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Public Employees for Environmental Responsibility wants a federal agency to intervene because it believes the state has not been tough enough with a Daytona Beach sewage treatment facility.

Reclaim agreement 7

Florida Power & Light and Miami-Dade County's Water & Sewer Department have entered into an agreement to construct a pipeline to carry treated wastewater from the county to FP&L's nuclear reactors at Turkey Point. The proposed pipeline would be the largest reclaimed water project ever completed in Florida, say officials with the county.

Tank program update 10

Officials with the state preapproval program have started planning for a major shift. DEP officials briefed representatives of industry in November on a new "screening initiative" approach. Essentially, the preapproval program will begin dropping site scores to levels not seen since 1995 so that thousands of sites that have not been worked on since that time will receive some level of assessment to determine if contamination is present. Glenn MacGraw provides insight on the upcoming changes.

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Got a story lead?

Got an idea for a story? Like to submit a column for consideration? Fire away. And don't forget to fill us in on your organization's new people and programs, projects and technologies—anything of interest to environmental professionals in the state. Send to P.O. Box 2175, Goldenrod, FL 32733. Call us at (407) 671-7777; fax us at (407) 671-7757, or email us at info@enviro-net.com.

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Numeric nutrient criteria rule passes ERC, awaits legislative action

By ROY LAUGHLIN

If Florida legislators and their supporters want numeric nutrient water quality standards written by someone other than U.S. Environmental Protection Agency scientists, they will have a chance in March to adopt a set of rules written by the Florida Department of Environmental Protection.

The new rules, if adopted, will become Chapter 62-302 and Chapter 62-

303 of the Florida Administrative Code.

The proposed rules are notably specific, setting total maximum daily loads for nitrogen and phosphorus in freshwater lakes, rivers, streams and coastal estuaries. Many waterbodies already have TMDLs established in Chapter 62-304, FAC, and are referenced in the newly proposed rules.

Rule 62-302 provides numeric nutrient standards for estuaries from Hillsborough County to Biscayne Bay.

Drew Bartlett, director of DEP's Division of Environmental Assessment & Restoration, said that these estuaries are not considered to be in an impacted state, so TMDLs for these estuaries could not be set under the authority of other FAC sections that stipulate TMDLs "designed to restore," as Bartlett called it.

"These are new numbers we are setting for those waterbodies," he said, referring to the Gulf Coast estuaries.

For those people who sought specificity, the new rule should satisfy even the wonkiest. Calculation of the geometric mean of water samples taken to ensure compliance with the new standards is clearly spelled out.

A geometric mean typically provides a lower numeric solution than an arithmetic mean and reduces the relative contribution that a few high values contribute to the calculated mean. This will translate into a stricter measure of compliance with the standards.

"The basic premise of a standard is how you derived it. We derived these using geometric means. Our approach is rooted in the science," said Bartlett, explaining why a geometric mean and other specific calculation and measurement criteria were spelled out uniquely in the regulations.

STANDARDS
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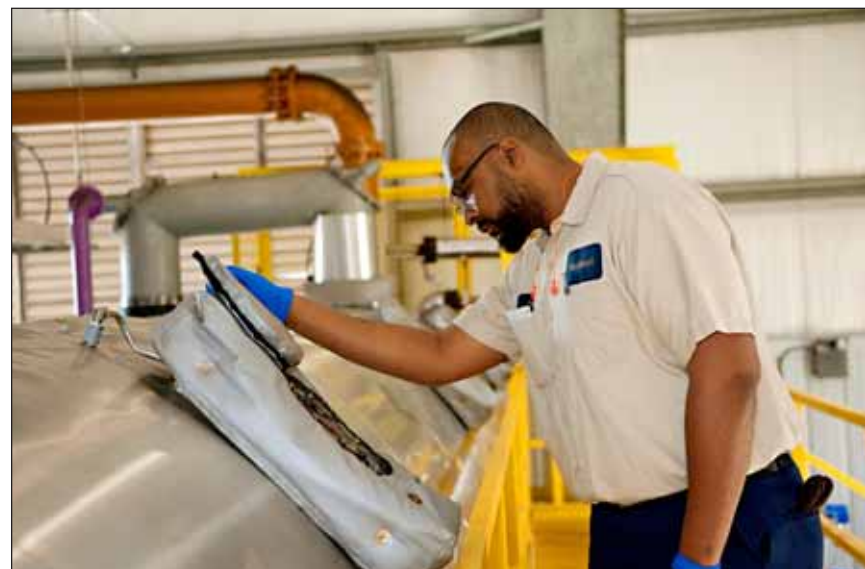


Photo courtesy of MaxWest Environmental Systems

Paul Long, an operator at MaxWest's Biogasification Facility in Sanford, FL, confirms the quality of the dried biosolids to be used as fuel within the gasification process. See story on Page 12.

Agreement with ranchers provides water storage north of the Everglades

By DAN MILLOTT

Eight Florida ranchers have joined together with three state agencies in an agreement that will provide water storage areas, and improve water quality and habitat north of Lake Okeechobee.

The state agencies that crafted the unique agreement included the Florida Department of Environmental Protection, the South Florida Water Management District and the Florida Department of Agriculture and Consumer Services.

DEP Secretary Herschel Vinyard and SFWMD Executive Director Melissa Meeker met with landowners at the Dixie Cattle Ranch to finalize the agreements that will store up to 4,800 acre-feet of water on private lands and improve water quality in Lake Okeechobee, the coastal estuaries and the Everglades.

The ranchlands cover three counties and total 9,500 acres. The land will become part of SFWMD's Dispersed Water Management Program, a plan that calls for storing water on public, private and tribal lands.

The eight ranches involved are in Okeechobee, Highlands and Polk counties.

Meeker said the SFWMD has a long term goal of providing 450,000 acre-feet of water storage north of the Everglades.

She said that using working ranch lands to achieve environmental benefits

also helps to sustain jobs, keep land on the tax rolls and avoid burdening taxpayers with new debt to buy the land needed for water storage.

"Water rights are central to every aspect of Florida life and its future," said Vinyard.

He added that collaborating with property owners to store excess water advances conservation and natural resource protection without the high cost of land acquisition.

"It eliminates the burden of ongoing debt payments and lets owners do what they do best—manage the land and support our economy."

The Dixie Cattle Ranch is a 1,075-acre property that has been recognized as a working example of innovative land preservation and water storage strategy.

AGREEMENT
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Environmental coalition challenges Port of Miami dredging project

By PRAKASH GANDHI

A coalition of environmental groups and activists has filed a petition with the state to block the Port of Miami's dredging project.

The petition was filed by Miami Beach-based Biscayne Bay Waterkeeper, the Tropical Audubon Society in Miami and Miami Beach boat captain Dan Kipnis.

The petition challenges the Florida Department of Environmental Protection's draft permit that would authorize the U.S. Army Corps of Engineers to deepen and widen the seaport's cargo ship channel.

The petitioners want a meeting with DEP and representatives of Miami-Dade County, which manages the port, and the U.S. Army Corps of Engineers,

which will supervise the dredging, to resolve the matter short of a hearing.

Jim Porter, an attorney representing the coalition, said his clients are very concerned about project impacts.

"Their concerns are primarily with the 600 days of blasting with the limited mitigation that is being proposed, and also with the significant impacts with turbidity generated by the dredging," Porter said.

The \$150 million Port of Miami dredging, which would generally deepen the cargo channel to 50 feet, has been scheduled for completion in August, 2014.

The project has been authorized by Congress. Florida Gov. Rick Scott has agreed to pay what would have been the

DREDGING
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UCS report: Power plants are primary cause of water supply stress

Staff report

Power plants that use fresh water for cooling have adverse impacts on source rivers and lakes. That's the conclusion of a recent report, "Freshwater Use by U.S. Power Plants: Electricity's Thirst for a Precious Resource." The report was written under the aegis of the Union of Concerned Scientists and a collaborating team of academic scientists.

The report concluded that water supply stress is "driven mainly by power plants." U.S. electrical power generation, according to the report, used as much water as agriculture in 2008. It used four times as much water as all residential use in the country.

These conclusions are based on an evaluation of the balance of local water supply and demand by power generation facilities.

The report's authors originally intended to study water usage by power plants based on information submitted to the U.S. Department of Energy's reporting system, but they found it inadequate. The data set compiled for this report, according to its authors, gives a markedly different picture about freshwater ecosystem stress than would be obtained only from DOE data sets.

Insufficient water supplies for cooling results in large volumes of overheated water being released. In some cases, power plants have been shut down to reduce possible damage caused by overheated cooling water.

The report's primary message is that increasing reliance on freshwater sources of cooling water is not sustainable even in the near term. It strongly endorses an alternative energy future based on photovoltaic and wind generation. These require no water for generation and do not produce greenhouse gas emissions.

The report notes that decisions made in 2011 to build generation facilities are commitments for at least half a century.

More chemical information available. The U.S. Environmental Protection Agency is making publicly accessible information about chemicals that in the past has been restricted as "confidential business information."

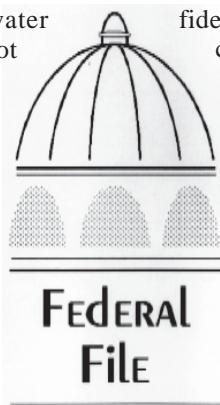
The information is part of the EPA's Chemicals Management Program. It characterizes safety and health risk for thou-

sands of chemicals manufactured and processed in the U.S.

Since 2009, previously confidential information on more than 1,000 health and safety studies describing 577 different chemicals has been released. In 2010, the EPA issued new guidance that denied confidentiality claims for some chemicals under the federal Toxic Substances Control Act.

Since that guidance was issued, EPA has been reviewing CBI claims in new and existing TSCA filings.

Steve Owens, assistant administrator for the EPA's Office of Chemical Safety and Pollution Prevention, said the EPA hopes to release several thousand additional studies now treated as CBI.



Clean air rules boost economy. The EPA estimates that American companies will spend as much as \$94 billion to comply with new provisions of the Clean Air Act. Investments in emission controls, according to a recent study, are "job creators" because that investment will be spent with American companies that provide Americans jobs.

The two rules responsible are the Cross-State Air Pollution Rule and the Mercury and Air Toxics Standards rule.

The report presents examples of air emission control projects in several states. Each involves a distinctly different technology to reduce air emissions.

The report lists 139 companies in more than 30 states that provide employment in order to supply services, materials and technology for air emissions controls.

The report concludes that complying with environmental regulation will "modernize aging infrastructure and cut hazardous air emissions ... [and] create a strong incentive for companies to channel capital construction projects and boost demand for skilled workers."

Contaminated sites, renewable energy. The EPA and the DOE's National Renewable Energy Laboratory are conducting a joint project to evaluate the feasibility of using Superfund sites, brownfields, and former landfills or mining sites as suitable locations for renewable energy production facilities.

The EPA has about \$1 million to spend across the country as part of its RE-Powering America's Land initiative.

The goal is to create energy production facilities that directly benefit adjacent communities, rather than simply to place energy production facilities into

blighted areas. All types of renewable energy technologies are being considered: wind, solar, biomass and geothermal.

The study includes 26 sites spread across 20 states. Feasibility studies consider the most appropriate placement of the facility on a candidate site, potential energy generating capacity, return on investment and the economic feasibility of the project.

Some of the sites under consideration are now being assessed or cleaned up. Evaluations in the current project include efforts to determine how energy production development could occur simultaneously with remediation efforts at a site.

In the U.S., over 20 renewable energy projects have already been completed on contaminated and reclaimed sites, including, the Exelon City Solar installation in Chicago. It is the largest urban solar power plant in the country.

Oil spill assessment. The financial cost of the Deepwater Horizon oil spill has been an item of speculation. U.S. law makes those responsible for oil spills financially liable for cleanup and also for financial damages.

Its magnitude and longevity makes the DH oil spill a new challenge for established Natural Resources Damage Assessment protocols.

As a result, Congress asked the National Academy of Sciences to convene a study group to recommend an appropriate methodology to conduct for the spill, taking into account its special circumstances of size, duration and location.

The concepts and practice for such assessments were first set in place after the Exxon Valdez oil spill in 1981. They have worked acceptably well for smaller oil spills since.

The standard assessment strategy requires a tally of individual losses that would then be charged to the spill's accountable entity.

The 12-member panel convened by the NAS said in a preliminary report that a new assessment protocol should include the value of "environmental services" that were compromised or lost when habitats in the Gulf were oiled.

The panel also proposed to develop methods to consider the value that arises from the complexity of the Gulf environment, and to assess a monetary value for habitats such as coral reefs and species such as sea turtles.

A robust new methodology to evaluate effects and costs of the DH blowout are important for two reasons. First, those responsible will pay financial damages that must be reasonable and assessed in a practical way. Second, restitution will likely be earmarked for a long-term Gulf ecosystem remediation program.

In its preliminary report, the panel said that an ecosystem services approach would address both goals, provide a more comprehensive assessment of damages, and more flexibility in the design and execution of a restoration program.

The NAS' final report is not due until spring, 2013.

FAU Everglades grant. Two FAU faculty members have received a three-year grant from the U.S. Geological Survey to study carbon dynamics in the Greater Everglades.

Described as a pilot study, it will attempt to identify potential impacts of disturbance, restoration efforts and climate change on the Everglade's carbon cycle.

Carbon cycling in the Everglades is dominated by carbon storage in peat. Peatlands, according to the FAU scientists, comprise just three percent of the Earth's land surface. But they hold an estimated one third of the terrestrial carbon pool.

The Everglades are believed to be a net carbon sink, but the magnitude of that function is easily compromised by fire, drought and land development.

FEDFILE
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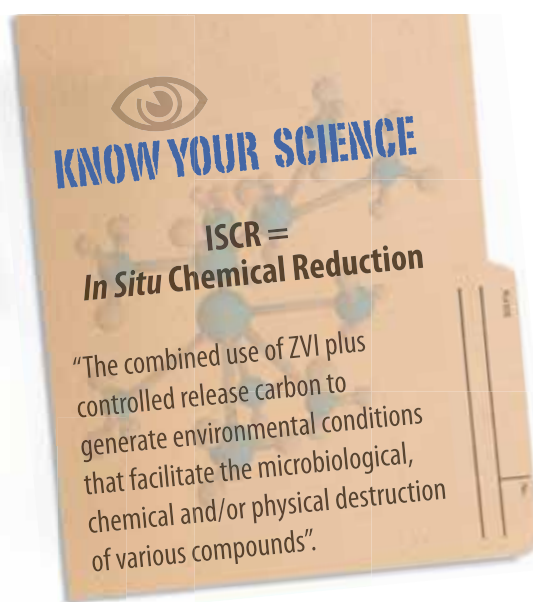


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Phone: (407) 671-7777
Fax: (407) 671-7757
info@enviro-net.com
www.enviro-net.com

MICHAEL R. EASTMAN
Publisher/Editor
mreast@enviro-net.com

Support services provided by
OSS
Orlando, FL

Contributing writers and columnists

JOE COLLINS

Chairman
South Florida Water Management District
West Palm Beach, FL

PRAKASH GANDHI

Senior Environmental Correspondent
Orlando, FL

LAURA J. GIMPELSON, PE

President
LG Environmental Engineering
Orlando, FL

BLANCHE HARDY, PG

Environmental Correspondent
Sanford, FL

ROY LAUGHLIN

Environmental Correspondent
Rockledge, FL

GLENN R. MacGRAW, PG

Vice President
The FGS Group
Tallahassee, FL

DAN MILLOTT

Environmental Correspondent
Miami, FL

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SJRWMD considers new ethics guidelines to protect employees

Staff report

New ethics guidelines are being considered by the St. Johns River Water Management District. The district wants to protect employees from possible intimidation when board members or their consulting companies ask agency approval to consume large amounts of water or destroy wetlands.

The *Orlando Sentinel* reported in early October that there was general concern among agency employees that they would be singled out for dismissal if they tried to block permit applications or tried to be too proactive in protecting the environment.

The district's new executive director, Hans Tanzler, proposed the ethics rules changes, which amount to recommendations that board members avoid circumstances in which they may appear to be pressuring employees.

Under district rules, board members are prohibited from doing business directly with the district. But they are not prohibited from doing business indirectly with the district by working on behalf of developers or utilities seeking water or wetlands permits.

Existing ethics rules also prohibit board members from voting on matters tied to their business or personal interests. Several board members in recent years have declared conflicts of interests and excused themselves from voting on certain projects that could have benefited them or their business.

BP grants. Representatives of the five Gulf States and two federal agencies have announced \$57 million in grants for environmental restoration and to offset the loss of human uses of the Gulf of Mexico during the 2010 Deepwater Horizon oil spill.

Florida will receive nearly \$5 million for two projects in Escambia County—one for beach restoration and another to improve four boat ramps.

The \$57 million is part of \$1 billion in payments agreed to by BP as part of the Natural Resource Damage Assessment process under the Oil Spill Prevention Act of 1990.

Of the \$5 million received in the first phase of grant awards, \$4.4 million will go towards the boat ramp projects and \$585,898 will go towards beach dune restoration on 20 acres there.

Meanwhile, environmental groups are seeking to gain support for a U.S. Senate bill that would channel 80 percent of the BP civil fines collected by the federal government back to Gulf States.

Florida Gov. Rick Scott said the projects are important to Florida. "These projects will address damage to the environment, as well as loss of recreational and outdoor opportunities," he said in a written statement. "Restoring these damages is vital to the communities of the Gulf coast."

Lake Apopka summit. About 75 people attended a summit in December on the restoration of Lake Apopka, the state's fourth largest lake and one of its most polluted.

The summit was hosted by state Sen. Alan Hays, R-Eustis, and attended by Herschel Vinyard, secretary of the Florida Department of Environmental Protection, and state lawmakers.

Officials from the St. Johns River Water Management District, which is directing the current restoration effort, stressed during the summit how difficult it has been to clean up the lake.

The city of Apopka plans to withdraw some of the lake's water, clean it and then pipe it to residents for irrigation purposes. Meanwhile, residents downstream in Lake County complain that their lake levels are too low because so much water is being held back in Apopka.

SJRWMD Executive Director Hans Tanzler said his agency expects by late in this decade to win the fight to clean up the lake at a cost of nearly \$200 million.

County buys dump site. Escambia County is set to buy about 15 acres of land in the northern part of the county where trash was buried more than 20 years ago.

The property is located near the former county-owned Camp V landfill, which closed in 1988.

RMS Timberlands tried to sell the property to Gulf Power as part of the 4,000 acres the utility is acquiring for a potential nuclear power plant. But because of water and groundwater issues, Gulf Power decided not to buy the property and turned to Escambia County to buy the land.

Thumbs down on landfill. Members of the Live Oak City Council have unanimously opposed a proposed solid waste facility near U.S. 129 and Interstate 10, north of the city.

City officials are concerned about a landfill being built so close to the city and are worried about the likelihood of bad odors, and the influx of birds and rodents associated with landfills.

The proposed landfill would have been situated near the city's new \$3 million wellfields and water tower.

Coalition formed. Former Florida Governor and U.S. Senator Bob Graham is urging Gov. Rick Scott to reverse the environmental damage done by lawmakers in last year's legislative session.

Graham said the 2011 Legislature reversed four decades of progress in water and land conservation. He announced that he and the state's top environmental advocacy groups have formed the Florida Conservation Coalition.

Graham said that legislative cuts made in 2011 to water management district funding and changes in water policy have resulted in the dismantling of the professional staff at the water management districts.

He said proposals now pending before the 2012 Legislature, such as one to allow for 50-year consumptive use permits, threaten the state's limited water supplies.

People news. John Brandvik, PE, had joined Bayside Engineering Inc. as construction management program leader. Brandvik has 26 years of engineering and management experience in both the public and private sectors, and is a registered professional engineer in Florida.

Florida Notes



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Lake Hamilton town council approves drinking water plant loan

Staff report

The Lake Hamilton town council unanimously approved a construction loan to partially fund the town's new \$3.4 million drinking water plant.

Approval gave the green light to close on a \$2.4 million loan with Center State Bank for interim financing required by the U.S. Department of Agriculture. That will permit a refinancing of the loan and provide a grant to cover the balance of the project's cost.

Town Planner Doug Leonard told the

council the loan will work as a line of credit, allowing funds to be withdrawn as needed while construction progresses.

Leonard explained that the town will pay interest on the funds they utilize. Once the \$2.4 million is used, the USDA will roll it into a permanent financing program. The rest of the funding will come from \$923,000 in grants.

Construction of the plant is underway and work will be completed by July, 2012.

The water plant project has been in the planning stage for several years. A Southwest Florida Water Management District

study found that the old water plant was creating stress on Lake Gordon from which the town was drawing its water supply.

Lehigh Acres projects. The East County Water Control District completed two water control structure replacement projects in Lee County.

The Harris Marsh Phase II improvements and the Three Critical Weirs Replacement Project were formally dedicated in late 2011.

The two projects allow the district to manage the flow of, filter and treat water before it moves to the Orange River and then on to the Caloosahatchee River.

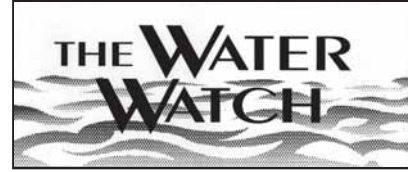
ECWCD Chairman J. Nathan Stout said the projects will improve water quality, reduce flooding and work to curtail pollution. He said it will also help the agency to comply with stricter U.S. Environmental Protection Agency regulations.

The Harris Marsh Phase II project replaced and improved the main structure on the flow way and the structure at the inflow of the North Marsh. Generators, automated gates and telemetry were also

added.

The Three Critical Weirs project replaced one structure east of Sunshine Boulevard at the intersection of Ann Avenue North and 11th Street, a second at Maple Street and Able Canal just north of Leeland

Heights and a third, the Mackerel 1 structure at the north end of Sunshine Boulevard at Hickory Creek Canal and Mackerel Canal.



Lynn Haven wa-

ter and sewer. An ongoing program of upgrading the city of Lynn Haven's water and sewer systems is being accomplished without bonds or unplanned rate increases.

City Manager John Lynch and Jim Sloninia, a project manager with Panhandle Engineering Inc., delivered that news to Lynn Haven's city council in November.

For 2012, there is more than \$400,000 available to upgrade about half of the city's 20,000 feet of cast iron water pipelines. Sloninia said the pipes are corroded and after hydrants are flushed, water sometimes becomes discolored.

Lynn Haven has budgeted \$517,000 in 2012 for upgrading the sewer system. Most of that work involves upgrades to the wastewater treatment plant.

Future plans based on available funds call for replacement of 85,000 feet of clay pipe, most of it 80-90 years old.

North Port drinking water. After years of fielding complaints about the hardness and taste of its drinking water, city of North Port officials decided to invest \$9.6 million to upgrade the water treatment plant on Myakkahatchee Creek.

A major element of the project is a \$9 million reverse osmosis system that will remove excessive sulfate, dissolved minerals and organics from the water. In addition, six new wells and a new surface water intake on Cocoplum Waterway will be part of the project.

North Port Utilities Director Cindi Mick said about a year from now customers will be drinking a blend of treated ground and surface water that will be softer and taste better.

Construction has already started on the RO plant and other improvements. Target date for completion is November, 2012.

A grant from the Southwest Florida Water Management District will cover half the cost of the project. The city will ask SWFWMD to reimburse them for the other half.

A grant from the U.S. Environmental Protection Agency is covering 47 percent of cost for the Cocoplum Waterway portion of the project. The rest of the costs are covered by utility funds including capacity fees charged to customers.

Sewage for biofuels. A North Florida renewable energy company proposed acquiring the waste sewage and landfill garbage from Pasco County and turning it into synthetic diesel fuel.

Newberry-based Earth, Wind and Fire Technologies LLC approached the county about taking its sewage and garbage. The idea is attractive to the county because it will save the current costs associated with its treatment and disposal.

The plan by the company is to partner with investors to build a plant for processing the waste.

Michael O'Carroll, president of EWFT, said the carbon waste trash and human waste would be shredded into small pellets, mixed with a proprietary material, and then microwaved—a process that uses less heat than incineration or plasma technology.

The diesel is extracted and what's left is distilled water and a small charcoal pellet that can be marketed as a soil additive.

Currently, Pasco spends \$800,000 an-



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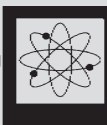
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WATCH
Continued on Page 5

Tallahassee Regional Airport goes solar as part of sustainability push

By PRAKASH GANDHI

The city of Tallahassee is turning to solar energy to help improve the environment and save money.

The Tallahassee Regional Airport has installed a 25,344-watt, roof-mounted solar photovoltaic system in its main terminal as part of an effort to promote green technologies.

The project, launched as part of the airport's water intrusion project, will generate as much as 20 kilowatts of power.

"This is our initial step into solar energy technology," said Sunil Harman, director of aviation at the airport. "We are hopeful it will offset some of our terminal energy costs and also allow us to reduce carbon emissions at the airport."

When flying into the airport, passengers will see 176 photovoltaic laminate solar panels affixed to the northeast side of the terminal.

City officials say the solar panels are expected to generate an annual energy savings of 34,823 kilowatt hours and reduce the release of about 28 tons of carbon dioxide per year.

Harman said the airport needs to be as cost-conscious and energy-efficient as possible and the solar installation is an initial step toward achieving that goal.

Officials say the solar photovoltaic system cost about \$180,000 to implement.

WATCH

From Page 4

nually to truck dried human waste out of the county. If the plan becomes a reality, that cost would be eliminated plus the county could use some of the diesel produced to run school buses and other county fleet vehicles.

A major question still to be answered is whether Pasco produces enough sewage to feed the proposed plant. O'Carroll said it would take 150 tons per day to make the project viable.

Marco Island public works. The Marco Island City Council gave City Manager Tim Pinter the okay to seek two grants totaling \$840,000 to help the city fund public works projects in 2012.

The funds would come from the South Florida Water Management District and will be matched by the city. Marco will be reimbursed by the SFWMD for up to 50 percent of their costs up to the grant amount.

The first grant of \$490,000 will be applied to Phase 4 of the reclaimed water production plant. Phase 4 will boost capacity by constructing an injection well sump and equalization storage tank that will be converted from an existing potable water tank.

The second grant of \$350,000 will fund three stormwater improvement projects. The first will target 10 city areas including eight intersections where drainage is sub-par.

The second upgrades evacuation areas on North Collier Boulevard leading to the Judge S.S. Jolley Bridge.

The third will correct inadequate drainage at the south end of the island on Swallow Avenue where road closures are frequent after heavy rains.

The total cost of the three drainage projects will be about \$1.3 million.

Marion bottling battle. A lawsuit filed seeking to overturn a Marion County Commission decision to grant a zoning change allowing withdrawal from artesian wells near Lake George, has hit a legal snag.

And the attorney representing the plaintiff admits that the lawsuit was filed too late.

The commission originally approved the change in May. It gave the green light for the Moody family of Ocala to withdraw water from a 12-acre site along the shores of Lake George. Their plan calls

They said that the system can reduce overall energy expenses by between \$5,000 and \$7,000 a year.

The solar project at the airport is part of a city-wide sustainability effort. Each of the city departments has a goal to help create a sustainable and clean energy environment.

The system was designed and engineered by RS&H and constructed by Renitta Knight Construction LLC with Simpler Solar Systems providing recommended technical improvements to the system.

Sperry and Associates and Bass Electric handled the permitting that was required for the project.

Officials plan to monitor the system over the next year to see if expanded use of solar would be a good investment for the future.

The solar project is the latest environmentally-friendly project launched by the airport.

The airport implemented a "Green Cleaning" program to improve indoor air quality, and mitigate long-term health risks and allergies associated with indoor air pollutants.

In addition to being designated as a Gold Certified Green City by the Florida Green Building Coalition, the city of Tallahassee has introduced environmentally friendly programs focused on sustainable practices and procedures.

for extracting 100,000 gallons of water a day and then transporting it to a bottling facility in Ocala.

County Attorney Guy Minter said the suit filed by George Hill, a Salt Springs resident, was filed after June 30, the deadline for challenging the commission decision.

Hill claimed that by granting the zoning change, the commission was establishing an industrial operation in an agricultural area.

His attorney, Don Holmes, has contended the commission failed to follow its own land use regulations by not forcing the Moodys to prove how 20 trucks per day coming and going from the site is compatible with the surrounding community.

Minter says the Hill suit is flawed on both legal and technical grounds. Not only was the June 30 deadline missed, he said, but the case was filed in the wrong venue.

While agreeing with Minter on the law, Holmes says a judge could still find an avenue for quashing the permit.



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The conference will be conducted at the Roz and Cal Kovens Conference Center on the Biscayne Bay campus of Florida International University in North Miami—just over the Broward County line in Miami-Dade.

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Have a recent cleanup project of note that you'd like to discuss? We are looking for a half dozen presentations on cleanup efforts that addressed the unique physical and regulatory challenges of South Florida. What techniques and technologies worked well, what didn't work so well and how did you overcome project challenges?

We will be accepting abstract submittals until Jan. 15, 2012. Send a brief, 250-word description of your talk to FRC-South Conference Manager Mike Eastman at FRC-South, P.O. Box 2175, Goldenrod, FL, 32733; e-mail mreast@enviro-net.com or fax to (407) 671-7757.

We plan to select talks for inclusion in the technical agenda in late January.

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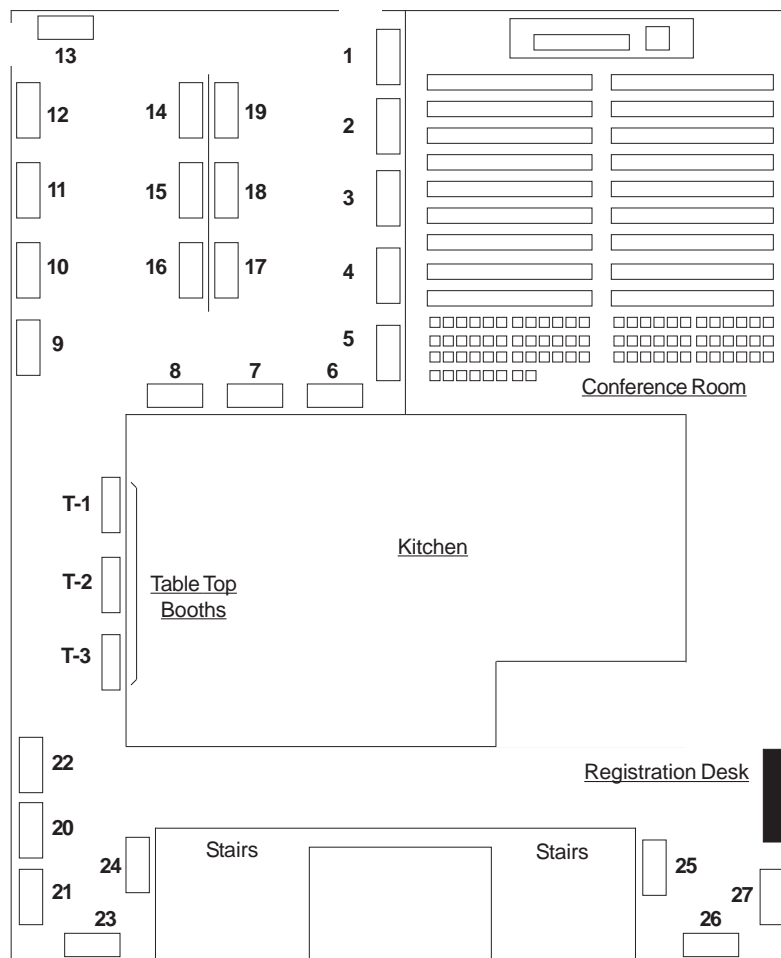
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PEER takes DEP to task over WWTP

By PRAKASH GANDHI

State environmental officials are under fire again from an environmental advocacy group—this time over a series of water pollution offenses by a city of Daytona Beach sewage treatment facility.

The group, Public Employees for Environmental Responsibility, wants a federal agency to intervene because it believes the state has not been tough enough with the city.

PEER is asking the U.S. Environmental Protection Agency to step in to handle compliance issues with the plant.

The group's complaint targets a pattern of excess sewage dumped into the already impaired Halifax River, which is popular with recreational users and lies within the Atlantic Intercoastal Waterway.

The Daytona Beach Bethune Point wastewater facility routinely exceeds its permit levels, say PEER officials.

Florida PEER Director Jerry Phillips, a former enforcement attorney with the Florida Department of Environmental Protection, said the city of Daytona Beach is a "poster child" for what is wrong with Florida's water quality.

Over the past five years, there have been almost continuous violations but only minimal enforcement action by DEP, said Phillips.

Since a 2009 consent order with DEP, state records show another 35 violations, including raw sewage overflow, excessive levels of fecal coliform and failures to disinfect discharges.

State environmental officials dispute these charges, saying the facility is making strides to improve its record.

According to regulatory officials, the facility has paid \$23,250 in penalties and completed a pollution prevention project.

"DEP is working closely with the city of Daytona Beach and we are satisfied with their current progress," said DEP spokeswoman Dee Ann Miller.

Still, PEER says the Daytona Beach facility routinely violates its permit nutrient restrictions, especially for nitrogen, for which it pays fines limited to \$250 per violation by the terms of its consent order with DEP.

The PEER complaint calls on the EPA regional administrator in Atlanta to enforce the Clean Water Act and take jurisdiction for permit enforcement away from DEP.

In recent months, PEER has lodged similar complaints with EPA against sewage treatment plants in Clay County and the city of Boca Raton.

PEER says the city of Daytona Beach has struggled on and off since 2006 to meet federal limits on some of the pollutants in treated sewage that the city's Bethune Point plant discharges into the Halifax River.

Federal rules govern discharge to waterways to reduce the levels of pollutants such as nitrogen, phosphorus and bacteria in sewage that can contaminate a waterway, promote algae blooms and cause fish kills.

The city signed a consent order with the state in June 2009 over a series of violations. Under that consent order, the city agreed to \$19,500 in penalties and to pay daily penalties for future violations of the standards.

To offset a portion of those penalties, the city agreed to undertake a pollution prevention project to reduce energy consumption at the treatment plant.

Phillips said the facility has a long history of violations.

"When DEP renewed their permit, the facility was out of compliance and it had violations within a few days of the permit being issued," he said. "When the consent order was executed, the facility was still out of compliance."

Phillips said there are no signs that the

PEER
 Continued on Page 7

Miami-Dade/FP&L reclaimed water project would be state's largest

By DAN MILLOTT

Florida Power & Light Co. and the Miami-Dade County Water & Sewer Department have entered into an agreement to construct a nine-mile long pipeline from the county's Black Point wastewater treatment facility to the power company's Turkey Point power plant.

The proposed pipeline would carry treated wastewater from the plant to FP&L's nuclear reactors at Turkey Point in south Miami-Dade County.

It would be the largest reclaimed water project ever completed in Florida, according to officials with Miami-Dade County.

FP&L is now about halfway through the permit process seeking to build two new nuclear reactors at Turkey Point.

Mayco Villafana, a spokesperson for FP&L, said the two reactors would be capable of producing 2,000 megawatts of

power, providing enough power to serve 745,000 homes.

The agreement is contingent upon all state and federal agencies signing off of on the utility's proposal for the two new reactors.

Agencies involved in the permit process include the federal Nuclear Regulatory Commission, the U.S. Army Corps of Engineers and the Florida Department of Environmental Protection.

FP&L will have a critical need for process water to cool the two new reactors. They estimate that they would need 90 million gallons of water a day to satisfy their cooling needs.

Doug Yoder, deputy director of MDCWSD, said that the county would pay for the materials and labor for the pipeline. For their part, FP&L would handle the design, engineering and construction management for the project.

The power company would also build the necessary treatment facilities at their

end of the pipeline and bear the cost of maintaining and operating the line in the future. The total cost of the pipeline is estimated at \$78 million.

Treatment facilities would be built at Turkey Point to lessen nutrient levels in the reclaimed water.

While the need for process cooling water for the two new reactors is the key to the project, the water provided will also be used to cool FP&L's gas-fired unit Number Five. That unit is currently drawing water from the Floridan Aquifer to provide cooling.

Yoder said FP&L currently has a joint project with the city of West Palm Beach's water utility to provide wastewater cooling for a new conventional power plant. That one is a large project but this new one will be the biggest in Florida.

Yoder pointed out that 2008 legislation mandated that the county water system stop using their ocean outfalls by 2025.

"We reuse 60 percent of that water now," he said. "But the water that will go to FP&L is not water that was going to the outfalls."

The MDCWSD official said legislation proposed for 2012 will allow all the 90 million gallons per day going to FP&L

to count towards meeting its 170 million gallon-per-day requirement.

Villafana estimated that the permitting process for the two new reactors should be completed by early 2014. Construction of new units could begin as early as 2016 and one of two new units could be operational by 2022, the second a year later.

FPL believes the deal with the utility will save the county about \$300 million and will have major environmental benefits. The route of the pipeline will follow existing FP&L right of way avoiding the problem of securing additional property to construct the line.

In recent years, the MDCWSD has initiated water conservation programs that have worked well. Yoder said water usage has declined.

"In 2007, our estimate for water use was 155 gallons per person per day," he said. "It's now down to 139 gallons per day."

He said while the conservation is a good thing, the decrease can adversely affect the bottom line of a utility.

The decline in water use can also be attributed to the slowdown in the economy, including fewer tourists and slower population growth since those 2007 projections were made.

EBI report: Water, wastewater industry growing

Staff report

The U.S. water and wastewater industry grew 3.2 percent in 2010 and is expected to grow a rate of 4.4 percent in 2011 to \$136 billion in revenues, according to new research by Environmental Business International Inc.

Population growth, water scarcity and the need to replace or upgrade old infrastructure have combined to make the global water market one of the steadiest segments of the environmental industry, said George Stubbs, EBI senior editor.

EBI has tracked the water and wastewater industry since 1988. Its annual analysis incorporates 10 segments, including water treatment equipment, chemicals, consulting & design engineering, O&M, instruments and analytical services.

Private sector water technology and service companies fared well in 2010,

PEER

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plant is meeting the terms and conditions of the permit.

"You have to wonder at some point when this is going to turn around," he said. "You are talking about years of non-compliance."

He said there has been a high level of nutrient discharge into the Halifax River, which he said has been designated by the state as an impaired waterbody.

"An impaired waterbody is supposed to receive the highest level of protection," Phillips said. "I think EPA needs to step in and take over the permit. The agency should put stricter limits on the discharge and apply some serious penalties if they don't meet those terms."

Phillips said it is cheaper for the plant's operators to violate the permit because the enforcement actions have been so weak. "I seriously doubt if anything is going to get done until it becomes painful for them to violate the permit," he said.

DEP spokeswoman Miller said there are five facilities on the EPA "significant non-compliance list" and DEP has requested an override from EPA for three of them, including the Daytona Beach Bethune Point wastewater plant.

She said the facility had violations of their total nitrogen interim limits in their consent order that were addressed by stipulated penalties.

"The facility has been in compliance the past two quarters; therefore, DEP is requesting the removal of the facility from DEP's watch list," she said.

City Utilities Director Mitt Tidwell could not be reached for comment.

But city officials say the violations can be attributed to a number of issues including equipment failures.

When the plant was built in the 1940s, it was designed to treat sewage to much lower levels than those required today. They say that several major changes have been made to the plant.

where some industries, notably mining and oil and gas—especially shale gas exploration—are enjoying substantial opportunities.

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When the flood waters cover the earth or "Can anyone tell me where I can find a 'gopher tree?'"

By LARRY SMITH, DEVO SEERERAM, PhD, PE and DONNA GREENLUND, FRP

In the Old Testament Book of Genesis, God gets the credit, or blame, for a flood that covers the earth. In order to save Noah and his descendants, God orders Noah to build an ark of "gopher wood." Notes to this section of scripture say that this was "an unknown kind of tree."

It may be assumed, therefore, that such a tree will be difficult to find today. There-

fore, enterprising plaintiffs' lawyers have taken to filing inverse condemnation lawsuits against government, in place of seeking out arks of gopher wood, to help save the victims of flooding in today's world.

God no longer gets the blame or credit. Furthermore, God is not accepting service of process. Thus, government and its public projects have become the objects of lawsuits to remedy the damage from flooding occasioned by otherwise natural

disasters.

Why inverse condemnation and what is the burden of proof?

An inverse condemnation action is a cause of action by a citizen against a governmental defendant to recover the value of property that has been taken in fact, although no formal exercise of the power of eminent domain has been attempted by the taking agency.

When a public project such as highway construction results in a diversion of water on to private land, the owner may have an inverse claim. Most experts believe that the requirement of a "permanent" taking by the flooding is no longer necessary since the decision in *First English Evangelical Lutheran Church of Glendale v. County of Los Angeles*, California, 482 U.S. 304, 107 S.Ct. 2378, 96 L.Ed.2d 250 (1987). However, recent decisions hold that during the period of inundation, the owner must be deprived of substantially all reasonable use of the property.

Unlike a traditional eminent domain action where the government bears the burden of proof that the taking sought is both a public necessity and for a public purpose, the property owner must carry the burden of proof in an inverse condemnation action.

Consistent with Florida law, that burden of proof includes the following:

1. Government action
2. Taken willfully or knowingly
3. Which caused a physical invasion of the plaintiffs' land
4. Reasonably expected to continually reoccur in the future or substantially expected to periodically recur
5. That interferes with all beneficial use of the property or denies any reasonable use of the property
6. As of a specific date.

By far the most critical element of proof is "causation." Unless it can be proved, by the greater weight of the evidence, that the government's project caused or substantially contributed to the flooding of the owner's property, there can be no recovery. This issue, coupled with the question of whether the flooding resulted in the owner being deprived of substantially all beneficial use of the property, usually decides the outcome of the inverse condemnation trial.

How causation is proved or disproved

During 2004 and 2008, Florida, which normally receives plentiful rainfall, in-

curred unusually high rainfall amounts from three hurricanes in August and September, 2004, and Tropical Storm Fay, August, 2008. Since most retention ponds are designed for a hurricane type event of 10 to 12 inches of rainfall within a 24-hour period, many ponds were simply overwhelmed.

When rain falls on land surfaces, stormwater runoff is generated and the surface water moves by gravity from higher to lower elevations. This runoff moves through conveyance systems and can be detained in ponds on its way to an outfall point in a lake, canal, natural channel or even the ocean.

Impervious surfaces such as asphalt pavement and driveways quite naturally produce more runoff than pervious surfaces such as turf grass. For example, for a one-inch rainfall event, the runoff produced is a percentage of this one inch which can vary from zero runoff on high and dry sandy soils, to about 30 percent on a vegetated site with high water table, and as much as 80 percent for impervious surfaces.

One of the first things you learn about rainfall in Florida is that a storm event with one inch of rain is a fairly significant storm. Most people tend to think one inch of rain is a small storm but it is a very heavy storm.

The runoff forms as sheet flow and then may enter a minor collection system such as a roadside gutter before it enters a major conveyance system such as a pipe, swale, ditch or creek. This water is conveyed to a storage system such as a pond where it is held and then slowly released by ground infiltration or through a small diameter opening. In rare instances, a pumped discharge is used. Runoff volumes in excess of the design holding capacity of the storage system flow out at a higher rate through a high level and wider outfall.

Stormwater storage ponds are usually sized to meet certain quantitative regulatory criteria that are presumed to protect downstream as well as upstream land owners and ecosystems. Even though a permit is obtained, it does not mean that the system will prevent flooding or eliminate offsite impacts.

Here are some examples of failures which may occur with stormwater systems:

1. During construction, the contractor may not have considered the natural flow paths for stormwater runoff through his work site with the result that some flow lines are obstructed leading to upstream blockages and impoundments, some of which may fail with a tidal wave effect. These failures cause significant erosion and environmental damage since they release a lot of sediment-laden water.


2. After the system is constructed, the drainage flow pattern may become altered where stormwater is now diverted into areas where it was not intended or may be impounded in upstream areas causing flooding. Some badly designed diversions can also dehydrate wetland ecosystems.

3. Stormwater storage and/or conveyance systems may be under-sized in some cases due to calculation errors by the design engineer or some other design deficiency that affects system performance such as a misestimate of the water table in the ground or accounting for too much ground infiltration in the stormwater holding pond.

4. Stormwater impoundments may fail, leading to sudden releases of stormwater causing flooding and damage to downstream properties.

5. Seepage through pond berms or an artificial rise in the water table in the locality of a stormwater storage system may cause nuisance flooding or chronic wetness/seepage/flooding to adjacent land owners. Some lake level modification projects which raise lake levels can im-

FLOOD
Continued on Page 9




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South Florida levee system undergoes needed maintenance, repairs

By DAN MILLOTT

When Hurricane Katrina breached levees in New Orleans, it was a wake-up call for the U.S. Army Corps of Engineers and anyone else charged with maintaining levees, including the South Florida Water Management District.

The water management district over-

FLOOD

From Page 8

sees 100 miles of levees designed to prevent flooding in the highly populated areas of Palm Beach, Broward and Miami-Dade counties.

And while the district has performed bi-annual inspections of state and federal levees, the debacle in New Orleans accelerated the urgency.

Following Hurricanes Katrina and Rita in 2005, Congress passed the National

model” can then be used to make predictions for “what if” scenarios, which is ideal for litigation.

These models can be used to predict flood levels for various scenarios including before and after an improvement project to show the net impact. This is more commonly known as a pre-post analysis and is the most powerful demonstrative tool.

Cost of experts and computer modeling

Fees charged by Devo Engineering for geotechnical and drainage expertise can range from \$10,000 for the simplest case to as much as \$400,000 for complicated high liability cases with exposure of over \$100 million. Generally speaking, expert fees of \$40,000-\$75,000 are more typical if the analysis is comprehensive and the plaintiff is proactive.

The county’s experience with other expert engineering firms reflects that fees may range from \$5,000 to \$111,000.

How to attack modeling on the question of causation

From the lawyer’s perspective on these computer models, the principle of “garbage in, garbage out” still applies. So, the primary test is almost always whether the information input into the computer is accurate or the best information available.

Such issues as 1) accurate topographic surveys, 2) the location of stations from which the expert obtained rainfall amounts and groundwater levels—surficial and Floridan Aquifer levels—at the time of the storm, 3) the size and configuration of the drainage basin used by the engineer, 4) review of plans of historical drainage structures/infrastructure to ascertain all elements contributing runoff to a particular location, and 5) field observations conducted during actual rain events to confirm the flow of stormwater runoff to the drainage basin in question, can affect the accuracy of the modeling and the ultimate credibility of the expert opinion.

Based on our experience, historical aerial photography often shows past flooding events pre-existing the government projects.

In the end, the critical question, from our experience, is whether the property in question would have flooded with or without the government project. Phrased another way, “but for” the government project, would the property have experienced substantially the same flooding from the storm event in question? It is the inability of property owners and their experts to answer this question accurately that results in the loss of these cases.

Inverse condemnation cases involving flooding events are not for the fainthearted and should not be undertaken without a very careful expert analysis and a detailed understanding of the issues involved and the cost of going forward to suit. These cases are tough to win and easy to lose. It may well be easier to find gopher wood than to establish causation in such cases.

Engineer’s use of computer modeling

Larry Smith is a deputy county attorney in the Volusia County Attorney’s Office supervising the litigation section of that office, and lead trial attorney during numerous inverse condemnation cases involving flooding claims.

Devo Seereeram, PhD, PE, is the principal engineer and owner of Devo Engineering LLC in Orlando.

Donna Greenlund, FRP, a paralegal in the litigation section of the Volusia County Attorney’s Office, has assisted during numerous inverse condemnation flooding cases and with the preparation of this column.

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Such issues as 1) accurate topographic surveys, 2) the location of stations from which the expert obtained rainfall amounts and groundwater levels—surficial and Floridan Aquifer levels—at the time of the storm, 3) the size and configuration of the drainage basin used by the engineer, 4) review of plans of historical drainage structures/infrastructure to ascertain all elements contributing runoff to a particular location, and 5) field observations conducted during actual rain events to confirm the flow of stormwater runoff to the drainage basin in question, can affect the accuracy of the modeling and the ultimate credibility of the expert opinion.

Based on our experience, historical aerial photography often shows past flooding events pre-existing the government projects.

In the end, the critical question, from our experience, is whether the property in question would have flooded with or without the government project. Phrased another way, “but for” the government project, would the property have experienced substantially the same flooding from the storm event in question? It is the inability of property owners and their experts to answer this question accurately that results in the loss of these cases.

Inverse condemnation cases involving flooding events are not for the fainthearted and should not be undertaken without a very careful expert analysis and a detailed understanding of the issues involved and the cost of going forward to suit. These cases are tough to win and easy to lose. It may well be easier to find gopher wood than to establish causation in such cases.

Larry Smith is a deputy county attorney in the Volusia County Attorney’s Office supervising the litigation section of that office, and lead trial attorney during numerous inverse condemnation cases involving flooding claims.

Devo Seereeram, PhD, PE, is the principal engineer and owner of Devo Engineering LLC in Orlando.

Donna Greenlund, FRP, a paralegal in the litigation section of the Volusia County Attorney’s Office, has assisted during numerous inverse condemnation flooding cases and with the preparation of this column.

Levee Safety Act directing the corps to inspect and inventory all existing federal levees.

The corps has completed inspections of levees in four counties. One levee in Okeechobee, two in Palm Beach, three in Broward, one that spans both Broward and Miami-Dade and one in Miami-Dade were found to be marginally acceptable.

But one levee in Miami-Dade, two in Broward, and two in Palm Beach and Broward were judged to be unacceptable in their current condition.

The Federal Emergency Management Agency has set standards for levee certification and they have concluded that some levees have failed to meet those standards.

The district agrees with FEMA and corps evaluations, and has initiated a two-year program to address these concerns.

Tommy Strowd, director of the Operations Maintenance & Construction Division at the South Florida Water Management District, said there is no risk of any failure of the existing levees.

SFWMD plans to spend \$15 million upgrading the Broward section of the levees to meet FEMA and corps concerns.

Improvements of the Palm Beach sec-

tions are expected to cost about \$7 million.

If levees fail to meet standards, homeowners living near the levees could be hit with higher home insurance rates.

Corps inspectors cite a number of levee problems including erosion, levees being too low, overgrown vegetation obstructing maintenance, fencing or gates in disrepair, slopes being too steep and culverts needing repair.

Work on the levees now underway includes raising 2,000 feet of the levees by about two feet, reinforcing portions of the outer base of the levees, removing vegetation growing on the levees as well as burrowing animals, and installing monitoring stations to identify potential erosion.

Jeff Kivett, PE, who oversees levee engineering for the district, said the work to upgrade the levees should leave them sound for decades to come.

Most of the levees in South Florida are earthen and water seeping through them is necessary for replenishing the drinking water supply.

But the corps contends that levee improvements are needed to stop erosion that might lead to breaches in a levee that could cause flooding.



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Petroleum cleanup industry groups present unified message ... But can the Legislature hear us?

GLENN R. MacGRAW, PG

Over the past two years, members of the Florida Petroleum Marketers and Convenience Store Association, the Florida Ground Water Association, the Florida Association of Professional Geologists and the Florida Petroleum Council have worked together to educate state legislators and assist with bill review, budgeting and program information related to the state petroleum cleanup program. The agendas of each of the trade groups have a lot of similarities, but there are also subtle differences in their messages.

As you recall, the results last year were positive with cleanups budgeted up to \$128 million, especially considering the budget deficit that the state was faced with. Members of the industry groups have been meeting since May of this year, working on program goals and objectives as well as the industry's legislative initiatives.

It has been interesting to experience the passion and to hear all of the great ideas coming from this collective group all heading in the same direction. Our main concerns this year will be another \$2.6 billion state budget shortfall and the Legislature's possible diversion of Inland Protection Trust Fund dollars to help fund things that were not intended to be funded by the IPTF.

We know that the state legislative budget process is a forged compromise (sometimes!) between the House, the Senate and the governor's office. However, we need to be mindful of what happened a few years ago when IPTF funds (approximately \$180 million) were swept by the Legislature and replaced with a \$90 million bond.

The first budget recommendations for the upcoming fiscal year, which starts on July 1, 2012, were released by the governor's office on Dec. 7, 2011. The recommendation was a continuation budget for the cleanup program of \$128 million and for the local county programs of \$7 million.

The special category fund that provides monies for infrastructure needs and staff augmentation teams took a small hit with a reduction for York Risk Services Group Inc., an administrative contractor, and the Florida Department of Health for administrative services and potable well sampling, respectively. There was no negative effect for privatized site management for Teams 5 and 6.

The compliance program took a significant hit of almost 35 percent—\$2.5 million dollars—of an already reduced budget from prior years. This means that a significant shift in how Florida's petroleum compliance program is structured may be forthcoming, if the House and Senate agree with this proposed budget cut.

The IPTF was created to provide funding for petroleum site cleanup. Site owners were promised over 25 years ago that if they reported themselves to the state, which was concerned with the quality of our drinking water supplies, they would have a free cleanup provided from the same funding source, the IPTF.

The response was overwhelming. Over 8,000 sites reported in the original Early Detection Incentive Program. Today there are five state-funded eligibility programs with over 17,000 sites registered in one or more of these programs. At this time the state's remaining liability from the sites reported in all five programs is approximately 10,929 sites with a cleanup liability of \$3.6 - 4.5 billion on eligible discharges. This equates to a program life of at least 32 years at the current funding levels.

Many of the property owners that reported their sites to the amnesty program have not yet had their sites assessed or remediated. And their problem is getting worse, with contamination spreading horizontally and vertically through our drinking water aquifers.

Drinking water wells, streams, lakes and rivers have been affected because the Legislature has taken the funds intended to provide cleanup and used them elsewhere.

It is important to note that the IPTF has been in place since 1986. Over that time, the annual revenues to the

fund were averaging \$205 to \$210 million per year. Now, due to the lagging economy and a drop in fuel sales, this number is down to \$192 million and will continue to drop until the economy recovers.

In late December or early January, 2012, officials with the state preapproval program will initiate the planning for a major shift in the way the program operates. In a meeting with industry representatives on Nov. 9, 2011, Robert Brown, chief of the Florida Department of Environmental Protection's Bureau of Petroleum Storage Systems, briefed representatives of industry on this new approach that he called the "screening initiative". The department will be working on the policies and procedures of this program for rollout on July 1, 2012.

Essentially, the preapproval program will begin dropping site scores to levels not seen since 1995, so that the thousands of sites that have not been worked on since that time will receive some level of assessment for the purpose of determining whether there is any contamination present.

The program also intends to restrict what types of work will be done on sites within the active score range as the score drops so that available dollars can be focused on sites below the current funding score and above 11.

The screening initiative's goal is to conduct site assessments on approximately 1,000 sites a year in addition to the sites being assessed through the Low Scored Site Initiative program. Even at this level, it will take several years to conduct assessments on all the sites scored between 11 and the current funding score.

According to Brown, this screening initiative will essentially allow the preapproval program to classify a site as 1) an "imminent threat," 2) "closed," 3) under "long term natural attenuation monitoring," or 4) a site that will be cleaned up in funding order. These four categories will define the program for years to come.

In addition, it will establish baselines at these sites so that future releases not covered by state funding can be easily identified. It will help reduce the number of disputes between existing discharges eligible for state funding and those that are not. Also, it will help establish a realistic cost projection for sites that do have documented contamination eligible for state funding.

To pay for the new screening initiative, officials with the preapproval program intend to fully implement the LTNAM process as required by statute so that they can shift the cost savings associated with sites that will no longer be in active remediation to begin conducting site assessments on low scored sites. It is believed that the program fully intends to conduct site assessments to the level that will allow a reasonable determination of the extent of the contamination that exists on the source property and beyond its boundary.

No cost savings projections were offered during the briefing that was held in November. However, if each

assessment costs a nominal amount of \$30,000 and assessments are conducted on 1,000 sites a year, the overall cost of this screening effort could approach \$30 million annually. Given the \$10 million a year set aside for the LSSI program and the \$10 million for PAC program, this translates into approximately \$50 million of a \$128 million budget being dedicated to just these three initiatives. Clearly, more money will be needed to assure that the department will be able to reach 1,000 sites per year or more in the coming years.

Environmental contractors who participate in the preapproval program need to determine how this screening initiative will impact their staffing levels and operations. They need to make early adjustments in order to be prepared for this major paradigm shift.

In addition, contractors need to brief their clients on the potential impacts of LTNAM if they have an active remediation system on a contaminated site or if they have sites in a state-funded program that are scored between 11 and 45. This also means that if they have clients that are cleaning up contamination with private funds, their sites also can qualify for the LTNAM program.

As always with this program, there is a lot going on. Additional program issues that have been addressed include more use of performance-based cleanups as well as a rounding memo to allow for closure of sites where the level of contamination above the set groundwater standard is so small, it is often within the error of the laboratory instrument. This will allow for closure of sites where you have, for example, 1.3 parts per billion benzene if this is the only chemical of concern.

Current program initiatives are an update of the preapproval program's standard operating procedures and some new guidance on delineating background concentrations of benzo(a)pyrene, which is a chemical that is found quite frequently at petroleum sites, but also occurs as a product of combustion. By establishing a known background of the chemical, it can then be compared to determine whether it can be derived from a petroleum release or may be at background levels.

With all that is going on, it is critically important that all environmental professionals and subcontractor service providers stay involved or get involved. The most active trade associations are the FPMA, the FGWA and the FAPG.

It's imperative to support these organizations in any way you can. They are on the front lines fighting for our future. At a minimum, contact your local legislative representatives and let them know how important this program is to the future of Florida and its resources. We believe the more we are heard, perhaps legislators might not only listen, but may actually hear us!

Glenn MacGraw, PG, is a vice president with The FGS Group in Tallahassee and can be reached at gmacgraw@thefgsgroup.com.

Site remediation: How to select the appropriate chemical or biological reagents

By LAURA J. GIMPELSON, PE

One question frequently asked during the 2011 Florida Remediation Conference Workshop on Implementing Successful Sustainable Remediation Strategies was how to select the appropriate reagent. The proposals in the workbook provided little technical assistance and there was limited time during the workshop to provide in-depth answers on the selection process.

The selection process evaluates various technical, safety and physical factors that favor one or more reagents. The process starts with creating a three-dimensional conceptual model that describes the overhead, surface and subsurface features along with the horizontal and vertical extent and distribution of the suspected chemicals of concern, aquifer parameters and how these factors influence remediation activities.

The initial model is developed before installing the first soil borings and groundwater monitoring wells. It uses information obtained during the pre-assessment site visit and from the review of the property appraisers, Florida Department of Environmental Protection and building department records, as well as utility location services and client files on the property, to locate the suspected source area of the release and any potential exposure and distribution pathways.

The initial site assessment determines if the preliminary model is valid for the site. It identifies the site lithology; upgradient, source and downgradient areas; hot spots; speciated COCs; average groundwater elevation and flow direction; and area and depth of the dissolved plume. OVA readings and groundwater sampling param-

eters are reviewed and incorporated into the model to further define possible remediation options.

Often the initial assumptions must be modified. The plume may have expanded further than expected due to an underground utility corridor bisecting the source area. Soil lithology may be less homogeneous and porous than neighboring sites. Volatile compounds may have vented through the soil pores or other pathways leaving the heavier compounds to remediate. Abandoned metal piping may have been encountered during the installation of the upgradient monitoring well.

Even taking in account these findings, supplemental assessments are often needed to finalize the model. Additional soil borings are taken and monitoring wells are installed until the horizontal and vertical extent of the plume is defined. Wet and dry season groundwater elevations and flow directions are needed to identify the smear zone and possible soil sorption issues. The construction materials used for all underground utilities are noted to minimize unintended consequences when implementing in-situ remediation processes.

Once the supplemental assessment is complete, the conceptual model must define the extent of the plume by speciated COC, document seasonal variation in groundwater flow and elevations and influence on COC concentration, and the location of active and abandoned utility lines, especially metal pipelines, if free product is present and if site development will impede in-situ injection remedial actions. Only now can you begin to determine which reagent will work best.

Laura Gimpelson, PE, is president of LG Environmental Engineering in Orlando. She can be reached at lg_environmental@bellsouth.net.

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P.O. Box 2175
Goldenrod, FL 32733

Michael R. Eastman
Publisher/Editor
Goldenrod, FL
mreast@worldramp.net

The Florida Specifier welcomes columns, articles and letters to the editor on any subject or issue pertinent to the environmental, regulatory and technical areas the newspaper covers. We reserve the right to edit all submissions for newspaper style and publish submissions on a space-available basis.

Calendar

January

JAN. 2-6—Course: Backflow Prevention Assembly Tester Training and Certification, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 5—Course: Backflow Prevention Recertification Review, Destin, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 5-8—Conference: 27th Annual Everglades Coalition Conference, Hutchinson Island, Stuart, FL. Hosted by Earthjustice. Contact Julie Hill-Gabriel at (786) 246-2903.

JAN. 9-10—Workshop: Hazardous Waste Management Certification Workshop, Orlando, FL. Presented by Lion Technology Inc. Call (973) 383-0800 or visit www.lion.com.

JAN. 10-11—Course: Emergency Preparedness for Water & Wastewater Utilities, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 12—Course: Water Distribution System Security, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 12—Course: Backflow Prevention Recertification Review, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 13—Seminar: Water Law Update 2012, Orlando, FL. Presented by Florida Earth Foundation and Barry University's Dwayne O. Andreas School of Law. Call (561) 686-3688 or visit floridaearth.org/wlu2012.

JAN. 17-19—Conference: 15th Annual LMOP Conference: Saving the Planet, One Landfill at a Time, Baltimore, MD. Presented by the U.S. Environmental Protection Agency Landfill Methane Outreach Program. Call (202) 343-0795 or visit www.epa.gov/lmop.

JAN. 18—Workshop: FSAWWA Regulatory Workshop: Where is Water Use Regulation Going? Orlando, FL. Hosted by the Florida Section of the American Water Works Association. Contact George Schlutermann at (407) 926-4381 or gschlutermann@burnsmcd.com.

JAN. 18—Workshop: Adaptive Planning for Sea-Level Rise - Legal Issues for Local Government, Fort Myers, FL. Presented by the Florida Sea Grant College Program. Contact Christine Swanson, UF/IFAS, at (352) 392-5684 or visit www.buildgreen.ufl.edu/cecampus.htm.

JAN. 18-19—Course: Green Building Fundamentals for the LEED Green Associate, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 18-19—Course: Water Reclamation & Treatment Processes, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 19—Workshop: Adaptive Planning for Sea-Level Rise - Legal Issues for Local Government, Largo, FL. Presented by the Florida Sea Grant College Program. Contact Christine Swanson, UF/IFAS, at (352) 392-5684 or visit www.buildgreen.ufl.edu/cecampus.htm.

JAN. 20—Meeting: Florida Section of the American Water Resources Association, Jacksonville Beach. Call Kristin Bennett at (772) 781-3414 or kristin.bennett@tetrattech.com.

JAN. 21-29—Course: Backflow Prevention Assembly Tester Training and Certification, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 23—Course: Lead Refresher: Inspector, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 23-27—Course: Backflow Prevention Assembly Tester Training and Certification, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 23-27—Course: The Original Environmen-

tal Compliance Bootcamp, Orlando, FL. Presented by the AArcher Institute of Environmental Training. Call (410) 897-0037 or visit www.aarcherinstitute.com.

JAN. 24—Course: Lead Refresher: Risk Assessor, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 24-25—Course: Emergency Preparedness for Water & Wastewater Utilities, Kissimmee, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 26—Course: Water Distribution System Security, Kissimmee, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 26—Conference: Integrated Water Resources Conference, Orlando, FL. Presented by the Florida Water Environment Association. Call (407) 574-3318 or visit www.fwea.org.

JAN. 26—Course: Backflow Prevention Recertification Review, Kennedy Space Center, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 28—Meeting: FGWA January Membership Meeting, Jupiter. Presented by the Florida Ground Water Association. Call (850) 205-5641 or visit www.fgwa.org.

JAN. 30-FEB. 1—Course: Asbestos: Inspector, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

JAN. 30-FEB. 2—Conference: The Utility Management Conference 2012, Miami, FL. Presented by the American Water Works Association and the Water Environment Federation. Visit www.wef.org/utilitymanagement.

February

FEB. 2-3—Course: Asbestos: Management Planner, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 3-11—Course: Backflow Prevention Assembly Tester Training and Certification, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 4—Course: Backflow Prevention Recertification Review, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 6—Course: Backflow Prevention Recertification Review, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center.

ter. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 6-7—Course: Asbestos: Operations & Maintenance (Class III), Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 7—Course: Backflow Prevention Recertification Exam, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 7-8—Course: Emergency Preparedness for Water & Wastewater Utilities, Ft. Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 7-9—Conference: Carbon Management Technology Conference, Orlando, FL. Presented by the American Society of Civil Engineers, Society of Petroleum Engineers and others. Call (972) 952-9393 or visit www.carbonmgmt.org.

FEB. 8-10—Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 8—Course: Lead Refresher: Worker, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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FEB. 9—Course: Water Distribution System Security, Ft. Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 9—Course: Asbestos Refresher: Worker, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 11—Course: Backflow Prevention Recertification Exam, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 13—Course: Asbestos Refresher: Operations & Maintenance (Class III), Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 17-18—Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

FEB. 25—Banquet: 2012 Central Florida Engineers Week Banquet, Orlando, FL. Contact Nicole Kolankowsky, Camp, Dresser and McKee at kolankowskyNE@cdm.com.

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Emerging technology offers alternative for biosolids disposal

By ROY LAUGHLIN

Officials with MaxWest Environmental Systems Inc. believe they have a new, low energy technology to safely dispose of biosolids produced at wastewater treatment plants: biosolids gasification.

As a generic technology, gasification operates by subjecting complex organic compounds to high temperatures under controlled oxidation conditions to yield carbon monoxide and methane. Those two

combustible gases can then be used as feedstock for energy-requiring processes or energy-transforming machines such as a turbine that produces electricity.

MaxWest uses the heat produced from gasification to dry biosolids before they are gasified. Use of the heat produced by gasification products makes the wastewater treatment process self-sustaining.

But gasification, for all the attempts to develop it as a clean energy alternative, is not yet a generic technology.

"Variation is one of the challenges with

biosolids," said Jeff Snyder, vice president and general manager of operations of MaxWest's Sanford, FL, facility.

Whether starting with a biosolids solution or in cake form, variation in water content and composition affects gasification and the amount of energy available to sustain biosolids gasification as a self-supporting process. In MaxWest's case, the process gas produced is burned to heat mineral oil. That heated mineral oil in turn dries biosolids into cake form, the raw material for gasification.

MaxWest has been operating its Sanford plant, co-located with the Sanford Wastewater Treatment Plant, for about three years. "As far as we know we're the only one in the U.S. (using gasification to process biosolids)," said Snyder.

After three years of operation, MaxWest recently signed on a new customer—the city of Ocoee Wastewater Treatment Plant. The plant produces about 2,200 tons of biosolids per year, which has, up to this point, been disposed of by land spreading.

"Realizing the increasing pressure on land application for disposal, the city has taken steps to provide a more green, secure and long term method of disposal," wrote George Smith, director of Ocoee utilities, to explain the recent decision to contract with MaxWest for biosolids gasification.

Biosolids gasification produces the energy required to sustain the process. Nevertheless, it is not markedly less expensive than alternative biosolids disposal options. According to Wendy Broley, vice president for marketing development for MaxWest, the cost for biosolids treatment is "based on materials being processed on a case-by-case scenario."

Biosolids characteristics including percent solids and BTU value are cost-mediating factors between MaxWest and its clients. According to Smith, gasification cost "is about 20 percent more (than the current costs of land spreading,) which reflects an increased trucking cost."

Broley said the most cost-effective strategy is to co-locate with a regional wastewater treatment plant, eliminating the transportation costs.

Biosolids gasification provides a substantial benefit for disposal. Its carbon footprint is small, it can be self-sustaining and its byproducts can be disposed of in a landfill. MaxWest is currently researching beneficial uses for the ash.

The path to wider adoption of biosolids gasification is at least narrowed because many potential customers lump it with incineration. Broley noted that gasification is not simple incineration, but the perception of it as incineration is one misconception that the company must address.

It is not helpful that air emission rules don't always make a clear distinction between waste incineration and use of "byproducts" of one process as alternative fuels for another. Biosolids gasification is clearly a candidate for the second category with respect to regulations.

Where there is combustion, many people expect to find smoke—or other air emissions.

"We do not have issues with ozone or mercury. All of our levels are below (regulatory standards) at this point," said Snyder.

During the last couple of years, the U.S. Environmental Protection Agency has been involved with promulgating, and occasionally withdrawing, new air quality standards. But there is no reason to expect that biosolids gasification will be knocked out of the game by the proposed regulations.

In fact, in its recently proposed revisions, the EPA specifically describes the process by which byproducts, such as biosolids, might be designated alternative fuels, removing them from regulation as incinerated wastes.

It's premature to suggest that wastewater biosolids gasification plants will be coming to wastewater treatment plants around the state. But it's likely that wastewater treatment plant operators will be evaluating carefully whether or not this emerging technology will, in a cost-competitive way, allow them to transform biosolids to benign materials in an environmentally acceptable technology, and at the same time significantly mitigate public health risks that some believe land spreading biosolids incurs.

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Orange County "takings" dispute resolved

Staff report

St. Johns water managers have won a major battle in a long-running dispute with an Orange County landowner. The Florida Supreme Court has supported the St. Johns River Water Management District in a fight about the "taking" of property.

The district has been at loggerheads for 17 years with the late Orange County landowner Coy Koontz over a development project. The dispute started because Koontz tried to develop 3.7 acres of a 14.9 acre parcel he had owned since the early 1970s near State Road 50 and the East-West Expressway in Orange County.

He needed a permit from the district because three to four acres of the targeted development property was wetlands and 0.3 acres were "protected uplands."

The district told Koontz they would grant the permit if he agreed to conditions that included doing an environmental mitigation project several miles away from his land. Koontz refused and filed suit.

For years, the case was bogged down in the legal system. In the end, the water management district issued a permit for the site. But water managers continued the case after a judge ordered the district to pay \$376,000 in damages for the "temporary taking" of the property during more than 11 years of legal disputes.

Koontz claimed that the denial of the permit amounted to a "taking" or improper "exaction" of his property. Lower courts supported his argument. Koontz died before the case was resolved.

Now, the Supreme Court has overturned a ruling by the 5th District Court of Appeal. Justices said such cases should occur only in narrow circumstances, such as when conditions are placed on a landowners' property in exchange for a permit.

Hank Largin, a spokesman for the St. Johns River Water Management District, said the district supports the Supreme Court's decision. "The court wrote a well-reasoned opinion that the district is very pleased with," he said.

UF study: Arsenic accumulating fern shows potential as remediation tool

By ROY LAUGHLIN

In the world of arsenic-accumulating plants, the Chinese brake fern has a special place. It is a record holder for arsenic tolerance and accumulation.

Dr. Bala Rathinasabapathi, associate professor in the University of Florida's Horticultural Sciences Department, and his colleagues have been studying this fern for several years. Over that time, the researchers have found the fern's behavior more and more remarkable.

"The plant is really unusual," said Rathinasabapathi. "Most plants grown in 50 parts per million of arsenic will suffer deleterious effects. Even at 500 ppm this fern grows well. Above that, the ladder brake fern show signs of stress."

This fern is an arsenic hyper-accumulator. Leaves of the plant may accumulate up to 2 percent arsenic as dry weight after several months of growth in soils enriched in arsenic.

Rathinasabapathi's group has studied arsenic accumulation processes in great detail. Arsenic is taken up from soil but is not sequestered in the roots. It accumulates in the leaves.

The plant is capable of reducing arsenate to arsenite. Arsenite is transported into vacuoles in the fern frond's cells by a transporter that also transports glycerol.

FEDFILE

From Page 2

Like all wetlands, the Everglades is a source of atmospheric methane, a strong biogenic greenhouse gas. Because production and atmospheric emissions of biogenic methane exert positive feedback on global warming, it is a climate change driver that can accelerate climate shifts.

The proposed project will include field sites throughout the Greater Everglades and in the Loxahatchee Impoundment Landscape Assessment.

The research results are expected to provide a comprehensive assessment of the role of soil organic carbon in multiple Everglades ecosystem components. It will give an insight into the mechanisms that form peat in the Everglades and the vulnerability of those processes to management practices and environmental change.

The study will be conducted by Brian Bencotter, assistant professor of biology, and Xavier Comas, assistant professor of geosciences. This research began in August, 2011.

Wastewater utilities penalized. In early December, EPA Region 4 released a list of its annual enforcement efforts under the Clean Water Act. The agency issued consent agreements and final orders against 25 alleged violators.

Responsible parties have agreed to pay more than \$184,000 in civil penalties, and to invest an additional \$285,000 to come into compliance with the Clean Water Act.

Four Florida wastewater utilities were each fined by the agency because they did not submit biosolids disposal reports or otherwise failed to comply with Section 503 of the Clean Water Act.

The four municipal utilities serve Clewiston, Plantation, Lake City and Starke. These Florida utilities have agreed to come into future compliance with the Clean Water Act.

Of the 25 citations, 14 involve municipal wastewater utilities that failed to properly document biosolids disposal, as was the case with the Florida utilities.

Alleged violations of stormwater rules comprised an additional 10 citations of the total of 25. The remaining citation was for a concentrated animal feeding operation in South Carolina. Its alleged violation was for improper disposal of manure.

EPA water grants available. Grants available under EPA's Urban Waters Program will provide up to \$1.8 million nationwide to help restore water quality and support community revitalization. Urban waters are defined as canals, rivers, lakes,

The arsenic accumulation process in the fern does not seem to be analogous to accumulation systems involving metallo-thioneins, which play a role in nonlethal accumulation of cationic metals.

Rathinasabapathi noted that the transport molecule may include thiol subunits, but molar ratios of thiol and arsenic within the fern indicate that thiols are substantially lower in concentration, ruling out storage protein function.

Rathinasabapathi said that he has been studying the fern's bioaccumulation of other elements. That research is in progress but he noted that in comparison, this fern accumulates arsenic, a metalloid that forms oxyanions, to much greater levels than it accumulates other metals that have bioaccumulation potential in other species.

The reason for the brake fern's notable ability to accumulate arsenic may be as a protective mechanism. Arsenite is toxic to animals. In a simple laboratory experiment, he found that grasshoppers avoided eating the fern leaves that grew in arsenic-enriched soil. The grasshoppers might taste-test arsenic enriched fern leaves but would starve before attempting to eat enough to make a meal of them.

This fern, with its extreme capacity to accumulate arsenic, has bioremediation potential. Fern fronds that are two percent arsenic by dry weight would have to be dis-

wetlands, estuaries, bays and oceans.

The EPA grants are intended to fund projects, training and research that will improve water quality and community access. Projects may include components related to education and training for water quality improvement or green infrastructure jobs; public education about methods to reduce water pollution; local water quality monitoring program; development of watershed management plan; and innovative projects that promote both water quality and community revitalization.

The EPA must receive completed applications for the current grant cycle by Jan. 23, 2012. The agency expects to award the grants during the summer of 2012.

Proposed CAA changes. Operators of small boilers and incinerators may get a break from EPA regulation if a proposed rule becomes law. At the same time, approximately one percent of incinerators in the U.S. would face stricter regulation to control soot and toxic compounds in air emissions.

The EPA proposed to require only annual maintenance and tune-ups for boilers and incinerators that release less than 25 tons of emissions. Machinery in this category, which comprises 99 percent of the nation's boilers and incinerators, is usually used to heat buildings, power heavy machinery or provide heat for industrial and manufacturing processes.

Fuel sources include coal, natural gas and biomass.

Machinery in this category contributes just a few percent nationwide to air emissions. The new rule proposes to begin enforcement in the second year following the rule's adoption.

The EPA proposed stricter rules for less than one percent of the boilers in the country. This one percent is responsible for the majority of air pollutants contributed by this sector. High emitting boilers are typically found in refineries, chemical plants and other industrial facilities.

The EPA's stricter standards are based on currently available technologies already in use. Approximately 14,000 boilers will be affected by the regulations.

The agency said that the new rules provide greater clarity on what types of secondary materials are considered non-waste fuels. The proposed revisions specifically list several secondary materials as non-waste when used as a fuel.

Another proposed provision allows a plant operator to request that the EPA identify specific materials as a non-waste fuel in the future.

posed of as hazardous waste.

Rathinasabapathi said that colleagues are looking into the possibility of composting fern leaves with high arsenic concentrations to reduce their biomass, and then disposing of the compost in approved landfills.

The fern has many favorable traits besides high accumulation behaviors. Arsenic is primarily stored in the leaves, above ground structures that are easily harvested. The fern is a perennial. It could be planted once, and then the leaves harvested until arsenic concentrations decline to target levels.

Although the fern is not particularly cold tolerant, it grows in warmer parts of Florida, Georgia and Louisiana. Under suitable conditions that include high calcium, alkaline soils, the fern is prolific.

On the negative side, in 1999, the Florida Exotic Pest Plant Council placed it on the Invasive Plant List as a Category 2 plant.

The Chinese brake fern's ability to accumulate arsenic marks it as little more than an oddity at present. However, it may one day be plucked as a low hanging fruit for a remediation tool because of its unusual capability.

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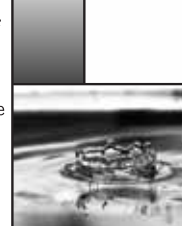
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Florida's water management districts: Intact, on task and spending wisely

By JOE COLLINS

Myths and misinformation continue to swirl around Florida's water management districts and their ability to do their job with lower revenues and smaller organizations.

In South Florida, unfounded concerns

have been expressed about the future of Everglades restoration, the capacity of our district scientists and the erosion of our regulatory authority. The facts can alleviate these unwarranted fears.

Fact 1. The establishment of Florida's five water management districts is firmly rooted in statute. In Florida, water is a

public resource. The districts were specifically created by the Water Resources Act in 1972 to manage and protect the state's waters on behalf of our citizens.

For four decades we have fulfilled our responsibilities of managing water supply, water quality, flood protection and natural systems in the public interest through a solid regulatory framework, governing boards appointed by the governor and state oversight through the state Department of Environmental Protection. This framework has not changed.

Fact 2. The South Florida Water Management District is indeed building a leaner, more efficient agency by eliminating unnecessary expenses and getting back to its core mission. In doing so, we are saving South Floridians \$128 million through a 30 percent tax reduction, the majority of which was realized by cutting overhead and administrative costs. This is welcomed news for taxpayers who expect cost-effective services, government transparency and accountability in spending.

Fact 3. The district continues to be a dynamic agency, providing more than 1,600 jobs across the region. Close to half of these jobs are dedicated to operating South Florida's massive flood control system. To support water resource protection and environmental restoration, more than 25 percent of our workforce holds PhD or master degrees, and we have more than 150 certified professional engineers and geologists on staff. This highly qualified, capable and competent workforce is focused on efficiently achieving the agency's water management responsibilities.

Fact 4. The district's \$576.1 million

budget is being used to deliver tangible, meaningful results. For fiscal year 2012, more than 70 percent of the budget will go toward flood control and restoring the South Florida ecosystem. With a combined investment of more than \$850 million in

2011 and 2012, we will be completing construction on a half dozen restoration projects. And over the next five years, the district will use financial reserves to invest another \$350 million toward developing and protecting the water resources of this state and to improving the Everglades, Lake Okeechobee and the St. Lucie and Caloosahatchee watersheds.

Fact 5. Our appointed governing board is highly engaged and actively guiding the agency's work. Representing diverse South Florida interests, these volunteers have oversight of district activities and provide policy direction on all issues, including regulatory functions. The district continues to scrutinize permit applications to ensure water resource protection, and we share with the Florida Department of Environmental Protection the objective of improved statewide consistency while recognizing our regional diversity. There is no effort to weaken our standards.

These facts do not represent the actions of a disabled water management district. Just the opposite. They are the actions of a government agency true to its founding principles, clearly focused on its mission, streamlined in its internal operations and delivering efficient and cost-effective water resource management.

Joe Collins is the chairman of the South Florida Water Management District Governing Board.

Guest Opinion

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UC engineers air condition with heat from new solar collector design

By ROY LAUGHLIN

It takes a lot of energy to air condition a building. In Florida, typical energy use at least triples when air conditioning is used to cool a house. For that reason, prospects of affordable energy independence end as soon as the air conditioner starts. But that could change in the foreseeable future.

Researchers at the University of California at Merced have successfully tested a new solar collector design that may substantially substitute solar heat for electricity to run air conditioning.

"It's an honest-to-God air conditioner. You can't tell the difference (between one using gas versus solar-powered)," said Professor Roland Winston of UCM.

Winston, executive director of the UC

Solar Institute, Dr. Ronald Durbin, a director of the UC Solar Institute, and a team of UCM students headed by graduate student Heather Poiry, call their new solar collector an external compound parabolic concentrator, or XCPC.

Their collector focuses sunlight on specially fabricated collector tubes containing commercially available mineral oil. Focused sunlight heats the oil to a temperature of 400°F. The novelty of the system is that the reflectors are stationary, but they still have thermal efficiencies of up to 60 percent.

Previously, only "tracking systems" whose reflectors moved to maintain optimal sunlight focus on the heat collector

SOLAR
Continued on Page 15

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SOLAR

From Page 14

had thermal efficiencies this high. These high collection efficiencies allow collection and concentration of sufficient solar energy to support effective air conditioning, heating or other applications that require temperatures hundreds of degrees above ambient.

UCM researchers have used the solar collector, an array of 160 XCPCs in parallel rows, to supply energy to an air conditioning unit that cools portable office space used to demonstrate the collector's effectiveness.

The cooling component is a commercially available high-performance, double-

effect absorption unit. It uses heat concentrated from sunlight to boil water from a concentrated lithium bromide solution, a highly hygroscopic salt. Water vapor circulates under vacuum through a typical air conditioning heat exchanger to transfer heat from air and back to the lithium bromide.

Conventionally, natural gas supplies the heat in these widely used chillers, but the new solar collector efficiently transfers sufficient heat to raise mineral oil to 400°F, enough to separate water from the lithium bromide to continue the heat transfer cycle.

"What you're doing is saving gas," said Winston.

But the petitioners have questioned whether the project is in the public interest. They are concerned about whether DEP followed appropriate procedures to determine the negative impacts and restoration requirements for water quality, seagrass, reef systems and endangered or protected marine species.

DEP spokeswoman Dee Ann Miller said the department received the petition in November. It is the most recent of three total petitions filed regarding the revised draft permit.

All three petitions have been forwarded to the state's Division of Administrative Hearings.

Their system works efficiently enough to cool with sunlight of about eight hours per day. It produces enough extra heat to yield 15 gallons of heated oil, and 200 gallons of chilled water to continue air conditioning into the evening. Residual cooling, if needed, can be met using gas for heat during darkness.

Commercial prospects for the technology appear good. Two start-up companies in California, b2u and Sun-Therm, are preparing to commercialize it.

But commercialization of an air conditioning system for residences is currently limited by the commercial chiller units available. The smallest unit available is 6.5 tons, capable of cooling a 6,000 square foot structure. Typical single family residential structures would need a

chiller only about one third that capacity.

Both Winston and Durbin are optimistic about the prospects for solar air conditioning using these panels. Materials will stand up to the elements for at least 20 years, the low profile collectors should withstand at least minimal hurricane winds, and at Florida's latitudes, collectors can be laid flat on most roofs.

They perform efficiently in clear sunlight or in hazy or cloudy conditions. Hardware cost is 10 - 20 cents per watt.

Solar energy will not likely completely replace electricity or gas as an energy source for reliable air conditioning. But getting 8 - 12 hours of solar-powered air conditioning would completely rebalance Florida's energy resource allocation.

DREDGING

From Page 1

\$75 million federal share of the cost. The remaining \$75 million is to be split by the state and the port.

Activists say that the permit issued by DEP does not provide adequate environmental safeguards for Biscayne Bay. They say the bay will be subjected to years of blasting and dredging, which will foul the waters and damage its ecosystem.

Porter said there will be both direct and indirect impacts.

"There will be destruction of about eight acres of seagrass bed and several acres of coral reef and hard-bottom habitat," he said. "This project is expected to take about two years to complete and during that time, there will be sedimentation and turbidity in the water."

The project is also being proposed in Biscayne Bay which he said is an Outstanding Florida Water and near a critical wildlife habitat.

"It is a very ecologically sensitive area of the bay," Porter said.

He said his clients would like to meet with all the stakeholders to reach an agreement.

"We want to improve the terms and conditions of the permit so that the bay will be protected," he said. "If that doesn't work, we will challenge the permit."

In a statement issued in response to the petition, Port of Miami Director Bill Johnson defended the dredging project.

"The Port of Miami agrees with the Florida Department of Environmental Protection's findings that the permit application for the dredge project is consistent with state requirements," Johnson said.

He said the project has undergone extensive studies and reviews by numerous agencies to ensure that strict environmental safeguards are in place to preserve the surrounding waters, ecosystems and marine life.

"We respect the permitting process and look forward to a speedy resolution," Johnson added in the statement.

AGREEMENT

From Page 1

The ranch's owner has already constructed berms and water control structures that will capture and store water that otherwise would flow directly into Lake Okechobee.

This helps prevent nutrients such as phosphorous from reaching the lake and reduces potential discharges to the St. Lucie and Caloosahatchee estuaries.

Added benefits are additional flood protection for communities near bodies of water and rehydration of ranchland that benefits plant and wildlife habitats.

Under the new contract with landowners, SFWMD will pay \$7 million initially and hopes to pay \$46 million over the next five years for new contracts. Ranchers would get as much as \$150 per acre-foot of water they store on their land over the next 10 years.

The Dispersed Water Management Program takes advantage of ranchers' knowledge of their own property. Costly engineering and modeling that include massive structures, gates and pumps are avoided.

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STANDARDS

From Page 1

The new rule section begins with the title "62-302.531 Numeric Interpretations of Narrative Nutrient Criteria." Some of the language throughout the rule may seem contradictory to readers who infer an exclusivity of meaning between "narrative" and "numeric" criteria. Bartlett noted that this language bridges the old narrative water quality standards to the new numeric standards.

The new standards are numeric, precisely defined in the narrative of the new rule. But this bridge goes both ways. Any person or entity bound by a prior permit, consent decree or other DEP compliance

mechanism is still bound to that agreement.

"It is a way to get around conventions of language," said Bartlett. "Where we have numbers we use them. Prior DEP decisions have to be followed."

Perhaps the most useful analogy is that the proposed rule is written so that it will be grafted to prior law and rules.

The proposed standards include a subchapter for site specific standards, "62-302.800, Site Specific Alternative Criteria." The proposed rule allows site specific standards to be established by the state for waters out of compliance because of natural processes or because of other circumstances or activities that cannot be

controlled or abated. It also outlines provisions for individuals to petition DEP for a site-specific criterion under conditions specified in the rule.

Numeric nutrient water quality standards have been an almost overwhelming focus of both supporters and opponents of convoluted and occult events that brought DEP to this point with its own draft of numeric nutrient water quality standards.

Bartlett noted, however, that the proposed 62-303, Identification of Impaired Surface Waters, is equally worthy of notice.

"We adopted ... biological assessments," he said. "We can evaluate whether a waterbody is healthy or not, regardless of nutrients. This rule is much more comprehensive. The other thing we have is a trend test for nutrients."

Where biological assessments identify water bodies that are impaired but the cause is not readily attributable, the waterbody may be put on a planning list or "study list," as the rule states, "for further analysis to determine the causative pollutant(s) or other factors contributing to the impairment."

The study list also addresses increasing nutrient trends in waterbodies. The department will only place a waterbody on the verified list if pollutant loading or concentrations cause or contribute to non-attainment of water quality standards.

However, the study list cannot be used in the administration or implementation of any regulatory program.

The first public review of DEP's proposed rule came in early November when DEP released its first draft.

EPA followed shortly thereafter with a statement that the proposed rules satisfy agency requirements for numeric nutrient water quality standards for Florida waters.

Some controversy arose because canals and ditches in North Florida were subject to the new criteria. Those in South Florida associated with the Everglades, which already have numeric nutrient standards, were exempted.

At its meeting in December, Florida's Environmental Regulation Commission amended the rules.

"With respect to our rules, we are setting standards for rivers, streams, lakes and estuaries. Our numbers are not applied to canals and ditches. The commission removed them from the rules," said Bartlett.

These proposed rules are still very much in a state of flux, in spite of the substantial progress that occurred through the summer and early fall.

The next step is an opportunity for the Florida Legislature to ratify these rules, which the EPA requires before it will rescind its regulations that are currently in effect. That is expected no earlier than March 2012.

"The ratification as it's designed is for the Legislature to give it thumbs up or thumbs down," Bartlett said.

If the rule is ratified, EPA would have the opportunity to determine if it will accept the rule without numeric nutrient water quality standards for ditches and canals.

If the EPA is satisfied with the new rule, it will go into effect simultaneously as EPA withdraws its authority for numeric nutrient water quality standards for Florida. That is, at the soonest, still months away.

One way or the other, Florida will soon have numeric nutrient water quality standards. They may be these proposed rules, or they may be an even more extensive set of rules mandated by the EPA.

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