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Sharper Insight: Landfill Gas Serving Multiple Users

Commonwealth Environmental Systems Landfill, Inc. (CES) is a municipal waste landfill located in Schuylkill County, Pennsylvania. Historically, CES controlled the gas generated by the landfilled waste by combusting it in enclosed ground flares. CES searched for a productive outlet for the energy source and the solution came in the form of two customers with energy demands that met CES's supply.



Broad Mountain Power Facility at CES

The first was Keystone Potato Products, LLC (Keystone), a customer looking for reliable, low cost energy to fuel a potato dehydration plant. After evaluating other conventional fuels, Keystone contracted with CES to purchase landfill gas and located its plant across the highway from the landfill. EarthRes Group, Inc. (EarthRes) designed a pipeline and delivery system to convey up to 1,200 scfm of landfill gas from the landfill to the plant and, automatically operate the landfill flare(s) as needed. Keystone uses the gas to fire its boiler that provides steam for the potato processing operation.

After several years of successful operation with Keystone, CES contracted with a second customer, UGI Energy Services, Inc. (UGI), who proposed purchasing available excess landfill gas for electrical power generation. The Broad Mountain Power (BMP) Facility, a 12 MW power plant, built and operated by DCO Energy (DCO), was constructed at the landfill to use up to 4,600 scfm of landfill gas. The plant includes two gas turbines along with a siloxane removal system. Future plans include the capability to expand the plant with the addition of a third turbine as gas flow from the landfill increases.

The addition of a second user on the system created unique challenges - primarily due to the variable and intermittent use of gas by Keystone. The potato processor operates on continuous shifts three to four days per week and the demand from the boiler varies during operation. Although the original control system developed by EarthRes was capable of automatically controlling the wellfield vacuum and flare operation as Keystone's demand fluctuated, the

introduction of an additional user on the system added another layer of complexity to the control system.

The solution required the development of a comprehensive landfill gas management system that balanced the needs of the landfill with the needs of its customers. The system had to manage the variable demand of Keystone and, UGI's desire to generate as much electricity as possible as well as CES's need to maintain control of all the landfill gas in compliance with

regulations. EarthRes designed a system that satisfied all of these requirements while allowing CES to maintain a constant vacuum on the landfill wellfield. The system operates using a network of PLC's to automatically control the flow of landfill gas to both customers and the landfill flare system. As demand from a user varies, the system will automatically compensate by adjusting flow and starting and stopping the landfill flares as necessary. Together, Keystone and UGI use all of the landfill gas being generated and have plans to increase that use up to 8,100 scfm as the gas flow increases. This is the equivalent of powering more than 7,600 homes for a year and eliminating the CO₂ emissions from nearly 100,000 cars per year. In addition, the landfill gas customers have brought approximately 40 jobs to an area in need of economic growth. These projects were successful based on the economics of using landfill gas and, demonstrate how multiple customers with varying needs can be accommodated by a single landfill.

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State Update: *Revisions to 25 Pa. Code Chapter 109 – Drinking Water Public Notification Requirements*

by Jillian M. Olsen, QEP

On May 9, 2009 the Environmental Quality Board issued amendments to 25 Pa. Code Chapter 109 (Safe Drinking Water), revising the requirements for public notification for community and non-community water suppliers (<http://www.pabulletin.com/secure/data/vol39/39-19/838.html>). New notification procedures for a Tier 1 violation or situation will take effect beginning May 10, 2010. Community water systems will be required to provide public notice to each service connection via:

- hand delivery;
- electronic mail;
- automatic telephone dialing system or other best available technology; or
- another form of direct delivery approved in writing by PA DEP.

“New notification procedures for a Tier 1 violation or situation will take effect beginning May 10, 2010.”

The elements required to be part of an abbreviated notice are now specified in the amended regulations. A community water system that serves transient and non-transient service connections must also provide notice using appropriate broadcast media (radio and television).

Non-community water systems may also provide public notice to transient and non-transient consumers by posting the notice in conspicuous locations throughout the service area, in addition to direct delivery methods. The following additional situations must now be reported to the PA DEP within one-hour of discovery:



- overfeed of a drinking water treatment chemical that exceeds published maximum use values;
- a situation that causes a loss of positive water pressure in any portion of the distribution system where there is evidence of contamination or a water supplier suspects a high risk of contamination; and
- a lack of resources that adversely affect operations, such as staff shortages, notification by the power utility of planned lengthy power outages or imminent depletion of treatment chemical inventories.

The Operation and Maintenance Plan required for community water supply systems must now include:

- procedures for repairing and replacing water mains;
- public notification elements;
- sanitary survey program;
- safety program;
- emergency plan and operating procedures;
- manufacturers' manuals;
- an interconnect, valve and blowoff exercise and testing program; and
- date of last update.

Community water suppliers must also have an Emergency Response Plan. Contact EarthRes Group, Inc. at 800-264-4553 for assistance.

Regulatory Update: *EPA Mandatory Greenhouse Gas (GHG) Reporting Rule*

by Nicole Wilson, P.E.

The U.S. EPA published the final Mandatory Greenhouse Gas (GHG) Reporting Rule on October 30, 2009 in the Federal Register. The Rule became effective **December 29, 2009**. Affected facilities were required to begin monitoring and recording data **January 1, 2010** for the first annual GHG report due on **March 31, 2011**. Best available monitoring methods (BAMMs) may be used through March 31, 2010. Facilities may apply for an extension by January 28, 2010 to continue using BAMMs, but BAMMs extensions will only be valid through December 31, 2010, and many may expire before this date. EPA has announced abbreviated 2010 reporting requirements for certain combustion sources only.

Rule applicability is based on source category. If your facility falls in any of the applicable source categories, or if you emit 25,000 metric tons (mt) of CO₂ equivalent (e) or more per year ($\geq 25,000$ mtCO₂e/yr) of GHG's, including CO₂, CH₄, N₂O, or other fluorinated gases, you may be subject to the rule.

Some examples of affected source categories include the following:

- ▼ Electricity Generation
- ▼ Cement Production
- ▼ Lime Manufacturing
- ▼ Municipal Solid Waste Landfills
- ▼ Stationary Fuel Combustion Units
- ➔ Includes: _____
 - ▼ Boilers
 - ▼ Turbines
 - ▼ Incinerators
 - ▼ Internal Combustion Engines
 - ▼ Process Heaters
- ➔ Excludes: _____
 - ▼ Facilities with aggregate heat capacity <30 MMBTU/hr
 - ▼ Portable equipment
 - ▼ Emergency generators
 - ▼ Flares (unless subject to another Subpart under the rule)



EPA expects to issue revisions to the GHG Reporting Rule in 2010 to add new source categories, including:

- ▼ Industrial landfills
- ▼ Wastewater treatment
- ▼ Underground coal mines

Reports must be submitted electronically directly to the EPA using an online reporting system that is currently under development. Reporting will typically be required on a facility level.

Applicability determination tools and training slides are available on the EPA's website. See <http://www.epa.gov/climatechange/emissions/GHG-calculator/index.html> or contact EarthRes Group, Inc. at (800)-264-4553 for assistance.

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PA DEP Revises Air Quality BAT Standards for MSW Landfills

by Holly Shoup Bruch

Pennsylvania's Revised Air Quality Best Available Technology (BAT) standards for Municipal Solid Waste (MSW) Landfills became effective on June 27, 2009. The new BAT requirements apply to new and/or proposed expansions of MSW landfills and will not be applied retroactively.

- The revised BAT specifies Plan Approval requirements;
- Standards were revised and new requirements were added for gas collection systems at active landfills;
- Standards have been added for enclosed flares;
- BAT standards have been added for open flares;
- The leachate storage standards have been completely replaced;
- A new section has been added to the BAT standards for leachate recirculation; and
- The landfill fugitive dust standards have been revised.

For a complete summary of the revised BAT standards for MSW Landfills, visit our website at www.earthres.com and click on **NEWS**.

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