SCS ENGINEERS







COA FM-812 Landfill Gas Collection and Control System

System History and Efforts to Enhance Landfill Gas Collection

Initial System Installation

- Installed in 1998 by Ecogas
  - 55-well system in Areas A and B
  - Above grade headers and laterals
  - Temporary blower/flare system
  - Operated only to preserve gas tax credits
  - System dormant until 2003

System Upgrades

- Upgrades implemented in late 2003 included
  - Addition of one well (for total of 56)
  - Burying of headers and laterals
  - Installation of permanent blower/flare system
  - Addition of heat exchange system for energy
- System operation commenced December 2003

COA FM-812 Landfill - Blower/Flare Station

Gas from landfill enters blower/flare station (BFS) through pipe from right. Passes through knockout to blower and then on to flare.

COA FM-812 Landfill - Blower/Flare Station

Single blower at BFS. Gas enters through top pipe, then exits pipe on left with 90^{o} elbow. Flow meter on pipe at left edge of photo.

COA FM-812 Landfill - Blower/Flare Station

Candlestick flare with shroud surrounding it.

Vacuum System Installation

- Installed system to address gas migration
  - 11-wells placed on about 50-foot spacing
  - Intended to create vacuum barrier to migration
  - Equipped with own condensate sump
  - Connected to existing collection system
  - Installation complete in mid 2010

COA FM-812 Landfill Well

Single well with condensate sump to left.

Wellhead Improvements

- Modified wellhead connections to reduce air infiltration
  - Old connection consisted of “hard” coupling
  - New connection utilized 4 x 6 Fernco coupling
  - Wellhead upgrade completed in late 2011

Landfill Gas-to-Energy Targeted Feasibility Study

- Purposes of study included
  - Identifying options for enhancing gas collection
  - Estimating recoverable gas through modeling
  - Determining electrical generation potential
  - Identifying end-users for energy produced
  - Addressing possible greenhouse gas credits
- Overall goal was assessing viability of landfill gas-to-energy (LFGE) project

Phase I Improvements

- Consisted of basic improvements that could be implemented quickly including
  - Repair of damaged lateral pipe to well
  - Replacement of existing wellheads
  - Installation of separate vacuum source for vacuum curtain wells
- Improvements completed by mid 2013

COA FM-812 Landfill - Well Improvements

Old-style wellhead with butterfly valve.

COA FM-812 Landfill - Well Improvements

New-style QED wellhead with fine-tuning valve.

Phase II Improvements

- Consists of improvements that are more costly and time consuming including
  - Submittal of permit modification to install wells
  - Installation of 4 new wells
  - Replacement of 4 existing wells
  - Connection of 3 existing leachate collection risers to collection system
  - Installation of pneumatic pumps in 5 wells and 4 condensate sumps

Potential Impact of Phase II Improvements

- Increased gas volume being recovered
- Improved gas quality from new wells
- Decreased emissions of gases to air
- More reliable condensate sump operation