



**SWANA**<sup>®</sup>

SOLID WASTE ASSOCIATION  
of North America

## Mid-Atlantic Chapter Solid Waste Association of North America

# SOLID WASTE NEWS For Waste Professionals

February 18, 2004

## Wetland's Treatment of Leachate Demonstration Project

By Mike Houlihan, P.E.

The Delaware Solid Waste Authority (DSWA) has begun a project to demonstrate the feasibility of passively treating leachate using a constructed wetlands area. The project is being performed at the Area A/B disposal area of the Central Solid Waste Management Center in Sandtown Delaware. The disposal area was filled from about 1984 through 1987. As of early 2003, only a few constituents were being detected in leachate (e.g., low levels of ammonia and chlorides), but the presence of these constituents prevent direct discharge of the leachate from the site and require that the leachate be treated. Wetland treatment systems can be substantially less expensive than active treatment systems (e.g., on the order of \$0.01



or less per gallon) but, because wetland treatment processes are typically anaerobic and removal of ammonia requires aerobic treatment, wetlands have not been used for treatment of ammonia (a common component of relatively clean leachate from highly biodegraded waste). However, using a new, patented aerobic wetland treatment system developed by Aqua Treatment Technologies, ammonia can now be removed using wetland treatment systems. The current demonstration project involves constructing two separate conventional wetland treatment

cells (one measuring 12 ft by 12 ft, and the other measuring 15 ft by 30 ft) and also three vertical flow bio-filter cells (five total) and routing leachate through the cells to several sampling points; one type of cell treats leachate by horizontal flow through the wetland (which results in anaerobic treatment) and one type of cell treats leachate by vertical flow through the wetland (which results in aerobic treatment). The patented bio-filter cells use vertical flow creating aerobic

conditions and utilize some proprietary technology and operating techniques to enhance treatment performance, particularly in the winter months when conventional wetlands are not as effective. The

system was constructed in August 2003 based on a design and construction plan developed by GeoSyntec Consultants. Based on preliminary data, the system is already producing a significant reduction in ammonia and biological oxygen demand concentrations. The study is scheduled to be completed in mid-2004. Based on the preliminary success of the study to date, DSWA is proceeding with detailed design of the full-scale system and plans to construct the full-scale system in mid-2004

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# Harford County Waste

By John O'Hara

On January 22, the SWANA Mid-Atlantic Chapter Board of Directors meeting was held at the Harford Waste to Energy Facility (HWTEF) in Harford County, followed by an interesting and informative tour led by Jeff Poulton, General Manager for Energy Recovery Operations, Inc. (EROI), and the contract operator for the facility. HWTEF burns most of the municipal solid waste generated in Harford County (about 115,000 to 120,000 tons per year). Presently, most County waste is collected by private haulers who contract directly with their residential and commercial customers. The attractive tipping fee charged at the facility (currently \$42/ton for in-county waste) discourages out of County waste export. Likewise, the tipping fee charged for waste delivered to HWTEF from out of County (\$100/ton) minimizes waste import from outside the County.

HWTEF was a project born out of necessity. The US Army faced closure and capping of its on-base landfill serving Aberdeen Proving Grounds (APG), while the remaining capacity at Harford County's now closed Tollgate Landfill was nearly depleted. To provide for the needs of both parties, a complex long-term arrangement was developed and implemented under the auspices of the Northeast Maryland Waste Disposal Authority of which Harford County is a member. The Army agreed to enter into a long-term lease to locate the HWTEF site on APG property in exchange for the right to deliver APG waste to the facility at no cost and to purchase the steam generated. To formalize the arrangement, the Authority entered into lease and steam purchase contracts with the Army. Likewise, the Authority contracted with Harford County to deliver a guaranteed amount of waste to HWTEF. The County did not provide waste collection services to residences or businesses. Therefore, the County was to meet its waste delivery obligation by establishing a waste tipping fee at HWTEF which would attract the tonnage required. The County operates the scales at HWTEF and collects the tipping fee revenue.

The Authority procured an owner/operator to design, build, and operate the facility for a 20 year period. Construction was financed through 20 year term revenue bonds issued by the Authority and HWTEF was constructed at a cost of \$26,000,000, including the construction of a 3 mile steam transmission line. HWTEF generates 5500 pounds of steam for each ton of waste burned. Steam produced by the waste combustion process is fed through the steam line at 360 psi to a central power plant located in the Edgewood area of APG. HWTEF produces enough steam (about 500 million pounds per year) to satisfy 100% of Edgewood's energy demand for summer cooling and 50% or more of the heating demand during the coldest winter months. Summer cooling

needs are supplied by steam driven chillers. Winter needs are met by both direct steam heat, and steam heated hot water. While HWTEF does produce some electricity for in house use (600 kw), there is currently no connection to supply excess energy to the power grid when not needed by the facility.

Delivery vehicles enter the waste to energy facility onto a 240 ft. by 120 ft. tipping floor which has a storage capacity of approximately 2000 tons. County staff patrol the tipping floor to identify prohibited and bulky wastes which are segregated by EROI for separate handling. Inspectors also monitor delivered loads to insure that out of County waste is not mixed with waste loads for which the in-County tipping fee has been paid. The waste to energy process is modular in design, consisting of 4 waste burners, each capable of processing 90 tons per day (360 TPD total). Each modular unit combusts waste using a 2 stage thermal oxidation process. In the initial stage, waste is burned in an air-starved environment producing combustion gases which are further oxidized in the second high temperature (2000°F) combustion chamber. Off gases are then directed to one of three boilers where steam is produced for sale to APG. The 2 stage process assures effective control of CO emissions. Boiler exhaust gases are treated prior to discharge using electrostatic precipitators for particulates control. Gas acidity levels are controlled by the addition of sodium bicarbonate to the fluegases. Ash produced (about 40% by weight and less than 10% by volume of the waste processed) is screened for metals removal and transported to Baltimore City's Quarantine Landfill where it is approved for use as Alternative Daily Cover. Plant operations are automated, utilizing programmable logic controllers to adjust system components. Operations data is transmitted via modem directly to the Maryland Department of the Environment so that facility performance can be remotely monitored.



Harford County Waste-to-Energy Facility in Joppa, MD

# e-to-Energy Facility

HWTEF is a favored site for the disposal of confidential records, and off-spec or expired consumer products (including pharmaceuticals), requiring witnessing and documentation of destruction. Since waste is fed by front end loader directly from the tipping floor to each modular combustor's feed hopper, rather than into a storage pit, destruction can be readily and immediately observed. EROI negotiates tipping fees for the specialized service depending upon waste handling requirements. The facility also accepts scrap tires which are temporarily stockpiled on the tipping floor and mixed with other waste in varying proportion to boost the waste stream BTU content to satisfy APG steam demand. The facility is licensed by MDE to receive and process scrap tires. Scrap tire tipping fees vary with season as steam demands fluctuate. The revenue received from processing these special wastes offsets the County's waste disposal cost.

Since initial operation commenced, the HWTEF owner/operator has changed several times as a result of business mergers and consolidations. In 1994, HWTEF was acquired by Brambles USA Inc., an international firm based in Australia. Two years ago, Brambles voiced the firm's intent to exit the waste business and to sell the facility. Harford County and the Authority decided to take a bold step and pursued negotiations to purchase HWTEF. The purchase was financed with Authority revenue bonds at a cost of \$10,500,000. EROI, Inc. is contracted by the Authority to operate the facility and Harford County controls 100% of

the disposal capacity. Site lease and steam purchase contracts remain in place with the Army with APG contracted to purchase steam through 2016. The current HWTEF net annual operating cost totals \$4,300,000 which is fully funded by tipping fee and steam sales revenue.

Additional challenges lie ahead. Within two years, HWTEF is required to retrofit its air pollution control system to meet new, more stringent emission standards. Specific retrofit measures have not yet been finalized, but could include expansion of the existing electrostatic precipitators for improved particulates capture and addition of an acid gas control system. Consideration may also be given to adding additional combustion capacity and to the installation of equipment (steam turbine generators, for example) to produce electricity for sale to the power grid.

HWTEF is one major component of Harford County's integrated solid waste management system. The County also operates a sanitary landfill (the Harford Waste Disposal Center) located on a 259 acre County owned site on Scarborough Road in Street. In addition to an active landfill, the site includes a yardwaste composting facility, recyclables drop off area, and facilities for the acceptance of oil, antifreeze, and tires. An aggressive recycling program has resulted in the recycling and source reduction of 56% of the combined commercial and residential waste stream generated in the County.



## Mid-Atlantic Chapter 2004 Scholarship Awards Program

**Graduating High School Senior:** Award - \$500-\$1,000

**College/University Students Entering Sophomore Year:** Award - \$500-\$1,000

**College/University Upper Division Undergraduate:** Award - \$750-\$1,000

**University Graduate Student:** Award - \$750-\$1,000

For eligibility, application forms and instructions, please visit the Website at [www.swana-midatl.org](http://www.swana-midatl.org) or call (410) 516-7091.

**The application deadline is May 1, 2004.**

# Maryland Recyclers Coalition To Hold 16<sup>th</sup> Annual Conference In Catonsville

The Maryland Recyclers Coalition will hold their 16<sup>th</sup> Annual Conference from Wednesday – Friday, May 26-28, 2004 at the Catonsville Campus of the Community College of Baltimore County. This event is expected to bring together more than 100 public and private recyclers to examine the state of the recycling industry and to consider ways to increase recycling in Maryland.

The three day event will include half day seminars on Wednesday afternoon designed for private sector companies and federal agencies. Thursday, May 27<sup>th</sup> will be a full day, with the annual meeting and awards ceremony, two plenary sessions in the morning, concurrent sessions in the afternoon and the annual dinner at the picturesque Rolling Road Country Club. Friday will include a tour of a local recycling facility, a concurrent session and a closing seminar on the future of recycling. The closing session will include developing recommendations for Governor Robert Ehrlich. The conference will close with the popular bull roast at the college. A draft agenda will be published shortly.

In addition to the technical sessions, the conference will feature an active exhibit hall with recycling vendors, a silent auction of valuable goods and services, the annual awards, the annual meeting of the Coalition and numerous opportunities to network with recycling leaders in Maryland and the Mid-Atlantic Region.

MRC is still looking for sponsors, exhibitors and attendees. For more information, contact Jackie King at the MRC Office, 443-640-1050 X105.

## Upcoming Events

- ◆ March 24, 2004—Board Meeting w/tours (See flyer inside!)
- ◆ April 16, 2004—Technical Seminar
- ◆ May 7, 2004—Rodeo & Exhibits for Mid-Atlantic & Keystone Chapters (to be held in Harford County)
- ◆ May 26, 2004—Board Meeting (10 a.m.—12 p.m.) with tour at Prince George's County \*
- ◆ June 5, 2004—Crab Feast
- ◆ July 28, 2004—Board Meeting (10 a.m.—12 p.m.) at DC offices with Collection Software Demonstration \*
- ◆ September 10, 2004—Annual Meeting

*\* Please note that lunch and an activity will be included with these board meetings, which are open to Chapter members and associates. Registration information will be provided at a later date.*

## Seeking Webmaster

In an effort to best serve the Chapter members, the Board is seeking a webmaster to keep the website current and informative. Are you looking for an opportunity to network with other solid waste professionals? Do you know how to use FrontPage? Please contact Chris Skaggs at the Northeast Maryland Waste Disposal Authority at (410) 333-2730 or [cskaggs@nmwda.org](mailto:cskaggs@nmwda.org).

## Anne Arundel County Bids

On December 19, 2003, Anne Arundel County put out a bid for the construction of a gas collection system for the active Cell 8. Cell 8 has six of the eight subcells partially filled and comprises approximately 45 acres. The prebid meeting was held on January 5, 2004 and bids were due January 20, 2004. Recommendation for award to the low bidder has been made and the official contract award is in process. Construction is planned to begin in May.

Possible upcoming bids include the excavation and hauling of approximately 140,000 yards of soil from the last two remaining subcells in Cell 8 as described above. Soil will be stockpiled elsewhere on site. The bid date is currently anticipated to be early summer 2004.

Other possible bids include construction of subcell 8.7 during early 2005 and construction of subcell 8.8 several months later. Current plans are to bid the liner materials for these subcells during the Fall of 2004 for delivery prior to subcell construction start.

## Congratulations to Prince George's County!

In January 2004 at the annual EPA Landfill Methane Outreach Program conference, Prince George's County was awarded the 2003 Community Partner of the Year. The award was accepted by Bill Chamberlin. Well done!