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Volume 38, Number 5

Drillers directory 5

Our annual directory of environmental and geo-technical drilling providers serving the industry in our fair state.

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A new report looks at financing tools and techniques to fund water projects based on the practices employed in the energy sector.

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After two years and 2,000 contaminated petroleum site assessments, the soil and groundwater cleanup industry should prepare for an increased level of cleanups. Steve Hilfiker weighs in.

Impacts of sea level rise 13

A new report describes the effects on U.S. coastal communities of two sea level rise scenarios—one with a three-foot increase and one with a six-foot increase.

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Got a story lead?

Got an idea for a story? Like to submit a column for consideration? Fire when ready. 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 Florida. Send to P.O. Box 2175, Goldenrod, FL 32733. Call us at (407) 671-7777; fax us at (407) 671-7757, or email mreast@enviro-net.com.

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Court overrules state on new Turkey Point reactors

By **BLANCHE HARDY, PG**

On April 20, the 3rd District Court of Appeal in Miami overturned Gov. Rick Scott and the Florida Cabinet's 2014 decision approving Florida Power and Light Co.'s proposal to add two new nuclear reactors to their increasingly controversial Turkey Point plant.

The decision came about a month from the Southern Alliance for Clean Energy and Tropical Audubon Society 60-day notice of pending federal legal action against FPL for discharging contaminants into waters at the plant in violation of the federal Clean Water Act.

The approval of the additional reactors was made by the Scott administration while acting as the state's siting board in review of the merit and appropriateness of proposed power plant projects.

The appellate court found that a series of errors were made by the board in their consideration of FPL's expansion proposal. Among the errors noted by the court was a misinterpretation of a county ordinance related to protection of the eastern Everglades.

The proposed power plant expansion will be sent back by the court to the siting board for additional review for consistency with local development regulations, comprehensive plans and environmental regulations.

The addition of two reactors is a major point of contention with local governments, environmental advocates and agricultural interests, given the ongoing controversy about the impact of the plant's cooling water discharges on local groundwater, surface water and ecological systems.

TURKEY POINT
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State of the Industry:

Environmental drillers see uptick in real estate development, infrastructure, remediation projects

By **ROY LAUGHLIN**

Florida's environmental and geo-technical drilling business is again on solid ground. Drilling company owners and managers said business has been good after the struggle they faced in the midst of the recession.

Most had sharply reduced the number of rigs they operated as well as the staff to run them. But the increasing workload is slowly returning companies to pre-recession business conditions.

Chad Campbell, president of Preferred Drilling Solutions Inc. in Largo, said he was forced to reduce the number of rigs on the road after the 2008 bust. But he recently purchased a rig and hired three people to operate it.

Fred Kaub, PG, president of GFA International Inc. headquartered in Delray Beach, said that his firm is busy again with the bulk of his clients in real estate development and heavy construction, primarily in South Florida.

He also provides drilling and geo-

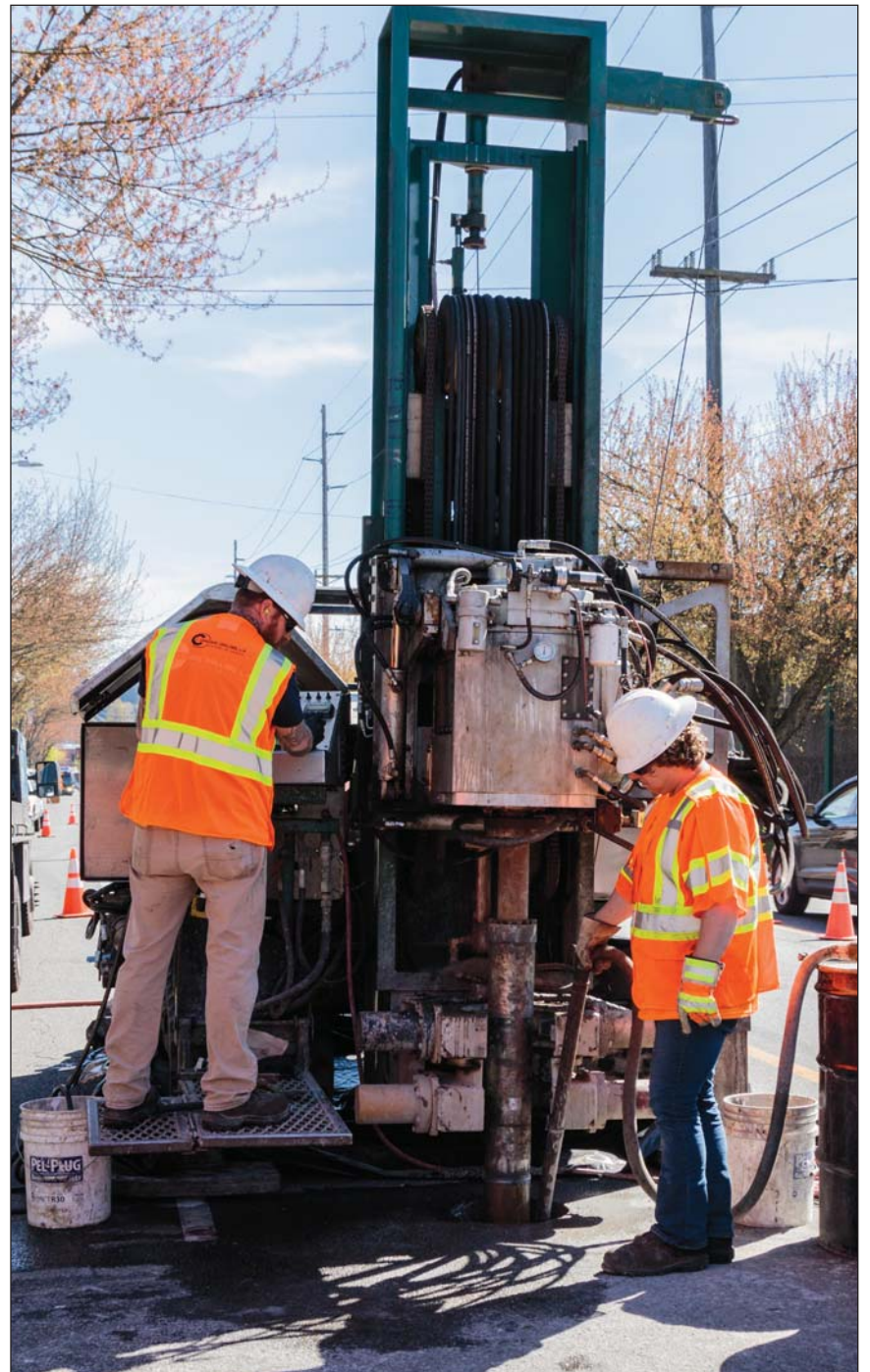


Photo courtesy of Cascade Drilling LP

Cascade Drilling crew installs a vibrating wire piezometer at a combined sewer overflow project using a Spider Sonic 200-C drill rig. Technological improvements in drill rigs continue to increase operational efficiency and expand drilling capabilities. See "State of the Industry" report below.

technical services for public sector infrastructure projects.

"We forecast a 15-20 percent growth in revenues in 2016. We had a 15 percent jump last year," he said. "It continues to look good."

Part of that forecast, he noted, is based on a new wave of real estate development work.

Florida's environmental and geo-

technical drilling firms may be one of the least recognized environmental service providers in the state, outside the circle of consultants and engineers who regularly employ them.

Drillers' heavy equipment and technical operating expertise contributes

DRILLING
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Caloosahatchee Riverwatch now an affiliate of global watchdog alliance

By **BLANCHE HARDY, PG**

Caloosahatchee Riverwatch is now a part of the Waterkeeper Alliance. Their immediate plans include hiring a director to perform public outreach and to help prevent continued pollution of the river.

The group kicked off its annual fundraising campaign earlier this year in Fort Myers. They hope to raise \$100,000.

"Waterkeeper Alliance is thrilled to

have Caloosahatchee Riverwatch as a Waterkeeper Affiliate to be the eyes, ears and voice for this vital watershed and community," said Waterkeeper Alliance Founder and President Robert F. Kennedy Jr. "Every community deserves to have swimmable, drinkable and fishable water, and Caloosahatchee Riverwatch is the right leader to fight

RIVERWATCH
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PHMSA proposes extension of federal natural gas pipeline regulations

Staff report

The federal Pipeline and Hazardous Materials Safety Administration, part of the U.S. Department of Transportation, proposed to extend existing natural gas pipeline assessment and repair criteria to those in moderately populated areas where pipeline failure would result in loss of human life.

The current rules apply only to natural gas pipelines in densely populated areas.

The proposed rules follow by four years a Congressional mandate to update pipeline rules to significantly reduce the risk of explosions. Congress implemented the mandate after a 2011 pipeline explosion in San Bruno, CA, killed eight people.

Most significantly, the new rule will eliminate a grandfather exclusion for some safety testing of natural gas pipeline constructed before 1970.

A National Transportation Safety Board investigation of the San Bruno explosion concluded that hydrostatic testing, which the pipeline was exempt from under grandfathering, would have identified the pipeline's flaws and prevented the explosion if the pipeline had been repaired.

A spokesperson for PHMSA said its revised rules incorporate a number of lessons learned from investigations of natural gas

pipeline disasters. It will rely heavily on risk-based safety practices for pipelines in or near moderately populated areas.

Along with new repair criteria, the proposed rules will add new instructions for evaluation of internal inspection anomalies.

The new rules also proposed changes in the way pipeline operators secure and inspect gas pipeline infrastructure after extreme weather events, which in Florida would be hurricanes and floods.

Seismically active areas will also have new rules to address risks from earth movement. Post construction inspections for coating integrity and cathodic protection will be implemented.

New verification requirements for determining a pipeline's maximum allowable operating pressure and requirements to report pressure exceedances are also proposed.

Proposed standards do not mandate automatic shut off or leak detection systems.

Safety advocates wanted these safety measures implemented as top priorities for safer natural gas pipelines. Shut off and

leak detection standards are reported to be under development in a separate rule, however.

In addition to safety, PHMSA noted that the new rules will reduce greenhouse gas emissions, as outlined in President Obama's Climate Action Plan.

Improved natural gas pipeline integrity could reduce emissions to the atmosphere from gas pipelines by 900-1,500 metric tons of CO₂ and 4,600-8,000 tons of methane annually.

The proposed rule announcement did not include an expected date for issuance of the rule but directed interested stakeholders to the agency's website for ongoing updates.

Voluntary methane challenge program. In related news, the EPA launched its Natural Gas STAR Methane Challenge Program in late March with the goal of reducing methane emissions through voluntary cooperative programs with industry partners in the oil and gas sector.

The agency said the program will provide participating companies with a plat-

form to make companywide commitments to cut emissions from sources within their operations by implementing a suite of best management practices within the next five years. Progress will be tracked using annual submissions to the agency.

The effort to reduce atmospheric methane emissions includes replacement or rehabilitation of cast iron and unprotected steel gas distribution mains.

Implementation of effective steps to reduce methane emissions from pipeline blowouts is another BMP the program strongly endorses.

The Natural Gas STAR Methane Challenge Program includes 41 oil and gas company partners.

The EPA believes that reducing methane releases from gas pipelines represents a significant opportunity to reach a 40-45 percent reduction from 2012 baseline methane releases by 2025, a goal of the Obama Administration's 2014 Methane Strategy.

The EPA said it expects pipeline operator participation to increase over time.

Federal funding for water reuse, conservation. The EPA announced that it will fund research at five institutions for the study of the human and ecological health impacts associated with water reuse and conservation practices.

The agency's announcement noted drinking water shortages in the U.S. associated with droughts and said water reuse grants would help to better manage limited water supplies.

The research will focus on how reclaimed water applications such as potable water reuse, groundwater replenishment and irrigation affect public and ecological health.

The money was awarded through EPA's Science to Achieve Results program.

The Water Environment Research Foundation will identify contaminant hotspots and assess their impact on human and ecological health.

The University of Illinois at Urbana-Champaign will develop a new framework for understanding UV and solar-based disinfection systems to reduce viral pathogens in wastewater for sustainable reuse.

Utah State University will investigate the impacts and benefits of stormwater harvesting that incorporates managed aquifer recharge in western urban ecosystems.

The University of Nevada is funded to quantify microbial risk in a comparison of the sustainability of indirect and direct potable water reuse in the country.

Lastly, the University of California-Riverside will measure the levels of contaminants of emerging concern in common vegetables and other food crops irrigated with treated wastewater and evaluate human dietary exposure as a result of that potential contamination.

Florida is at the beginning stages of potable reuse, which specifically refers to water reuse as drinking water. The city of Clearwater is constructing infrastructure for aquifer recharge to support indirect potable reuse there.

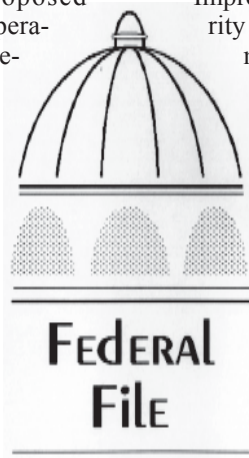
Non-potable reuse otherwise largely dominates Florida's alternative water supply strategy.

In the past, landscape irrigation dominated wastewater reuse. Over the past five years, Florida's alternative water reuse efforts include its use as cooling water for power plants and in some industrial processes.

Energy Star partners recognized. The EPA's Energy Star Program announced its 2016 Energy Star Partners of the Year for outstanding achievements in energy efficiency.

Program participation is nationwide. This year, seven of the 149 awardees are Florida businesses. The awards announced recently are for activities in 2014.

Intertape Polymer Group Inc. in Sarasota manufactures tapes, films, woven fab-



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Site assessment technologies/characterization

Field sampling

Contaminant transport and modeling

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Regulatory policy and initiatives

Brownfields

Cleanup case studies of sites and surface water contaminated with petroleum, PCBs, DNAPLs and LNAPLs, chlorinated solvents, arsenic and heavy metals, pesticides, nitrates/nitrites and other contaminants.

In addition, we are considering presenting several sessions featuring open forum discussion on technologies, site assessment techniques and regulatory subjects. If you have a suggestion for an open forum subject, please chime in.

Please submit abstracts of 250 words by July 1, 2016.

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Controversial plan for Palmetto Pipeline suspended

Staff report

Texas-based pipeline company Kinder Morgan suspended its controversial plan to lay 200+ miles of petroleum pipeline across eastern Georgia and into Florida.

The decision came after Georgia lawmakers passed legislation that would prevent the company from obtaining the necessary permits for the work.

The company proposed to build the \$1 billion Palmetto Pipeline that would have carried petroleum through South Georgia to Jacksonville.

The pipeline project ran into fierce opposition from a diverse group of organizations including environmental groups and business interests as well as local political leaders.

Kinder Morgan said the project could lower fuel costs along Georgia's east coast.

Those fighting the proposed pipeline said they would now try to tighten pipeline regulations in both Georgia and South Carolina.

Coal-burning units shuttered. Gulf Power shut down two coal-fired generating units operating in Bay County. The closures were made more than ten years earlier than originally scheduled.

The Pensacola-based utility said the units had operated since the 1960s. Officials said that the natural gas-powered plant at the site will continue to operate.

Last year, Gulf Power shut down an old coal-fired plant in the community of Sneads.

Gulf Power solar. The Florida Public Service Commission gave Gulf Power the green light to launch its community solar program, Gulf Solar Energy Share.

The commission's approval of Gulf Solar Energy Share allows all customers—including business owners—the chance to subscribe for \$99 a year.

By buying a subscription, customers can offset part of their traditional energy use with solar energy.

Subscribers will receive a monthly credit on their bill of between \$2 and \$2.50 for 2016. In addition, if participants agree to a five-year commitment, they will receive a reduced annual fee of \$89.

A new Gulf Power solar farm is in the works at a site near Milton.

Facing up to sea level rise. Miami-Dade County joined forces with the Nature Conservancy and engineering firm CH2M to look into ways to combat the impending impacts of rising sea levels.

The pilot program includes modeling work for the county's wastewater treatment plant near Cutler Bay, where officials said about \$1 billion in infrastructure is vulnerable to flooding from high tides and storms.

CH2M will try to determine how much nearby marshes will be able to protect the low-lying wastewater treatment plant from rises in sea level.

A recent study concluded that more South Florida residents will be at risk from rising seas than those in any other state if South Florida's population continues to grow as projected.

In 2000, Congress approved a major Everglades restoration project to restore the natural flow of water to Biscayne Bay. CH2M will share any important results with the U.S. Army Corps of Engineers, which is in charge of that project.

A second effort will look at ways of improving areas around Wagner Creek, which was once considered one of Florida's dirtiest waterways.

Florida black bear protection? A petition was submitted to the U.S. Fish and Wildlife Service to protect the Florida black bear under the federal Endangered Species Act.

The petition was submitted by a group of renowned scientists and more than a dozen conservation and animal protection groups.

Those signing the petition said that

2015 was a deadly year for black bears in the state. They said that humans were responsible for killing at least 590 bears out of an estimated population of 3,000-3,500.

The Florida black bear now occupies only 18 percent of its original range. The animal protection groups fear the bear's future is once again threatened following state delisting and a recent hunt sanctioned by the Florida Fish & Wildlife Conservation Commission.

The number of bears killed by vehicles has increased steadily from 33 in 1990 to 170 in 2014. In 2012, 285 bears were killed.

Florida wildlife managers also killed 108 problem bears in 2015 to eliminate ongoing conflicts with humans.

Bear advocates said the problem will only get worse as Florida's population is expected to increase by nearly 50 percent by 2060.

Pasco conservation. Gov. Rick Scott and the Florida Cabinet have unanimously approved conservation of more than 600 acres of the Phillips-Mathis Ranch in Pasco County and its active agricultural operations there.

The conservation easements will protect working agricultural lands and their environmental benefits from future residential and commercial development.

The Phillips-Mathis Ranch is located in central Pasco County just west of Interstate 75 and will be divided into two conservation easements.

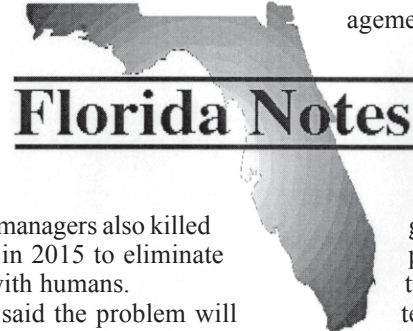
One easement will be purchased and monitored by Pasco County's Environmental Lands Acquisition and Management Program and the other by


the state Department of Agriculture & Consumer Services's Rural and Family Lands Protection Program.

The goals of the program created in 2001 include protecting valuable agricultural lands and helping to protect natural resources in conjunction with agricultural operations.


Superfund site donated to SCS. A nearly 10-acre Superfund site in Longwood has been donated to Seminole State College.

NOTES
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Ocala WaterSmart conservation program produces considerable water savings

Staff report

Late in 2015, the city of Ocala, with funding provided by the St. Johns River Water Management District, launched its WaterSmart potable water conservation program.

The pilot program involved 5,000 randomly-selected residents.

During the first five months of the program, Ocala estimates that it saved four million gallons of potable water. That's an average of three percent per resident.

Ocala officials are hoping to reach five percent per customer savings—a total of

15 million gallons of water saved—during the first year of the program.

WaterSmart is third-party data analytics and communications software that utilities use to send water use reports to utility customers.

Customers receive water reports that provide them with information about their water use and outline their residential water use in comparison to homes of similar size and climatic conditions.

Reports may also include additional information about water use and tailored water savings recommendations.

The effectiveness of the constant en-

couragement for water conservation “utilizes social norms in conjunction with comprehensive data analytics and targeted messaging to modify water use behavior.”

Although three to five percent may seem like a modest level of water savings, the cumulative annual total of more than 15 million gallons would help contribute to restoration efforts at nearby Silver Springs.

WaterSmart software is now used by more than 50 water utilities nationally and its provider claims to have verified nearly three billion gallons of water conserved nationally through its use.

New Gainesville stormwater facility. Gainesville City Commissioners approved funding for a new sediment treatment facility as part of its Tumblin' Creek Watershed Management Program.

The goal of the program is to improve water quality in Bivens Arm that flows into Payne's Prairie Preserve and eventually reaches the Alachua Sink, recharging water into the Floridan Aquifer.

In recent years, water quality in Bivens Arm has been impaired by excess nutrients and by floating trash entering through Tumblin' Creek.

The facility will collect floating debris from the creek, and remove sediment and nitrogen from water that flows into Bivens Arm.

The new facility will also rehydrate more than 60 acres of wetlands in the Tumblin' Creek Watershed by removing a berm that has kept water out. Those 60 acres can then function as a treatment wetland to help remove the nutrients.

The new water facility will be built near Southwest 13th Street at a revised total cost of \$1.8 million.

Originally, the city intended to build the facility on city-owned land. Engineers, however, concluded that it needed to be built on nearby private land that had to be purchased.

As a result, the final project budget was reported to be \$600,000 more than anticipated. Gainesville will use \$350,000 in undesignated utility funds, as well as a combination of already budgeted funds and other grants to add an additional \$765,000 to build the water treatment facility.

Gainesville expects to recover \$325,000 of the costs by using the new plant as a water quality credit facility, credits from which can be sold to developers or other entities to mitigate local environmental impacts.

Clermont water line improvement. The city of Clermont started its West Side Water Loop Project to replace and upgrade about five miles of old water distribution pipelines.

Most of the pipelines are in downtown Clermont, west of U.S. Highway 27.

The city will replace decades-old water lines with new pipe made of polyvinyl chloride and high density polyethylene.

In addition to traditional trenching methods, the contractor—Young's Communications Company of Melbourne—will use new techniques such as pipe bursting and directional drilling.

In pipe bursting, a leading section of new pipeline with cutting fins bursts the existing lines.

The new pipe following the leading section remains in place as the new water transmission line.

Using this technique coupled with directional drilling, digging will be limited primarily to connecting replacement pipelines to homes and businesses.

The project will be completed in five phases with the first phase already underway and subsequent stages occurring over the remainder of a 12-month period.

Skyview Utility upgrades. In early March, Lake County officials announced that upgrades to the former Skyview Utilities were nearing completion.

Those upgrades provide wastewater treatment and drinking water to approximately 1,000 customers in the Skyview subdivision on Lakeland's east side.

The upgrades announced in early

March represent the most recent good news for a subdivision's utility that failed financially in 1994.

In that year, the subdivision developer declared bankruptcy, abandoning the utility system that provided drinking water and wastewater treatment.

In 1998, Polk County took over management of Skyview Utilities. Then in 2013, Polk County conveyed the utility to the city of Lakeland, which operated the closest large wastewater treatment plant.

The Skyview subdivision was built on reclaimed phosphate lands whose soils are, for the most part, unsuitable for septic tank use.

Skyview Utilities released its wastewater treatment plant effluents to Lake Hancock. The increasing cost of effluent treatment to meet new water quality standards was the reason given in local press accounts for Skyview Utilities' abandonment by its developer.

When the city of Lakeland accepted responsibility for Skyview subdivisions' customers in 2013, the utility by that name no longer existed, but the name continues to be used informally.

In the ensuing two and a half years, the city of Lakeland connected the subdivision sewage collection lines to Lakeland's wastewater treatment plant, and has been replacing and upgrading the potable water supply lines, work that is largely finished now.

The upgrades are expected to cost about \$6 million in total.

In 2013, the Florida Legislature appropriated \$3.5 million for the work. Some federal grant money was also obtained for the upgrades.

The city of Lakeland recently announced assessments to pay for the remaining costs of upgrades.

Another IRL algae bloom. Since December 2015, the northern half of the Indian River Lagoon—the Banana River, the Indian River North of Melbourne and the Mosquito Lagoon—has experienced another extensive fish-killing microalgae bloom.

The brown alga, *Aureoumbra lagunensis*, is the dominant organism in this latest bloom, but has not been dominant in any previous bloom.

Reports of a dense algal bloom began in mid-January. In mid-February, the central Indian River Lagoon was mustard yellow with the microalgae. Then by late March, extensive fish kills occurred in the Banana River.

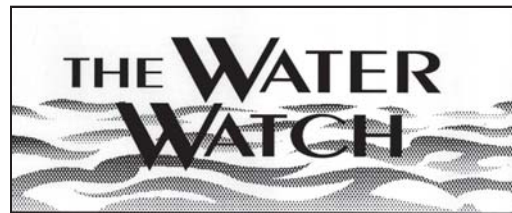
Night time anoxia, when algal metabolism uses more oxygen than photosynthesis produces, caused the fish kills due to suffocation. *A. lagunensis* did not produce algal toxins during this bloom.

For the first time as a result of fish kills in the Indian River Lagoon, local authorities organized an extensive effort to remove the dead fish.

This is third significant algal bloom in the Indian River since 2011. Each of the blooms exhibited unique characteristics with respect to its timing and the dominant algal species.

This one, which began in midwinter, is unique for that reason. A different microalga species, none taxonomically closely related, has dominated each event.

A. lagunensis cell densities reached



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WATCH
Continued on Page 5

Directional drilling used to bore under St. Johns River for wastewater main

By PRAKASH GANDHI

The St. Johns River is the focus of a major sewer project now underway.

JEA, Jacksonville's water, sewer and electric utility, is working on a \$12 million sewer line project that involves drilling a tunnel under the St. Johns River bed.

WATCH From Page 4

200 cells per milliliter, sufficiently high to give the water a murky, mustard yellow color.

Ecological damage caused by this latest bloom may shift from seagrass beds to this year's fish recruitment.

Most of the Indian River Lagoon's fish species lay eggs in the winter and by April, millimeter-sized larvae spread throughout the lagoon from spawning areas, the seeds of the fish population that grow to adulthood during the summer and fall.

This is the first major winter algal bloom in the Indian River Lagoon, so in the absence of experience, it will take time to characterize the level of destruction of 2016's class of fish and many invertebrate species.

Such a loss could be the most significant long-term ecological impact of this bloom.

The state and local response has been substantially more concerted with this bloom. Both the St. Johns River Water Management District and the Florida Fish and Wildlife Conservation Commission have been deeply engaged in monitoring the process.

Brevard County and local volunteer agencies have made the most significant effort to date to remove the dead fish.

In late March, the governor's office is-

The purpose of the project is to install a new sanitary sewer force main under the river from the north bank to an existing JEA sewer pump station, said JEA Spokesperson Gerri Boyce.

"Sanitary sewer force mains are a critical piece of JEA's sewer collection system, designed to transport high volumes of wastewater to one of 11 wastewater transport facilities," said Boyce. "This newest

sued a statement acknowledging the Department of Environmental Protections' efforts in the Indian River.

At the same time, the governor offered to declare the part of the Indian River affected by the bloom as a disaster area. But the Brevard County Board of County Commissioner's declined the declaration.

In mid-April, DEP announced it will provide \$1.5 million to fund four grants to upgrade stormwater treatment in Brevard County. The state Legislature also appropriated \$26 million more for muck dredging.

State officials have been quick to point out that this winter's bloom in the northern Indian River has no evident causal relationships with the algal bloom in the lagoon's southern segment two summers ago. That bloom was sparked by nutrients in drainage from the Lake Okeechobee through the St. Lucie River.

As of mid-April, the winter bloom appears to be waning rapidly and becoming patchy.

The extensive data gathered during the bloom is under evaluation and more information about correlations between environmental factors are forthcoming.

In the meantime, additional efforts to reduce nutrients in stormwater and remove muck as a source of internally mobilized nutrients are underway.

sewer force main will provide redundancy for the existing main that is a vital piece of JEA's sewer infrastructure."

Boyce said JEA will be installing 4,200 linear feet of 42-inch steel casing and 36-inch high density polyethylene 50 feet under the river bed using horizontal directional drilling.

Horizontal directional drilling is a steerable, trenchless method of installing underground pipes.

Boyce said that the technique is often used when digging or trenching is not practical for installing a pipe, such as under a waterbody.

The process has been adapted over the past 20 years for water and sewer projects due to lower cost and less disruption compared to traditional trench installation of water and sewer lines.

The existing pipe serves 50,000 cus-

tomers and can carry up to 10 million gallons of wastewater each day.

Once the new pipeline is operational, the system's daily capacity will be increased to nearly 17 million gallons a day.

The South Shores force main river crossing project is scheduled to be completed in September.

The existing sewer force main was built by the city of Jacksonville in the early 1970s.

The city transferred its water and sewer operations to JEA in 1997.

Since then, the utility has invested \$3 billion to repair and replace water and sewer lines.

Future projects that will be required to maintain the system will cost about \$120 million per year.

The new pipeline is expected to be in service for at least 40 to 50 years.

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Company name / Contact information	EMR rate	Years in biz	Total staff / Staff in FL	Services / Capabilities	Equipment / Tools	1) Other services 2) Firm's specialty 3) Specialty business designations 4) Other equipment/tools 5) Areas served in Florida
Action Environmental / EnviroTek 3007 N. 50th St. Tampa, FL 33619 (813) 909-0040 Fax: (813) 909-0042 Fred McKay, Drilling Division Manager fred.mckay@actn.com Tina Fritz, Business Development Rep. tina.fritz@actn.com www.actn.com	0.68	23	31/31	Geoprobe and drilling services including small diameter wells (1/2" - 1 1/2" dia.), conventional wells (2" and 4" dia.), injection wells, dewatering wells and dewatering system installation, directional borings, air sparge wells, SVE wells and well abandonment. Now providing LDA source removals.	Hollow stem auger ■ Air/mud rotary ■ Dual rotary ■ Sonic ■ Direct push ■ Diamond coring ■ Cone penetration testing ■	1) Remediation product injections, soil stabilization 2) Direct push technology and injection services 3) NA 4) Geotech SPTs, large diameter auger deep source removals 5) Serves entire state
Ambient Technologies 4610 Central Ave. St. Petersburg, FL 33711 (727) 328-0268 Fax: (727) 328-2477 Carlos Lemos, President info@ambienttech.com www.ambienttech.com	0.7	23	32/23	Environmental & geotechnical drilling, (Florida and Central America); rock coring (Central America); concrete coring and drilling. Instrument Installation in borehole, dewatering	Hollow stem auger ■ Air/mud rotary ■ Dual rotary ■ Sonic ■ Direct push ■ Diamond coring ■ Cone penetration testing ■	1) Central America office in Panama 2) Excellent safety record 3) MBE, SDB, DBE 4) Utility locate capabilities and surveying 5) Serves Central Florida
American Vibracore Services Inc. 1215 Wallace Dr. Delray Beach, FL 33444 (561) 372-0500 Fax: (561) 372-0501 Fred Kaub, Chief Executive Officer info@americanvibracore.com www.americanvibracore.com	0.72	16	5/5	Vibracoring, geotechnical and environmental drilling, materials testing	Hollow stem auger ■ Air/mud rotary ■ Dual rotary ■ Sonic ■ Direct push ■ Diamond coring ■ Cone penetration testing ■	1) Marine support services 2) Vibracore sampling: offshore, rivers, canals, swamps, lakes 3) SBE - Federal 4) Vibracore sampling 5) Serves entire state
Cascade Drilling Technical Services 6424 Pinecastle Blvd., Suite D Orlando, FL 32809 (206) 396-1561 Tampa - Mike Early mearly@cascade-env.com Ocala - Mike Rice mrice@cascade-env.com www.cascade-env.com	0.69	26	850/50	Cascade is the leading provider of environmental and infrastructure drilling, in-situ remediation applications, and high resolution site characterization technologies. Our collaborative approach, high quality service, reliable crews and leading safety program make us the first choice in environmental services. We are the only integrated nationwide contractor with expert technical capabilities and fleet licensed to work in all 50 states. With more than 850 employees and over 40 locations, Cascade integrates technology, safety, sustainability and human potential to tackle the challenging environmental and geotechnical issues facing our clients.	Hollow stem auger ■ Air/mud rotary ■ Dual rotary ■ Sonic ■ Direct push ■ Diamond coring ■ Cone penetration testing ■	1) Waste handling/management 2) Sonic: smallest to full size; DPT: remedial injection, direct imaging, sampling; auger & rotary 3) NA 4) Air/water knife, vacuum extraction 5) Serves entire state
Custom Drilling Services Inc. 100 Kid Ellis Rd. Mulberry, FL 33860 (863) 425-9600 Fax: (863) 425-9620 Michael Johnson, Vice President mdjohnson@customdrilling.net www.customdrilling.net	1.17	25	40/40	Environmental drilling: DPT services	Hollow stem auger ■ Air/mud rotary ■ Dual rotary ■ Sonic ■ Direct push ■ Diamond coring ■ Cone penetration testing ■	1) Well abandonment 2) NA 3) NA 4) NA 5) Serves entire state

Environmental & Geotechnical Drillers serving Florida

2016 Directory

Company name / Contact information	EMR rate	Years in biz	Total staff / Staff in FL	Services / Capabilities	Equipment / Tools							1) Other services 2) Firm's specialty 3) Specialty business designations 4) Other equipment/tools 5) Areas served in Florida Note: NA = No Answer
					Hollow stem auger	Air/mud rotary	Dual rotary	Sonic	Direct push	Diamond coring	Cone penetration testing	
Direct Push Services LLC PO Box 3998 Lake Wales, FL 33859 (863) 676-0088 Fax: (863) 223-8525 Scott Blackburn, General Manager scott@directpushcpt.com www.directpushcpt.com	NA	9	NA	Direct push/CPT testing, mud rotary drilling	■	■			■	■		1) NA 2) CPT, limited access drilling 3) NA 4) NA 5) Serves entire state
Earth Tech Drilling 2703 NW 19th St. Pompano Beach, FL 33069 (954) 974-2424 Fax: (954) 974-2423 Bob Orlando, President borlando@earthtechdrilling.com www.earthtechdrilling.com	0.93	14	9/9	Environmental and geotechnical drilling	■	■	■	■	■	■		1) NA 2) Quality, safe environmental drilling 3) SBE 4) NA 5) Serves entire state
Environmental Drilling Service Inc. 4712 Old Winter Garden Rd. Orlando, FL 32811 (407) 295-3532 Fax: (407) 296-3957 Doug Leonhardt, President doug@edsenvironmental.com www.edsenvironmental.com	NA	27	10/10	Sonic, DPT, hollow stem auger, mud/air rotary drilling, sampling and well installation	■	■		■	■	■		1) We assist consultants and contractors with in-situ remediation using chemical injection, air/biosparge, vapor extraction point installation, pumping and mixing 2) NA 3) NA 4) NA 5) Serves entire state
Geologic & Environmental Testing 2509 Success Dr., Suite 1 Odessa, FL 33556 (727) 376-7833 Fax: (727) 376-7433 David Harro, PG, Professional Geologist david.harro@geo3group.com	NA	17	5/5	Geotechnical and environmental drilling	■	■			■			1) Geophysics 2) Geotechnical, environmental 3) WBE, FDOTcertified DBE 4) NA 5) Serves Central Florida
Geologistics Inc. 750 E. Sample Rd., Bldg. 2, Suite 207 Pompano Beach, FL 33064 1-800-807-0165 Mary Kaub, President info@dbegeo.com www.dbegeo.com	0.71	7	5/5	Geotechnical and environmental drilling, CPT testing	■	■			■		■	1) Ground penetrating radar 2) CPT testing, environmental drilling 3) FDOT-DBE-Broward Co. SBE OSD - WBE Federal SBE 4) NA 5) Serves entire state
GFA International Inc. 1215 Wallace Dr. Delray Beach, FL 33444 (561) 347-0070 Fax: (561) 395-5805 Fred Kaub, President fkaub@teamgfa.com www.teamgfa.com	0.72	28	145/145	Geotechnical, environmental drilling, materials testing, inspections, code compliance and plan review, environmental assessments and remediation, asbestos consulting	■	■			■	■	■	1) Heavy civil, transportation and infrastructure QC 2) Wireline coring, borehole imaging, CPT testing, Geoprobe services, auto hammer precision, environmental drilling 3) SBE - Federal, FL licenced well contractor 4) Wireline coring, Geoprobe-Direct push 5) Serves entire state
Groundwater Protection 2300 Silver Star Rd. Orlando, FL 32804 (407) 426-7885 Fax: (407) 206-0856 Brian Shutts, Owner brian@drillprollc.com www.groundwaterprotection.com	0.69	30	32/32	Monitoring and remediation well installation; injection and well abandonment services; horizontal well installation. Auger, DPT, Sonic, angle drilling	■	■		■	■			1) Remediation systems, injection 2) Sonic, difficult access/low clearance angled wells 3) Certified small business, FL Water Well Contractor, NC/SC Water Well Contractor, Bonded in GA 4) Well abandonment 5) Serves entire state and Southeast U.S.
Huss Drilling Inc. 35920 State Road 52 Dade City, FL 33525 (352) 567-9500 Fax: (352) 567-6646 Ben Huss, Owner ben@hussdrilling.com www.hussdrilling.com	0.74	26	24/24	Environmental, geotechnical, exploration and water resource drilling services	■	■		■	■	■		1) Well rehabilitation 2) Environmental, geotechnical and exploration drilling 3) NA 4) ATV rigs, barge rigs 5) Serves Central, NE and NW Florida
JAEE Environmental Services Inc. 3010 Peachtree Cir. Davie, FL 33328 (954) 476-8333 Fax: (954) 476-8347 Willie Smitherman, President jaee@bellsouth.net www.jaeeenv.com	0.96	25	11/11	Soil and groundwater sampling, installation of monitoring wells, well abandonment, bioremediation injection	■				■			1) Bio-injecting, well abandonment 2) Sampling using Geoprobe equipment 3) Water well contractor 4) NA 5) Serves entire state
Preferred Drilling Solutions Inc. 11747 87th St. N. Largo, FL 33773 (727) 561-7477 Fax: (727) 561-9028 Chad Campbell, President chad@pdsflorida.com www.pdsflorida.com	0.78	14	40/40	Environmental drilling, direct push and remediation services. Statewide service with three locations in Florida	■	■			■			1) Remediation services 2) Environmental services provider with focus on safety, quality and service 3) NA 4) NA 5) Serves entire state
Singley Env. & Remediation 6741 Pine Forest Rd. Pensacola, FL 32526 (850) 944-7799 Fax: (850) 944-0704 Michael Newman, Operations Manager pensacola@singleycc.com www.singleycc.com	NA	44	NA/NA	Environmental drilling for site assessments and remediation	■	■			■			1) Excavation, remediation system installation, chemical injection 2) Direct push technology, well installations and remediation services 3) NA 4) NA 5) Serves NE and NW Florida
SMW GeoSciences Inc. 668 N. Orlando Ave., Suite 1009A Maitland, FL 32751 (407) 426-2836 Deborah Swan, Office Manager smwhitaker@smwgeosciences.com www.smwgeosciences.com	NA	14	6/6	Environmental drilling and wetlands monitoring wells. Geoprobe with narrow entry and limited close quarters capabilities, macro-coring, discrete water sampling, piezometers. Well design and construction oversight. Large public supply and geothermal					■			1) A) Env. assessments, water quality sampling, water level monitoring, APTs, water resources management, WMD/DEP permitting; B) Well abandonments 2) Hydrogeological investigative services 3) M/WBE 4) NA 5) Serves entire state
Universal Engineering Sciences Inc. 3532 Maggie Blvd. Orlando, FL 32811 (407) 423-0504 Fax: (407) 423-3106 Gwen Viglione, Marketing Coordinator getinfo@universalengineering.com www.universalengineering.com	.84	52	480/465	Drilling, engineering design & consulting, code compliance plan review & inspection, materials testing/quality assurance, site assessment & remediation	■				■		■	1) Haz materials assessment & remediation, sinkhole assessment & remediation 2) Geotechnical engineering & testing, soil borings, monitor wells 3) NA 4) NA 5) Serves entire state from 15 offices
Wingerter Laboratories Inc. 1820 N.E. 144th St. North Miami, FL 33181 (305) 944-3401 Fax: (305) 949-8698 Jill Wingerter Chin-You, President jill@wingerterlab.com www.wingerterlab.com	NA	67	21/21	Construction materials testing, geotechnical services, monitoring wells, percolation tests, double ring infiltrometers, geotechnical lab services	■							1) Seismograph monitoring, sound meters, light meters 2) NA 3) WBE 4) NA 5) Serves South Florida

How durable are the benefits of Florida's public-private conservation partnerships?

By ROY LAUGHLIN

Public-private conservation agreements play an important role in water conservation and water quality improvement efforts in Florida.

They are popular with the state's conservative Legislature and governor because they represent an alternative to spending money on conservation lands or restricting activities on private land to achieve environmental management goals.

Agricultural cost-share programs have been instituted in four of Florida's five water management districts. Through these programs, the districts underwrite 75-90 percent of the cost for more efficient irrigation equipment or farm infrastructure, or implementation of best management practices to reduce runoff that carries nutrients to surface or groundwater.

Some are as simple as underground irrigation systems, while others are computer-controlled fertigation systems that apply water and fertilizer independently as needed to zones within a large field. The costs for such systems can run up into the tens of thousands of dollars—even more.

But a recent report by the Environmental Working Group argues that voluntary conservation measures for agricultural water conservation are "a fool's errand."

Their recently released report, *Fooling Ourselves: Voluntary Programs Fail to Clean Up Dirty Water*, said that federally funded water conservation projects persist only as long as the funding continues.

If federal funding ends due to shifting budget priorities or farmer whim, less effective farming methods will reemerge.

In Florida, the water management districts play the dominant role in agricultural water conservation and water quality maintenance.

NWFWMD

The Northwest Florida Water Management District, according to district spokesperson Jim Lamar, has offered agricultural cost-share agreements for the past three years, so there is at least that many years of benefit.

In addition, district contracts stipulate that recipients have an audit completed every three years with the WMD's mobile irrigation laboratory. That audit will help the farmer maintain the system and ensure that it is capable of delivering water savings.

Lamar said that the district estimates that it is saving 7.7 million gallons per day as a result of two annual cycles of public-private cost-share conservation projects.

"We look at it as a benefit to the producer," he said. "They'll want to continue doing it."

When the reduced costs of pumping water flow to the bottom line, agricultural producers will continue with conservation measures, even in the absence of contractual obligation to continue. So far, that has been the case.

SRWMD

Abby Johnson, spokesperson for the Suwannee River Water Management District, said that her district has both district-wide and BMAP agricultural cost-share programs.

"The primary focus of the BMAP program is to reduce the nutrient loading in both the Santa Fe and Suwannee River basins," she said.

The Suwannee district also began cost-share programs within the past three years, and now has 103 executed cost-share agreements in place.

SRWMD cost-share contracts expire one year after execution but the district includes two stipulations for irrigation and fertigation equipment provided under the contract.

The first requires the equipment to be operated and maintained for five years after the effective date of the cost-share contract.

If the equipment funded by the project is removed from the real property prior to the contract's effective date, the producer must reimburse the district for all of the cost-shared funding within 90 days after

the equipment is removed.

Most, if not all, of SRWMD's cost-share agreements are within the five-year post-contract use period. After the first five years, the assumption is that cost savings will provide justification for farmers to continue with conservation programs initiated through the contracts.

Johnson said that their cost-share programs have saved a total of 4.1 million gallons a day within the two BMAPs, and 10.71 mgd district-wide. Some of those savings may be from programs other than agricultural cost-share programs, as the district has multiple cost-share targeted programs.

The BMAP cost-share contracts, she noted, have reduced total nutrient inputs to surface waters by 1,628,000 pounds.

SJRWMD

The St. Johns River Water Management District is in its first year of offering public-private cost-share agreements.

Suzanne Archer, technical program coordinator for the district's agricultural cost-share programs, said that they do have life expectancy for products in the project, but the district only audits their use for the year of the contract.

She noted that for projects now close to their first year completion, water pumping costs have been 50 percent less. She also said that fertilizer costs were about 25 percent less in some of the cost-share projects the district is funding. So it's in a farmer's best interests to keep using the equipment funded in the agreements.

Bill Abrams, assistant general counsel with the district, said that the district includes the following requirement in its cost sharing contract: "Maintenance of Project and Equipment. Recipient shall implement and maintain the project and any equipment funded under this agreement for a period of at least 20 years from the date of the final invoice submitted for payment. This includes data reporting to the district as required."

But Abrams noted that the contracts do not include long term tracking and reporting requirements. To do so would require the district to cover the additional costs of monitoring, collecting and processing the reports, and enforcement mechanisms would have to be developed.

"It is really a matter of whether the costs of administration and enforcement are worth the information," he said.

If cost-share projects become increasingly useful, there may be reason to evaluate post-contract following the dictum "trust but verify."

In the past, the district used the demonstrated water savings by funded recipients to lower the limits specified in their

consumptive use permits. The actual water quantity used, which was reported under the terms of the contract, gave the district an accurate insight into the conservation benefits.

Modifying consumptive use permits provides durable public benefit. But reducing consumptive use permit allowances is now in doubt. Senate Bill 552, signed into law in January, specifically stipulates that consumptive use permits may not be reduced as a result of water conservation measures taken by farmers.

SWFWMD

The Southwest Florida Water Management District has been offering cost-share projects since 2002, longer than of any

other district. During that time, the Southwest district entered into more than 150 cost-share projects, paying 50-75 percent of total project costs.

According to a staff member with the program, the usual contract term of an agreement is five years with no specific stipulations for continuity.

The district does not modify consumptive use permit levels but may put groundwater wells on standby if the conservation practice of the cost-share agreement involves surface water.

That means that the farmer would use

CONSERVATION
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DoD begins nationwide survey of perfluorinated chemical use on military airfields, ships

By ROY LAUGHLIN

For fifty years, the U.S. Department of Defense has used aqueous film forming foam, or AFFF, which includes perfluorooctanoic acid and perfluorooctane sulfate.

These compounds, when mixed with water, form a dense clinging foam effective in putting out fires, especially those caused by burning fuels.

When water alone is used, the burning fuel floats to the top and spreads with the water flow. AFFFs prevent the flow of the water-fuel mixture and smother the flames quickly.

The U.S. Navy and the U.S. Air Force have been DoD's primary users, both on ships and at airfields, and in fire control training exercises.

The DoD is now beginning a nationwide assessment to determine if these perfluorinated compounds have made their way into the soil and groundwater at military facilities.

In late October of 2014, the assistant secretary of the Navy for energy installations in the environment issued a memorandum directing the Navy's Defense Environmental Restoration Program to identify installations where PFOS and PFOA

were released or suspected to have been released. Other DoD branches are conducting similar programs.

The memorandum directed that Navy drinking water systems be tested and reported on by December 2015, and required that alternative drinking water supplies be provided if testing exceeds the U.S. Environmental Protection Agency's provisional health advisory value.

The PHA values issued in 2009 were 0.4 micrograms per liter for PFOA and 0.2 µg/L for PFOS.

The Navy has already found fluorinated chemicals in drinking water wells around a naval landing strip in Virginia and is providing bottled drinking water to the personnel there as a result.

DoD's perfluorinated compound assessment is a nationwide effort. At the end of last year, 664 sites and facilities were on DoD's assessment list.

Florida has 38 sites, ranking it third behind California with 85 and Texas with 57.

"Because we are in the early stages of the cleanup process, we do not have the full scope of the extent of perfluorinated compound contamination and the actions the department needs to take to address the

risks to human health and the environment," wrote Lieutenant Colonel Eric D. Badger, USAF, in a reply to emailed questions.

Badger said that the assessment will include a review of historical documents that provide information about the scope of AFFF use at a specific facility. Soil and groundwater samples may be collected for chemical analysis to detect perfluorinated chemicals.

Drinking water is a primary exposure route for perfluorinated chemicals for the public at large.

"Each site is unique, and depending on the conditions at the particular location, drinking water may be tested," he noted. "However if sampling indicates that groundwater being used as a drinking water source has been impacted, the department can test the drinking water."

Badger said the assessment tasks will be conducted by existing staff and contracts.

Assessment information will be made available to the public.

"Most installations have a local restoration advisory board that includes local citizens and community leaders," Badger

explained. "All results of these investigations will be shared locally."

He also noted that the 664 sites under evaluation are no longer in use for fire and crash training.

DoD is modifying protocols to prevent uncontrolled AFFF releases resulting from maintenance and fire-fight training. Each service branch will be overseeing specific actions so information about specific facilities will be fielded by the branch involved.

Badger noted that DoD is guiding the assessment in accordance with the federal Comprehensive Environmental Response, Compensation and Liability Act.

DoD also depends upon the U.S. Environmental Protection Agency as the lead agency responsible for toxicity levels, associated regulatory standards, and public health issues related specifically to PFOA and PFOS.

The EPA has had per-fluorinated compounds—PFOA and PFOS, in particular—on its radar for more than a decade because of the compounds' unusual behavior in the environment.

They are, paradoxically, highly soluble in water but bioaccumulate up to four orders of magnitude in tissue. And they persist for years in the environment and are not metabolized to any extent in human tissues.

Though the primary exposure route in humans is through drinking water, some foods may be a significant source for some people. In humans, the half-life of PFOA and PFOS is about four and nine years, respectively.

In the late 1990s, 3M, the world's major PFOS producer, stopped manufacturing these compounds in the U.S. after discussions with the EPA.

In 2002 and 2007, under the authority of Toxic Substances Control Act, EPA limited any further PFOS manufacture and importation into the U.S. That decision affected 271 chemicals, almost all PFOS compounds on the U.S. market.

In 2006, the EPA and eight major producers and users launched the 2010-2015 PFOA Stewardship Program to reduce global emissions and product PFOA content by 95 percent by 2010 and to eliminate them completely by 2015.

The EPA has not yet made a determination regarding whether PFOA poses an unreasonable risk to the public and has issued no specific recommendations to the public to reduce PFOA exposure.

And since there are no effective substitutes available for PFOA, the agency has not restricted its use.

In 2013, EPA added both PFOA and PFOS to the final second list of chemical and substances for endocrine disruptor screening program Tier 1 screening.

Then in 2014, the agency proposed toxicity values for PFOA and PFOS that will replace the current provisional health advisory values.

If and when those proposed values are formally accepted, the DoD will use the revised values in its assessments.

"DoD will be removing stocks of PFOS-based foams where practical," Badger said. "Non-PFOS based foams, which do contain shorter-chain perfluorinated compounds, will continue to be the main product used for fire fighting until non-PFC formulations can be tested and certified to meet the military performance specifications."

In the long run, substitution and phase out will be DoD's most effective strategy to address human health and environmental concerns about per-fluorinated compounds, specifically PFOA and PFOS.

Badger said that the DoD is currently supporting research to identify non-fluorinated compounds to give substitute AFFFs similar properties as those products currently in use.

There is no doubt that AFFFs have drastically reduced death and injury to military personnel on ships and planes.

But many experts believe that it is now time to identify and use alternative compounds.

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Useful tools for funding water projects found in electricity sector financing techniques

By **BLANCHE HARDY, PG**

A recently published report from researchers at Stanford University—Tapping into Alternative Ways to Fund Innovative and Multi-Purpose Water Projects: A Financing Framework from the Electricity Sector—offers financing tools and techniques to fund water projects based on practices employed in the energy field.

The report identifies innovative funding and governance mechanisms that support the integration of new distributed water infrastructure, practices and technologies.

“There are many similarities between the water and energy sectors, as utilities in both sectors provide commodities to customers that are required for modern life,” said Newsha Ajami, PhD, director of urban water policy and water-energy program lead at Stanford. “In turn, both sectors currently rely on extensive infrastructure networks and are highly regulated by many levels of government.

“Fiscally, the two sectors rely on revenue streams for most of their funding, and the financial health of their institutions plays a key role in accessing capital to fund supplementary projects.”

Recognizing that water utilities are typically much smaller than energy utilities, the report recommends solutions designed to be implemented at the local level.

The researchers indicate that providing incentives for locally initiated small- to medium-scale projects can be more efficient and economical than relying on more traditional funding models.

“One of these solutions is the incorporation of innovative and multi-purpose water projects, such as distributed solutions that are designed to manage water more locally and closely mimicking the natural hydrologic cycle,” Ajami, said. “Examples of these small- to medium-scale innovative projects include green infrastructure designed to manage stormwater, demand-side management measures that

protect potable source water from waste, and decentralized wastewater treatment systems.

“Incorporating these solutions has the potential to offer increased flexibility in responding to a changing climate and meeting future water quality and quantity needs.”

Demand-side management techniques decrease demand through the application of water conservation and efficiency practices.

“DSM strategies can be the first line of action for cities and water utilities trying to manage water consumption as these techniques can be more economically and environmentally sustainable than augmenting supply through new infrastructure or increased source capacity,” said Ajami.

“Some ways that a small utility can incentivize customer-level DSM are by offering education programs about water conservation, rebates for water-efficient devices, or loans or grants for household retrofits,” she said.

Utilities can also implement DSM at a larger scale, for example increasing the efficiency of their distribution systems by fixing leaks.

The report recommended the application of four elements the researchers consider essential to upgrading the nation’s infrastructure: 1) Catalyzing change through external forces such as direct enforcement and economic incentives; 2) Establishing public and private funding; 3) Using resource pathways such as grants, loans, rebates and tax incentives to facilitate the flow of funding; and 4) Creating innovative governance structures such as net metering and financial aggregation to enable project implementation.

Among the suggestions is the use of multipurpose infrastructure solutions.

“Multi-purpose infrastructure solutions are projects that meet more than one objective within the water sector and beyond,” said Ajami. “For example, install-

ing green infrastructure to manage stormwater could simultaneously prevent water quality degradation, recharge groundwater, prevent flooding, create green space for communities, and combat urban heat island effect among many other benefits.

“Many local, distributed water solutions are multi-purpose as they could protect water quality, eliminate transportation costs, decrease energy requirements and protect source water through conservation and reuse.”

While there are similarities between

energy and water utilities, Stanford researchers identify ownership as an important difference between the two sectors when considering financing. Many electric utilities are investor-owned so private companies play a noteworthy role in their financing.

Though most water utilities are publicly owned, there are enough similarities between the two sectors that some of the financing and governance tools are transferable.

Water utilities can learn many valuable lessons from electric service providers, Ajami said.

New report released on water usage in ACF River Basin

By **PRAKASH GANDHI**

A new report from the U.S. Geological Survey was recently released about water use in the Apalachicola-Chattahoochee-Flint River Basin that has been at the center of a fierce legal dispute between Florida, Georgia and Alabama.

The multipart water resources study was initiated for the basin five years ago, in part to estimate water usage.

The report contains 2010 water use estimates for the ACF Basin. The estimates include an inventory of the quantity and sources of water withdrawn by category of use and location, and the surface water returns in the basin during the year.

Water demand has grown considerably in the basin that encompasses about 20,230 square miles in parts of the three states.

The thirst for water has been fueled by increasing population growth and agricultural production from the 1970s to 2010.

The battle over water supplies in the basin has caused long-running litigation between the three states.

The population in the basin was 3.835 million in 2010, a 45 percent increase from 1990 of nearly 2.636 million. About 92 percent of the 2010 population in the basin lived in Georgia, the vast majority of that in the Atlanta metropolitan area.

In 2010, 1,645 million gallons per day of water were withdrawn from groundwater and surface water sources in the ACF Basin. About 89 percent of the groundwater and 83 percent of the surface water withdrawals occurred in Georgia.

Only about 5.6 percent of the total groundwater and nearly four percent of the total surface water withdrawals in the basin occurred in Florida. About 5.3 percent of groundwater and nearly 16 percent of

surface water were withdrawn in Alabama.

About 70 percent of all water withdrawals in the ACF Basin was by self-supplied agricultural water users and public water suppliers. Georgia had the largest public supplied population, representing nearly 93 percent of the public-supplied

ACF
Continued on Page 16



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Time for Petroleum Restoration Program work to shift into cleanup phases

By STEVE HILFIKER

It is time for more remediation. After two years and 2,000 assessments, the soil and groundwater cleanup industry should prepare for an increased workload. And a spike in remedial activity is on the horizon.

Due to the 2013-2014 legislative mandate to restructure the state Petroleum Restoration Program and Gov. Rick Scott's 2014 directive to ensure that all eligible sites are assessed within five years, the program has been out of balance with many site assessments and few actual remedial projects.

As assessments are completed, many sites are headed into remedial phases that will bring much needed balance to the petroleum cleanup industry.

Based on recent statistics, progress is being made with site closures. The extensive focus on assessment activity is finally bearing fruit.

Based on the March 30, 2016, PRP Dashboard report, we are on track to exceed the closure goal set by PRP of 350 eligible discharge sites rehabilitated and post one of the highest numbers in the history of the program.

This is good data that can be used to educate our various stakeholders.

As of March 30, there were 2,993 assessments but only 152 projects in remedial action construction/source removal

phases. This imbalance is difficult for environmental firms and their subcontractors to manage.

In addition to the expected progression from assessment to remediation, there are 1,433 discharge sites in supplemental assessment phases for pending remedial activity and 442 remedial action plans being prepared.

At the risk of repeating myself, a healthy state program depends on a healthy industry. Healthy contractors need a balanced, multi-disciplined staff of engineers, geologists, remedial field specialists, field technicians and subcontractors, including remedial vendors, drillers, waste disposal firms and laboratories, as well as the administrative staff that sustains them.

All of these organizations need some level of consistency to maintain efficient operations. Hopefully with more remedial work to balance the assessment activity, we—both PRP officials and industry working together as stewards of both the environment and the trust fund—can develop consistency with an annual progression of remedial sites. We need to keep all segments of our industry busy.

The substantial amount of pending remedial work should enable us to meet the combined 2015-2017 legislative budget appropriations by June 30, 2017, if the re-

medial work can be processed in a streamlined manner.

We need to make sure that our legislators who review program encumbrance and expenditure data know that the emphasis

on assessment this fiscal year will likely require a carry-over of the funds remaining in the 2015-2016 budget. That's not a problem because it will fund the much-needed

remedial work of 2016-2017.

Our collective goal is to close out these sites expeditiously, while being protective of human health and the environment. In the process, we will restore property values, create jobs, improve the economy and develop momentum for a healthy state program.

Since March 27, 1995, when former Gov. Lawton Chiles ordered the end of the Inland Protection Trust Fund reimbursement program, it has taken many years to restructure, for businesses to adjust, and for the program to regain any momentum.

The late 1990s, after the program was shut down, was a time of significant change for the environmental cleanup industry. We lost many talented cleanup professionals and our skilled, highly technical labor market suffered.

Many consultants left Florida to work in the Texas cleanup program and those that stayed shifted their focus toward real

estate transactions and other forms of marketable services.

On Feb. 18, 2013, when the announcement was made about the current program restructuring, we as an industry of both public and private sector environmental professionals were impacted once again. Many of our engineers, geologists, scientists, technicians, subcontractors and the professional administrative support staff were forced to change jobs, some to change fields.

For the past two years, steady progress has been made by PRP officials and new jobs are again available. We need this momentum to continue. Consistent workflow and funding is imperative.

So, let's finish the assessment work, close more sites and get additional remedial projects moving forward. Progress is being made and we—both industry and the PRP—are becoming more efficient.

Let's take petty issues off the table, move contaminated sites along from phase to phase, minimize project down-time, maintain site and project relationships, prevent start/stops, maintain site knowledge and work together as a team to get this done.

Steve Hilfiker is president of Environmental Risk Management Inc. in Fort Myers. He can be reached at steve@ermi.net.

Specifier guest column

Cape Coral approves deep injection well

By ROY LAUGHLIN

The Cape Coral City Council recently approved a contract to construct a new 3,200-foot-deep wastewater injection well.

The new well will be built at the city's Southwest Water Reclamation Facility to serve as a backup for disposal of effluent from the city's wastewater and reverse osmosis water treatment facilities.

The city council approved a well drilling contract with Youngquist Brothers Inc. of Fort Myers for \$4.3 million. The well is expected to be drilled in 210 days.

Final completion of a project to make the well completely functional for wastewater disposal will occur within 300 days. By the end of this year, the wastewater treatment plant will have a functioning backup Class 1 deep injection disposal well.

A year ago, the city awarded a separate contract to CDM Smith Inc. for \$1.193 million for inspection services, and a lump sum for design permitting and testing for the well. Total costs for the deep injection well including construction will exceed \$5.5 million.

The deep well project will complete the terms of a consent agreement between the Florida Department of Environmental Protection and Cape Coral's Utilities Department.

From time to time, the department had discharged RO reject into the Marauder Canal that carried the briny discharge into Finisterre Lake. Even with a variance, the RO reject water discharge exceeded standards allowed in Chapter 62-302.530, Florida Administrative Code.

In 2011, the city's Utilities Department had completed and was operating a Class 1 deep injection well system at their reverse osmosis water treatment plant.

That first well is permitted to dispose of up to 9.9 million gallons per day of non-hazardous reverse osmosis concentrate as well as nonhazardous treated effluent from the wastewater treatment plant.

With the completion of the second injection well, the department will now be in compliance with the consent agreement's disposal capacity.

During the wells' construction interval, the city retained surface water release capability for disposal of the reverse osmosis plant's reject water.

With completion of the latest backup deep well, Cape Coral will permanently cease RO concentrate discharge to Marauder Canal and downstream waterways.

Florida
Specifier

2016 Environmental Lab Directory

Each August, we turn our attention to the environmental laboratory business in Florida. As part of this special annual issue of the *Florida Specifier*, we include a directory of environmental labs providing analytical services in the state.

You're invited to complete the form below, providing details about your lab and its analytical capabilities. **There is a fee of \$200 to list your lab this year.** (*Fee waived for Specifier advertisers, and FRC exhibitors.*) In addition to your listing in the directory, **your lab will also be included in a special lab listing on our Enviro-Net website.**

Please type or LEGIBLY print the information requested and return as soon as possible to Mike Eastman via fax at (407) 671-7757, e-mail mreast@enviro-net.com or mail to P.O. Box 2175, Goldenrod, FL 32733. You can reach us at (407) 671-7777. The deadline for submissions to the August Lab Directory is **Friday, July 18, 2016.**

Note: If you were listed last year, we will be in touch. Do not complete this form.

Please include only lab operations, capabilities and personnel in Florida.

Laboratory name: _____

Primary Florida address: _____

City, State, Zip: _____

Phone: _____ Fax: _____

E-Mail: _____ Web: _____

Contact: _____ Title: _____

Locations in FL: _____

State of incorporation: _____ Years under same ownership: _____ years

Lab capabilities/specialties: _____

Sample types: _____

Certifications: _____

Additional services: _____

Number of years in business: _____ years

Staff: Total: _____ Engineers/scientists: _____ Technicians: _____

What single issue has most affected labs in Florida over the past year?

Are you a current *Specifier* advertiser or FRC exhibitor? _____ Yes _____ No

Contact me about: _____ Advertising in the *Specifier's* Lab Focus issue
_____ Submitting a column for the Lab Focus issue

Calendar

May

MAY 3 – Course: Initial Training Course for Spotters at Landfills, C&D Sites and Transfer Stations-8 Hour, St. Petersburg, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 3 – Course: Asbestos Refresher: Inspector, Dania Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 3 – Course: Asbestos Refresher: Management Planner, Dania Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 3 – Course: Refresher Training Course for Experienced Solid Waste Operators- 8 Hours, St. Petersburg, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 3 – Course: Refresher Training for Landfill Operators-16 Hours, St. Petersburg, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 3-4 – Course: Initial Training for Transfer Station Operators of and Materials Recovery Facilities-16 Hours, St. Petersburg, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 3-4 – Course: Refresher Training Course for Experienced Solid Waste Operators-16 Hours, St. Petersburg, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 3-5 – Course: Initial Training for Landfill Operators and Waste Processing Facilities, St. Petersburg, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 3-5 – Course: Initial Training for Landfill Operators and C&D Sites-24 Hour, St. Petersburg, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

Mar 3-5 – Course: Water Distribution Systems Operator Level 1 Training Course, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 4 – Course: Asbestos Refresher: Contractor/Supervisor, Dania Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 5-7 – Conference: Annual Convention & Trade Show of the Florida Ground Water Association, Orlando, FL. Call (850) 205-5641 or visit www.fgwa.org.

MAY 6 – Course: Basic Water and Wastewater Pump Maintenance, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 7-8 – Exam: Backflow Prevention Recertification Exam, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 7-15 – 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.

MAY 9 – Course: Introduction to Backflow Prevention, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 9-10 – Course: LNAPLs: Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation and Management, Denver CO. Presented by the Interstate Technology & Regulatory Council. Visit www.itrcweb.org/training.

MAY 9-13 – 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.

MAY 10-12 – Conference: Georgia Rural Water Association Spring Conference, Jekyll Island, GA. Call (770) 358-0221 or visit www.grwa.org.

MAY 13-14 – Exam: Backflow Prevention Recertification Exam, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 16-18 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 20 – Meeting: May 2016 Technical Meeting of the Florida Section of the American Water Resources Association, Safety Harbor, FL. Visit www.awraflorida.org.

MAY 22-24 – Conference: 20th Annual WaterReuse Research Conference, Denver, CO. Call (703) 548-0880 or visit www.watereuse.org.

MAY 22-25 – Conference: Annual Meeting of the National Association of Environmental Professionals, San Antonio, TX. Call (856) 283-7816 or visit www.naep.org.

MAY 22-26 – Conference: World Environmental and Water Resources Congress 2016, West Palm Beach, FL. Presented by the Environmental & Water Resources Institute. Call 1-800-548-2723 or visit www.ewricongress.org.

MAY 23-25 – Conference: North American Waste-to-Energy Conference, West Palm Beach, FL. Presented by the Solid Waste Association of North America. Call 1-800-467-9262 or visit www.swana.org.

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

MAY 24 – Course: The Science of Disinfection, Tavares, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

MAY 25-27 – Meeting: 2016 Spring Meeting and Technical Session of the Florida Society of Environmental Analysts, Sand Key, FL. Call (941) 748-5700 or visit www.fsea.net.

June

June 2-3 – Exam: Backflow Prevention Recertification Exam, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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

June 4-5 – Exam: Backflow Prevention Recertification Exam, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 4-5 – Exam: Backflow Prevention Recertification Exam, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 4-12 – Course: Backflow Prevention Assembly Tester Training and Certification, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 6-7 – Exam: 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.

June 7 – Conference: 2016 Brownfields Conference, Montgomery AL. Presented by the Alabama Department of Environmental Management. Visit <http://adem.alabama.gov/misc/2016bfconference.cnt>.

June 7-9 – Course: Process Control of Waste Treatment Plants, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 7-10 – Symposium: 17th Annual Florida Lake Management Society Technical Symposium, Daytona Beach Shores, FL. Visit www.flms.net.

June 8 – Symposium: 4th Annual Southwest Florida Regional Brownfield Symposium, Sarasota, FL. Presented by the Florida Department of Environmental Protection South District and the Southwest Florida Regional Planning Council. Contact Terry Cerullo, DEP, at (239) 344-5647.

June 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.

June 13-15 – Course: Asbestos: Inspector, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 13 – Course: Introduction to Backflow Prevention, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 14-15 – Course: Cross Connection Control: Survey and Inspection, Gainesville, FL. Presented by

the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 15 – Course: Hazardous Waste Regulations for Generators, Palm Coast, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 15 – Course: Refresher Training Course for Experienced Solid Waste Operators-8 Hours, St. Augustine, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 15-16 – Course: Refresher Training Course for Experienced Solid Waste Operators-16 Hours, St. Augustine, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 15 – Course: Initial Training Course for Spotters at Landfills, C&D Sites and Transfer Stations-8 Hours, St. Augustine, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 15-17 – Course: Initial Training for Landfill Operators and Waste Processing Facilities, St. Augustine, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 15 – Course: Refresher Training for Experienced Solid Waste Operators & Spotters-4 Hours, St. Augustine, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 15-17 – Course: Initial Training for Transfer Station Operators of and Materials Recovery Facilities-16 Hours, St. Augustine, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

June 15-17 – Course: Initial Training for Landfill Operators and C&D Sites-24 Hours, St. Augustine, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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June 4-5, 2016 - Tampa
June 6-7, 2016 - Lake Buena Vista
June 17-18, 2016 - Venice

Backflow Prevention Assembly Tester Training & Certification (Two consecutive Fri. & Sat.)

June 3-11, 2016 - Ft. Myers
June 18-26, 2016 - Tampa

Introduction to Backflow Prevention

June 13, 2016 - Gainesville

Cross Connection Control: Survey & Inspection

June 14-15, 2016 - Gainesville

Cross Connection Control: Ordinance & Organization

June 16-17, 2016 - Gainesville

Backflow Prevention Assembly Repair & Maintenance Training & Certification

June 8-10, 2016 - Lake Buena Vista
June 24-25, 2016 - Venice

Asbestos: Inspector

June 13-15, 2016 - Gainesville

Asbestos: Management Planner

June 16-17, 2016 - Gainesville

Process Control of Waste Treatment Plants

June 7-9, 2016 - Gainesville

Wastewater Class C Certification Review

June 21-24, 2016 - Gainesville

Hazardous Waste Regulations for Generators

June 15, 2016 - Palm Coast

U.S. DOT Hazardous Materials/Waste Transportation

June 16, 2016 - Palm Coast

Initial and Refresher Solid Waste Management Courses (Held with RFT)

June 15-17, 2016 - St. Augustine

Florida Specifier

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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 only. The opinions expressed on this page are those of the authors.

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FEDFILE
From Page 2

rics and packaging systems for industrial and consumer use. The EPA's award acknowledged its "sustained excellence for continued efforts to strengthen its energy program throughout the corporation and its active partnership with Energy Star."

The EPA cited Jacksonville Building Sciences, which offer services and expertise in the fields of energy rating and construction engineering, for its support of Energy Star homes certification.

Manitowoc Foodservice Inc. in New Port Richey designs, manufactures and supplies food and beverage equipment internationally under several brand names. The EPA cited it for sustained excellence in its support of the Energy Star specification development process, leadership in marketing Energy Star certified products, and efforts to educate employees and end-users on the benefits of Energy Star certified products.

The EPA recognized Parmenter Realty

Partners in Miami, a nationwide real estate investment, management and development firm that specializes in commercial property, for its commitment to energy efficiency improvement through renovating underperforming properties.

Providence Homes in Jacksonville has since 2009 been building only Energy Star certified homes. EPA's award recognized that commitment.

SkyeTec in Jacksonville, an energy rating and indoor environmental consulting company, provides third-party inspections to residential and commercial contractors nationwide. The EPA recognized its support of the Energy Star Certified Homes program.

Last on the list is TopBuild Homes in Daytona Beach, one of the nation's largest home energy rating companies. The company conducts two programs, Environments for Living and Energy Star, to help make homes energy-efficient, durable and safe. The EPA's award recognized its contribution to rating Energy Star certified

homes

EPA's Energy Star is a cooperative program with the U.S. Department of Energy. It promotes energy efficiency and the reduction of greenhouse gas emissions and has about 16,000 partners nationwide.

The EPA's Energy Star is "the most widely recognized symbol for energy efficiency in the world," said the agency.

EPA said that families and businesses have saved \$362 billion in utility bills and reduced 2.4 billion metric tons of greenhouse gas emissions since 1992 by using Energy Star-certified appliances, equipment and management practices.

Haz waste board of experts named.

The EPA appointed eight new members to its Hazardous Waste Electronic Manifest Advisory Board. The board's charge is to advise the agency on the development and operation of an electronic system for tracking hazardous waste shipments nationwide.

The advisory board will also make proposals for the electronic manifest system that will align waste material tracking with EPA Administrator Gina McCarthy's e-Enterprise strategy.

The overall goal is to reduce reporting burdens on states and industry while providing easier access to environmental data.

The advisory committee will provide advice on regulation and guidance, evaluate system effectiveness and explore options to encourage system usage.

It will meet periodically beginning later in 2016.

EPA implements ship ban. In March 2015, the U.S. Coast Guard discovered an improperly attached hose on the Antigua and Barbuda flagged multipurpose M/V BBC Magellan ship.

The Coast Guard alleged in a citation that between January and March of 2015 the ship's crew used the hose to pump oily wastes from the vessel's holding tanks and discharge the wastes directly into the ocean.

The crew also failed to make required entries into the vessel's oil record book. The Coast Guard also alleged that the chief engineer instructed the ship's crew to lie to Coast Guard inspectors about discharges.

In mid-March, the two German companies that own the ship pleaded guilty to violating the Act to Prevent Pollution from Ships by failure to maintain an accurate oil record book.

They also pled guilty to tampering with witnesses by persuading them to provide false statements to the Coast Guard about the bypass hose and discharge of oil to the ocean.

The two companies will pay \$1.25 million in fines and a \$250,000 community service payment to the National Fish and Wildlife Foundation to fund projects that will enhance coastal habitats of the Gulf of Mexico and bolster priority fish and wildlife populations.

In addition, the ship is banned from U.S. ports for the next five years.

Obama administration rescinds drilling plan. In a surprise announcement, the Obama Administration rescinded plans for offshore continental shelf oil and gas drilling.

In January 2015, the U.S. Department of the Interior's Bureau of Ocean Energy Management announced a five-year plan to begin leasing offshore continental shelf tracts for oil and gas drilling. The first leases to be offered would have been off the shores of Virginia and North Carolina, and would have reached Florida by 2022.

The 2015 announcement of intention to lease also initiated the widespread use of underwater compressed air cannons for seismic surveying.

Environmentalists oppose that, saying that the sounds injure and disorient underwater marine organisms, particularly whales and fish that depend on sound for sensing the underwater environment and communications.

Adversaries of the offshore leasing plan hailed the reversal decision as a victory for local coastal communities. While the

governors of Virginia, North Carolina, South Carolina and Georgia strongly endorsed the proposed offshore drilling, more than 80 coastal state legislators and the owners of more than 1,000 coastal businesses signed letters to the president opposing the drilling.

In all, over 106 coastal towns and cities passed resolutions opposing offshore drilling. At least six local governments in Brevard County passed resolutions opposing offshore drilling even though no exploitable oil or gas reservoirs are known to exist off Central Florida, and the likelihood of any undiscovered reservoirs is considered remote.

Opposition stems partly from the fact that existing tourism, fishing and real estate development efforts make a far greater economic contribution, particularly in Florida, than any promise of oil riches.

Others fear oil contamination from an accident such as the Deepwater Horizon oil spill in the Gulf of Mexico.

The Interior Department estimated that 3.3 billion barrels of oil and 31.3 billion cubic feet of natural gas could be recovered in Southeast coastal waters. Energy industry experts claim that the quantity is even more.

With the about-face in the federal leasing plan, it could be decades before any estimates could be verified by the first drilling projects.

The decision to suspend oil and gas leasing on the Atlantic OCS does not affect seismic surveying.

A couple of years ago, the Obama administration accepted survey permits for virtually the entire Atlantic region, up to 90,000 square miles, according to Michael Jasny, director of the Marine Mammal Protection Project's Land & Wildlife Program at the Natural Resources Defense Council. Those permits are still pending.

Environmental activists specifically oppose the use of underwater sonic cannons for seismic surveying.

Advocates are particularly concerned about the endangered Atlantic Right Whale, whose winter breeding grounds off the coast of Florida and Georgia are part of the survey area.

Attempts on several fronts including court challenges have not been effective at ending or modifying underwater sonic cannon use.

CERP report submitted. The 2015 Comprehensive Everglades Restoration Plan report submitted to Congress earlier this year trumpeted an unprecedented level of success in the partnership between the federal government and the state of Florida over the past five years.

During the reporting time frame 2010-2015, the South C-44 Reservoir and stormwater treatment area projects, the Picayune Strand Restoration Project, the Faka Union Pump Station, the C-111 Spreader Canal Western Project and the Melaleuca Eradication and Other Exotic Plants Research Annex were completed.

Hoover Dike upgrades around Lake Okeechobee continue to make progress, but water releases from Lake Okeechobee have continued while the Hoover Dike improvement projects are being completed.


The water releases are causing significant environmental problems. To address those problems, the federal and state partnership provided additional funding for the construction of restoration projects for the Indian River Lagoon that are now in the early stages of implementation.

The restoration of water levels and flows to Everglades National Park is in its early stages of testing, and work on three more construction projects, including a reservoir in Palm Beach County and canals and control structures in Miami-Dade County are underway.

In the 2000 Water Resources Development Act, Congress required the U.S. Department of the Interior and the U.S. Army Corps of Engineers to jointly submit a CERP report. The 2015 report is the third of the iterative five-year cycle.

The two collaborating federal agencies finished the draft in late summer last year. The final draft incorporated changes following public comment.

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Research provides insight into two possible sea level rise scenarios

By ROY LAUGHLIN

A recent report published in *Nature* by three demographers describes the effects on U.S. coastal communities under two sea level rise, or SLR, scenarios—one with a three-foot increase and one with a six-foot increase.

The researchers' approach is novel in two ways. First, they modeled population growth for the 21st century based on existing data for each of the continental U.S.'s 319 coastal counties. Then they used elevation and flood risk data for those counties to estimate a dynamic flood hazard model for the small area population projections county by county.

Under the SLR scenario for a three-foot increase, the researcher's estimated 4.2 million coastal residents would face significant disruptions. If there is a six-foot increase, the number of seriously affected residents increases to 13.1 million.

Matthew Hauer, one of the report's authors and a doctoral student in geography at the University of Georgia, said that his data showed that, even at the community level, some neighborhoods will be under water while adjacent ones will remain livable and secure.

The report is significant, especially for Florida, due to its fine grain analysis.

SLR will not uniformly affect every U.S. coastal community. There are 31

counties in the coastal U.S. where more than 100,000 residents could be affected by a six-foot sea level increase. The Southeast U.S. alone represents nearly 70 percent of the entire projected populations at risk.

And within the Southeast, Florida accounts for nearly half of the total at-risk population, Hauer said.

The three most vulnerable counties according to the recent analysis are Monroe County in Florida, and Hyde and Tyrell counties in North Carolina.

Eighty percent up Monroe County's residents would experience serious flooding effects. Miami-Dade and Broward counties together would account for more than a quarter of the U.S. population adversely affected by a six-foot SLR by 2100.

Tampa-St. Petersburg would fair a bit better, experiencing serious levels of population impact under the three-foot SLR scenario.

The authors noted in the report that "potential growth management strategies in high risk areas experiencing rapid population growth could also prove more effective than relocation" to avoid affecting millions of people in the coming decades if SLR theory becomes SLR reality.

So how is Florida managing growth in one of its highest SLR risk areas?

Eight of Florida's ten tallest buildings are in Miami and the trend to build addi-

sufficiently to allow the federally listed species to be reclassified from endangered to threatened.

The canals are home to roughly twenty percent of the American crocodiles residing in the U.S. Counts conducted in 2015 indicate a serious decline in those numbers.

Advocates base their legal case on the unauthorized point source discharge of pollutants into waters of the U.S. and Biscayne Bay in violation of the Turkey Point facility's National Pollution Discharge Elimination System permit.

They believe that the discharge of pollutants has led to violations of water quality standards in Biscayne Bay, which is protected from degradation as an Outstanding Natural Resource Water and Outstanding Florida Water.

They also claim that the canal discharges are affecting groundwater supplies, resulting in a threat to the water supply of Miami-Dade County and the Florida Keys.

The Southern Alliance for Clean Energy and Tropical Audubon Society notice of pending lawsuit gives regulators 60 days to take action against the utility. Absent regulatory action, the advocates will sue seeking civil penalties or an injunction for violation of the Clean Water Act.

conservation and reductions in nutrient release to ground and surface waters.

Notably, no single specific contract provision to guarantee benefit durability was used in all contracts.

Unlike federal programs characterized in the recent EWG report, Florida's cost-share programs include stipulations to ensure that the public benefits are persistent for periods of between three and 20 years.

Beyond that, all district spokespeople contacted said that cost savings from the practices were sufficient enough to expect the farmers to continue beyond the contract requirements.

Each WMD has different cost-share ratios, spanning from 10 to 50 percent.

No one contracted at the districts could recall even a single example of cost-share recipients acting in bad faith by, for example, selling the equipment when the contract ended.

In Florida, public funds applied to agricultural cost-share projects are intended to persist well past the year or two of funding.

So far, experience indicates that the public receives a durable, long-term conservation benefit from agricultural cost-share contracts for water conservation and water quality.

tional high rises in this most vulnerable land area is accelerating.

High rise construction creates the highest population densities and Miami's Biscayne Bayside population density rivals that of anywhere else in the western hemisphere.

In February 2014, Miami-Dade County logged more than a hundred high rise crane permits for high density high-rise construction and 40 of those were reported under construction by the summer of 2014.

The boom has already added an estimated 30,000 residential units to Miami and Miami Beach's inventory, all close to Biscayne Bay in the most vulnerable areas.

Soggy carpets will not be the first SLR experience that causes South Florida residents to flee high water. Infrastructure pro-

viding public health, sanitation and transportation will fail first and perhaps massively in the time frame of a decade or two.

But local officials have not yet seen the need to develop plans to avoid it.

Would potential future residents avoid moving to an area a generation before it floods?

Until this study, that question was largely irrelevant because few who moved into an area prone to flooding expected to live long enough to experience it.

So far, there's little evidence that it factors into decisions to move to coastal Florida counties. But children living in Florida today will experience extensive SLR flooding in populated areas of coastal counties if they intend to remain life-long residents, the report said.

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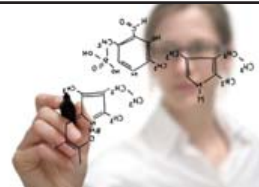
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DRILLING

From Page 1

hands-on skills that bring projects to successful completion.

Drillers obtain subsurface soil and groundwater samples, place sensors, install infrastructure for pump and treat systems, inject in-situ bioremediation treatment products, and make geotechnical measurements using specialized probes drilled or pushed into the ground, all while minimally disturbing the ground surface and structures on it.

The recession at the end of the last decade dealt environmental professionals in all disciplines a hard blow. Environmental drillers were hit as hard as the consultants and engineers for whom they typically work.

The industry is now growing again, but it has not yet returned to its pre-recession size. Market conditions have evolved, structurally changing business opportunities. The footprint of the industry and some of its largest practitioners are different now than a decade ago.

The majority of the drilling companies

we spoke with are owner-managed small businesses with several million dollars in capitalization and less than 25 employees.

Many are smaller, and a few are part of regional or nationwide organizations with more than \$20 million in capital investment, dozens of employees and multiple office locations.

And most also now serve clients outside the narrow niche of environmental and geotechnical drilling now.

Environmental consultants, geologists and engineers are environmental drillers' typical clients. Drillers' projects commonly include preliminary site assessments, environmental cleanup, groundwater monitoring, and other geotechnical work.

A few of the companies in one band of the drilling spectrum offer consulting services, with environmental drilling just a part of the overall business.

Cascade Drilling LP, in conjunction with its sister organization Cascade Technical Services, is one example of a large organization that offers both consulting and drilling services.

Brian Gose, business development

manager in Cascade Drilling's Orlando office said his company has 30 rigs available but also offers a broad range of consulting and remediation services.

Last year, Cascade purchased Zebra Technical Services LLC, a New York-based company very active in Florida. They now offer environmental drilling, infrastructure and industrial project drilling and consulting services.

Cascade's purchase of Zebra may signal some level of drilling services consolidation in the near future. While one example does not indicate a trend, market consolidation could become a significant reorganizing force in Florida's drilling enterprise, resulting in drilling being only one part of a diversified company's capabilities mix.

Finding employees

Finding the right employees and keeping them is one of the most challenging issues for drilling managers and owners.

Everyone interviewed for this story said they have hired additional personnel recently and are in the process of hiring more. All mentioned that finding the right person is difficult.

Ben Huss, president of Huss Drilling Inc. in Dade City, said that much of his hiring involves replacing people who move on to other jobs for various reasons, a few of them at his suggestion, revolving around the rigors of working outside in Florida's intense summer heat.

"We're hiring in virtually all divisions, especially geotechnical and environmental divisions," said GFA's Kaub. "But it's always hard to find the right people."

State program opportunities

Before 2009, Florida's various petroleum cleanup programs—predecessors of the current Petroleum Restoration Program—had annual cleanup budgets exceeding \$200 million. Environmental drillers as a group were substantially invested in those state-funded programs.

But deep budget cuts made at the state in 2010, continuing through the 2013 petroleum program reform effort, sharply reduced state spending on soil and groundwater cleanup related to petroleum-contaminated sites. Necessarily, drillers followed their clients to new kinds of projects—projects driven by non-program funding sources.

Today, current PRP program work represents a smaller proportion of environmental drillers' total portfolios than before 2009—sometimes a much smaller proportion.

Two aspects of PRP-related work are responsible for this. The first reflects the impact of an annual PRP budget approximately half that of pre-recession years.

Actual PRP spending has been roughly \$125 million for each of the past two years. This year, spending is expected to increase somewhat and is likely to remain consistent for the next few years.

The second contributing factor is that the program is now making use of the state's MyFloridaMarketplace's e-procurement system to get project cleanup contracts on the street.

If PRP officials issue close to \$10 million a month of approved contracts, drilling work could increase noticeably.

Drillers said that since last fall, the pace of PRP contracts has hastened noticeably, so it is reasonable to predict that PRP's share of the drilling enterprise is trending toward an uptick.

But while PRP contracting levels are on the rise, the e-procurement process now in use has held the line on pricing for sub-contracted services within the program, including drilling.

Opinions vary as to whether PRP contracting practices are broadly influencing the downward push on rates for drilling in Florida.

"I don't think the PRP has driven prices down or affected prices," said Campbell. "Every job is its own animal."

Others interviewed said that, with respect to PRP's influence, the pressure to keep project costs down has had a notable impact on their top lines. They said that PRP reform practices are at least strongly influencing, if not directly affecting, environmental drilling prices.

Huss, whose firm is one of the more active PRP drillers, said that the program is still using the prices submitted three years ago when it first established its list of agency term contractors.

"Once the prices were sent in, you can only decrease them," he said. "You can't increase them."

Huss said that most drillers have increased prices annually for other customers, including public sector organizations such as the water management districts.

But the small price increases have had little effect on driller profitability. Insurance costs have increased quite a bit, he said, as well as other operating expenses.

In addition, Huss said he would like to see more flexibility in scheduling within the state program so that he can minimize down-time between projects.

For example, on PRP's Low-Scored Site Initiative contracts, drillers may be scheduled for three days of work, but if baseline sampling shows no contamination, they must wrap up early.

If he is contracted for more than one site at three days each, he can't move up the other scheduling, leaving him with one or two days of no work for his crew, and thus no payment.

Pricing

The pricing structure for drilling jobs and the profit that drillers are able to earn depend on several factors. The most important is that contractors are paid by the foot drilled.

Small jobs, whether they are PRP-related or for private clients, are the most challenging with respect to profitability. But since there are more of them, smaller jobs are often seen as a driller's "bread and butter," keeping employees busy and cash flowing between the larger, more profitable projects.

Work for private clients, real estate developers for example, are typically more lucrative because they are larger and frequently more complex. Such clients are usually more amenable to spending what it takes to get the job done right and in a timely manner.

Technology

Florida's environmental drillers predominantly use direct push technology and sonic drill rigs in their work. Both of these methods are quicker than alternatives and have similar advantages, but their widespread adoption has depended on different factors.

Sonic drilling was first developed back in the late 1800s. It made its entrée among Florida drillers in the 1980s when mini-sonic drill heads came on the market at a price below half a million dollars.

Prior to that, sonic rigs were large with price tags to match—well over \$1 million and too expensive for most of Florida's environmental drilling firms.

Direct push technology rigs entered the Florida market in the mid-1990s, about 10 years after mini-sonic rigs. Direct push rigs initially cost about \$300,000, but the prices increased as the rigs become more sophisticated and capable of performing specialized drilling operations.

The prices of sonic and direct push rigs are competitive with one another now, strongly influencing their co-dominance with Florida drillers.

After price considerations, drillers focus on efficiency and the ability of the rig to work in tight spaces, often in urban settings.

DPT and sonic rigs produce the least amount of cuttings while drilling. Both produce substantially less than drill rigs used before them.

For example, DPT may yield only a third the cuttings of older techniques. This is extremely important when working at a contaminated site, because the cuttings have to be handled and disposed of as contaminated waste. They must be containerized and hauled to a suitable landfill for disposal.

Reducing cuttings volume by two thirds can significantly influence a driller's costs.

Doug Leonhardt, president of Environ-

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Study looks at WWTP's effluent contribution of microplastics to environment

By ROY LAUGHLIN

Timothy Hoellein, a professor in the Biology Department at Loyola University in Chicago, along with his colleagues are filling in a lot of the blanks in our understanding of how microplastics make their way into the environment.

Microplastics are particles of man-

DRILLING

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mental Drilling Service Inc. in Orlando, noted that direct push technology is "really nice for going out and doing a quick site assessment."

In Florida, he said, it can easily reach the water table.

GFA's Kaub noted that matching his firm's equipment capability with the right opportunity to showcase it has been valuable to his firm in the past.

GFA got involved early with rehabilitation investigations of Hoover Dike that encircles Lake Okeechobee.

"We have the best wireline coring out there," he said. "We do borehole camera imaging, along with getting samples."

That type work in South Florida has opened the door to additional opportunities in other states where dam and levee safety issues are being addressed.

On the geotechnical side, cone penetrometer testing for direct push is DOT's preferred soil testing method during highway construction. Drillers with that kind of rig have an inside track for contracts.

Leonhardt suggested that incremental changes and improvements in technology, which he has seen during his 30 years as an environmental driller, is a scenario that he expects will continue.

Safety

For drillers, the highest level of safety on the job is essential. Looking out for the safety and well-being of his crew is any drilling project manager's number one priority. Plus, a clean safety record is the primary tool a business owner has to exercise control over his insurance rates.

Huss said that for federal contractors and power companies, a poor safety record will cause a driller to lose a contract.

Kaub echoed that observation with respect to GFA's top clients. Some of those clients are big companies with embedded job safety cultures.

"We've upgraded our safety practices based on what we've learned from these big companies," he said.

Heavy industries have higher risks and a history of more injuries, but that doesn't mean that drilling companies in particular will accept that as an uncompromising fact of life.

"We are over 2,000 days without a man-hour loss," Kaub said proudly. "We take that very seriously."

The future of pricing

Though the state of the market for drillers is much better now than a few years ago, drillers may be coming to an economic crossroads.

For decades they have been paid by the foot drilled. Although there are different prices for different types of work, these prices have been static or, at best, have increased more slowly than costs.

So far, drillers have maintained profitability through technology innovation and project efficiency that allows them to drill more feet per week, thanks to rigs that have become more specialized.

But the traditional price-by-the-foot model may not support drillers doing the work in the future. Kaub, for one, said that drillers have to do a better job of keeping prices in line with the value of the service.

"We have to be realistic about how we price and what we demand in the marketplace, he said. "(Clients who need) equipment with certain characteristics should pay more."

Whether a sector with as much competition as the drilling industry will be able to keep prices high enough to cover increasing costs and provide some level of profitability remains to be seen.

made synthetic polymers generally smaller than one millimeter in length.

One common category of microplastics includes physical breakdown products of plastics like polyvinyl chloride, polypropylene and polycarbonate used in consumer goods and packaging.

Microbeads have emerged in the past few years as another distinct category. These are small beads or particles put into consumer products, particularly cleansers and personal care products. They enter wastewater streams in prodigious quantities and end up in wastewater treatment plant effluent released to surface waters.

Textile fibers are a third category of microplastics that also enter the environment predominantly in wastewater treatment plant effluents. They result primarily from laundering fabrics.

Hoellein said that over 50 percent of the microplastics his researchers identified in river samples from 11 sites have been fibers, with the remainder being plastic fragments and beads.

Two classes one might expect to see—pieces of plastic films and pieces of PVC—are not very common, he noted. They separate microplastics by density using a salinity gradient solution. He said that because PVC, in particular, is a dense material, they may be missing it.

Recent surveillance of marine and freshwater environments has shown that microplastics are ubiquitous, with the primary difference among areas being the amount of microplastics present.

Hoellein's recent research makes a clear case that WWTPs are a source of microplastics in rivers, even though properly operated WWTPs can filter out 90 percent of microplastics from effluent.

He said he prefers to interpret his results to say that WWTP are specifically "a point source" of microplastics.

Especially in smaller rivers, a wastewater treatment plant may release enough microplastics to create sediment microhabitats dominated by plastic particles. As a result, the microbial communities in sediments with significant microplastic are a distinctive niche with its own characteristic microbial community.

Hoellein said that biofilm-forming *Pseudomonas* species are prominent in microplastic debris accumulations in sediments. The researchers used a genetics probe to identify the 16S rRNA gene. That gene's variants are a tool to classify microbial families in riverine microbial communities including those found in high microplastic samples.

One perplexing surprise was that *Campylobacter* was found prominently in microplastic samples below WWTP outfalls. *Campylobacter*, an enteric bacterium that may be pathogenic, is one that WWTP processes remove from the effluent.

"They are supposed to die off, but they live in high abundance on plastics," said Hoellein. "Maybe there's something about the microplastic mass and organisms associated with them that helps bacteria sur-

vive."

A microplastic surveillance effort is now underway in Florida, conducted by Dr. Maia McGuire, through a Florida Sea Grant-funded network of volunteers.

McGuire said that microplastic levels found at one treatment plant site in Escambia County were pretty high. But samples collected close to WWTP discharges in Duval, St. Johns and Flagler counties were not significantly higher than other sites.

In fact, she said that some of the sites with highest amounts of plastic are not anywhere near a WWTP discharges.

One technological fix for ending microplastic inputs from wastewater plants could be the use of sand filters, noted Hoellein. Drinking water plants that filter river water with sand filters have no microplastic particles in their finished product.

It might be possible for wastewater treatment plants to adopt sand filtration technology to remove microplastics from effluents before release to rivers.

It is not Hoellein's intention to give the impression that WWTP operators are doing a bad job. He emphasized that every WWTP staff member has been supportive and helpful.

"I've appreciated that sense of collaboration and interest in the truth," he said. "It is not a fault of the system or the people who work in treatment plants."

It is just part of a process of incremental improvement needed to eliminate microplastic releases in WWTP effluent.

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RIVERWATCH

From Page 1

for clean water in the region.”

The Riverwatch has been active on the Caloosahatchee for about 20 years. The advocates champion the river’s watershed and perform public services such as clean-ups and educational outreach.

Joining the Waterkeeper Alliance brings access to a network of national lobbyists, organizational expertise and international visibility to the Caloosahatchee group.

“Waterkeeper Alliance is a global movement,” said Bart Mihailovich, Waterkeeper Alliance’s affiliate coordinator.

There are more than 270 Waterkeeper

organizations and affiliates who patrol and protect more than two million square miles of rivers, streams and coastlines in the Americas, Europe, Australia, Asia and Africa.

“Caloosahatchee Riverwatch as a Waterkeeper Affiliate will have an incredibly important job,” said Marc Yaggi, executive director of the alliance. “Waterkeeper affiliates defend their communities against anyone who threatens their right to clean water, from law-breaking polluters to irresponsible government officials.

“Until our public agencies have the means necessary to protect us from polluters and the will to enforce the law, there will always be a great need for people like John Capece (a Riverwatch founding

member) and the team at Caloosahatchee Riverwatch.”

The Caloosahatchee River is an approximately 67-mile long channelized flood control and navigational waterway that drains rural areas at the northern edge of the Everglades east of Fort Myers and flows west to San Carlos Bay and the Gulf of Mexico.

The river forms part of the Okeechobee Waterway.

The new director will patrol the river in search of pollution issues and violations, collect samples, and document conditions and activities for presentation to the public and governing agencies.

Significant historical modifications have been made to the Caloosahatchee River and its watershed. The hydrology of the region no longer functions as a natural system.

Heavy rainfall and associated fresh water runoff may result in large volume stormwater discharges in both the basin and Lake Okeechobee into the Caloosahatchee Estuary.

NOTES

From Page 3

U.S. Environmental Protection Agency officials said that contamination of the groundwater is relatively insignificant and there is no public health threat or environmental concern.

But the agency has not completed its final report explaining exactly what the current level of toxins is and what cleanup plans are needed.

Seminole State’s new land is located next door to the former Sprague Electric Co. factory that operated until its closure in 1992.

The property donation also includes about 80,000 square feet of building space. It was given by Norman and Jean Gould who operated a printing business at the property.

Seminole State officials have not yet determined how they will use the property.

Company news. Advanced Drainage Systems Inc. has opened a new distribution center in Panama City Beach, the company’s fourth location in the state.

The company manufactures water management products and solutions for non-residential, residential, infrastructure and agricultural applications.

The company has a network of 61 manufacturing locations and 31 distribution centers worldwide.

Global consulting firm Stantec Inc. entered into a definitive merger agreement to acquire MWH Global Inc. a Colorado-based engineering, consulting and construction management firm.

Both companies have multiple office locations throughout Florida.

The influx of freshwater adversely impacts salinity levels and water quality in the estuary, frequently resulting in ecological stress and the risk of algae blooms.

Recently, as a result of record January rainfall, the U.S. Army Corps of Engineers released six billion gallons of water a day from Lake Okeechobee into the Caloosahatchee to reduce pressure on a dike that protects South Florida from flooding.

The water formerly drained into and replenished the freshwater Everglades. Now it drains into saltwater estuaries and the Gulf of Mexico to protect privately held commercial operations.

The same operations withdraw fresh surface water from the lake during dry weather for irrigation, so drainage needs to be carefully balanced to assure natural resources are available when needed.

ACF

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population in the basin.

Public water suppliers served 193,700 people in Alabama and 31,880 people in Florida. Withdrawals for public supply and self-supplied industry were greatest in the Chattahoochee River Basin. Surface water accounted for 96 percent of all withdrawals in that basin.

The report said that water use trends in the ACF basin have varied during the 25 years between 1985 and 2010. Groundwater withdrawals increased between 1985 and 2000, declined in 2005, and then increased between 2005 and 2010.

Jessica Boyd, a spokesperson for the Florida Department of Environmental Protection, said the health of the Apalachicola River and Bay is vitally important to the environment and economy of Northwest Florida.

“The state of Florida remains committed to the protection of this waterbody and to fighting for the families who depend on it,” she said.

In August 2013, Florida Gov. Rick Scott announced that the state would file a lawsuit in the U.S. Supreme Court, requesting equitable apportionment of water in the ACF Basin. In November, the court agreed to take up Florida’s lawsuit.

“The lawsuit is ongoing,” Boyd said.



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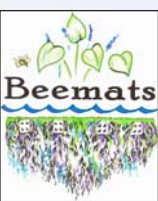
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