COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

January 28, 2009

Attn: Jerry Leone
Hyland Facility Associates
6653 Herdman Road
Angelica, NY 14709

Re: 310 CMR 7.00 Appendix B(7)
Transmittal # X224375 and X224378
Approval of BWP AQ 27 and
AQ 28 Applications
Certification and Verification of GHG
Credits at Hyland Landfill in Angelica, NY

Dear Mr. Leone:

The Massachusetts Department of Environmental Protection hereby approves your Application for Certification of GHG (Greenhouse Gas) Credits (BWP AQ27), dated September 22, 2008. The Department also approves your Application for Verification of GHG Credits (BWP AQ 28), dated September 22, 2008. In accordance with the requirements of 310 CMR 7.00: Appendix B(7)(f), the Department conducted a 30-day public comment period on the proposed approval. The public comment period ended on January 19, 2008. No public comments were received.

The approval of your Application for Certification of GHG Credits (BWP AQ 27), combined with the approval of your Application for Verification of GHG Credits (BWP AQ 28), creates 72,770 verified GHG Credits for emission reductions that occurred between January 1, 2008 and August 26, 2008 at Hyland Landfill in Angelica, NY. These credits have been deposited into MA GHG Credit account MAGHG-N-10008; the GHG Credit Account Representative for this account is Timothy Cretney. Verified GHG Credits from this project can be used by affected facilities for compliance with the CO_2 emissions standards of 310 CMR 7.29.

Included as part of this approval of your applications for certification and verification of GHG Credits are the following:

(1) A description of your project.
(2) A table showing the number of GHG Credits proposed for certification and verification.
(3) A list of relevant determinations that the Department has made in accordance with the requirements of 310 CMR 7.00: Appendix B(7).
(4) An explanation of how the number of GHG Credits proposed for certification and verification was calculated.

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD# 1-866-539-7622 or 1-617-574-6868.

MassDEP on the World Wide Web: http://www.mass.gov/dep
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Note that your applications are also incorporated, by reference, into this proposed approval. A copy of the notice of public comment period is also included as an attachment.

(1) Description of the Project

As described in the application,

The Project consists of the voluntary operation of a methane destruction system at the Hyland Landfill, in Angelica, New York. The system attaches a 3000 scfm flare to a collection system of vertical and horizontal gas extraction wells.

(2) Table showing the number of GHG Credits

	Time period	**Number of Credits**
Certified GHG Credits	January 1, 2008 through August 26, 2008	72,770
Verified GHG Credits	January 1, 2008 through August 26, 2008	72,770

(3) A list of relevant determinations that the Department has made in accordance with the requirements of 310 CMR 7.00: Appendix B(7). (Defined terms and language that is directly excerpted from regulations appear in italics.)

The Department has made the following determinations:

- The emission reductions are *Real*, in that there have been actual reductions in emissions of methane, a greenhouse gas, from the Hyland Landfill as a result of the project. Methane has been destroyed through combustion in a flare.
- The emission reductions are *Additional*, in that, according to the applicant, there is no legal requirement to destroy the methane gas that has been destroyed by the flare described in the application. The application states that "because neither state nor federal regulations require the installation and operation of a landfill gas destruction system at the Hyland Landfill, the flare was installed and is being operated voluntarily. Hyland Facility Associates developed the project with the intent of producing Verified Emission Reduction (VER) credits, and bears the costs associated with its construction and operation."
- The emission reductions are *Verifiable*, in that landfill gas flare is equipped with a flow meter and strip recorder. According to the applicant "Facility personnel take periodic readings of methane concentration at the flare using a Landtec Gem2000 gas analyzer."
- The emission reductions are *Permanent*, in that methane has been destroyed in the combustion process.

- The emission reductions are *Enforceable,* in that, pursuant to 310 CMR 7.00: Appendix B(7)(g)8., violations of the requirements of 310 CMR 7.00: Appendix B(7) may be enforced against any person who applied for certification or verification of GHG Credits, an affected facility that purchases GHG Credits created by this project, or any combination thereof.
- The project commenced *on or after January 1, 2006,* in accordance with 310 CMR 7.00: Appendix B(7)(d)9., in that the project commenced operation on January 1, 2008.
- The project is expected to *generate an annual average over the period applied for of 5,000 or more tons* CO_{2e}, in accordance with 310 CMR 7.00: Appendix B(7)(e)3., in that the project is expected to generate approximately 72,770 tons of CO_{2e} emission reductions over a period of eight months.
- The application includes *a proposed method for determining, monitoring and assuring compliance,* in accordance with 310 CMR 7.00: Appendix B(7)(e)4.b., in that data showing direct measurements of gas flow and periodic sampling of methane content have been included with the application.
- The applicant has specified *the best management practice used to determine an emissions baseline,* in accordance with 310 CMR 7.00: Appendix B(7)(e)4.d., in that the application includes the following explanation: "Installation and operation of landfill gas destruction systems is not common practice for small landfills in New York State. . . Because LFG destruction is not required nor is it common practice at similar landfills, the BMP scenario at the Hyland Landfill would be to passively vent landfill gas to the atmosphere, thereby achieving no greenhouse gas reductions." The application also lists several landfills in New York State that do not employ active landfill gas collection and destruction systems.
- The project does not present any potential project leakage.

(4) Explanation of how the number of GHG Credits proposed for certification and verification was calculated

The number of GHG Credits was calculated using the following equation:

$GHG\ Credits = N_{baseline} - N_{project}$

Where $N_{baseline}$ = the number of tons of CO_{2e} emitted without the project, calculated thus:

$N_{baseline} = N_{CH4(baseline)} \times 25 \times 0.90 \times 0.98$

Where:

$N_{CH4(baseline)}$ = the number of tons of methane determined to have entered the flare, calculated thus:

$N_{CH4(baseline)} = V \times 0.409 \times 0.80 \times 0.00002123$

Where:

V = the total number of cubic feet of landfill gas that entered the flare during the verification period, as measured by a gas flow meter;

0.409 = an estimate of the average methane content of the landfill gas that entered the flare, expressed as a fraction by volume. 0.409 is the average reported methane content from periodic measurements that were carried out approximately monthly at the Hyland Landfill.

0.80 = 20% discount factor of average methane content of the landfill gas as proposed by the applicant. The discount is based on the California Climate Action Registry Landfill Project Reporting Protocol (Version 1.0) Pages 19-20. The reporting protocol states, "For qualifying projects that become operational between January 1, 2001 and January 1, 2008, the use of monthly methane concentration measurements using a calibrated portable gas analyzer is acceptable... In the case where monthly methane concentrations are used, project developers must account for the uncertainty associated with these measurements by applying a 20% discount factor to the total quantity of methane collected and combusted."

0.00002123 = the number of tons of methane that is equal to one cubic foot of methane.

And,

25 = the global warming potential of methane, as published by the Intergovernmental Panel on Climate Change (IPCC) at the time of submittal of the certification application.

0.90 = factor representing the estimated fraction of the methane that would not have eventually oxidized to CO_2 without the project. Methane that would eventually have oxidized to CO_2 is not counted as methane emissions for the purpose of determining the project baseline, because it would have been destroyed anyway. This factor is also included in the landfill gas section of the Massachusetts CO_2 Budget Trading Program regulations.

0.98 = factor representing the estimated combustion efficiency of the methane destruction technology. Methane that passes through the flare without being destroyed is not counted toward the project baseline, because the project will have no effect on these emissions. This factor is also included in the landfill gas section of the Massachusetts $C0_2$ Budget Trading Program regulations.

And,

$N_{project}$ = the number of tons of CO_{2e} emitted with the project, calculated thus:

$N_{project} = N_{C02(project)}$

$N_{C02(project)}$ = the number of tons of carbon dioxide created through the combustion of methane, calculated thus:

$N_{C02(project)} = N_{CH4(baseline)} \times 0.90 \times 0.98 \times 2.75$

Where:

0.90 = factor representing the estimated fraction of the methane that would not have eventually oxidized to CO_2 without the project, as described above.

0.98 = factor representing the estimated combustion efficiency of the methane destruction technology, as described above.

2.75 = the number of tons of carbon dioxide created for each ton of methane that is combusted. 2.75 is the ratio of the molecular mass of carbon dioxide to the molecular mass of methane.

Data and calculations for this application are summarized in the following table:

	Certification (AQ27) /Verification (AQ 28)
V	533,817,000
$N_{CH4(baseline)}$	3,708
$N_{CO2(project)}$	8,994
$N_{baseline}$	81,764
$N_{project}$	8,994
GHG Credits	**72,770**

Should you have any questions concerning this APPROVAL, please contact Stacy DeGabriele at stacy.h.degabriele@state.ma.us or (617) 292-5864.

Very truly yours,

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.

Nancy L. Seidman
Deputy Assistant Commissioner
Climate Strategies
Bureau of Waste Prevention

cc: William Lamkin, DEP, BWP, NERO
William Space, DEP, BWP, Boston
Stacy DeGabriele, DEP, BWP, Boston
Loreen Kelley, DEP, BWP, Boston