



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

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October 25, 2011

Paul Gaudette  
Schweitzer-Mauduit International, Inc.  
2424 State Route 82  
Ancram, NY 12502

Re: Limited Plan Approval 310 CMR 7.02(4)  
Appl. #1-P-11-016; Trans. # X237985  
Installation of new landfill gas extraction wells, a  
biofilter and associated pipelines

### **Final Approval**

Dear Mr. Gaudette:

The Department of Environmental Protection, Bureau of Waste Prevention, Western Regional Office (MassDEP) has determined that the referenced Limited Plan Application (LPA) is administratively and technically complete and in conformance with current air pollution control engineering practices. The MassDEP approves the referenced LPA authorizing the request to install new landfill gas extraction wells, a biofilter and associated pipelines to be located at the Willow Hill Road Landfill at 70 Willow Hill Road in Lee, Massachusetts 01238.

This LPA Approval is in accordance with 310 CMR 7.02(4) of the Air Pollution Control Regulations (Regulations), 310 CMR 7.00, as adopted pursuant to M.G.L. c.111, sections 142A-142O.

Included as part of the LPA Approval are the following:

- 1) Special Conditions;
- 2) General Conditions for Non-Fuel Utilization Facility LPAs; and
- 3) Appeal Rights

Please review the entire LPA Approval carefully as it stipulates the particular conditions to which the facility owner/operator must adhere for the facility to be constructed, reconstructed, altered and/or operated in compliance with the Regulations.

The MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Environmental Affairs, for air quality purposes, was not required prior to this action by the MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act and Regulation 301 CMR 11.00, section 11.04, provide certain “Fail-Safe Provisions” which allow the Secretary to require the filing of an ENF and/or Environmental Impact Report at a later time.

Should you have any questions concerning this Final Approval, please contact Cortney Danneker at (413) 755-2234.

Sincerely,

This final document copy is being provided to you electronically by the  
Department of Environmental Protection. A signed copy of this document  
is on file at the DEP office listed on the letterhead.

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Marc Simpson  
Air Quality Permit Chief  
Bureau of Waste Prevention  
Western Region

cc: WERO AQ plan file  
WERO AQ approval file

ecc: Yi Tian, DEP Boston  
Peter Czapienski, DEP Western Region

### **Background**

The MassDEP received on August 25, 2011, a LPA for the installation and operation of new landfill gas extraction wells, a biofilter and connecting pipelines at the Willow Hill Road Landfill. The proposed system will control the emissions of methane, nonmethane organic compounds (NMOCs) and odors from the closed and capped Willow Hill Road Landfill which is owned and operated by Schweitzer-Mauduit International, Inc. (SWM).

The existing active landfill gas (LFG) extraction and treatment system consists of a series of gas extraction wells connected to a flare tower which was constructed in 1998. Since this time the methane gas production has reduced such that it is insufficient to maintain the flare without adding significant supplemental fuel. In June of 2010, SWM notified MassDEP that LFG migrated beyond the boundaries of the landfill and was detected at soil gas monitoring locations above 25% of the lower explosive limit (LEL). In the summer of 2010, SWM conducted a pilot study to evaluate potential LFG control technologies to prevent off-site methane mitigation. The pilot study was performed by modifying the LFG extraction well configurations, modifying the extraction rate and measuring the resultant impact on the methane concentrations in the off-site soil gas monitoring points. Conclusions from the pilot study were: an active LFG system is required to reduce methane concentrations below 25% of the LEL at and beyond property boundaries, emissions of VOCs will be less than 1 ton per year and the carbon filter removal efficiency for methylene chloride and chloroform, the primary pollutants, was limited.

### **Project Description**

The proposed LFG extraction and treatment system will include:

- seven new 6-inch diameter extraction wells (identified as LFG -1, 2, 3, 4, 5, 6, 7) installed at approximately 50 foot intervals between the property boundary and the landfill;
- four existing extraction wells along the property boundary (identified as VW-6, 7, 8 and 9);
- two new 7.5 hp blowers with a flow rate range of 20 standard cubic feet per minute (scfm) to 110 scfm;
- 6-inch high-density polyethylene (HDPE) collection piping; and,
- three identical biofilters approximately 20 feet by 70 feet each with a minimum combined compost volume of 605.5 cubic yards which will provide for a 90% removal efficiency for methane.

The planned flow rate will be 75 scfm, but the system will be designed based on 150% of the flow rate or 112.5 scfm. A vacuum will be produced in the subsurface which will convey the landfill gas from the extraction wells through the 6" diameter above ground (HDPE) collection piping to three identical biofilters.

The existing condensate knockout drum will be used with the proposed system and includes a liquid level gauge to monitor condensate collection and a regulated transfer pump for automatic condensate removal. Collected condensate will be conveyed directly from the knockout drum to an existing passive air vent within the landfill.

Landfill passive vents located greater than 75 feet away from VW-6,7,8 and 9 will be unplugged since they are no longer in use. A distance of 75 feet was chosen based on the estimated radius of influence for the extraction wells multiplied by a safety factor. The landfill cap passive vents were initially plugged during construction of the active LFG system in 1998 to prevent short-circuiting of the extraction wells.

The automatic controls of the existing LFG extraction and flare system along with unused portions of the packaged unit will be locked-out or removed/replaced. Any remaining gas storage vessels will be completely removed from the site.

### **Best Available Control Technology (BACT)**

SWM evaluated three technologies for the control of methane, NMOCs, as well as odor-producing compounds such as hydrogen sulfide from extracted LFG for compliance with the applicable requirements of BACT. The three control technologies were a carbon filter, a candlestick flare and a biofilter. The carbon filter was eliminated from consideration since the MassDEP Threshold Effects Exposure Limits and the Allowable Ambient Limits would likely be exceeded at the property boundary based on modeling analysis. Both the candlestick flare and biofilter would reduce air contaminant emissions of methane and NMOCs but the candlestick flare would create additional emissions of sulfur dioxide, nitrogen oxides, carbon monoxide and hydrochloric gas due to the combustion of the supplemental fuel and methylene chloride. The candlestick flare and biofilter would reduce greenhouse gases from the landfill by approximately 1,400 tons per year and 2,450 tons per year of carbon dioxide equivalents, respectively. The candlestick flare would have higher operational and maintenance costs as compared to the biofilter due to the use of supplemental fuel (propane) for the flare. Based on the BACT analysis, SWM concluded that the biofilter is BACT for the treatment of extracted LFG.

The LFG extraction system will use three identical biofilters which will each be 20 feet by 70 feet and will be installed flush with the ground surface. The biofilters will be spaced 10 feet apart along their width. The biofilter will consist of the following layers from top to bottom:

- 4 feet of compost material;
- Non-woven geotextile; and
- 1.5 feet of gravel with 4-inch diameter HDPE slotted piping space at 4 foot intervals.

The volume of compost will be a minimum of 605.5 cubic yards which was calculated based on a methane removal efficiency of 90 percent and a gas flow rate of 112.5 standard cubic feet per minute.

The compost material will consist of fresh yard waste and wood chips. Moisture within the LFG is sufficient for the requirements of the biofilter so no additional water is proposed. Two temperature probes will be installed within the compost of each biofilter, which will automatically shut down the LFG blowers if elevated temperatures are detected in the compost media.

The biofilter compost media will require periodic replacement. The compost media is anticipated to be replaced every 2-3 years. The replacement will consist of a 90% removal of the compost material and replacement with fresh yard waste and wood chips. Compost material will be replaced from one biofilter unit at a time allowing operation of the remaining 2 units.

**Air Contaminant Emissions**

SWM calculated the following potential air contaminant emissions from the LFG system post-treatment of the biofilter. Please see Appendix C, Section 6.1 of the limited plan application for supporting information on the air contaminant emission rates.

<b>Air Contaminant</b>	<b>Potential Emission Rate (tons per year)</b>
Methane	9.866
VOCs	0.013
Methylene Chloride	0.002
Chloroform	0.001
Toluene	$4.5 \times 10^{-5}$
Hydrogen Sulfide	$2.6 \times 10^{-4}$

The will be no emissions of particulate matter, sulfur dioxide, nitrogen oxides, halogenated organic compounds or lead since these air contaminants are not found in LFG nor will any fuels be combusted by the LFG system. Emissions of odors are not anticipated because research indicates a biofilter designed to treat methane is more than adequate to treat odor causing emissions.

**Ambient Air Quality Impact Analysis**

SWM conducted an air quality computer dispersion modeling analysis performed using the USEPA SCREEN3 model (version 96043) to determine if the emissions from the biofilter will comply with the MassDEP's air toxics limits for non-criteria pollutants. The SCREEN3 model predicted concentrations at different down-wind distances starting at 10 meters and up to 1,000 meters from the biofilter system. The results indicated that the non-criteria air contaminant concentrations in the ambient air were well below the MassDEP Allowable Ambient Limits (AALs) and Threshold Effects Exposure Limits (TELEs) at the modeled distances. The closest property boundary to the biofilter is 12 meters and the closest residence property to the biofilter is 193 meters. Therefore the impacts from the LFG system are not predicted to exceed the AALs or TELEs at these locations.

## **Special Conditions of Approval**

### **Monitoring**

1. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, two temperature probes shall be installed within the compost of each biofilter, which shall automatically shut down the LFG blowers if elevated temperatures outside of the normal operating range are detected in the compost media as defined in the Standard Operating and Maintenance Procedures.
2. The permittee shall monitor the LFG extraction and treatment system to ensure that it is operating in compliance with the Final Approval and with the Standard Operating and Maintenance Procedures.

### **Work Practice Requirements**

1. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, all three biofilters shall be operated simultaneously, except during the replacement of the biofilter compost media. During the replacement of the biofilter compost media, a minimum of two biofilters shall be operated simultaneously.
2. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, at all times when the LFG blowers are operated, the discharge of the LFG blowers shall be directed through the biofilters.
3. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the permittee shall winterize LFG and/or condensate piping, if needed, to avoid freezing problems of the piping in the winter months.
4. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the compost media contained in two biofilter beds shall be replaced after the initial two years of operation. Thereafter the compost media shall be replaced according to the frequency specified in the Standard Operating and Maintenance Procedures or less frequent as approved by MassDEP.
5. The permittee shall take immediate steps to mitigate any nuisance condition generated by the operation of the LFG extraction and treatment system, including changing of biofilter compost media more frequently, if necessary.

### **Reporting**

1. If nuisance odors are being produced or there is a failure of the LFG extraction and treatment system, MassDEP shall be immediately notified by telephone or fax.
2. The permittee shall submit the Standard Operating and Maintenance Procedures (SOMP) of the LFG extraction and treatment system to MassDEP for review within 60 days of the commencement of operation of LFG extraction and treatment system.

**Additional Restrictions**

1. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the landfill gas extracted from the seven 6-inch diameter extraction wells (identified as LFG -1, 2, 3, 4, 5, 6, 7), installed at approximately 50 foot intervals between the property boundary and the landfill, and from the four extraction wells along the property boundary (identified as VW-6, 7, 8 and 9) shall be conveyed by HDPE collection piping to three biofilters.
2. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the biofilter shall have a combined minimum compost volume of 605.5 cubic yards.
3. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the compost material shall consist of only fresh yard waste and wood chips and shall not contain any municipal solid waste.
4. The permittee shall develop complete Standard Operating and Maintenance Procedures (SOMP) of the LFG extraction and treatment system within 60 days of the commencement of operation of the LFG extraction and treatment system.
5. The permittee shall allow authorized MassDEP representatives immediate access to the facility in order to take samples, view the process operation or examine records to verify compliance.
6. The permittee shall perform any other testing deemed necessary, at the request of MassDEP, to determine compliance with this Final Approval or any other Massachusetts "Regulation".

**General Conditions of Approval**

1. OPERATION– No person shall operate a facility constructed, substantially reconstructed, or altered pursuant to 310 CMR 7.02(1), (3) and (4) except in conformance with the requirements established therein and in conformance with the specific written plan approval requirements.
2. RECORDKEEPING – The facility owner/operator shall establish and continue an on-site recording system. All records shall be maintained up-to-date such that year-to-date information is readily available for MassDEP examination. Recordkeeping shall, at a minimum, include:
  - a) Sufficient operating records to demonstrate compliance with the emission rates and data contained in the approved **BWP AQ 01-B** application form. This may include facility or equipment operating hours and/or the types and quantities of raw material used.
  - b) Maintenance - A record of routine maintenance activities 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 of facility 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 facility returned to compliance.

All records shall be kept on site for five (5) years from date of record and shall be made available to MassDEP upon request.

3. MassDEP must be notified by telephone or fax as soon as possible after the occurrence of any upsets or malfunctions to the facility equipment, air pollution control equipment, or monitoring equipment which result in an excess emission to the air and a condition of air pollution.
4. REPORTING – Any construction, substantial reconstruction or alteration, as described in 310 CMR 7.02(1), (3) and (4), at a facility subject to the reporting requirements of 310 CMR 7.12, shall be reported to MassDEP on the next required source registration.
5. SUSPENSION – This 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 LPA Approval. MassDEP shall be notified in writing prior to any modification of the facility such as a change in raw materials or an increase in production capacity which may increase emissions.
6. VISIBLE EMISSIONS - The facility shall be operated in a manner to prevent the occurrence of visible emissions which cause or contribute to a condition of air pollution as defined in Regulation 310 CMR 7.01 and 7.06.
7. Noise from the facility during construction, initial start up and routine operation, including startups and shutdowns, shall not exceed MassDEP noise guidelines and shall not cause a condition of air pollution as defined in 310 CMR 7.01 and 7.10.
8. DUST AND ODOR - The facility shall be constructed and operated in a manner to prevent the occurrence of dust or odor conditions which cause or contribute to a condition of air pollution as defined in 310 CMR 7.01 and 7.09.
9. OTHER REGULATIONS - This Final Approval does not negate the responsibility of owner/operator of the referenced facility to comply with this or any other applicable federal, state, or local regulations now or in the future. Nor does this approval imply compliance with any other applicable federal, state or local regulation now or in the future.
10. EMISSION TESTING – MassDEP may, in accordance with Regulation 310 CMR 7.13, require source emission testing ("stack testing"). All emission testing shall be conducted in accordance with Regulation 310 CMR 7.13.
11. ASBESTOS - Should asbestos remediation/removal be required as a result of the approved construction/reconstruction/or alteration of this facility, such asbestos remediation / removal shall be done in accordance with Regulation 310 CMR 7.15 in its entirety and 310 CMR 4.00.

**Appeal Rights**

This Final Approval is an action of MassDEP. 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. The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

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

MassDEP may waive the adjudicatory hearing filing fee 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.