

Ecoletter

WINTER 2008 ISSUE



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*A Publication of the Water and Waste
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PRESIDENT'S MESSAGE



WWOA President

—DuWayne Potter

com-pla-cen-cy
[kuh m-pley-suh n-see]
—noun, plural -cies.

1. a feeling of quiet pleasure or security, often while unaware of some potential danger, defect, or the like; self-satisfaction or smug satisfaction with an existing situation, condition, etc.

Are you complacent in your work life or your personal life? Does it ever come back to bite you? Like, “I should have known better than to think it was all good.”

We grow complacent in our daily work routine far too often only to have a new regulation or new project rear its ugly head and make us scramble to cover all the bases. How many of us were enjoying running a BNR facility and then have this ENR monster jump up and make us scram-

ble to meet deadlines and much lower permit limits? Are you staying up on new regulations that might affect you? How about new processes that may enhance your operation or allow you to do a better job with less effort? Are you on the lookout for the magical black box that lets you do all you need and more with less work?

How about complacency in day-to-day activities like driving to or from work, watching what you eat, maintaining our homes, and operating our facilities... Small seemingly insignificant daily duties we often go through without even remembering what we did or sometimes, if we did them at all. Ever get to work and wonder if you shout off the coffee maker? These rote activities we perform are part of a larger picture and we can't lose sight of how important the steps we take daily are in our overall operation of our facilities and in our lives.

We can't let ourselves fall into the “that's only a minor issue and I don't need to be concerned about it” trap. Wake up! Pay attention to where you are, what you are doing. Go about your day as if it really matters because it does.

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The Chesapeake Section, American Water Works Association, the Chesapeake Water Environment Association, and the Water & Waste Operators Association, will hold a combined Annual Conference (2008 Tri-Association Conference) and Exhibition at the Roland E. Powell Convention Center in Ocean City, Maryland from August 26 through August 29, 2008. This will be the largest and best Tri-Association Conference yet! The Conference Committee is currently planning the Conference program and schedule, as well as negotiating blocks of hotel rooms, at conference rates, with several hotels. Please check back on the web site (www.wwoa-cwea.org) frequently for Conference updates regarding hotel accommodations, program, registration, golf, and sponsorship opportunities.

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CALENDAR OF EVENTS Spring/Summer

May 22, 2008

Water Reuse Seminar
Edgewood, Maryland

June 1–6, 2008

Short Course
Washington College

August 26–29, 2008

Tri-Conference
Ocean City, Maryland

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EDITOR'S CORNER

The Chesapeake Bay Sr. Council met in December, and each state agreed to champion issues. Here's what each decided:

Maryland—Improve Bay Program accountability using tools like Maryland's Bay Stat.

—Create venture capital fund to foster innovative technology.

Virginia—Enhance delivery of agriculture management practices, targeting best bang for the buck areas and activities for nutrient and sediment control.

Pennsylvania—Encourage Congress to pass a sound Farm Bill.

—Co-sponsor a biofuels summit on cellulosic sources of ethanol.

District of Columbia—Become a model for greening urban areas, working with EPA to create next generation storm water permits.

Delaware—Investigate agriculture and forestry carbon sequestration.

—Host a carbon sequestration event.

West Virginia—Co-champion with Maryland to engage local governments in sharing experiences and techniques.

All agreed to work towards preserving an additional 695,000 acres of forestland in the watershed. Since the early 80's, 750,000 acres, or 100 acres every day, have been cut in The Bay watershed.



\$620 Million to \$1 Billion. Depending on whom you talk to, those are the estimated costs to upgrade Pennsylvania's 183 large WWTP's in The Bay watershed to meet nutrient removal standards. Unlike Maryland and Virginia, Pennsylvania has no state funding mechanism and that means rate payers will have to foot the hefty bill. Thus it should be no surprise that those rate payers are up in arms, filing threatening lawsuits (The Pennsylvania Capital Region COG seems to be in the forefront) about unfunded mandates and pointing fingers at farmers

who they say pollute a lot more and don't have to pay for it. This will get ugly with much gnashing of teeth before it starts to get any better, and the slightest improvement is a difficult concept to think about right now. So keep an eye on the Keystone State, it is a critical key to better Bay water quality.



Way up in The Bay watershed, in the far reaches of Pennsylvania's Sinnamahoning Creek, a big chemical spill into a small stream has a major company reaching into their deep pockets. Back in June 2006, a Norfolk Southern train derailed and spilled 42,000 gallons of Sodium Hydroxide into Big Fill Run. Downstream from the spill a healthy bass and trout fishery was severely damaged. In a settlement with the Pennsylvania's Fish and Boat Commission and Department of Environmental Protection, Norfolk Southern will pay \$7,350,000 for restoration efforts.



Science Magazine's January 18th issue had a feature article with pertinence to the Chesapeake Bay. Two Franklin & Marshall College scientists made an interesting discovery about runoff in Lancaster County, Pennsylvania. Researching why heavy amounts of soil were ending up in streams long after conservation practices had been implemented, they found the source of sediment to be historic. Legacy sediment is the term they coined to describe buried sediment left over from colonial era mill dams. These mill dams, nearly 500 in Lancaster County alone, turned many streams into lakes. With the dams now long gone, the streams are in the process of cutting into the legacy sediment to reclaim their natural watercourse. The State of Pennsylvania has created a Legacy Sediment Group to study this issue and ways to repair streams laced with old trapped sediment.



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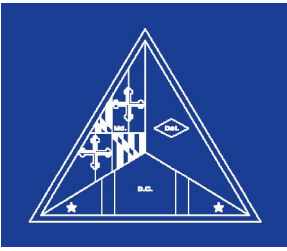
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CENTRAL SECTION— W.W.O.A. DECEMBER MEETING/ TECHNICAL SESSION

—By Marshall Phillips Secretary/Treasurer,
Central Section

On December 12, 2007 The Central Section of W.W.O.A. held a business meeting with technical session at the W.S.S.C. headquarters building in Laurel, Md. A good turnout produced 50 attendees. Special thanks are extended to the folks at W.S.S.C. for their hospitality and allowing us to use the conference facilities.

The business meeting covered the usual section matters including minutes from the last meeting, a treasurer's report, and old and new business topics. The main points discussed were T.R.E. related questions pertaining to process vs. non-process approved classes with M.D.E.

An update on the 2008 Short Courses, to be held in Chestertown, Md. at Washington College, was presented. The dates are June 1st–6th, 2008.

The technical session was presented by Mr. Robert Kershner, President of K.E.T., LLC. Rob presented a thorough and informative session entitled "Process Control Utilizing Chemical Pumps and Delivery Equipment."

Rob's process and equipment expertise was invaluable in transmitting a helpful blend of information. All who attended gained some useful insights. Thanks are in order to Rob for continuing to provide volunteer educational help to those of us in the industry.

The session was followed by a buffet style lunch at a nearby Country Buffet restaurant.



The Other Side of the Table: LIFE AFTER CONSULTANCY

—By Cynthia Lane, *Ecoletter* Co-Editor

A few months ago, November to be exact, I left my position with a local consulting firm to start a job as a regulatory engineer in the Government Affairs Office of the American Water Works Association. The purpose of this office, which is located in downtown Washington, DC, is to develop action programs to initiate, evaluate, respond, and comment within the framework of AWWA policy, on legislative, regulatory, and other matters which directly affect water utilities. We keep current lists of state and federal contacts, assist EPA in framing legislation, and help water utilities strategically position and explain issues to regulatory agencies. Our office works for reasonable, effective regulations that serve the highest public interests to minimize the financial burden on utilities and their customers, while ensuring the quality and safety of public drinking water.

There are six technical staff in the office and each of us has specific topics that we focus on efforts on. My effort is focused on three very different areas. The first major area is water resources, which includes more specific topics such as climate change, source water protection, water reuse, and water conservation. At the moment, I am very involved in the development of a regulation by EPA's Underground Injection Control (UIC) Group to address the sequestration of carbon dioxide in underground geologic formations. Specifically, I am trying to make sure the regulation is developed in such a way that protects underground sources of drinking water from possible contamination. My other major focus is on emerging contaminants such as endocrine disruptors (EPCs) (including pharmaceuticals and personal care products) and radionuclides. Lately, I have been dealing with the repercussions of an Associated Press article published on March 10 that addresses the presence of pharmaceuticals and EDCs in our drinking water. Needless to say, it was a crazy couple of weeks. The last area in which I am focusing my efforts is what we are calling "workforce issues." As part of this effort, I am working with a group of people to establish procedures and programs that can be implemented at the state level to encourage young peo-

ple to choose utility work as a profession, be it as an operator, maintenance technician or engineer.

The new job has also required a lot of travel, which is more than fine with me. I have attended many conferences in the past few months on a wide variety of issues from climate change to inorganic contaminants to utility management issues. I have also attended several stakeholder workshops related to different EPA programs (climate change, endocrine disruptor screening program, Gulf Coast hypoxia) and have developed comments on behalf of AWWA on programs or regulations that have been issued as part of the programs.

There is quite a lot of other activity in our office. Some of the topic areas that are covered by other people in my office include:

- Drinking water security
- WARN network coordination
- Safe Drinking Water Act
- Residuals management
- Total water management and water quantity issues
- Total coliform rule
- Disinfection by-products
- Perchlorate

This is just a brief discussion of what I will be working on and the services that the AWWA Government Affairs Office provides. Even though it is a drinking water organization, much of what I do affects both wastewater and drinking water providers. With scarcity of water becoming a major issue across most of the United States, the two different water communities will have to work hand-in-hand to develop solutions that are sustainable for the upcoming decades. I am providing an excerpt from an article that I just co-authored in the *Journal AWWA*. If you have any questions regarding this article, or would like to contact me regarding some other topic that I mentioned, please feel free to do so as I would like to be your legislative and regulatory voice at the national level. I can be reached at clane@awwa.org or at (202) 628-8303.

The following discussion of climate change is taken from the March issue of the Journal *AWWA*:

Climate change is an issue that cuts across all four areas previously discussed. In 2007, the Intergovernmental Panel on Climate Change (IPCC) released the Fourth Assessment Report: Climate Change 2007. This latest report addresses five main areas including:

- Observed changes in climate and effects
- Causes of climate change
- Projected climate change and its impacts
- Adaptation and mitigation options
- Long-term perspectives

The report states that global greenhouse gas (GHG) emissions due to human activities have grown since pre-industrial times, with an increase of 70% between 1970 and 2004. If the current climate change mitigation policies and practices continue to be followed, global GHG emissions will continue to grow over the next few decades resulting in further warming of the global climate system. Potential regional-scale changes as presented in the IPCC report include:

- Increased warming over land and at most high northern latitudes
- Contraction of snow cover areas
- Increased frequency of hot extremes, heat waves, and heavy precipitation
- Precipitation increases in high latitudes and decreases in most subtropical land regions
- Increases of annual river runoff and water availability at high latitudes and decreases in some dry regions in the mid-latitudes and tropics
- Decreases in water resources in many semi-arid areas (western United States)

The report also states that, due to the increase in temperature, sea levels will rise by approximately 7 to 23 inches. This issue, in addition to those presented previously, could provide for more challenges for water utilities in water resource planning and when treating and distributing drinking water to their customers. The report provides potential adaptation and mitigation options but cautions that they would require a significant investment of financial and technological resources. Potential sectors into which this investment is needed include water, infrastructure, agriculture, human health, transportation and energy.

Congress is now working on legislation to address climate change, with the Senate taking the lead. The Senate Environment and Public Works Committee passed

S.2191, America's Climate Security Act, in December 2007. It would cap carbon dioxide emissions from certain sources, set up emission allowances, and then establish a government auction for those allowances. Democrats will likely make this an issue in election campaigns. There is a chance, though, that some climate change legislation will pass. After all, a bipartisan energy bill did become law in December. In addition, the business community may prefer to see climate change legislation resolved while President Bush is still in office.

USEPA is scheduled to release a proposed climate change strategy sometime in 2008. This strategy will likely detail the specific actions that can be taken by the National Water Program to better address the challenges resulting from climate change. Actions in the categories of mitigation, adaptation and research will be the main focus of the strategy. The mitigation section of the strategy would address issues associated with the sequestration of carbon dioxide emissions in deep, underground geological formations. The Office of Water will likely work with other federal departments to investigate potential improvements in energy and water efficiencies. Adaptation methods would be developed to address the potential impacts of climate change on water resources and the strategy would also discuss the capacity of the agency to meet the requirements of the Clean Water Act in a changing environment. Finally, areas for further research will likely be developed and projects will likely be executed that will assist the environmental community in gaining a better understanding of climate change as it relates to water resources.

In addition to developing a proposed climate change strategy, USEPA is in the process of promulgating a rule to address the sequestration of carbon dioxide in deep, underground geological formations. The sequestration of carbon dioxide is currently being proposed by DOE as a method by which to curb carbon buildup in the atmosphere. It is anticipated that the draft USEPA regulation would provide for the methods by which carbon dioxide would be sequestered and monitored deep underground. Carbon sequestration could significantly affect the quality of underground sources of drinking water (USDW) include. Potential effects could include:

- Lowered pH conditions and iron, manganese, arsenic, and possibly other inorganics being released into groundwater surrounding the injection zone
- Dissolution of silica and boron into the groundwater

Continued on page 11

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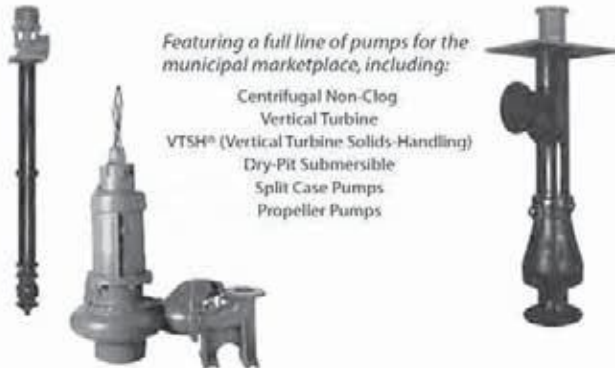
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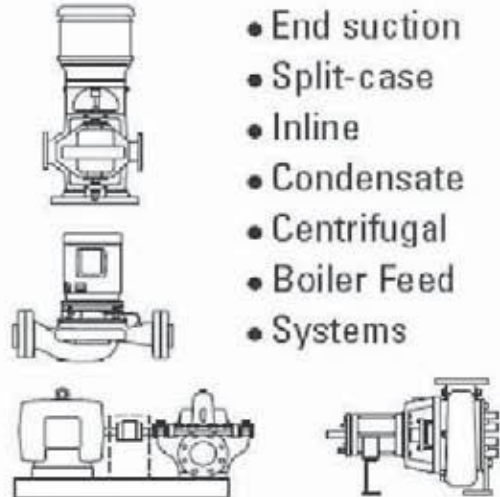
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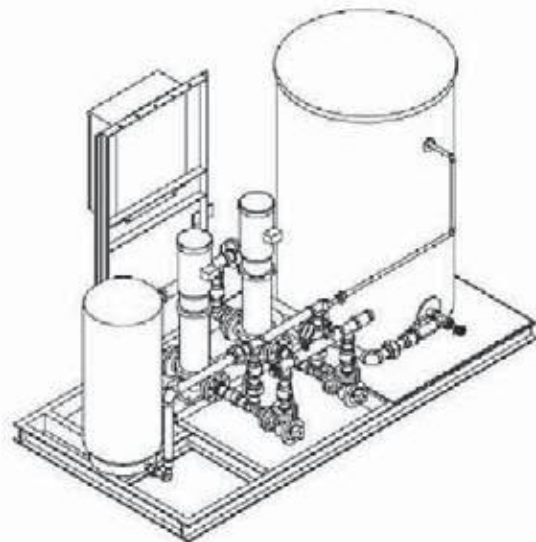
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The CWEA Nominations Committee is seeking nominations for the following positions:

1. **Vice President (for 2008–09 term; automatic advancement to President Elect, President, and Past President; four years commitment)**
2. **Secretary (for 2008–09 term; Tim Wolfe—present secretary has indicated interest in continuing for one more year)**
3. **Treasurer (for 2008–09 term)**
4. **Delaware Trustee (for 2008–11 term; three years commitment)**
5. **WEF Delegate (for 2008–11 term; three years commitment)**
6. **Assistant Secretary (can move up to Secretary in future)**

All nominations are to be submitted to Bharat Desai, Nominations Committee Chair (bharat.o.desai@usa.dupont.com) by April 18, 2008. With your submission, provide the position for which you want to be considered, telephone number, and employer.

Call Bharat Desai at (302) 774-8054 if you need additional information on any of the above positions.

Life After Consultancy

Continued from page 9

- Contamination of USDWs due to the presence of other compounds, such as nitrogen, carbon monoxide, sulfur dioxide and possibly mercury, in the carbon dioxide injection stream
- Potential for USDWs to be displaced due to changes in pressure gradients resulting from the injection of carbon dioxide into deep saline aquifers

- Lateral migration of saline aquifers into USDWs due to changes in pressure gradients

Little is currently known about exactly how carbon sequestration would affect water utilities as DOE large-scale pilot projects have only just begun. The overarching concern is the potential contamination of USDW from such activities and the potential for other unintended, and possibly harmful, consequences. AWWA plans to participate all of the public workshops by USEPA during the rule development phase and will comment on the proposed rule when it is published in mid-2008.

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2007 WATER REUSE SEMINAR

—By Brian Aylaian, Metcalf & Eddy

The primary goal of the Joint CSAWWA/CWEA Water Reuse Committee is to provide technical information and promote research in support of reclaimed water



and its beneficial use to utility, regulatory, consumer, environmental, and legislative audiences. To promote the goals of the committee, each year the committee arranges a seminar to present current water reuse topics including successful case studies, emerging technologies and regulatory updates. On May 9th of 2007, the Joint Water Reuse Committee, in association with Maryland Department of the Environment (MDE) and the University of Maryland Baltimore County Department of Civil and Environmental Engineering (UMBC), held its annual seminar at the University Center Ballroom at UMBC in Baltimore, MD. The theme of this year's seminar was "The Future of Water Reuse in the State of Maryland." Many states in the eastern US have been successfully implementing and expanding their water reuse regulations and programs for years. Speakers from these states were invited to speak on the challenges and suc-

cesses faced during the implementation of these programs. Then, focus was shifted on public outreach and finally an open forum discussion. The overall goal was to encourage the State of Maryland to implement a more progressive water reuse program in our State.

The seminar was the most well attended water reuse seminar yet, with approximately 150 attendees. Larry Heinz of PBSJ introduced the program and the first speaker, Robert Bastien of the EPA. Mr. Bastien's presentation discussed the history and purpose of the EPA's Water Reuse Guidelines and the 2004 updates to the guidelines. He explained that the reasons for the 2004 update were emerging pathogens, pollutants of concern, increasing pressure on water resources and new information available since the original publication. Since 1992, a large influx of new case studies, treatment technologies and updated information on state programs roughly doubled the size of the 2004 updated guidelines.

Dr. David York, the State of Florida's DEP Water Reuse Coordinator, followed Mr. Bastien with a presentation on the Florida's experience with microbiological issues and safety. He presented the Florida's standards for reuse

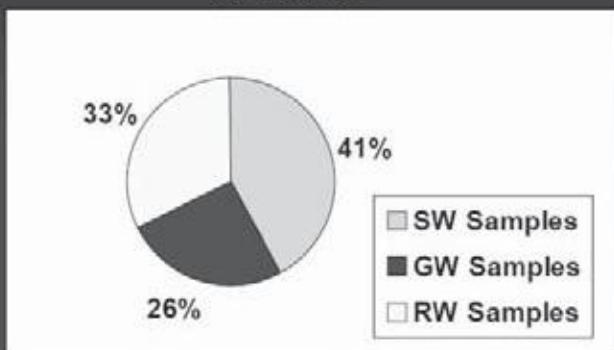
Florida Reuse Facts

- **465 WWTPs**
- **Capacity = 1,325 MGD**
 - ◆ **About 58% of All WWTP Capacity**
- **660 MGD Reused**
 - ◆ **About 41% of All Treated Wastewater**

2005 Data

The Florida Department of Environmental Protection

Sample Collection Sites by Water Matrix



Surface water quality believed to be more variable, therefore more sites



synthetic compounds that are present at low levels in our waterways.

Valerie Rourke, the Wastewater Residuals and Water Reclamation and Reuse Coordinator for the Virginia Department of Environmental Quality in the Office of Water Permit Programs, was the next speaker. She presented on the subject on the Commonwealth of Virginia's experience with developing its own water reuse regulations. She presented the history on how the Virginia's water reuse regulatory initiative was conceived and developed as well as the state of the program today. She anticipated promulgation of Virginia's water reuse regulations in late 2007 to early 2008.

In the afternoon, the seminar focused on the specific experiences of several states with regard to water reuse.

water and the basis behind these standards. He also presented the findings of various studies recently conducted on removal rates for some of the pathogens of highest concern, including viruses and the protozoa pathogens *Cryptosporidium* and *Giardia*. Finally, he presented the evidence for the State of Florida's track record of a safe water reuse program even with a reuse percentage of approximately 41% of the state's total wastewater flow.

Water Reclamation and Reuse Regulation

Anticipated Timeline for Adoption

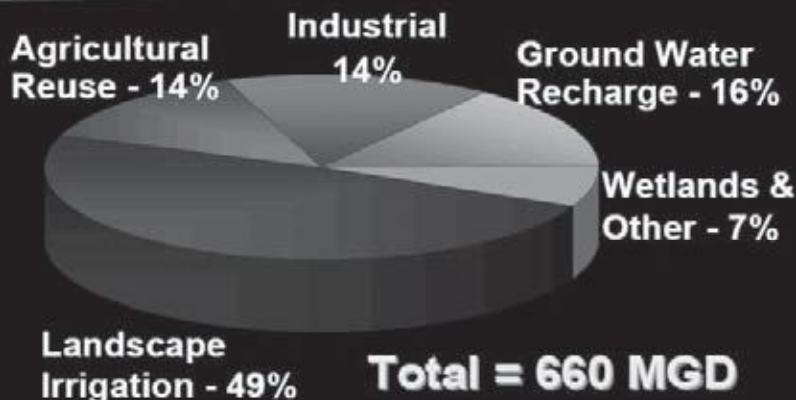
- Publish draft regulation for public comment in late May or early June – public hearings will be held during comment period of 60+ days
- Revise regulation based on public comments
- Take final regulation to the State Water Control Board in September 2007 for approval
- After Executive Branch review and approval publish final regulation for 30 days
- Adoption of final regulation anticipated before the end of 2007

First to speak was again Dr. David York on Florida's experience, followed by Don Safrit on North Carolina, Conrad Gelot on Georgia and Dr. Ching-Tzone Tien on Maryland. Dr. David York presented the facts on Florida's Water Reuse program, focusing the changes in the program over the last several years and a summary of

Continued on page 16

The next speaker, Tom Helgeson of CH2MHill, discussed the background and study approach of an ongoing Water Reuse Foundation study investigation on the water quality of ground, surface and reuse water. The point of the study is to understand the transport of constituents from wastewater into other water sources. The study poses two questions: (1) what, if any, should be the concerns of water quality degradation and/or contamination and (2) at what water quality levels are they a concern. Although the study is ongoing and the results not fully tabulated, one of the more interesting results is the growing number of

2005 Reuse Flow



Water Reuse Seminar

Continued from page 15



objectives and planning efforts of the state program for the northern portion of Georgia including Gwinnett. Finally, he reviewed some of the successful County projects of the nearly \$0.5 billion invested in water reuse infrastructure, including the addition of advanced treatment to existing wastewater plants, reuse water pipelines and the various residential irrigation and other applications fed from the new treatment and delivery systems.

Finally, Dr. Tien of MDE presented a brief history of water reuse in Maryland and pointed out that the majority of reuse projects are spray irrigation. He discussed the treatment requirements for spray irrigation for the two different classifications (I and II) for effluent quality and their respective regulations such as buffer zone requirements, soil conditions and application rates. He then presented the details of the Prince

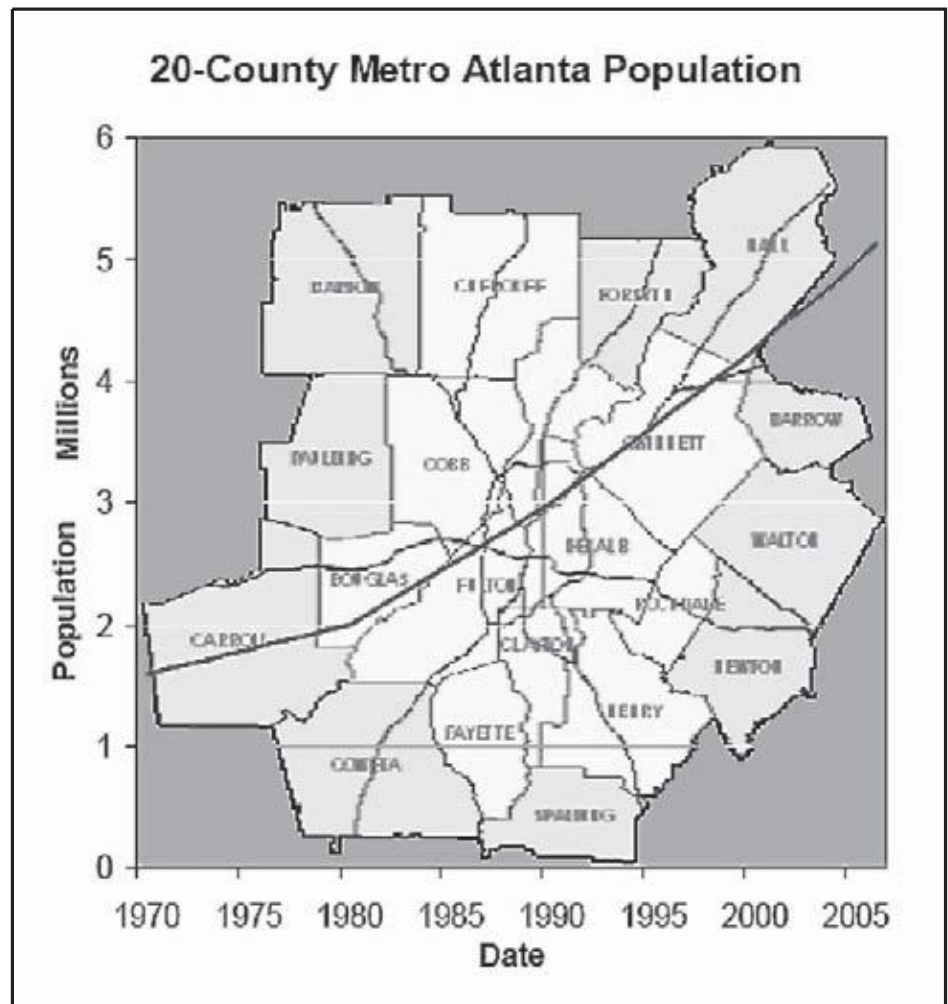
Frederick treatment plant and water reuse by spray water irrigation.

the year 2005 findings and statistics. Several case studies were presented on the different types of water reuse projects across the state including reuse applications for homes, car washes, stadiums, the power industry, fire protection, as well as indirect potable water reuse.

Frederick treatment plant and water reuse by spray water irrigation.

Don Safrit of HDR Engineering presented North Carolina's collaborative approach to its recent water reuse rule enhancements. He described the approach of a reuse subcommittee drafting treatment standards and other technical components of reuse. The draft rules are circulated to various committees, organizations, stakeholders and regulators and comments are received, discussed and incorporated until all comments are satisfied. The technical components of the established rules were also presented.

Conrad Gelot, of the Gwinnett County, GA Department of Water Resources, discussed the high rate of population growth driving the water shortage problems and subsequently the water reuse program. He summarized the





Prince Frederick No.2 WWTP,
Spray Irrigation Field (55 acres)



Public outreach was mentioned throughout the seminar as a critical parameter for the successful implementation of water reuse programs and applications. Lois Humphreys of TRG and Associates spoke on this subject. She discussed the common fears among the population regarding water reuse and common themes of successful outreach including clear articulation of the need for water reuse, early involvement of the public, open com-

munication and a focus on the benefits of the program or application. Finally, she wrapped up with some successful outreach strategies including more proactive ones such as educating the public about water reuse.

At the conclusion of the seminar, Brian Aylarian of M&E led an open floor Q&A discussion between seminar participants and the presenters. MDE was well represented in the audience and actively participated in the Q&A session.

Overall, the Joint Water Reuse Committee was very pleased with the attendance, technical expertise and quality of the speakers, engagement of the audience and representation of key state stakeholders. The Committee looks forward to continuing its goal of educating and promoting water reuse in the State through the planning of future water reuse seminars and other activities.

Electronic versions of the presentations given at the 2007 Water Reuse Seminar can be found on the CWEA website at the following location: <http://www.wwoa-cwea.org/cwea/re-use/050907presentations>.

More Successful Outreach Strategies

- **Train staff to provide superb service to customers**
- **Anticipate crises and have contingency plans in place**
- **Prepare for construction outreach**
- **Incorporate water reuse into school education outreach**



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CWEA Collection Systems Committee Holds Full Day Seminar: PRIVATE PROPERTY I&I CONTINUES

—By Jared S. Wray, Green Stone Engineering

The Chesapeake Water Environment Association's Collection Systems Committee (CWEA-CSC) hosted a full day seminar last November at the Maritime Institute of Technology and Graduate Studies (MITAGS) in Linthicum, Maryland. The seminar, entitled "Private Prop-



erty I&I, Continues" featured many of the top I&I professionals in the mid-Atlantic region providing practical perspectives and ideas concerning legal, engineering, and operational tools for eliminating I&I from private property, which is one of the greatest sources of I&I. The significance of the private property I&I issue to the wastewater community was clearly shown by the greater than one hundred attendees and fifteen vendors that were present.

Carlos Espinosa, the current CWEA-CSC Chair ran the event in conjunction with the rest of the committee in a well balanced entertaining and educational style. The morning and afternoon technical presentations were bisected by a vendor raffle and delicious cafeteria style lunch. In total there were

eight technical presentations, which were titled as follows: Inflow and Infiltration Legal Issues—Paul Calamita, AquaLaw; Development of Milwaukee MSD's Private I&I Experience—Nancy U. Schultz, P.E., CH2M HILL; The Cost-Effectiveness of I/I Reduction—Protocol and Case Studies—Andy Lukas, P.E., Brown and Caldwell; Private Property Virtual Library—Bruce Cohen, CSL Services; Private Sewer Lateral Rehabilitation—The Last Frontier—Mark G. Wade, P.E., Wade & Associates a CH2M HILL Company; Public Vs. Private I/I: The Chicken & Egg Recipe in Hagerstown, MD—Phil Hannan, P.E., Teresa DiGenova, Black & Veatch; I/I reductions Through Public Participation—Aaron K. Nelson, P.E., URS Corporation; PWCSA Private I/I Source Removal—Laurie Terry, P.E. and Frank Torre, The RJN Group.

These presentations in combination with the vendor booths provided an abundance of I&I knowledge with a focus on the private property issues. In addition to providing knowledge, the vendors also provided enough prizes to facilitate what seemed to be a never ending raffle. With the closing of the full day seminar, the CWEA-CSC brought an end to its year-long focus on private property I&I. The committee is currently working on their 2008 focus of Fats, Oils, and Greases (FOG) in sanitary sewer collection systems, and is planning a FOG luncheon and full-day seminar for this year.





WATER REUSE PROJECTS IN THE MID-ATLANTIC

—By Tim Davies, Applied Water Management (AWM), an American Water Company

*Water, water everywhere,
And all the boards did shrink;
Water, water, everywhere,
Nor any a drop to drink.
—Samuel Taylor Coleridge*

This thought is hard to process, considering that approximately 70 percent of the earth's surface is water. However, potable water supplies are gradually being depleted in the U.S. and across the globe. With increasing population and inefficient water usage, the demand for water currently exceeds sustainable supplies in many areas. Current practices of diversion, consumption and disposal are often counterproductive when it comes to conservation efforts. However, American Water is doing something to combat this reality by developing ways to effectively conserve water through reclamation projects across the state of New Jersey and beyond.

Reclaimed Water for Beneficial Reuse (RWBR): An Overview-

After the Northeastern United States suffered a drought in 1999, it was clear that even a water-rich state like New Jersey was at risk for potential water shortages. As a result, the New Jersey Department of Environmental Protection (NJDEP) prepared a Reclaimed Water for Beneficial Reuse (RWBR) manual that encourages and promotes water reuse with water conservation. At the same time, the manual aims to ensure the protection of public health and prevent environmental harm.

RWBR is wastewater which has been treated to a high standard. The resulting high quality reclaimed water is then reused via applications such as:

- Toilet Flushing
- Landscape Irrigation
- Agricultural Irrigation

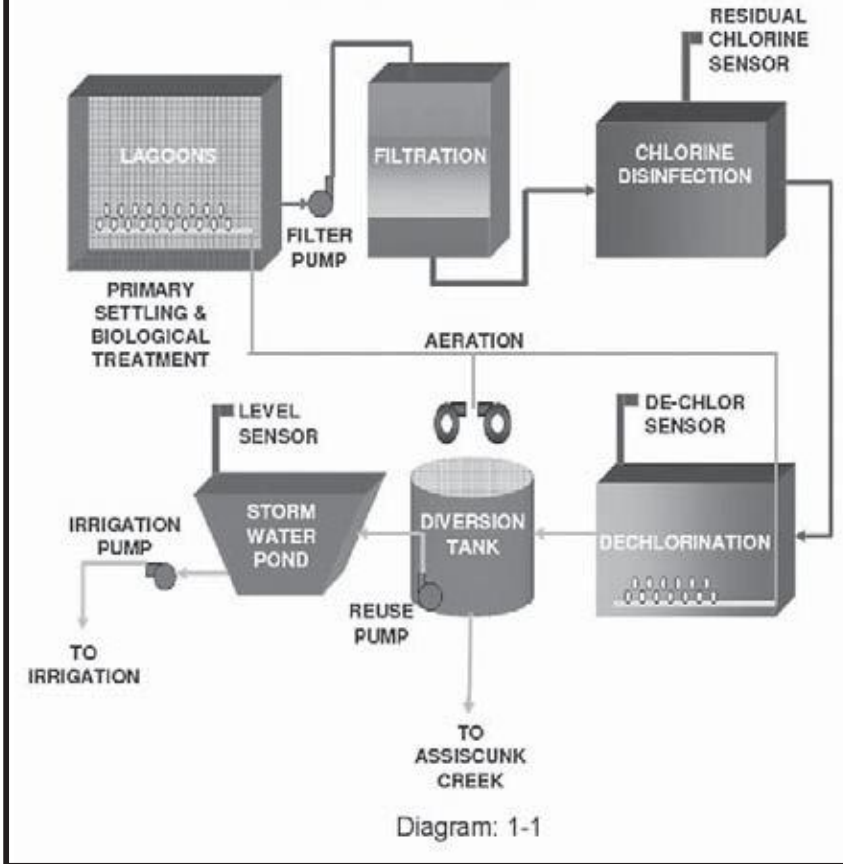
- Industrial Applications
- Fire Protection
- Groundwater Recharge

Depending on the use of the reclaimed wastewater, the NJDEP established reclamation criteria for different usage categories, ranging from public access (Category I) to industrial systems (Category IV) reuse. Category I reclaimed water is not suitable for human consumption, but it is suitable for human contact. The required quality of the water after treatment is determined by its end use. For example, water that is more likely to come into contact with human beings is subjected to higher levels of treatment.

For categories I, II and III, stringent treatment applications may be required to ensure compliance with the NJDEP RWBR treatment criteria. Several groups have been successful in applying a combination of the following treatment technologies for Category I reuse applications, which include the Homestead at Mansfield residential development and the Hawk Pointe Golf Course:

- Flow Equalization—Enhances the biological and chemical wastewater treatment processes.
- Advanced Wastewater Treatment—Processes that incorporate Biological Nutrient Removal (BNR) for the removal of phosphorous and nitrogen.
- Phosphorous and nitrogen occur in wastewater as a byproduct of human digestion. In the aquatic environment, phosphorous promotes the growth of algae and other plants that can suffocate lakes, streams and other receiving waters by depleting oxygen from these water systems. This in turn deprives fish and other water life of oxygen. Nitrogen in the form of ammonia is also toxic to aquatic life.
- BNR is a wastewater treatment process which removes these nutrients from the wastewater and reduces the environmental impact on receiving water bodies.
- Membrane Treatment—Membrane technologies are increasingly being used by the waste-

HOMESTEAD REUSE SCHEMATIC FLOW DIAGRAM



past few years that exemplify water reuse tactics involving residential and general irrigation.

Homestead at Mansfield— Mansfield, N.J.:

Homestead at Mansfield is a 1,200 home, active adult, residential development, located on a 295-acre site. The community is surrounded by open grounds and all the homes are connected to a dedicated wastewater treatment plant. As an effect of both the age of the system and more stringent requirements of the NJDEP effluent discharge permit, AWMG conducted a series of upgrades to enhance the wastewater treatment plant. The upgrades made to the plant have created a first-of-its-kind residential application of reclaimed water in New Jersey. The system irrigates personal residences as well as the common area and open space. Under continuous-operation conditions, the facility provides up to 250,000 gallons per day of reclaimed water to the site, using the following process (Diagram 1-1, Left):

- 1) Wastewater enters a series of lagoons, where primary settling, aeration and biological processes occur;
- 2) Wastewater is then pumped from the lagoons to a lamella clarifier for the removal of phosphorous before being pumped to one or both sand filters;
- 3) Particulate matter is removed through filtration;
- 4) Filtered effluent (minus solids) undergoes chlorine disinfection, then chlorine removal;
- 5) A diversion chamber then redirects the wastewater to a storm-water detention pond from where the reclaimed water is used for irrigation.

When treated water is not used for reuse, it is directed to the wastewater treatment systems permitted outfall, which discharges to a tributary of Assiscunk Creek.

In November 2006, the engineer for the project, the American Water Management Group (AWMG), was presented with the New Jersey Governor's Environmental Excellence Award for leadership in RWBR for this project. The award was presented to the company by Lisa Jackson, N.J.'s Commissioner of the NJDEP and recognized the cooperation between the government, corporate sector and private citizens for the common good of the environment.

Continued on page 25

water industry in the treatment of wastewater reclamation.

- Membranes are used as a filter for separating treated effluent from the biomass used to break down nutrients.
- Membrane Bio-Reactors (MBRs) use membranes for filtration and typically replace the solids separating function of a secondary clarifier and an effluent filtration system.
- MBR utilizes anaerobic and aerobic biological process to facilitate the removal of nitrogen compounds.
- Phosphorous is typically removed via chemical precipitation.
- The emergence of newcomers to membrane manufacturing has increased the competition in the supply of membranes. This is continuing to drive down the cost of membrane technology and increase the economic feasibility of reuse applications.

Example Projects

The Homestead at Mansfield and the Hawk Pointe Golf Course are just two of many projects completed within the



LEST YOU FORGOT OR DIDN'T KNOW

—By Floyd B. Johnson, *Ecoletter* Co-Editor

There are many things said about history and I won't try to mention some of the catchy phrases here, instead I'll just offer some snippets and tidbits and you can make up your own mind. I'm old enough to remember this stuff, and have been working for the *Ecoletter* a sufficient length of time to be entrusted with the fabled archives. Back in 2001 we celebrated the 30th anniversary of the *Ecoletter* and took a trip back through the history of this magazine. Unfortunately there are no issues in the archives from the 1970's. What I'll do here is mention what topics were talked about in the *Ecoletter* over the years since 1980.

1980—The new Maryland law requiring all water and wastewater operators to be certified and how all these operators would receive training was a hot topic. Previous to this law, only superintendents were certified.

Also there was an article on energy conservation efforts at the Cambridge, Maryland wastewater treatment plant.

1981—EPA gave a grant to Charles County Community College to build a Maryland training center for operators.

The Speakout Forum at the annual conference was on the need for operator training.

1982—Marilyn O'Neal, Delaware WWOA Trustee sent a letter to the President of Delaware Technical and Community College about providing training to operators seeking certification.

An article reported that the use of poultry waste on a U of Maryland farm in Salisbury increased corn yields and did not result in microbiological or nitrate contamination to ground and water.

1983—Thomas McKewen retired from the State of Maryland. He headed the Maryland Environmental Service from its 1970 inception and helped to develop the static pile method of biosolids composting.

Seminar held on new regulations on industrial wastewater pretreatment.

Much of Spring issue devoted to operator training.

1984—At the Bay Conference, Governor Harry Hughes said that Maryland has a prime interest in the Chesapeake Bay and will take the lead in improving its quality and resources.

1985—Privatization seminar held which discussed tax laws, perspectives from the municipal, private and regulatory sectors and case studies.

Another seminar addressed the Chesapeake Bay Program, where a lively debate occurred on phosphorus versus nitrogen control and the proposed phosphate detergent ban in Maryland.

1986—Stan Kappe willed \$10,000 to associations to provide educational and technical assistance to operators of small municipal wastewater treatment plants.

1987—Chesapeake Bay agreement, calling for a 40% reduction of Nitrogen and Phosphorus levels by 2000, signed by Governors of Maryland, Virginia and Pennsylvania, The Mayor of The District of Columbia, EPA Administrator, and The Chairman of the Chesapeake Bay Commission.

1988—Blue Plains Research and Development Center re-established with \$250,000 of local money.

Article on Montgomery County Composting Facility solving odor problem.

WSSC WWTPs see influent Phosphorus concentrations 35% lower than 1985 concentrations. Blue Plains Phosphorus concentrations drop 25%. Maryland Phosphate Ban was enacted in December 1985, and the District of Columbia banned phosphates in September 1986.

1989—EPA proposes rules for Surface Water Toxics and Disposal of Sewage Sludge.

300,000 gallons of heavy industrial heating oil spilled in Delaware Bay

Abel Wolman dies in Baltimore at the age of 96. He helped develop a method of adding measured amounts of chlorine into drinking water. The chlorination of water was considered one of the top engineering achievements of the 20th Century.

1990—One million pounds of wastewater sludge generated in Maryland in 1989.

Letter to the Editor about lack of water conservation at site for annual joint conference in Ocean City, Maryland.

Pre-Conference Workshop on SARA Title III—Emergency Planning & Notification.

WSSC's Piscataway WWTP wins National EPA O&M Award

1991—The Speakout Forum at the conference was on Civil and Criminal Liability Under the Safe Drinking Water and Clean Water Acts.

The Water Pollution Control Federation is changed to The Water Environment Federation. This is the 4th name change since 1928.

1992—The Keynote Address at the Joint Conference was on Total Quality Management.

The Speakout Forum topic was Toxic Control—How Much is Enough?

First Annual Chesapeake Operations Challenge held in late 1991 at the Baltimore Public Works Museum.

1993—Montgomery County Composting Facility receives third National EPA award in four years for its odor control efforts.

Seminar held on recently adopted EPA 503 Biosolids regulations, and Maryland's proposed Nutrient Management Program.

1994—Feature articles on Nutrients and The Chesapeake Bay, and The Delaware Estuary Program's Comprehensive Conservation and Management Plan.

Annual meeting of the Water and Wastewater Instrument Testing Association held in D.C.

1995—Update on recently adopted EPA CSO Control Policy.

Report on expansion of Blue Plains WWTP from 309 to 370 MGD capacity.

The US water and wastewater treatment chemicals industry is forecasted to reach \$3.3 billion by 1997. Total consumption of water and wastewater chemicals totaled 14.7 billion pounds in 1992.

Several Maryland wastewater agencies met to discuss creating an organization similar to Virginia Association of Municipal Wastewater Agencies (VAMWA)

1996—Speakout Forum at annual conference a prelude to a CWEA sponsored The Future of the Chesapeake Bay Program seminar at the University of Maryland. Chesapeake Bay Program website launched.

District of Columbia Water and Sewer Authority created.

1997—Seminar on TMDLs, Effluent Trading and Healthy Watersheds at the University of Maryland.

On the cover—The Emergence of Geographic Information Systems.

WSSC's Western Branch WWTP wins National EPA O&M Award.

CWEA forms International Committee.

1998—An issue was dedicated to talking about Pfiesteria. To illustrate how complex the situation was, one article was titled Why Are The Cows Eating The Squirrels? Speakout Forum on Nutrient Management.

Annual meeting of the Maryland Tributary Teams

WVOA-CWEA webpage launched.

Five Operations Challenge teams competed to determine who would represent CWEA at the National Conference.

1999—Several articles on Automated Process Control. Theme of one issue is Privatization—Pros and Cons.

Chesapeake 2000, a new initiative by the Chesapeake Bay Program, to help with a new Bay Agreement.

Workshop with the University of Maryland on Tree Farming with Biosolids.

CWEA Collection System Committee formed.

CWEA 5S Society formed.

2000—With over 7 million tons of Biosolids generated in the US, the theme for one issue was Biosolids. Another hot topic, TMDL was the theme for another issue.

Specialty Conference on The New SSO Regulations.

Articles on the importance of filter feeders to the health of the Bay.

Tri-Conference held at Hunt Valley, Maryland.

2001—Operators are the theme for the Winter issue.

Bill Matuszeski, Director of The Chesapeake Bay Program for the past ten years retires. In his farewell to *Ecoletter* readers he says, "If you think the last ten years were tough, you haven't seen anything yet."

2nd issue with the theme of privatization.

Speakout Forum on the "Don't spill a drop," philosophy of the SSO policy.

2002—Pearl Laufer wins the National WEF Public Education Award.

Several articles talk about energy management plans for facilities.

To illustrate the idea that it's all water, the first ever Tri-Association Spring Meeting held at the Dalecarlia Water Treatment Plant in D.C.

University of Delaware becomes first student chapter of CWEA.

In response to the 9/11 terrorist attacks, Blue Plains WWTP converts from gaseous to liquid disinfection chemicals.

2003—99% of the SSO volume in Maryland in 2002 came from large SSO's (>10,000 gals.) and 47% of the overflows were due to capacity. 24% were due to stoppages.

WEF Biosolids Specialty Conference held in Baltimore. Class A or Class B? What is the future?

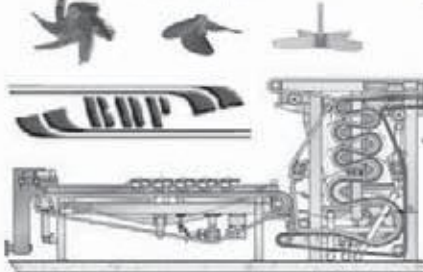
The Bioterrorism Act of 2002 requirements for all systems with > 3,300 users.

Larry Jaworski becomes WEF President, the first member of CWEA to assume that post since Ralph Fuhrman in 1951.

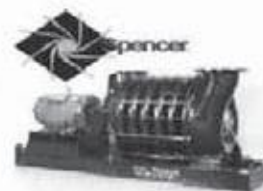
Continued on page 25



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Industrial Wastewater
Membrane Filtration
Odor Control
Screening Systems
Grit Removal Systems
Sludge Dewatering
Sludge Drying & Processing



Water Reuse Projects in the Mid-Atlantic

Continued from page 21

The Village at Hawk Pointe—Washington, N.J.:

Golf courses require significant volumes of water for irrigation. Many golf course owners are turning to water reclamation as an alternative source for irrigation water. Water reclamation plants are now being constructed to meet water demands for golf course irrigation.

One notable example is the system at The Hawk Pointe Golf Course in Washington, N.J. Formerly known as Asbury Farms, The Village at Hawk Pointe will consist of approximately 205 residences, 140,000 square-feet of commercial space and a golf course with a clubhouse and banquet hall once fully developed.

In November 2004, a Category I RWBR permit modification to the existing permit was granted. The wastewater treatment system is shared between the golf course, residential community and commercial businesses. The treatment process consists of conventional biological treatment followed by a membrane filtration system. The membrane system removes suspended solids producing a consistently high quality effluent. Hawk Pointe has not yet constructed the pipeline to transfer reclaimed water to the

irrigation pond. They plan to construct the pipeline this season after which Hawk Pointe will then use the treated effluent to irrigate the golf course.

With so many communities having reduced water supplies, wastewater reuse is increasingly being explored to meet water demand in an environmentally friendly as well as economically feasible way. Potential customers of water reuse include real estate developers, industrial clients, golf courses, stadiums and new and expanding communities. The implementation of water projects provides for safe, reliable, long-lasting and highly efficient solutions to suit individual water needs through environmentally sustainable development.

Lest You Forgot

Continued from page 23

2004—An issue addressed small systems and reminded us all that while 90% of the population is served by 10% of the systems, the converse is also true.

The Flush Fee passes in Maryland. A late inclusion of septic systems will more equally spread the cost of improving the Bay to all residents.

Maryland announces plans to reduce nitrogen to 3 mg/l on all 66 state plants >0.5 mgd. Estimated capital costs will be somewhere between \$500 and \$900 million.

2005—Kendal P. Philbrick, Secretary of the Maryland Dept. of Environment speaks at a WWOA regional meeting.

Article on use of biosolids as fuel in the manufacture of cement in Maryland. Approximately two tons of dried biosolids can replace one ton of coal as fuel for the process. And it burns cleaner than coal.

Delaware proposes strategic plan to protect inland bays. Like the Chesapeake, nutrients are a major component of the plan.

Baltimore County and the WSSC sign SSO Consent Decrees. The City of Baltimore and The District of Columbia are already under decrees.

2006—Issue dedicated to The WEF national conference recently held in D.C. Over 40 organization members serve as speakers, moderators, or poster presenters. Spring Tri-Association meeting held at the University of Maryland offered a wide variety of presentations. Collection system issue with a host of articles including one on the D.C. CSO control plan. Over ten miles of storage tunnels with a capacity of 193 MG is being proposed.

Plant profiles on Cumberland and New Market, Maryland.

2007—Asset Management Seminar put on by CWEA at Marine Institute of Technology.

Two issues devoted to The Bay's problems, including the role agriculture plays, and possible solutions. A not so easy solution is \$8 Billion in capital costs and \$1.1 Billion in O&M costs will be needed. And those are numbers on the low side.

Pre-conference Session on water and wastewater rates. Up is the only place they are going.

Continued on page 29



BENEFICIAL USE OF RESTAURANT GREASE

—By Chip Wood, Ecoletter Staff

In the Summer 2007 *Ecoletter*, Floyd Johnson presented an article focusing on conceptual topics of “Bio Energy.” In contrast, the article here is a more practical How-To-Do-It treatment focused on one form of biofuel known as biodiesel. This article originated from information presented at the June 1, 2007, CWEA Plant O&M Committee meeting at the Little Patuxent Wastewater Treatment Plant in Howard County.

Some time ago the buzzword was or maybe still is “beneficial use”—never again are we supposed to think about waste disposal. Take the residuals associated with your waste treatment (or water reclamation) processes and transform them into a valuable asset.

Here is a way to get started. Do restaurants in your area have problems with grease trap disposal? Does your WWTP already receive grease trap waste? Do you have a few acres of spare land area at your WWTP? Do you raise the roof in anger when you receive a dump of restaurant grease into your sewer collection system? If your answer is yes to any one or more of these questions, then you have potential capability to transform that yucky-looking restaurant grease waste into a wholesome-looking and valuable product, i.e., biodiesel fuel.

The term “biofuels” refers to fuels that are made from some sort of bio mass and they are considered an alternative fuel to the customary petroleum-derived fuels, commonly called “petrofuels.” As the United States searches for alternative ways to cope with its addiction to petrofuels, biofuels have been touted as the miracle potion. However, many forms of biofuels originally thought to be a great answer are now under attack as being worse for the economy and for aggravating the global warming trend. For example, the craze for ethanol motor fuel which is derived from growing corn is under criticism for taking away land used for growing food and feed, for removing carbon from the atmosphere while the crops are growing, and for taking two gallons of fuel for every three it produces. Most ethanol plants burn coal or natural gas to create the steam for the distillation process and emit carbon dioxide from the yeast process. So the net result is wealthier farmers but at the cost of higher food prices for consumers and more release of carbon-related emissions than originally thought.

One form of biofuel, known as “biodiesel,” can be made from a number of sources, sometimes called “feed-

stocks,” such as soy bean oil, canola oil, safflower oil, lard or restaurant grease trap waste. The inventor, Rudolf Diesel, used peanut oil when he invented the Diesel engine. Biodiesel fuel contains no petroleum, but it can be blended at any level with petroleum diesel fuel. To be legally used as a motor fuel, biodiesel must be produced according to the ASTM D6751 specification. Biodiesel fuel that meets ASTM D6751 is legally registered with the Environmental Protection Agency. Some diesel engines will run on certain forms of raw vegetable oil, but such fuel does not meet EPA required biodiesel specifications. Biodiesel fuel is made through a process called “transesterification” whereby the glycerin is separated from the fat or vegetable oil. The process produces at least two products—methyl esters (the chemical name for biodiesel) and glycerin (a valuable byproduct usually used in soaps and other products). Sometimes a fertilizer is produced. Biodiesel fuel is used in compression-ignition (diesel) engines with little or no modifications. Biodiesel is better for the environment because it is made from renewable resources and has lower emissions compared to petroleum diesel. When made from U.S. resources, use of biodiesel decreases our dependence on foreign oil.

Every day, millions of gallons of restaurant grease are created by restaurants across the country. A company called North American Biofuels Company (NABFC), founded in 2005, took an interest in restaurant grease and devised a process that takes one gallon of trap grease and refines it into nearly one gallon of renewable energy in the form of a gallon of biodiesel. Converting trap grease through beneficial reuse to renewable biodiesel fuel solves a major environmental problem. By taking the trap grease out of the wastewater cycle, the need to burn it, bury it, or inject it into the ground is eliminated.

Grease enters food establishment grease traps from dishwashers, sinks,



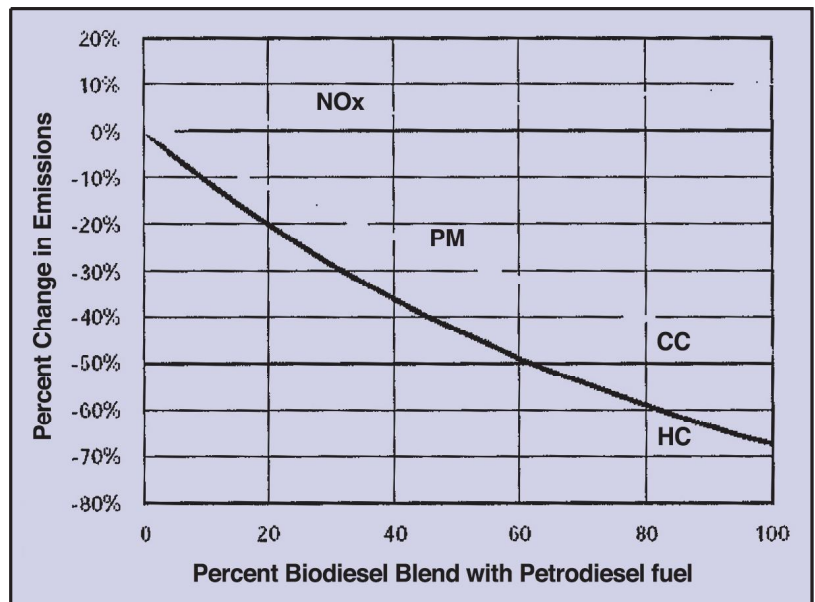
How to make Biofuel at Home

floor drains, and dumpster pads. The traps are designed to slow the incoming wastewater to allow the grease to be cooled and then float to the top while solids settle out to the bottom. Pipes at 90-degree angles keep the floating grease from floating out of the trap. If the retained grease and solids are not pumped out periodically, the incoming new grease has nowhere to go except to the wastewater collection system. Escaping grease builds up on the walls of the collection pipelines or comes into the head works at the treatment plant. Typically, a grease trap needs to be pumped out at three-month intervals, but this service can be very expensive—especially if the hauler has to travel long distances to find a disposal facility.

NABFC got its start when a “grease crisis” occurred in year 2002 when the Suffolk County, New York WWTP had a “heart attack” from too much grease and had to stop taking in grease trap wastes. For four years, Suffolk restaurant owners had to pay haulers to ship the grease waste from Long Island to South Jersey or to dump it illegally into the collection system. In August of 2006, NABFC opened a pilot plant in Bohemia on Long Island. Initially the plant was expected to produce up to 1000 gallons per day of biofuel that could be used in diesel-powered cars and trucks and home heating systems. Ultimately, the plant was expected to reach 4000 gallons per day of output. After passing a 50-cent-a-gallon Federal subsidy along to its customers, the whole sale price per gallon of NABFC’s biodiesel would be \$1.90—a good deal when compared with the \$2.25 for home heating fuel and \$3.10 for biodiesel made from soy beans. As long as the price of raw crude oil is above \$30 per barrel, NABFC is confident that their process will pay for itself.

The NABFC patented process can take in anything in the wastewater stream that has some form of fat content, e.g., trap grease, vegetable yellow fat, rancid vegetable oils, fish oils, tallow, meat scraps, etc. and make it into fuel or other useful byproducts, such as glycerin. The grease that is pulled from grease traps is pumped from the vacuum trucks to a fractionalization tank where passive settlement occurs. The trap product can be 70 per cent water. After settlement, there is a layer of grease and a layer of water. The water is pumped off and either piped or trucked to a WWTP. The remaining grease is dewatered further by centrifuging and cooking. Centrifuging also gets rid of foreign bodies such as mop fibers, rubber gloves, food products, etc. Next, the grease goes through several stages of filtering that further screen out foreign materials and then passes to a primary processing system. At this point it looks like paste and then catalysts and reagents are added. By the time it leaves the primary process, it begins to look like oil and after it leaves the final stage, it is ASTM D6751 biodiesel fuel.

An ideal site for a NABFC plant is on vacant land close to a wastewater treatment plant that will receive



Average Emission Impacts of Biodiesel Fuel in Diesel Engines

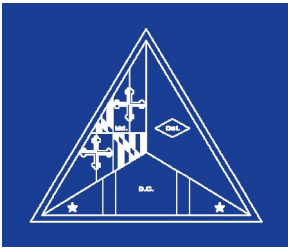
the wastewater stream from the biodiesel process. The NABFC processing units are portable and self-contained and can be rolled quickly into place and be hooked up to begin converting grease into fuel. The fuel product can be sold to wholesalers, used to help power the WWTP facilities or to run the grease collection trucks.

Biodiesel is typically blended with petro diesel to produce B20, which is a blend of 20 per cent biodiesel and 80 percent petro diesel fuels. With current air emission standards, the engines that burn 100 per cent petro diesel have relatively high concentration of regulated gaseous emissions and particulates. Biodiesel does not emit sulfur dioxide and there is a significant reduction of carbon monoxide, hydrocarbons, particulates, and air toxics. However, there is a slight increase in nitrogen oxides. Biodiesel adds lubricity to the engine, helping it last longer and cleans the black soot out of the engine which results in increased filter replacements. B20 is the minimum blend level allowed by the Energy Policy Act of 1992. B20 can be used in most equipment designed for diesel fuel use, including compression ignition (CI) engines, heating oil boilers, and turbines. Higher blend levels such as B50 and B100 require special handling and may require equipment modifications.

Biodiesel contains 8 per cent less energy per gallon than typical No. 2 diesel and about 13 per cent less energy per pound. Many users report little difference in engine performance between B20 and No. 2 diesel.

In conclusion, with such a process, NABFC has provided a unique solution to a national disposal crisis while at the same time offering an alternative fuel that is in high demand. And there is no hazardous waste involved.

Note: Pertinent websites used for this article include: www.nrel.gov; www.eere.energy.gov; www.biodiesel.org; www.nabfc.com; and www.newenergycapital.com.



CENTRAL SECTION— W.W.O.A. FEBRUARY MEETING/ TECHNICAL SESSION

—By Marshall Phillips Secretary/Treasurer,
Central Section

On February 28, 2008 The Central Section of W.W.O.A. held a business meeting with technical session at the W.S.S.C. headquarters building in Laurel, Md. A good turnout of approximately 40 attended the meeting. Special thanks are extended to the folks at W.S.S.C. for their hospitality and for allowing us to use the conference facilities.

The business meeting covered the usual section matters including minutes from the last meeting, a treasurer's report, and old and new business topics. The 2008 Section Officers election was held. Director—Elect was won by a new arrival to W.W.O.A., Mr. Clarence Gilliam from DCWASA. We welcome Clarence and I'm sure he will be an asset to the organization. Valerie Proctor now moves on to the Past-Director post and we all thank her for an outstanding job during her year as the Director.

Mr. Frank Owens ascends to the Director position for 2008. He will continue to be a driving force in the section just as he was in his capacity as Director-Elect. Our three Trustees elected were, Ms. Stephanie Millar, Jim Timmons, and Morgan Turner. Marshall Phillips was once again elected as the Secretary/Treasurer.



The Central Section offered a single scholarship for the annual Short Course. This year's winner was Clarence Gilliam of DCWASA (I think we've heard that name earlier in this memo). Coincidentally, the same Clarence Gilliam who was elected Director-Elect. Mr. Gilliam declined several offers to go immediately to Atlantic City.

The members discussed potential ways of utilizing W.W.O.A.'s education funds. Ideas and suggestions were solicited, and members were asked to forward these to the section or executive board officers.

We would like to recognize and thank the attendees from the Southern Section. It was a pleasure to have you with us.

Mr. Chris Brown of Geiger Pumps presented the technical session.

Chris presented a thorough and informative session entitled "Fundamentals of Hydraulics and Pumping." Thanks to Chris and Geiger for donating the time and expertise for our benefit. All who attended gained some useful insights

An update was presented on the 2008 Short Courses, to be held in Chestertown, Md. at Washington College. The dates are June 1st–6th, 2008.

The session was followed by a buffet style lunch at the nearby Country Buffet restaurant.

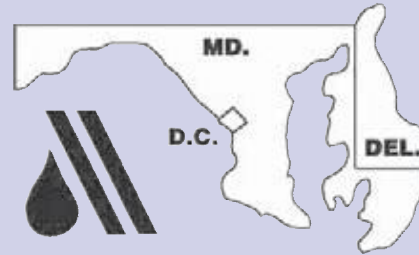


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The Joint CWEA/CSAWWA Water Reuse Committee is sponsoring a seminar on the issues utilities face when trying to finance and execute a water reuse project. The seminar will address these issues and will provide suggestions on the process that can be used to implement a successful reuse project. There will also be presentations by several local utilities who will present their water reuse project success stories.

Registration will soon be available online at <http://www.wwoa-cwea.org/>

Lest You Forgot

Continued from page 25

Understanding I put this list together—and understanding well thinking people can view history differently—nevertheless some things grabbed my attention more than others. Mandatory certification and training of all operators not only improved the operation of facilities but also allowed for more and more complex facilities to be operated at high levels. Governor Harry Hughes uttered prophetic words 24 years ago when he announced Maryland would take the lead in improving the Chesapeake Bay. It is without doubt that Maryland, the first state to enact a phosphate ban in The Bay region, the first state that across the board reduced nutrient levels in discharge permits to lower levels, the

first state to adopt a funding mechanism dedicated to improving The Bay, has shown the leadership that was promised. In perhaps a sign of things to come, court orders were issued to several large municipalities requiring massive amounts of money be spent to address massive SSO's and CSO's. Much improvement has been achieved in reducing overflows, and much more remains. There is no question the issue most talked about over the years, and the issue that will continue to receive the most discussion is the Chesapeake Bay. The Chesapeake Bay Agreement(s), The Chesapeake Bay Program, The Alliance For The Chesapeake Bay, and The Chesapeake Bay Foundation are just some examples of the focus on The Bay. It is after all the master of all our activities and we are liable to get a harsh reminder of that when the dreaded Bay-wide TMDL comes.

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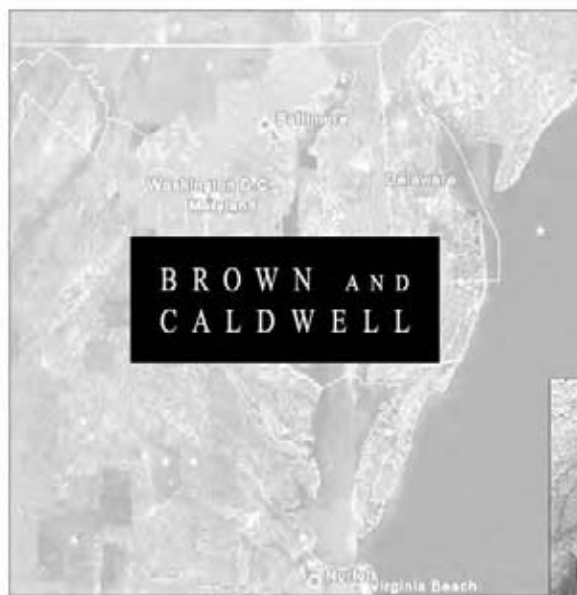
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