



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

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May 30, 2012

Mr. Michael L. Thoreson  
Commissioner of Public Works  
City of Brockton  
City Hall – Third Floor  
45 School Street  
Brockton, Massachusetts 02301

RE: **PLAN APPROVAL**  
Application for: BWP AQ 02  
Non-Major Comprehensive Plan Approval  
Transmittal No.: X230663  
Application No.: 4I09034  
Source No.: 2233

AT: Brockton Advanced Water Reclamation Facility  
303 Oak Hill Way  
Brockton, Massachusetts 02301

Dear Mr. Thoreson:

The Department of Environmental Protection (the "Department" or "MassDEP"), Bureau of Waste Prevention has reviewed documents, as identified below, submitted by the City of Brockton ("City") and by Camp, Dresser and McKee, Inc. ("CDM") on the City's behalf concerning the Brockton Advanced Water Reclamation Facility ("Facility"). The Facility's multiple hearth sewage sludge incinerator and air pollution controls were altered pursuant to MassDEP's Conditional Approval dated November 9, 2009. The referenced documents were submitted to MassDEP to satisfy provisions of the Conditional Approval, including the proposal of new air contaminant emission limitations.

The following documents were submitted to MassDEP:

- CDM letter dated June 20, 2011 and attachments concerning the air dispersion modeling and proposed emission limits.
- CDM letter dated June 7, 2011 with attachment titled "Response to Comments on Air Dispersion Modeling and Proposed Emission Limits" and disc file attachment titled "Brockton, MA, Air Dispersion Modeling, June 7, 2011";

- CDM letter dated May 16, 2011 with attachment titled “Air Dispersion Modeling and Proposed Emission Limits for Sludge Incinerator at the Brockton Advanced Water Reclamation Facility” dated May 16, 2011;
- City letter dated March 17, 2011 with three attachments:
  1. “Performance Test Report City of Brockton, Massachusetts, Brockton Advanced Water Reclamation Facility, Biosolids Incinerator No. 1, Brockton, Massachusetts” dated March 2011;
  2. “Source Test Report City of Brockton, Massachusetts, Brockton Advanced Water Reclamation Facility, Biosolids Incinerator No. 1, Brockton, Massachusetts” dated 10 March 2011; and
  3. A summary of test results in comparison the November 9, 2009 Condition Approval emission limits.
- City letter dated March 17, 2011 provided notification that incinerator upgrades were substantially completed as of January 31, 2011;
- City letter dated February 11, 2011 provided notification that stack emission testing had been completed;
- CDM letter dated December 31, 2010 and attached CD file titled “City of Brockton, Incinerator Upgrade Phase 4, As-Built Revision: A, Date: 11/08/10” which included the Standard Operating and Maintenance Procedures and as-built plans.
- CDM letter dated December 30, 2010 addressing Carbon Monoxide Emission Limit;
- City letter dated November 3, 2010 providing notification that upgrades completed and initial operation occurred on November 1, 2010;
- City letter dated July 21, 2010 providing notification that construction upgrades scheduled to start on July 26, 2010; and
- CDM e-mail to MassDEP dated May 24, 2012 and attachment titled “Brockton AWRF-Emission Calculations by Frank Sapienza 5-24-12.”

Modifications to the Facility’s multiple hearth sewage sludge incinerator addressed in this Plan Approval include: a new exhaust gas wet scrubber system, addition of a flue gas recirculation system, the installation of two (2) burners on incinerator hearth 2 and new air contaminant emission limitations. MassDEP previously issued Conditional Approval (4I09034) for the modifications in Non-Major Comprehensive Plan Application (NMCPA) that was prepared by CDM and submitted over the seal and signature of Frank C. Sapienza, P.E. No. 46995.

The above referenced documents were submitted in accordance with Section 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 "Air Pollution Control Regulations", adopted by the Department pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-M. The Department's review has been limited to compliance with applicable Air Pollution Control Regulations and does not relieve you of the obligation to comply with all other permitting requirements contained in other regulations or statutes.

MassDEP is of the opinion that the above referenced documents and underlying NMCPA are in conformance with current Massachusetts Air Pollution Control Regulations and satisfies the provisions of the November 9, 2009 Conditional Approval, and hereby issues this **Plan Approval** (4I09034) subject to the following descriptions, requirements, and provisions:

## **FACILITY/PROJECT DESCRIPTION**

The City of Brockton upgraded the Facility as a voluntary action to improve the operating performance of the multiple hearth sewage sludge incinerator and to reduce emissions to the ambient air with the construction of new air pollution control equipment.

As part of the Facility upgrade project, the following modifications were made:

- Construction of two burners on incinerator hearth 2 that burn natural gas;
- Construction of a flue gas recirculation system from incinerator hearth 1 to hearth 7;
- Construction of a new VenturiPak wet scrubbing system containing the following components:
  - A precooler quench in a separate vessel preceding the scrubber
  - Three subcooling impingement trays located in the lower section (inlet) of the scrubber
  - Multiple venturis with high pressure water sprays in the upper section of the scrubber
  - A mesh style mist eliminator at the outlet of the scrubber;
- Construction of two new incinerator stack test ports;
- Relocation of the existing sample line for the hydrocarbon and oxygen emission monitoring system operated as a condition of the National Pollutant Discharge Elimination System (NPDES) permit; and
- Construction of an enclosed sludge feed screw conveyor to minimize air leakage into the incinerator and thereby improve combustion efficiency and reduce pollutant emissions.

The Facility is currently subject to the following three (3) Plan Approvals issued pursuant to 310 CMR 7.00 Air Pollution Control Regulations:

- Plan Approval dated November 7, 1984, Application No. SM 83-040-IN;
- Conditional Approval dated May 14, 2004, Application No. 4B04004; and
- Conditional Approval dated November 9, 2009, Application No. 4I09034

Except as specifically altered herein, the November 7, 1984 and May 14, 2004 Approvals will remain valid, and the November 9, 2009 Conditional Approval is superseded by this Plan Approval (4I09034).

The Facility is subject to the following federal rules:

- 40 CFR 60 Subpart O; and
- 40 CFR 61 Subparts C and E.

In addition, the Department reserves the right to reopen this Plan Approval in the future to incorporate criteria contained in 40 CFR 60 Subpart MMMM as published in the Federal Register Volume 76, Number 54, dated March 21, 2011.

## **OPERATIONAL LIMITS:**

1. The incinerator fuel of use shall be natural gas.
2. The dewatered sludge charging rate to the incinerator shall not exceed 1,500 dry pounds per hour.
3. The incinerator dry sludge charging rate shall not exceed 547.5 dry tons per month.
4. The incinerator dry sludge charging rate shall not exceed 6,570 dry tons per consecutive 12-month period.

## **PRODUCTION LIMITS:**

None

**EMISSION LIMITS:**

1. This Plan Approval establishes new incinerator emission limits. The incinerator shall not exceed the emission limits as specified in Table 1.

<b>Table 1 : INCINERATOR EMISSION LIMITS</b>				
<b>Emission</b>	<b>Emission Limit/Standard<sup>1</sup></b>	<b>Pounds per Hour<sup>1,2</sup></b>	<b>Tons per Month<sup>3</sup></b>	<b>Tons per Year<sup>4,5</sup></b>
CO	1,676 ppmvd @ 7% O <sub>2</sub>	43.05	15.71	188.6
SO <sub>2</sub>	26 ppmvd @ 7% O <sub>2</sub>	1.56	0.57	6.8
VOC <sup>6</sup>	100 ppmvd @ 7% O <sub>2</sub>	4.02	1.46	17.6
NO <sub>x</sub>	220 ppmvd @ 7% O <sub>2</sub>	6.18	2.25	27.1
PM <sup>7</sup>	31 mg/dscm @ 7% O <sub>2</sub> and 0.865 lb/ton dry sludge	0.65	0.24	2.84
PM10 <sup>8</sup>	32 mg/dscm @ 7% O <sub>2</sub>	0.60	0.22	2.63
PM2.5 <sup>8</sup>	32 mg/dscm @ 7% O <sub>2</sub>	0.47	0.17	2.04
As	0.012 mg/dscm @ 7% O <sub>2</sub>	0.00024	0.00009	0.0010
Be	1.0 grams/24-hour period	0.00012	0.00033	0.0004
Cd	0.05mg/dscm @ 7% O <sub>2</sub>	0.00100	0.0004	0.0044
Cr	0.06 mg/dscm @ 7% O <sub>2</sub>	0.00120	0.0004	0.0052
Hg	60.5 grams/24-hour period and 0.28 mg/dscm @ 7% O <sub>2</sub>	0.00556	0.0020	0.0243
Ni	0.02 mg/dscm @ 7% O <sub>2</sub>	0.00038	0.00014	0.0017
Pb	0.20 mg/dscm @ 7% O <sub>2</sub>	0.00395	0.0014	0.0173
Opacity <sup>9</sup>	0%	----	----	----

Note:

- 1 - The average of three one hour or longer stack emission test runs per Special Condition No. 2.
- 2 - Dewatered sludge charging rate - 1,500 dry pounds per hour.
- 3 - Dewatered sludge charging rate - 547.5 dry tons per month.
- 4 - Dewatered sludge charging rate - 6,570 dry tons per consecutive 12-month period.
- 5 - Tons per consecutive 12-month period.
- 6 - As propane.
- 7 - Per test methods contained in 40 CFR 60, Appendix A, Method 5, or other test method(s) acceptable to MassDEP.
- 8 - Per test methods contained in 40 CFR 51, Appendix M, Method 201 or 201A and Method 202, or other test method(s) acceptable to MassDEP.
- 9 - Exclusive of uncombined water vapor 6-minute block average.

**TESTING, MONITORING AND RECORD KEEPING REQUIREMENTS:**

1. Once every 24 hours, sludge pounds per hour feed rate, % dry solids and % volatiles.
2. Hourly fuel feed rate of natural gas.
3. Continuously monitor and maintain a record of the exhaust gas oxygen and total hydrocarbon content.
4. Continuously monitor and maintain a record of the quench inlet and outlet gas temperatures.
5. Continuously monitor and maintain a record of the scrubber water flow rate to the quench, to the impingement trays and to the multiple venturis.
6. Continuously monitor and maintain a record of the following scrubber system temperatures:
  - a) Inlet to impingement trays (same as quench outlet)

- b) Outlet of impingement trays (same as inlet to multiple venturis)
  - c) Outlet of scrubber system
7. Continuously monitor and maintain a record of the scrubber pressure drop across the venturi stage and across the combined venturi and impingement tray stages.
  8. All current monitoring and recording requirements remain in effect and are not altered herein.
  9. All applicable testing, monitoring and record keeping requirements contained in 40 CFR 60 and 61.
  10. The City shall establish and maintain a record keeping system for the Facility. All such records shall be maintained up-to-date such that year-to-date information is readily available at the Facility for MassDEP examination upon request. The record keeping log/system, including any other "credible evidence", shall be kept at the Facility for a minimum of five (5) years. Record keeping shall, at a minimum, include:
    - a) Compliance records sufficient to demonstrate that emissions from the Facility have not exceeded emission limits contained in this Plan Approval. Such records shall include, but are not limited to, fuel usage rate, emissions test reports, monitoring equipment data and reports.
    - b) Maintenance: A record of routine maintenance activities performed on the control equipment and monitoring equipment including, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
    - c) Malfunctions: A record of all malfunctions on the incinerator emission controls and monitoring equipment including, at a minimum: the date and time the malfunction occurred; a description of the malfunction and the corrective action taken; the date and time corrective actions were initiated; and the date and time corrective actions were completed and the proposed equipment was returned to compliance.

### **NOTIFICATIONS AND REPORTING**

1. All notifications and reporting required by this Plan Approval shall be made to the attention of:
  - Department of Environmental Protection
  - Bureau of Waste Prevention
  - 20 Riverside Drive
  - Lakeville, Massachusetts 02347
  - ATTN: Permit Section
  - Telephone: (508) 946-2770
  - Fax: (508) 947-6557 or (508) 946-2865
2. The City shall notify MassDEP by telephone or fax no later than three (3) business days after the occurrence of any Facility upsets or malfunctions to the Facility equipment which results in an excess emission to the ambient air and/or a condition of air pollution.
3. The City shall ensure that all applicable notification and reporting requirements contained in 40 CFR 60 and 61 are met.

### **SPECIAL CONDITIONS:**

1. The City shall submit updated versions of the SOMP to the MassDEP no later than 30 days prior to the occurrence of a significant change. The Department must approve in writing any significant changes to the SOMP prior to the SOMP becoming effective.

2. In accordance with 310 CMR 7.13, MassDEP may require additional emissions testing of the Facility at any time to ascertain compliance with the Department's Regulations and/or this Plan Approval.
3. In accordance with 310 CMR 7.00 Appendix C(4)(a)6, the City shall submit an Operating Permit application to the MassDEP no later than one year after the date of this Plan Approval.

**GENERAL CONDITIONS:**

1. Facility personnel shall be trained to operate the Facility and control equipment in accordance with vendor specifications and this Plan Approval.
2. All requirements of this Plan Approval shall apply to all subsequent owners and/or operators of the Facility.
3. The City shall maintain the standard operating and maintenance procedures for all air pollution control equipment in a convenient location (e.g., control room/technical library) and make them readily available to employees and MassDEP.
4. The City shall comply with all provisions of 310 CMR 6.00-8.00 that are applicable to this Facility.
5. This Plan Approval may be suspended, modified, or revoked by MassDEP if, at any time, MassDEP determines that the Facility is violating any condition or part of this Plan Approval.
6. This Plan Approval does not negate the responsibility of the Facility to comply with this or any other applicable federal, state, or local regulations now or in the future.
7. The Facility shall be operated in a manner to prevent the occurrence of dust, odor or sound conditions that cause or contribute to a condition of air pollution as defined in Regulations 310 CMR 7.01, 7.09 and 7.10.
8. Should asbestos remediation/removal be required as a result of this Plan Approval, such asbestos remediation/removal shall be done in accordance with Regulation 310 CMR 7.15 and 310 CMR 4.00.
9. Any proposed increase in emissions above the limits contained in this Plan Approval must first be approved in writing by MassDEP pursuant to 310 CMR 7.02. In addition, any emissions increase may subject the City/Facility to additional regulatory requirements.
10. The City shall not cause, suffer, allow, or permit the removal, alteration or shall otherwise render inoperative any air pollution control equipment or equipment used to monitor emissions which has been installed as a requirement of 310 CMR 7.00, other than for reasonable maintenance periods or unexpected and unavoidable failure of the equipment, provided that MassDEP has been notified of such failure, or in accordance with specific written approval of MassDEP.
11. The Facility shall be constructed and operated in strict accordance with this Plan Approval. Should there be any differences between the NMCPA and this Plan Approval, this Plan Approval shall govern.
12. All provisions contained in existing approvals concerning the subject Facility, issued by MassDEP to the City of Brockton, remain in effect other than those specifically altered herein

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy and Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and Regulations 301 CMR 11.00, Section 11.04, provide certain

“Fail-Safe Provisions” that allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report at a later time.

This approval is an action of the Department. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts which are the grounds for the request, and the relief sought. Additionally, the request must state why the plan approval is not consistent with the applicable laws and regulations. The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, Massachusetts 02211

The request will be dismissed if the filing fee is not paid unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

The Department may waive the filing fee for the adjudicatory hearing filing for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this matter, please feel free to contact the undersigned at (508) 946-2779.

Very truly yours,

John K. Winkler, Chief  
Permit Section  
Bureau of Waste Prevention

cc: David Norton, City of Brockton, MA  
Ian W. Mead, CDM, Cambridge, MA  
Frank Sapienza, CDM, Cambridge, MA  
Board of Health, Brockton, MA  
Fire Department, Brockton, MA  
John Hamm, MassDEP/BRP, Boston, MA  
Marc Wolman, MassDEP/BWP, Boston, MA  
Yi Tian, MassDEP/BWP, Boston, MA  
David Johnston, MassDEP/BRP, Lakeville, MA  
Maria Pinaud, MassDEP/BWP, Lakeville, MA  
Jonathan Hobill, MassDEP/BRP, Lakeville, MA  
Jeffery Gould, MassDEP/BRP, Lakeville, MA  
Jack Siderwicz, MassDEP/BWP, Lakeville, MA  
Mark Poudrier, MassDEP/BWP, Lakeville, MA  
Laura Black, MassDEP/BWP, Lakeville, MA