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September 2014

Volume 36, Number 8

For sale: Superfund site 5

More than \$21 million was spent for cleanup and containment efforts at the Stauffer Chemical Co. plant site in the Tampa area. Now, local legislators are trying to attract industrial and manufacturing businesses to the site that could bring jobs to the area.

Sediment nutrient study 6

Scientists working for the South Florida Water Management District are completing a sediment-water column nutrient exchange study in the Caloosahatchee and St. Lucie estuaries. Staff is betting that the results will provide an important key to improving water quality management efforts.

Astatula cleanup 8

Lake County officials are again making plans for the cleanup of oil and gasoline contamination from a county fueling facility in Astatula to keep it from polluting nearby Lake Idamere.

Marion reclaim 14

A major project that will increase the use of reclaimed water in Marion County has been completed. The water reclamation plant will provide reclaimed water for irrigating golf courses in the county.

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To-Do List

- Buy milk & bread
- Wash the truck
- Register for FRC!!!!
-
-
-



Photo courtesy of South Florida Water Management District

Dr. Brian Howes, professor and director of the Coastal Systems Program in the School of Marine Science and Technology at the University of Massachusetts in Dartmouth, stabilizes a sediment core collected by diver Amber Unruh, a program intern, near Cape Coral in the Caloosahatchee Estuary. See story on Page 6.

DEP's PRP mulls new effort to reduce number of sites under long term observation

By ROY LAUGHLIN

The Florida Department of Environmental Protection's Petroleum Restoration Program is considering a new endeavor, characterized as a "Supplemental Remedial Effort," to reduce the number of sites currently under long term observation.

Sites currently designated for long term natural attenuation monitoring or monitored natural attenuation and that have been in the final monitoring stage for more than five years, are envisioned as candidates for inclusion.

Staff with PRP have identified 338 sites that might be included in the proposed category.

DEP's identification is based primarily on a site possessing intermediate risk to potable water, indicated by a

score of 30 or more on its risk-based rankings, and which has been in the LTM or MNA category for five years or longer.

The issue for the PRP is that many of these sites have been monitored for far longer than the 42 months stipulated in Section 376.3071(5)c, Florida Statutes, but have not yet reached a condition that allows site closure and removal from the PRP's list of contaminated sites.

The proposed Supplemental Remediation Effort is currently in its formative stage. PRP posted a memo on its website characterizing current sites that may qualify and asking for proposals characterizing additional effort needed to remediate the sites so they can be closed.

At this point, PRP staff is asking

contractors, site owners and responsible parties to determine if they have sites that might qualify.

A contaminated site with persistent concentrations of contaminants below natural attenuation default concentrations without a definitive trend towards groundwater cleanup target levels should be a key indicator of inclusion, according to Mara Berger, public information specialist with DEP.

After that initial characterization is satisfied, professional consultants should determine whether further active site remediation could meet performance-based contracts for groundwater cleanup target levels.

A professional evaluation of geochemical, lithological and contaminant access data will be an essential part of the vetting process, said Berger.

In its solicitation, PRP staff noted that it envisions that residual source removal and/or injection of biological or chemical amendments will allow many of the sites to meet closure criteria within 36 months.

In evaluating proposals that the program may receive under its solicitation, Berger said that the likelihood of success in reaching closure will be a major factor in decisions for the program to fund additional active cleanups.

The PRP's new effort, if it does come to pass, will be driven by cost or at least relative costs.

The decision to take additional action at a site will be made, in a still unspecified way, by comparing the costs to continue monitoring a site showing little progress toward closure versus making a capital investment to actively achieve remediation in a much shorter time frame to close the site.

Berger noted that no additional

National Research Council report rips CERP, Everglades restoration efforts

By SUSAN TELFORD

In a new report, the National Research Council, the operating arm of the National Academy of Sciences and the National Academy of Engineering, noted that the \$13.5 billion project to restore the Everglades has had limited impact on the ecosystem, does not adequately consider the threat from climate change, and lacks overall coordination to deal with non-native species, with a shortage of research on the species and their impact.

According to the NRC's biennial report on the project released this summer, the Comprehensive Everglades Restoration Plan that began in 1999 to restore the nation's River of Grass over the next 30 to 40 years, has been plagued by intermittent federal funding.

Since the NRC's last update two

years ago, CERP has had "modest restoration progress focused on the edges of the Everglades (and) considerable state effort to improve water quality."

The unique ecosystem of marshes, lakes, wetlands and tree islands that stretches 200 miles from Orlando to Florida Bay is now approximately half of its original size with surface water now moved through it by a system of levees, canals and pump stations.

The report did credit CERP with modest improvements at Picayune Strand in Southwest Florida, coastal wetlands at Biscayne Bay and the C-11 Spreader Canal in southern Miami-Dade County.

But it also stated that CERP is not adequately considering the threat from

GLADES
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PRP
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EPA seeking ways to improve risk management planning, response

Staff report

The U.S. Environmental Protection Agency issued a request for information related to its Risk Management Program.

Information obtained may be used to update its list of RMP regulated substances, adjust threshold quantities and toxic endpoints based on acute exposure guideline level toxicity values, comment on strengthening or clarifying some existing process safety elements, manage organizational changes, and plan and conduct emergency response capabilities and incident investigations.

The agency also requested comments on using inherently safer technology, process safety metrics, automated release monitoring, emergency drill, stop work authority and on addressing facility location citing risks.

The EPA seeks comment on potential revisions to its Risk Management Program as required under Executive Order 13650, Improving Chemical Facility Safety and Security.

The EPA is asking for information and data on specific regulatory elements and process health and safety management approaches to enhance public safety and to allow local fire, police and emergency re-

sponse personnel to prepare for and respond to chemical emergencies.

The information may be used to improve review of chemical hazards covered by the RMP and to determine how the program should be expanded to improve chemical facility safety.

The agency is coordinating its review with the Occupational Safety and Health Administration.

OSHA is conducting a similar review of the chemical hazards covered by their existing risk management programs and will evaluate additional measures to improve risk management with the goal of accident prevention.

The EPA's RFI does not require the agency to conduct rulemaking. A comment period opened the end of July and will close after 90 days.

More information is available online at http://www.epa.gov/emergencies/eo_improving_chem_fac.htm.

Emissions from new landfills. In early July, EPA proposed updates to air quality standards for new municipal solid

waste landfills. The updates considered will require certain landfills to capture landfill gas emissions. The goal is to reduce methane emissions from landfills and reduce other pollutants that harm public health.

The agency is also seeking broad public feedback on how and whether to update guidelines for existing landfills.

The proposal requires new MSW landfills to capture two thirds of their methane and air toxic emissions by 2023. This represents a 13 percent increase over current standards for the amount of landfill gas that solid waste facilities must control.

The EPA estimates that complying with the proposed rule would cost an additional \$471,000 in 2023.

Reducing the level of methane released to the atmosphere is the primary focus of the proposed rules. MSW landfills account for 18 percent of U.S. atmospheric emissions of this gas, ranking it as the third-largest source of human-related methane emissions.

Existing programs to reduce methane release from landfills reduced emissions

by 30 percent between 1990 and 2012.

The proposed rule is partially motivated by an expected increase in methane emissions from landfills through 2030.

The new proposal is a component of President Obama's Climate Action Plan's Strategy to Reduce Methane Emissions.

The agency said significant changes in the landfill industry should be considered as a basis for new rulemaking. Up to 1000 MSW landfills could be subject to new rules to reduce methane emissions, should the EPA decide to issue them.

More information is available at <http://www.epa.gov/ttn/atw/landfill/landflpg.html>.

Greenhouse gas chemical usage. In a second round of rulemaking, EPA is proposing to prohibit the use of some greenhouse gas chemicals to encourage their replacement with more climate-friendly alternatives.

The proposed rule is aimed primarily at reducing emissions of hydrofluorocarbons. HFCs and HFC-containing blends subject to the proposal are used in aerosols, motor vehicle air-conditioning systems, retail food refrigeration and vending machines, and foam blowing.

The agency said the proposed rule could reduce HFC emissions by 42 million metric tons of carbon dioxide equivalents by 2020, an amount equal to the carbon dioxide emissions from the annual electricity use of more than five million homes.

The new rule is proposed under the authority of the Clean Air Act's Significant New Alternative Policy program, or SNAP. This program evaluates substitute chemicals and technologies that are safer for the ozone layer than those currently in use.

The proposed action will specifically modify that status of certain "high-global warming potential" HFCs that have been listed as acceptable under SNAP.

Some chemicals may be listed as such for specific uses when other alternatives are available and pose a lower risk overall to human health or climate.

In formulating its proposal, EPA received input from industry, environmental groups and others through workshops and meetings over the past year. A public comment period will be open until mid-September.

More information is available at <http://www.epa.gov/ozone/snap/regulations.html>.

Offshore sonic cannon use. The U.S. Bureau of Ocean Energy Management approved the use of sonic cannons during surveys to identify new oil and gas deposits on the continental shelf from Florida to Delaware.

This action is part of a process of opening the Eastern Seaboard—an area that has been closed for decades—to offshore oil exploration.

Sonic cannons are towed behind ships, and emit loud pings as frequently as every 10 seconds.

Boats towing these cannons may operate for days or months at a time.

Environmental groups oppose the use of sonic cannons. They claim the sound is 100 times louder than jet engines.

Activists who oppose the use of sonic cannons said their sound intensity and frequency adversely influences the behavior of marine organisms that use sound for communication and echolocation.

In an environmental impact study, the U.S. government estimated that 138,000 sea creatures could be harmed by such sounds including the North Atlantic right whale, which gives birth off northern Florida and southern Georgia, and migrates along the east coast of North America.

Millions for pumpout stations. The U.S. Fish and Wildlife Service will give Florida about \$2.2 million for sewage pumpout stations.



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DEP to take legal action against Hughes Company

Staff report

State environmental officials said they will take legal action against the Dan A. Hughes Co., the Texas-based oil prospectors accused of unauthorized drilling in the Big Cypress Swamp watershed late last year.

The lawsuit is the latest twist in the ongoing saga that started last year when residents of a Naples suburb became concerned about Hughes' nearby drilling.

Officials with the Florida Department of Environmental Protection said it is clear that the company did not take seriously the department's demands to protect Collier County citizens or the state's natural resources.

The lawsuit will seek to temporarily shut down operations at the Collier-Hogan site until pending completion of appropriate environmental testing.

The lawsuit will be brought before a Collier County Circuit Court judge. In the suit, the department is seeking additional financial penalties along with shutting down all operations at the Collier-Hogan well.

The company announced that it would be ceasing all its oil exploration operations in Collier County.

Palmetto brownfield. A brownfield designation has helped the city of Palmetto obtain grants and provide extra incentives to developers and new businesses looking to relocate.

Palmetto's Community Redevelopment District was classified as a brownfield site after city commissioners adopted the state designation in 2012.

Palmetto's CRD is a state brownfield, which allows the city and redevelopment officials to apply for state and federal grants.

Palmetto has used environmental grant funding to pay for the demolition of an old gas station and its tanks near the Green Bridge, land assessments of the future site of Martin Luther King Park and an asbestos assessment of the soon-to-be renovated Olympic Theater.

The designation also helped the city with a \$1 million regional grant after the Sarasota-Manatee Metropolitan Transit Organization received the grant and provided chunks of it to municipalities throughout the two counties.

Palmetto received the largest amount, between \$300,000 and \$350,000.

The grant money has been used to lure new businesses and developers to the CRD by allowing the city to provide free environmental site assessments.

Thumbs up on new mine. The Polk County Planning Commission approved Lakeland businessman Tom Mims' plan to mine and process sand and clay on a 1,246-acre site south of Mulberry.

The property includes a landfill that was approved by the commission in 2009.

Some of the material mined from the site will be used for daily cover for the landfill.

The county commission's approval of the landfill triggered lawsuits in January 2010 by area residents and by Mims over the restrictions commissioners placed on his permit.

Polk County's decision was upheld in an October 2013 verdict, although some issues involving reimbursements of costs in the case are still under appeal.

Permit moratorium considered. Escambia County officials are considering a six-month moratorium on the permitting or re-permitting of borrow pits and construction and demolition debris landfills while they consider tightening regulations.

This summer, county commissioners directed staff to conduct a thorough review of the county's existing laws and procedures with the goal of ensuring consistent enforcement.

The review was also aimed at providing direction on how to ensure that the Florida Department of Environmental Protection provides adequate oversight of pits and dumps in the county.

Residents of Wedgewood in western Escambia County have rallied against what they see as the industry's intrusion into their neighborhood.

Jax power plant. Declining electricity sales and new federal environmental regulations prompted JEA to take the oldest and largest generating unit at its Northside Generating Station offline in December 2015.

The unit—one of three at Northside—will be placed into reserve storage for the next several years, but could be reactivated if needed.

It was built in 1977 to burn oil and was upgraded in the 1980s to burn natural gas.

Land purchase. The state purchased 156 acres between Wekiwa Springs and the Ocala National Forest in northern Lake County for \$450,000.

After the state takes ownership of the property and adds it to its inventory of park land, only one other piece of private prop-

erty will remain within a 25-mile stretch of public lands from the Orlando area's Wekiwa Springs north along the St. Johns River to the Ocala National Forest.

Since the 1980s, the state has bought nearly 56,000 acres for more than \$183 million. A significant portion of that land would have otherwise been developed as subdivisions.

The land buys by the state have been driven in large part by the need to safeguard the network of streams and rivers draining into the Wekiwa and St. Johns rivers.

Company news. Waste Management Inc. exited the combustion-based waste-to-energy business through the sale of Wheelabrator Technologies Inc. to an affiliate of Energy Capital Partners.

The private equity firm will pay \$1.94 billion in cash for Wheelabrator, which owns or operates 17 waste-to-energy facilities and four independent power-producing facilities in the U.S.

The facilities, including plants in

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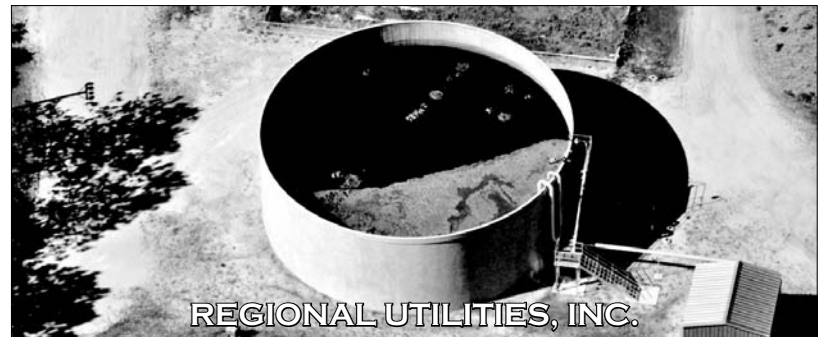


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State, local governments partner on Lake County sprayfield upgrades

Staff report

Lake County's Sisters Welcome Road wastewater sprayfield will be upgraded in the coming year to reduce nitrate loading to the local aquifer.

The upgrade project includes three components: a series of ponds and berms to manage water flow, vegetated wetlands adjacent to geological sinks on two of the three spray fields and construction of denitrification walls.

The sprayfield currently receives about one million gallons of treated wastewater a day. The sandy soil retains most of the

water so that its microorganisms adequately denitrify, except in the area of several sinks on the property, one of which is a particularly significant conduit to the aquifer.

Groundwater near the sink has periodically had high nitrate concentrations as a result of inadequate nitrogen removal from wastewater seeping into it.

The wastewater sprayfield is about 10 miles from the head spring of the Ichetucknee River springhead.

The project will cost \$4.6 million. The Florida Department of Environmental Protection will pay \$3.9 million of it from \$10

million appropriated during the 2013 legislative session for springs restoration and protection projects. The Suwannee River Water Management District, Columbia County and Lake City will cover the remaining costs.

Construction is expected to begin in January and be completed by September, 2015.

Escambia stormwater advisors. The Escambia County Board of County Commissioners established a 15-member Stormwater Advisory Group tasked with providing the commission advice on necessary stormwater management infrastructure and ways to fund its recommendations.

City and county officials have suggested various federal grant programs as possible funding sources. Local politicians appear loath to increase taxes or authorize bond borrowing that would increase local government debt in an election year.

Formation of the group is a result of a severe flooding event in the city of Pensacola in late April. Unusually heavy rains on higher lands north of the city flooded Pensacola.

Prevention of future flooding of the city depends on managing stormwater runoff from adjacent areas outside the city.

The advisory group is expected to have its first meeting by the end of August and complete its activities in about half a year.

New plant in LaBelle. In July, the city of LaBelle formally inaugurated its new 1.5-million-gallon-per-day reverse osmosis water treatment plant. The new facility includes two source wells, one deep injection well, a ground storage tank, high service pump stations and transmission and distribution pipes.

The system has a 70 percent recovery rate. The remaining brine will be reinjected into the deep aquifer.

The facility is capable of treating up to 1.5 million gallons a day, but is currently producing less than one mgd, the amount its permit allows. The remaining capacity is being held in reserve, to be used if growth warrants.

The plant's cost, about \$20 million, was covered by funding from the U.S. Department of Agriculture's Rural Development program.

Just slightly more than \$13 million was in loans and \$7,350,000 was in grants from the federal agency.

Construction began in January, 2013,

and the plant was up and running this spring.

Oakland storage tank construction. The town of Oakland in western Orange County voted in 2010 to construct a new water storage tank and pumping facility in Vanderley Park, west of the center of town.

That construction project is finally underway. It includes three primary components: a high service pumping facility, replacement raw water pipeline from the

Speer Park water well and a new 500,000-gallon water storage tank.

The storage tank is the centerpiece of the project. The lower portion of the tank is buried so that

only 16 feet of it are visible above ground level.

Oakland is well known for its tree canopy. Installation of the feeder lines used trenchless technology to install the pipeline to help preserve the trees.

The project cost, nearly \$1.8 million, will be paid through a 20-year loan from the Florida Department of Environmental Protection. The loan is secured by the town of Oakland's water rates.

All utility work is expected to be completed in November of this year.

The new tank will replace a 40-year-old 100,000-gallon storage tank, which will be used for reserve storage. A second water storage tank will be converted to a booster station to meet periods of high water demand.

Port St. Joe drinking water. Officials from the city of Port St. Joe reviewed the results of a pilot study that showed treating its drinking water with hydrated lime in place of caustic soda will improve drinking water quality, be less expensive and pose no risk of damage to the city's four-year-old drinking water plant.

Converting to hydrated lime use should also reduce or eliminate discoloration problems known to be associated with treatment of well water by caustic soda.

Port St. Joe's drinking water output has experienced discoloration since the new plant opened.

The Florida Rural Water Association, a trade association of water and wastewater utilities, performed the comparison study of caustic soda and hydrated lime, with the approval of the Florida Department of Environmental Protection.

The city issued a request for bids to purchase and install a hydrated lime holding tank and injection equipment.

They expect to recover the cost of capital improvements, expected to be about \$200,000, in about three years through savings arising from the cost of hydrated lime.

Port Manatee injection wells. DEP issued an "intent to issue" notice for two Class V injection wells that will be used to pump as much as 15 million gallons a day of treated municipal wastewater underground in Manatee County.

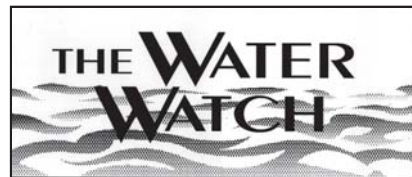
According to a press release, the two wells are billed as relief valves for the county's wastewater system.

The two new 1,100-foot deep wells will be located on Port Manatee property.

Manatee County currently pumps excess wastewater into a deep injection well located in Cortez.

The new wells are being constructed for the North Regional Water Reclamation Facility near Port Manatee to ensure the integrity of berms that enclose a storage lake currently receiving the treated wastewater.

The cost for the two injection wells is approximately \$18.9 million and includes wells, pipelines and a pump station to move water from the North Regional Water Reclamation Facility to the well field.



WATCH
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Cleaned up Stauffer Chemical plant site awaits redevelopment

By SUSAN TELFORD

The flat, vacant land is surrounded by a chain link fence topped with three rows of barbed wire. The field is empty, except for one lone trailer.

It is one of the largest undeveloped tracts of land left in Pinellas County and one would think it would be highly sought after because of its location.

But it is also the former home of the Stauffer Chemical Co. plant and is a federal Superfund site that once contained radioactive slag and toxic wastes.

The contaminated soil was mounded, capped and buried beneath a layer of trucked-in dirt and sod. More than \$21 million was spent for cleanup and containment efforts.

Local legislators have been trying to attract industrial and manufacturing businesses to the site in hopes of bringing more jobs to the area.

Because polluted soil remains on site, homes can never be built there—but that doesn't mean that it has to sit vacant.

Florida's state budget has \$2.5 million earmarked for "dredging, wharf stabilization and road improvements" at the former chemical plant. After those improvements are made, the state hopes the site is more desirable.

"The state won't spend that money to prepare the site unless a company agrees to move there," said Sen. Jack Latvala, R-Clearwater. According to Latvala, one company is currently "in talks" to relocate to the property. But there's no deal yet, he said.

The cleanup was completed in 2011.

DEP finds no further environmental risks at abandoned Lakeland plant

By PRAKASH GANDHI

State environmental officials have determined that there are no environmental risks from an abandoned Lakeland biofuel facility that still houses toxic and flammable chemicals.

The Clean Fuel Lakeland LLC plant in the Lakeland Industrial Park, which produced biodiesel fuel, has been idle for about a year. The plant is in the 20-acre industrial park with four other tenants.

An engineering company said there are large chemical tanks, and corroded pipes and valves that may contain hazardous chemicals. But the Florida Department of Environmental Protection said it inspected the plant and found no hazards. The most dangerous item at the facility appears to be sodium methylate, which is highly toxic to eyes, skin and respiratory tracts.

Two other chemicals also found there are flammable—biodiesel and methanol. In all, there are eight chemicals of concern at the site.

After being informed that Clean Fuel's manufacturing operation was being shut down, the DEP conducted several inspections during the fall of 2010, said DEP spokesperson Dee Ann Miller.

The department concluded that Clean Fuel Lakeland accumulated more than 1,000 kilograms of hazardous waste on site and was not in compliance with small quantity generator regulations.

"In addition, closure activities at that time resulted in additional waste generation and had the potential to cause the facility to be regulated as a large quantity hazardous waste generator," Miller said.

If a market for the remaining hazardous materials was not found by January 2011, the facility would have been subject to regulation as a large quantity hazardous waste operator.

DEP officials asked for documentation of disposal records as materials were shipped out. Clean Fuels provided an inventory and later provided disposal records, shipping records and receipts showing that hazardous waste, hazardous materials and raw materials had been re-

The site is located on the Anclote River, near the Gulf of Mexico and borders Pinellas and Pasco counties. Groundwater monitoring is done there periodically, but that's been the only activity for quite some time.

Local representatives are considering hiring crews to dredge Meyers Cove along the Anclote, and upgrading the seawall at the site to accommodate boats and make it suitable for boat launching.

The part of the state funding dedicated to road improvements would be used to connect the site to Anclote Boulevard to the north.

According to Rep. Ed Hooper, R-Clearwater, the potential client is serious.

"It's an existing company that's growing," said Hooper in a statement to the press. "They make parts of oil platforms. Where they are now, they have no access to the water. Currently, the company trucks its products to the Port of Tampa and ships them from there."

"This site would give them the ability to load their products and ship them all over the world by barge. It's about the only place in this county they can find that's zoned correctly, where you have direct water access to the Gulf. The move could also bring over 100 good-paying jobs to North Pinellas."

The Stauffer property is owned by international pharmaceutical manufacturing giant AstraZeneca, who once owned Stauffer Chemical and all its assets, including the polluted properties.

"We've been responsible for the cleanup," said AstraZeneca Spokesperson Michele Meixell. "Our goal is to return it to beneficial use."

moved from the property.

Removal was mostly completed by January 2011. By February 2011, monitoring wells had been installed, and the first round of soil and water sampling had been completed.

"Ultimately, no groundwater contamination was found, and soil contamination was cleaned to an acceptable level," Miller said.

In February, the department sent a closure letter to the owners stating that the agency required no further action.

Miller said the department is satisfied with the site's current condition. Any contamination left on site is minimal and is contained within property boundaries.

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Sediment nutrients key to improving water quality in St. Lucie Estuary

By ROY LAUGHLIN

Since 2008, South Florida Water Management District scientists have worked to complete a sediment-water column nutrient exchange study in the Caloosahatchee and St. Lucie estuaries. District staff is betting that the process under study will provide an important key to improving their water quality management efforts.

That's the reason Professor Brian Howes, PhD, director of the Coastal Systems Program in the School of Marine Science and Technology at the University

of Massachusetts in Dartmouth, returned to Florida this summer with staff to sample the estuaries' sediments after several years' hiatus since the first sampling effort was completed in late 2008.

His goal is to compare how sediment-associated nutrients are released during the winter and summer seasons to help spark algae blooms.

Blooms and low oxygen conditions are the most undesirable outcomes of poor water quality, with widespread adverse ecological effects.

The study involved two sampling exercises. In January 2008, Howes' group

collected samples from scores of sites in the Caloosahatchee and St. Lucie estuaries.

The original plan was to examine the data from these waterbodies and then complete a second round of wet season samplings in both locations in 2009. But funding prospects went awry with the start of the recession.

The wet season sampling, necessary to complete the original project plan, was not abandoned but lay dormant until this year.

This July, the UM researchers returned to collect warm wet season sediment samples. Like the winter season study, scores of sample sites were widely dispersed throughout the estuaries.

SFWMD staff said they believe that, in terms of area, this is the most extensively sampled study of nutrient exchange between sediments and the water column that has been done in South Florida.

The concept behind the study is to characterize the role of sediments of different compositions, broadly distributed in a subtropical estuary, in cycling nutrients between themselves and the water column.

The usual pattern is for sediments to sequester nutrients, specifically nitrogen and phosphorus. Nutrients are sometimes released from the sediments, during warm wet weather in the summer, usually the season of most extensive and prolonged release.

In the winter, sediments contribute minimally to nutrient levels in the overlying water. Once released to overlying water, eutrophication and damaging low oxygen level conditions are often the observed outcome.

When this study is complete, both Howes and his SFWMD sponsors expect to have an upper and lower bound for the extent of nutrient exchange between sediments and overlying water in the St. Lucie Estuary.

SFWMD is sponsoring this study for a couple of reasons, one general and one specific. The general reason is to see how extensive the sediment water nutrient exchange is in a representative subtropical estuary.

The second reason is site specific. These two estuaries have a recent history of poor water quality due, in part, to extensive algal blooms.

The St. Lucie Estuary was extensively in the news last summer when an algal superbloom wreaked havoc on it and the southern segment of the Indian River Lagoon.

Reducing nutrient inputs is seen as a key to improving water quality in the system.

The most recent regulatory tool to af-

fect recovery has been numeric nutrient criteria, adopted last year. In Florida, regulators use total maximum daily load levels to regulate human impacts and land uses in order to reduce nutrient inputs to acceptable levels.

Peter Doering, section administrator of the Coastal Ecosystems Section in the Applied Sciences Bureau of the district, said that there is not a legal requirement to determine internal nutrient fluxes to implement a new NNC, but effective regulation of activities on land depends on determining how nutrients already in the water affect its quality.

But this is not a muck study, said Teresa Coley, science supervisor in the Coastal Ecosystems Section at the district.

Both she and Doering said that the district is not sponsoring this study as a prelude to a dredging project to remove muck or other sediments from the estuary. The primary purpose is to obtain a scientifically rigorous overview of sediment contributions to nutrient dynamics in the St. Lucie Estuary.

Howes' research in temperate estuaries indicates that when nutrients from runoff is reduced, it declines in sediments over time due to washout and environmental compartmentalization. In many estuaries, the decline reduces adverse contributions to internal nutrient cycling.

He said that nutrient inputs load the sediments but that sediments can be unloaded over time when not "recharged" by high inputs.

The recently completed wet season sampling project is entitled "Measurement of Nutrient Loads from Sediments in the Caloosahatchee River and Estuary and the St. Lucie River and Estuary: Wet Season 2014."

The final report for the larger study that will compare seasonally correlated nutrient exchange between sediments and water columns in both estuaries is expected at the end of the summer next year. It will include an extensive characterization of the 2008 and 2014 sampling efforts.

The report will also include a discussion of the seasonal correlations and prospects for incorporating quantitative data from it into TMDLs.

SRWMD starts real-time springs monitoring

By DAN MILLOTT

A decision by the Florida Department of Environmental Protection to provide \$500,000 worth of monitoring equipment to the Suwannee River Water Management District now provides scientists there with real-time information on water quality and quantity.

The district has a heavy concentration of springs within its 15-county territory in North Central Florida. The equipment from DEP will be used for monitoring springs.

The U.S. Geological Survey is also a partner in the project.

Erich Marzolf, director of the district's Water Resources Division, said that without the new equipment, costs for the continuing monitoring program would have been prohibitive.

"We would have had to rely on old-fashioned water sampling with bottles," he said. "There would have been a long delay in getting results or noting changes."

The district learned of the DEP equipment in July and went operational with the gear in August. Springs designated for monitoring include Fanning Springs, Ichetucknee Blue Hole, Madison Blue Spring, Manatee Springs and Troy Springs.

The equipment will take water quality measurements several times an hour. The monitoring will measure nitrate, temperature, pH, dissolved oxygen, specific conductivity, dissolved organic matter, chlorophyll and turbidity.

"Deploying this new technology on these springs will give us a lot more infor-

SPRINGS
Continued on Page 14



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Day One, Thursday, Oct. 9, 2014

9:00 **Keynote Address from the Conference Chair**
Nick Albergo, PE, DEE, CRA, Tampa

9:30 Session 1B: **A New Model: Recovering Remediation Costs from Old Insurance Policies**
John Malanchuk, PhD, Eisenstein Malanchuk LLP, Washington, DC
John Fumero, ESQ, Nason Yeager Gerson White & Lioce PA, Boca Raton
While traditional funding sources for remediation costs have become more limited, new models are needed for cost recovery. Although not widely known in Florida, insurance recovery has been employed on dozens of sites by policy holders seeking to offset remediation costs. A policy holder might be a company, a city or county. Any entity with historical environmental liabilities, or contractors working for a policy holder should evaluate the merits of insurance recovery. Not to do so ignores a potential major funding source for remedial costs. A general liability insurance policy covers third party property damage that isn't specifically excluded. After 1985, there are pollution exclusions in GL policies meaning that coverage for events taking place now or in the future require you to have some sort of environmental policy. Prior to 1972, however, there were no pollution exclusions in GL policies. If site remediation today includes contamination that might have begun prior to 1972, it may be possible to make a claim under an insurance policy that was in effect when the contamination was occurring. Another important aspect of old GL policies is that they were written on an "occurrence" basis. Today, policy wording requires making the claim during the policy period. Formerly policy wording required only that the accident had to occur during the policy period, meaning that a claim can still be made on a policy that might be more than forty years old. Over the years, millions of dollars in claims have been lost because policy holders were unaware of this opportunity. No one with remedial obligations should ignore this potential funding source.

2014 marks the 20th anniversary of FRC
Scarcely anyone who attended our early conferences would have taken time to consider what the event might be like in two decades. In those days, remediation was an exercise in dig and dump. Sparging worked pretty well for water, or so we thought. Funny thing about science... what was once remarkable becomes routine, often quickly. Since its first couple of iterations, FRC, like science and technology itself, has featured a steady stream of novelty from the high tech fields it reflects. This year marks our 20th anniversary of producing FRC and the trend continues. Since its inception, FRC has played a role in promoting in-situ treatment as the norm, bringing science into the practice, and providing effective access to information about science and policy to remediation industry professionals. Over the years, the insights available at this conference have delivered science and engineering expertise to many involved in the environmental remediation industry. The remediation field has become high tech. The public now benefits from far more effective cleanup techniques across a wide spectrum of contamination scenarios. Property owners and state agencies are undertaking remediation efforts with confidence of efficacy and economy. Our water is safer to drink and our land can be made productive again. If you want to know what the cleanup industry's leaders are thinking about today, the Florida Remediation Conference is the place to be October 9-10, 2014, at the Orlando World Center Marriott. See you there.

Session 2: In-Situ Chemical Oxidation

10:30 Session 2A: **Evaluation of Advanced Oxidation Process Treatment Options for Extracted Groundwater with Chlorinated Solvents, Aromatics and 1,4-Dioxane**
Antonio Cardoso, EI, Project Engineering Specialist, ARCADIS, Tampa
As a result of historic site operations, groundwater has been impacted with 1,4-dioxane, chlorinated ethenes, chlorinated ethanes and aromatics. Site activities included, but were not limited to, the manufacturing of electronics and communication hardware. Assessment activities were conducted to develop a high-resolution conceptual site model and improve understanding of the nature and extent of the constituents of concern. The driver and challenge for remediation is 1,4-dioxane because it is difficult to treat and has not been shown to naturally attenuate, except through dilution in aquifer environments. Selection of the appropriate technology for the extracted groundwater was essential to ensure compliance and treatment objectives. As an initial phase, a pump-and-treat system was installed as an interim remedial action, which provided the opportunity to test two advanced oxidation processes side-by-side. The AOPs tested were the HiPOx™ system developed by ULTURA, former APTwater Inc., and the Photo-Cat system developed by Purifics® ES Inc. The IRA was operated in batch and continuous modes with data collected for the evaluation of AOP performance and optimization. The batch mode phase facilitated testing of different influent water quality, such as metal concentrations, 1,4-dioxane and/or volatile organic compounds load, while the effects of long-term groundwater extraction and AOP operation were observed through the continuous mode phase. The AOP systems were evaluated based on six criteria: treatment efficiency; treatment train complexity; chemical input; power usage; operation and maintenance; and economics. The results of this evaluation, the technical merits of each system and the performance of the IRA will be presented.

11:00 Session 2B: **In-Situ Chemical Oxidation of Pentachlorophenol and Dioxins/Furans at a Unique Cultural Site**
William Lundy, President, DeepEarth Technologies Inc., Alsip, IL
The Wiyot people inhabited Indian Island and the land around Humboldt Bay since prehistoric times. On Feb. 26, 1860, European settlers massacred an estimated 180 Wiyot villagers. Settlers claimed the land on the island until 2000 when the Wiyot Tribe purchased the 1.5-acre parcel where a shipyard was located. During occupation by the settlers, the site was contaminated with pentachlorophenol and dioxin/furan compounds and other chemicals used for preserving wooden ships. The objective of the cleanup project included: removing the majority of pentachlorophenol/dioxin-impacted soil, while minimizing the volume of soil disturbed; finding a technology to treat the remaining contamination on-site without damage to the contaminated shell mound; preventing impacts to groundwater or surface water; preventing human exposure to soils impacted with PCP and dioxins; and restoring the site for beneficial use. Cool-Ox® was selected for the ISCO bench-scale treatability study. Cool-Ox demonstrated significant reductions in contaminants of concern. Dioxin/furan TEQ was reduced by 84% and PCP was reduced by 86.4%. Cool-Ox destroyed the contaminants without destroying artifacts or remains on the historical burial grounds. The island site, in a tidally influenced bay of Pacific Ocean, provided no direct road access or functional dock facilities. Access was limited to boat at high tide or by foot from a bridge landing at low tide, and no electricity or municipal water supply was available. Added to that, there were significant cultural constraints. The comparison of soil analytical results from co-located pre- and post-ISCO soil samples indicated that the ISCO solution was effective in reducing concentrations of CoC. This allowed continued restoration of the site for beneficial use by the Wiyot Tribe. This case history and field data provide a valuable tool for the remediation community to evaluate this oxidant and treatment train for the restoration of similarly challenging sites.

11:30 Session 2C: **Evaluation of Multiple Biotic and Abiotic In-situ Treatment Methods for the Remediation of a Commingled TCE and Metals Plume**
Chad Northington, PE, Senior Engineer, WRS Infrastructure & Environment, Tallahassee
Continued vertical migration of a commingled trichloroethene and metals plume into the Floridan Aquifer at a former FDOT maintenance yard prompted implementation of a pilot study to evaluate the performance of several remedial alternatives simultaneously, prior to full-scale remediation. The study consisted of a series of discrete injections focused around three monitoring wells with a different technology and approach implemented at each location. The pilot test was intended to reduce overall remedial costs, mitigate performance uncertainties and expedite site cleanup by providing field data that would allow the full-scale approach to be tailored to the results of the study. Catalyzed hydrogen peroxide was continuously injected in the vicinity of a source well via a network of permanent injection wells fed by a vendor-provided system. Ferrous iron, controlled-release organic carbon substrate and DHC inoculum were injected directly during a single event with direct push technology. Sodium persulfate was injected into an existing monitoring well where depth limitations were a concern for DPT utilization. Prior to injections, more precise geotechnical data was obtained to better define the site model, improve the design approach and facilitate acquisition of hydrogeological parameters through utilization of the hydraulic profiling tool. Besides multiple contaminant classes that respond differently to treatment, the site presented additional challenges, such as inferred off-site contamination, large variations in geochemistry, elevated aluminum background concentrations, ongoing assessment and limited site access to adjacent

properties. Field tests and measurements were also performed to evaluate the effectiveness of the various approaches.

12:00 Day One Luncheon

Session 3: Field Tools

1:30 Session 3A: **Real-Time Flux Measurement Using Direct Sensing, Quantitative Discrete Sampling and On-site Analysis**
Brad Carlson, Manager-Direct Sensing Tools, ZEBRA Environmental, Tampa

William Davis, PhD, Principal, Triad Environmental Solutions Inc., Durham, NC
The objective of data collection during site characterization is to provide decision makers with data of sufficient quantity and quality to allow definitive decisions on remedial actions. Recent advances in tools for the collection of high density hydro-stratigraphy and high density soil and groundwater contaminant data have allowed implementation of cost effective strategies for mapping contaminant flux in high resolution. One of the key requirements for successful high density site characterization projects is a reliable real-time field analysis for the contaminants and matrices of concern. Data required to understand contaminant flux include local geologic and hydrogeologic conditions as well as contaminant distribution in groundwater and bulk phase soil. This presentation discusses the tools currently available to collect data to allow an understanding of flux at sites at the scale required to design and implement remedial actions. Case studies will be presented where U.S. EPA Method 8265 was used to collect contaminant data in conjunction with the hydraulic profiling tool to measure hydraulic conductivity to determine the flux distribution at complex DNAPL sites. These data are collected in real-time allowing flux measurements in real-time. Case studies demonstrate the use of flux measurements to determine contaminant transport zones and, perhaps more importantly, zones where back diffusion from non-advective groundwater contamination is occurring.

1:55 Session 3B: **BTEX & MTBE Remediation in Challenging Florida Geology at Two Separate Sites Using ISCO/BIO Injections**
David Laughlin, PE, Project Manager, ETEC LLC, Albuquerque, NM
Brian Timmins, Principal, ETEC LLC, Washougal, WA
To address elevated BTEX concentrations in groundwater at two separate sites in Chipley, FL, a unique remediation approach combining iron-catalyzed hydrogen peroxide (Fenton's reagent)

Continued on Page 9



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Lake County moves ahead with plans for Astatula fueling facility cleanup

By ROY LAUGHLIN

Lake County officials are moving forward with plans to cleanup spilled oil from a county fueling facility in Astatula. The spill has a history dating back more than 20 years and a vampire contamination plume that came back to life after a 1999 site cleanup.

County officials are likely to undertake another effort to remove residual oil and gasoline to keep it from contaminating nearby Lake Idamere.

The contamination story began about 1990 at a county fueling site that had been in operation since 1884. Lake County officials discovered significant leaks in its system while replacing components with double-lined tanks and piping to meet the upgraded underground storage tank rules.

Corroded pipes leaked and may have released as much as 20,000 gallons of diesel and gasoline. As part of the equipment update, contractors removed contaminated soil and residual fuel, and installed monitoring wells.

The replacement tanks are above ground, but cover the same footprint as the previously buried tanks and plumbing, adding to the complexity of cleaning up the

site that is still in use as a fueling facility.

In 1999, monitoring wells near the fueling station began showing high petroleum levels that were traced back to the facility. Since then, filters on the wells have been used to remove oil, but that system's filters have been plagued by frequent clogging due to the high level of natural organics in the groundwater.

Remaining oil is thought to be under only a couple of acres, and its depth is about 30 feet, according to Jim Stivender Jr., public works director for the county.

The continued use of the fueling facility removes excavation as a viable option, Stivender said. Selection of a different approach is still under discussion. In-situ recovery and removal will likely be used this time.

But for Lake County officials and its county commission, the budget is a much larger issue than cleanup method selection. Capital costs for cleanup are estimated to be about half a million dollars and subsequent monitoring may add as much as two million dollars more for an ensuing ten years of follow-up treatment and monitoring.

The county has had budget deficits for the past couple of years and its commis-

sioners are loathe to raise taxes, especially for a project like this.

Stivender said the county is hoping that the Florida Department of Environmental Protection, which provided about \$300,000 for site remediation in the past, may contribute more funds. But that additional funding may be as little as \$100,000.

The Astatula fueling facility site has a score of 11 on DEP's Petroleum Restoration Program's risk scale, based on the contamination threat to potable water. This score is well below the threshold for DEP's program to provide funds.

Contaminated sites with scores of 30 or above are more likely to get site remediation funding from the state program. At

this point, it seems Lake County will be paying for most, if not all, of this project's cost from county taxes or fees.

Stivender said that county officials are committed to cleaning up the site so that it no longer contaminates groundwater under it, or forms a plume that carries pollutants to the nearby lake.

The campaign for site remediation has been waged on two fronts. The first is to confirm the credibility of the people currently endorsing site cleanup. The second has been to quell adverse opinion due to a cleanup plan that has not moved quickly since the new plume was discovered in 1999.

Stivender said that his plan is to have site cleanup complete by the end of 2015.

Miami-Dade to extend sewer system to commercial, industrial areas

By DAN MILLOTT

The Miami-Dade County Commission moved this summer to bring sewer connections to older industrial areas within the county where economic redevelopment has been stalled for years.

A resolution was approved unanimously, earmarking \$126 million for the connections. While the areas to be connected are throughout the county, the area most affected is in northern Miami-Dade.

The county is moving to implement the sewer connections because the area has a concentration of business and industrial activity that lacks reasonable access to sewer service.

Businesses there are currently using septic tanks to treat their wastewater, limiting their prospects for additional job development.

Douglas Yoder, deputy director of the Miami-Dade Water and Sewer Department, said the area was developed years before sewers were mandatory.

"Other parts of the county—where developers built subdivisions or commercial and industrial complexes in recent years—were required to make water and sewer connections," he said.

Miami-Dade has a \$12 billion long term capital water and sewer program, but the plan does not include new sewer expansion. This prompted the commission's approval in June of the resolution.

The sewer connection costs will be covered by a voter-approved general obligation bond issue.

While the majority of the money for the sewer connections will go the northern Miami-Dade area, other areas will also benefit including sections off Southwest 40th Street from Red Road and Ludlum Road, South Dixie Highway including the Naranja area, and commercial and industrial properties along West Dixie Highway in North Miami.

Yoder said it will take a few years for the connections to be a reality.

"There will be design and permitting before construction can begin so it might be eight to 10 years before it is all done," he said.

In an April memorandum to Commission Chair Rebeca Sosa, Miami-Dade Mayor Carlos Gimenez detailed a plan for bringing sewers to commercial and industrial areas still using septic tanks.

The county identified 2,200 parcels and 29 separate projects along major corridors. The price tag: \$284 million.

The mayor noted that general obligation bond money already approved could be a partial source for the sewer connections.

The county's \$12 billion water and sewer capital improvement campaign does not include expansion of any sewers in the system, but is devoted entirely to repairing existing water and sewer lines.

Commissioners noted after the June approval that the county was making a basic infrastructure investment and, without it, the commercial areas would likely be left behind without an opportunity to grow for another 50 years.

Miami-Dade is under federal mandate to repair its crumbling system of water and sewer lines and pump stations.

The work will cost \$1.6 billion and is to be completed over the next 15 years.

To cover some of the cost, the county commission approved an eight percent rate hike to customers in late 2012.

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followed by bioamendments was applied at two sites. Each site injection event required three to four days and included simultaneous groundwater extraction with the ISCO/BIO injection. Substantial reductions in dissolved BTEX concentrations were achieved following the injection event at each site. Because of the mixed geology/hydrogeology at each site, significant injection/extraction challenges were encountered including off-gassing due to aggressive in situ chemical reactions, poor groundwater recovery, injection short-circuiting, and significant backpressure of fluid injection lines. These site-specific challenges and groundwater data are discussed in detail. At Site #1, following a source area soil excavation project, residual dissolved BTEX and MTBE constituents remained in the intermediate and deep groundwater zones. Treatment goals were Florida GCTL criteria and the ISCO/BIO pilot study was implemented around the most impacted site well. Following installation of several injection/extraction wells, the ISCO/BIO pilot study injection event was performed in January 2013, and six months later. The most impacted well had maintained an 85% reduction in BTEX and a 90% reduction in MTBE concentrations. Surprisingly, significant BTEX reductions were also noted in the intermediate groundwater zone in wells approximately 40 feet away from the injection wells. This larger-than-expected zone of influence is attributed to the permeable fill material in the excavation area. Site #2 contained an area with persistent dissolved-phase BTEX constituents in both the intermediate and deep groundwater zones. In the deep groundwater zone, benzene had migrated off-site across a roadway. Following installation of several injection/extraction wells in both zones, a pilot-scale ISCO/BIO injection event was performed in October 2013. Groundwater sampling performed three months after the pilot study showed three of the four wells in the target treatment area exhibited greater than 99% reductions in total BTEX. The other well, which is installed in tight silt/clay matrix, showed no change in BTEX concentration. During the pilot, massive site-wide off-gassing was noted in response to ISCO injections, indicating an aggressive in-situ chemical reaction. This slowed injection rates. Contact throughout the target subsurface soil/groundwater zones was confirmed via changes in pH and conductivity in monitoring wells adjacent to the fluid injection wells. Attempts to perform simultaneous groundwater extraction in the intermediate groundwater zone failed due to low or non-existent groundwater extraction rates. Groundwater extraction in the deep groundwater zone was more successful, resulting in successful remediation of the off-site deep groundwater well.

2:20 Session 3C: Application of MIP/HPT Logging for Source Zone Characterization and Water Quality Evaluations for Enhanced Conceptual Site Model Development

Cathy Soistman, PE, Project Environmental Engineer, Geosyntec, Titusville
 The development of an accurate, effective conceptual site model is crucial with regards to transitioning a complex site from assessment to remediation. Upon initiating work at a site with an extended assessment history, Geosyntec questioned the CSM and suspected that there was an undiscovered source contributing to the dissolved plume, and that the plume configuration may be a partial result of well construction contributing to vertical migration. To evaluate the first hypothesis prior to embarking on large-scale remediation efforts, an emerging assessment technology was used consisting of subsurface logging with a hydraulic profiling tool in combination with a membrane interface probe. Focused saturated zone soil and groundwater sampling was conducted. To evaluate the second hypothesis, geochemical parameters were evaluated to ascertain whether chlorinated solvent impacts in a monitoring well screened in the Floridan Aquifer were potentially attributable to vertical leakage from surficial aquifers along the outside of the well casing. During the initial development of the revised CSM, a review of the HPT and MIP logs indicated that there was a strong correlation between mass storage in low hydraulic conductivity zones and zones of apparent dissolved plume transport. Based upon the MIP/HPT boring program, focused direct-push technology soil and groundwater sampling confirmed the presence of a previously undiscovered area of elevated concentrations of tetrachloroethene in low hydraulic conductivity clay layers and associated plume transport from these layers. Elevated tetrachloroethene concentrations up to 1,700 milligrams per kilogram in saturated soil and up to 400,000 micrograms per liter in groundwater confirmed the MIP/HPT findings. The investigation of the Floridan Aquifer well focused on a comparison of water quality conditions within the surficial aquifer, within the Floridan and within the referenced well. A Piper diagram was used to evaluate geochemistry and document apparent cross-connection of aquifers due to well leakage. Collectively, questioning the CSM and developing an accurate CSM for the site has provided valuable information for developing a focused remediation design and for enhancing understanding of the dissolved plume attributes.

2:45 Session 3D: Emerging Tools Used for In-Situ Chemical Oxidation/Reduction Projects

Ron Adams, PE, LSRP, Executive Vice President Remediation, ERFs LLC, Boston, MA
 ISCO and ISCR projects can be successfully implemented under pay for performance contracts relying on real-time monitoring and process adjustments. Due to significant mobilization and set-up costs, it is more cost efficient to adjust treatment techniques during a field event rather than after the fact. This eliminates re-mobilizing crews, materials and subcontractors to the site. Real-time monitoring incorporates down-well trolls and data loggers, hand-held instruments to measure groundwater and vapor space parameters, soil resistivity surveys to depict geochemical changes on cross sections and commercially available field test kits. Further, many field observations can be relayed to remotely located design engineers using mobile phone pictures and videos sent via the Internet. As real-time data is received, design engineers can adjust field crew instructions to make the best use of the field event. This talk presents this information in overview and then delves into specific projects utilizing these techniques with graphically presented data and pictures. Sites will include Superfund, RCRA and gas station sites within the U.S.

3:05 Session 3E: SERDP Study Explores Well Flow Dynamics for Active "Purge" Sampling and Newer "Passive" Sampling Approaches

Sandy Britt, PG, CHG, Principal, ProHydro Inc., Fairport, NY
 Low flow purging and sampling techniques were introduced to limit purge volumes, reduce turbidity and agitation during sampling, and to improve repeatability. Passive, no-purge samples likewise have been introduced to improve sampling by limiting waste generation and improving cost structures. How do these methods reflect aquifer concentrations? Do they represent aquifer concentrations differently? Strategic Environmental Research and Development Program Project ER-1704 tested passive and dynamic sampling procedures in the lab, in the field and in model domains to better understand flow dynamics in wells. Results describe a flow field where water moves horizontally from the formation to the well, then moves vertically in the well bore to the pump intake during pumping. Under un-pumped conditions, results show vertical transport and mixing due to tiny density contrasts. In many cases, several well volumes were required to clear the well and reach chemical steady state. Ultimately, maintenance of steady flow rate, very stable parameter measurements and purging several well volumes is required to assure flow-weighted average samples using a low-flow purging approach. "False" stability is a concern in early purge times as slow parameter drift may reflect continued contaminant concentration change. Passive sampling approaches usually yielded similar results without purging due to the vertical density mixing effect, but care was necessary to understand whether stratification in the aquifer was homogenized or partially maintained in the unpurged well. Determination of these effects required substantial effort and is probably not warranted for standard monitoring. However, the study is informative in that it explains some of the dynamics associated with why passive and active samples often yield similar chemical results, and illustrates why practitioners must always pay attention to seemingly unimportant details such as slow purge parameter drift.

3:30 Afternoon Break

Session 4: Sorption

4:00 Session 4A: Sorption Coupled with Enhanced Biodegradation to Treat Petroleum and Chlorinated Contaminants in Groundwater

Drew Baird, PG, East Region Manager, Regenesis, Greenville, SC
 Enhanced biodegradation and monitored natural attenuation are effective, widely-used tools for elimination of organic contaminants in groundwater. However, the timeframe for treatment by these methods can be on the order of months to years. To significantly improve remediation performance beyond that of traditional enhanced bioremediation, a new in-situ colloidal biomatrix has been developed that accelerates biodegradation and drastically shortens the timeframes for reaching groundwater treatment goals. This presentation demonstrates the efficacy of a colloidal in-situ remediation agent that consists of highly sorptive activated carbon particles stabilized to transport widely through an aquifer upon injection. The stabilized colloids deposit on soil surfaces, forming a biomatrix that traps contaminants and accelerates their degradation. Some advantages of this approach include a rapid drop in groundwater concentrations, along with the ability to stop plume migration and protect sensitive property boundaries or environmental receptors. It is hypothesized that the protective effects of the colloidal agent last many years after its application. The presentation reviews the performance of the colloidal biomatrix material on multiple field sites with varying contaminants and site conditions. Data are presented from both the source and down-gradient plume area at a former leaking underground storage tank near a school. The direct-push application was a combined remedy that coupled the colloidal biomatrix with oxygen delivery to promote aerobic biodegradation. The presentation provides pre- and post-application soil cores to demonstrate zone of influence as well as groundwater monitoring to show >99% contaminant

reductions within three months of application. A second site is discussed that shows contaminant reductions >99% for TCA and TCE. Overall, the presentation focuses on demonstrating field performance through evaluation of the distribution of the biomatrix and the corresponding contaminant reductions.

4:20 Session 4B: Use of Colloidal Mg(OH)2 for Aquifer pH Adjustment from Concept to Laboratory to Field scale

Brad Elkins, MS, PG, Technical Sales & Support, EOS Remediation LLC, Raleigh, NC
 Aquifer pH has a major impact on contaminant mobility and attenuation including precipitation/sorption of metals and degradation of chlorinated solvents. However, adjusting aquifer pH can be challenging due to strong buffering by clays, iron oxides and sorbed Al3+. Commonly used bases can result in excessively high pH while others offer relatively low alkalinity/lb. Mg(OH)2 has many advantages over traditional alkalis including lower equilibrium pH, greater alkalinity/lb and slow release 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. For several years, EOS worked to develop methods to alter the surface charge of Mg(OH)2 to improve subsurface transport. Laboratory studies demonstrated that colloidal Mg(OH)2 suspensions could be transported through the columns packed with aquifer sand without significant permeability loss. The time before suspension breakthrough into the column

Continued on Page 12



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A storm is brewing for NPDES construction general permits, but Florida is safe

By MELISSA O'CONNOR, ESQ and DEAN MEYERS, ESQ

In response to a lawsuit by environmental groups seeking greater protection of surface water supplies, the U.S. Environmental Protection Agency introduced the Clean Water Act construction stormwater runoff limitation guidelines.

The new rule, codified in 2009 as 40 CFR Part 450, became known as the Effluent Limitations Guidelines and New Source Performance Standards for Construction and Development point source category.

Under the 2009 rule, construction-related stormwater discharges would be subject to a numeric effluent limitation for turbidity, a water quality indicator that relates to the amount of pollution carried by runoff from a point source discharge.

The rule states that construction sites that are 10 or more acres in size must not exceed 280 nephelometric turbidity units. Furthermore, construction managers would be required to conduct sampling of stormwater discharges to confirm compliance with the standard.

This rule marks a substantial departure from the EPA's formerly relaxed policy and has resulted in extensive industry noncompliance.

At the national level, immediate legal action was pursued by various construction industry stakeholders challenging the limitation guidelines in several federal circuit courts.

In Florida, however, most, if not all, construction managers and designers were unphased by the sweeping federal changes, assuming they were already in compliance with Florida's more narrow construction stormwater effluent turbidity standards.

As a result of the legal dust-up, EPA passed the National Pollutant Discharge Elimination System General Permit for Discharges from Construction Activities, or CGP, in 2012, which did not contain universal turbidity effluent limitations, but rather delegated water quality regulatory authority to the states.

Following up in March of this year, EPA published the "New Rule," which modified the 2009 rule through revisions to the best practicable control technology, best conventional pollutant control technology and the new source performance standards requirements.

Enforcement authority over CGP-holders and those subject to the New Rule in Florida is realized through the terms of a National Pollutant Discharge Elimination System permit.

The Florida Department of Environmental Protection has delegation authority from the EPA to issue and administer NPDES stormwater permits for construction related activities. In doing so, DEP has adopted a far more stringent effluent standard than that proposed by the federal government.

As a result, the changes to the CWA rule have minimal effect on construction stormwater permitting practices in Florida, despite the national attention and stir.

The most notable difference between the EPA and Florida CGP programs is the incorporation by reference of Florida's water quality standards into the state's CGP.

Chapter 62-302 of the Florida rules dictates the surface water quality standards for the state and requires the turbidity level of water discharged into the waters of the state not to exceed 29 NTU above natural background conditions at any given time.

This standard is nearly 10 times more stringent than the proposed 2009 rule that caused a national stir in the construction industry.

It is Florida's long-established commitment to the protection of waters of the state that has the majority of Florida builders at ease with the current proposed modifications at both the federal and state level. However, it is worth noting several important proposed revisions to the CGP by DEP that are scheduled to be ratified before the end of this year.

In June 2014, DEP published a Notice of Proposed Rule for revisions to the CGP, available at https://www.flrules.org/Gateway/View_notice.asp?id=14689115.

Asbestos notifications can be submitted online to DEP

By AJAYA SATYAL

A notification of demolition or asbestos renovation activity can now be submitted online to the Florida Department of Environmental Protection.

Last summer, DEP rolled out an electronic registration process for asbestos notifications. An owner or operator of a regulated facility can submit his notification and can also pay applicable fees there.

DEP administers the federal asbestos regulation, the National Emission Standards for Hazardous Air Pollutants, in Florida. The purpose of administering this regulation is to prevent the release of potentially dangerous asbestos fibers to the outside air during renovation and demolition activities.

This regulation is applicable to a project when a threshold amount of regulated asbestos-containing materials is removed from a facility or when such a facility is intended for demolition.

One of the requirements of this regulation is to submit a notification of renovation/demolition to DEP or the local program offices at least 10 working days prior to the project's intended start date.

This new online capability will help save time and money for building owners and contractors, as the online submittals cut down on the time required for delivery and the costs incurred on hand deliveries, postage, registered mail and overnight packages.

To submit the notice for regulated asbestos renovation or demolition activities or to pay fees, the owner or

operator of a project will need to log-in to the Florida Business Portal at <http://www.fldepportal.com/go/>. If signing in for the first time, users can create an account by selecting "Register" and then by providing the required information. A verification e-mail will be sent to the applicant at the e-mail address provided, with a link to create a password for the log-in.

The basic instructions for submitting the notification and paying fees can be found at <http://www.dep.state.fl.us/Air/emission/asbestos.htm>. If you have any questions click on the "Help" tab for tips as you progress through each step of the process.

If an incomplete notification needs to be put on hold, this system can do that, too. Unsubmitted notifications are stored on the portal for up to 30 days, so they can be completed at a later time and submitted anytime within the 30-day period. The instructions are provided on the website for a quick review.

DEP is making efforts to communicate with asbestos removal and demolition contractors in this regards through its district offices and delegated local program offices, and is finding that the use of the online submittals process is currently underutilized. DEP urges all affected parties to utilize this new online notification process.

If you need assistance with the use of the online registration process or have questions on asbestos regulation or renovation and demolition issues, contact DEP's Division of Air Resources Management at (850) 717-9000 or the district and local program offices.

Ajaya Satyal is an environmental administrator in DEP's South District Office in Fort Myers.

Earthjustice files suit against Gulf Power for allegedly polluting Apalachicola River

By BLANCHE HARDY, PG

Earthjustice filed a Clean Water Act lawsuit in the U.S. District Court in Tallahassee this summer against Pensacola-based Gulf Power, a subsidiary of the Southern Company.

The suit was filed on behalf of the Southern Alliance for Clean Energy, Waterkeeper Alliance and Apalachicola Riverkeeper.

The group had previously notified Gulf Power of their concerns and intent to file, giving the power company four months to begin addressing potential site problems and to confirm leaking impoundment walls were structurally stable.

Upon lack of a suitable response, the groups proceeded with the legal action.

Earthjustice's suit is intended to stop pollutants from entering the Apalachicola River from Gulf Power's Scholz Generating Plant property near the town of Sneads in Jackson County.

The Scholz facility is aging and has been found by its owners to be too expensive to upgrade to meet current and pending federal emission standards. Scholz was built in 1953 and is scheduled to be retired from operations in 2015.

At this point, Apalachicola Riverkeeper Dan Tonsmeire said the proceeding is "basically in a holding pattern, waiting for Gulf Power to respond to the complaint."

Gulf Power has a federal Clean Water Act permit allowing the discharge of treated coal ash water and chlorinated condensing water through an outfall directly into the Apalachicola River.

According to Earthjustice, although the plant has a discharge permit, the Clean Water Act is being violated as a result of the release of untreated and unpermitted

contaminants from aging unlined pits in a 40-acre coal ash dump atop a bluff along the Apalachicola River.

The lawsuit listed high levels of contaminants including arsenic, cadmium, chromium, aluminum, barium, beryllium, copper, lead, nickel, zinc, selenium and mercury.

Earthjustice said the contaminants are a result of the flushing of millions of gallons of coal ash sludge that travel through boils, seep into ditches and other drainage conveyances, eventually draining into the river.

The group reported "bright orange contamination leaking out of the pits" in June, 2013. Results of samples analyzed indicated levels of arsenic 300 times greater than what is considered safe in drinking water.

In addition to the group's concern about the health of the river and its ecosystem as well as the safety of nearby residents, they noted that the Apalachicola River flows into Apalachicola Bay, which supports a multi-billion-dollar seafood industry and is one of the most ecologically diverse ecosystems in the southern U.S.

The plant's pending closure was also taken into consideration by Earthjustice. They want to make sure the ponds, coal ash and contamination are appropriately addressed before the site is closed.

Officials with Gulf Power reject the suit's allegations and have, according to Tonsmeire, filed an appeal.

According to statements issued by Gulf Power Spokesperson Natalie Smith, assessments of site conditions and sampling conducted after notification of the pending suit failed to reproduce the group's data.

Gulf Power said that an analysis of samples from both Gulf Power and the Florida Department of Environmental Protection indicated no contamination above permitted levels.

Riverkeeper Tonsmeire agreed that the probable next step would be in the legal realm.

Florida Specifier

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

Calendar

September

SEPT. 3-6 – Conference: 2014 APA Florida Annual Conference, Jacksonville, FL. Presented by the Florida Chapter of the American Planning Association. Visit www.floridaplanning.org.

SEPT. 5 – Course: Initial Training Course for Spotters at Landfills, C&D Sites and Transfer Stations – 8 Hour, Daytona Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 5 – Course: Refresher Training Course for Experienced Solid Waste Operators – 8 Hour, Daytona Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 5 – Course: Refresher Training Course for Experienced Solid Waste Operators – 4 Hour, Daytona Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 5-6 – Course: Initial Training Course for Transfer Station Operators and Materials Recovery Facilities – 16 Hour, Daytona Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 5-6 – Course: Refresher Training Course for Experienced Solid Waste Operators – 16 Hour, Daytona Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 5-7 – Course: Initial Training Course for Landfill Operators and C&D Sites – 24 Hour, Daytona Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 5-7 – Course: Initial Training for Operators of Landfills and Waste Processing Facilities, Daytona Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 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.

SEPT. 6 – Course: Refresher Training Course for Experienced Solid Waste Operators – 8 Hour, Daytona Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 6 – Meeting: Quarterly Meeting of the Florida Ground Water Association, Key West, FL. Call (850) 205-5741 or visit www.fgwa.org.

SEPT. 6 – Course: Refresher Training Course for Experienced Solid Waste Operators – 4 Hour, Daytona Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 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.

SEPT. 8-12 – 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.

SEPT. 8 – 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.

SEPT. 8 – Course: Asbestos Refresher: Project Design, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 9 – 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.

SEPT. 9 – Course: The Science of Disinfection, Palm Bay, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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

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

SEPT. 10 – Course: Asbestos Refresher: Contractor/Supervisor, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 11 – Expo: FS/AWWA Region V 7th Annual Water & Wastewater Expo, Fort Myers, FL. Presented by the Florida Section of the American Water

Works Association Contact Cherie Wolter at (239) 278-7996 or visit www.fsawwa.org.

SEPT. 12 – Seminar: Improving Water Quality through Stormwater LID and BMPs, Orlando, FL. Presented by the Florida Stormwater Association. Call (850) 221-3124 or visit www.florida-stormwater.org/seminars.

SEPT. 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.

SEPT. 15-17 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Altamonte Springs, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 15-17 – Course: Backflow Prevention Assembly Repair and Maintenance, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 15-19 – Course: Wastewater Class A Certification Review, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 16-19 – Course: Wastewater Class B Certification Review, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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

SEPT. 20 – Course: Backflow Prevention Recertification Review, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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

SEPT. 21 – Course: Backflow Prevention Recertification Exam, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 23-25 – Course: Introduction to Electrical Maintenance, Boca Raton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 23 – 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.

SEPT. 24 – Showcase: Region IX & XII and FS/AWWA MAC New Technology Showcase, Destin, FL. Presented by the Florida Section of the American Water Works Association. Contact Cody Snell at (630) 824-8284 or visit www.fsawwa.org.

SEPT. 24-26 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 26 – Course: Backflow Prevention Recertification Review, West Palm Beach, FL. Presented by

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

SEPT. 27 – Course: Backflow Prevention Recertification Exam, West Palm Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

SEPT. 29 – OCT. 1 – Conference: WEFTEC, New Orleans, LA. Presented by the Water Environment Federation. Call 1-800-666-0206 or visit www.weftec.org.

October

OCT. 1-2 – Summit: 6th Annual Southeast Florida Regional Climate Leadership Summit, Miami, FL. Presented by a partnership of South Florida cities and counties. Visit <http://southeastfloridaclimatecompact.org/the-summit/>.

OCT. 2 – 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. 3 – 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. 3-4 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

OCT. 4 – Course: Backflow Prevention Recertification Review, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-

9570 or visit www.treeo.ufl.edu.

OCT. 6-8 – Course: Asbestos: Inspector, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

OCT. 9-10 – Conference: 20th Annual Florida Remediation Conference, Orlando, FL. Presented by NTCC Inc., publishers of the *Florida Specifier*. Call (407) 671-7777 or visit www.enviro-net.com.

OCT. 9-10 – Course: Asbestos: Management Planner, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

OCT. 10 – 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.

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

OCT. 13 – Course: Hazardous Waste Regulations for Generators, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

OCT. 14 – 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.

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effluent varied with surface treatment, indicating the Mg(OH)₂ retention could be controlled by varying the suspension surface treatment. These lab results were used to develop a colloidal Mg(OH)₂ formulation, CoBupH-Mg, where the particle size, surface charge, degree of flocculation and settling rate are controlled to enhance transport and distribution throughout the treatment zone. A pilot scale injection was performed in Virginia in February 2013. Results demonstrated pH increase over a one-year period at or above pH 6 and achieving pH adjustment over baseline samples up to 30 feet down gradient. These results demonstrate the ability of CoBupH-Mg to transport and adjust aquifer pH which can be used to enhance chlorinated solvent biodegradation in low-pH aquifers or to manipulate the dissolution of metals

4:40 Session 4C: In-Situ Remediation of Commingled Plumes Utilizing an Injection Program for pH and Alkalinity Optimization

Chad Hanna, Env. Engineering Specialist, ARCADIS, Tampa
The site is a chemical packaging and distribution center in operation since 1982. In July 1998, approximately 800 gallons of acetone were released during rail car unloading operations. Following the excavation of impacted soils, various phases of investigation were conducted to complete site characterization and groundwater plume delineation. The groundwater data revealed the presence of commingled plumes of aromatic and chlorinated volatile organic compounds in the surficial

aquifer system. Intrinsic reductive dechlorination has been observed at the site, as evidenced by the presence of degradation products since initiation of groundwater monitoring in 1999. Despite the continued presence of aromatic VOCs, which can be utilized as electron donors for reductive dechlorination, declines in chlorinated VOC concentrations slowed and stabilized between 2005 and 2009. The lack of recent active reductive dechlorination has been attributed to low groundwater pH and limited buffering capacity in the aquifer. A pilot test was performed between March 2010 and December 2011 to evaluate the feasibility of an injection program to restore subsurface conditions and enhance reductive dechlorination processes. Based on the results of the pilot test, a combination of in-situ pH and alkalinity amendments coupled with monitored natural attenuation was proposed as the remedial approach for the site. The implementation of the full-scale remedy was initiated in April 2013. The initial performance and ongoing optimization of the remediation program are presented.

5:00 FRC Reception

Day Two, Friday, Oct. 10, 2014

Session 5: **Laboratory Tools and Techniques**



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9:00 Session 5A: **Efficiency of an Online Chain of Custody Service**

Kent Patton, Global Managing Director, Promium LLC, Bothell, WA
A web-based online service provides an efficient, accurate and reliable process to replace paper-based chains of custody. This talk describes the components and benefits of one of these: EnviroChain from Promium, an online chain of custody service for environmental engineers, consultants and laboratories. For at least the last 40 years, environmental scientists and laboratories have been using paper chains of custody to manage samples. Thousands of paper CoCs are handled every year in most labs. That paper-based system is inefficient—data must be entered on paper and then again in the LIMS. It is also inaccurate—every time data is hand written and then transcribed repeatedly creates potential for data entry errors—and unreliable with the possibility of paper CoCs getting damaged or lost. A web-based electronic chain of custody service not only addresses those issues, it delivers a rich source of data in near real-time for laboratory project planning and sample management. The result is a reduction in costs and headaches. With the explosion in the use of smart phones and tablets, there is finally a field technology that can truly leverage web applications for managing chains of custody. Coupled with a tight integration with a laboratory information management system, the flow of data is accelerated from the field to final report.

9:30 Session 5B: **Interpreting 3D-CSIA Forensic Data: A Step-By-Step Demonstration**

Yi Wang, PhD, Director, Pace CSIA Center of Excellence, Pittsburgh, PA
Three-Dimensional Compound Specific Isotope Analysis has been demonstrated to be a promising approach for chlorinated solvent release site investigation. Obtaining carbon, chlorine and hydrogen isotopic signatures of PCE, TCE and their daughter products in groundwater, soil and vapor samples helps distinguish multiple release sources and assess biodegradation. However, how to interpret a 3D-CSIA forensic data report has been a big challenge to many site managers. It requires a full understanding of isotope geochemistry, stable isotope forensic approach and science-defensible interpretation based on the site information. For example, the typically negative isotope ratios obtained by 3D-CSIA for the target analytes are different from the positive concentrations obtained by the traditional EPA Method 8260B for the same analytes. Further, altered isotope ratios due to certain weathering effects like in-situ degradation, if occurring to the target analytes, would give data interpreters a lot of trouble, especially when they want to apply such data for contaminant source identification. During this presentation, a complicated PCE/TCE release site case study is presented to demonstrate step-by-step how we interpreted one of our 3D-CSIA data reports. Concentrations and carbon, chlorine and hydrogen isotope ratios of PCE, TCE and cDCE were measured in 31 shallow and deep groundwater samples from the site. In these samples, at least eight PCE sources and one TCE source were distinguished based on the isotopic signatures and the locations of the samples. Potential contaminant sources could be from a variety of historic industrial activities at the site.

10:00 Session 5C: **Optimization of Metals Remediation using Column and Microcosm Studies**

Jeff Roberts, Laboratory Manager, SiREM Laboratory, Guelph, ON, Canada
Metals remediation can be complex given the sensitivity of metals to geochemistry, in particular pH and redox potential. Remedial efforts such as the addition of electron donors can alter the redox state of an aquifer, thereby affecting the solubility and mobility of metal species. Furthermore, metals are often toxic to microorganisms and may be inhibitory to bioremediation of other compounds, such as chlorinated solvents, with implications for sites with commingled contaminants. Laboratory treatability studies are commonly used to evaluate remedial options prior to field implementation for a wide variety of contaminants including metals such as arsenic, chromium, zinc and nickel, chlorinated volatile organic compounds, petroleum hydrocarbons and polycyclic aromatic hydrocarbons. Treatability studies are used to determine the impact of amendments, electron donors, oxidants, zero valent iron and the effects of remediation efforts under various scenarios. This presentation focuses on the use of treatability studies to evaluate treatment options for metals. Case studies of laboratory batch and column treatability studies will be presented. In one study, effective dechlorination of trichloroethene was not observed until hexavalent chromium concentrations were reduced, at which point TCE dechlorination commenced and provided valuable information for managing the full scale remediation. Laboratory scale studies can be performed in both batch microcosms and continuous flow through columns. Batch microcosms offer the advantages of low cost and the ability to practically test numerous treatments simultaneously. Flow through column studies offer the advantages of simulating the movement of groundwater through an aquifer or permeable reactive barrier and are ideal for understanding the impact of geochemical gradients. Column studies can be used to evaluate design parameters such as amendment effectiveness, PRB residence time and treatment longevity under site specific conditions.

10:30 Morning Break

11:00 Session 6: Panel Discussion:

Performance-Based Assessment of Post-Closure Care at Landfills
Moderator: Mark Hudgins, Conestoga Rovers & Associates, Orlando
Panelists: Emerson Raulerson, PE, Professional Engineer, DEP, Jacksonville
Neal Hornick, PG, Professional Geologist, DEP, Jacksonville
City of Jacksonville (Landfill Owner), Invited
In Florida, prescriptive post-closure care periods for closed landfills can last 30 years or longer. However, there are regulations that allow for the reduction of this period provided it can be demonstrated that such reductions will not negatively impact human health and the environment (FAC 62-701.620(3)). Over the last three years, reductions in groundwater monitoring have been granted via permit modification for 36 of 42 facilities reviewed so far, resulting in cost savings of more than \$3.6 million. This panel, including an industry expert, state regulators and a facility manager, will discuss PCC re-assessment programs. The focus of the discussion will be to review such activity and projects, discussing requirements for PCC reduction candidacy and the development of consistent, state-wide criteria for performing such assessments in Florida.

12:00 Day Two Luncheon

1:30 Session 7: **Annual Environmental Regulatory Panel Discussion**

Moderator: Glenn MacGraw, PG, Vice President, The FGS Group, Tallahassee
Panelists: Jorge Caspary, PG, Director, Division of Waste Management, DEP; Invited Valerie Huegel, Program Administrator, Petroleum Restoration Program, DEP
Additional DEP representatives, Invited

3:00 Afternoon Break

Session 8: **Fixation/Mobilization**

3:30 Session 8A: **Chemical Fixation of Priority Heavy Metals in Soil, Sediment and Groundwater Using MetaFix™ Reagents**

Patrick Hicks, PhD, SE Region Technical Manager, PeroxyChem, Philadelphia, PA
High concentrations of heavy metals are found in many soil and sediment environments. At very high concentrations, heavy metals are known to create toxicity to microorganisms. Treatment approaches that rely on microbial process may not function well in an acutely toxic matrix because important processes such as carbon fermentation, oxygen consumption and biological sulfate reduction can be significantly slowed or completely inhibited. The understanding of many metals removal mechanisms operative in soil and groundwater has advanced significantly over the past decade—thus, we are now in a better position to develop a new platform of effective metal remediation products. In toxic environments, treatment reagents that do not depend entirely on

microbial activity, but rather combine reduction with adsorption and precipitation of heavy metals, are advantageous. MetaFix™ reagents represent an entirely new family of products for treatment of soil, sediment, industrial wastes and groundwater contaminated with heavy metals. Treatment mechanisms based on iron, iron sulfides and other iron-bearing minerals have significant advantages due to lower solubility and greater stability of iron-bearing mineral precipitates formed with heavy metals. The new reagents enrich the aquifer with a mixture of reducing agents and processed reactive minerals. This new approach is insensitive to toxicity and will perform well even in environments that have high metals concentrations, high concentrations of organic contaminants such as solvents, high salt content or pH levels that would inhibit carbon fermentation and sulfate reduction. The approach used in these new reagents is to create an effective blend of reducing agents, reactive minerals, mineral activators, catalysts, pH modifiers and adsorbents for either ex-situ or in-situ applications. Dredge spoils containing high levels of TCLP/SPLP metals can be quickly treated and stabilized before final disposal. In-situ reactive zones can be constructed to prevent migration of heavy metals into sediments or surface water. MetaFix reagents can also be directly delivered into sediments for in-situ stabilization of heavy metals and thereby reduce exposure to aquatic life. Laboratory results showing reduction in TCLP and SPLP of key metals are presented.

4:00 Session 8B: Advances in Surfactant Selection for LNAPL Remediation

David Alden, Technical Associate, Tersus Environmental, Wake Forest, NC
 A standardized approach to designing remedial actions essentially requires complete removal of free-phase and residual NAPL. Nevertheless, NAPL can be quite difficult to remediate due to capillary forces that trap organics in soil. Surfactant enhanced aquifer remediation achieves these removal goals in a matter of a few weeks to a few months. In many cases, it may even make economic sense to remove as much LNAPL as practicable by applying surfactants before adding oxidants or reductants to the matrix. This talk focuses on the use of state-of-the-art surfactant solutions to mobilize residual LNAPL in the saturated soil of the subsurface. Surfactants typically found in household cleaning systems like laundry detergent or shampoo only lower the interfacial tension about one order of magnitude. This is sufficient because mechanical energy can be added to laundry or shampooing to mobilize the trapped oil. In a porous medium, however, the interfacial tension must be reduced by three or four orders of magnitude. Researchers at the University of Oklahoma blended a combination of surfactants that lowers the LNAPL-water interfacial tension to allow physical mobilization of residual LNAPL. The now mobile "oil bank" is then displaced by continuing flushing and withdrawal by the extraction wells. This presentation describes a remediation project that incorporated an optimized surfactant blend to maximize LNAPL removal and minimize waste at competitive costs.

4:30 Session 8C: Treatment of Chromated Copper Arsenate Contaminated Water with Metsorb®

Craig Cowdery, Senior Engineer, WRS Infrastructure & Environment, Tallahassee
 Treatment of highly contaminated chromated copper arsenate water at wood treatment facilities can be challenging and can generate RCRA hazardous waste. The use of a single adsorbent, such as Metsorb®, greatly simplifies the treatment process. Metsorb represents an innovative green

technology that can produce a non-hazardous waste that passes the RCRA toxicity characteristic leaching procedure requirements. WRS Infrastructure & Environment Inc. was requested by U.S. EPA Region IV to perform emergency response at a 12-acre CCA wood treatment facility to treat residual water from the treatment area and water stored in tanks on-site in Jacksonville, FL. The facility was abandoned with all of the chemicals and waste unsecured. Metsorb had never been used to treat extremely high metal concentrations before, so a treatability test was performed to test adsorption capacity and effluent concentrations. Based on the treatability study results, approximately 200,000 gallons of highly-contaminated water were treated on-site using Metsorb. Another 100,000 gallons of the contaminated water were recycled by sending it to another facility for reuse in their CCA process. During operation of the adsorption unit, it was determined that metal adsorption was causing pH shifts that were affecting the Metsorb adsorption capacity and the system's effluent concentrations. This was rectified by reducing the pH of the influent solution using hydrochloric acid. Upon treatment completion, TCLP was used to analyze the spent Metsorb and none of the spent material exceeded the RCRA toxicity characteristic.

5:00 2014 conference adjourns

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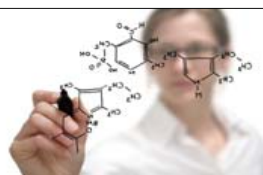
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Marion County Utilities completes project to supply more reclaimed water

By PRAKASH GANDHI

A major project that will help increase the use of reclaimed water has been completed in Marion County. The project will provide water to irrigate golf courses in the county.

The system is capable of producing up to 850,000 gallons of reclaimed water a day, said Doug Andrews, deputy utility director for Marion County Utilities.

The water goes through a treatment process that includes, among other things, screening, filtration and chlorination.

The treated water is pumped into a 1.6 million gallon storage tank on site. At that point, the water has a nitrate level of about two parts per million. County officials said this is cleaner than the standard for reclaimed use, which is 12 ppm. The water quality also beats the advanced wastewater treatment standard of three ppm.

The project took two years to complete. "The major benefit of this project is that it provides us with 850,000 gallons of water per day that we don't have to take from the aquifer," Andrews said. "It also means that golf courses can use less fertilizer because the reclaimed water retains some nitrogen."

Andrews said the project was completed at the end of last year and co-funded by the Southwest Florida Water Management District.

Officials added a 1.6-million-gallon storage tank to store the reclaimed water.

"We added some transfer pumps and two pipelines—one to the Oak Run Golf Club and one to the Spruce Creek Preserve Golf & Country Club," Andrews said. "All of our reuse goes to golf courses."

The water is pumped from the storage tank to the golf courses.

The project included 20 miles of new

pipeline and allowed for the removal of three smaller wastewater treatment plants.

Marion County Utilities' officials said that because the Oak Run facility produces treated water that meets or exceeds advanced wastewater treatment standards, the quality of the water returning to the aquifer has improved.

The reclaimed portion of the project cost about \$4.7 million, with SWFWMD providing 50 percent of the funding.

Andrews said that Marion County Utilities hopes to expand the system in the future to irrigate grassy areas along rights of way.

In addition, they hope to send the water to other golf courses in the area as well as the SummerGlen retirement community

through already installed pipelines.

Marion County Utilities pumps about 10 million gallons of water a day from the aquifer in Marion County and returns about 2.1 million gallons a day.

The reclaimed water effort is part of the Marion County Wastewater Regionalization plan, which includes facilities in Silver Springs, Stonecrest, Golden Ocala and Salt Springs.

The Oak Run facility was recognized with the 2014 Municipal Utility Operational Performance Excellence Award from the Florida Water Environment Association and the 2013 National Environmental Achievement award from the National Association of Clean Water Agencies.

Sebastian takes proactive approach to monitoring water quality in IRL

By BLANCHE HARDY, PG

The Sebastian City Council directed staff to take measures to assess water quality in order to reduce polluted discharge into the impaired Indian River Lagoon. According to City Engineer Frank Watanabe, the city is taking steps to stay ahead of the problem.

In order to collect preliminary measurements of pollutants, the city purchased a multiparameter hand-held colorimeter. The device is being used to build a database of water quality results from samples collected at nine outfalls along Indian River Drive.

The city has a total maximum daily load grant to install associated baffle boxes to help improve water quality.

Watanabe noted that the colorimeter will allow staff to conduct sampling at ten locations, recording measurements on parameters such as total nitrogen, nitrates, phosphorus, turbidity and others.

"We are not laboratory certified (but based on testing for nitrates, the initial results come close to the laboratory-certified test results," he said. "Are we okay with what we are getting so far? Yes, we are."

The advanced detector is a silicon photodiode that includes a colorimeter, two one-inch glass sample cells marked at 10, 20 and 25 milliliters, two one-centimeter plastic sample cells and a 1x16-millimeter COD/Test 'N Tube™ adapter.

The instrument is operable from 50 to 104 degrees F and at an operating humidity of 90 percent (noncondensing) and can test for up to 90 of the most common water quality test methods.

The Sebastian City Commission created an environmental specialist position and hired Cynthia Watson to help them achieve their no pollutant discharge goal.

Watanabe said that the council also adopted an ordinance to address impaired waters.

WATCH

From Page 4

Lake Talquin pollution limits. Lake Talquin in Leon County receives 85 percent of its water from Georgia and that water carries with it 90 percent of the lake's nutrient contaminants.

Since 2009, DEP has classified the lake as "impaired" even though it is a well-known bass fishing spot.

After 18 months of negotiation, DEP, the Georgia Environmental Protection Division, the U.S. Environmental Protection Agency, and area city and county officials developed a plan to establish new TMDLs to meet Florida's numeric nutrient criteria for the lake.

The EPA prepared a watershed model for the lake that included inputs from Florida and Georgia. Agriculture is the largest nonpoint source of nitrogen and phosphorus. BASF Catalysts in Attapulgus, GA, is the single largest point source of excess nutrient-laden water.

The workgroup established restoration goals to set limits for nitrogen, phosphorus and dissolved oxygen that may occur under eutrophic conditions.

"The city has a stringent NPDES permit and we want to follow the national standards," he said. "The cost of the hand-held device was nominal compared to the impacts to the lagoon."

Watson is the lead for the city's new water assessment effort and has proposed expanding the program to include other areas throughout Sebastian, such as waterbodies within parks.

She collects the samples and is building the database as well as coordinating with other local and regional efforts to preserve water quality in the lagoon.

She is currently being assisted by Jim Clifton, a volunteer and member of the local Environmental Resources Board. Watanabe characterizes them as "a solid team making a solid effort."

Watson credits the council for its progressive effort, noting that its members are trying their best to improve water quality in the troubled lagoon, proactively rather than reactively.

SPRINGS

From Page 6

mation on cause-and-effect relationships between nutrients and activities in the area," said Drew Bartlett, deputy secretary for water policy and ecosystem restoration at DEP. "That should lead to more effective and efficient restoration strategies."

For its part, USGS, which has been doing monitoring on a monthly or quarterly basis since 1932, will now have access to the same real-time data.

Timely monitoring of the springs' waters will allow scientists to get a better understanding of how activities within a springshed affect the spring water. That, in turn, will allow them to create a plan to reduce nutrient loading.

"Better data means better science," said SRWMD Executive Director Ann Shortelle. "It means improved decision making and project implementation."

Once the target levels are accepted, Georgia will be responsible for drafting total maximum daily loads that meet the NNC for the lake.

APWA award for NFWFMD. The American Public Works Association, Florida Chapter, recognized the Northwest Florida Water Management District's efforts to restore and protect springs that are part of the Econofina Creek Springs Complex.

The district received a Public Works Project of the Year Award. The award recognizes the Pitt and Sylvan Springs Restoration and Protection Project, completed in May 2012.

The project restored and protected the Pitt Spring bank and several sections of the Econofina Creek stream bank. Both suffered from erosion and unauthorized access.

Stormwater facilities to prevent runoff and erosion were also constructed during the project. Recreational amenities to improve public access while protecting the natural setting from human impacts were part of the project.

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By ROY LAUGHLIN

Low density polyethylene plastic film used as ground cover or mulch has become an integral agriculture practice in Florida, reducing weed growth and tilling as well as water evaporation from soil and fertilizer washout.

According to a recent article, about 25 million pounds of plastic film are used for mulch in crop production every year. Irrigation drip tape made of LDPE accounts for 10 million more pounds in agricultural use. An additional 6-8 million pounds of plastic films are used in greenhouses and nurseries around the state.

The 40 million pounds of LDPE used in Florida annually accounts for about a third of its use nationwide.

But very little of this LDPE is recycled. Most of it is burned in the field under an agricultural exemption in Florida's solid waste law. LDPE is highly recyclable and

has favorable economics internationally as a recycled commodity.

However, used agricultural film poses challenges to LDPE recycling. When collected after use, plastic films contain far more sand and soil organics than most recycled plastic consumables. The combination requires substantial washing before it can be shredded and treated. Sand, in particular, damages the shredding machines used for decades in plastic recycling. Consequently, recyclers have largely ignored agricultural LDPE film as recyclable.

Recycling prospects for LDPE may be changing as new technology and new businesses come together in Florida, led by Gene Jones, executive director of Southern Waste Information eXchange Inc. in Tallahassee.

Jones gives several reasons to recycle LDPE, among them reducing combustion emissions, reducing the use of new hydrocarbons, providing local jobs in the recycling effort and perhaps even making new useful items from the recycled plastics.

Jones said that over the past couple of years, new machinery developed overseas

resists damage from sand-impregnated plastic waste. Two companies, Recycpoly in LaBelle and FlaAgRecycle in Avon Park, will be installing the new generation recycling machinery to shred plastics.

The system includes a closed-cycle washing system that rinses plastics before shredding. Sand and dirt collect in a settling pond. Rainwater can be collected from the site to provide cleaning water.

A collaborating company, FieldClean-Florida, is developing a machine that rolls plastic mulch in the post-crop collection process. That drastically reduces the amount of soil included with the plastic. The rolled film is easier to transport to a recycling facility.

"In the next two or three years, we'll see a change in the way agricultural film is reused in Florida," predicted Jones.

FlaAgRecycle and Recycpoly are not currently recycling the plastics, although the LaBelle company is collecting piles of plastic film. Each company has new equipment on order and they are remodeling warehouses with the necessary electrical circuitry and other modifications the equip-

ment requires. The first recycling, using film stockpiled following the spring crop season, could begin this fall.

Jones insists that transporting used plastic films, even with substantial sand included, is economically viable. As an example, he points to Delta Plastics of Stuttgart, AR, which is gathering material from the Quincy area and transporting it to Arkansas for recycling.

His said the market price of the recycled LDPE is sufficient to pay the freight of the raw feed before recycling. The two recycling plants in the works in Avon Park and LaBelle could economically take plastic film waste from almost anywhere in Florida.

Jones said the recycling effort would be aided by removing the agricultural exemption on burning the mulch waste in fields, but he acknowledged that the exemption is likely to remain in force into the foreseeable future.

"The major advantage to implement a recovery program is that it will create an economic incentive in the state," said Jones. "It will create jobs from a material that is typically burned."

NOTES

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Tampa, Pompano Beach and Fort Lauderdale, process more than 7.5 million tons of waste per year and have an annual electricity-generating capacity of 853 megawatts.

In other news, Cascade Drilling LP acquired ZEBRA Environmental Corp., strengthening their presence in the Northeast U.S. direct push, in-situ remediation and small auger markets.

ZEBRA changed its name to ZEBRA Technical Services LLC but will largely retain its current corporate identity.

ZEBRA has six offices stretching from Albany, NY, to Florida with 50 employees.

The move brings Cascade's total rig count to 245 sonic, air rotary, mud rotary, auger, coring and probe rigs serving clients in all regions of North America.

The combined company employs over 500 people in 28 offices nationwide.

FEDFILE

From Page 2

Florida's grant includes \$1,410,651 for coastal pumpout stations and \$770,126 for inland pumpout stations.

This should provide 45 new or repaired sewage pumpout stations. The project may include traditional on-dock pumpout stations. In some cases, pumpout boats will travel in designated harbors to make sewage collection more efficient and convenient.

The grant money comes from federal excise taxes on fishing tackle manufacturers, boat and fishing equipment import duties, and motor boat and small engine fuel taxes.

This year, FWS has awarded \$16.6 million with these grants to 21 states. Since 1993, FWS has given more than \$200 million to states through these Clean Vessel Act grants.

Flood checklist tool. EPA has issued a new tool, the Flood Resilience Checklist, that offers strategies for local communities to help reduce flood risks.

The checklist includes suggestions such as conserving land in flood-prone areas, directing new developments to safer areas and using green infrastructure approaches, for example rain gardens, to help manage stormwater.

The checklist, part of a new report entitled "Planning for Flood Recovery and Long-Term Resilience in Vermont: Smart Growth Approaches for Disaster Resilient Communities," is a product of EPA's year-long Smart Growth Implementation Assistant Project in Vermont.

EPA worked with the Federal Emergency Management Agency in recovery efforts after Tropical Storm Irene to develop many of the ideas in this checklist, which the agency said could assist many communities to become more flood resistant.

The checklist is available at http://www.epa.gov/smartgrowth/sgia_communities.htm#recl.

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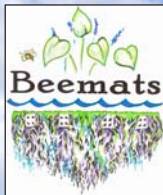
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PRP

From Page 1

money will be requested to fund this Supplemental Remedial Effort because the sites are already eligible for funding. The criteria for funding are what will change.

Sites in the program's current inventory that have already been in the monitoring stage for five years or longer are those of current interest for the proposal.

As time goes by, there is the potential for additional sites to move past the five year anniversary date without meeting closure requirements.

The current effort is expected to produce an effective strategy for implementing additional remediation steps for those sites that were expected to meet closure requirements with a hands-off approach, but have not.

The effort to develop such a strategy is in its early stages. But state contractors with candidate sites are urged to discuss them with PRP staff to determine if additional effort, which the program may fund in part or in full, may lead to site closures in shorter time frames.

GLADES

From Page 1

climate change and rising sea levels caused by higher temperatures, nor does it include a plan to deal effectively with the invasive species.

"CERP lacks overall coordination to deal with non-native species, with a shortage of research on them and their impact. Such invasive plant species as Melaleuca and Australian Pine are infesting hundreds of thousands of acres and fuel brushfires that destroy native plants," stated the report. "Burmese pythons have become the Everglades' top carnivore, eating alligators and virtually wiping out vertebrates."

CERP encompasses 68 component projects overseen by the U.S. Army Corps of Engineers and the South Florida Water Management District.

The project's goal is to reinstate the original surface water sheet flow as much as possible, mainly by restoring underdeveloped wetlands.

"We recognize that (even with) as much progress as we've made in our restoration efforts to date, there's still more work to be done," wrote corps' officials in a statement regarding the NRC report.

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