

SWANA 2012 EXCELLENCE AWARD
APPLICATION
“LANDFILL GAS CONTROL”
SENECA LANDFILL, INC



Thermal Oxidizer (Left) and Flare – Stack Testing

Nomination Page: Seneca Landfill Gas Control Project

Vogel Holding Inc., Seneca Landfill

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If Awarded: Vogel Holding Inc., Seneca Landfill Gas Control Project

2012 LANDFILL GAS CONTROL EXCELLENCE AWARD CHECKLIST AND RELEASE

2012 Applications must be submitted to SWANA no later than Friday, April 13, 2012

*** PLEASE NOTE THAT ENTRY REQUIREMENTS HAVE CHANGED ***

Application Checklist (Please make sure the following items are included in your submittal packet)

- Completed release statement (this page), to be scanned and included in digital submission
- Check (made payable to SWANA) or credit card payment for nomination fee (in U.S. dollars) via [Excellence Award Nominations](#)
- At least 2 pictures of your operation (may be included in nomination text)
- One copy of your award submittal uploaded using your purchased 2012 SWANA Excellence Awards Application Uploading Instructions
- If you would like to mail your submission, please contact Jesse Maxwell, Program Coordinator, at jmaxwell@swana.org or (240) 494-2237.

Release Statement: *I certify that the information provided in this application is accurate and correct to the best of my knowledge. SWANA reserves the right to publish the enclosed information. Nominations become the property of SWANA. My signature gives SWANA the right to reprint or make available for purchase any portion of this submittal.*

Signature: _____

Edward R. Vogel

Date: _____

April 6, 2012

EXECUTIVE SUMMARY

Seneca Landfill Inc., has a commitment to energy independence and environmental protection that is demonstrated by extensive projects to effectively collect and utilize Landfill Gas from Seneca Landfill in a manner that provides an example of excellence for the Solid Waste Industry.

Seneca's Landfill Gas Control Project attempts to recover every molecule of landfill gas for productive use by the systems, equipment, techniques, training and operations described in this application. In addition to the state of the art landfill gas collection equipment, the project includes:

- Combined Heat and Power Facility (CHP), provides electrical power for site use with surplus power sold to the local electric utility, Penn Power. Cooling water is further utilized to capture heat for site use.
- LEGO-V, High Purity Gas Recovery Systems convert landfill gas to pipeline quality gas sold to a local Gas Utility.

Features of Seneca's Landfill Gas Control Project:

- Constant monitoring,
- Ongoing installation, relocation, and adjustment of wells for optimum gas collection,
- Dedicated water removal systems,
- Training and capability of staff, and
- Attention to every possible source of landfill gas collection.

These features and activities Result in an exemplary, state of the art Landfill Gas Control Project as described in this application.



DESIGN AND CONSTRUCTION

Siting, Preparation and Design:

Siting of the Seneca Landfill Gas Control Project was predicated by the existence of a company owned and operated historic waste disposal facility that had been used for waste disposal for almost forty years and was then generating significant quantities of landfill gas which needed collected. Site Geology, Topography and historic use were evaluated and permit application was made for a landfill that would exceed Subtitle “D” requirements on the existing site. This construction included removal of some of the historic landfill. This action was partially due to a commitment by the owners of Seneca Landfill to environmental protection and partly due to the geometry the consolidated waste would achieve and the positive impact this would have on collection of the landfill gas. Siting new facilities adjacent the existing structures would produce the most cost effective and functional result with the least environmental and community impact. Our regulators agreed, construction permits were issued and work progressed through start up and enhancements are incorporated as technology develops. This state of the art facility, evolving actively with developing technology, is also a research and development site for new innovation. (See aerial of Project in Supporting Documents.)

Preparation and Design of the Seneca Landfill Gas Control Project initially was merely to collect and destroy landfill gas from the existing site in a flare for environmental protection. The owners of Seneca Landfill observed cost saving opportunity develop for landfill gas. The first opportunity was to use the landfill gas for heat and electrical power. As landfill gas technology evolved it became apparent that separation of the gas into methane and other gases would strategically position Seneca Landfill for enhanced environmental controls and increase the profitability of operations. Preparation included evaluating whether the volume of gas collected, the avoided price for power purchased, the price for natural gas purchased, the value for electricity generated and sold, the value of the methane sold, the cost of the systems and operational cost of personnel to collect and process the landfill gas into energy could be optimized to yield a favorable result.

Industry experience with electric generators powered by landfill gas demonstrated considerable maintenance and operational costs from deposition of siloxanes, contained in landfill gas, in the internal combustion engines. This very costly factor was removed when the technology to separate methane from carbon dioxide and siloxanes became effective. Removing the high maintenance and repair factors from the cost benefit evaluation favorably balanced the result.

The above factors resulted in formulation of the design basis of the Seneca Landfill Gas Control Project, to achieve total collection of Landfill Gas – down to the last molecule – and to utilize this resource for Seneca Landfill’s total energy independence. This design provides power for all site operations and contributes to a profitable operation. This design basis also achieves odor control, environmental protection, and fosters energy independence of the community we serve and the solid waste industry by our example and performance in “state of the art” Landfill Gas Control.

Blower, Flare, CHP and LEGO-V Design incorporated the NSPS requirements that LFG control systems be designed such that they “Collect gas at a sufficient extraction rate (a rate sufficient to maintain a negative pressure at all well heads in the collection system without causing air infiltration, including any wellheads connected to the system as a result of expansion or excess surface emissions, for the life of the blower).” The blower/flare equipment installed at Seneca Landfill’s Gas Control Project was designed to handle the maximum gas flow rate expected from the entire landfill, over the intended use period of the equipment. Therefore the blower/flare was designed to handle at least 9,400 scfm of landfill gas. Ten inches of water vacuum pressure at the well head located the furthest distance from the blower was specified in design to assure in excess of ten inches of water vacuum at all other well heads in the system. This specification resulted in a requirement of 9400 scfm at a minimum of 35 inches of water inlet vacuum pressure.

The Seneca Landfill Gas Control Project installed one enclosed ZTOF flare with peripheral equipment. Maximum capacity of this equipment is 6,000 SCFM of landfill gas. The unit is manufactured by John Zink Company, LLC and was installed by the manufacturer and Seneca Landfill employees. One direct drive, inlet driven, multistage blower sized for 6,000 SCFM of landfill gas at 80 inches of water vacuum pressure at the inlet and 10 inch water column completes the blower/flare installed equipment.

When the flare system described above reaches 80% of its design operational capacity, another flare system rated at 5,000 SCFM of landfill gas is specified and will be installed.

CHP design provides the flexibility to operate directly on landfill gas, with the decision to incur the additional maintenance and repair costs caused by siloxanes in raw landfill gas, or to utilize either pipeline gas or methane gas purified by the LEGO-V system and avoid these costs. The flexibility of the design enables the facility operators to evaluate prices for power, gas, and heat against operational needs and energy sources available to make the most cost effective operational decisions available based upon live time conditions. Typically the CHP would use methane from the LEGO-V system and avoid the additional maintenance and repair expense however, if the LEGO system is out of service, the pipeline gas is not available, there is no outside power and the CHP is available, the CHP can operate on landfill gas and provide power and heat to the entire site. The design truly provides the Seneca Landfill Gas Collection Project a high degree of independence from outside power.

Research and Development continues in the removal of hydrogen sulfide from raw landfill gas to further enhance the performance of the equipment and processes. Results of this research will be shared with the solid waste industry when positive improvements are documented and approved for market by the manufacturer.



Photo: CHP Building showing Jenbacher Landfill Gas Generator with Heat Recovery Piping

LEGO-V design introduced an entire “New World” of LFG control requirements as well as the ability to produce pipeline quality methane gas which may be utilized for Seneca Landfill’s site energy needs with the balance sold. The state of the art Pressure Swing Absorption and multi-membrane gas separation technology is very sensitive to infiltration of Oxygen and Balance Gases such as Nitrogen. With the Flare LFG could be destroyed with up to 5% Oxygen. With the CHP technology the acceptable Oxygen level drops to 0.5%. With implementation of the LEGO-V Project the acceptable levels of “contaminant gases” further reduced. The LFG Control System was refined, the frequency of readings was increased, employees were trained to operate gas analytical equipment, HDPE pipe fabrication and repair equipment and to monitor and adjust the well field to maintain very tight parameters for the LEGO-V System and compliance with the Operating Permits. As with the CHP, the operational flexibility to use the flare remains. This option is rarely exercised as a LFG Control Device due to the environmental and economic benefit of the state of the art enhancements to the Seneca Landfill LFG Control Project.

Construction

Construction of the Seneca Landfill Gas Control Project is to New Source Performance Standards (NSPS) described in 40 CFR 60 and started with the LFG Collection Wells and Flare.

The following performance limits were used to determine pipe sizes:

- Velocity of the gas in the pipe will not exceed 100 feet per second.
- Maximum allowable pressure drop within the pipe will not be greater than 1 inch water column per 100 feet of pipe (0.036 psi/100 ft.).
- Maximum pressure within the pipe will not exceed 25 psi.

Pipe diameters vary in size depending on the volume of LFG each pipe section is expected to carry. Pipe sizing for the LFG collection system at Seneca Landfill was performed using Pipe-Flo™ Fluid Flow Analysis Software using the following data:

- Material: HDPE – Flexco
- Schedule: 160 psi (SDR 11)
- Fluid Zone: Methane

A model of the proposed Seneca Landfill LFG Control System was created in Pipe Flo™. The input data for the LFG Control Project included:

- LFG flow into the system at each proposed well head.
- LFG flow into the system from the existing wells.
- Pipe lengths, endpoint elevations, fittings and initial diameter.
- Wellhead elevations.
- Compressor inlet location and elevations.

Each section of pipe within the system was sized in accordance with the design criteria and inputs described above. The Pipe-Flo™ software provided output data for each proposed section of pipe within the system: gas flow volume (cfm), velocity (ft/sec), pressure loss[dP](psi), length (ft), head loss [HL](ft) and resistance coefficient [k](unitless). The Pipe-Flo™ report also provides flow rate (cfm), pressure loss (psi), and elevation data for each proposed node installed along the LFG conveyance header pipe.

Connection of the Waste Water Treatment Plant to the cooling system of the CHP followed and significant quantities of waste heat were recovered and used to replace fossil fuel consisting of natural gas and/or propane gas for heating both the facility buildings and the waste water processing equipment and tanks. This achievement successfully completed the CHP and Energy Harvest Grant objectives to demonstrate that a clean-burning cogeneration project could use a portion of the landfill gas to power the facility and to provide hot water for the leachate treatment process and to operate continuously, in parallel, with the local electric utility company, Penn Power, as a continuous “stand by” operation while providing environmental benefits which will be discussed later.



Above: One of Two 600 HP Compressors in the LEGO-V System

Following completion of the Combined Heat and Power Project, Seneca Landfill's owners promptly moved to the next phase of the overall Landfill Gas Control Project with the design and construction of the LEGO-V facility. LEGO-V is a "state of the art" Pressure Swing Absorption (PSA) gas separation process which separates landfill gas through membranes, under pressure. The membranes are supplied as a bank of individual membranes, by Air Liquide. (See Support Documents.) The design allows change out of individual membranes or application of the desired number of membranes for the quantity of gas available.

The membrane separation refines landfill gas into two components: Saleable, utility grade, high purity methane gas and waste gas. The waste gas consists of carbon dioxide and balance gases. Waste gases are destroyed in a Thermal Oxidizer.

The first 11 Landfill Gas Separation units deployed utilized high purity product gas as the energy source to destroy the waste gases and any organic balance gases in the Thermal Oxidizer (TOX) system. In the LEGO-V Project, the 12th unit sold in the US, advances in operating technology developed by the owners of Seneca Landfill were adopted which utilized raw landfill gas to fuel the TOX. This development resulted in a greater yield of pipe line quality methane from landfill

gas thereby further improving the technology of the already “state of the art system” and improving the environmental and financial performance of this technology. This improvement contributes to further marketing of “state of the art” technology which serves to provide environment, solid waste industry and energy conservation benefits.



Photo Above: Air Liquide Gas Separator Membrane Skid – Right; PSA Beds on Left during carbon change maintenance. Note activated carbon staged for recharging PSA Beds in foreground.

The TOX is manufactured by Met-Pro Systems of Harleysville, PA. The LEGO-V unit features a 48.5 inch inside diameter tube and is 40 feet high. The TOX processes up to 2010 scfm of PSA waste gases at a nominal Higher Heating Value (HHV) of 95-120 Btu/cubic foot. The combined burners are rated to burn a total of 3,000,000 Btu/hr of PSA Blowdown gases, 111 scfm, at 460-600 Btu/cubic foot. At these heat contents, the maximum heat release in the TOX is rated at 14.47 million Btu/hr.

(See the Photograph of the Thermal Oxidizer on the Cover of this Document – Note that the wiring exposed is test equipment for the Stack Testing Protocol in progress.)

Complete and thorough combustion and destruction of waste gases is accomplished by deployment of burners fired by raw landfill gas in the base of the TOX. These burners operate continuously and provide baseline heating of the chamber. Waste gases are introduced into a “surge” tank with each blow down of the PSA beds. Gas from the surge tank is introduced into the upper chamber of the TOX at a rate to achieve complete combustion of the waste gases between blow down cycles of the PSA beds. The raw landfill gas provides the combustion source for the combustible components of the waste gas and achieves total destruction of residual methane and trace organic compounds. All flame is contained within the TOX and temperatures are controlled via a PLC based temperature control loop that maintains a set temperature to the TOX. The PLC is located in the control panel and is monitored remotely. The state of the art control system features call out capabilities to notify the operators if attention is needed.

LEGO-V was designed to further utilize waste heat from the Waste Water Treatment Plant to heat the facility by means of recirculating the discharge of the Waste Water Treatment Heat Exchanger Fluids through a series of pipes embedded in the floor of the building. This final step recovers the remaining heat energy from the Combined Heat and Power Project.

The LEGO-V project required two years from design to completion of construction in 2011. The drive behind the project was to control methane from landfill gas, to prevent this contamination from entering the environment, and to use this resource. Use included conserving (replacement of) natural gas from wells and providing the option to power electrical generators without the harmful siloxanes which plague operators of generators powered by landfill gas and to develop an alternate fuel for Waste Collection Vehicles.

In advance of the LEGO-V project, the Combined Heat and Power Project (CHP) sought to demonstrate that a clean-burning cogeneration (combined heat and power) project could use a portion of landfill gas (LFG) at the Seneca Landfill and generate 335 Kwh of electricity while also providing hot water for the leachate treatment process. The electrical generation system operates in parallel with the local electric utility company (Penn Power) and as a continuous stand-by operation.

LEGO –V was brought on line in February, 2011 and is currently producing high purity methane gas which is sold to Peoples Natural Gas Company through a gas transmission pipeline was constructed to connect to the utility’s lines 1.99 miles from the site. Since start up, LEGO-V has produced 290,000,000 cubic feet of pipe line quality gas, enough to provide for the annual needs of 3,222 homes at 7.5 mCf/month from a resource which would have otherwise been destroyed with no environmental or energy benefit. Overall, the Combined Heat and Power and the LEGO-V Projects are believed to demonstrate one of the most effective and environmentally beneficial “state of the art” Landfill Gas Control Projects in North America.

The result of the Seneca Landfill design and construction is a state of the art Landfill Gas Control System that evolves with landfill construction, adoption of new technology and which performs research and development to further enhance site and Solid Waste Industry performance in landfill gas control.



Photo Above: Combined Heat and Power (Methane or LFG Powered Generator) Control Panel

End Use Plans for the Seneca Landfill Gas Control Project include using the facility as a model for others in the Solid Waste Industry, or in Secondary and College Level Education programs, to provide a working, profitable, example of the application of state of the art technology in Utilization of Landfill Gas to preserve energy independence in our operations, locally and nationally. Seneca Valley High School is three miles south of Seneca Landfill and the opportunity to provide educational programs for environmentally sound solid waste management, power generation and conservation of resource through developing and applying state of the art technology to Seneca Landfill's Gas Utilization Project is an opportunity the owners of Seneca Landfill welcome.

The design of the Seneca Landfill Gas Control Project provides for the beneficial elimination of environmental contaminants now and well into the future. Use of the state of the are equipment and facilities of the Seneca Landfill Gas Control Project during the operation of the facility and through the Closure and Post Closure Phases of Seneca Landfill provide excellent environmental protection and will continue to reduce environmental contamination from the use of other fossil fuel through the end of active landfill gas production. Adoption of a second, larger, generator

may further allow the option of switching from production of pipe line gas to additional electrical power generation to better serve the interests of the community and for enhanced financial performance of the Project. Upon completion of active landfill gas production the facilities and equipment may be dismantled and sold. The land area upon which they are constructed may then be put to use for other beneficial purposes by the owners.



Photo Above: Landfill gas being collected from leachate piping clean out port in capped landfill area.

ENVIRONMENTAL CONTROLS

Seneca Landfill's Gas Control Project utilizes groundwater, landfill gas and leachate treatment environmental controls as described below. Seneca Landfill utilizes a minimum, double, 60 mil liner over a geo-composite liner to control leachate at the facility since 1993. Some cells have double 80 mil liners and others have double geo-composite liners with 60 mil HDPE thicknesses on each liner. As the facility undergoes expansion, Seneca Landfill is recovering historic waste - emplaced without liners - voluntarily and moving this historic waste onto cells constructed with the double 60 mil liners and geo-composite system to provide excellent environmental controls.

Groundwater - Since the landfill was initially constructed in 1961 there has been no groundwater degradation. There are 12 groundwater monitoring wells that surround the landfill to strategically monitor groundwater. One of the wells is an "up gradient" well that is used as a reference for the remaining wells that are under or down gradient from the landfill in the ground water flow pattern. These wells are sampled and tested quarterly. DEP is provided the results of this sampling directly from the contracted Lab for their review. (Seneca Landfill and our host Municipalities also receive a copy of the analytical results for review.

Seneca Landfill's Gas Control system consists of 170 vertical wells, a gas collection system powered by two 125 horsepower electric motors which serve to both collect the landfill gas and to keep negative pressure on the landfill to prevent odor, a flare, the LEGO-V, and a Jenbacher model JSG 208 generator set and control systems generate 335 kWh of power. The Jenbacher unit consumes about 75 scfm of product gas from the LEGO-V facility rather than raw landfill gas to prevent harm to the engine from siloxanes found in landfill gas which causes a mineral deposit buildup on pistons and heads of internal combustion engines. Siloxanes in raw landfill gas that are removed by the LEGO-V facility but the Jenbacher unit can also operate on the raw landfill gas when the LEGO-V facility is not available. A 6,000 scfm Zink Flare is utilized to destroy gas when the generator and the LEGO-V facilities are not available to productively use the landfill gas. This condition is kept to a minimum. A separate air compressor powers dedicated pneumatic gas well pumps which remove water from the landfill gas wells, maximize the collection of landfill gas, and enhance the odor control capability of the system. In addition to the vertical wells, Seneca Landfill's LFG Control Project implements temporary horizontal wells when other gas is found and collects LFG from pipe cleanouts to assure that every possible molecule of LFG is controlled. (See photo on above page.)

The landfill gas collection wells are monitored and adjusted as necessary, often daily, to assure proper function and compliance with operating permits.

Leachate is collected by a gravity flow collection system into a centralized pump station. Secondary leachate collection is by the pneumatic pumps in the landfill gas collection wells. Leachate from these wells is conveyed by a series of gas and leachate collection pipelines to the leachate pump station where the leachate is separated and stored while the gas is directed to the

compressor which collects landfill gas for discharge to one of the three separate gas control/processing facilities described above. From the leachate pump station, the leachate is pumped into one of four, 400,000 gallon processing/ equalization or storage tanks. From there leachate is processed through two clarifiers heated with heat recovered from the generator powered by landfill gas, aerated to remove BOD then flocculent is added and the leachate is processed through a filter press to remove suspended solids, heavy metals and other contaminants. The leachate is then filtered and passed through a three tower aerobic bio-reactor for ammonia removal. Chemistry is performed and composite samples taken. Upon review and verification of the chemistry to permit conditions the leachate is discharged to Connoquenessing Creek under Seneca Landfill's NPDES permit.

Seneca Landfill's Landfill Gas Control Project reduces greenhouse gas emissions and provides benefits to the environment by eliminating 9,000 tons of methane emissions each year. By using the hot water from the Jenbacher Generator Set, Seneca is using a valuable asset which would otherwise be wasted. Generating both electricity and 'natural' gas from the decomposing garbage in the landfill incorporates conservation into Seneca's management plan. There is no discharge of water from the use of the landfill gas. Leachate is separated from the gas and processed separately. The cooling and heat transfer fluids are in closed loops and are continuously recycled within the system. When periodic maintenance of the fluids is mandated, the fluids are commercially recycled.

Off-site migration of subsurface gas must be minimized under NSPS. The LFG Control System installed at Seneca Landfill is designed and constructed with environmental controls to monitor and control subsurface gas migration in accordance with state and federal regulations. The subsurface gas monitoring system is comprised of 27 monitoring probe clusters spaced around the permit boundary. The monitoring probe clusters have shallow well depths of 0-25 feet, medium well depths of 25 to 45 feet and deep well depths, where applicable based upon water table elevation, of 45-129 feet. These wells are monitored for Carbon Monoxide and Methane.

Condensate removal from Seneca Landfill's LFG Control Project has been designed based upon 9,238 scfm of landfill gas. Using the EPA Model the condensate design basis volume required was 1,688,490 gallons per year, maximum, Condensate Generation. The condensate is collected in the gas control system and separated from the gas at a "knock out" above the leachate collection sump from whence it is pumped via double walled HDPE piping to the Waste Water Treatment Plant for sampling and processing. Environmental Controls at the Seneca Landfill Gas Control Project are state of the art and do an excellent job of protecting the environment in our community.

REGULATORY COMPLIANCE

Vogel Holding Inc., owner of Seneca Landfill and the Landfill Gas Control Project, is a privately held family business started in 1958 by Edward L. Vogel and Margaret J. Vogel, husband and wife, which has grown into a successful enterprise with 451 employees. The employment opportunity provides benefits to the local region. Vogel Holding is an Integrated Solid Waste Management System committed to excellence in solid waste management in west central Pennsylvania. Vogel Holding Inc., provides comprehensive services including: waste disposal, recycling, processing of wood and shrubbery into mulch products, waste transportation, natural gas production, electrical power generation, Christmas Tree recycling, and annual clean ups for Host Municipalities.

Seneca Landfill provides educational opportunity for local students and organizations through tours of the facility, presentations at Municipal functions, and support of environmental education programs.

Edward R. Vogel, Vice President and Corporate Officer for Seneca Landfill, represents the Private Sector on the DEP Solid Waste Advisory Committee and has served in this volunteer position since 2005.

Seneca Landfill attempts to achieve full compliance with local, state and federal regulations using the most up to date electronic monitoring systems, through training our staff and compliance with our operating permits. The position of Seneca Landfill is that it is our duty to operate in full compliance with all local, state and federal regulations and the operating permits from DEP. It is our objective to foster an open and pro-active relationship with our regulators by demonstrating our ongoing commitment to this duty.

Cover pages from the Energy Harvest Grant Notification and Solid Waste Inspections are enclosed with Supporting Documents. Due to space constraints the entire inspection reports have not been submitted. There were no violations or items of non-compliance on the inspection. Vogel Compliance Tracking Software allows our staff to monitor system compliance from home or office and respond as necessary.

Seneca Landfill has an active safety program. The Landfill Gas Control Program has had no lost time injuries or accidents. Safety Training in Accident Reduction Techniques (S.T.A.R.T) was recently completed by all Seneca Managers and Supervisors.

PLANNING, OPERATIONS AND FINANCIAL MANAGEMENT

The Seneca Landfill Gas Control Project created a unique, state of the art, set of equipment to control Landfill Gas. Seneca Landfill has worked diligently to plan the facilities, equipment and staff to operate an exemplary project with stringent environmental controls in a cost effective and profitable manner. To this end Seneca Landfill has entered into contracts with two different utilities to market both electricity and natural gas. This resulted in the flexibility to meet all environmental concerns, provide for the energy needs of the site, and to selectively market product to meet the most pressing energy needs of the community. (The most pressing needs are also the most profitable market.)

The operating contracts provide a defined price for both electrical power and natural gas based upon meter readings. Net Metering on the electric supply line provides for a backup power supply In the event the Seneca Landfill power generator should fail while measuring power sold when the generator is running. Under this concept if power going out exceeds power used, Seneca Landfill is paid for the power generated per the terms of the contract. For the gas, payment is based upon meter readings. There is no backflow capability on the gas line. Under both contracts, Seneca Landfill is responsible for operating and maintaining the facilities which produce the power or gas being marketed. While this project was envisioned as a way to reduce the cost of energy consumed by Seneca Landfill and to demonstrate the benefits of co-generation of clean power and heat, there is a potential for revenue from the Project as well as an opportunity for positive public relations for the solid waste industry from public awareness of the state of the art energy conservation systems being used at Seneca Landfill.

Capital expenditures and financial performance data for the Seneca Landfill Gas Control Project is not available for publication, however the value of the electrical power and natural gas produced may be readily computed from available references in the public domain. This will allow planners to evaluate the cost benefit of a similar project at other facilities using site specific cost and product sales values. Because the value of energy changes from minute to minute in each market, the value of each commodity contemplated for market must be evaluated in the local market then compared to the production technology contemplated.

The option to install a larger power generator within the current project boundaries to allow focus of energy production on the product - power or gas - that will best serve the need of local markets while simultaneously providing the most revenue to the owners of the project, provides an opportunity for expansion of this project.

UTILIZATION OF EQUIPMENT/SYSTEMS AND TECHNOLOGIES

Seneca Landfill's Gas Control Project utilizes several components, described earlier:

- Landfill Gas Control, Collection and Pre-Treatment, collects landfill gas and pre-treats for use.
- LEGO-V, the facility that produces high purity methane gas using state of the art Pressure Swing Absorption Technology and Selective Membranes to yield high purity, pipeline quality methane. This high purity methane is used to power the HP or Combined Heat and Power component and sold as Natural Gas.
- CHP provides electrical power for all site needs and heat for waste water treatment and most buildings resulting in an operation that is energy independent of outside power and natural gas. Both LEGO-V and CHP produce energy that is sold to local utilities.
- Heat Recovery System, provides heat to process equipment and facilities eliminating the need to purchase natural gas for these purposes.
- Aggressive control and collection of LFG to achieve profitable operations and exemplary performance in landfill operations.

Vertical wells are equipped with dedicated, automatic, pneumatic well pumps to remove leachate which reduces gas generation and collection efficiency. The leachate is pumped into the gas collection headers and removed at a moisture separator near the leachate pump station where leachate is collected in the sump for processing. The automatic, pneumatic, well pumps are powered by a dedicated air compressor.

Processing of Landfill gas for production of high purity methane gas begins in the collection lines where a proprietary chemical provided by Innospec and PPC Lubricants may be injected into the 18 inch gas collection lines to precipitate hydrogen sulfides at the moisture separation stage. Processing of the gas for production of methane continues with use of an optional Sulfa Treat system to further reduce hydrogen sulfides which are harmful to the carbon filter beds in the Pressure Swing Absorption system as needed. These state of the art options further improve the effectiveness of the Seneca Landfill Gas Control Project and the Innospec/PPC technology is unique to the industry.

LEGO-V receives the landfill gas collected. Using state of the art Pressure Swing Absorption Technology and Selective Membranes provided by MEDAL and Air Liquide the process yields high purity, pipeline quality methane. A fraction of this high purity methane is used to power the CHP or Combined Heat and Power component and does not contribute to siloxane buildup on

the pistons and heads of the Jenbacher engine. The remaining high purity product gas is piped 1.99 miles to a gas transmission line and sold to Peoples Natural Gas Company (See Support Documents). A meter at the tie in provides a record of the volume of gas sold. The gas is monitored for BTU value, oxygen and nitrogen then an odorant is added by Seneca Staff. Compliance tracking readouts are available on line. In the event of non-compliance Seneca Staff is remotely notified and may adjust the system remotely to achieve compliance. Seneca Staff are trained to operate and maintain the LEGO-V unit and have done so since start up. Training is supplemented as innovation in systems develops new operating or maintenance techniques.

CHP provides electrical power for all site needs utilizing a 335 kWh Jenbacher model JSG 238 generator set. Surplus power is sold to the local utility. Seneca Landfill Staff have been well trained to operate and maintain this system well.

Heat Recovery System, provides heat to process equipment and facilities eliminating the need to purchase natural gas for these purposes. Both LEGO-V and CHP produce energy that is sold to local utilities thereby saving more than \$30,000 per year in energy costs, conserving natural resources and eliminating more than 9,000 tons/year of methane environmental pollution as well as acid rain forming hydrogen sulfides.

PUBLIC ACCEPTANCE APPEARANCE AND ASTHETICS



Photo Above: Welcome to Seneca Landfill

The Seneca Landfill Waste Utilization Project is kept neat and presentable. Daily inspections and odor patrols are in place to ensure compliance with operating permits and minimal disruption to our neighbors. Tours of the facility are available to those interested. In addition, Seneca Staff visit the local municipalities and provide presentations on the activities and points of interest at the facility.

At a recent Lancaster Township Meeting (Seneca Landfill's Host Municipality) the Landfill Gas Control, Landfill Reuse, and Landfill Gas Control Projects were described. Several members of the audience commented: "I had no idea such a state of the art and comprehensive program existed in our area." (See letters from Lancaster and Jackson Township, Seneca Landfill's Host Municipalities, in the Support Documents Section)

Offering tours and sponsoring organized programs for Scouts and other civic groups helps foster public acceptance. Seneca Landfill has approximately 600 acres of land providing opportunity

for many outdoor activities and environmental educational projects on the facility. These projects are considered as requested in an attempt to foster community relations.

Seneca Landfill has been part of this community for more than 50 years and looks forward to recognition for our efforts and continuing to provide a positive and proactive relationship with our host municipalities, neighbors, the communities we serve and the Solid Waste Industry.

INNOVATION AND CREATIVITY

The Seneca Landfill Gas Control Project is the only facility in the world that currently utilizes raw landfill gas to operate the Thermal Oxidizer and one of 15 facilities in North America that use Pressure Swing Absorption and dual membrane technology to separate methane from landfill gas and market it directly to a public utility.

Seneca Landfill's Gas Utilization is unique in that it has the option to generate either electrical power or gas to best meet the needs of the local market.

Seneca Landfill's Gas Utilization Project is unique in having pre-treatment for removal of hydrogen sulfide – the major component of acid rain – in our leachate and gas collection and transmission lines as well as the option to utilize Sulfa Treat technology down-stream to further reduce hydrogen sulfide contamination in our gas and leachate.

Secondary heat recovery is utilized to heat buildings from combustion of landfill gas in the CHP facility.

Seneca Landfill's Gas Utilization Project allows the facility to operate fully independent of outside utilities for heat and power during normal operations and to provide backup energy sources for our local community.


The Seneca Landfill Gas Control System evolves with adoption of new technology and performs research and development to enhance site and industry performance in landfill gas control. Seneca Landfill and our parent organization have a commitment to energy independence for our facility, our community and our nation.

It is hoped the Seneca Landfill Gas Control Project is judged worthy of recognition for the leadership in this area demonstrated by our employees and corporate management.

SUPPLEMENTAL MATERIALS

Most Recent DEP Inspection Report – No Items of Non-Compliance

2540-FM-BWM0131 6/2005

 COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT
P.O. BOX 8472, HARRISBURG, PA 17105-8472

Inspection ID _____
Field Code _____

INSPECTION REPORT – MUNICIPAL WASTE LANDFILL

Site I.D. Permit # 100403
Site Name Seneca Landfill
Address 421 Hartman Rd.
Evans City, PA 16046
Municipality Jackson and Landcaster Twps
Responsible Official Edward R. Vogel
Person Interviewed _____
Inspector Martha Michalek
eFACTS ID # PF _____ SF _____
Comment: _____

Telephone # 724-452-0899
Operator Name same
Address _____
County Butler
Title Vice President
Title Solid Waste Specialist

Inspection Date: 3/27/2012 Type: Mnc Results: _____ Resolved: / /
Permit Expiration Date: 10/5/2017 Days/Week Operated: 6 Max. Daily Volume: 3000 tn

1 - No Violation Observed 2 - Not-Applicable 3 - Not-Determined 4 - Non-Compliance

STATUS				REVISION	COMMENTS ATTACHED	CHAPTER CITATION	LINE ITEM
1	2	3	4				
GENERAL PROVISIONS							
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Required insurance in effect (expiration date <u>4/1/2012</u>).	<input type="checkbox"/>	271.371	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operation in accordance with approved plans and permit.	<input type="checkbox"/>	273.201(c)(2)	2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operation within permit boundaries (vertical and horizontal).	<input type="checkbox"/>	273.201(c)(2)	3
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Disposal Timing and sequence as per Section 273.112(1).	<input type="checkbox"/>	273.201(c)(2)	4
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No unapproved wastes or liquids.	<input type="checkbox"/>	273.201(d)-(m)	5
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Isolation distances are adhered to.	<input type="checkbox"/>	273.202(a)	6
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Facilities certification requirements followed.	<input type="checkbox"/>	273.203(a), (b)	7
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Written Department approval of new construction prior to waste disposal.	<input type="checkbox"/>	273.203(c)	8
DAILY OPERATIONS							
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proper signs posted.	<input type="checkbox"/>	273.211(a)	9
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Site perimeter clearly marked and grid coordinate system in use.	<input type="checkbox"/>	273.311(b)-(d)	10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proper barriers installed around site and access controlled when attendant not present.	<input type="checkbox"/>	273.212(a)-(i)	11
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Access roads maintained and negotiable by collection vehicles.	<input type="checkbox"/>	273.213(a)-(i)	12
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Approved means of measuring and inspected waste utilized.	<input type="checkbox"/>	273.214(a), (b)	13
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Adequate equipment on-site and stand-by equipment available.	<input type="checkbox"/>	273.215(a), (b)	14
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vehicles directed promptly to unloading area and promptly unloaded.	<input type="checkbox"/>	273.216(a), (b)	15
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Solid waste spread and compacted as approved by Department as part of permit.	<input type="checkbox"/>	273.216(c)	16
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operator implements fugitive air contaminant control/measures and prevents and controls air pollution including no exceeding of ambient air quality standards, no open burning, and minimizing generation of fugitive dust emissions from facility.	<input type="checkbox"/>	273.217(a)	17
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Operator complies with Air Quality Plan approval and Air quality Operating Permit.	<input type="checkbox"/>	273.217(b)	18

Page 1 of 7

LANCASTER TOWNSHIP
113 Kings Alley
Harmony, Pennsylvania 16837

Phone: (724) 452-7313
Fax: (724) 452-6139
E-mail: seneca@jacksontownship.net
www.jacksontownship.com

March 19, 2012

Solid Waste Association of North America
2012 Landfill Excellence Award Program

Subject: Nomination of Seneca Landfill for Excellence Awards

Dear SWANA:

Seneca Landfill is hereby nominated by the Board of Supervisors of Lancaster Township, Butler County, Commonwealth of Pennsylvania for Excellence Awards in the categories of Landfill Re-Use, Landfill Gas Utilization, and Landfill Gas Control.

Seneca Landfill has operated in our Township for more than 50 years, providing safe and environmentally sound waste disposal for our residents and the surrounding area. During this time Seneca Landfill has removed thousands of tons of waste from utilized landfill areas and placed this material on double lined, state of the art, landfills designed to both collect and recirculate the leachate from the landfill and prevent ground water contamination. Seneca Landfill did not have to remove the waste deposited prior to 1988 and place it on liners but they did this voluntarily to protect the environment, our ground and surface water, and other natural resources. This is excellent performance in re-using landfill space for our residents and keeps land from being removed from our tax base which is important to the Township in these difficult economic times.

Seneca Landfill has a comprehensive series of landfill gas collection equipment including vertical wells and horizontal collection sites that collect the gas generated by the decomposition of waste and processes this waste byproduct into pipeline quality gas that heats our homes, provides cooking, laundry and other household conveniences to our community without dependence on foreign oil or energy. There are miles of pipeline, approximately 50 water removal pumps, power generators which supply power to operate the landfill on site and the surplus power is also sent to the grid to power our homes. This is an excellent example of gas collection, gas control, beneficial use to the community and excellence in positioning our community to be energy independent. The leadership of the owners of Seneca Landfill is voluntarily pursuing, at great cost to be

sen, development of the state of the art energy recovery and power generation equipment they have deployed to the benefit of our community should be recognized for the excellence this demonstrates.

In addition to the high tech equipment and projects above, Seneca Landfill provides pro-bono bulk waste disposal to our residents annually. This is a great community service, saves our residents a lot of money, and is appreciated. Seneca Landfill also provides a dumpster to the Township during special clean up project and accepts tires and other debris that is thrown along side township roads.

On behalf of the Board of Supervisors of Lancaster Township, we are pleased to nominate Seneca Landfill for the 2012 Solid Waste Association of North America Landfill Excellence Awards.

LANCASTER TOWNSHIP
BOARD OF SUPERVISORS

By: 
Dennis C. Kerr, Chairman

By: 
Darrel K. Schneider

By: 
Joseph D. Pietsch



JACKSON TOWNSHIP

140 MACILL ROAD • ZELLENOPLE, PA 16063 OFFICE: (724) 452-6881 • FAX (724) 452-6584

Jay B. Grinnell, Chairman
Ronald E. Latta, Vice-Chairman
Gary R. Goshling, Supervisor

April 4, 2012

Solid Waste Association of North America
2012 Landfill Excellence Award Program

Subject: Nomination of Seneca Landfill for Excellence Awards

Dear SWANA:

Seneca Landfill is hereby nominated by the Board of Supervisors of Jackson Township, Butler County, Commonwealth of Pennsylvania, for Excellence Awards in the categories of Landfill Re-Use, Landfill Gas Utilization, and Landfill Gas Control.

Seneca Landfill has operated in our Township for more than 50 years, providing safe and environmentally sound waste disposal for our residents and the surrounding area. During their operations, Seneca Landfill has removed thousands of tons of waste from utilized landfill areas and placed this material on double lined, state of the art, landfills. These "Sub Title D" landfills are designed to collect leachate from the landfill and prevent ground water contamination. Seneca Landfill did not have to remove the waste deposited prior to 1988 and place it on liners but they did this voluntarily to protect the environment, our ground and surface water, and other natural resources. This is excellent performance in re-using landfill space for our residents. Seneca Landfill also provides us a consolidation on waste they dispose which is important to the Township in these difficult economic times.

Seneca Landfill has an extensive landfill gas collection and control system that collects the gas generated by the decomposition of waste and processes this waste byproduct into pipeline quality gas that heats our homes and provides other household conveniences to our community. We appreciate the effort of Seneca Landfill to make us energy independent. The gas also powers electrical generation equipment on the Seneca site which supplies power to both operate the landfill and to power our homes. This is an excellent example of gas collection and control which is very beneficial to our community and positions our community to be energy independent. The leadership of the owners of Seneca Landfill in developing the state of the art energy recovery and power generation equipment they have deployed to the benefit of our community is nominated to be recognized for the excellence this demonstrates.

On behalf of the Board of Supervisors of Jackson Township, we are pleased to nominate Seneca Landfill for the 2012 Solid Waste Association of North America Landfill Excellence Awards.

Sincerely,


Jackson Township Manager

RICHARD R. STEVENSON
MAJORITY CLERK ADMINISTRATION



HOUSE OF REPRESENTATIVES
COMMONWEALTH OF PENNSYLVANIA
HARRISBURG

ROOM 211 B JEFFERSON CAPITAL BUILDING
PO BOX 200000
HARRISBURG, PENNSYLVANIA 17120-0000
PHONE: (717) 781-8438
FAX: (717) 781-1848
E-MAIL: rrs@houserpa.com
WWW: www.houserpa.com
TOLL FREE: (800) 267-0488
TAX: (717) 482-4104

March 5, 2012

Solid Waste Association of North America
2012 Landfill Excellence Award Program

Re: Nomination of Seneca Landfill
for Excellence Awards

Dear SWANA:

Seneca Landfill is hereby nominated for the 2012 Landfill Excellence Awards in the categories of Landfill Re-Use, Landfill Gas Utilization, and Landfill Gas Control.

Seneca Landfill has operated in the 8th legislative district for more than 50 years, providing safe and environmentally sound waste disposal for our residents and the surrounding area. During this time Seneca Landfill has removed thousands of tons of waste from unlined landfill areas and placed this material on double lined, state of the art, landfills designed to both collect and recirculate the leachate from the landfill and prevent ground water contamination. Seneca Landfill did not have to remove the waste deposited prior to 1988 and place it on liners but they did this voluntarily to protect the environment, our ground and surface water, and other natural resources. This is excellent performance in re-using landfill space.

Seneca Landfill has a comprehensive series of landfill gas collection equipment including vertical wells and horizontal collection sites that collect the gas generated by the decomposition of waste and processes this waste by-product into pipeline quality gas that heats our homes, provides cooking, laundry and other household conveniences to our community without dependence on foreign oil or energy. There are miles of pipeline, approximately 50 water removal pumps, power generators which supply power to operate the landfill on site with surplus power sent to the grid to power our homes. This is an excellent example of gas collection, gas control, and beneficial use of energy to the community and excellence in positioning our community to be energy independent. The leadership of the owners of Seneca Landfill in voluntarily pursuing, at great cost, development of the state of the art energy recovery and power generation equipment they have deployed to the benefit of our community should be recognized for the excellence this demonstrates.

In addition to the high tech equipment and projects above, Seneca Landfill provides pro-bono bulk waste disposal to our residents annually. This is a great community service and is appreciated.

It is my pleasure to nominate Seneca Landfill for the 2012 Solid Waste Association of North America Landfill Excellence Awards.

Sincerely,


Richard R. Stevenson
Member, 8th District
PA House of Representatives

RRS/jed

County of Butler Board of Commissioners

124 W. Democrat Street, PO Box 1208, Butler, PA 16003-1208
Phone: (724) 284-6300 Fax: (724) 284-3400 TDD: (724) 284-3413



Commissioners
William L. McCarrier, Chairman
A. Dale Pinkerton, Vice Chairman
James Eckstein, Secretary

Dir. of Adm./Chief Clerk
William S. O'Donell

Solicitor
Julie M. Graham

February 29, 2012

Solid Waste Association of North America
Subject: Nomination of Seneca Landfill for 2012 Landfill Excellence Awards

Dear SWANA:

The Butler County Board of Commissioners would like to express its support for the nomination of Seneca Landfill, located in Evans City, Pa., for the 2012 Landfill Excellence Awards in the categories of Landfill Re-Use, Landfill Gas Utilization, and Landfill Gas Control.

Seneca Landfill has operated in Butler County, Pa., for more than 50 years, providing safe and environmentally sound waste disposal for our residents and the surrounding area. During this time, Seneca Landfill has removed thousands of tons of waste from unlined landfill areas and placed this material on double-lined, state-of-the-art landfills designed to both collect and recirculate the leachate from the landfill and prevent ground water contamination. Seneca Landfill did not have to remove the waste deposited prior to 1988 and place it on liners, but they did this voluntarily to protect the environment, our ground and surface water, and other natural resources, and continue to do so with the current construction of their new Cell. This is excellent performance in re-using landfill space.

Seneca Landfill has a comprehensive series of landfill gas collection equipment including vertical wells and horizontal collection sites that collect the gas generated by the decomposition of waste and processes this waste by-product into pipeline-quality gas that heats our homes and provides cooking, laundry, and other household conveniences to our community without dependence on foreign oil or energy. There are miles of pipeline, approximately 50 water removal pumps, and power generators which supply power to operate the landfill on site, with surplus power sent to the grid to power our homes. This is an excellent example of gas collection, gas control, and beneficial use of energy to the

community and excellence in positioning our community to be energy-independent. The leadership of the owners of Seneca Landfill in voluntarily pursuing, at great cost, development of the state-of-the-art energy-recovery and power-generation equipment they have deployed to the benefit of our community should be recognized for the excellence this demonstrates.

In addition to their high-tech equipment and projects, Seneca Landfill provides pro-bono bulk waste disposal to the residents of their host communities annually. This is a great community service and is appreciated.

It is our pleasure to nominate Seneca Landfill for the 2012 Solid Waste Association of North America Landfill Excellence Awards. Thank you for your positive consideration of this nomination.

Sincerely,

BUTLER COUNTY BOARD OF COMMISSIONERS


William L. McCarrier
Chairman


A. Dale Pinkerton
Vice Chairman


James Eckstein
Secretary

/s/



March 16, 2012

Mr. E.R. Vogel
Seneca Landfill
P.O. Box 1080
Mars, PA 16046

Re: Letter of Recommendation for Landfill Gas Utilization Excellence Award

Dear Mr. Vogel:

I commend Seneca Landfill for setting a leading example for how to harness landfill gas in order to maximize reuse and minimize waste. Seneca makes full use of the gas collected from the landfill not only by fueling a power generator, but also by supplying a high BTU gas separation plant, which produces high quality methane that is fed into the local utility's pipeline. Seneca is one of fifteen landfills in the country making use of the Air Liquide MEDAL Biogas gas separation unit, which uses membrane technology to separate the methane from the carbon dioxide in the landfill gas. Such innovation and forward thinking adds gas back into the grid and significantly reduces the amount of harmful greenhouse gas emitted into the atmosphere.

Seneca Landfill further maximizes value by fueling the waste destruction unit, the Thermal Oxidizer, with the raw landfill gas, rather than with the higher quality product gas. In doing so, Seneca Landfill is demonstrating their commitment to providing as much high value, high BTU gas as they can to the local utility, which in turn benefits the surrounding community.

On top of that, Seneca Landfill even makes use of the waste heat from the gas utilization systems to provide heat to buildings and the site's wastewater treatment equipment. This is yet another prime example of Seneca's pursuit to ensure that no energy source goes to waste.

Because of Seneca's dedication to generate and maximize valuable sources of energy, minimize waste, and reduce harmful impact to the environment, I recommend Seneca Landfill for the SWANA Landfill Gas Utilization Excellence Award.

Sincerely,

Charles L. Anderson
Director, Clean Energy Products

MEDAL, a division of Air Liquide Advanced Technologies U.S. LLC
305 West Street • Newark, NJ 07102 • USA • Phone (973) 325-1188 • FAX (973) 325-8412
Email: info.medal@airliquide.com • Website: www.medal.com



Pennsylvania Department of Environmental Protection

Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063
June 1, 2004

Office of Air, Recycling and Radiation Protection

717-772-2724

Mr. Edward L. Vogel
Seneca Landfill, Inc.
P.O. Box 1080
Mars, PA 16046-1080

Re: NW030016381
Seneca Landfill Gas to Energy

Dear Mr. Vogel:

On behalf of Gov. Rendell and Secretary McIntyre, I would like to congratulate you on your recent Energy Harvest grant award.

Enclosed are three originals of the proposed grant agreement between the Department of Environmental Protection (DEP) and your organization. Please review the entire agreement carefully. If you are satisfied with it, have all three originals signed by the officials designated on the signature page. If the agreement is signed by someone other than the officials designated on the signature page, you must submit a resolution of your organization's governing body, which authorizes the person(s) who signed the agreement to sign on behalf of your organization. Please return the agreements to the DEP Grants Center, P.O. Box 8776, Harrisburg, PA 17105-8776 by June 25, 2004.

Thank you again for your participation in and support of the Energy Harvest program. We look forward to working with you on this project. If you have any questions or concerns, please contact the Grants Center at 717-705-5400.

Sincerely,

Nicholas A. DeAngelis
Deputy Secretary for
Air, Recycling and Radiation Protection

Enclosures

SENATE SENATOR
JANE CLARE ORIE
SENATE DISTRICT 10

SENATOR JANE CLARE ORIE
SENATE DISTRICT 10
1110 N. MARKET STREET, SUITE 100
HARRISBURG, PA 17102-1000
TEL: 717-772-2724 FAX: 717-772-2725

14 JANE CLARE BUILDING
500 ALLEGANY ROAD, SUITE 100
HARRISBURG, PA 17101
TEL: 717-772-2724 FAX: 717-772-2725

SEN. JANE CLARE ORIE, SUITE 100
1110 N. MARKET STREET, SUITE 100
HARRISBURG, PA 17102-1000
TEL: 717-772-2724 FAX: 717-772-2725



Senate of Pennsylvania

March 19, 2012

Seneca Landfill Inc.
Attention: Mr. Edward R. Vogel, VP
PO Box 1080
Mars, PA 16046

Dear Mr. Vogel:

It is my pleasure to nominate Seneca Landfill, Inc., for the 2012 Solid Waste Association of North America Landfill Excellence Award in the categories of Landfill Gas Utilization, Landfill Gas Control, and Landfill Re-use.

Seneca Landfill has installed and operates a comprehensive, state of the art, landfill gas recovery system that collects gas from the landfill and provides fuel to about 28,000 homes, at 1,500 cubic feet per month, as pipeline quality natural gas while generating electrical power for the operation of the site with any surplus electricity sold to the local power company.

Seneca Landfill has also moved thousands of tons of waste from previously used, unused, landfill sites into "Solidate D" double lined landfills to achieve environmental protection to the benefit of our community and the Commonwealth. The Landfill Re-use nomination is based upon this activity, which continues with construction of a new landfill cell currently in progress. This is an example of Excellence in Environmental Protection and is commended.

While there are several other landfill and waste water treatment facilities in our Commonwealth, none have in any other state, that are demonstrating the leadership of Pennsylvania's in conserving natural resources and helping to provide for our energy independence by separating mixed waste gases to produce pure, pipeline quality, methane gas. The owners of Seneca Landfill have made the extra effort to fully utilize the waste gases by using the tramp heat from the systems for treating waste water and heating the facilities on the site in addition to marketing the product gas, which makes Seneca Landfill unique.

Seneca Landfill is also a strong supporter of their host municipalities, Lancaster and Jackson Townships. Each year, at no cost to residents, Seneca Landfill provides bulk waste disposal, which has greatly reduced dumping of large items in the area.

For these reasons, I believe Seneca Landfill's performance is worthy of the 2012 Landfill Excellence Award. I wish you every success in your application.

Sincerely,

JANE C. ORIE
4th Senatorial District

Aerial View of Seneca Landfill Gas Control Project

