1
Effluent Limitation = 1 x 19 ug/l = 19 ug/l (dissolved)
Total Recoverable = 19 / CF = 19 / 0.96 = 20 ug/l

Therefore, the **maximum daily** limitation for total recoverable copper is **20 ug/l**.

Chronic Criteria (dissolved) = $\exp\{m_c[\ln(\text{hardness})] + b_c\}$ (CF)

Where: m_c = pollutant-specific coefficient (chronic)
b_c = pollutant-specific coefficient (chronic)
hardness = 145 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor used to convert total recoverable to dissolved metal

For calculation of chronic limit for copper:

m_c = 0.8545
b_c = - 1.702
CF = 0.96

Chronic criteria (dissolved) = exp{0.8545[ln(145)] - 1.702} (0.96) = 12 ug/l

Dilution Factor = 1
Effluent Limitation = 1 x 12 ug/l = 12 ug/l (dissolved)
Total Recoverable = 12 / CF = 12 / 0.96 = 13 ug/l

Therefore, the **average monthly** limitation for total recoverable copper is **13 ug/l**.

Lead

The limits for lead are calculated based on EPA's National Recommended Water Quality Criteria: 2002, using a hardness of 145 mg/l in the conversion factor calculations and a dilution factor of 1.

Chronic Criteria (dissolved) = $\exp\{m_c[\ln(\text{hardness})] + b_c\}$ (CF)

Where: m_c = pollutant-specific coefficient (chronic)
b_c = pollutant-specific coefficient (chronic)
hardness = 145 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor used to convert total recoverable to dissolved metal

For calculation of chronic limit for lead:

m_c = 1.273
b_c = - 4.705
CF = 1.46203 – [ln(hardness)(0.145712)] = 0.737

Chronic limit for lead (dissolved) = exp{1.273[(ln(145)] – 4.705} (0.737) = 3.76 ug/l

Dilution Factor = 1
Effluent limitation = 1 x 3.76 = 3.76 ug/l (dissolved)
Total Recoverable = 3.76 / CF = 3.76 / 0.737 = 5.1 ug/l

Therefore, the **average monthly** limitation for total recoverable lead is **5 ug/l**.

COMMENT A3:

Site Specific Criteria for Copper

"The copper limitations proposed in the Draft NPDES Permit were developed using the EPA's National Recommended Water Quality Criteria. The Massachusetts Surface Water Quality Standards provide that permit limitations for toxic pollutants shall be established using site specific criteria if the EPA limitations are determined

to be invalid due to site-specific considerations, provided that these do not exceed safe exposure limits established by toxicity testing. The Massachusetts Department of Environmental Protection (MA DEP) has noted that the application of the EPA Water Quality Criteria in certain cases results in extremely stringent copper limitations. MA DEP has acknowledged that such limitations are often more stringent than necessary to protect water quality, and are extremely difficult for many treatment facilities to comply with. In order to address this problem, MA DEP has established site specific criteria for copper of 18.1 ug/L chronic exposure and 25.7 ug/L acute exposure for many watersheds in Massachusetts. MA DEP is in the process of evaluating site specific criteria for the Parker River watershed and previously informed the Academy that these criteria would be used for development of effluent permit limitations for the Academy's NPDES permit.

Whole Effluent Toxicity (WET) testing has been completed in May and August of each year for the Academy's permitted discharge since 2005. Both the LC-50 and NOEC limitations of 100 % survival were met in all but one test period, which was believed to be an anomaly. During this same time period, effluent copper concentrations ranged from 0 to 38.5 ug/L, with an average of 12.64 ug/L. The highest concentration occurred in May 2010 when WET test results showed 100 percent survival under both acute and chronic exposure test conditions. The results of the Academy's WET testing demonstrate that copper concentrations in the range seen in the treatment plant effluent since 2005 under existing treatment capability meet safe exposure limits. Site specific criteria as established by the MA DEP are therefore appropriate for this discharge.

The Fact Sheet acknowledges that MA DEP is considering a site specific copper limit for the Academy's discharge and indicates that a permit modification may be issued once MA DEP approves such a limit. The Academy believes that a provision should be included in the final permit that states that any site-specific copper criteria that may be approved by MA DEP for the Academy's discharge will be used to calculate the effective permit limits for copper immediately upon approval by MA DEP. The inclusion of such a provision would conserve the time and resources necessary for EPA to undertake a permit modification."

RESPONSE A3:

EPA is unable to insert a provision into a permit that would allow an automatic change to an effluent limit based on a future change to a water quality criterion. First, state water quality standards adopted and submitted to EPA after May 30, 2000 may not be used as the basis for NPDES permits until they are approved by EPA. Second, even following EPA approval, the application of the approved criteria must be evaluated on a case-by-case basis, a process required in a permit modification or reissuance.

COMMENT A4:

Source of Copper/Removal Feasibility

"Aside from the technical issues regarding development of water quality criteria described in previous comments, the Academy believes that effluent permit limitations for parameters that do not originate from operations of the Governor's Academy are unfair and inappropriate. The source of the copper detected in the effluent from the wastewater treatment plant is the public water supply from the town of Byfield. The most recent Byfield Water District Water Quality Report shows a 90th percentile value for copper of 130 ug/L with a range of 34 ug/L to 370 ug/L. This water is used in Academy operations and discharged to the wastewater treatment plant where removal to 9.3 ug/L is necessary to meet current permit limitations.

While substantial copper removal is being achieved through the adherence of copper to solids in the activated sludge process, consistent compliance with existing permit limitations has not been possible. The Academy believes that it will be unable to consistently comply with the slightly less stringent copper limitations proposed in the Draft NPDES Permit as well. The treatment plant was not designed to remove copper, and a technology capable of removing copper to EPA National Recommended Water Quality Criteria derived limitations has not been identified.

The Copper Optimization Report submitted in 2006 proposed ultrafiltration as a removal technology, however, subsequent research has shown that this method will not remove the copper remaining after activated sludge treatment to concentrations lower than that already achieved by membrane filtration. Any copper not adhering to activated sludge particles is in the soluble form and as such would not be removed by filtration, regardless of how small the pore size is. Given the extremely high cost of rebuilding the treatment plant to incorporate this technology and the lack of improvement in effluent water quality it would offer, ultrafiltration is no longer recognized as a viable option for copper removal. Because the Academy is not generating copper as a pollutant in its discharge and a technology to remove copper to existing or draft permit limitations has not been identified, the Academy believes that the requirement to meet the copper limitations proposed in the Draft Permit is unreasonable."

RESPONSE A4:

The copper limitations in the 2003 permit and the 2011 draft permit are water quality-based limits. As such, they are not based upon the cost or feasibility of removal technology used at the plant. The details of the 2006 Copper Optimization Report, including the possibility of using ultrafiltration, were included in the fact sheet for documentation purposes and EPA acknowledges that ultrafiltration may not be a viable option for further copper removal at this facility. Because of the reasonable potential for the discharge of copper to cause or contribute to an exceedance of the current water quality criteria, the copper limits will remain in the final permit. As discussed in the

response to Comment A3, any revised and EPA-approved water quality criteria will be used as the basis for future permit actions.

COMMENT A5:

Fecal Coliform Limitations

"The Draft NPDES Permit includes a reduced maximum daily limitation for fecal coliform bacteria of 28 cu/100 ml. The rationale for this reduction in permit limitations provided in the Fact Sheet is based on the new criteria for fecal coliform for Class SA receiving waters designated for shellfishing. The unnamed tributary which receives the treatment plant discharge enters the Mill River at mile point 3.5. MA DEP has classified the Mill River as a Class B water from milepoint 9.6 to 2.3, and the receiving water for the discharge is listed as a Class B water on the cover page of the Fact Sheet. The Mill River is classified as a Class SA water from milepoint 2.3 to 0, and it enters the Class SA portion of the Parker River. According to the Massachusetts Division of Marine Fisheries, however, both the Mill River and the Parker River to 1.95 nautical miles downstream of the Mill River discharge are classified as prohibited and are closed to the taking of shellfish. Because its discharge is not into or near Class SA waters which are approved for shellfishing, the Academy does not believe that its discharge should be held accountable to these new criteria and accordingly requests that the fecal coliform limitations in the permit be eliminated or revised."

RESPONSE A5:

Under the Massachusetts Water Quality Standards, a shellfishing designation for a receiving water makes that receiving water subject to more stringent regulation regardless of whether shellfishing areas in the receiving water are approved for use by the Massachusetts Division of Marine Fisheries. Although the facility discharges into a Class B receiving water, the limits must be protective of the Class SA waters located a short distance downstream. As a result, the limit will remain as described in the draft permit and fact sheet.

COMMENT A6:

Enterococci Limitations

"The Fact Sheet references 314 CMR 4.05(4)(a)(4) and the protection of recreational uses including swimming areas as the rationale for the addition of enterococci limitations. There are approximately 3.5 nautical miles between the treatment plant discharge into the Mill River and the terminus of the Mill River into the Parker River. There are no beaches or locations where landing of a boat is practical along this stretch of river. Protection of recreational uses in the Mill River through the addition of an enterococci permit limitation is therefore unwarranted. The Academy therefore requests that the enterococci

limitations be eliminated or revised to take into account the limited recreational uses made of the receiving water."

RESPONSE A6:

Section 314 CMR 4.05(4)(a)(4) which is referenced in the Fact Sheet and in the comment above states the following:

"*At bathing beaches as defined by the Massachusetts Department of Public Health in 105 CMR 445.010, no single enterococci sample taken during the bathing season shall exceed 104 colonies per 100 ml, and the geometric mean of the five most recent samples taken within the same bathing season shall not exceed a geometric mean of 35 enterococci colonies per 100 ml. In non bathing beach waters and bathing beach waters during the non bathing season, no single enterococci sample shall exceed 104 colonies per 100 ml and the geometric mean of all samples taken within the most recent six months typically based on a minimum of five samples shall not exceed 35 enterococci colonies per 100 ml.*"

According to this standard, waters with or without bathing beaches are subject to identical enteroccoci limitations for the protection of the designated uses. In addition, the implementation of criteria to protect primary contact recreational uses is not predicated on the presence of a designated bathing beach. In other words, even in the absence of designated bathing beaches, the designated uses of the receiving water must still be protected. As a result, the limit will remain as described in the draft permit and fact sheet.

COMMENT A7:

Enterococci Removal Feasibility

"The treatment plant utilizes a UV disinfection system and there is minimal technical data available regarding the efficiency of UV removal of enterococci. Additionally, there is no history of monitoring data for this parameter in the treatment plant effluent. Without knowing what current concentrations are and the efficiency of the UV system in removing them, the Academy cannot be confident that it will be able to meet the proposed permit limitations. If the final permit should include enterococci limitations, even though there are no beaches or bathing areas in the Mill River, the Academy requests that the final permit include a two year schedule for compliance. During this period, the Academy would conduct weekly monitoring of enterococci. Within 12 months of the effective date of the permit, the Academy would submit a report to EPA summarizing its findings. Should the Academy determine that compliance with the proposed permit limitations cannot be consistently achieved, the report would include an evaluation of disinfection upgrades necessary to meet the limitations. The report would also include a proposed schedule for implementation of any necessary treatment upgrades to be completed within 12 months of the filing of the report. Should completion of such

upgrades within 12 months be determined to be infeasible, the Academy would seek an extension of the compliance schedule."

RESPONSE A7:

Pursuant to 40 CFR Part 122.47, a permit may include a schedule of compliance when appropriate. In an EPA Administrator's Decision documented in the memorandum Order Denying Modification Request With respect to the Administrators Decision in Star-kist Carib, Inc (NPDES Appeal No.88-5). The Administrator determined that compliance schedules are allowed in permits for water quality-based effluent limitations based on water quality standards adopted after July 1, 1977, but only if the state has clearly indicated in its water quality standards or implementing regulations that it intends to allow them. (see NPDES Permit Writers' Manual pages 9-8 and 9-9 for a further discussion of EPA guidance regarding compliance schedules in permits)

The Massachusetts Surface Water Quality Standards at 314CMR 4.03(1)(b) allow compliance schedules in permits where appropriate and state that "the purpose of a schedule of compliance generally is to afford a permittee adequate time to comply with one or more permit requirement or limitations that are based on new, newly interpreted or revised water quality standards…."

The entrococcus effluent limitations are based on new Massachusetts water quality criteria, approved by EPA on September 19, 2007, so a compliance schedule may be included in the permit pursuant to EPA and MassDEP regulations and guidance. EPA and MassDEP have agreed that the schedule proposed by the permittee is appropriate and have accordingly included this schedule in the final permit.

Specifically, the compliance schedule in the final permit requires the Academy to conduct enterococcus sampling for 12 months following the effective date of the permit at the frequency required by the permit (1/week) and to submit a report to EPA and MassDEP at the end of those 12 months describing the effectiveness of the existing disinfection system in achieving the limits and making a recommendation regarding any improvements to the disinfection system necessary to achieve the limits. If the Academy determines that compliance with the proposed permit limitations cannot be consistently achieved by the existing disinfection facilities, the report should include a schedule for completing the necessary improvements and attaining the limits within 12 months (i.e., within 24 months following the effective date of the permit). If the permittee determines no upgrades are necessary in order to comply with the limitations, the limitations will become effective one month following the submittal of the report (i.e. 13 months following the effective date of the permit).

It should be noted that the compliance schedule is only for achieving the enterococcus limits. The fecal coliform limits are effective upon the effective date of the permit.

COMMENT A8:

Inflow and Infiltration Control Plan

"Part I.C.3 of the draft permit requires the preparation and submittal of an Inflow/Infiltration Control Plan within six months of the effective date of the permit. Since 2005 the Academy has been submitting annual Infiltration and Inflow Reports which describe all actions taken during the previous year, as well as a running tally of all inspections and corrective action completed for all components of the collection system during previous years. It seems redundant to develop and submit a Control Plan, given that an Inflow/Infiltration reduction program has been in place and reported on annually for the last six years. The Academy requests that this requirement be removed from the permit."

RESPONSE A8:

The draft permit requires that the Inflow/Infiltration Control Plan be *updated* and submitted to EPA and MassDEP within six months of the effective date of the permit. This requirement is assuming that a Control Plan already exists but may not be up-to-date. If the Control Plan is already up-to-date, simply submit it in a timely fashion. If it is not up-to-date, it must be updated and submitted.

COMMENT A9:

Fact Sheet Corrections

"There were several items in the Fact Sheet accompanying the draft permit that are incorrect. While the Academy realizes that it is not customary procedure to revise Fact Sheets, we note the following corrections for the record.

a. The treatment plant was designed and installed to treat a maximum flow of 100,000 gpd. The design capacity of 52,000 gpd identified in the Fact Sheet and Draft Permit actually relates to the permitted discharge and not the treatment capacity of the plant.
b. Thickened sludge from the wastewater treatment plant is hauled off site to the Ipswich Wastewater Treatment Plant, not the Fitchburg or Upper Blackstone plants.
c. Wastewater is discharged from six pump stations to the collection system and treatment plant rather than five pump stations.
d. The Copper Optimization Report submitted in 2006 and mentioned in the Fact Sheet proposed ultrafiltration as a means of meeting permit copper limitations. Research conducted during the last membrane replacement revealed that this technology would not be able to remove copper to levels lower than that already achieved by membrane filtration. Given the extremely high cost of rebuilding the

treatment plant to incorporate this technology and the lack of improvement in effluent water quality it would offer, this is no longer recognized as a viable option.

e. The Fact Sheet states that the range of average copper concentrations since 2009 has been 0 to 25 ug/L, with an average concentration of 12.35 ug/L. The data table provided in Attachment B to the Fact Sheet, however, shows these copper calculations resulting from all data since 2005."

RESPONSE A9:

The fact sheet is typically not changed because it serves to explain the basis for the draft permit and is not a document that is required to be prepared for a final permit issuance. However, these comments are now part of the administrative record. We would note that the description of copper concentrations in part (e.) above is not an error. The sentence is indeed describing the more recent data since the beginning of 2009, which does range from 0 to 25 ug/L with an average of 12.35 ug/L.

B. COMMENTS FROM THE COMMONWEALTH OF MASSACHUSETTS DIVISION OF MARINE FISHERIES

COMMENT B1:

"The Division of Marine Fisheries (*MarineFisheries*) has reviewed the draft NPDES renewal permit (MA0030350) that allows the Governor Dummer Academy to discharge secondary treated domestic wastewater effluent from their wastewater treatment facility into the receiving waters of an intermittent freshwater tributary which leads to the SA designated receiving waters of the tidal portion of the Mill River (Parker River Watershed, MA91-09). The Mill River flows into the Parker River. *MarineFisheries* requests the permit be modified for reasons described below.

MarineFisheries has identified shellfish growing areas affected by this discharge that will allow the harvest of shellfish. We wish to remain aware of potential sources of fecal coliform bacteria that could compromise the protection of public health. To assist with the management of this shellfish growing area, *MarineFisheries* requests to be notified within twelve hours when a permit excursion for fecal coliform or a plant failure occurs. We request the notification be included under Part E.1.d "Monitoring and Reporting" of the permit and be sent to the following location:

Division of Marine Fisheries
Shellfish Management Program
30 Emerson Avenue, Gloucester, MA 01930
phone number: (978) 282-0308 extension 160
email address: shellfish.newburyport@state.ma.us

MarineFisheries appreciates the opportunity for review. If you have any questions or require additional information please contact Dr. Jack Schwartz at our Gloucester field station (978.282.0308x122)."

RESPONSE B1:

As requested by the commenter, the notification period for a permit excursion or plant failure has been changed from 24 hours to 12 hours and more detailed contact information has been included.