

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),

Harvard University

is authorized to discharge from a facility located at

**Blackstone Steam Plant
46 Blackstone Street
Cambridge, MA 02139**

to the receiving water named the Charles River, a Class B water, in accordance with effluent limitations, monitoring requirements, and other conditions set forth herein.

This permit shall become effective on the first day of the calendar month following sixty (60) days after signature.

This permit expires at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on May 18, 2007.

This permit consists of 7 pages in Part I including effluent limitations, monitoring requirements, and state permit conditions, and 25 pages in Part II, the Standard Conditions.

Signed this 22nd day of April , 2014.

/S/SIGNATURE ON FILE

Ken Moraff, 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. Effluent Limitations and Monitoring Requirements

1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge reverse osmosis reject water from outfall serial number 002 . Such discharges shall be limited and monitored by the permittee as specified below:				
<u>EFFLUENT CHARACTERISTIC</u>	<u>EFFLUENT LIMITS</u>		<u>MONITORING REQUIREMENTS</u>	
<u>PARAMETER</u>	<u>AVERAGE MONTHLY</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE ¹ TYPE</u>
Flow ²	Report MGD	0.15 MGD	Continuous	Recorder
pH Range ³	6.5– 9.0 s.u.		1/Week	Grab
Dissolved Oxygen ³	Not less than 5.0 mg/l		1/Week	Grab
Nitrogen, Total Ammonia	Report ug/l	Report ug/l	1/Month	Grab
Total Suspended Solids	30 mg/l	45 mg/l	1/Month	24-Hour Composite ⁴
Total Suspended Solids	Report lbs/day	Report lbs/day	1/Month	24-Hour Composite ⁴
Priority Pollutant Scan - VOCs ⁵	Report ug/l	Report ug/l	1/Year ⁵	24-Hour Composite ⁴

Footnotes:

1. Sampling shall be conducted at some point prior to discharge to Outfall 002 and prior to mixing with any other stream. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP. 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.
2. The flow shall be continuously measured and recorded using a flow meter.
3. Requirement for State Certification.
4. A 24-hour composite sample will be comprised of at least 1 grab sample taken each hour during periods of discharge.

5. A priority pollutant (PP) scan for volatile organic compounds (VOCs) shall be conducted during the first three full calendar years of this permit, during the calendar quarter of April to June. All results of this scan shall be reported as a total and the report, with all lab results, shall be submitted with the July Discharge Monitoring Report (DMR) which is due by August 15th. The permittee shall analyze only for parameters 1V through 31V of EPA's Form 2C application.

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 be in the range of 6.5 to 9.0 standard units and not more than 0.5 s.u. outside of the naturally occurring range.
- c. The discharge shall not cause objectionable discoloration of the receiving waters.
- d. The discharge shall contain neither a visible oil sheen, foam, nor floating solids at any time.
- e. The results of sampling for any parameter above its required frequency must also be reported.
- f. The discharge of multi-media backwash water, ion exchange regenerant wastewater, or wastewater resulting from the cleaning of the RO filtration system through this outfall is prohibited.

Part I.A.

2. 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.

3. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the 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.

4. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

- a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - (1) One hundred micrograms per liter (100 ug/l);
 - (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
 - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or
 - (4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f).
- b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - (1) Five hundred micrograms per liter (500 ug/l);
 - (2) One milligram per liter (1 mg/l) for antimony;
 - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or

- (4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f).
 - c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.
5. This permit may be modified, or revoked and reissued, on the basis of new information in accordance with 40 CFR §122.62.

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

C. 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 electronic attachments to the DMRs. 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 (OES04-1)
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 attachments 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 (including those in Part I.D) shall be submitted to the State at the following address:

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention (Industrial)
Northeast Regional Office
205B Lowell Street
Wilmington, MA 01887

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. 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 an NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

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PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

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

- a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.
- b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both.
- c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

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

2. Permit Actions

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

3. Duty to Provide Information

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

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4. Reopener Clause

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

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

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

5. Oil and Hazardous Substance Liability

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

6. Property Rights

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

7. Confidentiality of Information

- a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words “confidential business information” on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).
- b. Claims of confidentiality for the following information will be denied:
 - (1) The name and address of any permit applicant or permittee;
 - (2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).
- c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

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8. Duty to Reapply

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

9. State Authorities

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

10. Other Laws

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

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

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

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

b. Bypass not exceeding limitations

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

c. Notice

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

d. Prohibition of bypass

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

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

5. Upset

- a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

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

- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
 - (4) The permittee complied with any remedial measures required under B.3. above.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.
- c. Records of monitoring information shall include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.
- d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.
- e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by

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

2. Inspection and Entry

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

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

- a. Planned Changes. The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:
 - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
 - (2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
 - (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. Anticipated noncompliance. The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- c. Transfers. This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

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

- d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.
 - (2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
 - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. Twenty-four hour reporting.
- (1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
 - (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
 - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
 - (b) Any upset which exceeds any effluent limitation in the permit.
 - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)
 - (3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

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- f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
 - g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.
 - h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.
2. Signatory Requirement
- a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)
 - b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.
3. Availability of Reports.

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

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

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

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

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

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

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

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

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

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

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

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

Construction Activities - The following definitions apply to construction activities:

- (a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.
- (b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.
- (c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

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

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

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

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

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

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

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

Discharge of a pollutant means:

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

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

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

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

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

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

EPA means the United States “Environmental Protection Agency”.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- (a) From which there is or may be a “discharge of pollutants”;
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source”; and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site”.

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

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

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

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

NPDES means “National Pollutant Discharge Elimination System”.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- (1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);
- (2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and
- (3) satisfies at least one of the following criteria:
 - (i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
 - (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
 - (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Waters of the United States means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;
- (b) All interstate waters, including interstate “wetlands”;
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

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

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

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

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

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

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

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

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

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Range land is open land with indigenous vegetation.

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

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(January, 2007)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl ₂	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

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TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M ³ /day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH ₃ -N	Ammonia nitrogen as nitrogen
NO ₃ -N	Nitrate as nitrogen
NO ₂ -N	Nitrite as nitrogen
NO ₃ -NO ₂	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

NPDES PART II STANDARD CONDITIONS
(January, 2007)

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

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

FACT SHEET

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

NPDES PERMIT NUMBER: MA0004901

PUBLIC NOTICE START AND END DATES: February 19, 2014 – March 20, 2014

NAME AND MAILING ADDRESS OF APPLICANT:

Harvard University
46 Blackstone Street
Cambridge, MA 02139

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Blackstone Steam Plant
46 Blackstone Street
Cambridge, MA 02139

RECEIVING WATER: Charles River
(USGS Hydrologic Code #01090001 – Charles River Basin)

RECEIVING WATER CLASSIFICATION: Class B - Warm water fishery,
Restrictions: CSO

LATITUDE: 42° 21' 50" N **LONGITUDE:** -71° 6' 59" W

SIC CODE: 8221 – Industry: Colleges and Universities

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Figure 1 - Facility Location and Outfalls

Figure 2 - Water Treatment Flow Schematic

Figure 3 - Site Layout

Attachment A – Discharge Monitoring Data

1.0 PROPOSED ACTION, TYPE OF FACILITY AND DISCHARGE LOCATION

The Blackstone Steam Plant, or the “Facility”, is owned and operated by Harvard University, or “Harvard”, the permittee. This Facility is primarily operated to provide heating for Harvard’s campus buildings. In addition, the Facility supplies process steam to on-campus academic and research laboratories. The current permit, which was issued in 2007, authorized the discharge of up to 0.3 MGD of non-contact cooling water (NCCW) and 0.15 million gallons per day (MGD) of reverse osmosis reject (ROR) water to the Charles River through Outfalls 001 and 002, respectively.

As required by the 2007 permit, all NCCW flows through Outfall 001 as well as the intake of cooling water from the Charles River were terminated as of the end of December of 2008 as described below. Therefore, the reissued permit will only authorize the discharge of the ROR water from Outfall 002, which is actually the former cooling water intake structure (CWIS) operated by the permittee. See **Figure 1** for a map of the facility and the outfalls, which shows inactive Outfall 001 and the intake previously associated with it, which is now designated as Outfall 002.

During the last permit term, the permittee initiated a boiler replacement project. The existing boiler was replaced with a more efficient boiler and installation of a five (5) megawatt (MW) steam turbine and generator. The permittee also installed a closed loop cooling system with a rooftop “finfan” cooler to dissipate heat that eliminated the need to operate the previous once-through non-contact cooling water loop. The new steam turbine uses a non-condensing back pressure system with exhaust steam directly supplying Harvard’s central heating supply. Up to five (5) MW of electrical power is generated as a result of the operation of this system and all of this is used within Harvard’s campus. As part of this boiler replacement project, the existing steam plant demineralization system, which employed an ion exchange system, was upgraded with the addition of two (2) reverse osmosis (RO) units. At that time, this upgrade required the installation and operation of a new outfall to the Charles River, Outfall 002, for the discharge of RO reject (ROR) water which would be generated by these RO units.

2.0 DESCRIPTION OF TREATMENT SYSTEM AND DISCHARGES

2.1 Outfall 002 – Reverse Osmosis Reject Water

As noted above, the installation of two RO units was required to meet the high purity demineralized water requirements of the new boiler and steam turbine system. A schematic diagram of the modified demineralization system is attached as **Figure 2** which shows that boiler makeup is obtained from the City of Cambridge municipal distribution system. The demineralization treatment train consists of the following components:

- Multi-media filtration, to remove any suspended solids contained in the raw water makeup supply;
- Water softening (existing ion exchange units), to remove dissolved salts and minerals contained in the raw water supply;
- Dechlorination (sodium bisulfite addition), to remove chlorine from the raw water makeup supply; and
- Reverse Osmosis Filtration, to provide high purity demineralized water for boiler makeup.

The above treatment train generates three waste streams:

- Multi-media backwash water;
- Ion exchange regenerant wastewater; and
- RO reject water.

Management of these waste streams is described below.

2.2 Multi-Media Backwash Water

Periodic backwashing of the multi-media filters will be required to remove accumulated solids and to prevent filter clogging. When required, the filters will be backwashed for approximately 20 minutes at a flow rate of approximately 350 gallons per minute (gpm). Backwash water will contain elevated levels of suspended solids. This intermittent waste stream will be directed to the City of Cambridge sewer system for subsequent treatment at the Massachusetts Water Resources Authority's (MWRA) Deer Island Wastewater Treatment Facility. Discharge of this backwash water is permitted under Harvard University's existing industrial user permit. This NPDES permit does not authorize the discharge of this backwash water to the Charles River.

2.3 Regenerant Wastewater

Water softening, using ion exchange, requires periodic regeneration of cation exchange resins. Resin regeneration is accomplished using sodium chloride. Under current operations, the regenerant waste stream from the cation and anion exchange beds is treated using an in-line pH adjustment system. Following pH adjustment, the neutralized regenerant waste stream is discharged to the City of Cambridge sewer system. Discharge of this wastewater is permitted under Harvard University's existing industrial user permit with the MWRA and will not be authorized by this NPDES permit.

2.4 Reverse Osmosis Reject Water

The flow of ROR water was originally estimated by the permittee at a maximum of 0.15 MGD and discharged to the Charles River through Outfall 002, which had previously

functioned as the facility's CWIS. This new outfall pipe was installed through the existing intake tunnel and equipped with a single port, high velocity discharge nozzle. The high velocity discharge nozzle provides for rapid initial dilution of the discharge to promote strong near-field mixing of the effluent under all river flow conditions. The flow limit represents the maximum flow rate of reject water that would be generated by the operation of the two (2) RO units. The permittee has only installed and operated one RO unit but may install a second RO unit in the future which will primarily be a backup to the existing unit. Depending on whether there is additional clean water demand during the next permit term, the second RO unit could possibly be operated simultaneously with the existing unit for certain periods of time.

A summary of recent Discharge Monitoring Reports (DMRs) data may be found in **Attachment A**. These data comprise the period between January 2009 and June 2013 which is referred to as the "monitoring period" in this fact sheet.

3.0 RECEIVING WATER DESCRIPTION

The Massachusetts Surface Water Quality Standards, found at 314 CMR 4.00, classify this segment of the Charles River, which runs from the Watertown Dam to the Boston University Bridge in Boston (Segment MA72-36), as a Class B water (314 CMR 4.00)¹.

Class B waters are described in the SWQS [314 CMR 4.05(3)(b)] as "designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. Where designated in 314 CMR 4.06, they shall be suitable as a source of public water supply with appropriate treatment ("Treated Water Supply") and suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value." A warm water fishery is defined in the MA SWQS as "waters in which the maximum mean monthly temperature generally exceeds 68° F (20° C) during the summer months and are not capable of sustaining a year-round population of cold water stenothermal aquatic life" (314 CMR 4.02).

Sections 305(b) and 303(d) of the CWA require that States complete a water quality inventory and develop a list of impaired waters. Specifically, Section 303(d) of the CWA requires States to identify those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of a Total Maximum Daily Load (TMDL) for each pollutant that is prohibiting a designated use(s) from being attained. In Massachusetts, these two evaluations have been combined into an Integrated List of Waters. The integrated list format provides the status of all assessed waters in a single, multi-part list.

This segment of the Charles River does not always meet the state water quality standards prescribed for Class B waters, especially after wet weather. This segment of the Charles

¹ <http://www.mass.gov/eea/docs/dep/water/laws/i-thru-z/tblfig.pdf>

River is listed on the *Final Massachusetts Year 2012 Integrated List of Waters*² as a Category 5 waterbody, which are those classified as “Waters requiring a TMDL”. This segment is impaired for chlorophyll-*a*, DDT, *Escherichia coli*, fishes bioassessments, nutrient/eutrophication biological indicators, oil and grease, dissolved oxygen, PCB in fish tissue, total phosphorus, Secchi disk transparency, and sediment bioassays (acute toxicity). This segment also contains non-native aquatic plants and may act as a fish passage barrier and have other flow regime alterations, although these last three items are non-pollutant impairments for which a Total Maximum Daily Load (TMDL) is not required.

MassDEP is required under the CWA to develop a TMDL for waterbodies that are identified as impaired. A TMDL is essentially a pollution budget designed to restore the health of a waterbody. A TMDL first identifies the source(s) of the pollutant from direct and indirect discharges in order to then determine the maximum amount of pollutant (including a margin of safety) that can be discharged to a specific waterbody while maintaining water quality standards for designated uses. It then outlines a plan to meet the goal. In 2007, the MassDEP finalized the Lower Charles River Basin TMDL for Phosphorus and a Pathogen TMDL. The sources of phosphorus and pathogens are mainly from stormwater, combined sewer overflows (CSO), illicit sanitary sewage discharges, and discharges from upstream Publicly Owned Treatment Works (POTWs). Fecal coliform and total phosphorus were not detected in sampling conducted for this permit application and these parameters are not expected to be present in the discharge. Therefore, no specific requirements have been included in this permit to meet the TMDL requirements.

4.0 LIMITATIONS AND CONDITIONS

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

4.1 Permit Basis: Statutory and Regulatory Authority

4.1.1 *General Requirements*

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. This draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and any applicable State regulations. The regulations

² <http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf>

governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136.

When developing permit limits, EPA must consider the most recent technology-based treatment and water quality-based requirements. Subpart A of 40 CFR Part 125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA-promulgated effluent limitations and case-by-case determinations of effluent limitations under Section 402(a)(1) of the CWA. EPA is required to consider technology and water quality-based requirements as well as all limitations and requirements in the existing permit when developing permit limits.

4.1.2 Technology-Based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (see 40 CFR §125 Subpart A) to meet best practicable control technology currently available (BPT) for conventional pollutants and some metals, best conventional control technology (BCT) for conventional pollutants, and best available technology economically achievable (BAT) for toxic and non-conventional pollutants. There are no effluent limitations guidelines which are applicable to this facility.

In general, the statutory deadline for non-POTW, technology-based effluent limitations must be complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989 (see 40 CFR §125.3(a)(2)). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit.

In the absence of published technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1)(B) of the CWA to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ).

4.1.3 Water Quality-Based Requirements

Water quality-based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water quality standards (WQS). See Section 301(b)(1)(C) of the CWA.

Receiving water requirements are established according to numerical and narrative standards adopted under state law for each water quality classification. When using chemical-specific numeric criteria to develop permit limits, both the acute and chronic aquatic-life criteria, expressed in terms of maximum allowable in-stream pollutant concentration, are used. Acute aquatic-life criteria are considered applicable to daily time periods (maximum daily limit) and chronic aquatic-life criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed

under 40 CFR §122.44(d)(1) and are implemented under 40 CFR §122.45(d). The Region has established, pursuant to 40 CFR §122.45(d)(2), a maximum daily limit and average monthly discharge limits for specific chemical pollutants.

A facility's design flow is used when deriving constituent limits for daily and monthly time periods as well as weekly periods where appropriate. Also, the dilution provided by the receiving water is factored into this process where appropriate. Narrative criteria from the state's water quality standards are often used to limit toxicity in discharges where (a) a specific pollutant can be identified as causing or contributing to the toxicity but the state has no numeric standard; or (b) toxicity cannot be traced to a specific pollutant.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal WQS. The permit must address 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. See 40 CFR §122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. In determining reasonable potential, EPA considers (a) existing controls on point and non-point sources of pollution; (b) pollutant concentration and variability in the effluent and receiving water as determined from the permit application, Monthly Discharge Monitoring Reports (DMRs), and State and Federal Water Quality Reports; (c) sensitivity of the species to toxicity testing; (d) known water quality impacts of processes on wastewater; and, where appropriate, (e) dilution of the effluent in the receiving water.

WQS consist of three parts: (a) beneficial designated uses for a water body or a segment of a water body; (b) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (c) antidegradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards (MA SWQS), found at 314 CMR 4.00, include these elements. 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. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site-specific criterion is established. The conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain WQS.

4.2 Antibacksliding

A permit may not be renewed, reissued or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of the CWA [see Sections 402(o) and 303(d)(4) of the CWA and 40 CFR §122.44(l)(1 and 2)]. EPA's antibacksliding provisions prohibit the relaxation of permit limits, standards, and conditions except under certain circumstances.

Effluent limits based on BPJ, water quality, and state certification requirements must also meet the antibacksliding provisions found at Section 402(o) and 303(d)(4) of the CWA.

The effluent monitoring requirements for total copper, as described below, have been eliminated from this permit. These actions meet the “new information” exception of the antibacksliding regulations. The results of the monitoring for copper, or “new information”, indicate that effluent levels are consistently not detected.

Regarding pH, the upper end of the pH range has been changed from 8.3 standard units (s.u.) to 9.0 s.u. This change is based on new information that shows that the permittee’s source water from the MWRA is often above 8.3 s.u. and that with the dilution available to the discharge and the high velocity nozzle of the discharge, it would not be expected that the discharge would cause or contribute to a violation of the instream State pH range requirement of 6.5 – 8.3 s.u.

Since all proposed permit conditions, with the exception of total copper and pH are at least as stringent as those of the current permit, the antibacksliding provisions for this permit reissuance are being met.

4.3 Antidegradation

Federal regulations found at 40 CFR Section 131.12 require states to develop and adopt a statewide antidegradation policy which maintains and protects existing instream water uses and the level of water quality necessary to protect the existing uses, and maintains the quality of waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water. The Massachusetts Antidegradation Regulations are found at 314 CMR 4.04. There are no new or increased discharges being proposed with this permit reissuance. Therefore, EPA does not believe that the MassDEP is required to conduct an antidegradation review regarding this permit reissuance.

4.4 State Certification

Under Section 401 of the CWA, EPA is required to obtain certification from the state in which the discharge is located that all water quality standards or other applicable requirements of state law, in accordance with Section 301(b)(1)(C) of the CWA, are satisfied. EPA permits are to include any conditions required in the state’s certification as being necessary to ensure compliance with state water quality standards or other applicable requirements of state law. (See CWA Section 401(a) and 40 CFR §124.53(e).) Regulations governing state certification are set out at 40 CFR §124.53 and §124.55. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR §122.44(d).

5.0 EXPLANATION OF PERMIT'S EFFLUENT LIMITATIONS

Outfall 002

5.1 Flow

The 2007 permit limited the ROR water flow to a daily maximum of 0.15 MGD. This maximum flow reflected the use of two (2) RO units at the facility. Since the permittee uses only one (1) RO unit to prepare its boiler makeup water, the daily maximum flow has ranged from 0.01 to 0.06 MGD for the “monitoring period” of January 2009 to June 2013. As shown in **Figure 2**, the permittee may add a second RO unit in the future which will initially serve as a backup to the existing RO unit. At such time, the permittee will assess whether it may need to operate both RO units simultaneously for periods of time when there may be an increase in make-up water demand. The draft permit continues the daily maximum effluent flow limit of 0.15 MGD.

5.2 Copper

During the monitoring period, all sampling for total copper resulted in readings below the detection level of the test method used. Therefore, monitoring for copper has been eliminated from the permit as the filtration treatment has been shown to reduce any influent levels of copper sufficiently low enough that it is not detected in the RO waste stream.

5.3 pH

The pH range in the 2007 permit was limited to the Class B range of 6.5 to 8.3 s. u. which is the range required by state WQS found at 314 CMR 4.05(3)(b)3. In addition, consistent with the State WQS, the pH shall not be more than 0.5 units outside of the naturally occurring range. During the reporting period for Outfall 002, the effluent pH was in the range of 6.89 to 7.7 s.u. with no violations of the pH range. The draft permit continues to require weekly grab samples for pH and a reporting of the monthly pH range in the DMRs.

The permittee has demonstrated that its source water is often above 8.3 s.u. and that the effluent could not always be within this permitted range without pH adjustment, typically with caustic soda or sulfuric acid. EPA has determined that the upper range of the pH shall be limited at 9.0 s.u. This is the highest level allowed in EPA technology guidelines. EPA expects that the upper limit of the instream State WQS of 8.3 s.u. would still be met, due to the significant amount of dilution available to this discharge once it enters the Charles River as well as the high velocity nozzle discharge which provides for rapid initial mixing of the discharge. The draft permit continues to require weekly grab samples for pH and a reporting of the monthly pH range in the DMRs.

5.4 Total Suspended Solids (TSS)

Since RO systems tend to concentrate the solids of the intake water, the 2007 permit established permit limits of 30 mg/l (monthly average) and 45 mg/l (daily maximum) for total suspended solids (TSS) as well as a monitoring requirement for the mass of TSS discharged. These limits were based on BPJ and are sufficient to meet WQS and to satisfy BCT as described in Section 304(a) of the CWA.

During the monitoring period, the TSS values have consistently been not detected in the effluent. In order to assure that the filtering mechanisms that are used prior to the RO unit are working properly and that suspended solids do not pass through to the effluent in the reject water, the permit limits and monitoring requirements for TSS have been maintained in the draft permit.

5.5 Dissolved Oxygen (DO)

Consistent with the Class B State WQS, this permit has maintained the minimum dissolved oxygen (DO) level of 5.0 mg/l as a permit condition, to be monitored once per month. During the monitoring period, the DO ranged from 5.21 to 13.42 mg/l.

5.6 Total Residual Chlorine (TRC)

Historically, RO reject water discharges have contained low levels of TRC from municipal intake water and chlorine based chemicals which have been used to clean the RO units. The permittee does not perform any cleaning of the RO units as the RO filters are changed out periodically by a vendor who takes the spent filters off-site. The intake water for this RO system is City of Cambridge water, which contains low levels of TRC. The permittee uses sodium bisulfite to remove any residual chlorine prior to the RO units. TRC was not detected in the permittee's reapplication at the detection level of 20 ug/l.

Since all discharges associated with the cleaning of the RO units will be discharged to MWRA's sewer system and the permittee adds sodium bisulfite to the city water to remove any residual chlorine, there has been no TRC requirement established in this permit.

5.7 Ammonia Nitrogen

When RO units are bleached or cleaned with hypochlorite or other chlorine-based compounds, chloramines are created, which in turn results in the reject water containing ammonia. Therefore, quarterly Total Ammonia Nitrogen (TAN) monitoring was required in the 2007 permit because it had not been determined at that time whether the permittee would be cleaning the RO units on site and because the Charles River was impaired for nutrients.

The permittee has its RO filters taken off site for cleaning and does not perform any cleaning operations on site that would result in any wastewater discharge to Outfall 002.

The discharge of wastewaters to the Charles River from any and all cleaning or backwashing of these RO units has not been authorized by this permit.

During the monitoring period, TAN has consistently been detected mostly in the 1.0 mg/l range, although there was one reading in April of 2011 of 38.7 mg/l. Since some of these readings of TAN are above typical background levels and may contribute to nutrient related impacts in the receiving water, the monitoring requirement has been maintained and increased to monthly in this draft permit.

5.8 Volatile Organic Compounds (VOCs)

In the recent permit application submitted by the permittee, four (4) separate VOCs were detected at low levels as follows:

Chloroform – 4.0 ug/l

Dibromochloromethane – 5.6 ug/l

Bromodichloromethane – 5.6 ug/l

Bromoform – 4.9 ug/l

These VOCs are believed to be present in the intake water and are consistent with disinfection byproducts that occur in drinking water. Although RO filters typically remove such VOCs, they may be appearing in the RO reject stream because very low levels coming through filtration are concentrated in the reject water and end up being detected. In order to assess whether these levels remain low, an annual scan for the first 3 years of the permit has been established in this permit for this class of compounds.

5.9 Stormwater

The site's stormwater collection system was upgraded during the last permit term resulting in all surface runoff being conveyed to a bioswale system that relies on vegetated embankments and a semi-permeable soil system to remove contaminants from stormwater runoff. All roof runoff from the site is conveyed to the intake well downstream of this bioswale. See the Site layout in **Figure 3**. Except for two buildings, all roofs consist of rubber membrane construction: the Blackstone Administration Building (Building 6) is covered with slate shingles; and the on-site garage (Building 12) which has a rubber membrane covered by ½-inch crushed stone. Water that permeates through the soil is collected in a slotted drain line that underlies the bioswale and discharges to the intake well prior to being discharged to the Charles River via a separate storm drain.

The site also includes an oil off-loading pad which is equipped with a 12,500-gallon sump to provide for full secondary containment for delivery tankers. Stormwater entering the sump will be periodically collected and transported off-site for disposal. This measure has eliminated outdoor exposure of rainfall to potential contaminant sources in this area. Under severe storm conditions, the bioswale is also equipped with an overflow to the intake well. This Facility's prior operations as a provider of steam (SIC code 4961) fell

under those stormwater discharges associated with industrial activity which would typically require permit coverage under EPA's multi-sector general permit (MSGP) for storm water. However, such discharges may be exempt from monitoring if the site owner submits a "no exposure" certification. The permittee had previously submitted a "no exposure" certification to EPA and therefore was not require to obtain coverage under the MSGP since it did not discharge storm water associated with industrial activity. Similarly, this permit does not contain any stormwater-related conditions or limits.

6.0 ESSENTIAL FISH HABITAT DETERMINATION (EFH)

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Services (NMFS) if EPA's action or proposed action that it funds, permits, or undertakes, may adversely impact any essential fish habitat such as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity [16 U.S.C. § 1802 (10)]. Adversely impact means any impact which reduces the quality and/or quantity of EFH [50 C.F.R. § 600.910 (a)]. Adverse effects may include those having 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.

EFH is only designated for species for which federal fisheries management plans exist [16 U.S.C. § 1855(b) (1) (A)]. EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. The following is a list of the EFH species and applicable lifestage(s) for the area that includes Massachusetts Bay, to which the Charles River discharges:

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod (<i>Gadus morhua</i>)	X	X	X	X
haddock (<i>Melanogrammus aeglefinus</i>)	X	X		
pollock (<i>Pollachius virens</i>)	X	X	X	X
whiting (<i>Merluccius bilinearis</i>)	X	X	X	X
red hake (<i>Urophycis chuss</i>)	X	X	X	X
white hake (<i>Urophycis tenuis</i>)	X	X	X	X
winter flounder (<i>Pseudopleuronectes americanus</i>)	X	X	X	X
yellowtail flounder (<i>Pleuronectes ferruginea</i>)	X	X	X	X
windowpane flounder (<i>Scophthalmus aquosus</i>)	X	X	X	X
American plaice (<i>Hippoglossoides platessoides</i>)	X	X	X	X

ocean pout (<i>Macrozoarces americanus</i>)	X	X	X	X
Atlantic halibut (<i>Hippoglossus hippoglossus</i>)	X	X	X	X
Atlantic sea scallop (<i>Placopecten magellanicus</i>)	X	X	X	X
Atlantic sea herring (<i>Clupea harengus</i>)		X	X	X
bluefish (<i>Pomatomus saltatrix</i>)			X	X
long finned squid (<i>Loligo pealei</i>)	n/a	n/a	X	X
short finned squid (<i>Illex illecebrosus</i>)	n/a	n/a	X	X
Atlantic butterfish (<i>Peprilus triacanthus</i>)	X	X	X	X
Atlantic mackerel (<i>Scomber scombrus</i>)	X	X	X	X
summer flounder (<i>Paralichthys dentatus</i>)				X
scup (<i>Stenotomus chrysops</i>)	n/a	n/a	X	X
black sea bass (<i>Centropristus striata</i>)	n/a		X	X
surf clam (<i>Spisula solidissima</i>)	n/a	n/a	X	X
bluefin tuna (<i>Thunnus thynnus</i>)			X	X

A review of the 24 species in this table for the Mirant Kendall Station NPDES draft permit (#MA0004868) in 2004 revealed that the life stages of concern were present in the seawater salinity zone (salinity > 25.0 parts per thousand) or the mixing water/brackish salinity zone (0.5 < salinity < 25.0 parts per thousand) only. No life stage was identified as inhabiting the tidal freshwater salinity zone. Although there is some seasonal salt water intrusion into the Lower Basin of the Charles River (that segment below the Boston University Bridge), the freshwater of the Charles River in the vicinity of Harvard's discharge does not experience appreciable mixing with the saline Boston Harbor water, due to the location of New Charles River Dam and Locks at the mouth of the river. This dam highly regulates the river level and flow of the Charles River, resulting in the river possessing the characteristics of the freshwater salinity zone.

Based on the available information, EPA feels that Harvard's operation, as restricted by the draft permit conditions, will not directly or indirectly cause adverse effects to EFH species or their habitat, because the draft permit contains limits that are protective of the aquatic species in the Charles River. For the ROR water discharge, appropriate limits have been established and all cleaning wastewaters will be discharged to the MWRA's sewer system and not directly to the Charles River.

7.0 ENDANGERED SPECIES ACT (ESA)

Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended 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 U.S. Fish and Wildlife Service (USFWS) typically administers Section 7 consultations for bird, terrestrial, and freshwater aquatic species. The National Marine Fisheries Service (NMFS) typically administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants to see if any such listed species might potentially be impacted by the reissuance of this NPDES permit and has not found any such listed species. EPA has determined that there are no species of concern present in the vicinity of this Facility’s outfall. Therefore, EPA does not need to formally consult with NMFS or USFWS in regard to the provisions of the ESA. Further, the effluent limits established in this permit ensure the protection of aquatic life and maintenance of the receiving water as an aquatic habitat. During the public comment period, EPA has provided a copy of the Draft Permit and Fact Sheet to both NMFS and USFWS.

EPA has structured the proposed limits to be sufficiently stringent to assure that Water Quality Standards will be met, both for aquatic life protection and human health protection. The effluent limits established in this permit ensure the protection of aquatic life and maintenance of the receiving water as an aquatic habitat. During the public comment period, EPA has provided a copy of the Draft Permit and Fact Sheet to both NMFS and USFWS.

8.0 MONITORING AND REPORTING

The permit’s monitoring requirements have been established to yield data representative of the facility’s pollutant discharges under the authority of Sections 308(a) and 402(a)(2) of the CWA and consistent with 40 C.F.R. §§ 122.41 (j), 122.43(a), 122.44(i) and 122.48. The monitoring program in the permit specifies routine sampling and analysis which will provide ongoing, representative information on the levels of regulated constituents in the wastewater discharge streams. The approved analytical procedures are found in 40 CFR Part 136 unless other procedures are explicitly required in the permit.

The Permittee is obligated to monitor and report sampling results to EPA and the MassDEP within the time specified within the permit. Timely reporting is essential for the regulatory agencies to expeditiously assess compliance with permit conditions.

The Draft Permit includes new provisions related to DMR submittals to EPA and the State. The Draft Permit requires that, no later than one year after the effective date of the permit, the Permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports (“opt-out request”). In the interim (until one year from the effective date of the permit), the Permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

NetDMR is a national web-based tool for regulated CWA permittees to submit 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 have otherwise been required to begin using NetDMR. Opt-outs become effective upon the date of written approval by EPA and are valid for twelve (12) months. 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.

9.0 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 WQS. The staff of 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.

10.0 PUBLIC COMMENT PERIOD, PUBLIC HEARING, AND PROCEDURES FOR FINAL DECISION

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 George Papadopoulos, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Section, Mailcode OEP 06-1, 5 Post Office Square, Suite 100, 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 MassDEP. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

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 CFR § 124.19.

11.0 EPA AND MASSDEP CONTACTS

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 the EPA and MassDEP contacts below:

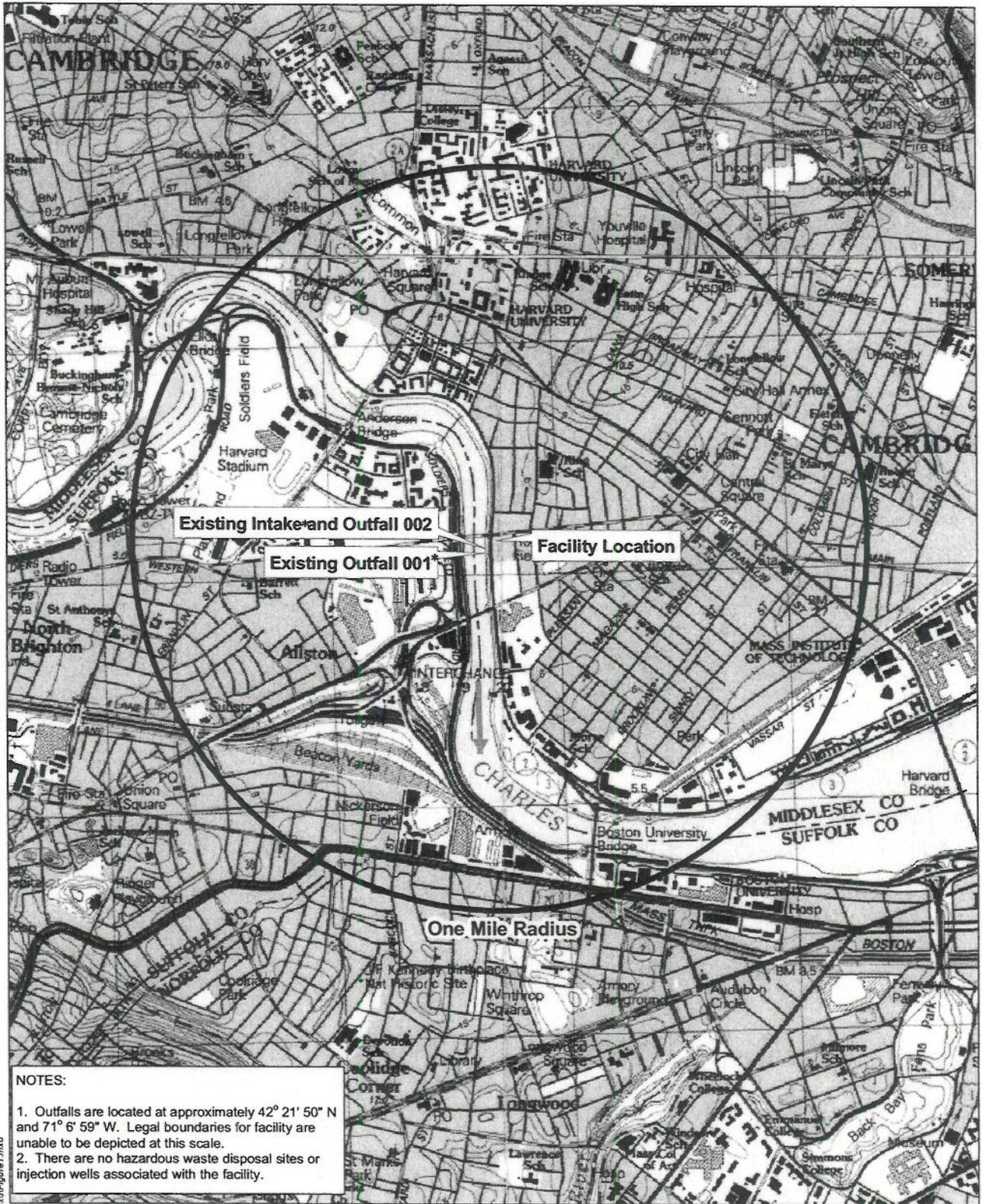
George Papadopoulos, Industrial Permits Section
5 Post Office Square - Suite 100 - Mailcode OEP 06-1
Boston, MA 02109-3912
Papadopoulos.george@epa.gov
Telephone: (617) 918-1579 FAX: (617) 918-1505

Cathy Vakalopoulos, Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
1 Winter Street, Boston, Massachusetts 02108
catherine.vakalopoulos@state.ma.us
Telephone: (617) 348-4026; FAX: (617) 292-5696

February 10, 2014

Date

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



NOTES:

1. Outfalls are located at approximately 42° 21' 50" N and 71° 6' 59" W. Legal boundaries for facility are unable to be depicted at this scale.
2. There are no hazardous waste disposal sites or injection wells associated with the facility.

Base map is 'Newton and Boston South'
1:24,000-scale USGS topographic quadrangles.

→ DIRECTION OF CURRENT

0 1,000 2,000 Feet



MASSACHUSETTS



QUADRANGLE LOCATION

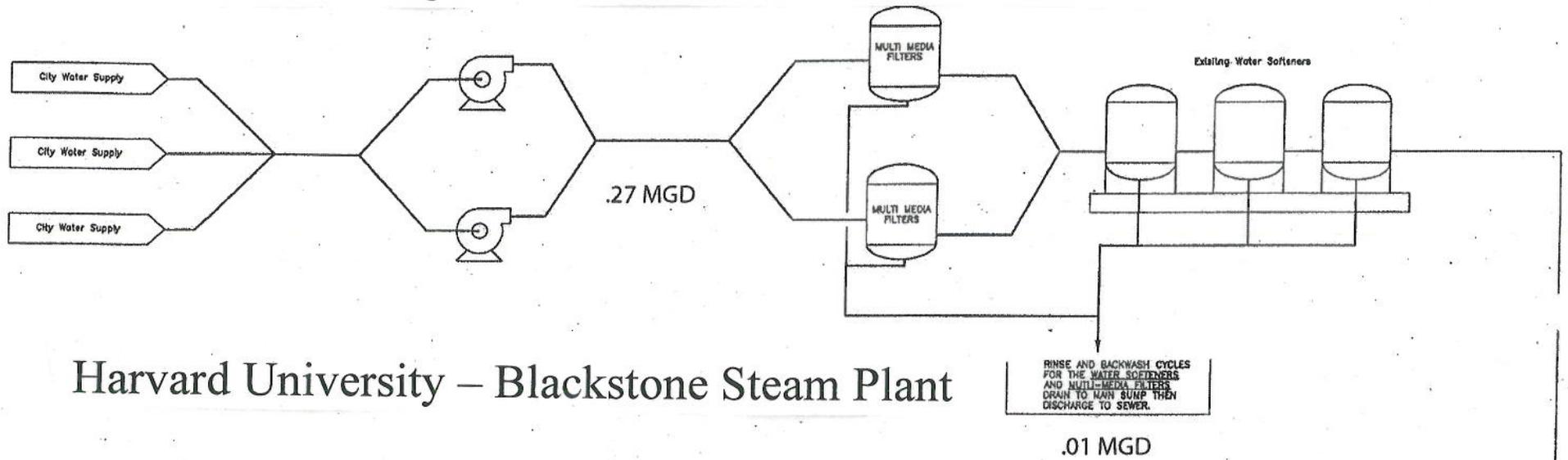
TRC

Boott Mills South
116 John Street
Lowell, MA 01852
978-970-5600

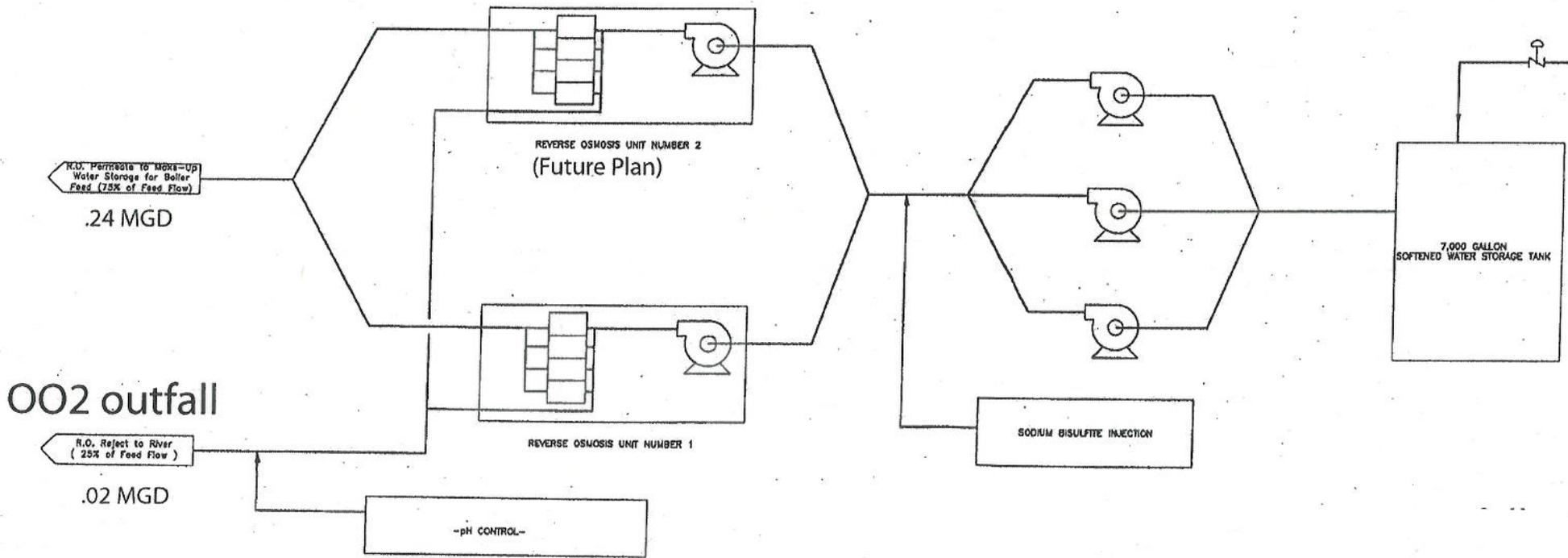
FIGURE 1
FACILITY LOCATION AND OUTFALLS
BLACKSTONE STEAM PLANT
CAMBRIDGE, MASSACHUSETTS

* NOTE: Outfall 001 and intake are currently not in use.

Figure 2 - Water Treatment Flow Schematic



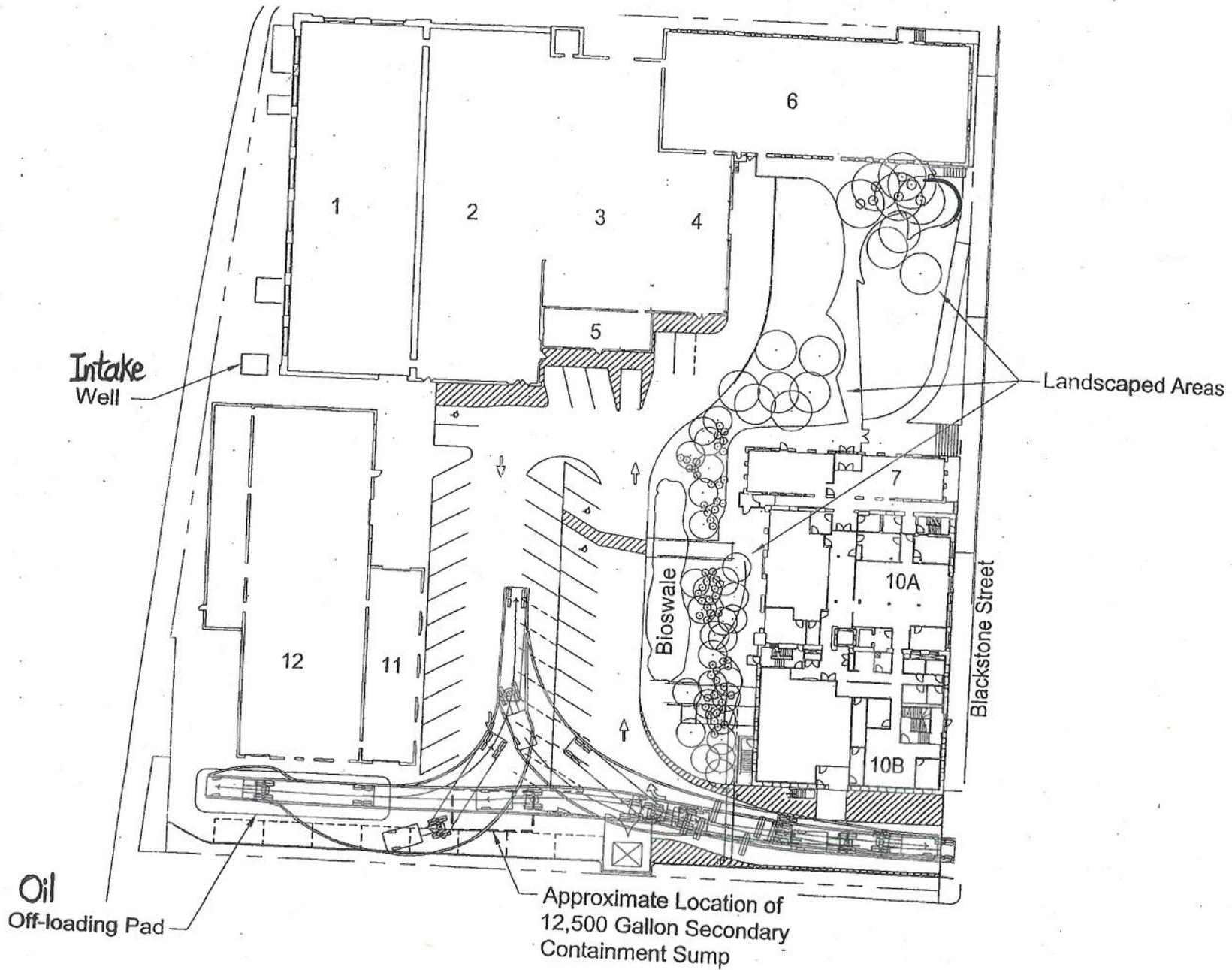
Harvard University – Blackstone Steam Plant



OO2 outfall

Harvard University – Blackstone Steam Plant

Figure 3 – Site Layout



Attachment A: Discharge Monitoring Data

Harvard Blackstone - MA0004901								
Outfall Serial Number 002 - Monthly Reporting								
Monitoring Period End Date	Total Copper	Total Ammonia Nitrogen	Dissolved Oxygen	TSS	pH		Flow	
	ug/l	mg/l	mg/l	mg/l	SU	SU	MGD	MGD
					Min	Max	Monthly Avg	Daily Max
Jan-09	0	1.03	13.42	0	7.4	7.6	0.032	0.044
Feb-09	----	----	12.97	0	7.5	7.5	0.033	0.056
Mar-09	----	----	11.27	0	7.2	7.5	0.024	0.035
Apr-09	0	1.05	9.82	0	7.4	7.54	0.022	0.03
May-09	----	----	8.83	0	7.4	7.5	0.018	0.025
Jun-09	----	----	8.97	0	7.4	7.5	0.013	0.017
Jul-09	0	1.27	8.5	0	7.4	7.5	0.015	0.027
Aug-09	----	----	7.07	0	7.28	7.5	0.015	0.019
Sep-09	----	----	8.24	0	7.4	7.57	0.015	0.019
Oct-09	0	1.4	8.66	0	7.48	7.5	0.02	0.039
Nov-09	----	----	9.06	0	7.48	7.5	0.021	0.03
Dec-09	0	1.32	10.68	0	7.15	7.5	0.031	0.04
Jan-10	0	1.12	10.28	0	7.44	7.5	0.034	0.05
Feb-10	----	----	9.86	0	7.25	7.47	0.035	0.05
Mar-10	----	----	9.71	0	7.3	7.4	0.022	0.03
Apr-10	0	1.34	9.28	0	7.1	7.4	0.019	0.029
May-10	----	----	7.7	0	7.1	7.4	0.021	0.024
Jun-10	----	----	7.08	0	7.1	7.5	0.017	0.019
Jul-10	0	0.732	6.89	0	7.3	7.5	0.018	0.024
Aug-10	----	----	7.04	0	7.3	7.41	0.015	0.017
Sep-10	----	----	7.1	0	7.5	7.5	0.011	0.014
Oct-10	----	----	6.27	0	7.41	7.5	0.01	0.012
Nov-10	0	0.8	7.9	0	7.5	7.6	0.014	0.03
Dec-10	----	----	8.7	0	7.5	7.7	0.043	0.057
Jan-11	0	1.30	6.96	0	7.34	7.6	0.039	0.061
Feb-11	----	----	10.3	0	7.2	7.7	0.044	0.057
Mar-11	----	----	6.9	0	7.5	7.6	0.03	0.04
Apr-11	0	38.7	10.32	0	7.43	7.5	0.032	0.038
May-11	----	----	8.84	0	7.3	7.5	0.027	0.029
Jun-11	----	----	8.03	0	7.21	7.4	0.015	0.024
Jul-11	0	1.18	7.8	0	7.19	7.45	0.013	0.02
Aug-11	----	----	7.3	0	7.1	7.4	0.011	0.017
Sep-11	----	----	7.14	0	7.3	7.31	0.0086	0.011
Oct-11	0	0.824	7.89	0	7.23	7.5	0.011	0.022
Nov-11	----	----	8.51	0	7.4	7.49	0.014	0.021

Dec-11	----	----	9.08	0	7.13	7.4	0.011	0.013
Jan-12	0	1.48	9.11	0	7.05	7.3	0.011	0.014
Feb-12	----	----	8.84	0	6.89	7.4	0.01	0.013
Mar-12	----	----	7.65	0	7.23	7.59	0.008	0.01
Apr-12	0	1.58	7.66	0	7.1	7.3	0.007	0.01
May-12	----	----	7.05	0	7.13	7.48	0.007	0.009
Jun-12	----	----	8.05	0	7.23	7.41	0.006	0.008
Jul-12	0	0.877	7.3	0	7.19	7.48	0.005	0.007
Aug-12	----	----	6.08	0	7.28	7.4	0.004	0.005
Sep-12	----	----	7.65	0	7.27	7.4	0.0046	0.006
Oct-12	0	0.836	8.37	0	7.23	7.3	0.006	0.007
Nov-12	----	----	8.54	0	7.13	7.54	0.008	0.01
Dec-12	----	----	9.71	0	7.19	7.54	0.009	0.01
Jan-13	0	1.58	10.45	0	7.07	7.24	0.013	0.024
Feb-13	----	----	8.65	0	7.1	7.6	0.013	0.016
Mar-13	----	----	8.33	0	7.31	7.61	0.011	0.013
Apr-13	0	1.69	5.34	0	7.43	7.58	0.01	0.013
May-13	----	----	5.21	0	7.3	7.58	0.009	0.012
Jun-13	----	----	6.89	0	7.2	7.51	0.006	0.007
2007 Permit Limits	Report	Report	5.0 mg/l minimum	30 mg/l & 45 mg/l *	6.5 min	8.3 max	Report	0.15 MGD
Minimum	0	0.732	5.21	0	6.89	7.24	0.004	0.005
Maximum	0	38.7	13.42	0	7.5	7.7	0.044	0.061
Average	0	3.16	8.43	0	7.28	7.49	0.017	0.024
Measurements	19	19	54	54	54	54	54	54

* Permit Limits of 30 mg/l monthly average and 45 mg/l daily maximum

Response to Public Comments

In accordance with the provisions of 40 CFR §124.17, this document presents EPA's responses to comments received on the Draft NPDES Permit, #MA0004901, for Harvard University's Blackstone Steam Plant in Cambridge, Massachusetts. From February 19, 2014 to March 20, 2014, the United States Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("MassDEP") (together, the "Agencies") solicited public comments on a Draft NPDES Permit, #MA0004901, developed pursuant to a permit application from Harvard University, for the reissuance of a National Pollutant Discharge Elimination System ("NPDES") permit to discharge reverse osmosis system (RO) reject water from outfall serial number 002 to the Charles River in Cambridge, Massachusetts.

After a review of the comments received, EPA and MassDEP have made a final decision to issue this permit authorizing this discharge. The Final Permit is substantially identical to the Draft Permit that was available for public comment. Although EPA's decision-making process has benefitted from the comments submitted, the information and arguments presented did not raise any substantial new questions concerning the permit.

Copies of the Final Permit may be obtained by writing or calling EPA's NPDES Industrial Permits Branch (OEP 06-1), Office of Ecosystem Protection, 5 Post Office Square, Suite 100, Boston, MA 02109-3912; Telephone: (617) 918-1579.

Comments submitted by Kathryn Kaminski, Manager of Environmental Programs, Harvard University:

Comment 1:

We respectfully request that Section 1.0, Paragraph 2 on Page 3 of the permit Fact Sheet be amended as follows:

Original Fact Sheet wording: page 3 section 1.0, paragraph 2

As required by the 2007 permit, all NCCW flows through Outfall 001 as well as the intake of cooling water from the Charles River were terminated as of the end of December of 2008 as described below. Therefore, the reissued permit will only authorize the discharge of the ROR water from Outfall 002, which is actually the former cooling water intake structure (CWIS) operated by the permittee. See Figure 1 for a map of the facility and the outfalls, which shows inactive Outfall 001 and the intake previously associated with it, which is now designated as Outfall 002.

Suggested Clarified Wording

As indicated in the 2007 permit, the Non-Contact Cooling Water (NCCW) discharge through Outfall 001 was terminated voluntarily, as of the end of December of 2008 as described below. Therefore, the reissued permit will authorize the discharge of RO reject water from Outfall 002. The discharge pipe for Outfall 002 is routed through the existing intake tunnel. See Figure 1 for a map of the facility and the outfalls, which shows the location of inactive Outfall 001, the intake, and Outfall 002.

This change is suggested in order to clarify the location and status of outfalls 001, 002, as well as the exiting intake infrastructure and also to recognize Harvard's proactive investment in developing alternatives to the original cooling water discharge. As part of the 2008 Boiler Replacement Project, use of non-contact cooling water from the Charles River was no longer necessary and was voluntarily terminated. The existing intake infrastructure has continued to be maintained to preserve future options for boiler makeup water supply redundancy and flexibility.

Response to Comment 1:

EPA acknowledges the permittee's comment and understands that the permittee may utilize this intake structure in the future for its makeup water requirements. However, since the Fact Sheet cannot be changed after the public notice of the Draft Permit is issued, this comment and response is part of the permit record.

April 1, 2014