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Practical Information For Environmental Professionals

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Audubon challenge 5

Audubon Florida has challenged permits that allow three sugar cane farms in the Everglades Agricultural Area to release polluted water into the River of Grass.

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A state hearing officer has advised against approving a Bay County permit application for pumping millions of gallons a day of groundwater along the Washington County line.

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International Paper Co.'s Pensacola plant is close to completing a \$69 million water quality improvement project to divert effluent from Eleven Mile Creek.

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When Flagler County officials stepped forward with a plan to compare notes on conservation lands with the St. Johns River Water Management District, a road map for inter-agency cooperation was created.

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While most of the recent attention on using the incremental sampling methodology seems to be focused on performing contamination assessments, ISM also applies to remediating sites. SCS' Mark Tumlin weighs in.

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Got a story lead?

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

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Grassroots effort underway to lock in annual state-wide conservation funding

By SUSAN TELFORD

Growing weary of watching the state's natural resources deteriorate, a grassroots alliance led by former Senator Bob Graham is building momentum to save what is left of the state's waterways, springs and natural areas.

"It's a broadly held Floridian value," said Pegeen Hanrahan, PE, principal of Community and Conservation Solutions LLC and a spokesperson for Florida's Water and Land Legacy campaign.

"Strong environmental conservation began with Gov. Martinez with Preservation 2000, and then later with Florida Forever," she said. "Since 2009, the funding has been cut by 97.5 percent. Given the extreme nature of the direction things were going, we had to do something."

The Florida's Water and Land Legacy is a coalition of the state's leading conservation organizations including the Florida Wildlife Federation, Sierra Club, Trust for Public Land, Audubon Florida and concerned Floridians who value the natural beauty of Florida's precious resources.

Targeting the November 2014 ballot, these groups have combined voices to launch a major constitutional amendment campaign that will assure that adequate funding is dedicated to areas like the Everglades and to protecting the state's waterways and lands.

"Lots of people active in the environmental world during the 1970s, 80s and 90s were happily retired until the 2011 Legislative Session," said Estus Whitfield, a Florida Conservation Coalition charter member and former principal environmental advisor to five Florida governors.

"Less government, cut taxes, less regulation—all in the name of jobs.

They (the current Legislature) have done some real damage. And when Florida Forever went unfunded again, that was the final slam-dunk," said Whitfield. "That brought forth attention and we formed the Florida Conservation Coalition, a loose-knit organization

AMENDMENT
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Photo by Shawn Tibbetts

Direct sensing specialists from ZEBRA Environmental perform MIP and HPT work with a 8040DPT unit. Brad Carlson with ZEBRA will describe the use of the modified combination probe that can be used in the field for sample collection at the 18th Annual Florida Remediation Conference in October.

Adena Springs to cut consumptive use request by 60 percent

By MELORA GRATAN

Officials with Adena Springs Ranch announced recently that they are changing a controversial consumptive use permit application that requested pumping of up to 13.267 million gallons per day of groundwater to a permit asking for 5.3 mgd.

Frank Stronach, the ranch's owner,

plans to create an agricultural first for Florida with a cattle operation that would raise the animals locally without the need for drugs, confinement or shipment to other parts of the country.

However, the initial CUP application raised a lot of eyebrows from individuals and organizations that voiced concerns over current drought conditions,

declines in area spring flow and regional groundwater levels, as well as the potential for exacerbating nutrient pollution.

The announcement was made during a public meeting held by ranch officials who said the cuts are being made possible by keeping the cattle on satellite farms longer and implementing efficiency improvements in areas such as irrigation systems.

However, the requested reduction did not change the opinion of some, including Robert L. Knight, PhD, director of the Howard T. Odum Florida Springs Institute.

"They (ranch officials) will very likely request CUPs for those farms that may be located in areas such as Putnam or Levy counties. While it takes the burden off of Silver Springs, it spreads it out; and regional pumping is still what is causing the burden on the springs system."

The idea that the impact will be spread out regionally is simply not true, said Honey Rand, a spokesperson for Adena Springs.

"Anyone who sat through the meeting knows it is absolutely false. This is an overall reduction because of management and operational changes. They (ranch personnel) have heard, listened and acted."

Although which satellite farms will be chosen to house the cows longer has not been decided yet, the farms will probably be as close to the Adena loca-

FRC 2012 Preview:

Technical advances, practitioner competence advance the discipline

By ROY LAUGHLIN

The pace of innovation seems to be on the upswing in the soil and groundwater cleanup business, a gratifying sequel to the economic downturn of the past few years.

The talks at this year's Florida Remediation Conference, set for Oct. 11-12 in Orlando, describe several areas that include extending successful remediation to low pH groundwater; a better understanding of how remediation treatments dovetail with biogeochemical processes in groundwater; and tweaks of strong oxidation treatments and surfactant extractions for initial remediation treatments.

Bioremediation, the in-situ use of

microorganisms injected or fostered by nutrient additions, is prominent in the technical program at this year's conference.

Bioremediation has evolved from being considered a snake-oil technique that might work, to an effective method of removing many contaminants when concentrations drop to the parts-per-billion level.

Bioremediation practitioners, in attempts to hone effectiveness and reliability, have recently focused on two major aspects. The first is identification and use of microorganism cultures that retain effectiveness when pH drops below



FRC Chair Nick Alberg

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Court of Appeals invalidates EPA's Cross-State Air Pollution Rule

Staff report

In late August, the U.S. Court of Appeals for the District of Columbia sided with an electric utility company that brought suit against the U.S. Environmental Protection Agency's Cross-State Air Pollution Rule, invalidating the rule that has been in effect since December of 2011.

Two of the three judges said that the rule was too strict.

The judges found that the EPA's rule required upwind states to make a disproportionate effort to reduce contaminants,

while the law requires only that upwind states bear responsibility for "their fair share of the downwind mess."

The court also found fault with EPA's actions saying the agency failed to give states an opportunity to draft their own regulations before they imposed their rule.

The Cross-State Air Pollution Rule is EPA's most recent attempt to reduce air pollution on a regional scale. Parts of 27 states, particularly in the Eastern U.S., are sometimes or frequently out of compliance with the Clean Air Act due to broad patterns of atmospheric circulation that con-

centrate oxides of sulfur and nitrogen, soot and smoke over regions with little indigenous air contaminant production. The rule focused on the largest sources—stationary fossil fuel-burning plants—the vast majority of which are coal-powered electricity generators.

Coal companies, electricity-generating companies and about a dozen of the 27 affected states opposed the rule vigorously. They said that compliance would cost consumers significantly and risk an unreliable electricity supply. Some older plants could not be economically upgraded to meet the new rules.

The EPA countered that the older plants are responsible for a small percentage of the country's electrical production. Their closure would have had minimal and manageable influence on electricity generation.

The agency also noted that many of the more recently constructed and soon-to-be permitted plants already met the requirements of the cross-state rule. The cost of the rule, they said, was therefore overstated by its opponents.

The appeals court confirmed EPA's authority to regulate these air pollutants and said they should continue to do so under the 2005 Clean Air Interstate Rule.

EPA has not announced whether it will appeal the decision or prepare a substitute rule that may satisfy the court's criticism of the cross-state rule.

EPA awards SBIR grants. The EPA awarded Phase II Small Business Innovative Research grants to seven companies poised to contribute new products or technologies that will protect and enhance the environment.

Several of these may have direct benefit addressing Florida's needs.

One firm, Pennsylvania-based FBS Inc., will receive just less than \$300,000 for "Defect Detection in Water Pipelines Using Ultrasonic Guided Waves."

In addition, two analytical methods projects were funded to a similar extent that may advance environmental sample analysis that could benefit Florida environmental professionals.

Other projects included application of ultrananocrystalline diamond for electrochemical destruction of contaminants of emerging concern, a catalytic system to reduce air emissions from wood boilers and an environmentally benign chrome-coating process using a trivalent chromium bath.

Florida sixth worst for power plant pollution. The Natural Resources Defense Council in its annual review of air emissions brought a mixture of good and bad news regarding air pollution.

Under the new Mercury and Air Toxics Standards rule, mercury is expected to drop from 34 tons to 7 tons, nearly an 80 percent reduction. Sulfur dioxide emissions are also on a downward path and expected to be reduced 63 percent, from 5,140,000 tons in 2010 to 1,900,000 tons in 2015.

Hydrochloric acid will be the loss leader with a 95 percent expected reduction from 160,000 tons in 2010 to 5500 tons in 2015.

Compared with 2009 levels, 2011 air pollution contaminants fell by 20 percent. Coal-generated electricity production is the primary culprit for air contaminants in this category.

The NRDC broke the data down into state-by-state tallies. Kentucky and Ohio were first and second on the list of the greatest contributors based on emission mass.

Florida ranked sixth on the list, primarily due to air contaminants emitted from power plants. Those power plants emit about 16.7 million pounds of MATS contaminants into Florida's air. Those 16.7 million pounds equals 57 percent of Florida's air contaminant emissions and 5 percent of total U.S. air emissions.

In Florida, a single coal-burning power plant, Progress Energy's Crystal River Plant, contributed more than 4.8 million pounds of air pollutants in 2010, a quarter of all Florida's air emissions from power plants.

Most Florida electrical utility generating plants are converting to natural gas as a fuel, producing far fewer MATS emissions. The substantial reliance on natural gas and nuclear power by Florida's electric utilities is one reason for the highly skewed air emission contributions.

Forest Service proposes new review process. The U.S. Forest Service proposed a new rule that will operate under an "objections process," and will be applied to all projects and activities that implement land management plans requiring an environmental analysis or environmental impact statement.

This means that individuals or other entities with a stake in a pending rule can object to proposed provisions before the rule is finalized. Under current practice, the rule has to be issued first, and then objectors may appeal to the courts for relief from overly burdensome provisions.

This procedural change is mandated by the Consolidated Appropriations Act of 2012, Section 428, which President Obama signed on Dec. 23, 2011. That appropriations act directs the Secretary of Agriculture "to provide for a predecisional objection process based on section 105 (a) of the Healthy Forests Restoration Act of 2003."

Legal cases since then have restricted the types of projects subject to categorical exclusion from the provisions of this law.

The proposed rule will enlarge the ranks of categories that will begin using predecisional objection as part of the rule-making process.

The department characterized "public comment opportunity for some management plans" as the primary value and benefit of the proposed change.

The new process is extensive, but generally follows procedures that the Forest Service has used since 2004 for hazardous fuel reduction projects.

The 30-day comment period closed the second week of September. The Department of Agriculture did not indicate an expected effective date for its proposed rule.

Endangered species grant. Florida will receive three grants from the Cooperative Endangered Species Conservation Fund. Their intent is to support conservation planning and acquisition of vital habitat for threatened and endangered fish, wildlife and plants.

The largest grant—to establish a statewide habitat conservation plan for Florida beaches—continues a multi-year planning effort that will support policies to protect beach habitat for federally protected nesting sea turtles, five beach mouse sub species and shorebirds.

The Florida Department of Environmental Protection is the lead agency and is collaborating with builders groups, municipalities and other stakeholders.

Highlands County will receive \$300,000 for its Highlands County multi-species habitat conservation plan. With that funding, they will develop a county-wide HCP for scrub habitats.

The Florida scrub jay, eastern indigo snake, sand skink, blue tailed moleskin skink and other dry scrub species living along the Florida Ridge are the focus of this conservation effort.

The east Collier County multiple species habitat conservation plan effort will receive \$150,000. This grant will assist efforts to conclude the first area-wide HCP to protect the Florida panther in Southwest



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Pinellas County, Largo green light brownfield designation for Ulmerton corridor

Staff report

Pinellas County commissioners have approved designating the Ulmerton Road Opportunity Corridor as a brownfield area. The resolution marks the final stage in the process between the county and city of Largo aimed at spurring redevelopment along the corridor from Seminole Boulevard to Roosevelt Boulevard.

Officials believe the four-square-mile area containing extensive industrial and commercial properties has a high job creation potential due to zoning, land uses, parcel sizes and geographic location.

The new brownfield area includes about 2,600 parcels of land on roughly 2,600 acres. The designation allows the county and city to provide incentives and encourage investment for redevelopment of the area.

New and expanding businesses could receive up to a \$2,500 job creation refund bonus for each new full-time job created. Properties could also be eligible for federal grant programs for assessment, cleanup, loan funds and job training.

Deltona brownfield advisory board.

In related news, the city of Deltona plans to pursue brownfield designation for its oldest shopping plaza. Winn Dixie closed its doors on the 44,000-square-foot space in the Deltona Plaza several years ago. The property is still vacant.

Establishing a brownfield advisory board will help determine whether there are any environmental problems associated with the site.

Many communities in the area, including DeLand, Ormond Beach, Daytona Beach and New Smyrna Beach, have established brownfield areas. This would be Deltona's first.

PBC landfill to reservoir. A Palm Beach County site once considered for a landfill may instead be used for water storage.

Palm Beach County's Solid Waste Authority is in "very preliminary discussions" with South Florida water managers about the possibility of using the 1,600-acre site next to the Arthur R. Marshall Loxahatchee National Wildlife Refuge to expand a stormwater treatment area.

In 2009, county commissioners scrapped their decade-old plan to build a second landfill on the site because of protests from environmental activists.

As an alternative for handling their waste, commissioners decided to move forward with a waste treatment facility capable of burning up to 3,000 tons of trash a day. That plant will delay the need for a new western landfill for decades.

Farmton conservation. About 44,000 acres of the Miami Corp.'s 59,000 acres in Brevard and Volusia counties will now be protected. A long-term management plan for conservation lands in Volusia is nearing completion.

The Farmton Local Plan, approved by the counties last year, required the lands in exchange for allowing the eventual development of 23,000 homes and more than four million square feet of commercial space on the remaining 15,000 acres.

The conservation easements require the company to reimburse the St. Johns River Water Management District and Florida Audubon for the cost of annual monitoring inspections for both counties.

Over the past year, the water management district has worked with a task force that included company representatives, Volusia County officials and other experts to write the conservation management plan.

The Farmton plan originally called for 1,132 acres along Deep Creek to be deeded to a separate organization with a board including representatives of Volusia, the water district and Audubon.

But in recent months, the task force determined it would be more appropriate to deed the land to Volusia County. The county hopes to open the land along Deep Creek for public use activities such as trails and kayaking.

About 13,000 acres of the company's land is conserved within the boundaries of a wetland mitigation bank, which is permitted and overseen by the water management district.

Farmton also received final approval this summer from the Public Service Commission for a wastewater utility on its Brevard County lands,

TECO plant expansion. Tampa Electric Co. plans to expand their South Polk power plant, adding enough capacity to power 100,000 homes at its Polk Power station south of Mulberry.

The \$700 million expansion will increase the station's natural gas output by 70 percent.

The station currently has a 260-megawatt coal unit and a 650-megawatt natural gas plant.

At the peak of construction, the project will create about 500 local jobs.

TECO has 670,000 customers in Hillsborough, Pasco, Pinellas and Polk counties.

The expansion would convert four single-cycle natural gas units to a more efficient combined cycle unit.

If Tampa Electric's project is approved, construction would begin in early 2014.

Miners pull out of Baker. Two sand mining companies have withdrawn their petitions in Baker County to allow more time for review of the plans by regulatory agencies and a consultant for the county.

Local residents and activists urged denial of the mining proposals.

The two companies—Old Castle Southern Group of Tampa and E.R. Jahna Inc. of Lake Wales—asked the county to grant zoning exceptions to allow sand mining operations on property zoned for agricultural use.

County land development regulations require the applicants to obtain permits from the St. Johns River Water Management District and the Florida Department of Environmental Protection.

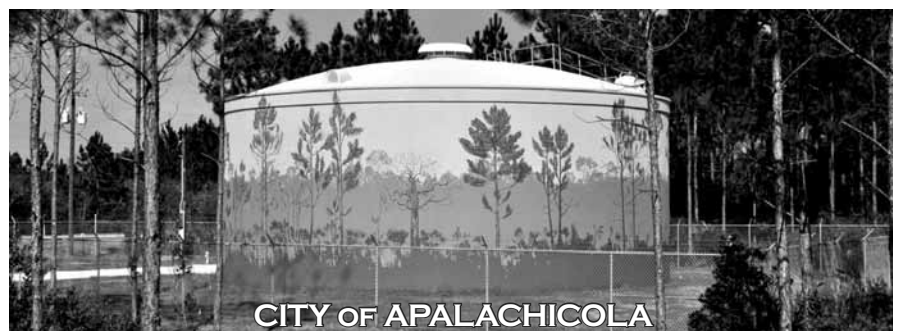
Both agencies are seeking additional

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Florida Notes



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Counties opt out of state septic tank inspection program

Staff report

10 of 19 counties that must act by Jan. 1, 2013, under a new septic tank inspection law have served notice that they will take a pass on implementing the inspection program.

The Florida Department of Health reorganization bill, passed by the 2010 Florida Legislature, included repeal of a statewide septic tank inspection program.

But the law singled out 19 Florida counties with a significant number of larger springs to conduct the inspections unless

they opt out by the first of the year.

The original inspection requirement in 2010 was seen as a springs protection measure by its supporters. However, it drew strong opposition from rural homeowners and conservative activists, and was dropped from the law earlier this year.

Hernando County was the first to opt out when their commission moved to do so in May. They indicated that they would revisit the issue later.

Brevard IRL stormwater project. Brevard County has finished the initial

phase of a \$4-million project to stop untreated rainwater from entering the Indian River Lagoon.

For decades, untreated stormwater runoff from the 5,970-acre drainage basin south of the Kennedy Space Center entered the lagoon via a series of canals.

The Pine Island Conservation Area stormwater project, designed to prevent pollution and flooding, converted a 73-acre borrow pit into an 80-acre stormwater pond, complete with perimeter berms, a pump station and a kayak-canoe launch ramp.

Now the polluted water from the Pine Island Road canal flows into the stormwater pond and is naturally filtered before reaching the river.

The need for the project came to the fore in November, 1994, when Tropical Storm Gordon dumped eight inches of rain on central Brevard in a 24-hour period, taxing Merritt Island's drainage capacity.

With considerable flooding upstream in the canal system, the county and the St. Johns River Water Management District opted to purchase the property and retrofit the site as a stormwater treatment facility.

Avon Park water grant. The city of Avon Park will receive a \$1,005,000 construction grant to provide city water to residential areas with contaminated wells.

City Manager Julian Deleon said the grant comes from the Florida Department of Environmental Protection. The funds will come in two parts: 75 percent in grant funding and 25 percent in state revolving loan funds.

The funding will cover the cost of extending city utilities to Lake Lotela and sections of Avon Park Lakes. Deleon said the grant was given priority because of health concerns.

Construction is expected to begin in October.

Plant City reclaim. Work has begun to install 19,000 feet of pipeline to carry reclaimed water to Walden Lake Golf & Country Club in Plant City.

The project, with a price tag of nearly \$4 million, will transport 370,000 gallons of reclaimed water a day to the golf course and additional customers along the pipeline route.

E.T. Mackenzie of Florida, contractor for the job, estimated a March completion

for the work.

Besides the golf course, other customers include South Florida Baptist Hospital, Tomlin Middle School and Bryan Elementary School. The schools and the golf course will use the water for irrigation and the hospital for irrigation and cooling tower needs.

Plant City hopes to sell more reclaimed water to additional customers. The city has been selling reclaimed water for years. Their largest customer is CF Industries who uses two million gallons a day at their phosphate processing plant.

In 2008, Plant City rebuilt its sewage treatment plant and increased its reclaimed water processing capacity from 8 to 10 million gallons per day.

The Southwest Florida Water Management District is paying about \$1.5 million on the pipeline to the golf course and \$875,000 toward a second 10,000-foot pipeline that is being built to Plant City's Sports Stadium

and surrounding complex.

The second project, due to be completed in 2014, will cost \$1.75 million.

Clearwater water quality project. Construction on an \$800,000 water quality improvement project at the city of Clearwater's Prospect Lake Park is underway.

The job will be completed in two phases. In the first, crews will dredge about 4,300 cubic yards of material from the lake bottom.

The second phase calls for enlarging the lake and installing wetland plants in the southwest corner of the lake. The project completion date is the summer of 2013.

City officials note that water quality improvements at the park will benefit drainage in the downtown district. That stormwater eventually flows into Clearwater Harbor.

Funding for the project comes from the city's stormwater utility fee.

Dade City utility improvements. Dade City commissioners will seek a \$240,000 state loan to improve potable water service and build new water wells.

When completed, customers will notice better water pressure in some areas. The work will also add greater storage and pumping capacity.

Currently the city's water system provides 1.8 million gallons a day from eight wells.

The project includes replacing the College Hill well site with an expanded Orange Valley facility; installing a booster pump and ground storage tank at Tank Hill; drilling future wells, and making repairs at three 10th Street wells that now provide half the city's water supply.

Cedar Key turns the tap. Drinking water for Cedar Key residents is again flowing after the switch was flipped on a new reverse osmosis filtration system and the facility passed water quality tests conducted by the state DEP.


In June, the water supply suffered from extensive salt water intrusion that forced the Cedar Key Water and Sewer District to take the action.

When the intrusion was discovered, residents and businesses had to use bottled water or draw it from mini-tankers located around town.

David Beach, chairman of the water and sewer district, said the water tastes good now but expects more improvement as water that has been in the system is flushed out.

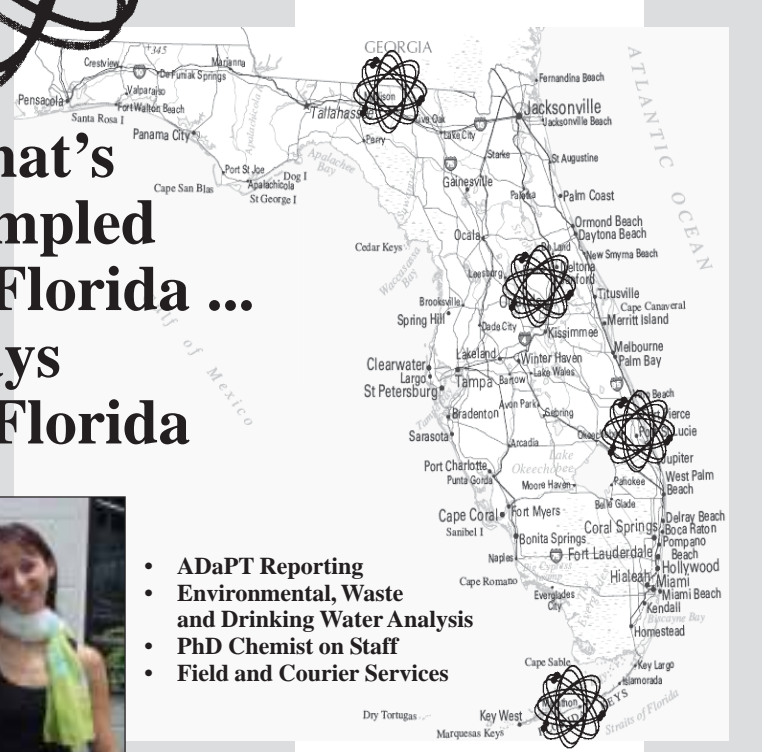
Daytona North water system. Construction on a pump house in the Daytona

WATCH
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Florida
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Audubon Florida challenges three EAA cane growers' water permits

By DAN MILLOTT

Audubon Florida challenged three permits that allow three farms within the Everglades Agricultural Area to release polluted water into the Everglades.

Audubon said the permits allow the farms to violate Florida state law. The permits are part of a group approved by the South Florida Water Management District.

Audubon also said the permits were approved "with scarce public notice and participation."

Audubon wants the three permits denied because no requirements for additional on-farm cleanup were included as part of the permits.

The organization urged the water management district to impose more cleanup requirements on the most polluting farms in the EAA. They cited state law requiring farms to engage in phosphorous-reducing practices before discharging polluted wa-

ter into district canals.

Audubon said failure to cleanup water on the farm not only hurts the Everglades, but places more costs and burdens on taxpayers to build treatment projects.

The permits in question were issued to U.S. Sugar Corp., Sugar Cane Growers Cooperative of Florida and Sugar Farms Co-op. Audubon wants an administrative hearing on the permit applications.

"We just want them to take their dirty water and put it in the new cleanup treatment areas," said Eric Draper, executive director of Audubon Florida.

Judy Sanchez, senior director of corporate communications and public affairs at U.S. Sugar, said the SFWMD's water quality modeling shows water flowing from the farms has no effect on the water quality in Lake Okeechobee.

"It's unfortunate that some people would rather sue than work on fixing the problems," she said.

SFWMD has been involved in a 17-

The Marshall Foundation champions the restoration and preservation of the greater Everglades ecosystem through science-based education and outreach program. Annually, over 25,000 elementary and high school students in Palm Beach County participate in foundation programs.

Governor names 13 to utility group. Gov. Rick Scott named a 13-member study committee to look at the dealings of investor-owned water and wastewater utility systems in Florida.

The committee was established by the state Legislature after consumer complaints of poor service and poor water quality.

The committee is a compromise. Rep Jason Brodeur (R, Sanford) originally filed a bill that limited the amount utilities can seek to recover in rate hike requests and would have imposed penalties against utilities for inadequate service.

Brodeur's bill passed the House, but died in the Senate. The study committee idea was tacked onto another Senate bill and Scott signed it in April.

The Brodeur bill was originally a reaction to numerous complaints against Aqua Utilities Inc., a company with 23,000 customers, most in Central Florida.

Public Service Commissioner Julie Brown will serve as chairman of the committee. Other members will be drawn from the Florida Department of Environmental Protection and the Office of Public Counsel. The balance of the committee will be appointed by the Senate President and the Speaker of the House.

year effort to reduce phosphorous discharge from sugar farms. Those efforts resulted in a 71 percent reduction achieved this year from new farming techniques.

Audubon noted that prior to 2007, EAA farmers could comply with the law by reducing phosphorous pollution by 25 percent across the 700,000-acre EAA. Their efforts have achieved an annual reduction

of 55 percent—and some years, even higher—an effort applauded by the organization.

But Audubon said that a few polluting farms, some releasing as much as 400 parts per billion of phosphorous, are still not being required to limit their pollution and the Everglades water standards are still not being met.

WATCH

From Page 4

North community began in early August that will bring potable water to over 2,000 households in western Flagler County.

In April, the Flagler County Commission authorized staff to move forward with the water system with a condition that the county would pay for the annual upkeep of the system, but not the construction.

For the past year, County Commissioner Nate McLaughlin has lead an effort to secure private funds for the project. He raised \$61,000 in cash and in-kind labor to help make it a reality.

McLaughlin said that over 30 individuals, companies, organizations and municipalities contributed to bring water to the Daytona North area.

The system was to be operational by late September.

Floral City water plant. After years of debate, the proposed Stage Coach Trail water facility in Floral City is a reality.

The Floral City Water Association received a \$3,325,600 check signaling the go-ahead. In August, Richard Machek, state director of the U.S Department of Agriculture's Rural Development agency, presented the check.

The money is a 40-year, two-percent interest loan. The funds will be used to construct a water treatment facility that will include two 1,500-gallons-per-minute wells, a 500,000-gallon storage tank, three 750 gpm high service pumps, chlorination facilities and a building.

Boynton Inlet dredging. A \$2.5-million dredging project for the Boynton Inlet should start in early 2013 if Palm Beach County can get the necessary permitting and grants in place.

The county's Department of Environmental Management plans to dredge about 1,800 feet of the Intracoastal Waterway and 700 feet of the Boynton Beach Boat Club Channel, a section running from the inlet to the boat ramp at Harvey Oyer Jr. Park.

About 45,000 cubic yards of sand will be dumped just offshore at Ocean Ridge Hammock Park. The sand will eventually migrate south to Boynton Beach's Oceanfront Park in Ocean Ridge.

The county is required to finish the work before the turtle nesting season starts in March.

Of the estimated \$2.5 million cost, DEP will pay about \$1.675 million; the Florida Inland Navigation District, \$800,000; and the city of Boynton Beach, \$40,000-\$50,000.

New Everglades Foundation director. The Arthur R. Marshall Foundation for the Everglades has named Ann Paton as their new director of development.

The foundation provides Everglades programs to children throughout Palm Beach County. Nancy Marshall, president of the Foundation, announced the appointment.




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Judge recommends denial of Bay County water withdrawal permit

By PRAKASH GANDHI

Residents and environmental activists have won a major battle in their efforts to stop Bay County in Florida's Panhandle from pumping millions of gallons per day of groundwater along the Washington County line.

A state hearing officer has advised against permitting the wellfield.

The ruling comes two years after a legal battle arose over the Northwest Florida Water Management District's decision to grant Bay County a 20-year permit to operate a wellfield that would have drawn water needed to maintain hundreds of lakes and springs in the environmentally sensitive Sand Hill Lakes region.

The Coalition to Save Sand Hill Lakes, made up of more than 500 landowners and environmental groups from in and around Bay and Washington counties, was formed to oppose the proposed wellfield.

The water management district and Bay County argued that the project was needed as an alternative drinking water source to Deep Point Lake.

Bay County initially wanted a permit to withdraw an average 10 million gallons of water per day from the Floridan Aquifer for 20 years.

The original plan was opposed by Washington County and the James L. Knight Charitable Term Trust, which owns 55,000 acres of land in the area.

In late July, opponents of the proposed permit received the backing of Administrative Law Judge David M. Maloney who recommended that the water management district issue a final order denying the permit application.

The judge concluded that it is not in the public interest for Bay County to operate the wellfield. He found that Bay County's data was inadequate to determine that the area's natural systems would not be significantly affected.

Maloney also said Bay County did not consider alternative water sources and that there was no requirement in the proposed permit that prohibited pumping when Deer Point reservoir was available.

John R. Thomas, an attorney representing Washington County, described Maloney's recommendation as "solid."

"They (Bay County) have a huge supply of water and there was no new evidence to demonstrate they needed a backup supply," he said. "The applicants failed to consider other alternatives that would have been cheaper and would have been better from an environmental viewpoint."

He said that if a party is given access to water it doesn't need, that water is not available to other parties that do need it.

"They did not provide justification for the amount of water they said they required, and they did not adequately evaluate the environmental effects of that water withdrawal," he said.

In late August, Bay County filed an exception to the order with the district. The county says it is willing to reduce the average daily withdrawal it requested to no more than two mgd from the five mgd recently proposed.

The county said it was also willing to

accept additional conditions to the permit including a condition that limits water usage in an emergency to only essential uses.

County officials said they are also willing to reduce the number of proposed wells from 10 to eight and reposition them to reduce impacts to the Knight property.

In September, Bay County officials announced that they will appeal Maloney's decision, requesting that the case be remanded to the judge for reconsideration.

The final decision on the permit and the project will eventually fall in the lap of the water management district's governing board.

JU, UNF release Lower St. Johns River basin annual report

By BLANCHE HARDY, PG

Jacksonville University and the University of North Florida released the fifth annual "State of the River Report for the Lower St. Johns River Basin," providing details of the status and trends of various health indicators within the lower basin of the St. Johns River.

The annual report provides information useful for making informed decisions regarding the management and protection of approximately 100 miles of the river between Welaka, located just north of Little Lake George in Putnam County, and Mayport at the mouth of the St. Johns.

The report provides information on water quality, fisheries, aquatic life and contaminants, and aquatic toxicology. It is predominately funded by the city of Jacksonville's Environmental Protection Board.

Because this is the fifth year in which the report has been published, sufficient data is now available to track trends in the basin. The contribution of each of the river indicators is presented according to its current status and its trend over time.

The "current" status is based on the most current available data and is assigned a satisfactory or unsatisfactory score according to its compliance with state and federal minimum standards and guidelines.

"Trend over time" status is determined from statistical analysis of the best available data for each of the indicators as it has changed over time. Results are reported as "condition: improving, stable or worsening" or "uncertain."

The report team evaluated twenty-three tributaries of the St. Johns River for this year's work. Tributaries were selected according to their impact on the health of the river and the adjoining local community. Of the indicators, water quality garnered the most unsatisfactory designations, continuing a trend first noted in 2008.

Graphs illustrating water quality constituent variations indicate that total phosphorus, dissolved oxygen, fecal coliform and chlorophyll-a were detected in excess of water quality criteria most frequently in the tributaries examined. Extended discussion of the health of each tributary is included in the report.

Fisheries ranked better than water quality with five varieties of fish receiving satisfactory marks. No overfishing of finfish, shrimp and stone crab is apparent. Plus, endangered and threatened species appear to be faring well, although habitat loss and the increasing introduction of non-native species into the basin are reported as areas of concern for the future health of the basin's native life.

Like water quality, contaminants detected in sediment samples ranked poorly with unsatisfactory scores being awarded in four of five subcategories: pesticides, polychlorinated biphenyls, metals and polyaromatic hydrocarbons.

This trend has been repeated in each of the five years of data assessed. Of the contaminants, those associated with petroleum and PAHs are indicated as of greatest concern for their ability to stress organisms within the study area.

As with many environmental initiatives both in Florida and throughout the nation, recent monitoring efforts have been reduced. The report stated that the lack of data has limited assessments. While the reliability and accuracy of available data is improving with time, the quantity of new data samples for many locations is decreasing.

As consistent collection of data is necessary for trend analysis and event investigation, lack of adequate data may adversely impact both the quality of future reports and the health of the basin.

The full report is available at www.sjrreport.com/2012report.

Areawide phosphate study fails to garner widespread approval

By ROY LAUGHLIN

The U.S. Army Corps of Engineers released its Draft Areawide Environmental Impact Statement for phosphate mining this summer after more than two years of preparation. The document generally supported expansion of phosphate mining activities further south towards Charlotte Harbor, along the Peace River watershed.

The document concluded that water resources would not be significantly reduced, and wildlife and critical habitat issues could be successfully addressed by establishing buffer zones around mines.

Criticism of the statement's minimal impact findings has come in significant volumes from the mining industry, particularly Mosaic Inc., the Charlotte Harbor National Estuary Program and county governments in Southwest Florida. Environmental groups, predictably, have also criticized the statement's findings.

Mosaic responded with lengthy comments criticizing the prediction of impacts. The company hopes to modify some of the

statements of impact, as well as the methodology for predicting cumulative impact analysis.

Charlotte County Commission Chairman Chris Constance sharply criticized the finding that an average reduction of 41 feet per second flow in the Peace River by 2030 would be insignificant.

He pointed out that such a reduction amounts to 6.9 billion gallons per year. That's more water than the quantity consumed by the Peace River-Manasota Regional Water Supply Authority, he said.

Environmental groups soundly panned the statement's findings. In its July 30, 2012, *Sierra Club Florida News*, the group published a substantial critique characterizing the statement study as "badly flawed."

Their critique included a discussion of how changing the land cover and drainage as a result of phosphate mining had led to localized climate change—higher temperatures and less rain—that invalidates estimates of water availability presented in the statement.

The corps will publish responses in their final draft, expected out next year.

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EDF, Duke use value chain analysis to showcase Gulf restoration technologies, businesses

By ROY LAUGHLIN

In light of the pending infusion of funding from RESTORE Act fines and penalties, the Environmental Defense Fund spent the summer orchestrating an effort to showcase environmental restoration technologies, businesses and business opportunities in the Gulf region.

EDF supported studies by Duke University researchers to craft a series of value chain analyses focusing on several classes of environmental remediation technologies and goals seen as essential to enhancing and conserving ecosystem services in Gulf estuaries and near-shore habitats.

EDF and the Duke researchers focused attention on those that have long-term benefits, are sustainable and will immediately provide jobs for local people and regional

AMENDMENT From Page 1

of most of the environmental conservation organizations in Florida. They are the movers and the shakers behind the newly formed Florida's Water and Land Legacy. We formally endorse the proposed amendment and we directly embrace Florida's Water and Land Legacy campaign."

Floridians have a proud history of conserving the state's lakes, rivers and springs and acquiring lands to protect precious drinking water resources.

Historically, preservation has been a nonpartisan issue that transcended party politics. Over the past four decades every governor made the environment a priority. Florida Forever and its predecessor, Preservation 2000, have protected over 2.4 million acres of precious water sources, wildlife habitat, parks, greenways and trails throughout Florida.

But funding for the Florida Forever program has been reduced by 97.5 percent since the first program cuts began in 2009. This year, only \$8.5 million was allocated by the Legislature—less than \$1 for every Floridian.

With voter approval, the amendment will create stable, long-term funding for conservation programs like Florida Forever and Everglades restoration. The proposed amendment would not raise taxes, it would simply ensure that conservation funding continue as envisioned when former Gov. Bob Martinez launched Preservation 2000 in 1990.

For the past few decades, the document stamp tax—the fee on real estate transactions—has been assessed in Florida to pay for programs like land conservation and affordable housing. The proposed amendment would allocate one-third of existing doc stamp revenues to be directed to funding land and water conservation, management and restoration.

This would provide an estimated \$5 billion for conservation over the next 10 years, and \$10 billion over the twenty-year life of the amendment. Considering the value of Florida's natural systems, this is a small amount compared to the \$7 billion the state spends annually on transportation.

Florida's Water and Land Legacy wants to restore the state's leadership on water and land conservation. The amendment would assure the values placed on clean waterways, abundant drinking water, springs protection and conservation of natural resources would be ensured by the state's constitution.

The amendment also allows conservation funds to be used to buy development rights, a useful tool that enables ranchers and others to continue agricultural operations.

The campaign has begun and Florida's Water and Land Legacy needs to get the signatures of at least 676,811 registered voters to get the constitutional amendment on the November 2014 ballot.

The future of Florida's natural paradise is at stake and Florida's Water and Land Legacy is asking all Floridian who value the state's natural resources to take action.

Information about the campaign is available on-line at floridaconservationcoalition.org.

businesses.

Researchers at the Duke University Center on Globalization, Governance & Competitiveness prepared three reports.

The first, "Restoring Gulf Oyster Reefs: Opportunities for Innovation," focused on restoring oyster reefs in the Gulf Coast region. The report presented in great detail how new geosynthetics make possible restoration of oyster reefs throughout the region.

In Florida, artificial oyster reefs have been successfully placed to shield mangroves from destructive erosion due to boat wakes. In other estuaries, oysters are "keystone species." The physical structure of the reef creates an extensive habitat for a diversity of other benthic and pelagic species that gather there for feeding opportunities.

As filter feeders, oysters contribute notably to reducing suspended particulates, and the nitrogen and phosphorus associated with them. In this role, they improve water quality.

Shawn Stokes, a research analyst at the Duke center and lead author of the report, said that the ulterior motive is to encourage oyster reef restoration in the Gulf area because these reefs and their organisms are

essential to environmental housekeeping functions in the estuaries and near-shore environments where they occur.

The second report in the series, "Restoring the Gulf Coast: New Markets for Established Firms," expanded the focus to a broader suite of environmental restoration efforts, from erosion control to marsh restoration.

"Wetland restoration is more successful with a geotextile perimeter, filled with hydraulic dredge spoils and then planted with (marsh) grass. We can do 500 years of (natural process) work in a few months," said Stokes.

Environmental degradation is occurring so rapidly and extensively in the region, appropriate human intervention is seen as essential to reverse the progression.

The third report from the Duke center, "Geosynthetics: Coastal Management Applications in the Gulf of Mexico," characterized the use of geosynthetics technology with a special emphasis on firms in the Southeast that provide environmental remediation services using them, the regional supply chain that produces the materials, and the number of employees that are working now in this industry, or could be employed for new projects.

Stokes noted that many of the geosynthetics are plastics made from resins produced in refineries in the Gulf region from petroleum obtained from the Gulf. The oil industry that spawned many of the Gulf's environmental problems will be part of the solution as EDF envisions it.

These reports are not 1970s-era ecological surveys or damage reports. They are based on value chain analysis, a research tool developed by economists to show how different industries play an integrated role in economies.

In this case, researchers accepted the premise that environmental restoration to provide affordable, sustainable ecosystem maintenance services is a given and should be funded by the RESTORE Act.

Their analysis focused on describing currently available technologies, identifying and characterizing regional firms providing either materials or services appropriate for environmental restoration efforts, and where these firms were located.

The analysis includes businesses such as oil refineries, that perhaps few would initially identify as suppliers to the environmental restoration industry. Because they supply plastic resins for many of the

GULF
Continued on Page 20

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PREVIEW

From Page 1

6.5, a common situation in many southeastern states' groundwater.

The second is a focused reference to the biogeochemistry of bioremediation processes in aquifers, of which fermentation and redox reactions in microbial metabolism are only a part.

Chlorinated organics may be an entirely contemporary chemical addition to aquifers, but remediation treatments influence—and are influenced by—the much larger scope of biogeochemical process in groundwater. This larger perspective gives powerful insight into managing bioreme-

diation processes for the most effective and economical outcome.

Day One's agenda includes two presentations describing new capabilities and methods to enhance anaerobic bioremediation, particularly the chlorination of organic compounds, at low pH.

Brad Elkins, MS, EOS Remediation, will describe use of a proprietary Mg(OH)₂ buffer in a colloidal suspension that can be managed so that it doesn't occlude pore water.

"Most conventional buffers are the stop gap," said Elkins. "They are either really strong and soluble, or weak and insoluble."

The Mg(OH)₂ buffer does not com-

pletely dissociate, as does for example NaOH, and so provides prolonged buffering with high capacity that maintains pH near neutrality and enhances rates of reductive dechlorination in initially acidic contaminated groundwater.

This, according to Elkins, is a significantly more effective buffer than others used in the past to modify aquifer pH during bioremediation.

In the next talk of the morning, Jeff Roberts, MS, SiREM, will describe a different approach: Using pH-tolerant microorganisms that his laboratory has isolated and cultured in groundwater where pH is near six or just slightly below it. Roberts noted that "at a pH 5, the 'metabolic processing' of chlorinated compounds declines in orders of magnitude."

The laboratory investigations of the proprietary microorganism cultures show that ethene production remains high in the acid-medium adjusted cultures as they dechlorinate dichloroethane. This suggests that acid tolerant microorganisms have a modified metabolic pathway that operates efficiently at low pH.

Pat Hicks, PhD, FMC Environmental Solutions, will present the results of a bioremediation experiment using a lecithin and ferrous iron adjuvant to enhance in-situ dechlorination of organic compounds. James Studer, MS, PE, InfraSUR LLC, will follow with an even broader consideration in his presentation that considers the shift from biotic to abiotic bioremediation reactions in aquifers.

Donovan Smith, PE, JRW Bioremediation, and John Haselow, PhD, PE, Redox Tech, follow with additional discussion and insight to the interaction between intentionally initiated bioremediation reactions and subsequent biogeochemical processes that result.

The number of talks dealing with bioremediation should not give the impression that it now dominates remediation techniques. Bioremediation is most effective when contaminant concentrations are in the parts-per-million range or lower. This low concentration often marks the final stages of a remediation effort that employed much more aggressive efforts to treat or remove pollutants and to reduce contaminant concentrations in plumes from several hundred parts per million.

Higher concentrations are often toxic to microorganisms directly, so contaminant levels have to be reduced by other methods first.

Since the early days, remediation projects at highly contaminated sites have first focused on the existence, location and flow of the contamination plume so that the greatest effort can be put where it will have the most impact. If puddles of dense non-aqueous phase liquids are not removed or degraded in situ, they regenerate dissolved

contamination in the groundwater.

Two presentations at this year's conference discuss recent refinements that aid in DNAPL location and characterization.

Cal Butler, PG, Black & Veatch Special Projects Corp., will discuss characterizing NAPL as either mobile or residual, and distinguishing the two states based on whether there is enough liquid in the pore space to coalesce/coagulate the substance and thus influence further migration. Brad Carlson, ZEBRA Environmental Corp., will describe the use of a modified combination probe that can be used in the field as an adjunct to sample collection followed by laboratory analysis. This will save time and potentially make treatment application and locations more effective, whether or not DNAPL is present.

Solubilization of contaminants using surfactants and pumping groundwater is still the best option for quick contaminant removal, particularly if the plume is headed for a lake or estuary. David Sheehan, PE, and Lydia Ross, EIT, both with Groundwater & Environmental Services Inc., will describe a project in South Florida that was conducted over several days and included surfactant injection. It quickly removed hydrocarbons.

Sean Davenport, Carus Corp., will discuss the use of xanthans, a natural product, as surfactants that favorably influence distribution of microorganisms and amendments to support their growth for groundwater remediation.

Strong oxidants such as persulfate, ozone and the Fenton reagent are often the first treatments for sites highly contaminated by organic compounds. They have at least a 20-year history of experience. Nevertheless, tweaking can improve treatment performance and efficiency.

A Day Two morning session includes three presentations that tout the successful use of strong oxidants in highly contaminated soils. This session begins with a case study, given by Ernest Mott-Smith, PE, Black & Veatch Special Projects Corp., and Tracy Deal, PE, Groundwater & Environmental Services Inc. This talk describes a remediation project at a former wood preserving facility, where multiple techniques were used over a period of months to remediate a broth of contaminants of concern.

Barry Rudd, Exo Tech Inc., will discuss in-situ soil blending with activated persulfate and will describe an innovative soil blending treatment that successfully decontaminated a former drum manufacturer's site. The challenge at this site was both the relatively high concentration of organic compounds, and silty clay loam and weathered shale bed rock that reduced permeability.

William Kerfoot, PhD, a frequent presenter at the annual conference, is an expert advocate for ozonation. His presentation will bring listeners up to speed with ozone's emergent properties in remediation projects.

For the past several years, and particularly since 2008, bioremediation projects have had to pass an additional litmus test: affordability and sustainability. This year, three papers address these topics as distinct characteristics on which proposals will be evaluated and success will be measured.

Buddy Bealer, Shell Oil Products U.S., will provide an overview of standards development for green remediation by the ITRC, SuRF and ASTM organizations.

The concept is still evolving, but with these major standards organizations poised to release draft documents, the path from idea to technique will be much clearer.

Lydia Ross, EIT, and Michael Spievack, PE, both with Groundwater & Environmental Services Inc., follow with a discussion of how environmental, social and economic metrics are part of evaluating sustainability in a remediation project. This talk includes discussion of both technical and non-technical aspects that contribute to or influence the sustainability of a remediation project.

Day Two's final presentation is a case study from Angela Finney, AMEC, describ-

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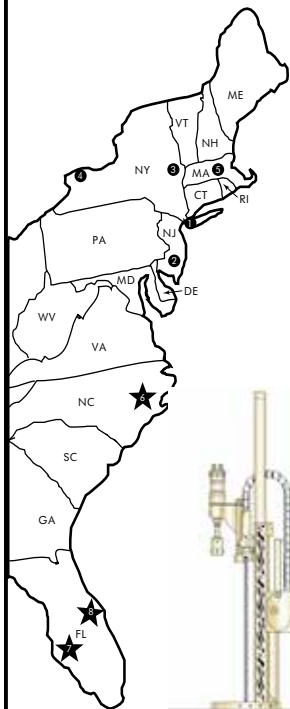
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International Paper plant in Pensacola finishing up major water quality project

By DAN MILLOTT

The International Paper Co.'s Pensacola plant has been wrestling with environmental issues for years, but now a \$69 million water quality improvement project is virtually complete.

The primary goal of the work is to divert effluent loaded with pollutants from Eleven Mile Creek. The creek water eventually makes its way into Perdido Bay, designated by the state as an Outstanding Florida Water.

When IP took over the plant in 2000, they inherited a consent order, in place since 1989, aimed at reducing the level of pollutants in wastewater leaving the plant.

The wastewater improvement plan hatched by the company was the result of series of recommendations from Wade Nutter, a retired University of Georgia professor of hydrology and soils along with additional consultants.

The project includes an upgrade to the process that treats the effluent from the manufacture of 650,000 tons of paper products per year.

Also involved is the now-complete 10-

mile-long underground pipeline from the facility to company-owned land north of Perdido Bay. That pipeline will eventually eliminate direct discharge into Eleven Mile Creek.

A third leg of the project, one based on Nutter's recommendations, will be the distribution of treated effluent over a 2,600-acre restored wetland area one mile north of Perdido Bay.

Kyle Moore, IP's environmental, health and safety manager, said the site was originally a wetland, but was drained to make way for pine forests and agriculture decades ago.

Nutter originally recommended the site because it contained four large gravity-fed lagoons that could filter potentially harmful effluents from the mill.

While IP's water quality improvement project has been hailed by the company as a "showcase of how the pulp industry does business," it does have its detractors.

Jackie Lane, president of Friends of Perdido Bay, contends that the company instituted the project because they wanted to increase their daily production of paper products from 1,500 tons of pulp per day

to 2,500 tpd.

Moore refutes Lane's contention, saying the project was not tied to production increases.

"In 2007, we changed the type of products produced at the plant," he said. "We went from making white printer paper to brown paper used to construct cardboard boxes. That process actually uses less water and lessens the environmental load on the wastewater system."

Moore said IP is gradually transitioning the effluent flow from the creek to the wetlands. By October, 75 percent will be diverted; by the end of the year, 100 percent

will be diverted.

Moore said plans for the wastewater project at the plant were advanced to the Florida Department of Environmental Protection in the early 2000s.

One of International Paper's partners in the project is the Emerald Coast Utilities Authority.

ECUA sends five million gallons a day of treated reclaimed water to IP. It is used as process water in the production of their paper products.

Moore said the use of reclaimed water from ECUA helps offset the use of groundwater at the plant.

Restoration funding to benefit springs, other critically impaired waterbodies

By PRAKASH GANDHI

Efforts to restore Silver Springs received a boost thanks to \$1 million in water quality improvements earmarked by state environmental managers.

The funds will help improve conditions at the ailing springs, one of Florida's earliest tourist attractions.

The Florida Department of Environmental Protection, Marion County and the St. Johns River Water Management District have already identified the first project to benefit from the funding.

The project will eliminate a wastewater effluent discharge from the Silver Springs' regional wastewater treatment plant, which is within 1.5 miles of the main boil of the springs.

The project will redirect the discharge to the Silver Springs Shores Wastewater Treatment Plant, ten miles from the boil and will reduce up to 2,000 pounds of nitrates annually that would have gone into Silver River.

The total estimated cost is \$700,000. DEP and Marion County will each contribute \$300,000 and the St. Johns River district will contribute \$100,000 to the project.

The department plans to fast-track the restoration efforts because Silver Springs is one of the state's critically impaired waterbodies.

Instead of setting nutrient targets and then waiting for months, even years, to start establishing a restoration plan, DEP wants to get restoration underway as quickly as possible, said agency spokesperson Dee Ann Miller.

The department's proposed nutrient reduction is the foundation for additional projects and actions resulting in water quality improvements of Silver Springs.

Miller said that in the past, springs funding supported primarily outreach, monitoring and research. Restoration work took a back seat to those efforts.

For fiscal year 2009, \$2.4 million was appropriated to the trust fund, she said. The department spent nearly 50 percent on research, 30 percent on monitoring and 10 percent for both outreach and restoration.

Most restoration projects, she said, were in the form of land owner assistance and included sinkhole cleanup and spring parks improvements.

Those projects focused primarily on habitat improvements.

"Monitoring and research were essential to the understanding of issues impacting the water quality of springs and groundwater," Miller said.

"Building upon the knowledge and public support gained previously, the department is now able to make a greater com-

mitment to restoration actions that will reduce nutrients to the springs."

Defenders of Silver Springs want to halt all new water permits so that scientists can have more time to do a better job of explaining declining flows from the springs near the Ocala National Forest.

A recent report found that Silver Springs is increasingly polluted and dwindling in flow. But the probe found that water use by cities, farmers and industry is not causing major declines in flow from the springs.

The department has also committed funding to aid restoration efforts for the Santa Fe/Suwannee basins (\$900,000) and Kings Bay (\$500,000). In addition, over the past two years, the legislature has provided DEP with nearly \$8 million for nutrient monitoring in springs priority areas.

In addition to setting nutrient targets and establishing a restoration plan for Silver Springs, the department is working to establish nutrient reduction requirements for other major springs, Miller said.

Earlier this year, the department adopted a water quality restoration plan for the Santa Fe River and is working on a similar restoration plan for the Wekiva Basin.

DEP will kick off restoration plans for the Wakulla and multiple springs along the Suwannee River this year as well.



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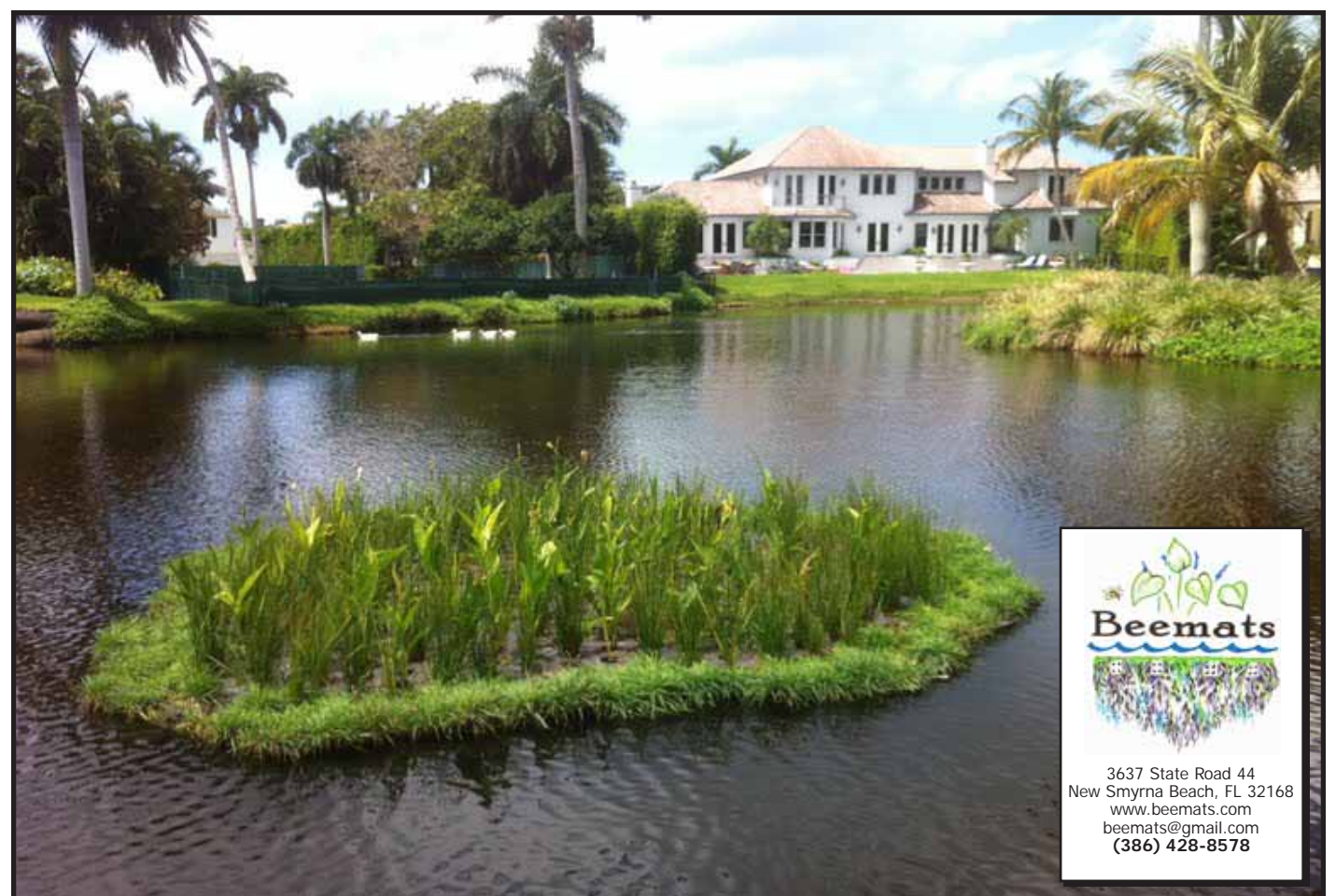
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Lands review results in SJRWMD, Flagler County interagency partnership

By DAN MILLOTT

The St. Johns River Water Management District, owner of over 600,000 acres in its 18-county territory, is under a state directive to review its conservation land holdings.

Teresa Monson, spokesperson for the district, said the acreage has been accumulated over the last 35 years. In addition, another 100,000 acres has been acquired in joint partnership with other entities.

"Some of the lands are sites for water control projects, some for water resource development, but most of the land is open

to public recreation that is compatible with conservation," she said.

The district has learned that some of the lands have limited water resource value or are too difficult to manage. In such cases, the district may have resold the properties rather than spend public funds to manage them.

The state review of land holdings, issued by the Florida Department of Environmental Protection, originated with directives from Gov. Rick Scott right after he took office in January, 2011.

Last December, district land management staff went to their governing board

and proposed to complete a review of all lands owned by the district to see if the parcels met the goals of conservation and restoration.

With an okay from the board, staff began to evaluate the holdings acre by acre. "The idea was to identify which land is surplus or if any portion should be considered for alternative use," said Monson.

During the first half of the year, district staff began to rank properties based on their resource value. The land being evaluated included flood plains, corridors, natural communities and important burning areas. Maps covering all the properties were completed in June.

Recently, officials in Flagler County, which has several parcels of district-owned land within its borders, instructed its staff to approach the water district.

"There has always been a strong land preservation ethic in Flagler County," said Tim Telfer, the county's environmental planner. "We identify ourselves with green space, recreation and water body access."

The county has had its own land acquisition program since 1988 and Telfer noted that the county and district have had a history of partnering on projects.

Initially, county fathers wanted to make sure they were engaged with the district to guarantee that the use of public lands within the county would not be altered and that the lands would not be put up for sale.

Before the dialogue started, district staff in Palatka had been trying to come up with ways to work with other government agencies within their district. When Flagler stepped forward, a road map for inter-

agency cooperation was created.

Robert Christianson, director of the Division of Operations and Land Resources at the district, emphasized that the same dialogue will commence with all the counties in the district with recommendations for all district properties going before the governing board at an upcoming meeting.

Telfer noted one major factor in getting the water management district's ear. "It was the level of engagement we pursued," he said. "We performed our own analysis, and they were receptive to us. We found a lot of common ground."

In the meetings, Telfer said both parties shared concerns. The result was that some parcels will be transferred to Flagler, and others will be maintained in a joint-management arrangement. In joint arrangements, the district will take the lead in water management allowing the county to expend their resources elsewhere.

Christianson said district staff has concluded that most of what is owned by the district is important for conservation. "We now have to determine the limited number of acres not necessary for conservation and how to dispose of them," he said.

In Flagler, there are a couple of parcels that are likely candidates for timber leases.

"We would be changing the type of pine trees growing there. That could be done by a private lease or in-house by the district," said Christianson.

For Flagler, the district plans to recommend a donation of 4,687 acres to the county and 2,015 acres for timber lease. No land will be sold.

concerns to this panel discussion.

The speaker at Thursday's luncheon, Chuck Whisman, PE, Groundwater & Environmental Services Inc., will address recent shale gas activities in the country and provide an overview of natural gas extraction by fracking. This new technique has increased the U.S. gas supply by double digits annually for the past four or five years.

Although many fear adverse environmental consequences, the benefits of fracking are substantial. Advanced natural gas extraction techniques are not going away. Whisman will discuss the state of the practice and the benefits derived from it.

Conference chair Nick Albergo, president and CEO of HSA Engineers & Scientists in Tampa, will again kick-off the conference with his keynote address. He plans to share some thoughts on the unique challenges of his recent work on cleanup projects overseas.

The Florida Remediation Conference has always hosted a large number of exhibitors offering remediation equipment; consulting, engineering and technical services; and environmental laboratory and drilling services, among others. This year is no exception. The number of vendors continues its year-after-year increase with 90 exhibitors and sponsors in attendance.

Conference organizers have not overlooked the opportunity to enhance interactions among professionals while raising money for a worthy cause. The 2012 conference again features its charity golf tournament to be played on Wednesday before the conference at the nearby Celebration Golf Club. This year, the tournament benefits Kids Beating Cancer.

On Thursday night, SWS Environmental Services hosts a night at Universal's CityWalk, providing transportation from the Caribe Royale, the new home for the conference this year, to CityWalk and back.

At the conference, attendees have an opportunity to meet and greet, to inform, and to be informed—all in a casual but upscale venue in Central Florida.

The remediation industry has no doubt been affected by the slow economy of the last four years. But technical advances and practitioner competence continue to advance the discipline. The conference is one of the best meetings in the country to get a front row seat to the progress that is ongoing, and to meet and speak with those in the know.

PREVIEW

From Page 8

ing the use of recycled crushed glass as flowable fill for a large petroleum source removal project in north-central Florida.

In this case, tons of contaminated soil had to be removed. The soil was replaced with crushed glass from a light bulb recycling facility. The glass was effective as a substitute for clean soil and displaced about 80 tons of material whose fate was otherwise taking up space at a landfill.

Glenn MacGraw, PG, the FGS Group, will again moderate the popular Regulatory Panel Discussion, which will be conducted following Friday's lunch. The panel includes Tallahassee-based DEP representatives Jorge Caspary, PG, Robert Brown, PE, Rob Cowdery, PE, and John Wright, PE.

It is rare to have so many significant DEP department and divisions represented at one conference with the current travel restrictions in place. MacGraw encourages all participants to bring their questions and



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Thursday,
October 11, 2012



9:00 Welcome

Mike Eastman, Publisher/Editor, Florida Specifier
FRC Manager and Conference Host

Keynote Address from the Conference Chair

Nick Albergo, PE, DEE, President/CEO
HSA Engineers & Scientists, Tampa

9:30 Session 1A: **Enhancing Anaerobic Bioremediation of Chlorinated Ethenes in Low-pH Aquifers**

Brad Elkins, MS, Technical Support Manager, EOS Remediation LLC, Raleigh, NC

Aquifer pH has an enormous impact on enhanced reductive dechlorination of chlorinated ethenes, cVOCs. Dechlorinating bacteria that reduce parent cVOCs, such as PCE and TCE, to ethene are sensitive to pH, exhibiting significantly reduced degradation rates at pH less than 6. At many field sites, however, aquifer pH is naturally acidic and base addition is required to generate optimal pH conditions for cVOC dechlorination. Increasing aquifer pH for in-situ bioremediation can be a challenging task. Commonly used strong bases, including NaOH and KOH, can result in excessively high pH if not closely controlled. Weaker, easier-to-use bases, such as Na₂CO₃ and NaHCO₃, offer relatively low alkalinity/pound, necessitating large quantities to overcome the natural soil acidity while adding large amounts of sodium to the aquifer. Alternatively, Mg(OH)₂ is safe to work with, provides greater alkalinity/pound, and serves as a long-term buffer since it is less soluble and slowly dissolves over time. Despite these benefits, distribution of an aqueous Mg(OH)₂ suspension in-situ can be complicated by attractive forces between the positively-charged Mg(OH)₂ particles and the negatively-charged aquifer sediments. A recently developed colloidal Mg(OH)₂ formulation, CoBupH-Mg, has a negative surface charge designed to increase distribution. Laboratory column tests demonstrated excellent transport of CoBupH-Mg through aquifer sand. After three pore volumes, only 18 percent of the injected Mg(OH)₂ was retained within the column and no significant permeability loss was observed, suggesting that large volumes of this suspension can be distributed away from an injection point without clogging the aquifer. This presentation will illustrate the effectiveness of Mg(OH)₂ in adjusting aquifer pH, the laboratory results from CoBupH-Mg column experiments, and geochemical modeling demonstrating its potential for extended longevity.

10:00 Session 1B: **Alternatives for Successful Bioremediation at Low pH**

Jeff Roberts, MS, Laboratory Manager, SiREM, Guelph, Ontario, Canada

Bioremediation of chlorinated compounds is optimal in the neutral pH range of 6.8 to 7.5. Below pH 6.0 complete biodegradation of chlorinated ethenes to ethene can be difficult to achieve. Many sites in the Southeast U.S., including Florida, Georgia, South Carolina and North Carolina, have natural groundwater pH commonly below 6.0. This, combined with acid generation from reductive dechlorination and fermentation of many electron donors, can make bioremediation challenging at some sites in the Southeast. In recent years, modifying aquifer pH using buffering agents such as sodium bicarbonate and commercial buffer formulations has become increasingly common at low pH sites. Aquifer pH modification has been met with varying degrees of success depending on application method, site geology and geochemistry, but is generally considered challenging. Effective alternatives would be welcome. In certain cases, especially where pH is near or slightly below 6.0, the use of bioaugmentation cultures acclimated to lower pH could reduce the need for aquifer neutralization. There is increasing evidence that complete dechlorination to ethene is possible below pH 6.0 with pH tolerant bioaugmentation cultures, including a low pH acclimated version of KB-1[®]. The challenges associated with pH modification and the use of low pH acclimated cultures will be highlighted using case studies from sites in Florida and around the Southeast.

10:30 Break

11:00 Session 2A: **DNAPL Identification, Characterization and Mapping Techniques**

Cal Butler, PG, Senior Geologist
Black & Veatch Special Projects Corp.
Tampa

Historically, DNAPL source regions have gone undelineated for a couple of reasons. First, the bulk of borings/wells on any particular site were installed downgradient to identify and contour the low-level leading MCL edge of the dissolved fraction of the plume. Consequently, only a handful of borings/wells were advanced in or near the source zone, frequently missing the "mother lode" altogether. Second was the valid fear that drilling through the source zone would cause more damage than good because of vertical migration of the plume. Currently, regulators and other stakeholders understand the importance of source area delineation, and careful drilling techniques with experienced field personnel limit the probability of conduit formation and contaminant drag-down. The

identification, delineation and characterization of DNAPL on sites impacted by SVOCs or VOCs are essential for the accurate portrayal of the conceptual site model. The degree of DNAPL contamination can be subdivided into zones of either residual or mobile NAPL depending on whether there is enough liquid in the pore space to coalesce/coagulate to promote further migration. Movement or pooling of NAPL relies heavily on the geotechnical properties of soil, and the physical properties of the NAPL. In this presentation, four creosote and coal tar DNAPL sites in Florida are examined with field tests and observations that assist in the recognition of soil horizons of residual versus pooled NAPL. Downhole High Resolution Site Characterization techniques including laser-induced fluorescence and geophysical plume mapping are also discussed as invaluable tools for preliminary NAPL delineation.

11:20 Session 2B: **Using the MiHPT to Characterize a Solvent Plume**

Brad Carlson, Manager, Direct Sensing, ZEBRA Environmental Corp. Tampa

The MiHPT system utilizes the dynamic sampling approach of real-time field measurements to determine a range of contaminant concentrations, the degree of heterogeneity and spatial correlation for contaminant distributions and movement. Real-time screening does not replace laboratory analysis with its high degree of certainty. Rather, combining real-time field measurements and laboratory analysis supports risk characterization, risk-based cleanup negotiation, remedy selection and protective site reuse strategies. One benefit of the MiHPT system is to expeditiously reduce site characterization uncertainty to promote effective remedial solutions. Real time field measurement using the Membrane Interface Probe includes three screening sensors; however, chemical speciation and actual concentrations are not achieved by these detectors. Selected confirmation sampling is necessary at critical locations to determine contaminant nature and extent with a high degree of certainty. MiHPT results can be evaluated daily to optimize and reduce laboratory-analyzed sample collection needed to identify the spatial contaminant distribution. Therefore, utilizing MiHPT in a dynamic sampling strategy, a critical element of MiHPT system, combined with the proper placement of confirmatory samples can significantly reduce the overall project cost and expedite site remediation. The objective of this presentation is to demonstrate the use of the MiHPT System to streamline and optimize remedial decision making.

11:40 Session 2C: **Application of High Resolution Characterization and Three-Dimensional Imagery to Develop an Effective Conceptual Site Model**

Jill Johnson, PG, Senior Hydrogeologist, Geosyntec Consultants, Pensacola

A case study from work performed at a Kennedy Space Center site highlights how high-resolution sampling techniques for source characterization combined with three-dimensional modeling is critical to the development of an effective conceptual site model that will ultimately affect site cleanup costs and timeframes. At this NASA KSC site, a RCRA facility investigation conducted by a previous consultant delineated a CVOC plume to meet regulatory requirements. A limited CVOC plume was identified on-site, consisting primarily of cis-1,2-dichloroethene and vinyl chloride. Parent compounds were not identified or were detected at very low levels, and the assessment was concluded without identification of a source area. In 2008, Geosyntec recommended supplemental assessment due to consistently elevated concentrations of cDCE in a long-term monitoring well at the site. Supplemental assessment activities included high frequency, discrete interval direct push technology groundwater sampling and a membrane interface probe investigation. During these activities, a source area with TCE concentrations up to 160,000 µg/L and dissolved plumes extending off-site were identified. In the source area, DPT locations were as close as 10 to 15 feet apart and in some areas, the TCE source area is less than 20 feet wide. The high resolution dataset was used for detailed 3-D modeling to develop an effective CSM to support follow-up remediation. This case study demonstrates that while meeting regulatory requirements and understanding the distribution of a dissolved plume is important, remedial success and cost ultimately hinge on understanding the location and architecture of the source area.

12:00 Day One Luncheon, Sponsored by Jamson Environmental

Shale Gas Initiatives in the U.S.

Chuck Whisman, PE, Chief Technical Officer

Groundwater & Environmental Services Inc., Exton, PA

U.S. shale gas production has grown rapidly in recent years as the natural gas industry has improved drilling and extraction methods, creating significant opportunities for many business sectors across the country and reshaping our nation's energy outlook. U.S. shale gas production is projected to increase from 23 percent of total U.S. gas production in 2010 to 49 percent by 2035. Total output from shale formations in the continental U.S. averaged 25.58 billion cubic feet

Continued on Page 12

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Presentations by GES

Ozone & Hydrogen Peroxide Injection for Dissolved-Phase PAH & Creosote DNAPL Impacts

by Tracy Deal/Ernest Mott-Smith, Black & Veatch

Surfactant-Enhanced GW Extraction for Expedited Remediation

by Lydia Ross/Dave Sheehan

Incorporating Sustainability into Remediation

by Lydia Ross/Michael Spievack

Shale Gas Initiatives in the US

by Chuck Whisman

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a day in May 2012, an increase of 24 percent from May 2011. In addition to the environmental benefits associated with increased natural gas usage, the economic benefits of this development are resonating throughout the nation through more affordable energy resources, low natural gas and NGL prices, significant job creation, large transportation and infrastructure projects—pipeline, storage, shipping, rail and more—and significant growth in the petrochemical industry including providing lower-cost feedstock to the Gulf region. According to a recent economic analysis, the natural gas industry invested more than \$12 billion in Pennsylvania alone in 2011 while supporting more than 200,000 jobs across the region through the develop of the Marcellus Shale. Other U.S. states are feeling a similar natural gas and NGL exploration and production boom, including Texas, Oklahoma, North Dakota, South Dakota, Wyoming, Ohio, Colorado and West Virginia. This discussion will provide an overview of the shale gas boom in the U.S. and how it will increasingly impact businesses and the economy throughout the country for many years to come.

1:30 Session 3A: **Surfactant-Enhanced Groundwater Extraction for Expedited Remediation**
David Sheehan, PE, Senior Engineer, and Lydia Ross, EIT, Engineering Supervisor
Groundwater & Environmental Services, Inc., Ft. Lauderdale

A surfactant-enhanced groundwater extraction event was performed to address persistent residual BTEX concentrations above GCTLs and benzene concentrations above NADCs in groundwater in the area of an active tank field at a retail gasoline station in Miami. No discernible decrease in concentrations was observed during several years of natural attenuation monitoring. Given the relatively low amount of residual mass at the site and the proximity of an active tank system, a one-time surfactant-enhanced groundwater extraction event was proposed as a more sustainable and shorter-duration remedy than a traditional system installation. A non-ionic, biodegradable, non-toxic surfactant was selected for this application. A product submittal application was submitted to the Miami-Dade County Department of Environmental Resource Management and an underground injection control permit was applied for and received prior to application.

Approximately 5,000 gallons of groundwater were pumped out of the tank field and replaced with 5,000 gallons of surfactant solution that was left in the ground overnight. On the following day, 5,000 gallons of surfactant solution and groundwater were recovered. Groundwater samples were collected from surrounding monitoring wells before and after the event to confirm the recovery of the surfactant solution. Due to detailed, specific sampling parameters required, including all contaminants, chemical components and possible by-products, three separate laboratories in three different states were contracted to perform the analyses. The surfactant-enhanced groundwater extraction event was performed in August 2010. As of February 2012, all BTEX compounds were below GCTLs and residual octylphenols, a surfactant by-product, continue to decrease to pre-injection baseline levels.

2:00 Session 3B: **Coupling Polymer Flooding with Bioremediation for Enhancing the Distribution of Biological Amendments and Microorganisms**

Sean Davenport
Environmental Research Chemist
Carus Remediation Technologies
LaSalle, IL

In-situ bioremediation has been successfully used to remediate a variety of organic contaminants worldwide. The application of organic substrates and/or microorganisms for the detoxification of emerging and recalcitrant compounds shows great promise for ensuring successful and complete remediation of contaminated sites. The coupling of shear-thinning polymer floods, such as xanthan polymer, with traditional in-situ remediation technologies has shown great promise in improving the distribution of amendments in heterogeneous subsurface systems. Several microcosm experiments were performed to elucidate the timing and extent of xanthan polymer degradation in subsurface soils. During the course of the experiment, changes in solution properties, including viscosity and reducing sugar concentrations, were used to determine the rate of polymer degradation in two different aquifer soil samples. Additionally, the potential for degradation of the xanthan polymer to provide a source of carbon to facilitate reductive dechlorination was examined. Finally, the coupling of shear-thinning polymers with bioaugmentation shows promise for enhancing microbial transport and distribution in heterogeneous aquifers. Dual-permeability, 2-D tanks were used to demonstrate the transport of dehalococoides cultures using both polymer and artificial groundwater as a carrier solution. The results of the microcosm and 2-D tank experiments will be presented.

2:30 Break

3:00 Session 4A: **Laboratory and Field Evaluation of a Novel Liquid Amendment Containing Lecithin and Ferrous Iron**

Patrick Hicks, Technical Sales Manager
Southeast Territory
FMC Environmental Solutions
Philadelphia, PA

This presentation focuses on the results of long-term laboratory evaluation of a recently developed reagent for anaerobic remediation of chlorinated hydrocarbons and redox-reactive metals. The reagent is a buffered micro-emulsion of slow-release, food-grade carbon lecithin, ferrous iron and a redox buffer. Results from the initial bench-scale evaluation shows how the product formula was developed and what the role of each component is with respect to microbial and abiotic pathways of reductive dechlorination. Subsequent product testing was designed to evaluate long-term effectiveness using contaminated site groundwater. In addition, an overview of the status of ongoing field pilot evaluations will be provided. Flow-through column tests were used for all laboratory evaluations. The procedure included packing the columns with site aquifer material that was either unamended or amended with the evaluated reagents. The flow rate corresponded to a residence time of five days within column beds. All columns received site groundwater containing TCE and cDCE. The columns were evaluated under natural conditions and after bioaugmentation using a commercial dehalococoides inoculum. The columns have been operated for 14 months and monitored data included concentrations of TCE and its breakdown products, TOC, pH, ORP and

Continued on Page 13

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Questions? Call Eric Brown, SWS, at (727) 546-6193.

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inorganic parameters. Average TCE and cDCE concentrations in the influent were at about 5,000 and 600 µg/L, respectively over the test period. No TCE breakthrough was observed in the amended column from the initial sampling event at 14 days after initiation. A cDCE concentration increase to a value of ca. 5,000 µg/L was observed in the amended column effluent after about 40 days of flow. This intermittent cDCE peak corresponded to a direct conversion of TCE to cDCE. Complete treatment of cDCE was observed after about 75 days of flow, which was accompanied by VC generation at values ranging from about 500 to 1,600 µg/L. The amount of VC generated in the amended column corresponded to molar conversion of between 20 percent and 60 percent of influent TCE plus cDCE. After about 175 days of flow, the amended column was bioaugmented by an inoculum. Subsequently, complete degradation of the influent chlorinated ethenes was observed in the effluent of the amended column. Dissolved organic carbon was generated within the amended column from carbon fermentation, as expressed by a substantial increase in total organic carbon in the column effluent. TOC concentrations of about 950 mg/L were observed in the amended column effluent within the initial 30 days of flow. Subsequently, the TOC levels decreased to a steady-state concentration of about 10 mg/L above the influent value after about 120 days of flow. This TOC level was maintained in the remainder of the test period. Comparing the amount of carbon in the amendment added to the column to that cumulatively released as TOC over the test period, about 30 percent of the added carbon mass was retained within the column bed after about 400 days of flow. Since complete degradation was observed in the amended column in the latter part of the test when the effluent TOC levels were relatively low, it appears that the slow release components of the amendment retained within the column bed were sufficient to sustain microbial and abiotic processes that provided complete treatment of influent TCE and cDCE.

3:30 Session 4B: **Biogeochemical Iron Reduction for Dechlorination of Chlorinated Solvent Plumes- Status of Practice Shift from Biotic to Abiotic Degradation Pathways**

James Studer, MS, PE
Managing Principal
InfraSUR LLC, Albuquerque, NM

With respect to the remediation of subsurface plumes containing chlorinated aliphatic hydrocarbons such as PCE, TCE and TCA, a popular approach to in-situ treatment is biological reductive dehalogenation. However, abiotic reductive dehalogenation, is gaining ground with variations based on zero-valent iron or hybrids with biotic pathways being perhaps the most popular at this time. A ferrous monosulfide-based approach has been under development for the last decade and is now set to enter the remediation professionals practice as a highly attractive technology option. This new approach is referred to as biogeochemical reductive dechlorination, or BiRD. It has been shown in multiple government-sponsored demonstrations to achieve desirable technology and economic performance metrics relative to biological and ZVI approaches. BiRD is currently being tested and implemented at commercial scale in Florida. BiRD is an engineering process based on amplification of naturally occurring biogeochemical and geochemical reactions where solid-phase iron sulfide minerals are generated in-situ and en masse as a permeable reactive barrier. Discriminating benefits of BiRD include: rapid degradation of a wide range of chlorinated compounds; no production of undesirable transformation products cis-1, 2 DCE and vinyl chloride and therefore avoidance of accumulation of these products; and greatly reduced conversion of carbon to methane. BiRD is a highly robust process that can be reliably implemented using low-cost treatment materials and trench-based or direct injection tactics. The presentation will describe the salient features of the spectrum of treatment technologies ranging from biological to biological-abiotic, a ZVI-based hybrid, to strict abiotic and will introduce the BiRD technology. A case study involving the side-by-side demonstration of biological dehalogenation and BiRD will be presented to illustrate the differences and similarities between the technologies and the features and benefits of BiRD.

4:00 Session 4C: **Evaluating Organic Substrates as Soluble DVI Transport Mechanisms**

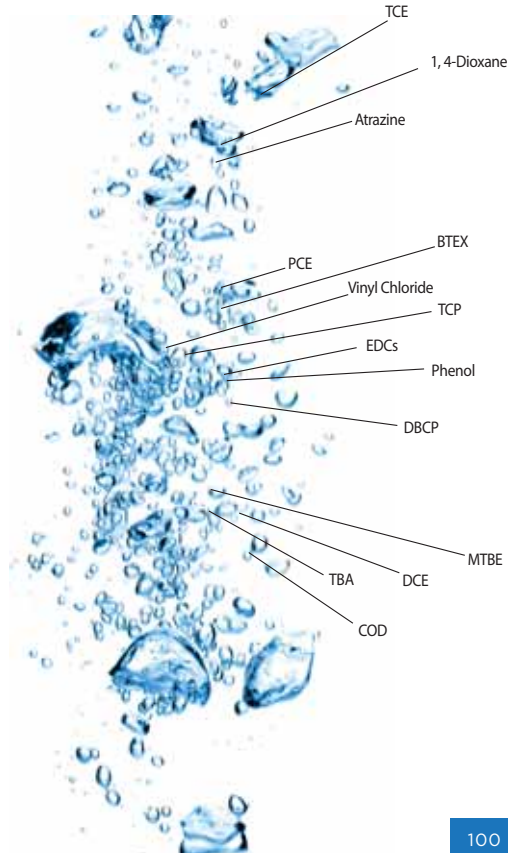
Donovan Smith, PE, President
JRW Bioremediation LLC, Lenexa, KS

In-situ biologically enhanced reductive dechlorination and chemical reduction have developed as parallel technologies for the remediation of chlorinated solvents for more than a decade. More recent advances in remedial design have attempted to take advantage of the benefits of both processes by combining organics with either zero valent iron, ZVI, or dual valent iron, DVI, in order to promote both abiotic and biotic contaminant degradation. These systems benefit from a positive interaction between the abiotic and biotic components. Benefits include maximizing abiotic degradation rates by keeping the iron surfaces reduced by providing electrons as a result of substrate fermentation, soluble iron reduction and direct iron reducing bacterial activity. Most of these combinations have relied on suspending the iron particles in solution or as part of an emulsion system to increase distribution. Because the approach has been centered on the suspension of solid ZVI and DVI particles, distribution through low permeability systems remains problematic. The problem may potentially be solved by broadly dispersing a mixture of soluble DVI within an organic to promote distribution throughout the aquifer. To evaluate the performance of soluble DVI compounds in various highly mobile organic substrates, JRW performed a series of microcosm studies to demonstrate the viability of the process and identify the possible biotic and abiotic mechanisms. The study was conducted by introducing mixtures of various DVI compounds and organic substrates into biologically active systems containing trichloroethene and then monitoring the changes over time. This presentation presents the results and discusses field application implications.

4:30 Session 4D: **In-Situ Chemical Reduction of Removal of Kepone and Other Pesticides**

Jim Mueller, PhD
Technical Applications Manager
FMC Environmental Solutions, Freeport, IL

The global use of organochlorine pesticides, such as Lindane, DDT, Dieldrin, Kepone, Chlordane and Toxaphene has resulted in long-term soil impacts at many sites. Given the potential risks to human health and the environment, some OCP-impacted sites require treatment. One example is the use of the insecticide Kepone on banana plantations until the late nineties in the French West Indies, which has resulted in the contamination of drinking water supplies; bans on vegetables, fish and sea food consumption and commercialization; and increased occurrence of prostate cancer. As in many other cases, the dig-and-dump approach is not practical here due to the magnitude of the problem, access issues and resource constraints. Alternatively, bioremediation may potentially be used to treat the soils on site, often at lower costs and certainly in a more sustainable manner. Unfortunately, most OCPs, notably kepone, are not amenable to conventional bioremediation technologies. In-situ chemical reduction entails the combined effects of stimulated biological oxygen consumption and direct chemical reduction with reduced metals, leading to enhanced decomposition reactions that are realized at the lowered redox conditions. To facilitate ISCR conditions, DARAMEND® amendments combine controlled release carbon with a reduced metal, such as zero-valent iron or zinc, to stimulate the degradation of persistent organic compounds without accumulation of catabolic intermediates. Most soils can be effectively treated in a reasonable time frame using standard agricultural machinery at a price typically less than U.S. \$20 per tonne of soil treated. In the present work, ISCR with Daramend was applied on the three major soil types of the French West Indies in studies under controlled conditions and with detailed



physicochemical and microbiological monitoring. The presentation will summarize the ISCR approach followed by results from technology validation tests for remediation of kepone impacted soils from banana fields. Mesocosm studies conducted with site soils demonstrated a 90 percent decrease in kepone concentration for the nitrosoil, 88 percent for the ferral soil and 47 percent for the andosoil, with significant fluctuations over time in the control and treated soils. Unexpected buffering capacity of the redox potential was observed in the tropical soils, particularly in the andosoil. Dechlorinated transformation products were observed and subsequently identified, and significant changes in the structure and activities of the bacterial communities of the three soils were also observed. A tentative degradation pathway for Kepone can therefore be suggested. Additional data will be presented on ecotoxicity and bioaccumulation studies.

Day 2
Friday, October 12, 2012

9:00 Session 5A: **Oxidation or Reduction – Some Thoughts on the Big Picture**

Jim Mueller, PhD, Technical Applications Manager
FMC Environmental Solutions, Freeport, IL

Many compounds can be degraded via oxidative or reductive processes. Various in-situ chemical oxidation technologies using oxidizing agents such as hydrogen peroxide, permanganate, Continued on Page 18

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Incremental sampling methodology a useful tool in site remediation

By K. MARK TUMLIN

Environmental professionals are recognizing the increased momentum for using the incremental sampling methodology, ISM, on heavy metal-impacted project sites. While most of the recent ISM attention seems to be focused on performing contamination assessments, it also applies to remediating sites. Recent project experience has revealed certain considerations that should be made between the two efforts.

During the course of a recent heavy metals soil remediation project completed in South Florida, the regulatory-approved remedial action work plan included discrete grab sampling methods for confirming excavation limits.

Although grab sampling has been the industry standard, ISM was also utilized at this site within a specific decision unit to supplement the soil analytical data for confirming the vertical limits of the excavation.

Various challenges were encountered during the ISM sampling program phase, which included the development of the project-specific data quality objectives for the ISM samples and concluded with analytical turnaround challenges. This column summarizes the primary challenges encountered with ISM for remediation and considerations to minimize sampling and analytical error.

Although the site and laboratory identities are being withheld from this article, some project background is useful. The project objectives included capturing impacted soils within the decision unit for disposal and leaving in place the soils above the remediation levels. Visual delineation of impacted soils during excavation was not a definitive tool since discrete sample results collected from homogeneous appearing areas occasionally exceeded remedial action levels. Therefore, attention was focused on the sampling process and high reliance was placed upon the analytical results. The prequalified analytical laboratory performed the analyses on both discrete and ISM samples to maintain analytical consistency.

The difference in collecting and analyzing an ISM sample for the decision unit during a contamination assessment can differ compared to an ISM sample for a remediation confirmation effort because of the considerations required for the environmental media. Within a contamination assessment, the objective of the data is to characterize the contamination location and concentration, whereas on a remediation site, the objective is to confirm the contamination has been removed. With this understanding, our sampling protocol was established.

Since it is commonly understood that the greatest variability in analytical data begins with the sample collection process itself, systematic planning was taken to collect a representative sample in accordance with the current requirements and guidelines. Systematic random sampling within a grid was chosen as the most representative sampling approach. This eliminated potential bias related to the sample collection process which included the collection of natural limestone and sands encountered in the geologic formation cavities.

The proportion of the sample contents of rock and sands was also concerning. If the sample was non-proportional to the formation, the sample data would not be representative of the excavation limits and may not accurately characterize the completion of the remediation.

Once the ISM sample was received by the laboratory, specific sample processing questions needed to be addressed. Questions related to moisture content, aggregate removal, sample splitting, sieving, milling and sub-sampling were addressed. The answers to these questions could potentially change the final data and influence the progress of the project.

For example, large diameter non-impacted formation rock, if left in the sample, would be milled into the final sample volume and could reduce the concentration of the metals in the sample; so removing large diameter aggregates should be considered.

In our case, removing the large limestone aggregate would generate the potential for a worst-case scenario.

Determinations of aggregate removal, sieving and milling should be established during the data quality objectives development process so the laboratory is prepared to generate results consistent with the project data quality objectives.

Finally, when comparing data between the discrete samples and the ISM samples for this project, we found that the ISM results for the decision unit fell within scientific confidence levels compared to the discrete samples, so ISM sampling and analysis proved to be a technically useful tool for soil remediation.

It is important to note that due to the laboratory sample processing time, the turnaround time for ISM samples data may not meet the expedited time demands for a remedia-

tion project. However, as the ISM method matures with increased use and efficiency, the benefits of using it will also improve.

K. Mark Tumlin, MBA, is a vice president with SCS Engineers in Tampa. He currently directs the environmental sciences practice for the firm throughout the Southeast U.S. including assessment and remediation of various magnitudes of hazardous waste sites. As the firm's national partner for environmental data quality, he has been instrumental in integrating ISM into the firm's operations.

Editor's note: For additional details of the laboratory sample processing and analysis, see the Interstate Technology and Regulatory Council publication titled "Technical and Regulatory Guidance, Incremental Sampling Methodology dated February 2012."

Increased site closure options spark more opportunities for redeveloping impacted sites

By STEVE HILFIKER and BOB FINGAR

In 2012, the Florida Department of Environmental Protection has emphasized its desire to help facilitate the closure of regulatory files on impacted sites. This is a great opportunity for many impacted-site property owners, lenders and prospective purchasers. The focus on regulatory closure will open opportunities for redevelopment and enable more cost-effective solutions for parties responsible for previously expensive or cumbersome resolutions.

The DEP's Office of General Counsel was on center stage on Sept. 12, when they explained the June 2012 revisions to the Institutional Controls Procedures Guidance document that will ease the process of regulatory closure through risk-based corrective action. The information was presented via webinar to a large audience of Florida environmental professionals, who now have more tools to close the regulatory files on impacted properties.

As outlined in Laurel Lockett's column in the September issue of the *Specifier*, RBCA streamlining has reduced the post-assessment legal documentation process necessary to obtain clearance from lenders, tenants, easement holders and utilities to close discharges with reasonable conditions.

Conditional closure is now easier in most cases. Prior requirements to obtain legal consent from secured lenders, easement holders and others with an interest in the property—who often were simply not interested in the matter—required unnecessary cost and time, and plagued a viable closure option.

For example, the legal department of one Central Florida utility company resisted efforts to consent to RBCA at a site. They simply did not want to deal with it. The matter provided no benefit (or impact) to their operations and busy people tend to not address issues that are not urgent to them. When they did respond, it was hasty and required additional information. We had to try to keep the disinterested utility legal department involved in an outcome that did not benefit them. It took several years.

The new guidance simply requires a demonstration of legal notice if the controls will not materially affect the interest. If the third party has a concern, they have the opportunity to address it. The RBCA process requires an approved assessment, posting legal notices, title research, a survey in many cases, recording fees and some correspondence to obtain approvals, but the parties will usually be motivated to get it done rather than resist the whole idea. This is a good thing.

If streamlined RBCA unfolds as intended, decision-makers will become more comfortable with it. As consultants managing risk so our clients can close files, sell or refinance, it is our duty to educate the lending and real estate community that the 'O' in SRCO stands for 'order.' Site Rehabilitation Completion Orders with Conditions are still orders and represent final agency action on a regulated discharge. It is a viable and reliable means to close regulatory files.

The Low-Scored Site Initiative is another closure option that has helped owners of currently or formerly impacted property in locations where downgradient nearby drinking water wells do not exist. LSSI has increased the rate of regulatory closures and has provided relief to many site owners with low-risk impacts. LSSI enables mitigated risk, allows contamination to remain on sites under controlled and stable conditions, and provides closure to clean sites in the cleanup program that have not had a chance for state-funded assessments in many years.

At RBCA and LSSI sites that have achieved file closure, while contaminants remain on site, sufficient precautions, controls and data have been obtained to protect human health and the environment. In other words, the risks have been mitigated, the liability no longer exists

and the future owners should not be concerned. If they are informed and we do our jobs as consultants to properly document and educate the interested parties, there should be no environmental issues to block economic progress on these sites.

So transactions, redevelopment and refinancing should not be inhibited if a RBCA closure option is successful. To industry representatives, their trade associations and DEP officials involved in making this happen: Well done!

Many sites do not qualify for RBCA because impacts migrate off site beneath the adjacent roadway. Provided that worker safety is protected in a reliable manner, it would be in the best interest of property owners and the state-funded petroleum cleanup program to extend restrictive covenants within public rights of way.

Two aspects of the June 2012 guidance document make this feasible. The process can include off-site impacts if the impacted-site owner agrees to the restrictions and a stipulation of restrictive covenants requires that if impacted areas are disturbed (which could happen if any utility work was done in a right of way), impacted soil and groundwater needs to be properly disposed of in a manner that will not pose a risk to human health or the environment. Cooperation by departments of transportation at such sites would expand site closure options. As long as their interests are managed as part of the closure documentation process, perhaps someday this can become more common.

How many sites exist in Florida with hardships based on one or more of the following scenarios? A responsible owner operating in compliance paid insurance premiums and managed their sites diligently but couldn't afford the upgrades and ended up with impacted property but no insurance. Determinations of coverage were (perhaps wrongly) denied based on differences of opinion regarding the date and source of the release. Annual inspections and/or release detection systems failed at some point to detect an ongoing small quantity release. Sampling was not required during tank closure or upgrade at a PLRIP or PCPP-eligible site (one of the discharge-specific forms of cleanup program eligibility), and impacts unrelated to the eligible discharge that could have been discovered at a time when the owner had insurance were found later and insurance was declined or not available.

Many similar scenarios exist, including owners of non-program eligible sites or sites with a low program cap, and a high copayment or deductible. In each of these cases, an owner is facing substantial liability that they frequently cannot afford. The new closure options should be considered as a form of relief to these property owners.

The most important factor in this discussion is that the property owner maintains the authority to select the best option to resolve the pollution conditions and unique circumstances of their sites. The best form of closure is and always will be to remediate the site to cleanup target levels. Cost-effective remedial advancements such as episodic sparging, bioremediated recirculatory treatment systems and other innovative technologies continue to be developed.

An owner should never be forced to accept a risk-based closure where impacts remain on their site. Provided they have that security, numerous strategies to manage risk and expand options for site closure will help in the restoration and redevelopment of impacted property in Florida. That message needs to be clearly explained to lenders.

Lenders should be encouraged by the developments described in this column. Many of these developments represent an opportunity for banks that understand that loans are secure on sites where the risks are managed. Regulatory file closure, whether it is done through remediation, determinations of No Further Action or conditional closure on deed restricted property, terminates en-

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Continued on Page 15

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 of the newspaper covers. We reserve the right to edit all submissions for newspaper style and publish submissions on a space-available basis.

Calendar

October

OCT. 1-5—Course: Backflow Prevention Assembly Tester Training and Certification, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 5-13—Course: Backflow Prevention Assembly Tester Training and Certification, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 6—Course: Backflow Prevention Recertification Review, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 8—Course: Backflow Prevention Recertification Review, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 8—Course: Introduction to Commissioning, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

OCT. 8—Course: Optimizing Clarifier Performance & Flow Measurement Workshop, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 8-10—Course: Asbestos: Inspector, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 9—Course: Getting Back to Basics With Landfill Gas, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 9—Course: Health and Safety for Solid Waste Workers-4 Hours, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 9—Course: Backflow Prevention Recertification Exam, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 9—Course: Hazardous Waste Regulations for Generators, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 9-11—Course: Process Control of Advanced Waste Treatment Plants, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 9-17—Course: Backflow Prevention Assembly Tester Training and Certification, Ft. Myers Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 10—Course: Spotter Training for Solid Waste Facilities, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 10—Course: U.S. DOT Hazardous Materials/Waste Transportation, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 10—Course: Greenhouse Gas Accounting-Measuring an Organization's Carbon Footprint, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 10—Course: 4-Hour Refresher Course for Spotters at Landfills, C&D Sites and Transfer Stations, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 11-12—Conference: 18th Annual Florida Remediation Conference, Orlando FL. Presented by NTCC Inc. and the *Florida Specifier*. Call (407) 671-

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forcement. Borrowers are no longer liable on sites with closed enforcement files. Such loans are secure from an environmental regulatory perspective.

As lenders increase their roles in these sites, further opportunities for impacted property owners will emerge.

Steve Hilfiker is president of *Environmental Risk Management Inc.*, a Florida assessment, remediation, forensic and risk management firm. He can be reached at steve@ermi.net. Bob Fingar is a shareholder at *Guilday, Tucker, Schwartz & Simpson P.A.* representing petroleum site owners in matters involving insurance coverage, cleanup, real estate transactions and compliance. He can be reached at bob@guildaylaw.com.

7777 or visit www.enviro-net.com.

OCT. 11-12—Course: Asbestos: Management Planner, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 12-13—Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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

OCT. 15-16—Course: Green Globes Professional (GGP) Training, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 15-19—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.

OCT. 16—Course: Introduction to DEP SOPs for Surface and Groundwater Sampling, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 16—Course: Introduction to DEP SOPs for Surface and Groundwater Sampling, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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OCT. 17-19—Conference: Southeast Stormwater Association Annual Conference, Chattanooga, TN. Call (850) 425-2610 or visit www.seswa.org.

OCT. 18-27—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.

OCT. 19—Course: Backflow Prevention Recertification Review, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 20—Course: Backflow Prevention Recertification Exam, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 22-26—Course: Asbestos: Contractor/Supervisor, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 23-24—Course: Florida Water Conservation Coordinator Training, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 23-24—Course: Florida Water Conservation Coordinator Training, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 23-25—Meeting: ASTM International Committee E60 on Sustainability, Atlanta, GA. Contact Steve Mawn at (610) 832-9726 or visit www.astm.org/meetings.

OCT. 23-25—Workshop: AMTA/SEDA Technology Transfer Workshop: Reducing Costs and Membrane Plants, Key Largo, FL. Presented by the American Membrane Technology Association and the Southeast Desalting Association. Call (727) 463-0820 or visit www.amtaorg.com.

OCT. 24-26—Meeting: Annual Fall Meeting and Technical Session, Florida Society of Environmental Analysts, West Palm Beach, FL. Call (386) 441-3111 or visit www.fsea.net.

OCT. 25—Course: Backflow Prevention Recertification Review, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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

OCT. 30—Course: Backflow Prevention Recertification Review, Ft. Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

November

NOV. 2-10—Course: Backflow Prevention Assembly Tester Training and Certification, Venice, FL.

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

NOV. 3—Course: Backflow Prevention Recertification Review, Bradenton FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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

NOV. 5-9—Course: Backflow Prevention Assembly Tester Training and Certification, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

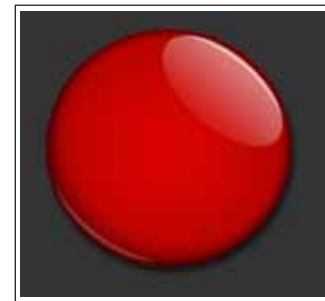
NOV. 6—Course: Backflow Prevention Recertification Exam, Altamonte Springs, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 6-14—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.

NOV. 7—Course: Asbestos Refresher: Inspector, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 7—Course: Laws and Rules for Florida Engineers, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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Backflow Coordinator: Marta Keilhauer, mkeilhauer@treeo.ufl.edu or 352/392-9570 ext. 227

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ADENA
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tion as possible and depend on numerous factors such as soil conditions and grasses, Rand said.

The irrigation systems include significant efficiencies that will irrigate only when necessary, Rand said.

In terms of nutrient management, the ranch has hired a nationally recognized expert to design a nutrient management system that should be finished in about a month. This system uses designated areas known as pivots where cattle graze and move from one area to another while machinery follows them and spreads their

waste products. After about two years of grazing and moving, the cows will eventually reach the processing plant.

"The farm managers know the nutrients required for the grass and on the occasion when more is needed, they will apply more. They will do leaf tests about every two weeks to see if they have the correct amount of nutrients," Rand said.

The revised plan has reduced the amount of pivots from 87 to 34, according to a written statement from the ranch.

William Dunn, an environmental scientist for the project, stresses that the original request would not have caused any harm to the environment, including Silver

Springs or the Silver River.

"This new plan makes any potential impact virtually immeasurable with today's technology," Dunn wrote in a statement. "The nutrient management plan ensures that any excess nutrients leaving the property would be minimal."

Rand stresses that Stronach wants to have as minimal an impact on the environment as possible and even insisted on air scrubbers at the package plant on the ranch even though the engineer told him they weren't required. "The whole ranch is a reflection of that attitude," she said.

Although Knight said he is not against the concept of the ranch, he is opposed to anything requiring more pumping and has advocated that water management officials stop issuing new permits and work toward

reducing current pumping levels.

"The districts need to be looking at things regionally. There is 65-160 mgd missing from Silver Springs' long-term flow from the most recent decade compared to the last 80 years. The only explanation is regional drawdown of the aquifer," Knight said. "There is too much being pumped now and all water bodies are suffering. Until we reduce the amount, we aren't going to see a reduction (in the impacts)."

The district will have 90 days to make a decision once it determines that the revised application is complete. The ranch will probably file the revised application in November, at the same time it submits results for a pump test requested by the district, Rand said.

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NOTES

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information, including the results of an extensive program of test well drilling and sampling.

Old Castle is seeking a 20-year consumptive use permit from the district to withdraw roughly two million gallons daily from the Lower Floridan Aquifer during the first five years of mining and about 100,000 gallons per day for the next 15 years.

The company agreed to build the well and do the sampling, but only after the permit is issued.

E.R. Jahna is requesting a 20-year permit to withdraw 2.16 million gallons of water daily from the aquifer for five years, and 180,000 gallons per day for the next 15 years.

Call for Piney Point investigation. State environmental officials should open an internal investigation into their handling of the Piney Point accident last year, said an environmental advocacy group.

The investigation is being requested by ManaSota-88 which is concerned about the state's role in a 170-million-gallon toxic spill into Bishop Harbor last year.

If the state refuses to cooperate, the organization plans to file suit.

Piney Point is a former phosphate facility purchased by HRK in 2006 to serve as disposal grounds for Port Manatee's Berth 12 dredging project.

In May last year, liners and pipes that housed the dredged material sprung leaks, releasing 2,700 gallons of polluted water a minute into Tampa Bay's Bishop Harbor.

ManaSota-88 holds the Florida Department of Environmental Protection accountable for the incident. The DEP issued all permits associated with the plan and had final oversight.

The group said DEP's risk analysis in July 2009 identified concerns about using gypsum stacks as dredging storage reservoirs, yet the state approved the project anyway. They claim that water discharges at Piney Point still have not been properly

treated to meet Florida water quality standards.

Natural gas vehicle group. A new group has been created to promote the use of natural gas-powered vehicles in Florida and seek incentives from the state.

The Florida Natural Gas Vehicle Coalition said that natural gas is a clean, efficient alternative to gasoline and diesel.

A study done for the group shows state incentives could create 10,000 jobs, \$300 million in new wages and \$1 billion in economic output over 20 years.

Clean Cities coalition reshaped. The former SunCoast Clean Cities Coalition is being reestablished as the Tampa Bay Clean Cities Coalition. The coalition's goal is to establish petroleum reduction strategies and report to the U.S. Department of Energy each year.

The coalition is expected to help the Tampa area reduce its impact on the environment and move toward cleaner transportation alternatives.

The SunCoast Clean Cities Coalition existed from the mid-1990s to the early 2000s. But the group folded because of a lack of resource and federal approval of its plan. The new coalition, encompassing Hillsborough, Pinellas, Pasco, Manatee, Polk and Sarasota counties, will create a forum for business and organizations to network and understand where conservation opportunities exist.

Company news. Clark Environmental Inc. received the first Florida Department of Environmental Protection permit to thermally treat liquid biofuel-contaminated soils. This permit enables Clark to remediate soils contaminated with liquid biofuels, such as ethanol, methanol, biodiesel, green diesel and vegetable oils.

This additional treatment capability will provide Clark with the opportunity to better serve energy, infrastructure, commercial and industrial customers throughout the state of Florida and Georgia.




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FEDFILE

From Page 2

Florida. Collier County is in the Florida panther's primary recovery zone.

The plan is a collaborative effort among many private stakeholders with ranching, development and conservation interests. In total, these conservation efforts will receive more than \$1.2 million.

This money is provided through the Cooperative Endangered Species Conservation Fund, authorized by Section 6 of the Endangered Species Act. These competitive grants provide funding to states and enable collaborative efforts between private landowners, conservation groups and other government agencies. They fund conservation planning efforts, and efforts to acquire and protect habitat of threatened and endangered species.

In 2012, the \$1.2 million received by Florida was part of a total of \$33 million in grants.

Corn wars: fuel versus food. The U.S. corn crop was expected to yield a record harvest when it was planted in the spring. But the summer's record drought in the nation's breadbasket has sharply reduced the harvest, predicted to be the lowest in decades. Livestock farmers find themselves in a head-to-head competition with ethanol fuel producers for a share of the meager harvest.

Farmers have asked the Obama administration to relax the federally mandated schedule for substituting ethanol for petroleum in liquid transportation fuels.

In 2012, the Renewable Fuel Standard stipulated that the U.S. must produce 13.2 billion gallons of ethanol biofuel from corn. That means that ethanol producers will use 40 percent of the nation's corn crop, while livestock producers are expected to use only 36 percent.

Economic competition for the scarce corn is fierce. The bushel of corn that average \$2.15 before 2006 is selling in 2012 for \$8.

Predictably, any response the government makes to tweak any unintended consequences of the Renewable Fuel Standard will be mired in the usual delays anchored by philosophy, politics and self-interest.

Fuel producers said that removing the ethanol mandate would lower corn costs by only about \$.50 per bushel. They point out that the residual left after ethanol production becomes a high-value animal feed.

Livestock-producing interests, on the other hand, said they can't compete economically with a mandated diversion of corn for fuel production. Meat, poultry and egg prices have been rising as a result throughout the summer. Consumer demand is decreasing. Some large producers are buying corn overseas, attempting to get lower prices than are available here.

The U.S. Department of Agriculture said in August that sufficient ethanol from

prior year production is in storage and can be used to meet the current year's blending target. It is next year's target that may be influenced, however.

It may take through the end of the 2012 growing season to get an accurate estimate of corn production and to inventory the available ethanol for biofuel production.

SRS completes cleanup project. As of August 2012, 85 percent of the Savannah River Site had been cleaned up with completion of the environmental remediation plan for the 20-mile-long Lower Three Runs.

That project involved excavation and disposal of about five million pounds of contaminated sediments from three specific sites, miles of fencing and the posting of a couple of thousand signs.

Lower Three Runs is a tributary of the Savannah River. It leaves the Savannah River Site and flows through parts of Barnwell and Allendale counties. The Lower Three Runs project alone accounted for 10 percent of the Savannah River site's environmental footprint.

Officials at the site have been conducting scheduled remediation projects for many years. The American Recovery and Reinvestment Act provided a portion of the funding for the accelerated cleanup.

Phosphorus management grants. The Department of Agriculture announced two grants that will benefit both Florida farmers as well as Florida's aquatic habitats.

The first grant, "Refine and Regionalized Southern Phosphorus Assessment Tools Based on Validation and State Priorities," is a multistate program administered through North Carolina State University. Its goal is to ensure that most Southern phosphorus assessment tools have been tested based on guidance in the 2011 NCRS 590 standard and compared to water quality data.

The benefit of validating these phosphorus assessment tools will be to assure greater similarity in regional Phosphorus Index Ratings and recommendations. Florida is one of 10 Southern and lower Midwestern states collaborating on this project.

In addition, the National Fish and Wildlife Foundation will receive \$230,000 for "Creating a Tool for Assessment and Mitigation of Agricultural Operations to Benefit Coral Reefs."

This project has two goals. The first is to develop a standard methodology toolkit for island jurisdictions that will evaluate the source of sediments and nutrients that affect coral reefs. This will allow for a clear characterization of what portion is attributable to agriculture.

The second part of the project is to use genetic markers to evaluate the reduction of stress responses due to agricultural operations on coral reefs in real time.

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9:30 Session 5B: The Evolution of Innovative Technologies for Soil and Groundwater Remediation

John Haselow, PhD, PE, President
Redox Tech LLC, Cary, NC

Over the past 17 years, Redox Tech has implemented over 900 turn-key in-situ soil and groundwater remediation projects mainly using chemical oxidation and reduction, as well as aerobic and anaerobic bioremediation. During the period, a number of technologies have evolved and matured in the marketplace. A large number of technologies were never accepted by the

marketplace for varying reasons. In its early stages, chemical oxidation mainly involved high strength hydrogen peroxide, ozone or permanganate. Hydrogen peroxide chemistry and its implementation have improved dramatically over the past years. Ozone remains relatively the same with the exception of improvements in the ozone generation systems. Permanganate has remained relatively unchanged with the exception with some new delivery techniques. More recently, persulfate emerged as another viable peroxygen for remediation. Both anaerobic and aerobic bioremediation have matured and the chemicals that are used for their implementation have essentially become commodities. The combination of zero-valent iron with anaerobic bioremediation has allowed reductive technologies to compete with oxidation technologies in terms of timeframes for remediation. For Redox Tech, this has meant that chemical reduction combined with anaerobic bioremediation has largely supplanted chemical oxidation for chlorinated alkene remediation. Also, anaerobic oxidation via sulfate reduction is being more commonly applied for petroleum hydrocarbon remediation versus other electron acceptors. This presentation will provide a perspective on the evolution of these technologies based upon field implementation experience. Also, a brief overview of some emerging technologies for soil and groundwater remediation will be presented.

10:00 Break

10:30 Session 6A: Ozone and Hydrogen Peroxide Injection for Dissolved-Phase PAH and Creosote DNAPL Impacts

Ernest Mott-Smith, PE, Remedial Practice Leader, Federal Services
Black & Veatch Special Projects Corp., Tampa
Tracy Deal, PE, Principal Engineer
Groundwater & Environmental Services Inc. Exton, PA

This presentation discusses in-situ chemical oxidation remediation implemented at U.S. EPA Region 4's Brunswick Wood Preserving site in Brunswick, GA. The site is a former wood preserving facility where creosote, pentachlorophenol and copper chromium arsenate were used. The subsurface is impacted with both dense non-aqueous phase liquid and dissolved-phase and adsorbed-phase constituents of concern. Primary COCs consist of PAHs such as naphthalene, PCP and semi-volatile organic compounds. ISCO bench testing was conducted to determine the proper dosing of ozone and hydrogen peroxide to treat the COCs located within the extended plume. A field pilot test was subsequently performed at the site which consisted of GES' patented HypeAir-EX chemical oxidation system that utilizes ozone, oxygen, atmospheric air and hydrogen. Based on the success of the field pilot study, ISCO via ozone and hydrogen peroxide injection was selected to address the extended dissolved-phase plume beyond the subsurface barrier walls. The HypeAir-EX ISCO system includes an 80 pound/day ozone unit, hydrogen peroxide injection system and an injection well network that includes 74 injection wells covering target aquifer zones ranging between 10 to 55 feet below ground surface. The ISCO system began operation in late July 2011. The presentation will cover the ISCO system design, operation and overall effectiveness of the remediation over 12 months of Hype-Air-EX system operation. Key design considerations for system installation will also be discussed, considering the vast injection well network in the vicinity of numerous underground utility structures and site encumbrances.

11:00 Session 6B: In-Situ Soil Blending with Activated Persulfate

Barry Rudd, President
EXO TECH Inc., Monroe, GA
EXO TECH recently performed an innovative in-situ soil blending treatment at a brownfield

site developed by the city of Cullman, GA. The site was formerly used by a drum manufacturer and contained a mixture of chlorinated solvent VOCs and petroleum VOCs in the vadose zone soils and shallow groundwater. EXO TECH worked with Jymalyn Redmond of Goodwyn, Mills, & Cawood, nationally known for her advances in phyto-remediation. GMC performed an assessment which identified a 4,500-square-foot source area contaminated from approximately two to 12 feet with a maximum of 180 parts per million of trichloroethene, 6.6 ppm of cis-1,2-dichloroethene and lesser concentrations of vinyl chloride, tetrachloroethene, xylenes, ethylbenzene and related VOCs. Impacted soils were identified as silty-clay loam underlain by clay and weathered shale bedrock. Dissolved TCE and DCE were identified above the shallow shale bedrock at concentrations of 49,000 parts per billion and 17,000 ppb, respectively. In December 2011 and January 2012, EXO TECH treated approximately 1,500 tons of impacted soils in-place. Due to the high clay content in the soil matrix, additional lime was utilized for soil conditioning prior to oxidant blending. The results of confirmatory sampling indicate VOC concentrations were reduced to non-detect levels above and below the water table. No Further Action is pending regulatory review.

11:30 Session 6C: Disinfection, Pharmaceutical, VOC and PFC Removal with Coated Nanobubble Ozone

William Kerfoot, President
Kerfoot Technologies Inc. Mashpee, MA

The creation of peroxide-coated, low-micron to nanobubble size ozone increases the effectiveness of disinfection, pharmaceutical, and volatile organic compound removal over traditional dissolved ozone and conventional advanced oxidation procedures. A reverse venturi system composed of a laminar Spargepoint® insert receiving peroxide and ozone positioned after a high pressure pump boosts the rate of removal of trichloroethene to over four times that expected by air stripping. Within pipe systems, gas does not escape, but partitioning proceeds. Kinetics of bench-scale and field tests show that the rate of decomposition is directly proportional to induced pressure change. Each bubble maintains a negative charge which maintains nanobubble separation during fluid transport. Adjustment of the thickness of coating allows control of oxidation/reduction potential of the receiving water to avoid pipe corrosion. The opposing inward partitioning of VOCs appears to collide with outwards dissolution of the concentrated gaseous ozone fraction from surface to volume ratio transfer to create a highly dynamic reactive film region of predominantly hydroxyl radical reaction. The rate of decomposition is greater than that found previously by Glaze and Bowman for AOPs involving dissolved ozone and peroxide. The difficult perfluorohydrocarbon bond also appears to be cleaved, indicating an increase in oxidation potential to the 3.0 volt range. The additional energy may be derived from the energy of collapse of the bubble, adding to the presence of a spherical hydroxyl radical film zone.

12:00 Day Two Luncheon

1:30 Session 7A: Regulatory Panel

Moderated by Glenn MacGraw, PG, Vice President, The FGS Group, Tallahassee
Jorge Caspary, PG, Director, DEP Division of Waste Management, Tallahassee
Robert Brown, PE, Chief, Bureau of Petroleum Storage Systems, DEP, Tallahassee
Robert Cowdery, PE, Professional Engineer III, DEP, Tallahassee
John Wright, PE, Environmental Engineer, DEP BPSS, Tallahassee

3:00 Break

3:30 Session 8A: ITRC, SuRF and ASTM: A Review of Recent Sustainability Initiatives

Buddy Bealer, Shell Regional Manager, Nazareth, PA
Green and Sustainable Remediation is a relatively new concept and an evolution in how site remediation is performed. Several organizations, including the Interstate Technology & Regulatory Council, the Sustainable Remediation Forum and ASTM International, have recently completed, or are in the process of completing, framework guidance documents on how to perform GSR. This presentation will provide an overview and update on some of the key components of GSR and will review the similarities and differences between the different frameworks. The ITRC framework is one of the most well developed and will be presented in a summary format to demonstrate how a GSR framework is being incorporated into a regulatory program and used by responsible parties and consultants.

4:00 Session 8B: Incorporating Sustainability into Remediation

Lydia Ross, EIT, Engineering Supervisor and Michael Spievack, PE, Project Manager
Groundwater & Environmental Services Inc., Ft. Lauderdale
"Sustainability" and "green remediation" are the current buzzwords in the remediation industry, but how can they be implemented during each step of the remedial process? By considering sustainability in terms of its three major metrics—environmental, social and economic—it is easy to identify small changes that can make big differences. This presentation will demonstrate several examples of changes that have been made in various steps of the remedial design and implementation process to show how each supports one or more of the three metrics. The

Continued on Page 19

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Registration and Hotel Information

Continuing Education Credits: PE and LEP

National Technical Communications Co. Inc., producer of the Florida Remediation Conference, is an approved Continuing Education Provider (CEP 0004002) for the Florida Board of Professional Engineers. As a provider, NTCC offers Professional Development Hours for FRC 2012 to professional engineers who are licensed in Florida (and other states) as follows: Attend both days, earn 12 PDHs; attend Day One only and earn 6 PDHs; Day Two, 6 PDHs. **Sign-in is mandatory for PEs and your PE license number is required.** CEUs are also available for PGs in South Carolina, Alabama and other states where continuing education required for PG licenses.

In addition, FRC has qualified for continuing education credits through the International Society of Technical and Environmental Professionals Inc., INSTEP. Credits apply to those currently registered by this association. Participants will receive one CE credit for every actual hour of instruction. LEP's may enter their credits on the LEP Center Section of the INSTEP website.

Hotel Reservations

Make your room reservations directly with the hotel. Go to our website at www.enviro-net.com and click on "Room Reservations at Caribe Royale" under the FRC logo or call 1-800-823-8300. If calling, identify yourself as an attendee of the 2012 Florida Remediation Conference when booking your room. Double Queen and King suites are \$129/night; King Deluxe suites are \$149/night and villas are \$254/night. This special discounted room rate will be available until Sept. 16 or until the group block is sold-out.

Registration

Registration for the full 2011 Florida Remediation Conference is \$395. Day One only is \$285 and Day Two only is \$235. The fee includes registration for the conference, conference manual on flash drive (binder as extra), continental breakfasts, beverage breaks, luncheons and the reception for Day One registrants.

To register for the conference, complete and return the registration form on the next page with payment in full to: NTCC Inc., P.O. Box 2175, Goldenrod, FL 32733, or fax your completed registration form with credit card information to (407) 671-7757. This is a secure fax number. (Purchase order numbers are accepted for government employees.)

We encourage you to register early. Conference registration is limited to avoid overcrowding. Please note: Payment in full is required to confirm your registration. Cancellations received before Sept. 11, 2012, will be refunded, less a \$75 service charge. No refunds will be made for cancellations received after that date. However, paid no-shows will receive a copy of the presentation materials upon request. Substitutions will be accepted at any time, preferably with advance notice.

18th Annual



2012 Conference Registration

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SWS Environmental Services / Florida Specifier

FRC Night at CityWalk

7:00 PM, Thursday, Oct. 11, 2012



Join us after Day One of the Florida Remediation Conference, Thursday, Oct. 11, for some good times as we wind down from with an evening at Universal's CityWalk. Luxury coaches, sponsored by SWS Environmental Services and the Florida Specifier, will leave from the Caribe Royale's convention center at 7:00 PM following the FRC reception and head down to Universal's City Walk, just a few minutes away.

CityWalk features night clubs, bars and restaurants, putt-putt golf, cinemas and shops of all kinds—pretty much anything you can think of in the way of evening entertainment. Dinner and drinks, etc. are not included in this night out. Bring the plastic! We will get you there and back safe and sound—but you're on your own while at CityWalk.

At the stroke of midnight, buses will leave CityWalk for the return trip to the Caribe Royale. Should you miss the bus or want to leave earlier, you will need to call a cab or make other arrangements for transportation back to the hotel.

Best of all, there is no cost to participate in this night out at CityWalk. SWS and the Specifier are picking up the tab for the buses. But you must register (by checking "CityWalk" on the registration form) to participate so we can make arrangements for the appropriate number of buses. For more information, contact Eric Brown, SWS, at (813) 917-0576, eric.brown@swsenvironmental.com, or Mike Eastman, Florida Specifier, at (407) 671-7777 or mreast@enviro-net.com.

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environmental benefit involves methods to reduce the environmental footprint during the remediation process. The social benefit is consideration and support of neighbors and the local community. The economic benefit focuses on reducing costs associated with remedial implementation and operation and maintenance activities. This presentation discusses how sustainability can become a routine part of a remediation system design by incorporating both technical and nontechnical measures.

4:30 Session 8C: Using Recycled Glass in Flowable Fill for a Large Petroleum Contaminated Source Removal Project

Angela Finney, Senior Geologist/Project Manager
 AMEC Environment & Infrastructure, Tallahassee

The concept of sustainability should now be part of the discussion when developing site remediation plans. AMEC completed an LSRAP for the remediation of petroleum contaminated soil at Tharp's Grocery in Cypress, FL, proposing to cleanup contaminated soil using excavation via large diameter augers. As part of our internal sustainability program, opportunities to implement sustainable remediation practices were also explored. A local fluorescent light recycling facility generates 20 tons of recycled glass per week that is currently being landfilled. The proposed site remediation process included backfilling boreholes with a flowable fill mixture which included sand. AMEC met with Robert Brown, PE, chief of the DEP's Division of Waste Management's Bureau of Petroleum Storage Systems, to discuss the prospect of using the recycled glass in lieu of sand as a small percent of the flowable fill mixture. The concept was also discussed with Johanna Poston with DEP's Greening Florida Government program, regarding the benefits of reusing the recycled glass to promote the sustainability concept of reducing, reusing and recycling and contributing to DEP's recycling goal of 75 percent. Authorization was given to proceed based on the successful results of laboratory analysis and material testing. During a four-week period, approximately 80 tons of recycled glass were diverted from the landfill and successfully incorporated into the site remediation project. The opportunity to expand this practice to other site remediation projects across the state appears to be viable.

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materials used, their involvement in the market stands to be substantial if billions of dollars of RESTORE Act funding should become available.

In September, EDF will release a state-by-state characterization of the value chain analysis for environmental remediation associated with near-shore and estuarine Gulf environments. This is the next step, tailored to a state-by-state view, to show what technologies are available for restoration efforts and what the economic impact could be in terms of jobs and material purchases.

A strategy of engaging the public's support for environmental restoration as an economic activity has been carefully orchestrated by EDF under the direction of Jackie Roberts, EDF's director of sustainable technologies.

"We have realized in this particular climate, as we advocate environmental projects that will benefit communities, it will incur a cost in investment. We focus on benefits in terms of creating customers in different regions," Roberts said. "We are tangible and specific about what industries are prone to grow."

EDF began this strategy when lobbying for the RESTORE Act. Roberts said that lobbyists for the oil industry suggested that they should receive a portion of any

funding because they were the most capable of immediately providing significant employment in the region. Roberts noted that the EDF analysis indicated just the contrary: as oil exploration and drilling has moved offshore, less work for local dredgers and marine construction contractors became available.

On the other hand, marsh restoration, oyster reef construction and other restoration efforts provide jobs to local businesses and workers left behind by the oil industry's move to deeper water.

The idea of showing state-by-state, and by implication congressional district by congressional district, what businesses would benefit if RESTORE Act funds were spent for specific restoration activities is seen to be a particularly effective opportunity to continue what Roberts described as "our strategy of the microeconomics of sustainability." By that she meant making an open effort to link specific jobs in specific communities with environmental restoration to enhance the sustainability of natural resources.

The EDF was heavily involved in lobbying for passage of the RESTORE Act. Any fines collected will be determined by provisions of the Clean Water Act.

Prior to the RESTORE Act, fines collected under the Clean Water Act went into the U.S. Treasury's general fund.

The RESTORE Act provides 80 percent of the any BP fines to the five affected Gulf states. The states will have the opportunity to determine, under the guidelines of a complex formula, what specific projects to fund.

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