

# Florida Specifier

Practical Information For Environmental Professionals

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## Oil spill research 3

The Deepwater Horizon oil spill was notable for the millions of gallons of oil dispersant used to break up the surface slick, but also notable for ongoing research characterizing the magnitude of the spill, the fate of the oil, and its biological and ecological impacts.

## PFAS report 6

The Environmental Working Group issued an update to its analysis of government data, reporting that over 2,000 industrial facilities across the U.S. could be discharging perfluorinated compounds into the air and water.

## Springs investigation 7

Research from the University of South Florida looks into the bacteria and virus species occurring in Florida springs. Some surprising results surfaced.

## Imperiled rivers 8

American Rivers released its annual report listing the most imperiled rivers in the country. Florida's Ocklawaha River made the list, as did the Okefenokee Swamp and St. Marys River along the Florida-Georgia border.

## Panhandle wastewater 11

A regional wastewater treatment plan that brings together Santa Rosa County, the city of Gulf Breeze and the Holley-Navarre Water System is finally a functioning reality.

### Departments

Federal File	2
Water Watch	4
Guest Column	10

### 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](mailto:mreast@enviro-net.com).

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Photo courtesy of USF C-IMAGE consortium

Patrick Schwing, (right), and David Hollander, both with the University of South Florida College of Marine Science, process sediment cores containing mud from the Gulf of Mexico's seafloor in an effort to examine the physical, chemical and biological changes caused by the Deepwater Horizon oil spill. See story on Page 3.

## EPA relaxes enforcement during pandemic

By ROY LAUGHLIN

**O**n March 26, the U.S. Environmental Protection Agency issued a memorandum entitled COVID-19 Implications for EPA's Enforcement and Compliance Assurance Program, authored by Susan Parker Bodine, assistant administrator for enforcement and compliance assurance at the agency.

The memo's verbiage wanders through multiple paragraphs of com-

mentary and context about the COVID-19 pandemic. Somewhat obscurely, the memo introduced a policy of an "enforcement discretion policy during the COVID-19 pandemic."

This enforcement discretion applies to civil violations of environmental compliance obligations during the pandemic.

EPA, in a related press release, said that it will not seek penalties for "non-compliance with routine monitoring and reporting obligations that are the result

of the COVID-19 pandemic."

But it also said that it expects operators of public drinking water systems to continue ensuring the safety of potable water supplies.

The agency noted that enforcement discretion does not provide any leniency for intentional criminal violations and that Superfund and RCRA corrective action enforcement instruments are not subject to discretion.

In subsequent advisories, the agency provided guidance for NPDES submissions, including the use of "Natural Disaster" as a reporting category for reasons associated with lack of compliance or reporting during the pandemic.

Instructions for paper submission of compliance information was also provided for respondents who do not use electronic record submission.

This temporary policy began on March 13—even though it was announced later. Surprisingly, no ending date was stipulated.

**EPA**  
Continued on Page 14

## Florida's environmental industry adapts to life during the pandemic

By ROY LAUGHLIN

**T**he economic effects of the COVID-19 pandemic are secondary only to the health impacts on its victims.

Florida's tourism, hospitality and retail businesses have been hit hard during recent weeks but Florida's environmental industry, designated as "essential," has largely continued to operate with notable adjustments and adaptation procedures.

Florida's environmental labs, remediation contractors, waste managers, researchers and others have fared well during the early months of the pandemic and adjusted to keep their projects moving forward while protecting worker health and safety.

Most environmental professionals we spoke to said their work has continued since the start of the shutdown but with a small decrease in business activity and occasional delays directly attributable to the pandemic.

Glenn MacGraw, PG, a principal with Tallahassee-based Clean Asset Environmental LLC, a state Petroleum Restoration Program contractor, said his project workload has fallen by about a third.

He attributed this circumstance to

the inability to contact staff two insurance companies in the Northeast U.S. that are footing the bill for the remediation work.

Two current projects have not halted but have been delayed pending work

**INDUSTRY**  
Continued on Page 13

## SFWMD begins work on EAA reservoir

By BLANCHE HARDY, PG

**I**n a widely touted milestone, the South Florida Water Management District received the final federal permit needed to begin work on the Everglades Agricultural Area reservoir in April.

The EAA reservoir project is a critical component of Everglades restoration work. Gov. Ron DeSantis made completion of the reservoir a key priority in one of his first executive orders.

"Completing the Everglades Agricultural Area reservoir is one of our major long-term water quality solutions," said Florida Congressman Francis Rooney, an advocate of the Comprehensive Everglades Restoration Plan. "In FY 2020, we obtained \$200 million in funding for the EAA.

"Now that the South Florida Water Management District has received its final federal permit to begin work at the site, it is my hope that we move quickly on construction of this vital piece of the puzzle for Everglades restoration."

Rooney noted that the federal government has met funding requests for approximately \$1.5 billion to date.

"The EAA reservoir will enable water storage south of Lake Okeechobee and reduce discharges to the Caloosahatchee River," Rooney said. "The beginning of this project is great news for anyone concerned about our water quality."

The governor's executive order directed the district to start the next phase

**RESERVOIR**  
Continued on Page 15

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# Corps district commander overturns Big Cypress Swamp drilling decision

## Staff report

In early April, Col. Andrew Kelly Jr., district commander at the Jacksonville District of the U.S. Army Corps of Engineers, rescinded the findings of his district chief compliance officer to halt oil exploration activities in the Big Cypress Swamp under the federal Clean Water Act.

The alleged compliance violations resulted from seismic exploration by Burnett Oil Co. using heavy vibroseis trucks in 2017 and 2018.

The 30-ton trucks, sometimes known as “thumpers,” emit sonic vibrations to image deep geological formations that might contain oil.

Burnett’s thumpers left about 100 miles of vegetation-cleared, rutted and sometimes water-filled tracks up to 20 feet wide through the Big Cypress Swamp.

Earlier this year, Robert Halbert, chief of compliance at the corps’ Jacksonville District, sent a cease and desist letter to Charles Nagel, president of Burnett Oil. Halbert wrote in that C&D letter that

“the activity caused an identifiable individual and cumulative adverse effects on aquatic function” in the swamp.

He further characterized the seismic survey activity as “mechanized land clearing, ditching and channelization.”

Halbert said that, in the future, any activities resulting in such impacts by Burnett Oil would require a Clean Water Act permit.

In the letter overturning Halbert’s findings, Col. Kelly wrote that the corps will take no further action concerning the completed seismic survey.

Although the federal government owns the surface resources of the Big Cypress Swamp, the prior owner, Collier Resources Co., owns subsurface mineral rights.

Collier Resources hired Burnett Oil to perform the seismic survey.

Nagel Oil obtained a permit from the National Park Service for the seismic surveying.

The permit required Burnett Oil to repair any damage done by surveying activities.

According to Greg Pittman, a writer for the *Tampa Bay Times*, NPS officials said that Nagel Oil had repaired most of the damage until interrupted by wet weather.

The repair effort came to a halt when the COVID-19 shutdown started.

Further restoration efforts, if they occur, await drier weather.

The damage was done during two years of seismic surveying from 2017 to 2019. Nagel Oil could have returned for further seismic surveying during the winter of 2019 but did not.

The oil exploration permit expires in December this year.

For the time being, it appears that the case against the oil company is closed. And with the recent collapse in oil prices, it may be years before any economic justification returns for further oil exploration in Big Cypress Swamp.

The permanent solution to ending further damage by oil exploration or drilling could depend on the U.S. government purchase of Collier Resource Co.’s mineral rights.

Prior attempts to purchase the mineral rights for \$120 million failed.

**PFAS in manufactured products.** Over a year ago, the U.S. Environmental Protection Agency announced a Perfluorinated Alkyl Substance Action Plan that promised to put teeth into protections for human health and the environment from these ubiquitous persistent contaminants.

But when the agency proposed what could have been its most significant protective regulations to date, the Trump White House acted to substantially neuter the restrictions on imported materials containing PFAS.

In July, 2019, the White House Office of Management and Budget sent EPA an email formal notifying the agency that it planned to step in to the rulemaking process.

OMB subsequently requested three changes to the draft rule proposed in July, 2019.

The first change was a “safe harbor provision,” a loophole that allows importation of PFAS surface-coated items.

The second was a more stringent technical requirement under which the EPA could ban imported products containing perfluorooctanoic acid.

The OMB also endorsed stringent requirements that would limit the number of products subject to agency import restrictions.

The EPA responded to the OMB requests in January, 2020, opposing the safe harbor provision in its proposed regulations.

The agency did, however, comply with other OMB requests, opting for more neu-

tral language in the rule, and submitted it for public review at the beginning of this year. The public comment period ended in early April.

Nancy Beck, a former chemical company executive, led the White House involvement.

Before Beck joined the White House Council of Economic Advisors position, she had been an administrator in one of EPA’s regulatory divisions.

In the rule announced in late February this year, EPA announced that it “believed” that the use of PFAS as surface coating on imported products had ended, but was proposing to clarify the categories of imported products covered under the significant new use rules of the Toxic Substances Control Act.

The agency further explained that it intended to prevent products such as furniture, automobile parts, electronics and household appliances that could contain PFAS as part of the surface coating from being imported unless they reviewed and approved importation.

It appears that EPA bowed to the White House with respect to the use of PFAS in textiles, shoes and upholstery. The new rule has no language to restrict their importation.

Laundering PFAS-treated items releases short-chain, highly persistent PFAS into wastewater streams.

Perhaps the agency will address short-chain PFAS later this year, or let a new administration do so next year.

**No change in NAAQS for particulates.** The EPA proposed to retain the current National Ambient Air Quality Standard for particulate matter under the Clean Air Act.

The decision affects standards for fine particles, PM 2.5, and coarse particles, PM 10.

Soot is the primary particle intended to be regulated by these standards, in place since 2012.

By majority vote, the EPA Clean Air Scientific Advisory Committee advised the agency to retain the current standards rather than make them stricter. It was not, however, a consensus vote.

The Trump EPA, beginning with EPA Administrator Scott Pruitt, purged federally-supported academic research scientists from EPA advisory committees, labeling them as likely to be biased by the federal funding support for their research work.

The committee that recommended retaining the current standards is heavily weighted by former regulated industry consultants and regulated industry-employed scientists.

*InsidetheEPA.com* reported on April 7 that agency scientists preferred stricter standards for PM 2.5, particles that occur in the smoke from diesel engines, cigarette smoke, industrial fire smoke and other sources that burn fossil fuel.

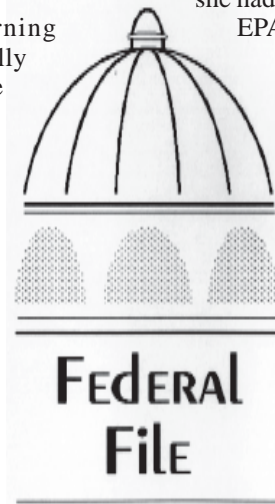
Scientists and health professionals from outside industry have also consistently urged the agency to tighten PM 2.5 standards.


Those particles penetrate the lung’s alveoli and may be retained for long periods, significantly impairing lung function.

The EPA formally defended its decision to make no change claiming that progress to date justified no further efforts to improve air quality.

The agency said that PM 2.5 concentrations in the U.S. fell by 39 percent between 2008 and 2018. PM 10 concentrations fell 11 percent during the same 18-year interval.

The proposal announced in April still has a public comment period that may influence current EPA Administrator Andrew Wheeler’s decision. In the end, he will be the final arbiter of any change.






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## A decade after Deepwater Horizon oil spill, effects still observable

By ROY LAUGHLIN

April, 2020, marked the tenth anniversary of the BP Deepwater Horizon oil spill, one of the 21st century's unprecedented disasters.

The spill was notable for its use of millions of gallons of oil dispersant used to break up the surface slick so less oil drifted onshore to the coasts of the five U.S. states bordering the Gulf of Mexico.

The oil spill was also notable in another way. Several universities in both Gulf Coast states and from across the country immediately began to characterize the magnitude of the spill, the fate of the oil, and its biological and ecological impacts.

Importantly, the funding has continued, allowing the longest and largest research program on record for such an ecological disaster.

Oil releases continued for 87 days before the well was plugged on Sept. 19, 2010. Over those months, the official estimate was that 4.9 million barrels, or 210 million U.S. gallons, of oil were released from the well.

Floating oil fouled beaches from Florida's Panhandle to Texas with the majority of it ending up along 1,600 miles of beaches and marshes in Louisiana, East Texas, Mississippi and Alabama.

Florida's western Panhandle beaches were also oil-fouled to a lesser but still historically record-breaking extent.

The use of oil dispersants to transform surface oil slicks into subsurface flocculent plumes of oil and dispersant was given a unique name: "marine oil snow sedimentation and flocculent accumulation," or MOSSFA.

MOSSFA settled slowly to the gulf bottom where subsurface currents carried it widely throughout the Gulf.

The highest amount of MOSSFA fouled the deep-sea bottom near the well, but some of it spread through deeper water from eastern Texas to Florida's continental slope off the central Gulf coast.

Off Louisiana, Mississippi and Alabama, continental shelf sediments were also contaminated with this material.

The subsurface current dispersal was ignored or relegated to the category of "a necessary evil" when the U.S. Environmental Protection Agency approved the application of record amounts of the oil dispersant Corexit.

The goal was to prevent the entire northern shore of the Gulf of Mexico from becoming heavily oiled.

During the years after the spill, some MOSSFA remained in the water column leading to unusual microbial communities, an increase in dissolved mid-depth methane perhaps from their metabolism, and persistent low levels of petroleum hydrocarbons in the Gulf's deep waters.

Where MOSSFA settled, it remains widely present in deep and intermediate-depth Gulf sediments. It increased oxidation by microbial communities in sediments, and suppressed populations of deep-sea sediment-dwelling foraminifera, marine amoebae that have a shell made of a keratin-like extracellular matrix that may include sand grains and other trapped minerals.

Foraminifera are the basis of a marine food chain that transfers carbon from deep-sea sediments to the Gulf of Mexico's pelagic food chains.

Scientists have questioned whether the extreme reduction in foraminifera populations has played a role in the reduction of the populations of many pelagic species, particularly marine mammals, marine birds and other top-level species in the Gulf food chain.

After the spill, commercial fish, sea bird and marine mammal populations declined in numbers. In addition, some may have altered their ranges to avoid the areas in the northern central Gulf where contamination was greatest.

Since the earliest days of the spill, petroleum hydrocarbons have been found in numerous samples taken of marine organisms. Studies show that bioconcentration

through the food chain is occurring. Marine mammals, especially dolphins, are taxa that scientists think show the most visible effects.

The biological effects on fish, one trophic level below marine mammals and birds, continue to show some pathologies attributable to sublethal oil toxicity.

That includes enhanced numbers of lesions on the skin of redfish, changes in oxidative metabolism of flatfish and reduced fishery yields of other fish due either to decreased populations of adults, lower reproductive output of those that survived or poor recruitment of fish larvae into adult populations.

Recovery from these effects has occurred, according to some reports, but has not diminished to the point of being largely absent. The long-term studies that linked these effects to oil hydrocarbon bioaccumulation is a notable program accomplishment.

The research effort that began after the spill is another lasting legacy of it. Federal and state governments through enhanced funding of colleges and universities began observing and recording the ef-

fects of the oil spill almost immediately.

The University of South Florida's Center for Integrated Modeling and Analysis of Gulf Ecosystems, or C-IMAGE, became the state's flagship oil spill research program.


Although based at USF's St. Petersburg marine lab, it brought together researchers from other Florida colleges and universities as well as Mote Marine Laboratory & Aquarium. Research programs eventually included universities and research laboratories from across the country.

The C-IMAGE research over the past decade created the first comprehensive database of fish tissue and sediment contamination in the broader Gulf of Mexico.

The center's researchers spent several years retrospectively studying Mexico's IXTOC 1 oil spill, which occurred in the early 1980s off Merida, Mexico, in the Gulf of Campeche.

Even after 30 years, oil from that spill was recovered in mangrove swamps and deep-sea sediments. It is likely that Deepwater Horizon oil throughout the

**SPILL**  
Continued on Page 16



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# Officials work to eliminate phosphorus flow to Lake Washington

## Staff report

Lake Washington, a segment of the St. Johns River that separates southern Brevard and Orange counties, is experiencing increased levels of phosphorus, a trend that may have caused a harmful algal bloom in August last year.

In response, the Brevard County Board of County Commissioners approved a study of phosphorus sources to the lake, a source for the city of Melbourne's potable

water supply.

The results of the study conducted by Applied Ecology Inc. showed that phosphorus, possibly from the land spreading of biosolids, originates from the Deer Park Ranch.

The ranch's runoff during heavy rains carries the phosphorus into Lake Washington.

In 2018 alone, 7,484 dry tons of biosolids were applied to 3,270 acres on the ranch. The ranch's annual report calculated

that biosolid land application added 807,610 pounds of nitrogen and 294,228 pounds of phosphorus to the ranch's soil.

The biosolids came from three wastewater treatment plants, one in Miami-Dade County, one from the city of Holly Hill in Volusia County, and one from Orange County.

In late August, 2019, the BOCC instituted a six-month ban on Class A biosolids land spreading county-wide.

The ban did, however, allow continued land application where it was already occurring, such as on Deer Park Ranch. But it banned spreading on new areas, typically pastures, that had not previously been used for land application.

Even with the limitations of Brevard's moratorium, significant land spreading still occurs within the Lake Washington watershed. A large portion of Deer Park Ranch is in Osceola County and is not subject to the Brevard ban.

In early April, Brevard county commissioners unanimously approved a 180-day extension of the moratorium.

In addition to Brevard's moratorium, the Clean Waterways Act, SB 712, passed by the Florida Legislature in March 2020, imposed additional setback requirements and protective measures intended to reduce phosphorus release in runoff from areas subject to biosolids spreading.

That bill, sponsored by State Sen. Debbie Mayfield of Vero Beach will become effective on July 1.

**SWFWMD septic-to-sewer conversions.** The Southwest Florida Water Management District announced five new septic-to-sewer projects intended to protect a pair of first-magnitude springs in the district.

The projects include the Citrus County Cambridge Greens conversion; the Crystal River Indian Waters conversion, Phase 2; the Crystal River southern septic conversion; the Citrus County Old Homosassa West conversion; and the Citrus County Old Homosassa East conversion.

The first three will provide benefits to the Crystal River/Kings Bay watershed; the last two will improve water quality in the Chassahowitzka and Homosassa rivers.

Combined, the five projects are expected to reduce nitrogen loading by more than 10,000 pounds per year.

Septic tanks contribute up to 40 percent of the current nitrogen pollution in

the district's five first-magnitude springs. The additional nitrogen fuels undesirable algal growth.

Under the new program, the district will provide more than \$7 million in matching funds to help underwrite the conversions.

Tina Malmberg, PE, MBA, director of utility planning & engineering at the Citrus County Water Resources Department, wrote in an email that in June, 2020, her department intends to begin the design phase simulta-

neously for the Cambridge Greens and Old Homosassa West conversion projects.

Those projects will continue simultaneously until completion.

"Given the different project area locations, different design engineers and different construction contracts, it is most likely that one project will be in a different stage than the other," she wrote. "Our goal is to have them both completed by the beginning of 2024."

Malmberg said that the Old Homosassa East Project has not been scheduled yet but the design phase will begin later this year with an anticipated completion date of early 2024.

**St. Lucie County stormwater reservoir.** At its Apr. 9 governing board meeting, the South Florida Water Management District approved a land purchase to modify the location of the C-23/C-24 South Reservoir project.

The St. Lucie County project is intended to capture stormwater runoff so that its nutrients can be removed before the water is released to the St. Lucie River and subsequently into the Indian River Lagoon.

The South Reservoir is one of two projects to be built intended to remove nutrients from stormwater runoff from western Martin and St. Lucie counties.

The county originally intended to purchase 4,608 acres south of Okeechobee Road and west of Summerlin Road in western St. Lucie. An unwilling seller of a portion of that land forced the district to reconsider its originally planned reservoir location.

Land northwest of the site was available from a willing seller at a \$7.5 million price, seven percent over its \$7 million appraised value. The governing board approved the purchase because a future condemnation process would have incurred significant additional legal costs.

The replacement purchase shifted the reservoir location further to the north and west, and changed the reservoir perimeter to a square from an elongated rectangle.

The geometry of a square means that the perimeter levee can be lower for the area enclosed. The costs of constructing the levies will, therefore, be less than the cost of the original configuration.

The planned 46,000-acre reservoir will be just over 16 feet deep and hold about 19.5 billion gallons of water. When its sister reservoir is complete, the two will retain a total of about 30 billion gallons.

When the district acquires the land, the U.S. Army Corps of Engineers, a partner on the project, may begin design work. Construction is slated to begin in 2024.

As a result of the land purchase, SF-WMD now has 3,900 acres of land no longer intended for use in the reservoir's construction, separated from the new reservoir location by a strip of land whose owner was unwilling to sell.

The district board will determine whether it has a use for the property or whether it would be in the public interest to sell it to private interests so that it would return to the taxable property role in St. Lucie County.

**Panama City wastewater overflows.** Panama City signed a consent order with



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**WATCH**  
Continued on Page 5



**WATCH**  
From Page 4

the Florida Department of Environmental Protection to make repairs and renovations to its wastewater collection system and to one of its wastewater treatment plants.

DEP also assessed \$145,000 in civil penalties. Those penalties will be waived if Panama City applies the funds to underwrite a more extensive wastewater system improvement plan.

Panama City has a significant effort ahead to meet the DEP demands.

During the past three years, DEP cited 35 instances of sanitary sewer overflows from a lift station in the city's sewage collection system involving hundreds of thousands of gallons of spillage.

DEP is requiring the city to make repairs and improvements within three years, to develop an emergency response plan, and to update and improve its mapping and inventory plans.

In particular, DEP wants the city to provide information about materials such as clay pipes used in the collection system.

Most of the management issues have 90 to 120 days for compliance.

City officials acknowledged the need to upgrade and replace the clay piping beneath roadways, significant portions of which were damaged by heavy traffic following Hurricane Michael.

The city has been upgrading its St. Andrews Wastewater Treatment Facility but additional upgrades will be needed for the second of the city's wastewater treatment plants.

Panama City Manager Mark McQueen said that an extensive overhaul would require multiple sources of funding including borrowing from DEP's Clean Water State Revolving Fund.

Towards that end, the city has hired Mott MacDonald to develop a long-term plan.

The city replied to the consent order at the end of April, a response that was delayed by COVID-19 issues.

A response by DEP to the city's proposals is expected this summer.

**Palm Coast wastewater treatment expansion.** The city of Palm Coast in Flagler County is poised to expand its wastewater treatment plant capacity to four million gallons per day by 2023.

The project to double its capacity occurs just two years after Palm Coast completed construction of a \$30 million advanced wastewater treatment plant capable of treating two million gallons of wastewater a day.

The expansion will occur at the Palm Coast utility facility three miles north of Palm Coast Parkway. It is the newer of the city's two wastewater treatment plants.

The expansion project is an integral part of the city's long-term wastewater treatment plan.

The first step was the construction of the first phase module in 2018.

This is the second of three planned expansions to increase wastewater treatment capacity to a total of six million gallons a day.

Like the first phase, the second will be an advanced wastewater system using a membrane bioreactor treatment system.

The additional capacity includes a new lift station, flow equalization tanks, chlorine contact chambers and pumps, and a new sludge holding tank. The system will produce reclaimed water.

Sanford-based CPH Engineers Inc. prepared the plan for the new system.

Construction is scheduled to begin early next year with the completion of Phase 2 by November, 2022.

City officials plan to apply for a nearly \$20 million loan, the entire cost, from the DEP Clean Water State Revolving Fund. The interest rate on the loan is expected to be less than two-tenths of a percent.

According to local newspaper accounts, city officials do not expect any increase in wastewater treatment rates as a result of the facility expansion.

In 2018, Palm Coast instituted a wastewater system rate plan that bumped utility bills up by 20 percent and anticipated phased capacity expansion.

**Lee County stormwater projects.** In mid-April, the Lee County Board of County Commissioners approved several stormwater management projects that have been in the planning stage for about four years.

One of those was the FPL Powerline Easement Water Quality Project. This project included a stormwater treatment component to improve runoff water quality flowing from the Stroud and Palm creek watersheds into the Caloosahatchee River.

It will help meet total maximum daily load requirements for nitrogen, established under a basin management action plan.

The county board approved reprogramming of about \$48,000 of unspent grant funding.

This money was left over from a \$200,000 feasibility grant provided by DEP in April, 2016. That feasibility study cost \$152,000.

With the reprogramming, Lee County officials will prepare an addendum to the original project report to include design plans, updated nutrient removal calculations, estimates of construction costs and modeling of stormwater design.

The next project stage is to identify potential parcels adjacent to the FPL easement to reestablish watersheds that overflow and flood.

The flooded areas will improve water quality while the water stands before release, and would provide base flow to the Caloosahatchee River during the dry season.

In addition, it would reestablish flowways within the Pop Ash Creek Preserve at the northern end of the project.

**Deltona water/sewer upgrades.** The Volusia County Council approved approximately \$6 million in funding to upgrade potable water and wastewater collection lines along Howland Boulevard between Providence and Elkcam boulevards in the city of Deltona.

The water line improvements are part of a larger project to widen Howland Blvd. That widening project, including new water and wastewater pipelines, should be completed by early 2023.

The council also approved \$5.7 million in funding to build a new pipeline that will carry wastewater from the Deltona North wastewater facility to the Southwest Regional Water Reclamation Facility in the nearby city of DeBary.

The wastewater redirection project is the concluding stage of a larger wastewater consolidation project that began four years ago.

The project goal was to reduce nitrogen releases within the Volusia Blue Springs watershed, some of which came from wastewater treatment plants and septic tanks within the watershed.

DEP and the St. Johns River Water Management District are covering \$2.9 million of the project's total cost of \$5.7 million.

The project includes installation of a high-capacity lift station in Deltona North as well as three miles of sewer pipeline to connect the two plants.

When the pipeline work is complete, the Deltona plant will discontinue operation. That should occur in about 14 months.

**Lee County irrigation restrictions.** In late April, Lee County and the South Florida Water Management District in-


stituted irrigation restrictions to help conserve water.

Once the rainy season begins, landscape irrigation will be restricted to one day a week in all parts of Lee County.


Irrigation water restrictions are in effect until rainfall returns to improve groundwater levels.

Between September and March, 2019, Lee County and adjacent areas received less than 15 inches of rain, 66 percent of their average total. During March, it received only 12 percent of average rainfall.

This deficit is expected to continue through the rest of the dry season, which usually ends in late May.



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# EWG update: Industrial facilities may be releasing PFAS to air, water

By **BLANCHE HARDY, PG**

The Environmental Working Group recently issued an update to their analysis of government data, reporting that over 2,000 industrial facilities across the country could be discharging perfluorinated compounds into the air and water.

Per- and polyfluoroalkyl substances are man-made chemicals that include a suite of products manufactured and used by industries worldwide since the 1940s.

PFAS chemicals are persistent in the environment as well as in the human body. They do not easily break down and accumulate over time.

According to the U.S. Environmental Protection Agency, exposure to PFAS can result in adverse health effects. Research has linked the chemicals to weakened childhood immunity, cancer, kidney and thyroid disease, and other serious health problems.

EWG staff reviewed EPA databases and surveyed the state of New York to assess current data. They found over 2,000 industrial sites that are, or are suspected of, using PFAS.

EWG confirmed that some are sources of drinking water contamination.

The reviewed databases included EPA's 2020 Chemical Data Reporting rule, the agency's Enforcement and Compliance History Online, a 2017 New York Department of Environmental Conservation in-state survey and a 2017 EPA memorandum identifying PFAS users.

Well known large companies that appeared in the research material included Chemours (DuPont), 3M and Dow Corning.

EWG found that companies using PFAS are comprised of "chemical producers, tanneries, carpet and rug mills, coated-paper product plants, electroplating facilities, semiconductor factories and wire manufacturers."

The researchers noted that their count of industrial sites did not include the 446 water systems contaminated by PFAS or the 678 PFAS-contaminated, or suspected contaminated, military facilities.

PFAS are found in numerous consumer products including cookware, pizza boxes and stain repellants, to name a few.

Other sources of PFAS exposure include food packaged, processed or grown in conjunction with or contaminated by PFAS, commercial household products ranging from nonstick pots to cleaning and polishing products to fire-fighting foams.

The federal Clean Water Act does not currently restrict industrial discharge of PFAS into the environment.

EWG noted that industrial discharges of PFAS are the most significant source of PFAS contamination in many communities, including communities where the pollutant is impacting drinking water supplies.

The researchers also found PFAS present in municipal biosolids frequently used as residential or commercial fertilizer.

But there has been some progress in regulating PFAS. The U.S. House of Representatives passed a PFAS Action Plan bill in January that would establish deadlines for the EPA to regulate industrial discharges of PFAS under the Clean Water Act and set treatment standards, require discharge permits, require discharge pretreatment prior to municipal wastewater treatment, and prohibit indirect discharge to municipal wastewater plants without advance notice for priority industry categories.

EPA issued its first PFAS Action Plan in 2019. The plan was updated in 2020 to include efforts to expand drinking water testing methods, to work with the Safe Drinking Water Act to make a regulatory determination and to produce new toxicity assessments.

In the interim, the agency announced EPA Method 533, a new validation method for PFAS testing in drinking water.

The 2020 action plan update committed to "make progress on addressing PFAS under the Safe Drinking Water Act, the Comprehensive Environmental Response, Compensation and Liability Act, the Resource Conservation and Recovery Act, and the Toxic Substances Control Act.

The agency said it will work to expand its research efforts as well as enhance their engagement with the rest of the federal government, and focus attention on providing more information and data to the public in the coming year.

## ALA report: Florida air quality remains good

Staff report

Florida's air quality statewide is good, at least with respect to particulates and ozone. Cities and counties here that ranked

lowest for these two health-degrading air contaminants experienced much better air quality than the nation's worst areas.

This is according to the American Lung Association's annual nationwide rankings. ALA rates air quality separately for particulates and ozone.

In terms of standout air quality, the Palm Bay-Melbourne-Titusville region tied for 14th place nationwide for year-round particle pollution. This area in Brevard County did not experience a single day of unhealthy air due to particulates such as soot from diesel exhaust and fossil fuel combustion.

Not far behind for particulates was the Gainesville-Lake City area. It tied for the 23rd position nationwide.

Florida lacks heavy industry dependent on fossil fuel combustion. Diesel engines, particularly in vehicles, are the primary source of soot particles. In some areas, landscape fires also contribute significantly to soot particles in the air.

In terms of annual changes of year-round particulate levels, Miami-Fort Lauderdale-Port St. Lucie and Orlando-Lakeland-Deltona experienced levels in 2019 that were slightly higher than those measured earlier.

Year-round particle pollution in Tampa-St. Petersburg-Clearwater was slightly lower than it had been in the past.

The report also ranked locations in terms of their short-term particle days, attributable to short-term events such as traffic or fires.

In Florida, Orlando-Lakeland-Deltona, Tampa-St. Petersburg-Clearwater, Tallahassee, Pensacola-Ferry Pass, Palm Bay-Melbourne-Titusville, Northport-Sarasota and Gainesville-Lake City all made the list of the nation's cleanest cities for short-term particle days.

Annual changes in air quality in short-term particle air pollution occurred in some Florida's cities. But short-term particulates in Miami-Fort Lauderdale-Port St. Lucie and the Jacksonville-Palatka area did not change.

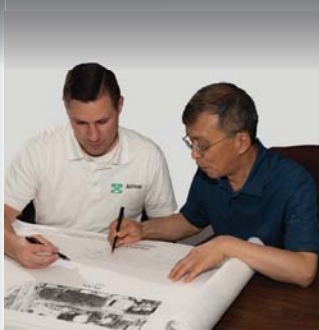
These two regions tied for 84th place in the rankings for short-term unhealthy days, and continue to have the best levels they ever had since the rankings were established over two decades ago.

Ozone was the second air contaminant considered by ALA in establishing its clean air rankings. Florida cities generally have benign levels of ozone.

For example, Jacksonville-Palatka experienced fewer unhealthy days this year than last and continued to report levels similar to its best years in the past two decades. But Tampa-St. Petersburg-Clearwater experienced a few more days of unhealthy ozone levels in 2019.

Two metropolitan areas ranked more poorly for ozone in 2019 than in the past. Ozone levels worsened in the Miami-Fort Lauderdale-St. Lucie and Orlando-Lake-

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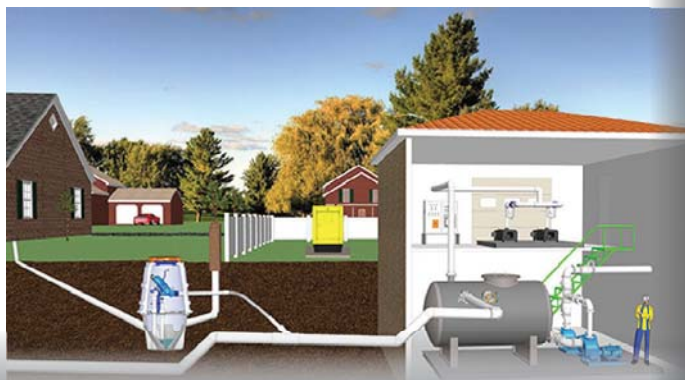


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**AIR**  
 Continued on Page 16



# New USF study compares bacteria, virus communities in five Florida springs

By ROY LAUGHLIN

Florida's flourishing bottled water industry promotes the illusion of clean, pure water. But, in fact, how many bacteria and virus species actually occur in Florida's flowing springs?

A recent research paper, part of a University of South Florida student's dissertation research, provided new and tantalizing answers to that question.

Graduate student Kema Malki and undergraduate student Paige Boleman, working with a research group at the University of South Florida College of Marine Science, sampled water from five of Florida's first magnitude Springs: Ichetucknee, Jackson, Manatee, Rainbow and Volusia springs.

Malki noted that she chose springs widely spaced so they have no springshed overlap. That isolation simplified data interpretation.

The researchers gathered physical and chemical data about the springs' water chemistry and physical characteristics.

In addition, they obtained and correlated land use characteristics of the springshed with their taxonomic data.

Their goal was to describe microbial and virome assemblages, and correlate the differences found with ecological characteristics.

In terms of abundance, the number of virus-like particles, or VLP, and bacterial cells were at the low end of abundance compared to numbers found in other ground and surface water studies.

The research team measured cell abundances ranging from  $2.2 \times 10^3$  to  $3.4 \times 10^4$  per milliliter of spring water. That finding was no surprise.

But comparisons within the springs' VLP abundance did produce a surprise. Volusia Springs was the outlier for abundance with microbial cell and VLP counts about 10 times higher than at other springs sampled:  $9.6 \times 10^3$  and  $1.1 \times 10^5$  per milliliter of spring water, respectively.

The research group noted the correlation at Volusia Springs with higher phosphate levels in the water to explain the order of magnitude higher bacteria and VLP abundances.

Most of the other findings about bacteria and VLP are anything but what the investigators expected to find and on which they based hypotheses at the start of their research.

First, the species array in each spring is highly endemic. Only 25 bacterial phyla were found across all springs.

Just four phyla plus *Planctomycetes*, a divergent bacteria genus with unusual morphological characteristics, were found in all springs. Members of the genus *Bacteria* dominated prokaryotic cell abundance at all springs.

To explain the high endemism—only five out of 25 prokaryote taxa were common to all springs—the researchers suggested that it reflected the impact of land use on the physicochemical properties of the spring water.

The researchers noted this finding was the opposite of their original hypothesis. They expected that because the Floridan Aquifer fed all the springs, microbial and viral assemblages would be similar.

Another surprise of the prokaryotic taxonomy was that 25 most abundant bacteria genera included cyanobacteria. The researchers expected the lack of sunlight in the aquifer would not foster these photosynthetic bacteria.

The percentage of Archaea was small ranging from 0.2 percent to 4.7 percent. Manatee Springs had the highest number of Archaea species, 4.5 percent.

High endemism for each spring was also present in viral genome data. The researchers found that no single complete viral genome occurred at all five springs sampled.

At the family level, the VLP spectrum among all the springs showed a similar pattern, but with different numbers for abundance.

Viruses found in the springs are a complex assemblage based on their genetic components. DNA viruses may be either single-stranded or double-stranded. Other viruses have their genetic material as RNA.

In this study, researchers were surprised to find the majority of the DNA viruses were double-stranded, more than 82 percent across all springs except one.

Based on prior studies, they expected to find single-stranded DNA viruses as the dominant form. Single-stranded DNA viruses were most abundant at only Ichetucknee Springs.

In addition to the study that asked an original question, the methods used to identify microbial cells and VLPs was cutting-edge.

The researchers used molecular biology methods that identified genetic sequences of DNA and specific RNA sequences from viruses.

The nucleotide sequences found were attributed to virus taxa by comparison to

nucleotide sequences in databases for known viruses.

The researchers discussed how the content of the comparison database might influence the interpretation of sequence data, particularly if the viruses from Florida springs included significant numbers of sequences that are not in the databases.

The identification of single-stranded DNA viruses found was discussed in this context by the researchers. A reader who is an expert in this field may wish to consider those details in evaluating this work.

Malki, who described her research as "foundational," encountered some major surprises in the findings.

One was that despite the connections between the springs through the Floridan Aquifer, the bacteria and viruses in five Florida springs water displayed a high degree of endemism.

Each spring had a distinct assemblage of bacteria and viruses with only five eukaryote species and just two virus taxa found in all springs.

The study was also distinctive in comparing ecological factors including land use patterns on the springshed to explain some of the differences.

Of all the distinguishing characteristics, high phosphate concentration in Volusia Springs, which supported higher prokaryotic cell densities and higher VLP densities, seemed to be a master factor influencing both bacteria and viruses.

"It's surprising that there isn't more knowledge regarding the natural microbial and viral communities in Florida's freshwater springs and the Floridan Aquifer," said Mia Breitbart, PhD, professor of biological oceanography at USF's College of Marine Science. "We think this study is a critical first step towards understanding these precious ecosystems."

Toward that end, Malki, whom Breitbart praised as "the driving force behind this research," continues her work, now collecting data about seasonal changes in the virus and prokaryote composition in the springs.

Malki is also taking a closer look at the single-stranded DNA phages found in springs. "It's a group we're lacking much knowledge about," said Breitbart. Phages are viruses that infect bacteria cells.

This study had elements of an adventure story as the researchers described how the findings were contrary to several of their hypotheses—a science story with several notable plot twists.



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## UF/IFAS appoints interim director of R&E center

### Staff report

Jack Rechcigl was appointed as interim center director of the University of Florida IFAS Fort Lauderdale Research and Education Center. On May 12, Rechcigl stepped in to oversee operations and research at the center, previously led by retiring center director Robin Giblin-Davis.

Giblin-Davis, who first took the helm of the facility in 2009 as acting co-director, is an internationally celebrated scientist, whose area of study has been applied and basic research concerning soil, plant-parasitic and insect-associated nematodes and nematode biodiversity.

Rechcigl's role as director will be to support and mentor the scientists, faculty and graduate students dedicated to solving local and regional agricultural, urban and wildlife issues in Southeast Florida, while continuing the center's mission.

Areas of research at the center include sustainable management for tropical and subtropical landscape systems. Scientists also aim to reduce the impact of invasive animals and plants on natural and highly urbanized habitats.

Other areas of research include wildlife ecology and conservation, palm production and maintenance, environmental horticulture, aquatic plant management and sea level resilience in South Florida.



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# Mining battle brewing along St. Marys River on Florida's northern border with Georgia

By **BLANCHE HARDY, PG**

For well over three decades, national advocacy group American Rivers has released an annual report listing the most imperiled rivers in the U.S.

This year, the report, America's Most Endangered Rivers, included two Florida waterways on its list of the 10 most endangered rivers.

The report has been used by scores of local and national environmental groups as a springboard to river advocacy.

One of the criteria used for listing is the occurrence of a major river decision

within the upcoming year that the public has an opportunity to influence. The report identifies both the key decision makers as well as ways to get involved in the review process.

Florida's Ocklawaha River is listed this year to support the removal of the Rodman Dam and restoration of the river's natural flow.

In addition, the Okefenokee Swamp and the St. Marys River along the Florida-Georgia border were listed together to avert potential environmental and hydro-

geologic damage resulting from a permit request by Twin Pines Minerals LLC for a sand mine 1.7 miles from the Okefenokee refuge boundary.

The 680-square-mile Okefenokee Swamp is designated as a National Natural Landmark, a Wetland of International Importance and a potential UNESCO World Heritage Site.

The Okefenokee National Wildlife Refuge is the largest wildlife refuge in the eastern U.S. and is North America's largest blackwater swamp.

Unlike the Florida Everglades, the swamp has not yet been significantly impaired by human activity.

"Changes in hydrology from mining can potentially dewater the swamp," said Rena Ann Peck, executive director of the Georgia River Network.

The St. Marys and Suwannee rivers are also at risk of hydrologic and water quality impairment.

"Heavy mineral sand mining will excavate below the swamp water elevation on Trail Ridge, which acts as a geomorphological dam holding the waters of the swamp—the headwater source of the St. Marys and Suwannee rivers," Peck said.

Mining on the Trail Ridge, an area rich in heavy metal deposits from Green Cove Springs to Waycross, has occurred since the 1940s, said St. Marys Riverkeeper Anna Laws.

"The areas left unmined on the Trail Ridge are those in the St. Marys basin and adjacent to the Okefenokee Swamp," Laws said. "Compared to other mine sites on the ridge, the proposed mine site will have more wetland impacts simply because the site has more wetlands and streams."

"If mining is to occur within the St. Marys watershed, we want to make sure it has minimal wetland and stream impacts, and that the impacts are mitigated."

And it's not just the Georgia River Network and other conservation groups raising concerns about the mining, according to Peck. The U.S. Environmental Protection Agency stated that mining will have a substantial and unacceptable impact on the swamp.

And the U.S. Fish and Wildlife Service stated that damage to the swamp may be permanent.

The documents submitted to federal and state regulators by Twin Pines Minerals are sorely lacking in information about how much ground and surface water the mine will use, and how the mining will impact the hydrology of the area as the company digs 5,000-square-foot ditches to

an average depth of 50 feet in pursuit of minerals.

What few details are available in the company's permit applications show that the company would withdraw groundwater from the Floridan Aquifer that underlies the swamp—the very same water that helps maintain water levels within the swamp, the headwaters for the St. Marys and Suwannee rivers.

Twin Pines Minerals' initial permit application proposed operations on 2,414 acres. The permit request was modified slightly downward in 2020, but the American Rivers report noted that government agencies expect operations to eventually grow to 12,000 acres, potentially come within 400 feet of the swamp, and operate for as many as 30 years.

The U.S. Army Corps of Engineers is the responsible permitting agency handling the issue.

"Because Twin Pines has failed to demonstrate beyond a reasonable doubt that the project will not harm the Okefenokee, we are encouraging the corps to reject its permit application or, at a minimum, require the development of an environmental impact statement," said Christian Hunt, Defenders of Wildlife's Southeast U.S. program representative.

"To this point, Twin Pines has attempted to circumvent that process in an attempt to greenlight the project without additional scientific scrutiny," he said.

"The way to stop the mine is to make sure that the corps denies the wetlands permit for the project and the Georgia Environmental Protection Division denies the surface mining and water withdrawal permits," said Peck. "Before moving forward, a thorough study of the project's impacts—an environmental impact statement—must be required."

## Expectations for infrastructure investment plummet

Staff report

A new survey indicated that global industry leaders are not hopeful about an increase in infrastructure spending following the coronavirus pandemic.

In its most recent Global Infrastructure Industry Survey, CG/LA Infrastructure found only five percent believe that investment will "increase significantly" following the pandemic, a sharp decline from 34 percent before the crisis.

In total, only 27 percent believe that infrastructure investment will increase or increase significantly—a drop from 71 percent.

Prior to the crisis, only 10 percent of respondents thought that infrastructure investment would decrease or decrease significantly. But now a majority, 52 percent, believe that infrastructure investment will decline or decline significantly.

"The data shows that the outbreak of COVID-19 cases worldwide has essentially put a halt to infrastructure investment globally," said Norman Anderson, chairman & CEO of CG/LA Infrastructure.

It's clear that more has to be done, he said. "Given that infrastructure needs to be a driver of the global economic recovery, these results are deeply troubling."

A critical theme emerging from the survey is that 82 percent of respondents viewed infrastructure as weak or average in terms of its branding.

Only 18 percent identified infrastructure as a strong brand and the vast majority saw branding as problematic, or characterized by incompetence and chronic corruption.

Other findings include that 28 percent said that social infrastructure, such as new hospitals and schools, were their top priority, with 55 percent listing it as one of their top three priorities.

Clean water was highlighted as the top priority by only 14 percent and was included in a top three priority by 48 percent of respondents.

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# Supreme Court decision protects important Clean Water Act provision

By **BLANCHE HARDY, PG**

Any time you hear the Trump administration and the environment mentioned in the same sentence, it is usually bad news for public health and the environment.

But in a blinding ray of hope, on Apr. 23, the U.S. Supreme Court rendered a 6-3 decision upholding the federal Clean Water Act in opposition to Trump's view.

The decision protects groundwater, Florida's potable water lifeblood.

The Supreme Court concluded that CWA statutory provisions require a permit if the addition of pollutants through groundwater is the functional equivalent of a direct discharge from a point source into navigable waterways.

The case pitted the County of Maui, HI, against the Hawaii Wildlife Fund et al.

Maui County operates the Lahaina Wastewater Reclamation Facility that discharges an average of four million gallons a day of partially treated wastewater into four groundwater wells.

Lahaina's wastewater migrates approximately a half mile through groundwater into the Pacific Ocean. The county has been discharging wastewater in this manner for roughly three decades.

Earthjustice, representing the environmental advocates, attributed coral damage, outbreaks of invasive algae, and staph infections contracted at nearby beaches to the Lahaina wastewater discharges.

The advocacy groups repeatedly requested that the county manage their wastewater discharge through the National Pollutant Discharge Elimination System permit process. The county declined; the advocates sued.

The county was already under a long-term consent decree with the U.S. Environmental Protection Agency and the Hawaii Department of Health for two Clean Water Act-related lawsuits filed in the 1990s.

The EPA subsequently required the county to disinfect all the wastewater injected into the wells by 2013. But years of contaminated effluent injected into the groundwater had already taken its toll.

Earthjustice represented the Hawaii Wildlife Fund, West Maui Preservation Association, Surfrider Foundation's Maui Chapter and the Sierra Club-Maui Group in the complaint, taking the stand that Maui was discharging pollutants into "navigable waters" without the required permit.

The district court found that the discharge from Maui's wells into the nearby groundwater was functionally a discharge into navigable water and granted summary judgment to the advocates.

That court's ruling was upheld by the Ninth Circuit Court of Appeals that found the pollutants discharged by Lahaina, a point source, were "fairly traceable" to the Pacific Ocean, a navigable water.

Although the results were the same, the difference in how the courts reached their conclusions led to the Supreme Court.

One court stressed the direct laboratory identification of pollutant constituents present at both the point source and in the

Pacific Ocean, and the other considered the well-to-groundwater-to-ocean connection traceable and therefore clear.

Attorneys for Maui County maintained that there was no basis for requiring an EPA permit. They argued that the point source, or sources, must be the direct means of discharges entering navigable waters for the permit requirement to apply.

If a nonpoint source such as groundwater or stormwater runoff lies between the point source and the navigable waterway, the county considered it to be the conveyance mechanism and no permit would be required.

"That narrow interpretation would risk serious interference with EPA's ability to regulate point source discharges, and Congress would not have intended to create such a large and obvious loophole in one of the Clean Water Act's key regulatory innovations," noted the court.

"The question presented here is whether the Act 'requires a permit when pollutants originate from a point source but are conveyed to navigable waters by a nonpoint source,' here, groundwater," wrote Justice Stephen Breyer in the majority opinion of the court.

"We hold that the statute requires a permit when there is a direct discharge from a point source into navigable waters or when there is the functional equivalent of a direct discharge."

## EPA repeals mercury, air toxics standards

By **ROY LAUGHLIN**

In mid-April, the U.S. Environmental Protection Agency finalized its repeal of the 2012 Mercury and Air Toxics Standards rule.

The EPA repealed the original MATS rule to render mute the required cost-benefit analysis associated with it.

The Trump administration claimed the analysis method was onerous and disingenuous.

The rule replacement mandates a much narrower scope of consideration for future cost-benefit analyses.

Paradoxically, the EPA left the mercury standard associated with the 2012 rule intact—but without any effective way of enforcing it to prevent additional human exposure to the hazardous element in air emissions.

Attempts to reduce mercury in air emissions from fossil fuels lasted only a year or two before court challenges rendered them powerless since the first one in 2005.

In 2008, a decision in a court challenge to the rule, *state of Michigan v. U.S. EPA*, required the agency to justify the rule based on cost-benefit. EPA estimated the public derived \$7 million in direct benefits, primarily through the protection of children's health.

The \$7 million benefit was minuscule compared to the then-estimated \$10 - \$18 billion in compliance costs over several years across all coal-fired plants.

In 2012, EPA promulgated the second iteration of the rule including the court-mandated cost-benefit analysis. In that analysis, the agency calculated the direct benefits of lowering mercury emissions plus the co-occurring benefits of reducing soot, and oxides of sulfur and nitrogen.

The technology to remove mercury would necessarily remove the other two air contaminants, the EPA noted, so including all in one analysis was legitimate for the purpose of removing the third contaminant, mercury.

Soot and oxides of sulfur and nitrogen that generate acid rain are regulated under a different federal rule. But in practice, the technology to control particulates, and nitrogen and sulfur oxides can be combined to remove mercury as well.

There is not necessarily a single-process additional cost for reducing mercury in coal-fired stack emissions.

Under the 2020 rule revision, the agency said mercury emissions will not increase as a result of the rule.

What it does do is create a tortured rhetorical stream of consciousness endorsing the EPA's conclusion that it is not "appropriate and necessary to regulate any air toxics from coal and oil-powered plants under Section 112 of the Clean Air Act because the cost of such regulations outweighs the benefits of hazardous air pollutant emission reduction."

In the 2020 mercury rule, EPA further revised interpretations of CAA Section 112 to limit the calculations of benefit only to the direct effects.

Under its new calculations, EPA said that the total projected cost of compliance with MATS, \$7.4 to \$9.6 billion annually, dwarfs the monetized HAP benefits of the rule, \$4 to \$6 million annually.

After making that characterization of cost-benefit, the EPA concluded that it was

**MATS**

Continued on Page 10



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# Guest opinion: Restarting economy by weakening water quality, growth management a bad idea

By RYAN ORGERA, ROB MOHER

As we restart our economy, we have the opportunity to learn from past mistakes in environmental management. Florida's economy is inextricably connected to healthy ecosystems.

Businesses and citizens must ensure lawmakers do not eliminate environmental regulations in the guise of jump-starting our economy. Without healthy, clean waters, forests, wetlands and beaches, Florida's economic future would be bleak.

We hopefully learned a great deal from the past economic downturn when we saw the state gut environmental enforcement, staffing and budgets, and eviscerate Florida's Growth Management Act and the agency that managed it.

At that same time, the state began years of systematically defunding key government agencies resulting in a historic loss of scientific talent from water management districts, the Florida Department of Environmental Protection and other agencies.

We now are living with the results of how that served the state of Florida—it put us a decade or more behind in managing the restoration and protection of our natural systems that sustain and enable the

economy.

The consequences took time but were predictable.

Without adequate growth management laws in place, we saw massive new developments approved that are negatively impacting our environment. Growth took off, but in the wrong direction, into our sensitive eastern rural lands that are essential for protection of vulnerable species, our water supply and clean surface waters downstream.

The wetlands lost in this process are integral in our Southwest Florida watersheds. They clean and filter our freshwater and act as incredible flood mitigators.

The lack of enforcement and appropriate standards added pollution from Florida's failing water treatment plants and exacerbated our water quality problems.

Insufficient water quality regulations continue to result in unacceptable amounts of pollution entering our waterways, further stressing impaired ecosystems.

This system has reached a breaking point, and the water quality disasters of the past few years revealed the devastation these failures had on our environment, our economy, our quality of life and our health.

Thankfully, when things get bad, citizens demand change. And change we did see.

The myth that the economy was somehow separate from the care and protection of our natural resources was debunked. We celebrated Gov. Ron De-

Santis' moves to re-establish much needed leadership and credibility at the South Florida Water Management District Governing Board.



## Florida Specifier

### Why not include your lab in our 2020 Environmental Lab Directory?

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

You're invited to complete the form below, providing details about your lab and its analytical capabilities. **There is a fee of \$200 to list your lab this year.** (*Fee waived for Specifier advertisers, and 2019 FRC exhibitors.*) In addition to your listing in the directory, **your lab will also be included in a special lab listing on our Enviro-Net website.**

Please type or LEGIBLY print the information requested and return as soon as possible to Mike Eastman via fax at (321) 972-8937, e-mail mreast@enviro-net.com or mail to P.O. Box 2175, Goldenrod, FL 32733. You can reach us at (407) 671-7777. The deadline for submissions to the August Lab Directory is **Friday, July 5, 2020.**

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

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

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

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We were, and are, encouraged by the necessary investments in Everglades Restoration projects and addressing water quality treatment as part of the massive C-43 Reservoir in the Caloosahatchee watershed.

However, all this momentum could be at risk if powerful interests have their way. Despite massive complexity and costs, the state is moving forward with its plans to take on the Clean Water Act 404 permitting program from the U.S. Army Corps of Engineers, meaning that permits for the destruction of wetlands will be fast-tracked.

This is particularly concerning as we face the construction of three massive toll roads through some of our state's most important wetlands. These roads, if realized, will have terrible effects on our water quality. The last thing we need is fast-tracked wetland destruction permits.

Getting Floridians back to work and reviving our economy is essential; however, making sure it is done in a manner that ensures economic viability now and in the future is paramount.

Key to this is understanding that, if we wish to recover our economy, it must be done within the context of safeguarding and supporting our natural resources.

Simply put, going backwards is not an attractive option. Protecting nature is protecting our economy, our quality of life and our health.

*Ryan Orgera is the CEO of the Sanibel Captiva Conservation Foundation in Sanibel and Robert Moher is president and CEO of the Conservancy of Southwest Florida in Naples.*

#### MATS

From Page 9

inappropriate given the HAP-specific focus of CAA Section 11 for monetized particulate material co-benefits to be the primary determinative factor in EPA's appropriate and necessary finding.

Nominally, the focus of the new rule is mercury but the EPA's reach for ignoring contaminants in air emissions based on perceived cost-benefits is much broader.

Recent rule reviews of particulates and ozone have left existing standards in place even when expert data interpretation justified tighter exposure regulations or lower standards.

The revised mercury rule's lax new cost-benefit requirement is a bulwark against any future reductions of air emission standards across a broad category of air contaminants.

In what seems to be the most tortured legal reasoning, the EPA said of the new rule that it "has concluded that making this determination that it is not 'appropriate and necessary' does not remove coal- and oil-fired electric generating units from the list of affected source categories for regulation under Section 112 nor does it affect the status of the MATS rule, which remains in effect."

This argument makes the point that while EPA retains the authority to regulate coal- and petroleum-fired electric generating units, it has almost completely abdicated any effective and accepted means to do it or any interest in further addressing the most dangerous element associated with fossil fuel combustion.

Beyond the science and legalities of the rule, the agency justified the revision to provide "regulatory certainty," as it is to justify almost every other of the more than 95 rules that it has modified or rescinded over the past three and a half years.

Changing the rule engendered rare bipartisan public criticism from Congress.

Sen. Lamar Alexander (R-TN), chairman of an energy and water appropriations subcommittee, and Sen. Carper (D-DE), the ranking democrat on the Environment and Public Works Committee, wrote in an opinion column that "(t)he gains we have made over the past decade to protect children and families from dangerous mercury pollution should not be lost. The mercury rule has been a success, and changing it just doesn't make sense."



# Game-changing regional wastewater plan in Panhandle moves forward

By ROY LAUGHLIN

After months of planning, negotiations and incremental progress, a regional wastewater treatment system for Santa Rosa County, the city of Gulf Breeze and the Holley-Navarre Water System is poised to begin planning and construction to make it a functioning reality.

Gulf Breeze was the final member of the trio to approve a memorandum of agreement in early April that outlined a mutually-agreeable cooperative implementation plan.

Santa Rosa County and the Holley-Navarre Water System approved the plan at meetings in March.

The agreement provides opportunities and benefits to the three parties and will have multiple benefits for residents of Santa Rosa County.

The most important one is that Santa Rosa County utility companies will no longer discharge their treated wastewater into Santa Rosa Sound or Choctawhatchee Bay.

Santa Rosa took the first steps to end effluent discharges into Choctawhatchee Bay and Santa Rosa Sound almost two decades ago, according to local newspaper accounts, when the county first approached Eglin Air Force Base officials seeking a landside disposal site for their wastewater effluent.

Then, in early 2018, the U.S. Air Force and county officials agreed in principle to a land lease. And in mid-2019, the county approved a 25-year lease for 200 acres of land for a total cost of \$210,000.

The county announced that it would construct a rapid infiltration basin system for treated wastewater disposal on the leased land.

Two HNWS treatment plants on the south and north sides of Santa Rosa Sound are close enough to use the planned RIBS site leased by the county.

In late 2019, HNWS began negotiations to use the planned sprayfield.

HNWS planned to build a pipeline to carry effluent to the Eglin AFB RIBS site,

ending the utility's discharges to Santa Rosa Sound.

HNWS also needed a new location for wastewater disposal as a long-term solution to an emerging problem. The utility faces a November 2022 permit renewal deadline for its wastewater treatment plant.

Without an increase in disposal limits, the utility would not be able to accept new customers, potentially throttling real estate development, an important economic engine for the area.

By late 2019, HNWS had an agreement in place with Santa Rosa County to construct a pipeline to the planned Eglin AFB RIBS to transport wastewater from its Navarre Beach and Pepper Road wastewater treatment plants.

The city of Gulf Breeze Fairpoint Regional Utility System is the third party in the expanded plan.

FRUS was interested in increasing its reuse water capacity. Local homeowners could use it for landscape irrigation, decreasing the demand for potable water among utility users overall.

FRUS was originally excluded from negotiations between Santa Rosa County and HNWS.

But over the past several months, with involvement from State Rep. Alex Andrade and State Sen. Doug Broxson, FRUS was able to enter the negotiations.

FRUS is slated to receive 200,000 -

500,000 gallons a day of wastewater from HNWS.

Gulf Breeze's utility will increase its advanced wastewater treatment capacity so that the treated effluent from the additional wastewater will meet the tougher reuse water quality standards.

The memorandum outlined a four-phase implementation plan that connects Santa Rosa County RIBS with HNWS and the construction of a pipeline between HNWS and FRUS' wastewater treatment plant in Gulf Breeze.

In Phase 1, the agreement requires expansion of Santa Rosa's RIBS field so that it can handle additional wastewater from the HNWS plant.

Along with expanding the RIBS field on Eglin Air Force Base, HNWS will construct a 20-mile pipeline from its mainland wastewater treatment plant following a northerly route to the proposed RIBS site.

In Phase 2, HNWS will construct a pipeline from its Navarre Island WWTP to the mainland plant, and then a pipeline to Eglin AFB's RIBS sprayfield.

When this is complete, the wastewater treatment plant on Navarre Island will no longer release effluent to Santa Rosa Sound.

During Phase 3, a pipeline between the Gulf Breeze wastewater treatment plant and HNWS' wastewater treatment plant will provide Gulf Breeze with a guaran-

teed 200,000 - 500,000 gallons of wastewater a day destined for treatment to reclaimed water standards.

Gulf Breeze is responsible for securing funding for the pipeline and treatment system expansion.

In Phase 4, the Navarre Beach wastewater plant will be upgraded so that its effluent meets reclaimed water standards. That advanced treatment effluent will be sent to Gulf Breeze.

As originally planned, Phase 1 construction of the pipeline from HNWS' plant was expected to begin in May. However, COVID-19 pandemic closures have affected the schedules.

Funding for this regional wastewater plan will come from several sources.

Funding from the Deepwater Horizon oil spill RESTORE trust fund will pay for HNWS' pipeline construction. Local news reports said the Northwest Florida Water Management District is committed to providing additional project funding.

It has been a long time coming, but this complex, interconnected wastewater treatment plan will provide multiple reuse water and public health benefits to Santa Rosa County residents.

The schedules to complete the plan's different components may be somewhat uncertain due to the pandemic, but the public health benefits likely ensure its completion.

## New conservation, wildlife refuge funding

Staff report

Funding for various wetland conservation projects in North America was recently announced by the Migratory Bird Conservation Commission.

The commission allocated \$22.1 million to the U.S. Fish and Wildlife Service and its partners to conserve or restore more than 160,000 acres of wetland and associated upland habitats for waterfowl, shorebirds and other birds for 22 projects in 15 U.S. states.

Partners will match these grants with an additional \$50 million.

Wetlands provide many economic, ecological and social benefits.

In Florida, Gulf Coast Watersheds Conservation will receive \$1 million to restore and acquire 6,671 acres of wetlands and hardwood forest in Florida's Gulf Coast area.

These watersheds are critical in supporting a variety of migratory bird species.

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# UGA technology researcher sees golden opportunity for fiber reuse

By ROY LAUGHLIN

If Gajanan Bhat's hunch is correct, recycling textile fibers into acoustic insulation is a technology with a huge upside ahead of it.

"If you're making products, (recycled textile fibers) will work as well as new fibers. So we are trying to blend them with something else that will give new life to old fibers," said Bhat, PhD, Georgia Athletic Association professor of fibers and textiles and department head of the College of Family and Consumer Sciences at the University of Georgia.

The researcher has a current contract to recycle cotton fibers into acoustic insulation.

The key to technology development, according to Bhat, is to engineer products using available materials that meet the specifications for its use.

In the case of cotton fiber insulation, "we compact them with high pressure and thermoplastic binder fibers. That welds the natural fibers. Water does not penetrate it," said Bhat.

This is a high-tech approach to recycling and product engineering.

The cotton fiber recycling project is supported by a company in New Mexico that wanted to find a use for denim scraps and old denim clothing.

Bhat noted the appeal of plant fibers in

general.

"We want biodegradable materials, but we want them to last as long as we use them. In use, it will last for many years."

After that, he said, acoustic insulation materials that are no longer needed can be composted for disposal. Unlike some synthetic textile fibers disposed of, they will not lurk perpetually in landfills.

The opportunities for product development aren't limited to using cotton and could expand to use any local source of sufficiently abundant plant fibers. Linen, jute and other plant fibers are just as potentially useful.

Synthetic textile fibers could also be used, but because they lack biodegradability in most cases, they would persist in landfills when discarded. Combustion would be one way to dispose of synthetic fiber materials.

The sources of recyclable fibers can be pre-consumer manufacturing processes, such as making yarn and cloth, or recovery from post-consumer materials.

In recent years, the U.S. produced 14.5 million metric tons of textile wastes, according to a recent review. Europe, with 16 million metric tons, was not far ahead.

Sixty million metric tons of waste textiles are produced in the rest of the world annually. China dominates the remaining global textile waste production by a wide margin.

Cotton is the prevalent natural fiber waste globally with 25.5 million metric tons in waste streams. Jute, at 3.2 million metric tons, and wool, at 1.2 million metric tons, are a fraction of cotton's mass in waste streams.

## The market

The market is not always broken up by uses, but rather by materials. The properties that make a good thermal insulator usually make good acoustic insulation, Bhat noted.

According to Grand View Research, the insulation market is dominated by three types of insulation materials: rock wool, fiberglass wool insulation and foamed plastics.

The first two types have huge markets because of their use in construction. Foamed plastics are most commonly used in automobiles and other manufactured items.

Compressed insulation materials, such as those Bhat is working with, are part of a very small fourth group of acoustic ma-

terials, at most one quarter the size of any of its competing product classes.

Nevertheless, within specialty markets the potential dollar value of acoustic insulation could be as high as \$17 billion annually within five years, according to *Global Newswire*.

They noted that part of the increase in demand will be led by stringent regulations to lower noise levels in factories and by consumer products including automobiles.

Some of the materials currently used to meet energy efficiency guidelines for thermal insulation, including rock wool and fiberglass wool, will also be tweaked to meet acoustic insulation standards.

Acoustic installation will not be an entirely new product category although new products with special characteristics, such as composite insulation made of natural fibers, could have favorable opportunities to gain market share, particularly in manufactured items.

Likely, few readers have ever purchased acoustic insulation as a consumer product, but most would not buy a consumer product in certain categories without it.

Acoustic insulation prevents dishwashers, refrigerator compressors and other household appliances from becoming a persistent annoyance. They help make automobiles traveling on freeways an oasis of peace, and they are widely used in space dividers and ceiling insulation in offices and retail space.

Bhat said that they could be used far more widely in homes than at present, particularly in multi-unit dwellings.

He began his R&D career over 30 years ago looking for ways to recycle polyester carpet fibers into another generation of useful products.

His more recent research focuses on natural as well as synthetic fibers and new uses for them.

But he's also looking at sustainable recycling.

"We are trying to look at sustainability overall but even at the end of the life of the car when it is disposed of, the compositions are biodegradable," he said. "They can be disposed of and they will break down."

That's the general idea behind much of his research these days, and it's part of a larger trend both in waste management and sustainable development.



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## FPL installs floating solar panels at Miami airport

By BLANCHE HARDY, PG

Florida Power & Light Co. and Miami-Dade County recently partnered to install a half-acre, 402-panel floating solar array at Miami International Airport.

It is the first floating array at an airport in the state.

The array, in Blue Lagoon, is visible from planes flying over the airport and by vehicle occupants traveling on the west-bound side of the Dolphin Expressway.

FPL anticipates the array will generate up to 160 kilowatts of electricity and prevent 165 tons of carbon dioxide emissions annually.

The system will be used as a test site for solar energy research with an emphasis on solar panels on water.

"We're working to make Florida a world leader in solar generation with 18 solar plants in operation, 10 more coming online this year and a plan to install 30 million panels across the state by 2030," said Eric Silagy, president and CEO of the power utility company.

"This unique project will add to our solar expertise as we explore new ways to deliver more affordable clean energy to our customers," he said. "Importantly, the so-

**SOLAR**  
Continued on Page 16



**INDUSTRY**

From Page 1

approval to move forward. His company's other projects are active and ongoing.

The project pipeline at companies whose officials we interviewed is full and continues to flow as of early May.

Jim Langenbach, PE, senior principal environmental engineer with Geosyntec Consultants in their Titusville office, said his firm's projects remain active.

Everyone we spoke to said they expected work to continue with minimal interruption through the summer.

**Waste handlers, labs busy**

Clark Environmental Inc. in Mulberry is a waste hauling, handling and disposal company. Jim Clark, vice president and general manager with the firm, said that road construction contractors who dispose of contaminated soils as they grade rights of way are working with less interference from heavy traffic and are delivering contaminated materials regularly.

Other industrial clients continue to use Clark as normal. Even as some waste generating activities have slowed by reduced economic activity, the waste stream is still being produced, the usual disposal regulations remain in effect and producers are required to practice proper disposal methods.

Most analytical laboratories continue to operate and remain busy with ongoing monitoring analyses.

June Flowers, quality systems director at Flowers Chemical Laboratories in Altamonte Springs, said her clients with permits that require regular reporting are operating as usual.

She noted that some utilities that operate their own in-house labs have recently sent samples to FCL for analysis due to staffing shortages during the pandemic.

That additional work is notable but not overwhelming, she added.

FCL has made some operational and procedural adjustments to protect staff health. Flowers said that a few client projects planned for the near future were temporarily put on hold pending the end of the lockdown.

**Protecting personnel**

Efforts to protect personnel have been made at all the companies we spoke with. The companies have adjusted in different and ingenious ways.

Consulting companies now have staff working from home to increase social distancing. Some companies asked some employees to work from home if they had heightened health risks.

Flowers noted that the laboratory staff is working every day in the facility where instruments are set up. Several people are now working a staggered second shift, a strategy that reduces staff contact.

The second shift comes in during the late afternoon with about two hours of necessary overlap interaction with the first shift staff, as needed. Other employees are working during evening hours.

All companies we spoke to have reduced staff interactions with clients and the public. Consultants said they now rely almost entirely on phone and electronic communication with clients and state agency personnel.

In those few instances when face-to-face contact has occurred, the parties practice personal distancing and other safety protocols to avoid the possibility of virus transmission.

Personnel who usually work at project sites away from company facilities are also following new protocols to avoid contracting or carrying COVID-19 into the workplace.

FCL, for example, now directs its couriers not to enter client buildings. The clients leave sample packages at outside pickup points.

Steve Hilfiker, president of Environmental Risk Management Inc. in Fort Myers, said his field personnel now take vehicles home overnight.

They may now work extended hours over a single day and return home where, in the past, they may have worked two regular-length days and stayed overnight in a hotel.

In offices and labs, frequent surface decontamination and mask use are now routine practices. In those facilities that remain open, surfaces are wiped with disinfectants at least once each day.

Frequently-used surfaces are cleaned as often as every hour, including door-knobs, doors, keyboards, desk surfaces and others that people are likely to handle.

Lunchrooms are closed and many people now eat lunch outside.

At least one consultant who still works out of an office said the cleaning of personal work areas is now done by everyone and the dedicated cleaning staff handles the common areas such as floors and bathrooms.

Langenbach said he holds his weekly staff meeting just outside of his Titusville office building where his staff can spread out in a setting where virus transmission is lessened.

Other companies are using phone and video conferencing within the offices to maintain social distancing.

**CDC guidelines**

Centers for Disease Control and Prevention guidelines are the basis for protective measures taken in offices and vehicles, and on project sites.

Several interviewees described the need to make their own hand sanitizers in-house using isopropanol and aloe lotions, or other suitable products. They did this due to the shortage of available commercial product.

Flowers described even more elaborate measures now being used in her lab. In addition to making hand sanitizers, they use some of their stock of laboratory isopropanol to disinfect surfaces and instrumentation.

She said that as paper towels became hard to obtain, they began using shop wipes, which she described as much longer-lasting and more effective than paper towels.

Clark noted that his staff and drivers now carry a homemade kit with hand and vehicle disinfectant and towel wipes.

These examples illustrate that, although CDC guidelines are the basis for effective COVID-19 avoidance, the industry practitioners themselves are effectively adapting the guidelines and improvising implementation tools.

One interviewee, the director of engineering at a large firm, said that the company has industrial health and safety and related-field experts on its consultant roster and have relied on them for some protocols.

On project sites, both contractor and client procedures may apply to workers. Our reporting indicated that adjustment to the new standards has been smooth, with minimal adverse influence on workers or project progress.

**DEP open for business**

Interviewees working within the PRP, permitting and water quality programs all said that the Florida Department of Environmental Protection is open and functioning.

DEP is still expecting to receive analytical results from drinking water suppliers and wastewater treatment plants.

Permits with monitoring requirements such as NPDES have not been waived.

At least three respondents noted that routine contact with PRP program staff and inspectors continues as usual. They said some DEP and water management district staff are working from home.

In one case, a consultant noted that his DEP contact's home was closer to a job site needing inspection than his local DEP office. Inspections have occurred more quickly as a result.

The same is not necessarily true of municipal and county inspectors.

One respondent specifically mentioned the Florida Department of Health on-site wastewater treatment facility inspections have been slow or delayed in East Central Florida counties.

**Employee retention, hiring**

None of the officials we spoke with

**INDUSTRY**

Continued on Page 15

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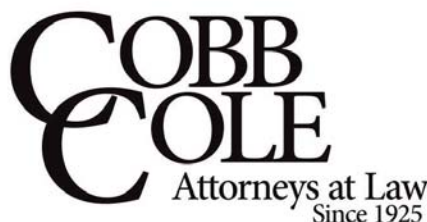
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### EPA From Page 1

Instead, the agency said the policy end will be determined by the course of the pandemic.

This is the first time, EPA watchers noted, that the agency promulgated an order like this without an ending date.

#### Florida's delegated responsibilities

The EPA delegates responsibility to states for enforcement of many of the monitoring and compliance requirements under the Clean Air Act, the Clean Water Act and the Safe Drinking Water Act.

The EPA memorandum on COVID-19 enforcement will therefore affect many of the activities of the Florida Department of Environmental Protection.

In early April, DEP followed the EPA memorandum with its own emergency order noting that "the department will continue to carry out all inspections, testing, data and file reviews, and other compliance verification activities to ensure full compliance with regulatory and pollution prevention requirements, including the pollution notification requirement under Section 403.077, Florida Statutes. In the event of noncompliance with any such requirements, the department will continue to fully execute its compliance and enforcement duties."

The major leeway DEP provided in its memo is a 30-day compliance extension for a set of specified deadlines.

Those activities include conducting or reporting periodic monitoring; deadlines to respond to and complete cleanup of mineral oil dielectric fluid; deadlines to file an application for an extension of permit duration or renewal under specified statutes or rules (except for air permits issued under Title V of the Clean Air Act); the expiration date for an existing permit lease (except for air permits issued under Title V of the Clean Air Act); deadlines to obtain a permit for, and commence construction of, the initial phase of a system for which a conceptual permit was issued under Part IV of Chapter 373, FS; and the time deadline for major sources of any pollution to pay Title V fees.

Submission of annual operating reports for air permitted sources were also modified. Those must have been submitted by midnight on May 1, 2020.

And finally, the May 22, 2020, sunset date specified in subsection 62-210.700 (6), Florida Administrative Code, was extended 30 days to June 21, 2020.

DEP's emergency order applies to other state agencies including water management districts and local governments acting under a delegated authority agreement. But they do not apply when local entities are acting on their own behalf.

Most, however, have adopted similar or consistent policies and adjustments to their enforcement activities.

For example, the St. Johns River Water Management District adopted a similar emergency order and stipulated a nearly identical emergency authorization for extensions of certain regulatory deadlines.

#### Site fieldwork decisions

On April 10, EPA issued its Interim Guidance on Site Fieldwork Decisions Due to Impacts of COVID-19.

This guidance concerns response actions for cleanup and emergency response sites where EPA is the lead agency or has direct oversight.

In its memorandum, the agency neither specifically directed work to continue or to end. It only directed that the work continue under the Centers for Disease Control and Prevention's COVID-19 guidelines.

If work is to pause, the memorandum directed regions to continue monitoring site conditions and plan to resume work as soon as possible.

Work at these sites may also be discontinued if state or local regulations require delay. Additional decision-relevant details are explicitly provided in the memo.

Many of Florida's remediation and emergency response programs continue to operate as they were deemed essential activities under Gov. Ron DeSantis' emergency declaration.

Of special interest are remediation pro-

grams such as the state Petroleum Restoration Program that continues to operate with few impediments.

PRP staff are still on the job, even though some may be working from home.

Contact with project officers has not been interrupted or significantly delayed and inspections are occurring as needed.

The above generalizations apply statewide except for the state's three southeast counties where the pandemic has been the most severe.

Palm Beach, Broward and Miami-Dade counties have a stricter lockdown that continued after May 1 when DeSantis eased some of his emergency order stipulations elsewhere in the state.

DEP's public meetings and hearings as in-person events were canceled at the beginning of the pandemic. The governor's directive and a DEP document allow electronic conferencing as a substitute for public meetings.

DEP's online calendars, however, indicate that the number of public meetings has been quite low. And it appears that the number of advertised public meetings at the state's water management districts has also been substantially reduced.

When DEP followed EPA's lead to extend deadlines for reporting and meeting permit requirements, a few news and opinion outlets claimed that it was now "open season" for polluters.

That histrionic characterization, so far, has not been experienced.

#### EPA discretion letter

Writing on behalf of Earthjustice, Patrice Simms, vice president of litigation, characterized three unusual features of the Trump administration's COVID-19 enforcement discretion letter.

First, she noted that "the EPA limits the policy neither to specific facilities or particular facility types nor along any geographic or exposure-related parameters."

Second, she pointed out the lack of transparency for the public that will ensue.

She is particularly concerned that communities adjacent to out-of-compliance facilities would lose valuable notifications of contamination that allows them to protect their health and property.

Third, neither the EPA in its original memorandum nor DEP gives a specific date for ending discretionary enforcement.

Simms, who wrote or helped write many enforcement letters during her seven years at the EPA, noted that "an extension of enforcement discretion in my experience always has an end date. And that date is calibrated to the agency's expectation about how long the unavoidable and unforeseeable event or circumstance will continue to make compliance impossible."

She said that EPA in the past routinely included such end dates even when agency staff and letter writers had no clear idea when conditions would end.

If conditions persist, she noted, the EPA is perfectly capable of extending any deadlines. She suggested that by not specifying an end date, "EPA is shifting the burden to force itself to justify the removal of the enforcement discretion."

Jerry Phillips, director of Florida Public Employees for Environmental Responsibility and author of a number of reports on lax enforcement by Florida environmental agencies, said that while he has not paid particular attention to notifications since the emergency order was released, he did notice an unusually low number of sanitary sewer overflow notices posted.

Other states, such as Colorado, have clearly stated that the state will continue to enforce laws that pertain to spills, releases and emissions even if reporting requirements are temporarily suspended.

In Florida, during the first six weeks under the emergency order, delays in reporting and filing deadlines for permit requirements have not caused egregious contamination as far as is known.

#### The end of the order

The federal shutdown order formally ended on May 1, but effectively ended on Monday, May 4, the day when many work-

EPA  
Continued on Page 15



**INDUSTRY**  
From Page 13

said their companies had furloughed personnel who wanted to continue working. They have honored requests for time-off for those who had concerns about contracting the virus, usually just a few people in an average sized company.

Langenbach said that Geosyntec makes significant investments in its employees through mentoring and fostering skills development, so it is a primary goal to keep those people on the payroll.

There has even been some hiring. FCL hired two employees who began work after the shutdown started, planned hires recruited before the shutdown.

Other respondents said that they are always looking for the right person and have not stopped reviewing resumes.

Many of the people we spoke to said they hoped to begin hiring later in the summer, contingent upon a significant reduction of COVID-19 infection rates.

On the whole, however, the pace of resume reviews, employee interviews and prospects for hiring in early summer has slowed as compared to the past couple of years when many firms were staffing up to meet expanding workloads in a tight labor market.

To date, environmental industry work on the private sector side has continued with minimal interruption. That governments foot the bill for much of the private sector project work is a primary reason for this "business as mostly usual" status during the shutdown.

**Academic research**

Academic research is a source of much of the science used by Florida environmental professionals as well as the source of many entry-level personnel for industry positions.

The research effort conducted at state universities has been slowed but not halted altogether. Some of the research was declared "essential" and continued under state guidelines for social distancing and personal hygiene practices.

Althea Paul, media relations manager for the University of South Florida, noted in an email that a USF/St. Petersburg anthropology professor was recently awarded funding to co-conduct studies related to the true economic losses of red tide.

So, research does continue, she said. "Regarding field projects, there are some that have been impacted due to social distancing guidelines and travel restrictions," Paul noted.

Lynda Figueredo Rysavy, associate director of media relations at Florida Atlantic University's Harbor Branch Oceanographic Institute, said that many activities have continued through the pandemic including aquaculture research and Indian River Lagoon Observatory data collection.

She noted that three authority levels have affected continuation. The first was Gov. Ron DeSantis' COVID-19 lockdown declaration. The second was similar mea-

**EPA**  
From Page 14

asures taken by FAU. Finally, local jurisdictions including St. Lucie County also issued and enforced stay-at-home orders.

ures taken by FAU. Finally, local jurisdictions including St. Lucie County also issued and enforced stay-at-home orders.

Rysavy said it was difficult to provide generalizations about how all researchers complied, but research efforts have continued.

**Bleak state budget prospects**

Regardless of how and when the pandemic ends, the Florida environmental industry's economic status is likely to change by the end of the year. Economic losses are sure to influence all business sectors.

Florida's 2020 budget was replete with continued environmental program funding. That will likely change, but it is too early to predict by how much.

As of mid-May, DeSantis had not officially received Florida's 2020 budget because COVID-19 activities had priority for his attention.

DeSantis will have two weeks following the budget's official delivery from the Florida Legislature to red-line and approve the budget.

He also has the option of scheduling an additional legislative session to draft a new budget informed by the economic influences of expected budget shortfalls.

The longer-term effect on Florida's budget is likely to be bleak.

The Center on Budget and Policy Pri-

orities, a progressive think tank, said that states will have an aggregate budget shortfall of \$500 billion through the 2022 fiscal year.

As of mid-May, Florida's environmental consultants, laboratories and other providers have remained busy and adjusted to pandemic health guidelines.

**RESERVOIR**  
From Page 1

of design work on the project and ensure the U.S. Army Corps of Engineers approves the project according to schedule.

The district said that critical site preparation and preliminary design work is now underway

The reservoir will store 240,000 acre-feet of water and includes a stormwater treatment area being built by the district.

That STA is a 6,500-acre man-made wetland area crafted to treat water discharging from the reservoir.

Construction of the STA is underway and is expected to be complete by the end of 2023. After the site preparation, the district will begin construction of canals and berms.

The entire project is expected to cost more than \$1.8 billion, create hundreds of jobs and provide a significant boost to the local economies south of Lake O.

The reservoir is currently set to be com-

pleted in 2028.

The SFWMD noted that the EAA reservoir was conditionally authorized under the federal Water Resources Development Act of 2000. The project is considered a key component of CERP by the state.

However, excitement concerning the reservoir has recently waned a bit.

On May 15, Rooney, U.S. Senator Marco Rubio and U.S. Representative Brian Mast issued a joint statement condemning a recent U.S. Army Corps of Engineers' decision that could delay the project for up to a year.

"The corps' bureaucracy has proven an impediment to this vision shared by the president, Congress, and the state of Florida by incorrectly interpreting the law and insisting that the EAA requires a 'new start' designation," said the statement.

"Congress was crystal clear that the EAA reservoir is a part of the Central Everglades Planning Project and does not require a 'new start' designation."

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## SPILL

From Page 3

deep waters of the Gulf will persist for decades—if not most of the rest of this century.

Much of the early biological effect studies attributed the use of dispersants to the remarkable extent of oil contamination and its bioaccumulation.

The C-IMAGE program took a closer look, however, at the physical dispersal of oil at high pressures in deep water. The physicists found that even though the pressure at the wellhead was about 200 atmospheres, the pressure release from the oil's geological reservoir was immense.

In the summary of its study, USF researchers summarized that "... oil was 'atomized' into very small droplet particles that remained in deep water forming submerged plumes, in the absence of the use of chemical dispersants ... High pressures resulted in the differential rates of partitioning of toxic substances contained in oil into seawater, increasing their toxicity to deep-sea life."

The relevance of this information will inform future oil well blowout responses.

The Trump administration opened the entire offshore Gulf of Mexico for leasing. The leasing was not as active as the federal government expected because onshore fracking wells are now favored.

However, until 2020, when the oil mar-

ket collapsed, there was no great decrease in oil production from Gulf of Mexico waters.

USF noted in its program description that over half of the oil from the Gulf of Mexico today comes from wells over one mile deep, and the deepest are nearly two miles deep.

Since the first oil tanker spills in the 1960s and 1970s, conventional wisdom was that cold temperatures and pressure in deeper waters retarded oil degradation by microorganisms.

That thinking was the basis for the development and use of chemical dispersants.

However, the C-IMAGE program instituted a marine microbiology investigation that bought modern genetic methods to the study of microbial communities in the deep sea. Their studies discovered that oil degradation under higher pressures is, in fact, slower.

"Using new genome sequencing and gene mapping tools never before applied to oil spills, researchers identified the impacts on bacterial communities in near-shore areas, including effects on species abundance, composition and gene expression," they reported. "High-pressure experiments concluded that the rates of bacterial degradation of oil were retarded in the high pressures of the deep sea and in the presence of dispersant chemicals."

As a result of the oil spill, BP paid bil-

ions of dollars in combined criminal and civil fines and restitution. A portion of that money was used to create the Gulf Coast Restoration Trust Fund, a portion of which is allotted to Florida for spending on recovery efforts from the effects of the spill.

The University of South Florida has used \$36.6 million over the past decade to establish and fund their C-IMAGE program.

Beyond that, the program has yielded 250 research papers in the past decade and has supported collaboration at 17 partner institutions, both national and interna-

## AIR

From Page 6

land-Deltona areas.

ALA's report discussed several factors that influence particulates and ozone levels in ambient air. One is the source.

Florida has only a few coal-burning power plants left in operation so improvements in air quality around the Tampa Bay area and the city of Jacksonville reflect the phase-out of these regional soot sources.

In addition, the U.S. Environmental Protection Agency has promulgated rules and provided funding to help metropolitan areas phase out the use of older diesel engines responsible for higher levels of soot emission.

Current declining soot levels in Florida's air reflect the success of the agency's

efforts.

This year, the consortium published a two-volume summary of the decade of research on the Deepwater Horizon and IXTOC 1 spills, the Gulf of Mexico's two mega spills.

Since the earliest oil tanker disasters, years-long persistence of oil in the sea has been the focus of remediation and recovery efforts.

But the C-IMAGE program still has its work cut out for it, even after a decade of cutting-edge science and collaborative re-

search.

Landscape fires did not contribute excess soot particles this past year.

Higher air temperatures favor higher levels of ozone formation and make it more difficult to reduce levels where they are high. The report noted that the last six years have been the warmest ones globally.

Breathing soot and ozone harms human health. Long-term effects of breathing soot-laden air are most apparent in older people, while ozone affects children, those with asthma and other lung conditions, and older people with cardiovascular problems and lung problems.

In terms of mortality, Florida had nine deaths per 100,000 people, a relatively low mortality level considering the state's mix of large cities and rural areas.

These numbers help make the case unambiguously that reducing exposure to particulates from soot and ozone in the air people breathe has significant positive effects on human health that are worth the investment to maintain the low air pollution levels.

## SOLAR

From Page 12

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