

Florida Specifier

Practical Information For Environmental Professionals

Single Copy Price: \$5

April/May 2021

Volume 43, Number 2

Radioactive roads 6

In late 2020, the U.S. Environmental Protection Agency published a revised regulation in the Federal Register that significantly relaxed a long-standing rule on the use of phosphogypsum as an aggregate material in road construction.

Septic-to-sewer 7

Citrus County officials are working in conjunction with DEP and the Southwest Florida Water Management District to make centralized sewer service available to existing homes currently on septic tanks.

Gulf of Mexico research 8

The 2010 Deepwater Horizon oil blowout and resulting spill was a huge ecological disaster for the Gulf. But it did engender a decade's worth of extensive scientific research.

Stormwater harvesting 10

Orange County Public Works installed a stormwater "harvesting" system to collect, store and reuse the runoff. The system collects runoff, diverts it through a baffle box filter, and then directs the water to a set of below-ground cisterns for storage.

Drillers Directory 12

Our annual directory of environmental and geotechnical drillers appears on Page 12. The directory includes equipment, capabilities and specialties for each driller.

Departments

Classified Advertising	5, 15
Federal File	2
Florida Notes	3
Water Watch	4

Got a story lead?

Got an idea for a story? Like to submit a column for consideration? Let us know. And don't forget to fill us in on your organization's new people and programs, projects and technologies—anything of interest to environmental professionals in Florida. Send to P.O. Box 2175, Goldenrod, FL 32733. Call us at (407) 671-7777; fax us at (321) 972-8937, or email mreast@enviro-net.com.

Address label change?

If your mailing label is inaccurate or incomplete, please contact us with the correct information at Post Office Box 2175, Goldenrod, FL 32733; fax (321) 972-8937; or e-mail mreast@enviro-net.com. We appreciate your help with keeping our circulation database accurate.



Photo courtesy of Orange County Government

Herson Rodriguez, a member of the Orange County Stormwater Management Team, fills a county truck with stormwater runoff captured in underground cisterns from a county rooftop. The innovative system "harvests" runoff to be used for vehicle washing, among other purposes, to minimize the use of potable water. See story on Page 10.

ASCE report card shows slight improvement in condition of nation's infrastructure

By ROY LAUGHLIN

The American Society of Civil Engineers released its 2021 Report Card for America's Infrastructure in early March. It reflected an overall grade of C- on the current condition of the country's infrastructure.

In its last report card in 2017, the group gave roads, bridges, water and wastewater treatment plants, communications and other U.S. infrastructure a grade of D-.

ASCE's infrastructure grade originates from about three dozen engineers that worked full time on the evaluation.

The society's grading definition may help parse it.

According to the report, a "C" means "Mediocre, Requires Attention. The infrastructure in the system or network is in fair-to-good condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, increasing vulnerability to risk."

The minus in the grade can be interpreted as "just barely."

The group's comments about the current grade levels are extremely rhetorical and aspirational with almost no prescriptive statements.

The report characterized the nation's infrastructure as "a system of systems," an important insight into how interdependent and complicated the larger picture is.

For the discussion, the report divided the nation's infrastructure into categories, each receiving an evaluation.

Some of the categories are identi-

able as traditional civil engineering specialties such as Wastewater, Transit, Drinking Water, Dams and Bridges.

Also included are infrastructure categories where civil engineers play an increasingly prominent role: Hazardous Wastes, Energy and Levees.

In addition, the categories of Parks and Recreation, Schools and a new category this year, Broadband, spotlight ubiquitous public services that depend on a functional array of technological and physical assets that, according to the report, need work.

The key findings in the report are a catalog of unflattering evaluations of the country's current physical infrastructure assets.

The findings include maintenance backlogs that are managed through an "increasing use of creative asset management to set priorities for use of limited funding."

It's anyone's guess how much sarcasm is intended by the use of the word "creative."

Transit and wastewater categories were singled out for their "staggering deficits" related to infrastructure spending.

The report strongly endorsed developing a clearer picture of where infrastructure improvement is most needed,

ASCE
Continued on Page 13

Nestle gets nod to pump more groundwater for bottled water sales

By BLANCHE HARDY, PG

In a simple one sentence paragraph, Florida Administrative Law Judge Garnett Chisenhall opened the door for Nestle Waters NA to increase its use of Florida's precious groundwater resources to expand its commercial bottled water operations.

Chisenhall found that "(b)ased on the foregoing findings of fact and conclusions of law, it is recommended that the Suwannee River Water Management District render a final order granting permit No. 2-041-218202-3 to the Seven Springs Water Co."

Over opponents' objections including the potential for degradation of connected natural ground and surface waters, the SRWMD Governing Board

approved the permit on Feb. 23.

"The Seven Springs Water Co. consumptive use permit renewal, as well as all permit renewals, underwent an extensive, unbiased scientific and regulatory review," said Lindsey Covington, the district's strategic communicator and marketer. "We have full confidence in staff and legal counsel's rigorous analysis and evaluation of the permit and final recommendation to the governing board."

At the heart of the matter is the determination that water withdrawn under the permit meets the required criteria of being of "beneficial use," as it will provide bottled water for human

PERMIT
Continued on Page 14

Presorted Standard
U.S. POSTAGE
PAID
ORLANDO, FL
PERMIT 1556

2104

Florida
Specifier
P.O. Box 2175
Goldenrod, FL 32733
CHANGE SERVICE REQUESTED

EPA announces plans to regulate two perfluorinated alkyl substances

Staff report

In February, the U.S. Environmental Protection Agency announced two actions related to regulating perfluorinated alkyl substances under the Safe Drinking Water Act.

The agency announced its final decision to regulate perfluorooctanesulfonic acid, PFOS, and perfluorooctanoic acid, PFOA, in drinking water.

The decision cleared the path for EPA to implement the national primary drinking water regulation development process for these two substances and allowed the agency to begin examining as a group the 29 PFAS described in the brief below.

Under the Safe Drinking Water Act, the EPA must periodically establish a Contaminant Candidate List as the first step to setting priorities. The agency must select no less than five compounds from this list for closer scrutiny.

The two PFAS subject to further regulatory action were listed on EPA's CCL 4, a prerequisite for the actions announced in February.

The agency also announced that it halted study on six other chemicals on CCL 4 including 1,1-dichloroethane, acetochlor, methyl bromide, metolachlor, nitrobenzene and RDX.

Public supply providers to monitor additional PFAS. In late February, the Biden administration announced that it would reissue the fifth Unregulated Contaminant Monitoring Rule.

Under the reissue, the new administration is proposing to analyze drinking water samples for all 29 perfluorinated aliphatic substances covered by validated EPA methods. The proposed rule also includes one metal, lithium.

"The proposed UCMR 5 would provide new data that are critically needed to improve EPA's understanding of the frequency that 29 PFAS are found in the nation's drinking water systems and at what levels," the agency said in its rule proposal.

Under the SDWA, utilities are required to monitor for chemicals and metals under review. The monitoring requirements for frequency and effort are scaled to the size of the water treatment facility.

Those monitoring requirements with differential effort requirements are part of the new rule.

Small systems will have to analyze only

800 samples, while intermediate-sized and larger systems will monitor all ground and surface water sources.

Under the provisions of the America's Water Infrastructure Act of 2018, EPA is responsible for all analytical costs associated with monitoring at systems serving 10,000 or fewer people.

That will provide funding for small and intermediate-sized water treatment plants across the U.S. The sampling required by this new rule will occur between 2023 and 2025.

The new rule was proposed under a provision of the SDWA that requires the agency to identify and establish a monitoring program for chemicals such as perfluorinated compounds that could occur in drinking water and pose risks to public health.

The EPA will accept public comment for 60 days following publication of the notice posted in February.

Broward County Superfund. Earlier this year, EPA took an important step toward significant cleanup of the Petroleum

Products Corp. Superfund site in Broward County.

The agency released a cleanup plan that proposed building demolition, contaminated soil excavation, soil stabilization and groundwater remediation.

The comment period ended Feb. 12.

Petroleum Products Corp. operated a waste oil reprocessing facility on a large plot of land in the town of Pembroke Park.

The plant's sulfuric acid-clay refining process produced re-refined oil, but also generated tons of sulfuric acid sludge and spent clay sludge that contained petroleum aromatic hydrocarbons, metals, chlorinated solvents, polychlorinated biphenyls and dioxin.

PPC disposed of the contaminated sludge in unlined excavation pits that covered more than two acres at the site. Leaks and discharges from storage tanks on the property added to the extensive level of contamination.

PPC ended its refining operations on spent oil in 1971 and redeveloped the property, building multiple warehouse buildings—still in use in 2021—over the disposal pits.

The EPA established three site contamination operable units: OU1 has free oil floating on the water table; OU2 includes waste soils and sludges in disposal pits; and OU3 has contaminated groundwater.

Remediation efforts begun in 1991 removed about 43,000 gallons of waste oil from OU1 until that effort halted in 2014.

The agency press release noted that "the development and implementation of a final remedy for the OU2 materials was not successful during the late 1990s."

The proposed plan released earlier this year included a final OU3 plan—to remedy the interim OU3—that will remove the main contamination source material at the PPC site.

The EPA proposed to relocate warehouses, businesses and residential tenants; demolish several warehouse buildings; and excavate soil for off-site disposal.

Other efforts include in-situ stabilization of deep contaminated soils, and groundwater treatment and monitoring.

By any scale, this is a massive project even though it is 50 years since the last site contamination occurred.

In its press release, the agency said it did not expect the remediation effort to begin for at least another two years.

Environmental justice grants. In early March, EPA announced the availability of up to \$6 million for the next annual round of environmental justice grants.

This cycle, the agency will give special consideration to addressing COVID-19 effects on low-income communities and communities of color, planning for climate change and natural disaster resiliency outreach, and a port initiative that will assist people living and working near ports across the country.

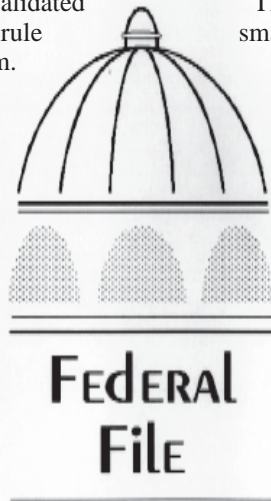
Two additional areas of focus include providing priority consideration for new applicants for either of the first two focus areas above, as well as for small nonprofit organizations that apply.

Two funding categories were established. \$3,200,000 will be provided through cooperative agreement programs. The EPA expects to enter into cooperative agreements worth up to \$160,000 each within all of the 10 EPA regions.

In addition, approximately \$2,800,000 will be awarded to as many as five applicants per EPA region in amounts of up to \$50,000 per award.

The EPA's ports initiative program will join the funding effort. It anticipates funding up to six additional projects focusing on clean air issues at coastal and inland ports or rail yards.

For either category of opportunity, applicants must submit a proposal before May 7, 2021, to be considered for funding to begin on Oct. 1, 2021.



LEADING PROVIDER OF ENVIRONMENTAL PRODUCTS, SYSTEMS, AND SERVICES FOR OVER 40 YEARS

Carbon Service & Equipment Company

A Division of Encotech, Inc.

Full line of quality activated carbons, organo-clays and numerous medias for removal of VOCs, SVOCs and Metals; including Arsenic.

Sale & Rental of remediation and dewatering systems.

Turn-key non-hazardous & hazardous on-site change out services.

Reactivation of spent carbon and disposal of medias.

Eighty Four, PA 724.222.3334
sbazzoli@carbonservice.net

Orlando, FL 407.313.9113
jbelmore@carbonservice.net

Columbia, SC 803.447.0888
hwharter@carbonservice.net

www.carbonservice.net

Let Us Help You Market Your Materials

a modern day match making service with a twist!

The Southern Waste Information eXchange, Inc. (SWIX) is a 501(c)(3) non-profit clearinghouse & repository encouraging the recycling & reuse of waste materials. Let us help you market your materials. Our service is **FREE**.

Waste Generator

Waste User

Visit Our WEBSITE

www.wastexchange.org

FEDFILE
Continued on Page 14

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

Contributing writers and columnists

BLANCHE HARDY, PG
Environmental Correspondent
Sanford, FL

ROY LAUGHLIN
Environmental Correspondent
Rockledge, FL

FPL shuts final coal-fired power plant in Florida

Staff report

Florida Power & Light Co. closed its last electricity generation plant in the state powered by coal.

FPL has made a practice of acquiring existing coal-fired plants with the goal of shutting them down. The plant that was just closed, the Indiantown Cogeneration plant in Martin County, was acquired in 2017.

FPL-owned Gulf Power Co. also discontinued coal-fired power generation after modernization of their Plant Crist in Escambia County. The plant now runs entirely on natural gas.

Eric Silagy, FPL's president and CEO, noted that 20 years ago, the company was the country's largest user of oil to generate electricity, but has lowered its oil use by 99 percent. It now uses it only as a secondary fuel source.

FPL has built solar generation facilities as aggressively as it has pursued the elimination of fossil fuel power with plans to install 30 million solar panels by 2030.

Forecast model for invasive species.

The University of Florida is leading a team of scientists from the UF Water Institute, U.S. Geological Survey, Florida Fish and Wildlife Conservation Commission and U.S. Fish and Wildlife Service to predict the movement of invasive animal species into the Southeast U.S. in response to climate and land use change.

The two-year project, An Assessment of Invasive Species Range Shifts in the Southeastern U.S. and Actions to Manage Them, is funded through a grant from the Southeast Climate Adaptation Science Center at NC State University.

The study's principal investigator, Brett Scheffers, PhD, wildlife ecology and conservation department professor at UF/IFAS, said the group hopes to "help wildlife agencies stay ahead of the curve and allocate resources strategically."

The research group plans to develop a model that combines known details about invasive species, such as their native ranges, the types of environments they can occupy and how climate affects them, with a variety of climate and land use scenarios to predict where invasive species might spread beyond Florida into the southeastern U.S.

"When species start moving into a new area, it's not like a solid wave that covers all the ground available," Scheffers said. "A better comparison would be the way veins and arteries in the body branch out in different directions and spread out in an uneven, patchwork way. We want to know what that branching network will look like."

Largo wastewater reclamation facility lawsuit. The city of Largo filed a lawsuit in February claiming engineering firm Greeley and Hansen failed to complete a \$4 million engineering services contract after design work at the Largo Wastewater Reclamation Facility proved faulty, according to city officials.

The firm was hired to address regulatory issues related to sewer overflows at the facility and design a disinfection and effluent pumping system to reduce the release of treatment byproducts and improve pump station capacity.

The roughly \$20 million project was completed in 2018.

The system was allegedly fraught with issues from the start. The city claims it failed to reduce the volume of treatment byproducts as required, among other concerns.

Largo officials secured the services of a second consultant to identify problems and recommend possible solutions.

According to city officials, Greeley-Hansen proposed remedies to the problems but refused to accept either professional or financial responsibility for implementing the needed solutions.

The delay in correcting the problems resulted in the city being fined again by the Florida Department of Environmental Protection.

World's largest solar-powered battery system. The new Florida Power & Light Co. Manatee Energy Storage Center in Parrish is proposed to be four times the capacity of the largest battery energy storage system in operation worldwide.

The solar-powered battery storage system is expected to be online this year.

FPL intends to use the battery system during times of high demand, allowing the utility to offset the need to generate electricity at other power plants.

Its 409-megawatt capacity is expected to deliver 900 megawatt hours of energy while facilitating the closure of natural gas-burning units in a nearby power plant.

FPL "planting" more solar trees.

FPL's SolarNow program is installing four new solar trees and canopies in Miami-Dade and Brevard counties.

SolarNow projects include covered walkways, parking canopies and solar trees designed to make solar energy more accessible by allowing the public to interact more closely with it.

The tree units suspend solar panels on top of attractive, often brightly colored curved trunk- and limb-like structures.

Over 60 SolarNow installations exist at a variety of locations including parks, zoos and museums.

FPL installs, operates and maintains the projects, partnering with public community "host sites" committed to advancing the use of solar energy. Each solar tree can produce up to three kilowatts of solar energy—enough to power an electric vehicle 15,000 miles per year.

Avalon Park Group proposes solar facility. Developer Avalon Park Group announced the formation of a consortium with Switzerland- and Singapore-based

partners to build a 300+ megawatt solar generation facility in Volusia County.

The group intends to purchase more than 6,000 acres west of Avalon Park/Daytona Beach on State Road 40. The site is adjacent to Tiger Bay State Park.

The plans include a biomass/agrivoltaic farm that will use the same land for both solar power generation and farming.

When positioned properly and elevated high enough above crops, solar panels can help plants remain cool, preventing overheating during the hottest parts of the day.

More solar in NW Florida.

Gulf Power announced the start of construction on two new solar power generation facilities slated to begin operation by the end of the year.

The 500-acre sites will house 600,000 new solar panels at the Cotton Creek Solar Energy Center in Escambia County and the Blue Springs Solar Energy Center in Jackson County.

The Escambia site will be the first solar generation facility in the county.

Each facility will generate 74.5 megawatts of power, enough to power roughly 30,000 homes.

Approximately 11 percent of Gulf Power's energy mix is derived from renewable sources including four active solar fields, three of them on military bases in Northwest Florida, according to company officials.

Conservancy of Southwest Florida expands solar. The Conservancy of Southwest Florida plans to significantly expand solar power capability at its Naples-based campus through a donation from The Martin Foundation.

Florida Notes

NOTES
Continued on Page 16

The Florida Specifier makes every effort to ensure the accuracy and validity of all editorial and advertising content. The newspaper is independent in its views and does not support, endorse or guarantee any data, statements or opinions that appear under any reference or are attributed to or quoted from any known source. The views expressed by authors do not necessarily reflect the views of NTCC Inc. or the Florida Specifier.

The Florida Specifier (ISSN 0740-1973), founded in 1979, is published every other month for \$24.95 per year (\$49.95 for three years) by National Technical Communications Co., Inc., P.O. Box 2175, Goldenrod, FL 32733. Subscription refunds are not provided.

Standard postage paid at Orlando, FL 32862.
POSTMASTER: Send address changes to the FLORIDA SPECIFIER, P.O. Box 2175, Goldenrod, FL 32733.

© Copyright 2021 by National Technical Communications Co. Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form without the publisher's prior written permission.

ENVIRO-NET
www.enviro-net.com

NTCC National Technical
Communications
Company, Inc.

P.O. Box 2175 • Goldenrod, FL 32733
(407) 671-7777 • Fax (321) 972-8937
info@enviro-net.com



**Advanced
Environmental Laboratories, Inc.**

Florida's Largest Laboratory Network

When all else changes, you can count on AEL

Government rule changes play havoc with your business and staff. The economy has changed both business models and peoples' lives. Many subcontractors have been sold or changed names, and more still will. Regardless of what changes come, AEL will continue to be there for all our clients, tomorrow and beyond.

Count on it ... Count on us.

Seven Labs Means More Local Service and Faster TAT

Fort Myers - (239) 674-8130
Josh Snead - jsnead@aellab.com

Jacksonville - (904) 363-9350
Jerry Allen - jallen@aellab.com

Gainesville - (352) 377-2349
Josh Apple - japple@aellab.com

Miami - (954) 889-2288
Wayne Khan - wkhan@aellab.com

Orlando - (407) 937-1594
Todd Romero - tromero@aellab.com

Tallahassee - (850) 219-6274
Tim Preston - tpreston@aellab.com

Tampa - (813) 630-9616
Sheila Wilcox - swilcox@aellab.com

City of Milton begins initial phase of wastewater treatment plant expansion

Staff report

With its current wastewater treatment plant nearing its rated 2.5 million gallon per day capacity, the city of Milton started construction on the old plant's replacement.

The new wastewater plant will treat up to six million gallons a day. \$32 million is budgeted for the construction, expected to be complete in 2025.

The work will be completed in two phases.

The first phase will add three million gallons a day of treatment capacity and

should be online in two years, about the same time the current plant maxes out its capacity.

In the ensuing two years, construction at the new plant will provide an additional three million gallons a day of capacity.

When the new plant is complete in 2025, the old plant will be decommissioned and razed.

Over the course of the multi-year construction plan, wastewater collection system flow will be incrementally transferred to the new facility.

The new wastewater treatment plant will service the city of Milton, industrial

parcs in Santa Rosa County, businesses along the Interstate 10 corridor and surrounding areas including Whiting Field.

Panhandle communities to receive infrastructure funding. A dozen communities in the Florida Panhandle will receive a total of \$4.6 million in post-Hurricane Michael assistance.

The funding, administered by the Florida Department of Economic Opportunity, is available from a special appropriation from the state Legislature to support rural infrastructure projects.

The projects are in Calhoun, Gadsden, Holmes, Jackson, Liberty and Washington counties.

The money can be used for planning, preparing and financing infrastructure projects in these counties.

Proposed projects will promote tourism, trade and economic development, and will provide local jobs to area residents.

Three applicants, the cities of Bonifay, Chipley and Graceville, intend to use their money to upgrade stormwater, sewer infrastructure and potable water mains, respectively. Their grant funding ranged from \$95,000 - \$292,000.

The cities and towns of Midway, Havana, Malone and Sneeds will use the money for downtown redevelopment projects.

Most of the anticipated projects involve streetscaping and needed infrastructure improvements.

The town of Malone will use its \$256,500 grant to alleviate stormwater flooding in its downtown area, considered necessary to attract new businesses and protect existing ones.

The other three cities received funding ranging from \$75,000-\$262,000.

Liberty and Washington counties will use the funding, at least in part, on broadband communication infrastructure installation.

Washington County will use its funding as a 50 percent match for a planned broadband internet upgrade intended to help businesses in the county.

The final three communities will use the money to assist commercial projects already in existence or now being built.

The city of Marianna will spend its \$177,000 grant to improve two industrial parks.

Holmes County will use its nearly \$300,000 to establish an industrial park for manufacturing and shipping, taking ad-

vantage of its Interstate 10 location.

Liberty County will spend the money to finish site design for Sunshine Cypress, the county's first industrial park.

Jackson County will use \$300,000 to get certifications for the Spanish Trail Commerce Park and Endeavor Commerce Park.

In September of 2019, Hurricane Michael rampaged through the eastern Panhandle as a Category 4 hurricane.

While many tourist areas along the Gulf recovered quickly, areas with fewer resources were slow to recover. This money, late in coming, is still needed there.

Funding for Palatka drinking water system. In February, the city of Palatka began another in a series of projects to improve its aging potable water system.

In the most recent effort, workers began replacing pipes in the central downtown area and eastern Palatka Heights.

This area has some of the city's oldest potable water distribution pipes. The cast-iron pipes date back to as early as the 1880s. Many of the newer segments in the area are 85 years old.

The current project is part of an effort to replace a total of 66 miles of old potable water pipeline. Eighteen miles of water lines have already been upgraded.

The current replacement phase that began in January, will increase the total by 6.7 miles and complete the downtown central replacement, designated as Phase IV. Modern PVC pipes will replace the old cast-iron pipes.

The city estimated that it loses up to seven million gallons of potable water annually from its distribution system due to leaks and breaks in the cast-iron pipes.

Completion of the current phase is expected to stop 6.5 million gallons of those losses.

With the new pipes in place, the city will be able to reduce the flushing necessary to maintain low bacteria counts in its potable water distribution system.

The city received funding from the St. Johns River Water Management District's Rural Economic Development Initiative and Innovative Projects cost-share funding program.

Crystal Lake water quality improvement study. The city of Lakeland will conduct a feasibility study to evaluate nutrient reduction treatments that can prevent or reduce sediment releases of phosphorus into Crystal Lake. Those releases foster algae blooms.

Crystal Lake is under a Florida Department of Environmental Protection-mandated nutrient reduction plan.

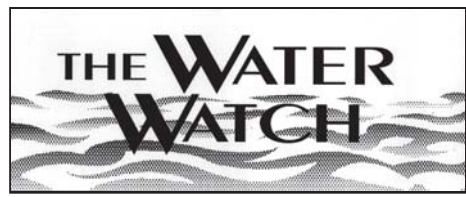
An earlier study showed that over 90 percent of the phosphorus responsible for eutrophication was a result of internal loading—the release of phosphorus from sediments.

The study will evaluate the use of limnocorrals as part of an in-situ mesocosm study where treatments that reduce phosphorus flux from sediments can be evaluated.

The limnocorrals, formed by large diameter plastic tubes anchored on the lake bottom and extending to the surface, will be subjected to candidate treatments being evaluated for effective and non-detrimental use in the lake. Successful treatments identified in the study will then be used to treat other lakes in the city.

Laurie Smith, manager of lakes and stormwater in the Lakeland Public Works Department, said the materials for the study will be delivered before the end of April. Mesocosm construction will commence soon after delivery.

The study, to be conducted for up to six months through the summer, is a cost-





What's in your water? Ask us!

Laboratories across the state handling all of your environmental, waste and drinking water sampling and analyses

407-339-5984
www.flowerslabs.com

Since 1957



JAEE

Environmental Service, Inc.

A Full Service Water Well Contracting Company

Specializing in Geoprobe® soil and groundwater sampling, bioremediation injections, monitoring well construction and abandonment.

Fleet of 15 Geoprobe® Machines Serving All of Florida
(5400 Truck Mounted, 54LT Track Mounted, 6600 Track/Truck Mounted,

Call or email for services today!
Phone: (954) 476-8333 Fax: (954) 476-8347
E-mail jae@bellsouth.net or visit us on the web at www.JAEEenv.com

WATCH
Continued on Page 5

WATCH
From Page 4

share effort by the city and the Southwest Florida Water Management District's Cooperative Funding Initiative grant program. This project will receive \$100,000.

Longboat Key, DEP work to resolve sewage spill issue. In late February, officials with the city of Longboat Key accepted a consent order from the Florida Department of Environmental Protection following a 14.7-million-gallon sewage spill last September.

In the order, DEP acknowledged that the failure of a sewage main under Sarasota Bay "yielded no evidence of impact from the (leak) on bacterial levels in Sarasota Bay."

Longboat Key commissioners also agreed to \$188,328 in civil penalties and cost assessments against the town by DEP.

In lieu of that payment, the city can choose to implement an in-kind environmental project, such as replacing or updating the sewer line at a cost of no less than \$281,073.

Longboat Key's acceptance of the consent agreement does not entirely close the matter. Under the agreement, Longboat Key will further negotiate with the department over improvements to its wastewater collection system to prevent future spills.

The wastewater collection force main buried in Sarasota Bay had been tested in 2017 and appeared to be in good shape. The September breach occurred because a buried log abraded the pipe until it failed.

The city plans to further investigate parts of the underwater pipeline to ensure that no such failure occurs again.

In the short term, the city is also investigating the installation of sensors in the line that will alert operators of any pressure or flow change indicative of another breakage.

In the long term, Longboat Key is planning a redundant pipeline project between Longboat Key and the mainland wastewater treatment plant.

Fort Myers, DEP sign agreement aimed at improving Caloosahatchee water quality

Staff report

The Florida Department of Environmental Protection signed a consent agreement with the city of Fort Myers to compel the city to correct a number of discharge and water quality violations affecting the Caloosahatchee River, two tributaries and its estuary.

DEP alleged 10 separate categories of water quality violations including nine raw sewage discharges over a two-year period to Manuel's Branch and Billy Creek, both Caloosahatchee tributaries.

The department also alleged that the city exceeded its permitted limits in both wastewater treatment plant and stormwater effluent releases for total dissolved solids, total phosphorus, total nitrogen, copper, arsenic and nitrogen.

In addition, Manuel's Branch, DEP alleged, has a history of high bacteria content that city officials have failed to effectively reduce.

At least one violation of its municipal stormwater discharge permit was also listed.

The city has had issues with water quality violations for years that have led to prior DEP consent agreements.

The primary violation for this latest order was a 184,000 gallon discharge of raw sewage documented last September.

It appears that the other violations in the order may be related to a persistent lack of surface water quality improvements mandated by a 2012 basin management action plan to improve Caloosahatchee River water quality.

The consent order assessed a \$500,000 penalty against the city for these violations.

Fort Myers has made many efforts to reduce nutrient and bacteria releases to the Caloosahatchee River and its estuary.

It built three advanced wastewater treatment plants, including one with a

More Melbourne baffle boxes. In early February, the city of Melbourne approved another stormwater system baffle box to trap particulates and the nutrients they hold from stormwater draining to the Indian River.

The new baffle box, located on Cherry Street, is expected to remove 980 pounds of total nitrogen and 186 pounds of total phosphorus. Construction will begin in early 2022.

Bussen-Mayer Engineering Group of Merritt Island was hired to do the planning. The cost of the planning effort is \$76,250.

The Save Our Indian River Lagoon Citizen Oversight Committee provided \$91,120 for the project. Those funds come from a one-half cent sales tax approved by voters a few years ago.

The city will cover the remaining costs from its stormwater utility fund.

Pensacola stormwater projects. The city of Pensacola recently completed three stormwater projects: the B Street and Gimble Street Stormwater Rehabilitation Project, the Spring Street Stormwater Infrastructure Improvement Project and the 9th Avenue Manhole Rehabilitation Project.

The B Street/Gimble Street project rehabbed a large metal stormwater pipe running from the street to a drainage ditch.

The Spring Street project repaired and replaced 36-inch stormwater pipes and manholes to fix leaks in the stormwater system.

The 9th Avenue project rebuilt two stormwater manholes that were performing poorly due to age and usage.

A Pensacola press release said that the projects, part of the city's ongoing stormwater infrastructure improvement program, improve public safety as well as the obvious benefits of improved stormwater management.

Palm Coast to relocate public works facility. The city of Palm Coast in Flagler County will construct a new public works

facility two miles north of its current location.

The recent city commission decision reversed plans made in 2016 and added to a 2017 master plan.

The previous plan would have expanded the existing public works site after closing an adjacent street to obtain the needed land.

Even with the street closure, the city would have had to buy additional lots to obtain sufficient parking and storage areas for the expansion.

The cost of those purchases would have been about \$12 million, including

the cost of site preparation.

Since 2017, the situation in Palm Coast has changed, making the original site less desirable, particularly with respect to sufficient area to store vehicles and materials.

The new site at the corner of U.S. 1 and Matanzas Woods Parkway is about 2.5 miles north of the existing facility, adjacent to Palm Coast's Water Treatment Plant #3 and Wastewater Treatment Plant #2.

The city owns a part of the site planned for the expansion but will have to purchase additional adjacent parcels. However, the price is expected to be less than the \$12 million required to expand its current location.



CITY OF
SANFORD
FLORIDA

Utility Systems Engineer

As a Utility Systems Engineer, you will be under administrative direction, the purpose of the position is to conduct professional engineering work to plan, coordinate and implement Utilities engineering services, manage the Utility Inspector division to ensure all utility inspections conform to and meet City, State and Federal codes and standards. In this classification you will perform at senior professional level, and are accountable for managing Utility projects in compliance with all applicable City/State/Federal codes and regulations, and according to all acceptable engineering practices. Work includes assisting the Public Works/Utilities Director with rate studies, public relations functions, and special projects. Works with considerable independence, however confers with the Public Works/Utilities Director in unusual matters.

MINIMUM QUALIFICATIONS

Bachelor's Degree in Civil Engineering, Mechanical Engineering or closely related field; supplemented by five (5) years responsible technical experience in engineering, to include two (2) years project management experience in water and wastewater; and two (2) years' experience with AutoCAD 2000 or higher and (GIS) ESRI ArcMap 9.X or higher or closely related experience.

Must possess and maintain a valid Florida Driver's License.

Employee shall obtain the National Incident Management System ICS-100 Introduction to the Incident Command System and IS-700 National Incident Management System, An Introduction within six (6) months of employment. The following courses are designed to provide a baseline, as they introduce basic NIMS and ICS concepts and provide the foundation for higher level Emergency Operations Center (EOC), MACS, and ICS related training.

TO APPLY AND REVIEW THE FULL JOB DESCRIPTION:

Visit our website at www.governmentjobs.com/careers/sanford

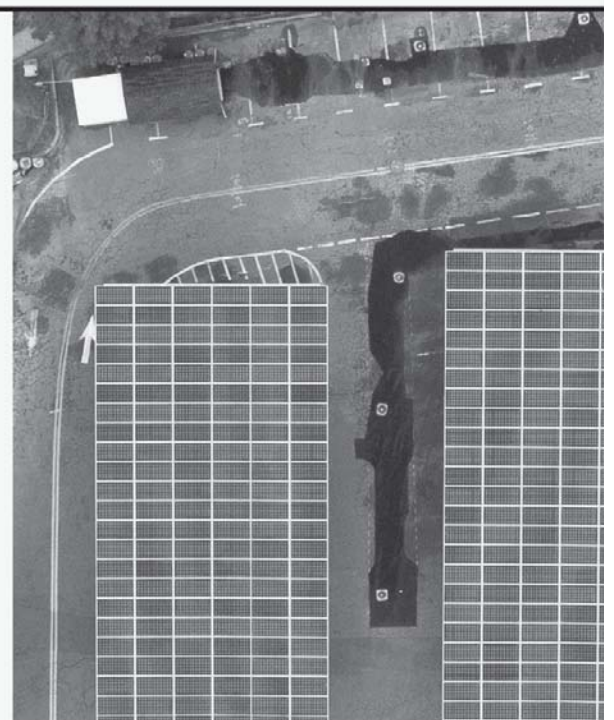
BENEFITS

Medical Insurance, Dental Insurance, Vision Insurance, Health Reimbursement Account, FRS Retirement Plan, Paid Time Off, Bereavement Leave, Paid Military Leave, Employee Assistance Program, Short Term Disability Insurance, Paid Employee Life Insurance (1 x annual salary), Paid Holidays, Paid Jury Duty, Protective Safety Equipment, Fitness Center, Wellness Center for members of City's Health Insurance program, Wellness Incentive Program, Bi-Weekly Pay Checks, Direct Deposit, Employee Recognition Events, Free Flu Shot, Free Parking, Bi-Lingual Pay, Safety Incentive program and Supplemental Benefits.



Have a challenging site?

Gasoline /MTBE/ TBA	Hexavalent Chromium
Diesel	PCE
Heating Oil	TCE
Benzene	DCE
Ethylbenzene	VC
Toluene	TCA
Xylenes	DCA
Aviation Fuel	Nitrates
Motor Oil	Sulfates
Hydraulic Oil	NDMA
Kerosene	Pesticides
Coal Tar	Pentachlorophenol
TNT / DNT	Freon 11, 12, 113
PAHs	Carbon tetrachloride



ETEC has experience with many different types of contaminants.

ETECLLC.COM or call **971.222.3616** | **#bioremediation**

Phosphogypsum may become integral component of Florida roadway network

By ROY LAUGHLIN

In late 2020, the U.S. Environmental Protection Agency published a revised regulation in the Federal Register that caught many environmental activists off-guard.

The agency significantly relaxed a long-standing rule on the use of phosphogypsum as an aggregate material in road construction.

All phosphogypsum use in road construction had been forbidden since 1992 when an EPA risk assessment indicated that use of the material, which has radium levels somewhat greater than phosphate ore, posed an unacceptable risk of cancer in humans when used in residential roads.

That risk was estimated to be about two excess instances of cancer per 10,000 people over 30 years due to cancer caused by gamma radiation exposure from radium as it decays.

That 1992 restriction had been in place for the past 28 years.

One result for Floridians was the long-term placement of waste from phosphate mining into large gypstacks near phosphate refineries.

Trace amounts of radioactive uranium, thorium and radium are naturally present in phosphate ore.

After phosphoric acid extraction, uranium and thorium are extracted and concentrated with the phosphate. The radium remains in the much larger mass of gypsum.

The radium is concentrated a little by phosphoric acid treatment, but still, that may be enough to increase the human cancer risk to residents who build homes on radium-contaminated soils.

When radium decays into radioactive radon gas, that gas can accumulate in buildings where human exposure can lead to increased cancer risk.

In early 2019, The Fertilizer Institute submitted a revised risk assessment to the EPA challenging the 1992 risk assessment.

TFI's risk assessment recalculated 1.3 deaths per 10,000 exposed humans, down from two deaths per 10,000 people over a 30-year exposure period due to radioactivity when phosphogypsum is used in roads.

But the most salient difference in the two risk assessments was a reduction in the estimated radioactivity content of phosphogypsum. The earlier assessment used a value of up to 35 picocuries per gram of phosphogypsum. The more recent TFI recalculation used a lower value, 27 picocuries per gram.

The other major difference between

TFI's new assessment was the assumption of a different road structure using phosphogypsum aggregate. TFI claimed that radiation exposure risk is lessened when roadbeds are completely covered by pavement. The older model assumed roadbeds extended beyond the edge of the pavement.

One effect of such complete coverage would be lower leaching by rainwater. In many parts of Florida, roads need thicker road beds under the pavement where sandy soils are softer.

Leaching might also occur under pavement in locations with high water tables, prevalent at least part of the year throughout the state.

The EPA had its staff review the risk assessment TFI submitted and hired an outside consultant to provide additional input.

In its Federal Register notice, the agency said that the calculations for the revised risk assessment were accurate. Left unexplained was why decreasing the radiation emission from phosphogypsum by 20 percent was justified.

It is not known whether the road configuration TFI proposed to lower exposure risk is consistent with Florida road-building standards. But the new rule seems to have little support in the road construction industry or Florida's Department of Transportation.

Former EPA Administrator Andrew Wheeler took an unusual route to approve the relaxed rules allowing phosphogypsum use as a roadbed and concrete pavement aggregate. He simply approved the rule changes and published a notice in the Federal Register in October, 2020, to make it official.

There was no public comment period as required by law and EPA practice.

The new rule does not extend carte blanche for phosphogypsum use in road construction. The phosphogypsum destined for use in roads must be below designated radiation levels. Records, certification and record-keeping requirements are imposed.

Phosphogypsum max content of 2.5 percent in pavement and 50 percent in road base materials were imposed. Notification of its use was also required.

Any other phosphogypsum use in road construction is explicitly outside of these regulations and may violate the Clean Air Act for unauthorized distribution of phosphogypsum.

Another risk reduction restriction in the revised rule is that governments may not abandon roads containing phosphogypsum and allow them to be used for residences.

Radium's half-life is 1,600 years. For any government entity presently in existence, radiation levels posing human health risks will vastly outlive its regulators.

A group of environmental advocacy groups, led by the Center for Biological Diversity, immediately petitioned the decision for reconsideration. Their petition, available online, included a detailed critique of the decision that interested readers desiring further information may find useful.

The possible use of billions of tons of phosphogypsum in roadways is particularly significant for Floridians. TFI noted that transportation costs will limit the economical use of phosphogypsum in roads to within 200 miles of its source.

Two states, Florida and Louisiana, host phosphate refineries and thus the prospects of enhanced phosphogypsum reuse.

This rule is not a done deal. Although the consortium opposing the rule believes its petition will be ignored, submitting it is a prerequisite for filing a lawsuit, which a spokesperson for the Center for Biological Diversity has promised if the EPA ignores its petition.

This rule may be within the window of the Congressional Review Act and it seems unlikely new EPA Administrator Michael Regan would support the rule given his experience with coal ash regulation in North Carolina.

Whether or not phosphogypsum is banned from road use, huge gypstacks will remain a part of Florida's landscape.

Okeechobee officials review plans to convert former sod farm into wetlands

By BLANCHE HARDY, PG

In late 2020, Okeechobee County Commissioners reviewed plans for the U.S. Department of Agriculture Natural Resources Conservation Service's Cody Sod Farm Wetlands Restoration Project.

The project is located north of Lake Okeechobee bordering on Taylor Creek to the south, just outside the limits of the city

of Okeechobee. NRCS acquired an easement on the 414-acre Cody Sod Farm for the project in 2014, specifically for wetland restoration.

NRCS is undertaking the project to restore the easement to its original ecological condition to the extent possible. The site's natural state, determined using data from historical aerial imagery, topography and soils, was historically freshwater marsh, wet prairie and cypress domes.

The restoration effort will create an opportunity for the establishment and enhancement of wildlife, will improve water quality and provide for water storage, as well as providing all the benefits and functions associated with wetlands.

NRCS will replace the old, overgrown dikes and outfall pump with a gravity flow control structure and a new pump on the project's northern boundary. The new pump is intended to ensure that the project does not create offsite impacts to properties north of the site.

On-site soils include up to nine feet of peat muck. Due to the muck, the construction of three-foot-high dikes will require importing about 35,000 cubic yards of clean fill material.

Commission comments covered three areas: the location, operation and maintenance of the pump; restoration of damage caused to local roadways by the trucks hauling fill; and adequate control of drainage.

The new pump will be located on the north end of the project away from residences to the south. NRCS also agreed to consider installing an electric pump to minimize the potential for fuel spills.

An agreement was reached with Stokes Ranch who will hold the water management district permit for the pump and handle its maintenance and repair.

Citrus County to convert septic systems to municipal central sewer

By **BLANCHE HARDY, PG**

Citrus County is home to Crystal River/Kings Bay, Homosassa and Chassahowitzka springs, all first order magnitude springs designated by the state as Outstanding Florida Springs.

The county's springs were evaluated as part of the state's total maximum daily load program and were found to be impaired as the result of high nutrient loading.

The Florida Department of Environmental Protection's resulting basin management action plan identified septic tank discharges as one of the most significant contributing factors to the springs' impairments.

"Citrus County is working in conjunction with DEP and the Southwest Florida Water Management District to construct sewer systems where feasible to make sewer service available to existing homes that are currently on septic systems," said Ken Cheek, PE, director of the county's Department of Water Resources.

The county is now working on a DEP-funded study to identify areas where conversion of septic systems to centralized sewer is feasible.

"The main factors that were used to identify areas for sewer service expansion were the concentration of septic tanks in a given area and the proximity of the area to existing wastewater collection facilities," said Cheek.

The feasibility study will focus on how to comply with BMAPs for the Crystal River/Kings Bay and Chassahowitzka-Homosassa Priority Focus Areas.

DEP will collect data including groundwater travel time to the springs, area hydrogeology, nutrient loading in the spring watersheds, and identify boundaries such as roads or political jurisdictions to define priority focus areas.

The conversion to centralized sanitary sewer will reduce nutrient concentrations in the wastewater effluent released.

"The BMAP required that the county's three largest wastewater treatment facilities be upgraded to meet the strict 3 mg/L total nitrogen requirement," said Cheek. "Most conventional septic systems do not

treat for nitrogen removal and can discharge around 60 mg/L of total nitrogen."

One of the treatment plants has been upgraded and the other two are in the planning stages but already reduce nitrogen concentrations to below 12 mg/L.

Citrus County officials identified the Crystal River/Kings Bay springs group focus area as one of the most complex water resource systems in the state.

The system includes more than 30 major springs that discharge freshwater to Kings Bay and Crystal River.

The Chassahowitzka Springs Group and the Homosassa Springs Group focus areas are the source waters for the Chassahowitzka and the Homosassa rivers, respectively.

Waterways in the Chassahowitzka-Homosassa priority focus areas are known for sports fishing and recreational activities, including canoeing and kayaking.

The main sources of pollution identified in this area are septic tank discharges and agricultural operations runoff.

The septic-to-sewer conversion program is a multi-year project with several phases that will be implemented over the 20-year life of the BMAP.

"The county recently completed a project phase in the Old Homosassa area,

and is currently working on two additional expansion phases in Old Homosassa and a phase that will serve the Cambridge Greens subdivision in Citrus Hills," Cheek said.

"Additional project areas will be added to the county's capital improvement pro-

gram annually based on the septic-to-sewer study and available funding," he added.

The county is now conducting public outreach in the feasibility study areas and a survey for property and business owners, and producing additional information about the study and the spring systems.



Announcing our new
Mid-Atlantic Service Center in Roanoke, VA

Expanding to serve you better

Florida Office
904-352-0536

Virginia Office
540-537-4697

www.carbonworks-usa.com

Four new members named to Florida ERC

Staff report

Dr. Thomas Frazer, Cari Roth, Jim McCarthy and Eric Buermann were appointed to the Florida Environmental Regulation Commission.

The commission is a non-salaried, seven-member board selected by the governor that represents agriculture, the development industry, local government, the environmental community, residents and members of the scientific and technical community.

The group sets standards and rules to protect public health and the environment based on scientific and technical validity, economic impacts, and risks and benefits to the public and Florida's natural resources.

Frazer is dean of the College of Marine Science at the University of South Florida. Previously, he was director of the University of Florida's School of Natural Resources and Environment and recently served as Florida's first chief science officer.

Roth is vice president of governmental and regulatory affairs for Lykes Bros. Inc. Previously, she was a shareholder at Dean Mead, and general counsel and assistant secretary at Florida's Department of Community Affairs.

McCarthy is president of the North Florida Land Trust. Previously, he served as executive director of the Cystic Fibrosis Foundation and was president of Spectrum Marketing and Public Affairs.

Buermann is a former chairman of the South Florida Water Management District Governing Board. Previously, he was of counsel at Squire Patton Boggs.

The appointments are subject to confirmation by the Florida Senate.



The P6 Difference

- Zero Maintenance
- 10-Year Wear Warranty
- Reduce Polymer Consumption
- Increase Cake Solids
- Gentle Mixing
- Optimize System

PATENTED



GERBERPUMPS
INTERNATIONAL INC.

CONTACT: Stephen Gerber
www.gerberpumps.com

PHONE: 407 834 9104

EMAIL: sales@gerberpumps.com
www.p6polymix.com

A treasure trove of Gulf research springs from Deepwater Horizon spill

By ROY LAUGHLIN

Though the 2010 Deepwater Horizon oil well blowout was an ecological disaster for the Gulf of Mexico, it engendered a decade of extensive scientific research.

The organization behind the research, the Gulf of Mexico Alliance and its Gulf of Mexico Research Initiative, recently conducted a webinar to review its progress on a decade's worth of research.

Gulf of Mexico waters have not historically been well characterized. But over the past decade, its surprisingly high di-

versity of pelagic and deep fish fauna have been well documented.

Tracey Sutton, PhD, a professor at the Oceanographic Center of Nova Southeastern University and the director of the DEEPEND Consortium, noted during the webinar that the Gulf of Mexico has about 1,600 fish species and habitats ranging from littoral areas to its deepest pelagic bottoms.

Over the past decade, researchers in the program documented 897 deep water pelagic fish species in the Gulf, 186 of which are new recordings of fish species there; 20 are new species.

Sutton noted that GoMRI's pelagic species study had a greater rate of species discovery in the Gulf than anywhere else on earth over the past decade.

Although the term "pelagic" describes offshore waters, the Gulf's open seas are a reservoir for some coastal species and a recruitment source for multiple shallow-water fish, including some that support fisheries.

The Gulf's pelagic ecosystem has not survived the Deepwater Horizon spill well. Pelagic fish populations have declined by 57 percent.

Cephalopod populations, a primary food source for whales, dropped by 63 percent.

Populations of lantern fish, relatively small voracious pelagic predators that can live in depths between the surface and 1,200 meters below, experienced an 85 percent decline.

Lantern fish vertically migrate into shallower depths during the night and are a primary food source for dolphins and young stages of commercial fish such as mahi-mahi.

Populations of krill, small planktonic crustaceans, declined by 92 percent. They are food for baleen whales.

The extensive decline of these species reduced the productivity of the Gulf's food

chain. Marine mammals, seabirds and some fisheries have also declined dramatically as a result of the food reduction.

Food chain recovery is not apparent a decade after the spill and the resulting dispersion of oil through pelagic waters.

The decade of scientific research following the disaster in the Gulf provides unequivocal clarity about the cause of the loss of critical populations of pelagic species.

"No other environmental feature explains the loss (of organisms) other than the oil spill," Sutton said.

"For example, polycyclic aromatic hydrocarbons, were found in eggs and ovaries in mesopelagic fish," he said. "That continuing contamination comes from the food chain and suspended particles."

Sutton noted that population numbers have not improved over the past five years.

In another presentation, Martin Grosell, PhD, lead principal investigator and director of the GoMRI-funded research consortium RECOVER and a professor at the University of Miami Rosenstiel School of Marine and Atmospheric Sciences, reviewed several years of experiments on the sublethal effects of oil exposure, from the tissue level to the ecological level.

His team's research was based on the hypothesis that "crude oil toxicity is a multi-organ toxicity."

The research group looked at the effects of oil on multiple life-history stages of mahi-mahi.

They found that vision, upon which this fish relies heavily to catch food and avoid predators, is affected by exposure to 630 parts per trillion of polycyclic aromatic hydrocarbons.

That low level of PAH exposure also affects neuromasts, the cells responsible for auditory sensations. Inhibited sensations reduce the fish's startle sensation by about 50 percent.

Such reductions prevent the fish from moving away from dangerous locations, such as the splash zone where pelicans dive.

In another lab experiment, consortium researchers measured the swimming performance of mahi-mahi exposed to oil, and then tested swimming ability in a swim tunnel.

Even with water-soluble fractions of oil exposure as short as 24 hours pre-test, their swimming performance was inhibited. The fish could not swim as fast, nor could they maintain their speed for long periods.

According to Grosell, mahi-mahi may swim up to 100 kilometers a day. They use this prodigious swimming stamina to migrate between the Gulf of Mexico and the Atlantic Ocean off the eastern coast of Florida.

If low levels of PAH impair this fish species' swimming ability in the lab, what are the effects on free-living mahi-mahi in the Gulf?

To answer that question, Grosell's group conducted similar oil exposures on board a ship in the Gulf. Oil-exposed and control fish were tagged and then released into the Gulf.

The experiment showed that the survival of oil-exposed mahi-mahi was reduced even during the first 24 hours after release.

During the experiment, oil-exposed fish had twice the chance of mortality during the first week after exposure, compared to controls.

Most of that mortality was due to predation, primarily by six-gill sharks.

In the experiment as a whole, 75 percent of the tagged deployments ended with confirmed predation.

This was a particularly elegant group of experiments. It showed the relatively mundane but easily demonstrated effects of oil exposure inhibition on nervous and muscular functions.

The inhibition translates to significant ecological effects on oil-exposed fish.

The results are compelling explana-



FLORIDA REMEDIATION CONFERENCE

The 26th Florida Remediation Conference & Exhibition (FRC 2021)

November 17-19, 2021
Rosen Centre Hotel, Orlando, Florida

*One of the Premier Remediation and Redevelopment
Educational & Business Networking Events in the Country!*



Conference Topics Include:

- Innovative Remediation Technologies
- Environmental Assessment and Analysis
- Emerging Contaminants
- Vapor Intrusion Investigation and Remediation
- Brownfields and Redevelopment
- Characterization, Fate and Transport
- Risk Assessment Practices, Applications, and Benefits
- Environmental Forensics
- Innovative Strategies and Approaches to Expedite Site Closure
- Remediation of Petroleum and Heavy Hydrocarbons
- Funding and Insuring Remediation Projects
- Business Aspects for the Environmental Professional
- Other Relevant Topics

FloridaRemediationConference.org

RESEARCH
Continued on Page 16

Grants awarded through state DEO will harden critical facilities

By **BLANCHE HARDY, PG**

Grants totaling \$75 million were awarded to 30 communities in the state through the Florida Department of Economic Opportunity's Rebuild Florida Critical Facility Hardening Program.

Funding for the grants was made available through the U.S. Department of Housing and Urban Development's Community Development Block Grant-Mitigation program.

The grants to local governments, administered by DEO, were announced in February.

The funding will allow the awarded municipalities to increase the resiliency of

NSF renews Everglades research program

Staff report

The National Science Foundation provided a four-year, \$4.75 million renewal of the FIU Institute of Environment's Florida Coastal Everglades Long Term Ecological Research program.

This renewal marked the fourth since the program's founding in 2000.

For two decades, FIU researchers and partners have collected data on water quality, plant and animal communities and ecosystem function from a network of research sites in Everglades National Park.

Research produced from data collected by the program has shown how restored water flows are benefiting the Everglades, how the building block of the Everglades is under threat, and how healthy wetlands can help stave off rising seas.

In 2020, FIU ranked No. 9 in the world for positive impact on life below water by The Times Higher Education Impact Rankings.

critical facilities that serve a public safety purpose in local communities.

The grants covered four broad categories: Shelters and Recovery Centers, Emergency Facilities, Water and Wastewater Treatment Plants, and Pump and Booster Stations.

The application submission cycle for the program closed in June, 2020.

The city of Miami Beach secured nine grants totaling roughly \$14.6 million, the largest allocation of funding among the awarded applicants and the sole recipient under the Pump and Booster Station category.

"Miami Beach faces a daunting challenge from sea level rise over the next 20 years and beyond," said Mayor Dan Gelber in the city's response to the award. "These funds will help us better prepare our infrastructure for what is projected to be an additional 10 inches to 1.4 feet of higher sea levels during that period over levels recorded in 2000."

Construction on the Miami Beach projects is expected to begin in 2022.

"We worked collaboratively to identify key projects across the city's water and sewer systems," said Roy Coley, Miami Beach's director of public works.

The city has been proactive in addressing sea level rise. Last November, city officials passed a resolution creating a resilience fund to address private property flooding and sea level rise impacts.

The city-funded program will provide matching funds up to \$20,000 to residents to prevent flood damage to their low elevation properties.

Twelve grants were awarded to 10 municipalities under the Shelters and Recovery Centers category.

The largest total allocation in the category, roughly \$7.3 million, went to Lee County to install new roll-down shutters, replace and harden the roof and replace

seals and windows of the Hertz Arena; and to harden and upgrade the roof structure for the Alico Arena at Florida Gulf Coast University.

Collier County received funding in the same category for three projects totaling roughly \$5.7 million.

The grants will allow the county to harden the Immokalee Sports Complex by replacing the roof, replacing HVAC systems and upgrading to current wind-resistant standards.

In addition, a new roof, windows, doors, and a permanent generator will be installed at the Immokalee Branch Library, and the roof, windows and doors will be replaced, electrical and mechanical equipment will be elevated, and a new generator will be installed at the Collier County Golden Gate Senior Center.

The Emergency Facilities category in-

cluded 27 grants awarded to sixteen municipalities.

The largest, \$8,378,741, was awarded to the city of Miami to replace windows, doors, HVAC system, generators and electrical systems at Police Department headquarters.

Twelve grants were awarded to eight municipalities under the Water and Wastewater Treatment Plants category. The largest grants went to Lee and Palm Beach counties.

Lee County will receive \$2,820,983 to harden several roofing systems and secure the HVAC systems of Lee County's waste-to-energy facility.

Palm Beach County will receive \$2,710,000 to upgrade electrical, mechanical and pipe systems, and install new generators at their Western Region North Wastewater Treatment Facility.

AΩTC

YOUR EH&S AND EMERGENCY RESPONSE COMPANY

EMPLOYEE-OWNED

#1 Trusted Environmental Consulting, Remediation, and Industrial Services Company

AOTC is pleased to announce the acquisition of L.S. Sims & Associates Inc.

Corporate Office: Cocoa, FL

Emergency Response Center: Newberry, FL

(321) 445-9845 • www.a-otc.com

Service locations throughout the Southeast

Capturing Litter...

BEFORE It Reaches Our Oceans



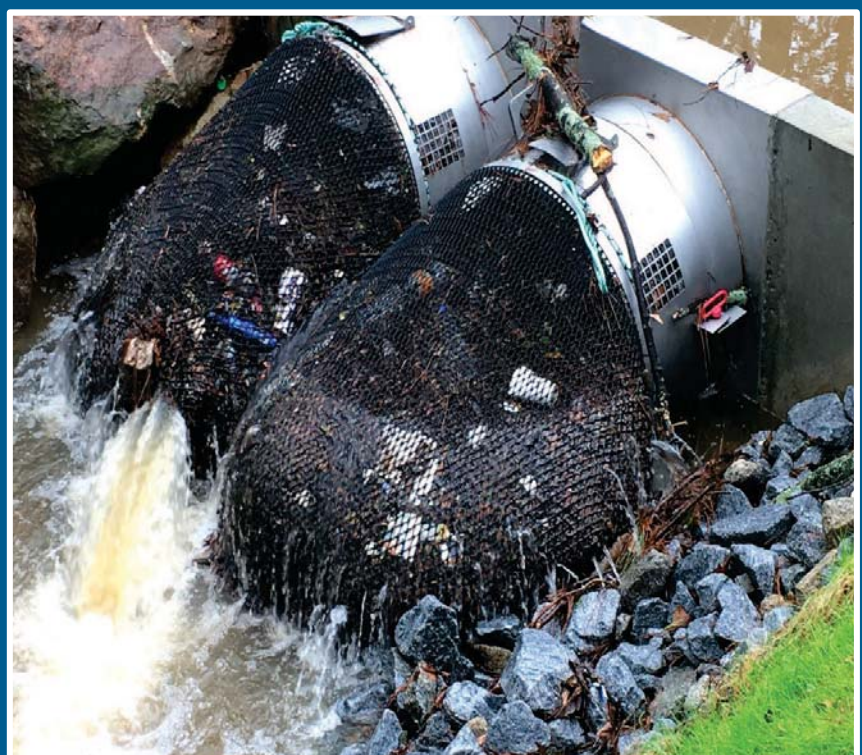
stormwatersystems

stormwatersystems.com
(888) 730-5819



Bandalong Litter Trap™

In-Stream Trash Trap



StormX™

End-of-Pipe Netting Trash Trap



Orange County public works captures stormwater, puts it to good use

By ROY LAUGHLIN

The Orange County Department of Public Works, like most public works agencies, uses a lot of potable water for chores where water cleanliness is not really necessary, for example, vehicle cleaning.

A couple of years ago, OCPW built and began using an ingenious stormwater collection and storage system at their public works facility.

The collection system's concept is simple: collect, store and subsequently use

stormwater running off the roof of a warehouse-sized building.

The storage solution includes a "right-tech" water storage module with a high-tech supervisory control and data acquisition system.

The system collects stormwater from the roof of the county's Building 6, diverts it through a baffle box filter to remove visible particles and larger materials such as leaves, and then directs the water to a set of below-ground cisterns.

The water collected there receives no further treatment before county staff uses

it for vehicle washing and other purposes that need clean water, but not disinfected potable water.

The water storage units, called PIPE-R reservoir systems, are produced by Environmental Construction Solutions LLC.

They are constructed of stacked four-inch diameter recycled high-density polyethylene pipes.

The pipes are corrugated and perforated like drainfield piping.

The standard PIPE-R water storage unit is a two-row stack of these pipes. Successive pairs in a stack are constructed at right angles to one another.

When stacked, corner tubes are double-walled to bear the force of straps that bind bundles of tubes together.

The cubes are so strong that, after burial, they can bear the weight of vehicles or allow the service area to be used for productive activities involving machinery and heavy materials.

The cubes are built to meet Department of Transportation and other engineering standards for strength.

The stacked pipes alone are not the finished product. On-site, the pipes are placed in a trench and wrapped in a geotechnical membrane.

The use of an impermeable membrane results in a storage system; a permeable membrane makes the system an infiltration system.

In practice, storage systems depend on exfiltration to handle excess rain volumes. They have permeable membranes at the top of a cube that allows the excess rainwater to replenish groundwater.

Jim Shumsky, district sales manager for ECS, said that the way the system works may not be intuitively obvious to contractors when they see a cube of prefab pipes on site waiting to be installed.

The tubes forming the pipes are not connected or sealed. The stacked pipes maintain void volume both inside and outside the individual pipes for water. The membrane placed around the piping gives the system its storage characteristics.

The stacks as supplied are prefabricated, a considerable time and labor-saving aspect of the system.

The largest volume of a single storage unit that PIPE-R routinely makes is 1,828 gallons.

Single storage units can be connected in series to increase a system's total capacity.

On site, contractors install a pipe connecting units in a series. The cubes have an outflow at the bottom that gives access to water for reuse.

Each cube also has a top port to allow access for suction cleaning of debris from the bottom of the cube.

In the final construction step, the trench containing PIPE-R's storage units are surrounded by gravel for water percolation and topped with soil up to two feet deep, a standard code requirement.

In its simplest form, the storage system is a cistern built of modern materials and engineering practices.

Total water storage capacity is a function of tube

length and the height of the storage unit, usually a cube. But they can be as few as two layers of pipes if site characteristics require it.

Ikiensinma Gogo-Abite, PhD, engineering manager with ECS, said the HDPE piping in the system can last for at least half a century and probably many decades longer.

Experience with HDPE in these applications is only about half a century long, so experience with longer time frames is still being acquired.

The SCADA system used in the Orange County system controls the filling and retrieval of water, and provides data on how much water is available.

The pre-fabricated stormwater collection system is typically included in a construction site plan that is part of a building permit application. But the system itself does not require any special building permits.

However, property owners or responsible parties may need to obtain an environmental resource permit for it from their local water management district.

Despina McLaughlin, public information officer for Orange County, said that the system is able to prevent nearly all stormwater runoff, about 150,000 gallons, from leaving the site, and significantly increases groundwater recharge and offset potable water use.

Orange County's system cost \$70,000 to install, a cost that favorably compares with pricing to excavate for a retention pond.

Shumsky noted that the PIPE-R system can be placed in commercial or residential settings.

In Florida, one of the six PIPE-R systems in place is under the drive-through lane of a Starbucks coffee shop.

Four are installed in Georgia, where a recent stormwater management ordinance requires property owners to manage the first inch of stormwater runoff on-site.

Two more are installed in North Carolina and one in South Carolina.

"It doesn't sound like a lot but we think it is," Shumsky said.

And perhaps it is a lot for a technology that is just a few years old and competes with the more familiar arch and stone below-ground water storage systems.

Shumsky noted several PIPE-R benefits including its ease of maintenance to remove sediment that otherwise would be retained.

PIPE-R cubes are designed for suction cleaning. Because there are fewer textile components that trap and hold sediment, cleaning a cube is like vacuuming a tile floor while cleaning competing systems is like cleaning a carpet.

In addition, the system has a high storage volume and, as a prefab unit, requires less labor and time to install.

The stormwater collection and reuse project is part of Orange County's Sustainability Initiative, started in 2013.

The project was completed in collaboration with ECS, who provided the PIPE-R systems, Geosyntec Consultants Inc., and OptiRTC, who provided the SCADA equipment and related services.

The system collects stormwater from the roof of the county's Building 6, diverts it through a baffle box filter to remove visible particles and larger materials such as leaves, and then directs the water to a set of below-ground cisterns.



~ You're Invited! ~

Clark
ENVIRONMENTAL



"CLARK's World"
Open House Extravaganza

11:30 am - 2:30 pm
Friday, April 16, 2021

Come on over to our facility in Mulberry and help us celebrate our 30th Anniversary!

Enjoy award-winning BBQ, fun give-aways, a walk down memory lane and lively entertainment

RSVP to Nana@ClarkEnv.com

For directions and to learn more about our Transportation, Recycling and Disposal capabilities, visit www.ClarkEnv.com



SUPPORTING YOUR ENVIRONMENTAL SERVICE NEEDS



Unequaled service. Solutions you can trust.
USEcology.com

INDUSTRIAL SERVICES
Industrial cleaning and maintenance including vacuum pumping, water blasting, sump cleanout, facility and equipment cleaning.

STANDBY/OSRO
NRC, a US Ecology company, is the largest commercial USCG approved OSRO, with certified crews offering unparalleled marine and land response capabilities.

EMERGENCY RESPONSE
Extensive trained team providing 24/7/365 fast, effective and compliant services to respond to any spill or natural disaster. (800) 899-4672

WASTE TREATMENT
Tampa location offers waste treatment, lab packing, LTL, HHW. Only TSDF in Florida permitted to stabilize metal bearing waste.

(800) 624-5302
7202 East Eighth Avenue
Tampa, FL 33619

UF Whitney Lab researchers attempt to restock hard-shell clams in IRL

By ROY LAUGHLIN

Researchers at the University of Florida's Whitney Laboratory for Marine Bioscience are testing a hypothesis that hatchery-raised hard-shell clams can be released into the Indian River Lagoon as small juveniles to restock the depleted natural population.

The effort is slated to become large-scale, with at least five million clams to be replanted by the end of 2021, and perhaps many more if additional funding becomes available.

The story of this project could be just a side note, except for some exceptional aspects of the effort and progress made during the COVID-19 pandemic.

The hard-shell clam, *Mercenaria mercenaria*, became an important IRL shell fishery after populations expanded explosively in the late 1960s and 1970s.

Through the 1970s, clams became one of the prevalent large invertebrates found in shallow water in the Indian River.

Hard-shell clams were hardly present in the northern Indian River in the late 1950s and 60s, but in the 70s and early 80s, the hard-shell clam fishery became the lagoon's largest in total weight and value.

But by the mid-1980s, wild hard-shell clam populations were in decline. Aquaculture operations initiated at the Harbor Branch Oceanographic Institute assertively promoted aquaculture as the solution for seafood lovers.

Other supporters and legislators hailed it as a job creator with a huge financial upside.

The state of Florida developed the concept of aquaculture leases for clam production, expanding the terms of use of aquaculture leases as compared to the prior shellfish leases that Florida had practiced since the Great Depression.

Nevertheless, the aquaculture effort in the Indian River foundered almost as soon as it was underway. By 2010, the hard clam fishery was a dim memory.

Wild clam populations were being overfished to the point of extinction by 1995 and aquaculture leases suffered increasingly poor production following Hurricane Erin in 1995.

By 2010, commercial clam aquaculture was virtually extinct, like the wild clam populations.

Water quality is often blamed for the end of clam production.

The increasing instability of salinity due to stormwater inflow, particularly the drainage of the St. Johns River headwaters in southern Brevard County through the Sebastian River, was a significant contributor to the conditions that corresponded with the final demise of aquaculture in the central segment of the Indian River Lagoon.

M. mercenaria is a temperate species. Increasing temperatures, particularly milder winters, also contributed to poor clam reproduction.

Todd Osborne, PhD, an assistant professor in the Wetland Biogeochemistry Laboratory at the Whitney Lab, and his colleagues found a limited number of adult *M. mercenaria* clams in the southern Mosquito Lagoon about three years ago.

Over a two-month period, they found a total of 39 clams.

"We felt like those 39 clams had specific traits to survive when others did not," Osborne said.

He hypothesized further that those traits included an expanded resistance to environmental conditions that reduced survival of clams in a huge population that existed in the river from before 1970 until about 2010.

Genetic tests are now underway to further explore the genetic basis for adaptations responsible for the survival of the small relict population of clams in Mosquito Lagoon.

Even in the absence of analytical evidence of genetic

adaptation, Osborne and his fellow researchers maintained those 39 adult clams in aquaculture, raised their larvae and, in 2020, began returning juvenile clams to five sites in the Indian River.

Two sites are in Volusia County and Mosquito Lagoon, and the remaining three are in the Indian River. One is near Titusville, the second is between Rockledge and Eau Gallie, and the third near Grant.

This spans much of the range of the most productive fishery areas in the 1970s and aquaculture efforts in the 1980s.

Osbourne's program began soliciting funds in 2019 for experimental replanting when the Whitney Laboratory's aquaculture effort was initially successful with

growing spat clams.

Donations from private donors were significant and sufficient enough to get the first juvenile clams planted in Mosquito Lagoon in Volusia County.

After a year of restocking, the effort in the Indian River station has been declared successful.

The first-year annual report described the growth of clams in Mosquito Lagoon as follows:

"Measures of clam survival at Turner Flats showed 94 percent survival

throughout the study interval, which is exceptional for cultured or natural clam communities. Clams at Cedar Creek also showed significant growth over the period from January to August of 2020.

"Survival of 93 percent is also exceptional and suggestive of the hearty nature of this genetic variation. This site is also considered a success given current measurements of shell length increase throughout the monitoring."

In October, 2019, the Indian River Lagoon Natural Estuary Program provided the Whitney Lab researcher with two additional years of funding.

Researchers had hoped to restock clams in the study's IRL northern segment

sites in early 2020. However, COVID-19 interrupted all aspects of life at that point, including this project.

The transplanting of juvenile clams onto a former clam lease at Pineda was delayed until August, 2020. At that site, clams were placed in both shallow and deep locations in the river.

The transplanted clams grew between August and October, the most recent interval of growth measurement, but the interval was too short to unequivocally show statistical significance of post-transplantation growth.

Clams planted in deeper waters did not grow nearly as much as those planted in shallow water.

A persistent, extremely dense algal bloom lasting from late May, 2020, to the middle of January, 2021, created anoxic conditions resulting in fish kills.

Clams are resistant to anoxia, but the extended anoxia undoubtedly experienced by clams in deeper waters exacted a metabolic cost that reduced growth and gamete production.

That the clams survived at all during these conditions is no small measure of success for this restocking effort despite the lack of growth.

The second year of the study will provide additional insight into the long-term effects of suboptimal growing conditions because the bloom continued until the cold weather in mid-January, 2021.



University of Florida
Whitney Laboratory for Marine Bioscience

UF TREEO Center UNIVERSITY of FLORIDA

EXCELLENCE IN ENVIRONMENTAL TRAINING



COURSES THAT FIT INTO YOUR BUSY SCHEDULE!

Classroom, virtual, hybrid and online courses available.

For course listings, see the UF TREEO Calendar in this month's Specifier or visit our website:
www.treeo.ufl.edu

- ✓ ASBESTOS ABATEMENT
- ✓ BACKFLOW PREVENTION
- ✓ SOLID & HAZARDOUS WASTE
- ✓ WATER & WASTEWATER

WWW.TREEO.UFL.EDU

Florida Specifier

P.O. Box 2175
Goldenrod, FL 32733

Michael R. Eastman
Publisher/Editor

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

Florida Spring Institute: WMDs, DEP failing to protect state's springs

By ROY LAUGHLIN

The Florida Springs Institute, a leading coalition of expert professionals and environmental advocates, recently released a detailed two-part technical report on the Santa Fe and Ichetucknee rivers and their springs.

The first volume reviewed water flow and quality. The second volume made recommendations for an effective recovery program that meets public expectations and complies with legislative mandates.

FSI's report noted that the Santa Fe River has an annual water shortage of 200 million gallons per year, independent of rainfall. In addition, water quality continues to decline significantly.

The river has experienced a 2,600 percent average increase in total nitrogen content over historical water concentrations. Some spring stations have had much greater increases than that average for all

stations along the river.

The Santa Fe, now listed by the state as impaired, is not improving after decades of state-mandated environmental improvement programs and projects.

Some springs and their runs that feed the river have been damaged by excess human use. In fact, the report listed limiting human use that causes ecological damage as one of four recovery strategies.

The first two major problems cited in the report are distinguished as one of shortage and another of excess.

Human activities, primarily water withdrawals for human use, create a shortage of water, while nitrate contamination continues to grow from agricultural activities, land-use changes and the disposal of sewage.

Water quality

Nitrate is now the predominant form of nitrogen found in the Floridan Aquifer, and the Santa Fe River and its springs.

A century ago, the natural background level of nitrate in Florida's springs was 0.05 milligrams per liter, or 50 parts per billion.

The Florida Department of Environmental Protection's current target for TMDL regulation is 0.35 milligrams per liter.

FSI scientists reviewed nitrate data for multiple stations along the Santa Fe and its springs.

In its data summary, 77 percent of the 37 data stations tested exceeded the springs' 0.35 mg per liter nitrate standard, a concentration that is already seven times higher than nitrate ecological background.

The report documented 18 stations among the 37 spring and river stations sampled for nitrate whose nitrate concentrations were substantially higher than either the Santa Fe or Ichetucknee rivers.

Nitrate exhibits a concentration gradient with low concentrations at the head-

waters of the Santa Fe River, increasing to the river's junction with the Suwannee River.

Three springs have exceptionally high nitrate concentrations, with average values ranging from 4.5 milligrams per liter to almost five milligrams per liter: Betty Spring, Trail Spring and Troop Springs.

The elevated NOx-N concentrations at these springs are attributed to their proximity to Alliance Branford Dairy located only one or two miles to the south, according to the report.

Readings such as these show how dramatically activities in the springshed can directly influence nitrate levels in the springs.

In terms of mass loading, the Santa Fe River contains an estimated 1,900 tons per year of average nitrogen pollutant loading

FSI
Continued on Page 15

Environmental & Geotechnical Drillers serving Florida

2021 Directory

Company name / Contact information	EMR rate	Years in biz	Total staff / Staff in FL	Services / Capabilities	Equipment / Tools							1) Other services 2) Firm's specialty 3) Specialty business designations 4) Other equipment/tools 5) Areas served in Florida Note: NA = No Answer	
					Hollow stem auger	Air/mud rotary	Dual rotary	Sonic	Direct push	Diamond coring	Cone penetration testing		
Ambient Technologies 4610 Central Ave. St. Petersburg, FL 33711 (727) 328-0268 Fax: (727) 328-2477 Carlos Lemos, President info@ambienttech.com www.ambienttech.com	0.81	28	32/29	Environmental and geotechnical drilling; monitoring wells; soil & groundwater sampling; in-situ testing; inclined probing; rock coring, concrete coring; dewatering well points; methane recovery wells; injection wells for environmental remediation; split-spoon, Shelby tube soil sampling; mud rotary, auger borings (solid and hollow) & DPT; installation of piezometers and inclinometers; SPT with automatic hammer	■	■			■	■			1) Geophysical surveys for environmental, geotechnical and sinkhole investigations 2) Environmental, Geotechnical and Geophysical Field Services for Project Site Assessment and Investigations 3) MBE, DBE, SBE, SBD 4) GPR, EUL, Magnetometer, Vacuum Excavator, ERI Electric Resistivity Imaging, GPS, Pipe & Cable Locators, Swift 56 and 112 Channel Resistivity Systems 5) Serves entire state, Central America and Caribbean
Betts Environmental Jacksonville, FL (904) 805-3734 Blake Cabit bcabit@bettsenv.com bettsenv.com	.94	28	NA/35	Sonic, GeoProbe, auger mud rotary, rock coring	■	■			■	■			1) NA 2) Enhanced safety, increased production, customer service 3) Small business 4) NA 5) Serves entire state
Environmental Drilling Service Inc. 4712 Old Winter Garden Rd. Orlando, FL 32811 (407) 295-3532 Fax: (407) 296-3957 Doug Leonhardt, President doug@edsenvironmental.com Carl Leonhardt, Vice President carl@edsenvironmental.com www.edsenvironmental.com	NA	32	14/14	Mini sonic, DPT, HS auger, mud/air rotary drilling, sampling and well installation	■	■			■	■	■		1) Full service contract drilling firm offering environmental, geotechnical, exploratory and infrastructure drilling 2) NA 3) NA 4) NA 5) Serves entire state
Groundwater Protection 2300 Silver Star Rd. Orlando, FL 32804 (407) 426-7885 Fax: (407) 206-0856 Brian Shutts, Owner brian@drillprollc.com www.groundwaterprotection.com	0.73	35	32/32	Monitoring and remediation well installation; injection and well abandonment services; horizontal well installation. Auger, DPT, Sonic, angle drilling	■	■			■	■			1) Remediation systems, injection 2) Sonic, difficult access/low clearance angled wells 3) Certified small business, FL Water Well Contractor, NC/SC Water Well Contractor, Bonded in GA 4) Well abandonment 5) Serves entire state and Southeast U.S.
Huss Drilling Inc. 35920 State Road 52 Dade City, FL 33525 (352) 567-9500 Fax: (352) 567-6646 RJ Huss rj@hussdrilling.com www.hussdrilling.com	0.78	31	31/31	Environmental, geotechnical, exploration deep wire line coring and water resource drilling services	■	■			■	■	■		1) Well rehabilitation 2) Environmental, geotechnical and exploration drilling 3) NA 4) ATV rigs, truck mtd. and track mtd. 5) Serves entire state, GA, AL and SC
JAEE Environmental Services Inc. 3010 Peachtree Cir. Davie, FL 33328 (954) 476-8333 Fax: (954) 476-8347 Willie Smitherman, President jaee@bellsouth.net www.jaeeenv.com	0.96	30	14/14	Soil and groundwater sampling, installation of monitoring wells, well abandonment, bioremediation injection	■				■				1) Bio-injecting, well abandonment 2) Sampling using Geoprobe equipment 3) Water well contractor 4) NA 5) Serves entire state
National Env. Technology Inc. 12435 Jess Walden Rd. Dover, FL 33527 (813) 655-3612 Fax: (813) 655-3652 Ross Chinander, President netross@tampabay.rr.com www.netdrilling.com	0.91	28	6/6	Environmental and geotechnical drilling, and direct push services	■	■			■				1) NA 2) Geotechnical and environmental drilling and dewateringservices 3) NA 4) Limited access equipment 5) Serves entire state
Preferred Drilling Solutions Inc. 8820 66th St. N. Pinellas park, FL 33782 (727) 561-7477 Fax: (727) 561-9028 Chad Campbell, President chad@pdsflorida.com www.pdsflorida.com	0.73	20	55/55	Environmental drilling, direct push and remediation services. Statewide service with locations in Pinellas Park, Lakeland, Live Oak, Milton, Bonifay and Pompano Beach	■	■			■	■			1) Remediation services 2) Environmental services provider with focus on safety, quality and service 3) NA 4) NA 5) Serves entire state
Terracon Consultants Inc. 1675 Lee Rd. Winter Park, FL 32789 (407) 740-6110 Fax: (407) 740-6112 Erik Bluemke, Drilling Department Manager erik.bluemke@terracon.com www.terracon.com	.72	56	5,000/318	Terracon is a 100 percent employee-owned consulting engineering firm providing multidiscipline services in environmental, geotechnical, construction materials testing and facilities architecture	■	■			■	■	■		1) Solid-stem augers, hollow-stem augers, odex, rock coring (NQ, HQ and PQ), rotary (air, mud, wash), casing advance (N&H) and down-hole hammer 2) Conventional field drilling and sampling methods as well as in-situ testing methods combined with geophysical investigations 3) NA 4) NA 5) Serves entire state from 11 offices

Audubon scientists propose plan to stop water loss in Corkscrew Swamp

By ROY LAUGHLIN

The Audubon Society's Corkscrew Swamp Sanctuary in Naples has a 60-year history of water records that shows that, over the past 20 years, the landscape has been drying out excessively during the winter dry season.

In a recent report, Audubon scientists Shawn Clem, PhD, and Brad Cornell used those measurements and modeling to show that flood control drainage canals built in the mid-2000s are primarily responsible for the conditions.

Other water uses also play a role, including public water supply wells drawing from the aquifer and agricultural irrigation.

The scientists used their groundwater drainage model to explore potential reme-

diation strategies.

Reducing the amount of water drained from the sanctuary through canals, the model indicated, would substantially reverse the excessive water loss and help restore the swamp's hydroperiod and ecology to late 20th century conditions.

Before 2010, the sanctuary was flooded throughout the year, including the winter dry season. That flooding prevented fires and allowed for the survival of bald cypress for centuries.

The standing water below the tree canopy created high relative humidity conditions and a temperature buffer that allowed an array of tropical and subtropical orchids and bromeliads to thrive.

CORKSCREW
Continued on Page 15

ASCE
From Page 1

estimating that the U.S. spends roughly half as much money as needed annually on infrastructure maintenance and upgrades.

And even though money is being spent in problem areas, it may be consumed by crisis management as infrastructure fails.

The report directly laid the burden of the problem on the lack of political will and public support for some—if not all—of the problems related to degrading, aged infrastructure.

Since the last report card, federal financial support for infrastructure projects was not a lot more, in total, than it had been in the previous decade.

However, some projects, such as wastewater plants, transportation and federal facility maintenance, received targeted spending that provided some improvements.

Florida's rank

The report did not include a separate section for each state, but the ASCE website provided an interactive breakdown for states that provided some "key facts."

Florida has a problem or two among its infrastructure categories.

For example, the report pointed to "12,518 bridges, 2.9 percent of which were structurally deficient in 2019." For the transportation sector, that's a relatively good score.

More ominous was mention of 102 high-hazard dams, which seems a notably large number for a state that is essentially so flat the term "water control structure" is more widely used than "dam."

The report said that Florida needs \$21.9 billion for drinking water infrastructure improvements over the next 20 years. It also cited "\$18.4 billion in wastewater needs." Those sums equal about \$2 billion annually for the next two decades.

Florida may have spent, in aggregate, more than \$2 billion annually during the last four years for water and wastewater infrastructure, but whether post-pandemic economic conditions will allow that to continue remains to be seen.

Florida is home to 93 Superfund National Priority List sites, according to ASCE's Florida Facts. A closer parsing of this number showed that of those 93 sites, the EPA now classifies 26 as "deleted," meaning they have been cleaned up as much as possible and no further action is warranted.

The first Superfund site in Florida was proposed in 1982. So, over the past four decades, less than one Superfund NPL site was remediated per year.

Even assuming no more sites will be added to Florida's NPL, some of the remaining 65 Superfund sites (including NPL and non-NPL sites) will probably be subject to remediation efforts past the lifetime of anyone now reading this article.

Despite slow progress made on Superfund site remediation, Florida's cleanup activity score is bolstered by a notably abundant number of state and federal brownfield projects quickly being addressed by the state's hyperactive real estate development sector.

Municipal properties have consistently been part of Florida's hottest real estate redevelopment activities.

Redevelopment, for both private and public projects such as roads, water and sewer lines, is the primary development scenario in metropolitan areas, and that means an abundance of remediation work through brownfield projects.

Florida is considered to be a state with good roadways, primarily because tourists arriving by car contribute to road construction costs through gasoline excise taxes.

According to the report, 13 percent of Florida's roads are in poor condition. Each motorist pays \$425 annually in costs due to driving on roads in need of repair.

This number is much lower than the national cost of poor roads, which is \$1,300 annually per motorist, according to ASCE, a plus for Florida infrastructure.

Florida's substandard internet infrastructure became a significant factor over the past year as the pandemic dramatically increased the number of students learning remotely and office professionals working from home.

Many encountered poor internet service and electricity interruptions at home during this time.

The ASCE Florida report listed only 848 power outages between 2008 and 2017. Considering the hurricane activity of 2017 and 2018, this number seems low.

Nevertheless, electricity interruptions since 2005 were dramatically less than those during the 2004-2005 storm years.

That difference may be due primarily to a decade-long electricity transmission line improvement project underwritten by at least \$200 million in bond sales, a cost passed directly on to power customers.

Florida's better-performing infrastructure categories reflect a point made in ASCE's report: The differences in infrastructure reliability among categories, as reflected in the grades they received, primarily resulted from spending priorities.

Produced for three decades, ASCE's report card has become quite influential, focusing attention on infrastructure categories that lag significantly.

In the past, Congress and states increased funding to improve significantly lagging infrastructure's serviceability and reliability.

Though specific recipes for improvement are not part of the ASCE's modus operandi, states and the federal government have orchestrated strategies for improvement in problem areas.

Surely after this year's report card, broadband communications will get more attention as a result of pandemic-driven work and study from home.

The complete report and an executive summary are available online. An additional online utility provides an interactive display of "key facts" about the states' infrastructure categories ASCE considered in writing its report.

The complete report is available online at <https://infrastructurereportcard.org/>.

Florida-specific infrastructure details are covered at <https://infrastructurereportcard.org/state-item/florida/>.

Environmental Services



www.groundwaterprotection.com
2300 Silver Star Rd.
Orlando, FL 32804

Serving Florida and the Southeastern U.S. Since 1986

Todd@drillprollc.com • (407) 426-7885 • Brian@drillprollc.com

Environmental Services

- ✓ **Sonic Drilling:** Truck Mounted (2) • Track Mounted (4)
Angled wells and low clearance (14')
- ✓ **Geoprobe Direct Push Technology**
• 66 series (3) • 77 series (1) • 78 series (3)
Indoor/Limited Access Rig (2)
- ✓ **Auger/Mud Rotary**
• Diedrich D-120 (2) • Diedrich D-50 (2)
- ✓ Multiple Injection Applications
- ✓ Well Abandonment with Pad & Vault Removal
- ✓ Angle and Horizontal Well Installation
 - ✓ Electrode Installations
 - ✓ CMT Well Installations
 - ✓ Mineral Exploration

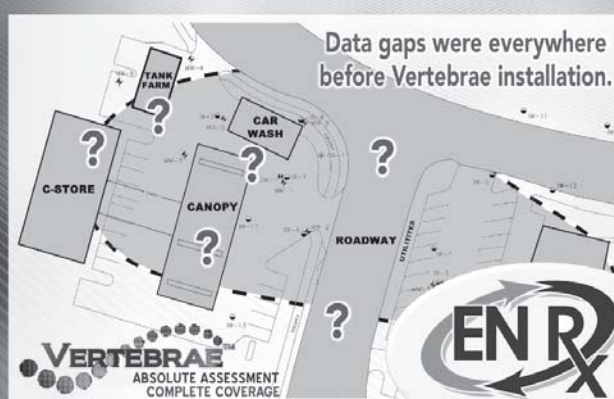
IT'S TIME TO SEE THE COMPLETE PICTURE.

VERTEBRAE™ - UNDERSTAND WHAT'S UNDER YOUR SITE.

With EN Rx Vertebrae well systems, sampling under buildings, tanks and roadways has never been easier. Get complete plume access without disrupting your business.

- Less Cost
- Less Time
- Less Disruption
- More Uses
- More Effective

www.enrxinc.com • 877-747-ENRx



SPOTLIGHT GEOPHYSICAL SERVICES

Your Source for Geophysical Expertise

- In-house geophysical tools
Microgravity ~ GPR ~ MASW ~ EM
Seismic Refraction ~ Electrical Resistivity
- Quick response and professional reporting
- Licensed geophysicists and geologists
- SBE Certified

Offices in Miami, Florida
(305) 607-2377 info@spotlightgeo.com
www.spotlightgeo.com



Professional Environmental Testing & Consulting, LLC

NELAP certified full service laboratory, specializing in microbiology and wet chemistry for potable and non-potable water. Minority Business certified.

Located in Davie, FL • (954) 440-3537
www.petc702.com • petc702@comcast.net



remedial-systems.com

SYSTEMS

- Component rebuild of compressors, blowers, pumps, etc.
- System design and build (AS/VE, peroxide & ozone injection, MPE, etc.)
- System retrofits
- Equipment consulting
- Operation & maintenance
- System rental
- System startup assistance
- System troubleshooting & repair

(813) 585-8769

ENVIRONMENTAL SAFETY CONSULTANTS, INC.

Professionally Serving Florida Since 1986

LICENSED ENGINEERING FIRM • BOARD CERTIFIED INDUSTRIAL HYGIENIST

- Environmental Permits - NPDES & Air Emissions
- Site Assessments - Contamination & Phase I & II ESAs
- Indoor Air Quality & Industrial Hygiene (CIH)



Bradenton | Clearwater | Tampa | Fort Myers
escinc@verizon.net
www.escflorida.com

800-226-1735

See Web Site for the Complete List of all Services Offered

Florida Specifier Business Card Ads

Ad size	Dimensions	Annual Rate
Single card	2 1/4" x 1 1/8"	\$425
Double card	2 1/4" x 2 1/4" or 4 3/4" x 1 1/8"	\$725
Triple card	2 1/4" x 3 1/2"	\$1,025
Quadruple card	2 1/4" x 4 1/2" or 4 3/4" x 2 1/4"	\$1,225

Keep your company name in front of thousands of environmental professionals every month at cost-competitive rates. Call (407) 671-7777.

Environmental Services

U.S. Environmental

Your source for RENTALS, SALES, & SERVICE

Our device & data experts are ready to provide the **BEST** rental experience possible!

Photo Ionization Detectors	Mercury Vapor Analyzers	Gas Detection Tubes	Well Development pumps
Dust Monitors—Area	Radiation	Sound	Peristaltic Pumps
Weather Stations	Leak Detection	Thermal Imaging	Submersible Pumps
Remote Data Acquisition	Air Pressure	Water Level Meters	Water Sampling
Combustible Gas Monitors	Air Sampling	Interface Probes	Soil Sampling
Flame Ionization Detectors	Anemometers	Pressure Transducers	XRF Analyzers
Gas Analyzers	Dust Monitors—Personal	Flow Probes	and so much more...
Landfill Gas Monitors	Indoor Air Quality	Multiparameter Devices	

Tampa, FL (813) 628-4200 Also convenient locations in MA, CT, NJ, & IL!

RENT FROM THE BEST

24/7 Nationwide Service ... RENTALS • SALES • PARTS • REPAIRS

2930 Parkway St. Lakeland, FL 33811 (813) 501-3415 www.vactruckrental.com	• Air Machines • Excavators • Liquid Rings • Container Trailers	• 100-BBL Trucks • Easement Machines • Portable Cameras • Stainless Steel	• Combos • High-Rails • Liquid Vacs • Scrubber Vacs	• Tankers • Camera Vans • Roll-Offs • Road Tractors
--	--	--	--	--



Providing quality drilling services with quality people and equipment



Environmental drilling • Exploration
Geotechnical drilling • Wire line coring
All terrain rigs • Sonic

(352) 567-9500 • Toll-free: 1-800-487-9665
www.hussdrilling.com

GPR Services

- Private Utility Markouts
- Ground Penetrating Radar (GPR)
- Concrete Scanning with GPR
- Pre-Excavation Utility Clearance
- Geophysical Investigations



Drilling Services

- Best Remote Access Equipment in South Florida!!
 - Remote 420M Dolly Probe 23" Wide
 - EP200 Auger Rig Only 36" Wide
 - Monitoring Wells Installations
 - DPT Geoprobe Sampling
 - Hollow Stem Auger (HSA) Drilling
 - Call Us Today for Competitive Rates!!
- Deeefield Beach, FL • Mount Laurel, NJ
(800) 596-7472 • www.enviroprobe.com

Environmental Remediation

Industrial Tank Cleaning and Decontamination
Waste Management
Emergency/Disaster/Marine Response
Property Management



Florida offices in Lakeland and Orlando
800-258-5585 • www.discoverlewis.com



Environmental Risk Management, Inc.
Licensed Engineering & Geology Firm
Site Assessment • Remediation
Fort Myers • Tampa • Jacksonville

Phase I & II ESA, Indoor Air Quality,
RBCA, Consulting and Forensics

Steve Hilfiker | President
1-888-368-6468 • 888-ENV-MGMT
info@ermi.net • www.ermi.net

Serving Florida since 1999



Catherine Katsikis
President/Principal Scientist
LDCFL-NAOS Consulting, LLC
Training - Audits - Data Validation - QA Support

Training:
Ethics and Data Integrity
Corrective Action/Root Cause
Quality Systems ... and more

Internal Laboratory and Field Audits
QA Management and Technical Support
ADaPT/ADR Validation and Training
Laboratories and Field System Start-up
3rd Party Data Validation
3rd Party Laboratory and Field Audits

catherinekatsikis@gmail.com
(561) 512-9956

UTILITY LOCATION SERVICES
FOR ALL YOUR ENVIRONMENTAL NEEDS



BORE HOLE CLEARANCE
SITE SURVEYS • USTs • BURIAL PITS
GPR • EMI • MAGNETICS

WWW.GEOTEKSERVICES.COM
SALES@GEOTEKSERVICES.COM

FAST RESPONSE - SERVING ALL OF FLORIDA



Water Analysis & Environmental Consulting

NELAP certified, specializing in microbiology,
chemistry, metals, pesticides, semi/volatile
organic compounds and radio chemistry

Located in Hollywood, FL • (954) 342-9006

www.anascolusa.com info@anascolusa.com

PERMIT

From Page 1

consumption.

“Seven Springs provided competent, substantial and un rebutted evidence of the contractual obligation between it and Nestle, and of the obligation for all water to be used at the High Springs bottling plant,” Chisenhall found. “Thus, the district now has reasonable assurances that all of the water withdrawn by Seven Springs will be utilized for a beneficial use, i.e., bottled water for personal consumption.”

Water management district staff initially recommended denial of Seven Springs’ application to renew its permit to withdraw 1.152 million gallons of water a day from its operation in Gilchrist County.

Seven Springs is family-owned and has been in business for quite some time. Their initial water use permit was issued in 1994. They asked to renew their permit for a five-year period in 2019.

The company withdraws groundwater from wells and then pipes it to an adjacent water bottling facility owned by others.

The bottling plant has passed hands several times. The property housing the plant was sold by Seven Springs to Aqua-Penn Spring Water Co. in 1996. Aqua-Penn constructed the bottling plant in 1998.

For the initial transaction as well as each time the bottling plant was sold thereafter, the new owner retained an agreement with Seven Springs to be the exclusive

FEDFILE

From Page 2

TSCA risk evaluations. In order to strengthen the science used in chemical risk evaluations, EPA announced that it will review the first 10 chemicals that the Toxic Substances Control Act requires under rules established by the Lautenberg Chemical Safety Act.

In 2018, the EPA engaged the National Academies of Science, Engineering and Medicine to conduct a peer review of the 2018 Application of Systematic Review in TSCA Risk Evaluations.

NASEM began work in December, 2018, and recently provided the EPA with its report.

When the EPA first announced the NASEM review, the agency said that it wanted the panel members to help update its systematic review process based on the experience of the first 10 TSCA reviews.

Those reviews were widely criticized because they trivialized the risk and exposure scenarios used to reach “no regulation” decisions.

In its recent announcement, the EPA said that while it is committed to addressing their recommendations ensuring that strong science is the basis for all chemical risk evaluations, the agency is not using and will not use again the systematic review approach the academies reviewed.

The agency noted that TSCA requires the agency to “adhere to specific standards including the use of the best available science and the weight of scientific evidence.”

“Systematic review” is a means to this end in the agency’s hazard and exposure assessments.

“High quality, best available scientific data and studies are the foundation of our chemical risk evaluations,” said Michal Freedhoff, the new acting assistant administrator in the Office of Chemical Safety and Pollution Prevention. “Strengthening the process used to select this information will improve chemical safety and ensure our risk evaluations protect human health and the environment.”

This statement likely refers to Trump administration changes in acceptable data selection that required studies used by the EPA to be based on publicly-available data.

That stipulation conflicts with other well-established human subject rules that protect privacy and data confidentiality.

Trump EPA administrators rejected the standard use of anonymized data, a mandated technique that invalidated the use of key human effects studies, most notably for the country’s key air quality protection rules under the Clean Air Act.

water provider to the bottling facility.

After AquaPenn, the High Springs bottling plant has been owned and operated by Dannon, The Coca-Cola Co., Ice River Springs Co., and finally Nestle.

Hearing documents noted that the bottling plant is currently adding capacity and “expects significant increase in production volumes equal to the requested annual average daily withdrawal volume of approximately 1.152 million gallons of spring water by Seven Springs Water Co.”

Covington provided an update noting a change in the permit’s withdrawal volume.

“For clarification, the permit allocation was reduced from 1.152 million gallons per day to 0.984 mgd,” she said.

Among the issues advanced by environmental advocates was historical withdrawal volumes usually significantly less than the proposed volume of water the refurbished bottling plant could process.

According to information made available during the hearing, Nestle Waters NA is the world’s leading bottled water company with an estimated 11 percent of the world’s market share and 51 bottled water brands.

Editor’s note: In February, Nestle sold its North American bottled water operations to two companies, One Rock Capital Partners and Metropolous & Co., for \$4.3 billion. The new owners plan to operate their newly acquired bottled water brands as independent businesses.

The EPA’s rule also gave the agency administrator arbitrary and final authority to include or reject the scientific studies used in rule setting.

What emerges from this EPA effort will likely put established studies based on rigorous science back on the list of scientific studies used in rule making, perhaps permanently.

The EPA is now accepting public comments on rule development. It expects to publish comments and responses later this year.

Pandemic-related air emission reductions. Reductions in economic activity and vehicle use in 2020 had at least one significant beneficial effect: Emissions of key air pollutants dropped by 16 to 20 percent, a remarkably large one-year decrease.

In 2020, SO₂ emissions in the U.S. dropped by 19 percent, NO_x emissions dropped by 16 percent, CO₂ dropped by 17 percent, and mercury dropped by 17 percent.

During the summer months, ozone produced by internal combustion engines and interaction with some of the other air contaminants listed above dropped by 10 percent across the country.

The EPA announced that during 2020’s first 11 months, U.S. electricity demand dropped by three percent, most markedly during the March-May COVID-19 lockdown.

The drop in SO₂, CO₂ and mercury emissions is directly attributable to a drop in the use of coal for power generation, a drop of 19 percent in 2020.

The ozone decline was primarily due to decreased driving by workers who telecommuted and pandemic business closures during the summer.

The 2020 air emission levels are an acceleration of long-term trends.

Emissions of SO₂ and NO_x have been declining since 1990 by several percent per year. With the 2020 numbers included, annual SO₂ and NO_x emissions have dropped 95 percent and 88 percent, respectively, since the EPA’s base years, 1990-1992.

This decrease benefits both human health and the environment.

Senate approves Regan nomination. The U.S. Senate approved Michael Regan’s nomination as EPA administrator by a wide, bipartisan margin of 66-34.

Sixteen Senate Republicans crossed the aisle to join all Senate Democrats in the affirmative vote. In a surprise, Florida’s senior senator, Marco Rubio, voted to approve Regan’s appointment.



Digital Access

to monthly issues of the
Florida Specifier now available at

www.enviro-net.com

CORKSCREW

From Page 13

The hydrology changed drastically since the mid-2000s, according to the report, after the South Florida Water Management District constructed drainage canals south of sanctuary to prevent flooding in parts of Collier County.

In the last decade, the sanctuary's water levels retreated below ground level four times.

The researchers used a well-accepted hydrology model to identify possible causes for the water level decline in the swamp, and to inform potential remediation strategies.

They modeled the effects of several scenarios: ending agricultural water withdrawals, ending potable water withdraw-

FSI

From Page 12

with 95 percent of that contributed by springs that feed groundwater into the Santa Fe.

The primary visible effect of the excess nitrate is filamentous algae growth that can "shade out" submerged aquatic vegetation. Consequentially, water clarity is affected, and fish and invertebrate communities are stressed.

Water quantity

The story of water quantity is one of scarcity, the opposite of nitrate's damaging influence.

According to the report, the Santa Fe River at its confluence with the Suwannee River had a historical flow of about 2,200 cubic feet per second; 75 percent of that, 1,630 cubic feet per second, came from groundwater discharge through springs or directly into the Santa Fe.

In 2015, the SRWMD issued a recovery strategy for the Santa Fe River and its springs, noting that they were past the point of "significant harm."

At the time, water withdrawals affecting the springs and river averaged 450 million gallons per day.

The current report cited a study estimating that up to one-third of the premodern spring flows are now withdrawn by groundwater wells.

Minimum flows and levels in the river are subject to updating as conditions warrant. FSI fears that future MFLs may be set to even lower regulatory limits that will be further away from the historical flow necessary for meaningful restoration.

"The irony is that even the new draft lower minimum flow will not be—and has not been—consistently achieved in more than 20 years," the report stated.

The most unfortunate part of Florida's attempt to provide meaningful regulation is that at the same time that DEP and the SRWMD set targets and initiated water conservation programs, it continued to approve permits for more water withdrawal.

For example, the district increased water allotments for public supply wellfields in Alachua County.

But the most controversial was a permit approved to allow Nestle to take over a million gallons a day from Ginnie Springs to supply its bottled water plant.

The groundwater withdrawals are of concern because the water is almost entirely exported from its source watershed.

Public supply wells within the Ichetucknee River watershed that provide public supply water for Alachua County residents are another withdrawal that relocates water from one watershed to another.

If FSI's point about the current levels of groundwater withdrawn by wells is valid and rainfall levels are not increasing, then the only alternative for increasing flow rates would seem to be effective water conservation strategies.

That includes decreasing the permitted level of water withdrawals, an obviously limited practice that environmental advocates in the area strongly endorse.

A concluding remark in the report bears repeating here: "While meaningful restoration is not easy, it does not have to be expensive for the public that owns and values these unique natural resources. Every year and decade of the state's inaction and delay makes springs restoration more expensive and more difficult."

als, ending both agricultural and potable water withdrawals, eliminating woody marsh vegetation and reducing pine flat land density to reduce evapotranspiration losses, reducing downstream drainage; and mitigating drainage.

The modeling indicated that a "reduction in downstream drainage has the potential to return Corkscrew Swamp Sanctuary's hydrology to pre-1990 conditions ... it demonstrated that this driver was the only examined hydrologic driver with a great enough simulated impact to allow for significant reversal of the sanctuary's shortened hydroperiods."

People familiar with water management strategies might be surprised by this finding, and would expect that the combination of reducing agricultural and public supply withdrawals would be more effective than reducing stormwater drainage.

However, in this case, modeling showed that simply reducing, but not eliminating, the water loss through drainage canals would have prevented the dry spells since 2010, except for the dry spell in 2016.

The report primarily described the harm of the dryness to an ecosystem adapted to a landscape permanently covered by water.

Beyond that is the existential threat of catastrophic landscape fires. Fire prevention is a primary reason to maintain permanent standing water in the sanctuary that has protected the old-growth cypress for

millennia.

To get the benefits of high water tables during the dry periods when fire is an issue, the human ecosystem south of Corkscrew Swamp must develop a strategy to better accept and adjust to flooding and potential flooding during the wet season.

Brad Cornell, Southwest Florida Policy Associate at Audubon of the Western Everglades/Audubon Florida, said that sanctuary staff are now working on multiple fronts to implement a remediation plan.

He said that consultants are fine-tuning some measurements where water and canopy cover influenced the measurements obtained earlier and characterizing the structure and extent of buried porous shell layers south of the sanctuary that accelerate water drainage from the swamp.

When that new data is processed, it will support an engineering plan to create a bentonite clay barrier to be built underground south of the sanctuary. The barrier will significantly reduce water loss, especially that conveyed by the shell beds.

The clay barrier will retain a large proportion of the water lost, but not all of it. Other water retention steps are also needed.

Cornell said the sanctuary was negotiating with the SFWMD and local authorities to collaborate on additional measures that could include retrofitted and new stormwater retention systems, wetland restoration and land acquisition, a shift of public water supply away from surficial sources, and possible adjustments of agricultural irrigation practices with public investment assistance.

Classified Advertising

Civil Engineer

Gator Engineering & Aquifer Restoration, Inc. (GEAR) has immediate opening for highly technical Civil Engineer to join our team of design professionals. Our portfolio includes Federal, State, County and private clients with an exciting array of projects requiring an individual with diverse capabilities. Clients include the Department of Defense, Veterans Affairs, FDEP, Orange County Utilities, Orange County Public Schools, SpaceX, Blue Origin, Northrup Grumman and many more. Projects include A-E Design and Design Build, Geotechnical Engineering, Site Civil Design, CADD/REVIT Design, Environmental and Remedial Design. The successful candidate will have a Bachelor's Degree in Civil Engineering with a minimum five years of Civil Engineering experience. Professional Engineer license is preferred but not required.

Contact neeld@gearengineer.com or visit www.gearengineer.com.

FLORIDA REMEDICATION CONFERENCE

The 11th Annual FRC Charity Golf Tournament Shingle Creek Golf Club Orlando, Florida

November 17, 2021

Tournament Features:

- 12:00 PM Shotgun start, four-man scramble
- Contests, door prizes
- Sponsorship slots available
- Registration includes golf, box lunch and cookout dinner
- Play one of the very best courses in Florida
- You do not have to attend FRC to participate in tourney

All proceeds to benefit:



If you are interested in helping to sponsor the Tournament, please contact **Gene Jones** at 850-386-6280 or by email at gene@swixusa.org

Website: <https://FloridaRemediationConference.org>

Call for Golfers!

2021 Tournament
Signature Sponsor:



NOTES
From Page 3

"Having an extensive capacity to generate electricity on the campus aligns with our environmental goals to use the best sustainable practices as well as to educate our members and the public about the benefits of solar energy," said Rob Moher, president and chief executive officer of the Conservancy of Southwest Florida.

"We are grateful to The Martin Foundation for their generous donation that further expands our commitment to sustainability and reducing our carbon footprint," he said.

The Conservancy plans to install 537 solar panels on the roofs of four campus

buildings. They estimate a cumulative energy savings of \$1 million may be gained over 40 years allowing those funds to be returned to conservancy work.

The project is projected to save over 20,000 barrels of oil, equal the planting of 235,887 trees, and remove 1,917 vehicles from the road.

The solar generation equipment will be installed in conjunction with renovations already underway at the Conservancy Nature Center.

WMD chief receives geology society award. The University of South Florida's Geology Alumni Society awarded Southwest Florida Water Management District

As it emerged from the breached well-head, the pressure dropped to about 100 atmospheres.

The methane outgassed explosively and was responsible for the dissolved, very fine particles of oil that formed, contaminating the deep ocean.

Murawski noted that scientific discoveries have influenced public opinion about offshore oil drilling. The vast majority of Floridians oppose drilling for oil on Florida's continental shelf, as reflected in the successful 2018 state constitutional amendment.

As a result of the GoMRI research, said Sutton, we have better approaches to spill prevention, and better models of spills when they happen, better tools to assess

Executive Director Brian Armstrong, PG, its 2020 Geology Alumni Society Award.

The award, the most prestigious given by GAS, is presented to alumni who have distinguished themselves through achievement and career success.

Armstrong has served as the district's executive director since June, 2016. He previously served as their assistant executive director, providing oversight for the day-to-day operations of three divisions and more than 400 staff and as the assistant director for the Florida Department of Environmental Protection's Southwest District office, where he provided oversight for department initiatives in eight counties.

damages to natural resources, a more coordinated response capability, a more informed citizenry, closer relationships with international partners and a well-trained cadre of students.

Fifty million dollars a year seems like a reasonable price to pay for this progress.

As the program concludes its 10 years of scientific research, its participants have produced 5,432 science presentations and more than 1,500 peer-reviewed publications, a number that will continue to grow.

From the beginning, investigators were required to archive data in an actionable format to ensure that the initiative's immense data trove will provide an independent source of reliable information for future research.

Armstrong earned both a bachelor's degree in geology and a master's degree in hydrogeology from the University of South Florida.

People news. Lee Killinger joined Florida Crystals Corp. as director of environmental affairs. He brings three decades of experience in environmental policy and Everglades restoration knowledge to the company.

He will be responsible for monitoring legislative and regulatory developments and trends at the federal, state, regional and local levels in support of the company's government affairs and legal departments.

David Johnson joined Cardno as operations manager in the Tampa office. He will be working in the Lake Okeechobee area to assist in expanding Cardno's southeastern restoration services business, as well as leading the firm's project efforts with the South Florida Water Management District.

Johnson has more than 20 years of restoration and invasive vegetation management experience.

James Woods joined Lewis, Longman & Walker PA in its West Palm Beach office as an associate. Woods's practice will focus on environmental and land use law.

Company news. Alpha-Omega Training and Compliance Inc. announced the acquisition of L.S. Sims & Associates Inc.

"The addition of LSSA gives us direct access to engineers and scientists to support our waste cleanup operations and employee training programs," said AOTC President Todd McDowell.

LSSA will continue to operate as L.S. Sims & Associates from their principal office in Rockledge, FL, as a division of AOTC.

"The acquisition allows us ready access to AOTC personnel and equipment to complete waste removal actions and support remediation projects," added Lawrence Sims, PG, senior geologist at LSSA.


RESEARCH
From Page 8

tions for the loss of some keystone food chain species in the Gulf.

Another presentation was given by Steve Murawski, PhD, a fisheries biologist and marine ecologist at the University of South Florida College of Marine Science in St. Petersburg, in collaboration with a research group in Hamburg, Germany.

The team examined the origin and dispersal of dissolved and particulate oil during the well blowout.

The Deepwater Horizon's oil was saturated with methane when it was in the ground under a pressure of approximately 200 atmospheres.






PFAS Forum

April 28-30, 2021

Renaissance Tampa International Plaza Hotel
Tampa, Florida

Attend In-Person or Virtually

Forum Purpose:
To educate the environmental/remediation industry and regulatory community on the potential risks from PFAS, as well as discuss regulatory and legal issues, monitoring, treatment, cleanup and disposal technologies.

<https://pfasforum.org>

Index to Display Advertisers

Advertiser (Florida Representative)	Page
Telephone URL/E-mail (if available)	
ADVANCED ENVIRONMENTAL LABS (904) 363-9350 www.aellab.com	3
ALPHA-OMEGA TRAINING & COMPLIANCE (321) 445-9845 www.a-otc.com	9
CARBON SERVICE & EQUIPMENT CO. (407) 313-9113 www.carbonservice.net	2
CARBONWORKS (904) 352-0536 www.carbonworks-usa.com	7
CHEROKEE ENTERPRISES (305) 828-3353 www.cherokeecorp.com	8
CLARK ENVIRONMENTAL (800) 276-2187 www.thermaltreatment.com	10
CLIFF BERRY INC. (800) 899-7745 www.cliffberryinc.com	6
ETEC LLC (971) 222-3616 www.etecllc.com	5
FLOWERS CHEMICAL LABS (407) 339-5984 www.flowerslabs.com	4
FRC 2021 (850) 386-6280 floridaremediationconference.org	8
GERBER PUMPS (407) 834-9104 www.gerberpumps.com	7
HYDRO-INTERNATIONAL (407) 322-0330 ssm.hydro-int.com	2
JAEE ENVIRONMENTAL SERVICES (954) 476-8333 www.jaeeenvironmental.com	4
PFAS FORUM (850) 386-6280 pfasforum.org	15
REGENESIS (972) 377-7288	6
STORM WATER SYSTEMS (888) 730-5819 stormwatersystems.com	9
SWIX (850) 386-6280 www.wastexchange.org	2
UNIV OF FLORIDA TREEO CENTER (352) 392-9570 www.doce.ufl.edu/treeo	11
US ECOLOGY (800) 624-5302 www.usecology.com	10