

Florida Specifier

since 1979

The Next Full Moons

June's Full Moon reaches peak illumination at 7:52 a.m. EST on Tuesday, June 14, 2022. It's known as the Strawberry Moon.

July's Full Moon reaches peak illumination at 2:38 a.m. EST on Wednesday, July 13, 2022. It's known as the Buck Moon.

Practical Information For Environmental Professionals

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Volume 44, Number 3

A note to readers

With more and more people and businesses relocating to Florida, Environmental Professionals will be busier than ever.

Florida resources used for construction and recreation, the disposal of such, and hopefully the renewal have garnered national focus.

We need you; you are our Super Heroes.

—John Waterman,
Publisher

Fishing report 11

We're dip netting for shrimp on the Mosquito Lagoon and I brought my boss along — she showed an interest in catching crustaceans.

Business profile 14

Amy Yoder wants to make a difference. And through hard work is doing just that. Oh . . . and in her free time (what there is of it), she loves being with her horses.

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Have a story idea or lead?

Have an idea for a story? Would you like to submit a column for consideration? Please let us know. And remember to fill us in on your organization's new people, programs, new offices, projects or technologies — anything of interest to environmental professionals working in Florida. Send to *Florida Specifier*, 2901 1st Ave. N., Suite 202, St. Petersburg, FL 33713.

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'Tis the season to kill a lionfish

FWC issues challenge to curb population

STAFF & WIRE REPORTS

Depending on which Floridian you ask about "seasons," you may be surprised by the response: Hurricane Season, Snow Bird Season, or maybe even blackened season(ing). Regardless of the response, there's an acknowledgment of something having a beginning and an end, which makes the Florida Fish and Wildlife Conservation's (FWC) position on lionfish all the more eyebrow raising... there is no season per se. Those who desire can legally spear, net, and catch lionfish year-round.

Since 2015, along Florida's Emerald Coast in Destin-Ft. Walton, FWC's official Lionfish Challenge kicks off each year on the first Saturday after Mother's Day. The day is designated Lionfish Removal & Awareness Day, LRAD for those in the know.

The first LRAD was attended by fewer than 3,000 participants; the following



Photo courtesy of Ricardo Valera

The lionfish, a flourishing invasive species in U.S. Southeast and Caribbean coastal waters, is harming reef ecosystems because it is a top predator that competes for food and space with overfished native stocks such as snapper and grouper.

year attendance more than doubled to 7,000. The "R" in LRAD is for "removal" and the first year LRAD (ahem) netted 877 lionfish. To give perspective, 2022's LRAD was responsible for the removal of 13,835 lionfish.

Lionfish were identified as a problem by FWC in 2010

with the first known reported sighting dating back to 1985 off the coast of Miami.

Perhaps this pioneer lionfish was from a ship's ballast or, more likely, an accidental (or purposeful) aquarium release.

In an effort to raise awareness and somewhat control

the invasive species known as Pterois volitans and Pterois miles in Florida waters, FWC hosts and promotes a variety of events geared toward educating the public and removing lionfish from Florida waters. Over the years, the event has grown to include

To LIONFISH Page 2

Hotel world's largest with Smart Windows

By BLANCHE HARDY, PG

Lake Nona continues to lead the way in impressive technology. The city that has become well known as an autonomous vehicle front runner and the home and initiator of BEEP, the turnkey mobility autonomous shuttle network provider, is leading the smart pack once again.

The recently opened Lake Nona Wave Hotel boasts View floor-to-ceiling Smart Windows, and with more than 250 guest space options, the Wave is the largest building in the world with smart windows.

Smart windows are electrochromic. They tint, opaque or clear according to variables, including intensity and the timing of direct solar radiation.

View Smart Windows use artificial intelligence to automatically adjust light levels in response to the sun, so the windows increase access to natural light while offering unobstructed views. This eliminates the need for blinds and minimizes heat and glare.

View installations also include a cloud-connected smart building platform that can be extended to customize individual user preferences.

Smart windows increase building sustainability and cost savings by reducing



Photo courtesy of the Lake Nona Wave Hotel

The Lake Nona Wave Hotel is the largest building in the world with smart windows. View Smart Windows use artificial intelligence to automatically adjust light levels in response to the sun.

building energy consumption and carbon emissions. Industry estimates indicate electrochromic glass can cut peak energy use for cooling and lighting by roughly 20 percent.

Five buildings in Lake Nona have smart windows, and the community plans to install them in an additional 30 buildings.

"View Smart Windows are a focal

point among the innovative new technologies on display at the Lake Nona Wave Hotel and featured in many new buildings under construction in Lake Nona," Tavistock Development Company President Nick Beucher said. "Our partnership with View is a critical part of our strategy to reimagine the built environment to improve how people live, travel, and work."

To SMART Page 18

Efforts continue to bolster St. Pete's Lassing Park

By RACHEL ARNDT

The multi-year living shoreline project, sponsored by Tampa Bay Watch and the City of St. Petersburg at Lassing Park, began with 250 oyster reef balls deployed by a group of volunteers in just two hours.

The project will help stabilize about 700 feet of severely eroding shoreline. It also provides hard bottom habitats for fish and wildlife resources, promoting water quality improvements in the Tampa Bay ecosystem.

Lassing Park is one of the few remaining undeveloped shorelines in St. Petersburg. It has been part of the St. Pete Park system since 1924.

During avian migration, Lassing Park is a feeding ground and rest stop for many species of shorebirds, including the federally threatened Red Knot.

Through the decades, this park has had severe erosion due to the impact of large wind-driven waves and the wake from passing boats and ships. Lassing Park is bordered to the north and south by hardened concrete shorelines that amplify the intensity of waves



Photo courtesy of Tampa Bay Watch



Dozens of volunteers deployed reef balls to address about 700 feet of severely eroding shoreline at Lassing Park. It is one of the few remaining undeveloped shorelines in St. Petersburg.

and wakes hitting the shoreline.

The creation of a living shoreline project, including oyster reef balls, oyster shell reefs, and coastal wetland

plants, will prevent the further erosion of Lassing Park, restore lost habitat systems to the bay, and improve water quality through natural biological filtration.

Once stabilized, the shoreline will provide optimal conditions to the settlement

and reintroduction of coastal marsh, mangroves, and upland species. Wetland marsh communities function as an essential fisheries habitat and play a vital role in the health and water quality of the estuary.

More than 85 percent of all fish and shellfish spend some part of their life in the protected estuarine waters of coastal wetlands. This type of habitat meets the Magnuson-Stevens Act definition of Essential Fish Habitat as "all waters and substrates necessary to fish for spawning, breeding

feeding or growth to maturity," according to the Fishery Ecosystem Plan of the South Atlantic Region.

This biological community is necessary for habitat required to support a sustainable fishery and a healthy ecosystem. The position of wetland marshes along the edge of estuaries makes them valuable for shoreline stabilization and buffer uplands from storms. They also act as a filtering agent for stormwater runoff and serve as a vital link in the marine food web. ●

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From LIONFISH Page 1

cooking demonstrations, artists, and other performers. Lionfish tartare, anyone?

Lionfish pose a challenge to Florida waters as they have no known predators, they are extremely tolerant of water conditions, and have high rates of reproduction. In their native waters, they are not an issue due to a yet-to-be-identified "control mechanism," which could be attributed to the aquatic environment in the South Pacific and Indian Ocean, or perhaps a predator species.

What's the problem? Well, lionfish eat juvenile shrimp, crabs, grouper, snapper, and lobster...they are carnivores. Ironically, the species for which there are seasons, due to their cyclical breeding patterns, etc., are perfect prey for this somewhat apex predator.

An added feature that makes lionfish remediation challenging is their venomous spines. Anyone who has had the misfortune of stepping on a member of the Pterois family may have experienced a change in heart rate, abdominal pain, sweating, and fainting.

While deaths from lionfish "stings" are rare, the symptoms can last from 8 hours to a full month. The lionfish spines are part of their skeletal structure, with venom channeled through grooves in the spines retained only by the animal's flesh...the perfect delivery mechanism for anything unfortunate enough to come into contact with it.

Further illustration of the importance of unified remediation efforts is the lock-step collaboration between FWC and the National Oceanic Atmospheric Administration (NOAA), which has let FWC take the lead in dictating policy.

FWC's jurisdiction extends from the Florida shoreline to three nautical miles on the Atlantic side of the state and from the shoreline to nine nautical miles on the gulf side of the state. NOAA has adopted FWC's policies from where FWC's jurisdiction ends and theirs begins. Such collaboration demonstrates the importance of these remediation efforts.

So, next time you are sitting down at your favorite restaurant, be it as a native Floridian or snow bird, and you have the option of choosing lionfish off the menu, just know that you'll be doing your part to remediate this visually pleasing yet environmentally vexing visitor to Florida's waters. ●

JOHN WATERMAN

Publisher

Want to send a compliment or hash out a complaint . . . send it to the boss at JWaterman@FloridaSpecifier.com

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Florida governor vetoes solar net metering bill

STAFF & WIRE REPORTS

Florida Governor Ron DeSantis vetoed HB 741 that would have gutted net metering in the Sunshine State. Net metering is the policy which compensates solar owners for the excess electricity they generate and then sell back to the grid.

Environmental advocates campaigned for years to defend policies that support solar growth in Florida. Environment America collaborated with the Florida Solar Coalition and Alianza to generate more than 1,000 calls to the Governor to urge him to veto the bill. More than 250 Environment Florida members also emailed Gov. DeSantis with the same message.

Tampa Bay Regional Transit Authority to use electric buses

The governing board of the Tampa Bay Regional Transit Authority, TBARTA, has agreed to use electric buses on the proposed future transit system expected to be operational in 2030.

TBARTA originally planned to use hybrid diesel- and battery-powered buses. Electric buses will add an additional 20 percent to the initial proposed capital costs now estimated at \$180 million. To maintain operations on the 41-mile proposed route TBARTA plans to install 11 charging stations at eight locations in addition to the 15 chargers needed at the overnight depot.

Going fully electric will require 36 vehicles to operate the four planned routes from State Road 54 in Pasco County to downtown Tampa and on to the city of St. Petersburg.

Calculations, compiled by a federal Transit Agency matrix, put annual environmental savings at \$568,000 per electric bus, including better safety, reduced energy use and air quality benefits.

Florida State University named a top workplace for commuters

The Center for Urban Transportation Research named Florida State University as amongst the nation's best workplaces for commuters.

The center designated FSU a Best Workplace for Commuters 2022 on the strength of the university's transportation policies and practices that help to promote energy conservation, reduce traffic congestion, and cut related air pollution.

Some of the programs and initiatives leading to the award include the universi-



ty's all-electric bus fleet, campus shuttles, fare-free access to the City of Tallahassee transit system, fleet vehicles, ride matching through FSU Rideshare and electric vehicle charging stations.

Among the criteria FSU fulfilled is providing at least five means of support to help employees leave their cars at home, including designating a central point of contact for employee commuter questions and providing an Emergency Ride Home program for employees.

CSX honors six with inaugural Environmental Excellence Award

CSX has recognized six customers with its inaugural CSX Customer Environmental Excellence Awards for contributions to reducing carbon emissions through truck-to-rail conversions.

In 2021, the freight shipped by all customers on CSX rail instead of the highway avoided 11 million metric tons of carbon dioxide emissions, which is equivalent to the emissions generated from passenger vehicles driving 2.3 million miles.

Winners of the inaugural Environmental Excellence Awards include:

- Active Minerals International, LLC
- Amazon Logistics, LLC
- Cemex, Inc.
- Georgia Pacific, LLC
- Molson Coors Beverage Company
- Wal-Mart Transportation, LLC

FDACS Commissioner announces new statewide renewable energy goals

Commissioner of Agriculture and Consumer Services Nikki Fried has announced new statewide renewable energy goals to increase the amounts of renewable energy used by the state to at least 40 percent by 2030; 63 percent by 2035; 82 percent by 2040; and 100 percent by 2050.

The new program requires electric utilities report the amount of renewable energy they produce or purchase annually and require the Florida Department of Agriculture

and Consumer Services (FDACS) to review the reports and provide the state Public Service Commission with comments as to whether each utility will meet these goals.

North Florida Resiliency Connection on track to be ready by hurricane season

FPL and Duke Energy Florida have reached an agreement allowing the North Florida Resiliency Connection (NFRC) to remain on track to begin serving customers in time for the 2022 Atlantic hurricane season.

The NFRC will install state-of-the-art, storm-hardened transmission line to physically connect FPL's energy grid to Northwest Florida and help make Florida's energy grid even more resilient.

The NFRC will span 176 miles from Columbia to Jackson counties. In addition to improving day-to-day reliability and enhancing FPL's storm response, the transmission line unlocks about \$1.5 billion in benefits following the consolidated operations of FPL and the former Gulf Power.

Tallahassee awarded \$500,000 EPA Brownfields Assessment Grant

The USEPA has awarded the City of Tallahassee \$500,000 through its Brownfields Assessment Grant program. The grant funds will be used to conduct environmental assessments, cleanup planning and community involvement activities for properties located within and near Tallahassee's Southside.

The latest grant will help the City build upon its successes and maintain focus on the Southside and neighboring areas. Grant funding will become available after Oct. 1.

Little Wekiva River restoration, Oviedo Wastewater Rescue upgrades get funds

The U.S. Congress has passed a bipartisan bill to fund the federal government including two projects by Congresswoman Stephanie Murphy that will improve the environment in Central Florida.

It includes a grant for \$688,000 to restore the Little Wekiva River by removing sediment, recontouring the historic river flow, and replanting the basin with beneficial native plant species.

The City of Oviedo will receive \$900,000 to modernize the city's wastewater reuse system, increasing the amount of reclaimed water available to city residents, and decreasing the amount of potable water usage in the city. ●

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'Rights of nature' allows Orange County waterways to sue

By APRIL DAY

Orange County, Florida, is one of the largest and latest localities in the country to join a growing global movement advocating for the "rights of nature." In November 2020, the county passed an ordinance recognizing the rights of nature for waterways to flow, be protected against pollution, exist, and maintain a healthy ecosystem. The ordinance also allows guardians of nature to sue on its behalf. A case called *Wilde Cypress Branch et al. v. Beachline South Residential, LLC* and Noah Valenstein, Secretary of the Florida Department of Environmental Protection, was filed last year on behalf of several waterways. Stated differently, as for now, you can be sued by a waterway in Orange County, Florida.

Half a century ago in 1972, the idea that nature can sue for its own protection was born. Law professor Christopher Stone published an article in the *University of California Law Review* called "Should Trees Have Legal Standing? Toward Legal Rights for Natural Objects." He advocated for nature to have rights similar to humans. Stone argued that recognizing the rights of inanimate objects had precedent such as recognizing personhood in certain situations for corporations. The legal concept of standing requires suing parties (plaintiffs) to show that they were injured by the defendant, and that the

In the last 15 years, different countries, governments and localities around the world have begun recognizing the rights of nature. Ecuador, Pakistan, Canada, Mexico, Colombia, Bangladesh, Bolivia, New Zealand, Uganda, and India have all recognized the rights of nature through constitutional amendments, legislation, or judicial decisions.

court can give them a remedy. Without legal standing, a case is thrown out of court.

In 1972, the U.S. Supreme Court decided the landmark case *Sierra v. Morton*, throwing out a case by reasoning that an environmental group lacked legal standing to sue to protect the environment. What's important now is the dissent in *Sierra v. Morton*, where Justice Douglas wrote about the rights of nature, saying that public interest for the environment "should lead to the conferral of standing upon environmental objects to sue for their own preservation."

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amendments, legislation, or judicial decisions.

Orange County is not the first locality in the United States to have an ordinance that recognizes the rights of nature. It joins more than 30 other localities across the country, including, among others, Colorado, Pennsylvania, and Minnesota. After the lawsuit on behalf of several waterways in Orange County was filed, other localities within Florida have also tried to develop their own ordinances recognizing the rights of nature.

The rights of nature movement has received pushback from academics as well as state legislatures. For example, on learning what Orange County was planning to do, lobbyists in Florida secured passage of SB 712 in 2020, prohibiting such ordinances. This Florida statute prohibits a local government from passing a law recognizing

or granting any legal rights to a plant, an animal, a body of water, or any other part of the natural environment. This Florida state statute went into effect before the voters of Orange County adopted their local ordinance by a margin of 89 percent.

While the lawsuit in Orange County, if successful, would be the first time in the U.S. that the right of nature on behalf of a waterway would be recognized in court, several courts from New York to Oregon to Hawaii have already recognized the intrinsic rights of animals. Orange County is also significant because it is the largest county to have passed such a law, being home to around 1.5 percent million people.

Local communities face challenges when passing ordinances that recognize the rights of nature. For example, in the U.S., state or federal laws can trump local laws. Lawsuits can also prevent a local ordinance from going into effect, at least for the duration of the lawsuit, which is what happened to the Lake Erie Bill of Rights. That bill of rights recognizing the rights of a water body passed with 61 percent voter approval.

A judge will soon decide whether to throw out the case in Orange County. Either way, unless state-level or national-level changes in environmental protection occur, the rights of the nature movement will probably still receive some support. •

Group sues EPA over lagoon on verge of 'ecologic collapse'

By FRED MAYS

The Indian River Lagoon has been getting a lot of press recently, and it's not necessarily good. The 156-mile-long lagoon, which runs from Volusia County to Palm

Beach County, is one of the most polluted bodies of water in the state of Florida. The worst is that stretch in Brevard County, where water quality is rated "F minus minus" by the Marine Resource Council.

Earthjustice, an environmental law

organization, recently filed suit against the U.S. Department of Environmental Protection (EPA), calling the lagoon on the verge of "ecologic collapse."

Persistent algae blooms block sunlight to the bottom of the lagoon, killing off seagrass, the primary source of food for manatees. The result is the massive die-off of manatees in the lagoon, more than 800 in the past two winters. Most deaths have been attributed to starvation.

The lagoon pollution comes from a number of sources, and it's taking more than one solution to try and solve the problem. One of the more novel approaches has been the use of oysters and clams to naturally filter the water.

Experts say an oyster can filter up to 50 gallons of water a day, and a small clam is capable of cleaning up 20 gallons daily. If you have a fish tank that's getting grungy, just put a few oysters in it and watch the water become clear again.

Efforts are underway on a large scale to reintroduce many millions of oysters and clams to the lagoon, which hopefully will filter lagoon water and make a difference in water quality. The bivalves used to naturally live in the lagoon, but oysters were harvested to extinction, and most clams could not survive the polluted waters.

Enter ambitious efforts by the Brevard Zoo and the University of Florida.

The zoo has been collecting oyster shells from local Brevard County restaurants since 2014 and recycling them into the lagoon where oyster embryos can grow. The effort is called "Shuck and Share" and results in the collection of about 27,000 oyster shells a month.

The shells bake in the hot sun for three months and are then packed into mesh sleeves for transplanting along the lagoon shoreline to form an oyster reef. The work is done by volunteers. It's hot, dirty work, and everybody gets wet. The volunteers come from individuals, civic organizations, college groups, and business teams. If you want to volunteer, go to restoreourshores.org and click on the Volunteer tab.

The head of the zoo effort, Olivia Escandell, refers to the project as "the liver in the river." The zoo's work is funded by a Brevard special voter-approved sales tax that was passed six years ago, and it gen-

erates about a half million dollars a year for lagoon cleanup work. About \$45,000 of that is used for the oyster work.

While the oyster project has been around awhile, new emphasis is being placed on their smaller bivalve cousin, clams – millions and millions of clams.

The introduction of clams into the lagoon began in 2018. The lagoon has been largely without clams for years, due to being either over-harvested or dead from the polluted water.

The University of Florida Whitney Lab in St. Augustine managed to locate surviving colonies of what they refer to as Super Clams. According to the U of F project leader, Dr. Todd Osborne, who is called the "clam master," these clams have evolved to the point they can survive in the algae-choked waters of the lagoon. "We think of the clams as Darwinian natural-selection survivors," Dr. Osborne said.

University researchers gathered together the Super Clams and began breeding them at the St. Augustine lab. The big test was when they reintroduced the clam offspring into the lagoon. Would they survive and breed on their own?

To date, more than 10 million clams have been released into the lagoon, and the results look promising. "We found clam larva in the lagoon, so we know it's working," says Osborne. "They're doing it. They're reproducing." What is most promising to the scientists is that the new clams have survived recent algae blooms.

"Reintroducing clams, especially those clams adapted to the way the lagoon is now, should be a huge step in the right direction for improving our water quality," says Osborne.

The Florida researchers have worked on seven different clam colonies in the lagoon, and plan to add more locations to the project, both in Brevard County and other locations in the lagoon. They specifically are targeting Fort Pierce and Port St. Lucie. There are different water-quality issues in those locations, so it will require more experimenting to see how the clams do in that environment.

Surprisingly, even tiny clams can be expensive. "It costs us 10 cents a clam,"

To LAGOON Page 5



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FPL, Air Force energize new solar microgrid on Earth Day

By SHARON BENNETT

Florida Power & Light Company (FPL) and Tyndall Air Force Base recognized Earth Day 2022 by energizing a first-of-its-kind solar microgrid on the Panama City base.

The innovative microgrid is part of a pilot project that supports the U.S. Air Force's "Installation of the Future," and is an example of FPL's investments in the state's cleaner and more resilient energy future including this year's Earth Day theme, "Invest in our Planet."

The Tyndall Microgrid, consisting of a 150-kW photovoltaic solar array and a 750-kW by 1,575-kWh battery, contributes to the resiliency of the Air Force Base by harnessing and storing solar power.

"The microgrid allows certain facilities on base to quickly recover from severe weather events and keeps mission-critical buildings powered without interruption," said Maj. Gen. John Allen, Air Force Civil Engineering Center commander.

The FPL additions add reliability during storms, create new microgrid-study control labs at state universities, and boost the number of next-generation energy professionals who will work on microgrid projects in the future.

FPL describes itself as the largest energy company in the U.S. as measured by retail electricity produced and sold. In early October 2021, it unveiled the Florida International University (FIU) FPL microgrid in Miami at Florida International University. The microgrid's power comes from 4,400 solar panels that make up the 1.4-MW array at the FPL-FIU Solar Research Center. The solar canopy provides shade for about 400 parking spaces and incorporates a 24-foot by 12-foot FIU logo visible from high above.

For more than three decades, FPL and FIU have partnered on various energy engineering projects. Faculty and students at FIU will use this installation to conduct research that will help FPL advance solar energy in the state. The system stores and discharges renewable energy in a large-scale battery (3 MW/9 MWh) integrated with a command-and-control center. In the event of an outage, it will generate enough energy to supply backup power to FIU's engineering center, one of the most high-tech



Photo courtesy of Florida Power & Light

The Tyndall Microgrid consists of a 150-kW photovoltaic solar array and a 750-kW by 1,575-kWh battery

The Tyndall Microgrid, consisting of a 150-kW photovoltaic solar array and a 750-kW by 1,575-kWh battery, "allows certain facilities on base to quickly recover from severe weather events and keeps mission-critical buildings powered without interruption."

learning facilities in South Florida.

In early November 2021, FPL and the University of Central Florida (UCF) unveiled an on-campus microgrid control lab that will allow students to simulate and test real-life grid-control operations, including finding ways to optimize and secure grids in the future.

The energized lab aims for safe, reliable, efficient, and secure operation of large-scale distribution networks, which will have more renewable energy power sources feeding the grid. By collaborating with industry and

utility partners, UCF sees the lab as a way to offer students real-world opportunities as they prepare to go into careers shaping the future. More than 1,400 UCF undergraduate and graduate students now study electrical or computer engineering, supporting energy systems and electricity grids.

In November 2021, FPL unveiled another microgrid, called the Evolution Hub. The company says it is learning more about microgrid technology, which could hold significant benefits for reliability during storms. FPL is exploring new, and what it describes as possibly better, designs for solar, energy storage, and electric vehicle (EV) charging stations. The FPL Evolution Hub in Riviera Beach, Florida, is being built with a 5-MW microgrid, charged by a PV solar array with a 7.5-MW/15 MWh stationary battery backup. It also has two mobile EV trailers — each containing a 650-kW/1.3 MWh battery paired with six EV chargers.

FPL already operates 42 large-scale solar energy centers in the state and uses two types of panels: fixed or tracking. Fixed panels typically face southwest or southeast, while panels on tracking systems follow the sun from east to west.

With the 5-MW solar array onsite at Riviera Beach, FPL staff can test the benefits of a new design with fixed panels facing east and west. This design could pave the way for similar installations in the future.

FPL's Evolution Hub is also home to two separate energy storage systems: A 7.5-MW/15-MWh stationary battery and two mobile EV trailers, each containing a 650-kW/1.3-MWh battery. Both energy-storage applications will be charged from the 5-MW solar array and will provide further insight into integrating solar and energy storage with electric vehicles.

By storing excess energy from the sun, customers can enjoy the benefits of solar energy even when the sun isn't shining — at night or on a cloudy day.

The two 28-foot mobile EV charging stations will be able to provide clean energy on the go, and the mobile EV trailers will each carry a fully charged battery.

The EV chargers will be stationed at FPL's West Palm Beach service facility, where EV fleet drivers can charge their vehicles. EV charging trailers will help during public emergencies or in evacuation situations, such as hurricanes.

Since the EV can charge the microgrid and the microgrid can charge the EV, each can operate autonomously — and will work regardless of any power outages or issues that affect the larger grid.

Each trailer has six DC fast chargers, which means they will charge up to 12 cars at one time. FPL plans to energize the project before the height of 2022's hurricane season. ●

From LAGOON Page 4


says Osborne. Multiply that by the millions of clams, and the price tag goes up. Osborne says the 2022 budget is close to a million dollars, and they expect to plant 8 to 10 million clams this year. Most of that budget goes to staff time, boats, and the refrigerated trucks that are used to transport the clams from the St. Augustine lab to the lagoon.

Osborne calls the clams and oysters just one treatment "for a large disease." Pollution of the lagoon comes from many different sources and "there is not one particular solution."

According to Craig Wallace, chairman of the Brevard Indian River Lagoon Coalition, tougher regulations are needed to clear up water before it gets to the lagoon. He calls for stricter measures to clean up discharges from leaky septic systems and municipal water-treatment plants, and better management of storm water run-off.

These issues are being addressed with Brevard County's lagoon cleanup work, but while some progress is reported, there's a long way to go.

"The oysters and clams are good, but we need to stop the pollution before it starts," says Wallace. "Right now, state regulations aren't strong enough, or enforced enough." ●



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Bamboo a sustainable alternative crop

By DANIEL TORRES

It is a beautiful Sunday morning, and you have just woken up early to watch Liverpool take on some inferior English Premier League team. You grind some coffee beans, and while you wait for the pot to brew, you search the fridge for a cold breakfast beverage. You pour yourself a glass, and down it in one sip, because nothing quite quenches the thirst like a Sunday morning glass of extra-pulp bamboo juice.

I apologize if that sentence sounds a bit strange, but if current trends continue in their trajectory, that is actually where this world may be headed, and to tell the truth, it may not be the worst thing to happen to the Sunshine State.

Citrus farming is extremely water-intensive. Groves require a ton of water, and the Florida population continues to grow every year, in turn increasing the demand for orange juice and other citrus products that have been a Florida staple for generations, while subsequently reducing the amount of arable land available for the farming of citrus.

As Florida has become increasingly urbanized over the last two decades, the

Bamboo is a fast-growing grass that doesn't require fertilizer. It self-regenerates from its own roots, so it doesn't need to be replanted.

citrus industry has been on a downward trajectory, in large part due to residential and commercial development and a shift in consumer habits.

This year's harvest is on track to be Florida's lowest citrus yield since before World War II. This precipitous decline in production can primarily be attributed to older-tree inventory not producing adequate product, recent cold snaps, and a bacterial disease called HLB, or as it is more colloquially known, "citrus greening."

In early April, the U.S. Department of Agriculture dropped the Florida orange forecast by more than seven percent, and it isn't just oranges that are suffering. Grapefruit projections were cut by nearly eight percent as well.

The Florida orange has become iconic. It's our shtick. It's on our license plate. It is strewn across billboards scattered throughout the highways of the state. There are welcome centers and roadside stands devoted to the merchandising of citrus products. Citrus is a big deal.

Indian River Select, my favorite producer of orange juice, and based out of Fort Pierce, can be purchased virtually anywhere in the country. I have found it while shopping in the Carolinas, New York, and as far west as Utah. The secret is out on Florida orange juice, if there ever was a secret to be kept, that is, but the continued success of commercial citrus farming in the Sunshine State is becoming less viable, and frankly, less sustainable.

Some farms are already exploring the idea of branching out, no pun intended, to higher yield and more cost-effective alternatives. One such alternative is coming to fruition at Mixon Fruit Farms in Bradenton.

Fields once covered with citrus trees as far as the eye could see have now been replaced with Asper bamboo, also known as giant bamboo, a species native to Southeast

To BAMBOO Page 9

Florida's new Solar Energy Apprenticeship first in nation

STAFF & WIRE REPORTS

Solar installer jobs are expected to increase more than 50 percent by 2030, one of the fastest growing occupations in the clean energy sector, and there is a need for more workers skilled in this field to meet the demand.

That's why the Florida Solar Energy Industries Association (FlaSEIA) has partnered with the Florida Solar Energy Center (FSEC) to develop the Florida Solar Energy Apprenticeship. The apprenticeship aims to ensure that Florida continues to produce well-trained, highly qualified solar energy technicians. Approved by the Florida Department of Education, the program is the first and only solar apprenticeship in the country registered with the U.S. Department of Labor

"Workforce education is a top priority for Governor Ron DeSantis and the Florida Department of Education (FLDOE), with the goal of being number one in the nation by 2030," according to Kathryn Wheeler, Director of Apprenticeship for FLDOE. According to CareerSource Florida, apprenticeships

offer opportunities for individuals to earn the high-value skills and nationally recognized credentials necessary for high-earning careers and support the state's growing industries and globally competitive economy.

"We've been working on the Solar Apprenticeship over the past year, and through the hard work of FSEC, FlaSEIA, and a dedicated group of solar contractors, solar companies across the Sunshine State can now take advantage of the registered apprenticeship system to grow their solar installation workforce," said Colleen McCann Kettles, solar apprenticeship committee secretary and FSEC Director of Workforce and Business Development.

The Florida Solar Energy Apprenticeship program provides a pathway to state certification of Florida's solar contractor license, which allows a company to install both photovoltaic and solar thermal water heating systems. "The apprenticeship program is composed of 4,000 hours of on-the-job training (OJT) and 296 hours of classroom training. It will provide contractors who install solar in Florida access to well-trained solar energy technicians," said Rick Gilbert, solar apprenticeship committee co-chair and executive vice president of Solar Source.

"The solar apprenticeship program adds credibility to our apprentice's future and gives contractors in the state a higher level of confidence that when hiring one of our apprentices, they are getting a well-rounded and competent individual, someone who will become an asset for their company," said David Bessette, solar apprenticeship committee chair and president of Energy Technology Services. "Finding skilled labor, especially trained and educated skilled solar energy technicians, has been a daunting task," said Bessette.

The Florida Solar Energy Apprenticeship program will begin recruiting solar employers who are interested in being a part of the program in the coming months.

For more information, contact Colleen Kettles at ckettles@fsec.ucf.edu. •

"Finding skilled labor . . . has been a daunting task."

—
David Bessette,
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PFAS, Florida Drycleaning Ops: Part 2 – Finding Solution

By CHAD NORTHINGTON, PE

This article is Part 2 of a two-part series investigating the potential PFAS problem at Florida drycleaners and the remedies likely to be used for reducing PFAS exposure risk.

In Part 1, the Florida Statewide PFAS Pilot Study at Drycleaning Sites report was reviewed, revealing two-thirds of drycleaning sites tested by FDEP contained one or more PFAS at concentrations above Florida's Provisional Groundwater Cleanup Target Levels (PGCTL).

The results indicate that remedial responses for PFAS could be required at hundreds of sites currently enrolled in the Drycleaning Solvent Cleanup Program (DSCP). Part 2 addresses how PFAS is likely to be addressed at these facilities.

PFAS emerges as an issue as DSCP budget is cut

Most of the Florida drycleaner sites where a closure strategy for PFAS will be needed already are in the DSCP queue to remediate chlorinated solvents. DSCP's current budget is used to inform how FDEP may ultimately address PFAS.

The program was appropriated \$6 million for 2022, a meager sum, to adequately address contamination impacts across the state and a sharp cut from the \$8 million budgets of 2020 and 2021.

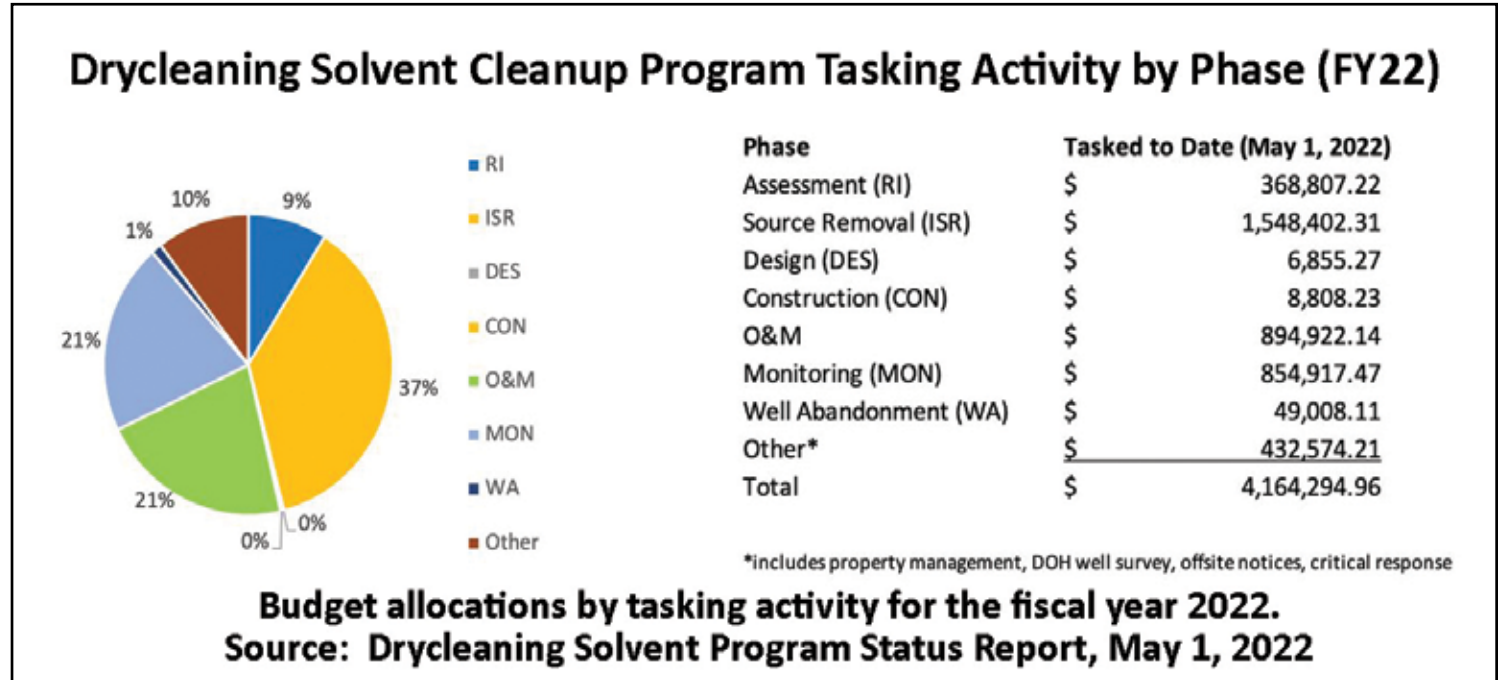
As of May 1, 2022, \$4.2 million has been allocated by DSCP, with the top three tasking activities being source removal (37 percent), operations and maintenance (O&M-21 percent), and monitoring (21 percent).

MNA, an approach used for many contaminants, proposed for PFAS

When appropriate, the most cost-effective and sustainable remedial approach for PFAS is Monitored Natural Attenuation (MNA), recently proposed by industry leaders as a scientifically sound method to manage PFAS plumes while still protecting potential receptors.

MNA entails demonstrating a contaminant plume will not impact receptors and is validated through periodic groundwater monitoring. MNA is frequently combined with active mitigation approaches including source removal or in situ chemical injections to create contaminant-plume stability. According to a commentary published following the recent PFAS Expert Symposium 2:

MNA plays a critical and accepted role both spatially and temporally in the remediation of other classes of contaminants. Therefore, if PFAS remediation follows the arc of previous contaminants, then MNA is presumed to be a component of many PFAS remedial strategies. MNA for



Results from a Florida PFAS Pilot Study at Drycleaning Sites indicate that remedial responses for PFAS could be required at hundreds of sites currently enrolled in the Drycleaning Solvent Cleanup Program (DSCP).

PFAS can be a viable alternative, as either a standalone or combined remedy, if the concepts of plume stability and receptor protection are implemented.

Of the 273 sites closed through the DCSCP to date, 17 percent have achieved closure through MNA. As with other contaminants, MNA will need to be accompanied by source mitigation in most cases. Source mitigation approaches for PFAS will be required even more so since PFAS do not naturally degrade within acceptable timeframes.

Enhanced attenuation approaches for PFAS source zone treatment

Massive energy inputs are required to destroy PFAS chemically, rendering destructive technologies impractical at the scale of most field sites. Source removal by excavation, the tasking activity comprising nearly half of DSCP's current budget allocations, is also problematic for PFAS. With the hazardous designations looming for certain PFAS (e.g., PFOA and PFOS), unsettled regulatory limits, and lack of available technologies to destroy the compounds, the disposal and treatment options for PFAS-impacted soils are expected to be limited and costly in the foreseeable future.

Given the complications surrounding excavation and disposal, source mitigation of PFAS is expected to heavily rely on Enhanced Attenuation methods designed to prevent their leaching and movement in groundwater. Such methods may include one or a combination of the following:

- In situ injection of materials such as Colloidal Activated Carbon (CAC) into the source zone groundwater or at the property boundary to prevent

contaminant plume migration.

- Mixing of chemical sorbents and soil stabilizers (Portland cement) into dry soils above the water table to prevent further groundwater leaching.

- Capping the source with concrete or other impermeable material to prevent water infiltration.

By quarantining PFAS, these enhanced attenuation methods remediate the contaminants by removing the exposure risk to potential receptors.

These methods are also effectively used to treat chlorinated solvents. Source zones containing mixtures of chlorinated solvents and PFAS, such as those at drycleaning facilities, are supplemented with other amendments (controlled release electron donors, zero-valent iron, microbial cultures) to promote the biogeochemical reduction of the chlorinated solvents.

To date, the in situ injection of CAC has resulted in numerous effective source-zone PFAS treatments, including complete contaminant removal at sites with commingled plumes of PFAS and chlorinated solvents. Additionally, CAC has been extensively applied to treat hundreds of chlorinated drycleaner sites glob-

To PART 2 Page 19

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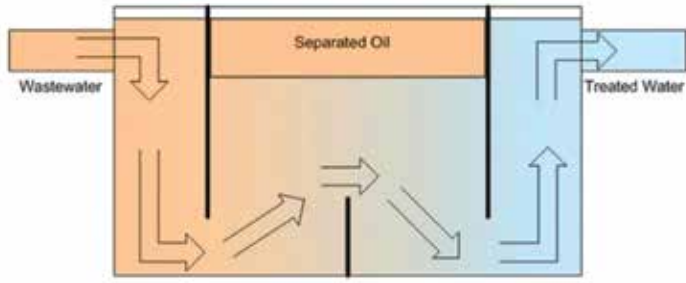
Oil/Water separators a hidden environmental risk

LEE BIENKOWSKI, PG
Senior Geologist,
ECS Florida, LLC

Oil/Water Separators (OWS) are ubiquitous throughout the United States. They are typically associated with auto repair shops, car washes, marinas, aircraft hangers, railyards, or other facilities that have a floor or trench drain. OWS can be constructed of concrete, steel, or fiberglass. They are designed to separate lighter-than-water liquids such as gasoline, diesel fuel, and motor oil from wastewater by running the water through baffles that allow sufficient residence time for the less-dense liquids to separate from the water and float to the top of a chamber. The treated water is discharged to a sanitary sewer, storm sewer, or ditch.

A diagram of a standard gravity OWS is provided below.

Standard gravity oil/water separator



A properly operated and maintained OWS prevents the release of oily water to sewers or surface water. However, many OWS are poorly maintained, and substances are flushed into them that they were not designed to treat. Best Management Practices recommend inspecting OWS every six months. Inspection should include measuring the distance from the top of the accumulated liquid to the top of the chamber, the thickness of sediment that has accumulated at the bottom, and the depth of accumulated oil. Excess oil or sediment should be removed for disposal. In addition, a sign should be posted near the drain that discharges to the OWS that states that no antifreeze, brake

fluid, solvents, or detergents should be flushed into the drain. These liquids prevent the OWS from functioning properly and can result in a release of contaminants to the environment.

The State of Florida lacks equivalent oversight and regulatory guidance for the installation, monitoring, inspection, and closure of OWS to the standards for above-ground storage tanks (ASTs) and underground storage tanks (USTs). Although OWS do not normally contain the same quantity of hazardous liquids as ASTs or USTs, they nevertheless pose a threat to the environment. Poorly maintained OWS can release petroleum hydrocarbons and other contaminants into soil and groundwater. Off-gassing of groundwater plumes that migrate under buildings present a vapor intrusion risk. These releases often go undetected for years and result in substantial and costly cleanup efforts. Several examples of subsurface releases from OWS encountered on project sites are outlined below.

An example of the type of release that can result from a poorly maintained OWS was a small vehicle maintenance facility

on a military base. The facility staff were not aware that the OWS should be inspected at regular intervals, and as a result, the OWS had not been inspected or cleaned for as long as any of the staff could remember, which was at least ten years. Used oil from the OWS leaked into the surrounding calcium carbonate-cemented soil, which resulted in widespread pockets of free product within a few feet of ground surface. A substantial excavation was required to remove the free product and surrounding soil.

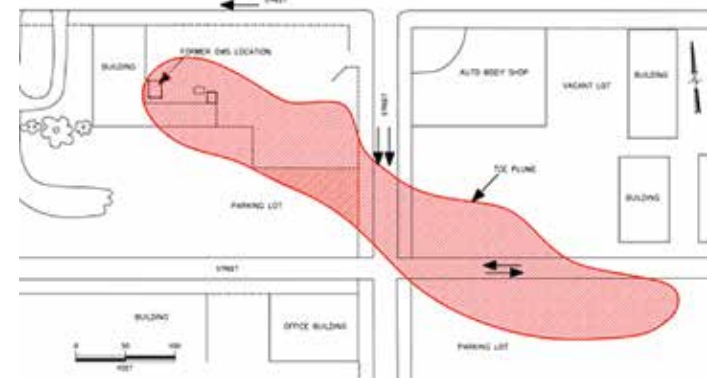
Other examples of releases from OWS involved facilities that carelessly allowed solvents to be flushed down the drain leading to the OWS. As solvents are denser than water, the baffle system designed to segregate

petroleum hydrocarbons from water does not function and solvents are released to the sewer system, surface water, or groundwater. More than one OWS site in northeast Florida resulted in a small shallow dissolved petroleum hydrocarbon plume and a much more extensive deep trichloroethene (TCE) plume. The TCE plumes descended through the water column until they reached a limestone layer approximately 30 feet below land surface (bls), after which they followed the slope of the limestone toward the nearest river. The shallow petroleum hydrocarbon plumes were remediated by the removal of the OWS and a few quarters of natural attenuation. However, the TCE plumes required extended assessment (plumes generally reached a total length of up to ¼ mile) and remediation by either pump and treat or In-Situ Chemical Oxidation (ISCO).

Another OWS release involved a vocational school with a motor repair shop. Several gallons of solvents were flushed down a floor drain into a fiberglass OWS. Fifteen years later, the school opted to remove the OWS, but when the area was excavated, only a few shreds of fiberglass remained to show where the OWS had been. The solvents had dissolved most of the OWS! As there was a hard pan layer within 10 feet bls, the solvents did not enter the deep aquifer system. Over the course of 10 years of monitoring, the original tetrachloroethene (PCE) plume dechlorinated to TCE and then to dichloroethane before finally stalling at vinyl chloride (VC) by which time

the majority of the plume extended under the

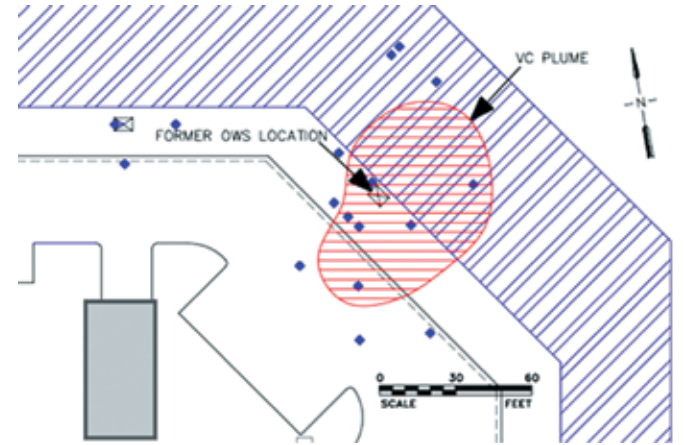
Example TCE Plume from OWS



school building. A remediation system was installed at this site, which included a horizontal recovery well under the building and a recirculation system that injected oxygen, microbes, and nutrients into the groundwater before reinjecting it.

Although OWS are ubiquitous, there

VC Plume from OWS



is currently little oversight regarding the maintenance of these systems. Consequently, some OWS are poorly maintained and misused, allowing the discharge of hazardous liquids, resulting in releases to soil, groundwater, and surface water. Environmental professionals and facility owners and operators should be aware of the potential for OWS to be a source of environmental impacts onsite and offsite. ●

Environmental experts meet to tackle potential risks of PFAS

STAFF & WIRE REPORTS

Environmental experts from around the world gathered in Tampa to discuss PFAS-related issues and bring solutions

and ideas to the professional environment community May 2-4.

Per- and polyfluoroalkyl substances (PFAS) are a group of human-made chemicals that includes PFOA, PFOS, GenX,

and many other chemicals. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States since the 1940s. PFOA and PFOS have been the most extensively produced and studied of these chemicals. Both chemicals are very persistent in the environment and in the human body — meaning not only do they not break down; rather, they can accumulate over time.

The PFAS Forum II was organized to provide an understanding of the environmental issues, educate the environmental/remediation industry and regulatory community on the potential risks from PFAS, as well as discuss regulatory and legal issues, monitoring, treatment, cleanup, and disposal

technologies.

With a full agenda, attendees were able to gather a plethora of takeaways that they could bring back to their businesses and communities to further address the issues brought about by PFAS contamination. It is the opinion of this publication that the PFAS Forum is not only timely, but it looks to become one of the larger and more-important conferences of its kind and the *Specifier* is proud to be a sponsor.

For more information about the PFAS Forum series, contact Brittany Sullivan from the Southern Waste Information eXchange at Brittany@swixusa.org or (850) 386-6280. ●

Florida Specifier Publisher John Waterman has a little fun at The PFAS Forum II May 2-4 in Tampa, Florida.

Courtesy photo



Gov. DeSantis: Celebrate great outdoors in June

STAFF & WIRE REPORTS

Florida Gov. Ron DeSantis signed a proclamation declaring June as Great Outdoors Month in Florida. The Governor's proclamation honors Florida's abundant natural resources and the nation's best recreational opportunities, provided by the state's waters, trails, public lands and parks.

Great Outdoors Month is celebrated across the country each June to spotlight not only the beauty and wonder of our lands but also the health and economic benefits they provide.

From vibrant coral reefs and white-sand beaches to clear, natural springs, ambling rivers and peaceful pine forests, the state of Florida offers a myriad of opportunities to connect with nature and explore outdoors. The Florida Department of Environmental Protection's Florida Park Service and Office of Resilience and Coastal Protection are committed to providing visitors with unforgettable experiences and lifelong memories.

More info online

Learn more about Florida's state parks, trails, aquatic preserves and national estuarine research reserves at FloridaDEP.gov.

"This Great Outdoors Month, we welcome you to come experience . . . the Real Florida and see why Florida is the only recipient of four National Gold Medals for Excellence in Park and Recreation Management," said DEP Secretary Shawn Hamilton. "An adventure awaits you at any of Florida's 175 state parks, 42 aquatic preserves and three national estuarine research reserves."

With families preparing for summer fun, June is the perfect time to enjoy the natural beauty of Florida. Florida's state parks, trails and aquatic preserves offer opportunities to camp, hike, paddle along pristine waterways, enjoy local flora and fauna, and more. ●



Photo courtesy of The Florida Department of Environmental Protection

Canoes, kayaks and stand-up paddleboards are available for rent at many state parks.

From BAMBOO Page 6

Asia. Asper has been introduced all across Latin America and Africa, as it does not tend to grow laterally, and therefore has no invasive properties.

Primarily used as a building component for heavy construction, Asper can grow up to four inches per day, but when harvested before emerging from the soil, the young stems are typically tender and sweet, with a taste akin to artichoke, and rich in vitamins and antioxidants. Spinach and bamboo

dip doesn't quite have the ring to it, but I would be willing to give it a shot.

RIzome, a company cultivating giant bamboo in Florida and the Philippines, is working to transform bamboo fiber into building materials capable of meeting the demands of the construction industry. Bamboo is used as a building material for houses and buildings in less-developed regions throughout the world. It is only natural, then, with global deforestation rates rising every year, that corporations would attempt to harness the resilient nature of bamboo

for more varied purposes.

Bamboo also requires little water and does not need to be sprayed with pesticides or fertilizers to promote growth, and despite technically being considered a type of grass, bamboo releases 35% more oxygen than tree species of comparable size. It is also remarkably resilient. While primarily grown in temperate climates, several genera of bamboo, like *Phyllostachys* and *Fargesia*, can withstand temperatures of -15 degrees Fahrenheit (-26C).

Bamboo has been praised for its sus-

tainable, renewable properties, and for its versatility. Bamboo grows at a rate of ten to fifteen times faster than pine, while also regenerating at a faster rate after harvest. In terms of tensile strength, or the maximum amount of stress a material can withstand before breaking, bamboo comfortably surpasses steel. Bamboo is also molecularly more densely packed than steel, making it a stronger material.

Maybe Jerry Siegel and Joe Schuster should have nicknamed Superman the "Man of Bamboo." ●

Rodman Dam OK, but now classified 'HIGH Hazard' if it fails

By BLANCHE HARDY, PG

The anticipated Rodman/Kirkpatrick Dam inspection report completed by Mead Hunt for the Florida Department of Environmental Protection-owned facility has been released. The dam, commonly referred to as Rodman Dam, received a satisfactory rating for field observed structures and is not characterized as immediately failing in the report, but it is recommended the dam be reclassified as HIGH Hazard from its current LOW Hazard rating.

FEMA issues the Federal Guidelines for Dam Safety: Hazard Potential Classification for Dams. The purpose of the classification system is to establish simple, clear, concise, and adaptable criteria providing straightforward definitions that can be applied uniformly by all federal and state dam safety agencies and can be readily understood by the public. The classification system is used for the National Inventory of Dams.

A High Hazard dam is one where failure or mis-operation will probably cause loss of human life.

The field inspection of the Rodman Dam, including an underwater dive inspection, was completed in August 2021. Several observed conditions such as excessive debris upstream of the spillway and a broken boat barrier generated recommendations for repair or improvement by December 2024. The cost of the recommended repairs is estimated at roughly \$1.5 million in 2021 dollars.

A "Dam Failure Analysis and Hazard Assessment" is required in addition to the filed inspection. The failure assessment was completed by Mead Hunt in January 2022.

Mead Hunt developed combined U.S. Army Corps of Engineers Hydrologic Engineering Center's River Analysis System 1D/2D HEC-RAS (v6.0.0) models to simulate failure of the Rodman Dam under various reservoir pool-elevation scenarios. A maximum pool elevation of 20.0 feet was used followed by reservoir drawdown elevations of 18.0, 16.0, and 14.0 feet. The results of modeling were used to determine the flood wave height and arrival time for each scenario at select critical locations downstream. Each scenario also included an assessment of parcels containing habitable structures that would be impacted by the dam's failure.

A separate model was created for each of five scenarios. Each model was based on the same geometry data for the dam and considered a breach of the dam traveling down the Ocklawaha River into the St. Johns River. The upstream extent of the scenarios is the

Rodman Reservoir pool, and the downstream extent is just upstream of the Seaboard Coastline Railroad bridge.

Comparison of the results of the failure models to the FEMA standards for dam hazard-potential classification prompted a recommendation to reclassify the dam as a HIGH Hazard dam. It is important to note that the hazard potential classification does not regard the structural condition of the dam as observed by the field inspection. The classification reflects the capacity of the failure of the dam to cause loss of life and damage to downstream property under different scenarios.

"The 2022 report confirms what was revealed in previous inspections, that more than 500 properties would be inundated by 4 feet of water in the event of a catastrophic dam failure," St. Johns River Waterkeeper's Rebecca Vecera said.

In addition to human life and economic property damage issues, the report finds that a significant flood wave moving through the Caravelle Ranch Wildlife Management Area

downstream of the Rodman Dam has the potential to cause significant environmental damage to the ecosystem.

Environmental advocates have been championing the removal of the Rodman Dam for years. The Free the Ocklawaha Coalition science team continues to recommend an immediate drawdown of the reservoir to allow for a more comprehensive assessment of the condition of the dam and to avoid the risk of downstream flooding to homes in Welaka.

The science team is calling for immediate action considering hurricane season is fast approaching, and portions of the dam could not be adequately inspected due to the presence of debris. The report's recommendation for additional assessment of the dam gates by a qualified hydraulic steel structural engineer and additional underwater assessment of the dam's foundation for undermining are also called out.

According to St. Johns Riverkeeper, in addition to providing added downstream dam safety, "drawdowns allow the submerged springs and natural channel of the Ocklawaha to reemerge and help naturally reduce the invasive plant growth without the use of harmful chemicals. The drawdowns also provide visitors with an insight into what restoration might entail. The last drawdown resulted in an 81% increase in visitation to the Ocklawaha and the area surrounding the dam."

The ball is now in FDEP's court. ●

"The 2022 report confirms what was revealed in previous inspections, that more than 500 properties would be inundated by 4 feet of water in the event of a catastrophic dam failure."

— Rebecca Vecera,
St. Johns River Waterkeeper

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DEP recognizes 2022 Earth Day Art Contest winners

STAFF & WIRE REPORTS

In honor of Earth Day 2022, the Florida Department of Environmental Protection (DEP) hosted an art competition for students in the fourth to 12th grades. The art contest theme — "What do you love about Florida's environment?" — invited students to think about their favorite memories and experiences in Florida's natural areas.

A finalist in each age category was selected from DEP district offices, and the finalists' art was sent to the Tallahassee office where DEP staff selected a state winner for each age group.

"It was inspiring to see the student art submissions. Protecting Florida's natural resources is the responsibility of all, and it is rewarding to see students engaged in environmental issues from such a young age," said DEP Secretary Shawn Hamilton. "Congratulations to this year's winners and future environmental stewards."

Floridians and visitors alike are

Grades Four to Five
State Winner

**Kely Aguilar, Fifth Grade,
Advanced Achievers Academy**



"Florida Scenic Ocean"

encouraged to visit DEP's Earth Day 2022 webpage at floridadep.gov/EarthDay for inspiration on how to celebrate Florida's environment year around and for steps to take to protect our valuable natural resources.

Grades Six to Eight
State Winner

**Ramona Lungu, Sixth Grade,
Thomas L. Sims Middle School**



"Let's Appreciate Our Planet"

Earth Day is the global celebration and recognition of the planet's environmental resources. The first Earth Day took place in 1970 and has since been recognized annually on April 22.

This year's international Earth Day

Grades Nine through 12
State Winner

**Jade-Rose Konuch, 11th Grade,
SAIL High School**



"Untitled"

theme is "Invest in our Planet."

The DEP considers every day Earth Day and the agency's staff works tirelessly every day to protect, conserve and manage Florida's natural resources while growing the state's economy. ●

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Sen. Baxley to deliver keynote address at RFT Conference

STAFF & WIRE REPORTS

On June 27-29, Recycle Florida Today, Inc. (RFT), known as the State Recycling Organization (SRO), will welcome Sen. Dennis Baxley of District 12 and other leading experts to discuss and educate attendees on waste prevention and source reduction at the 2022 Annual Conference and Exhibition.

RFT has emerged as a premier professional association for resource conservation and environmental stewardship in Florida. With an emphasis on sustainable source and waste prevention, (reduction/reuse, recycling, and composting) and legislative advocacy, RFT continues to be a thought leader in the field.

Environmental professionals from local and state governments, private and non-profit sectors, program managers, recycling coordinators, directors, managers, consultants, regulators, and those interested in the industry are encouraged to attend any RFT conference, webinar, or even join the organization itself as an employee or volunteer.

The purpose of RFT is:

- To function as a professional association among individuals engaged in the business of recycling.
- To assist individual members in improving skills and techniques in recycling. This will be achieved through education, special studies, research, and the exchange of ideas and technical knowledge related to all forms of recycling.
- To provide a forum for public, private and non-profit recyclers to mutually discuss and resolve recycling issues.
- To inform the public, law-making bodies and the business community of the economic significance and importance of recycling, and to demonstrate the high professional standards of those involved in the business of recycling. This will be accomplished through sponsorship of educational meetings, research and publication of articles, reports, statistics, and other material. ●



Sen. Baxley

VLS turns trash headed to landfills into fuel for kilns

STAFF & WIRE REPORTS

The term “alternative fuel” first appeared in the late 1970s. The simplest and most-accepted definition of the term refers to any nonconventional energy source that is not gasoline, diesel, or any product derived from oil, gas, or coal. The category also excludes all fuels made from other fossil fuels, biofuels originating from plant material, and chemically derived fuels such as methanol, ethanol, etc.

In 2010, the EPA proposed rules in conjunction with the Clean Air Act (CAA) to reduce materials classified as solid waste when combusted. A stated goal of the 2010 EPA was to reduce, treat, or eliminate over 426 million pounds of pollution, an ambitious goal. Perhaps the push stemmed from the year 2010 that capped a 20-year period (1990-2010) on which the EPA would be preparing a cost/benefit analysis and impact analysis of the CAA. In the abstract, the EPA maintains that the economic value of the public health and environmental benefits, from the CAA Amendments of 1990, exceeded their costs by a margin of four to one.

Anecdotally, the CAA prevented more than 20,000 Americans from dying prematurely and averted another 1.7MM incidences of asthma, bronchitis, etc. In productivity terms, the EPA claimed to have prevented

VLS Recovery Services collects contaminate-free Non-Hazardous Secondary Materials, such as non-halogenated plastics, paper, cardboard, wooden pallets and crates, and manufactures Alternative Engineered Fuel (AEF) for commercial use in cement kilns. It is branded as Shredded Heat.

4.1MM lost work days as well as 31MM days during which Americans would have had to restrict their activity due to air pollution.

Back to the EPA in 2010, proposing rules in conjunction with the CCA to reduce materials classified as solid waste when combusted. If it's solid waste, then combustion unit must meet CCA Section 129 Emission Standards for waste-to-energy burners. If it's non-solid waste, then combustion units must meet CAA Section 112 Emissions Standards.

From these forces emerged the inspiration to seek and find uses of and for alternative fuels. Enter alternative engineered fuels or AEFs, which are legitimate, engineered fuel products. A commercial use of an AEF is as a coal-substitute in cement kilns. Enter VLS in Branford, Florida.

VLS Recovery Services collects Non-Hazardous Secondary Materials to manufacture Alternative Engineered Fuel (AEF) for commercial use in cement kilns.

Non-Hazardous Secondary Material (NHSM) can be post-consumer material,

off-specification commercial products, post-industrial material, and/or scrap. NHSMs are not considered solid waste if the underlying material has been processed to produce a fuel or “ingredient” in a larger manufacturing process or product.

VLS has embarked on presenting itself as an alternative to landfills for some manufacturers and the NHSMs coming from their processes. As counterintuitive as it may seem, the NHSM must be free of contaminants such as liquids, food, metal, and certainly biological waste. Targeted NHSMs must have low moisture, be free of powder, and have no PVC, etc. An ideal producer of desired NHSMs would be a facility receiving parts/components producing tons of packaging material waste: Non-halogenated plastics, paper, cardboard, and even wooden pallets and crates are acceptable NHSMs. These NHSMs are collected, screened, and tested before being processed. NHSMs have different compositions, so they are strategically “blended” with other NHSMs to create a proprietary AEF. Contaminants

are extracted through a continued process of shredding and a series of magnets. In the case of VLS, the final product is branded as Shredded Heat.

Again, using VLS as an example, the Shredded Heat replaces coal and natural gas for fuel in cement kilns. Cement kilns are better for the environment than Waste-to-Energy (WTE) facilities (i.e., simply being burned). Why? Well, cement kilns burn at a higher temperature, around 1,800°F, whereas WTE facilities burn around 1,000°F. The kiln burn being 80 percent higher than the WTE puts the destruction ratio efficiency (or DRE) at 99.99 percent. Material does not flow through the system requiring scrubbing; cement kilns combust all the material. WTEs create 20-25 percent ash; this is avoided with disposing via kilns. In fact, since cement kilns use limestone, it acts as a natural scrubber to encapsulate ash. Material that is combusted and subsequently encapsulated in the limestone becomes part of the cement, without any leachate.

The results of this clever approach are the encapsulation of ash, meaning none goes to the landfill, nor do the original NHSMs; reduction of air emissions with the limestone as a natural scrubber; and saving natural resources such as coal and/or gas by using an AEF in the manufacturing process. ●



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FGWA hosts convention, trade show, golf tournament

STAFF & WIRE REPORTS

The Florida Ground Water Association (FGWA), a non-profit association providing professional and technical leadership in the advancement of the ground water industry and use of ground water resources in the State of Florida, held its Annual Convention & Trade Show in Orlando, Florida, on June 2-4. The FGWA Convention hosted more than 300 attendees and 75 exhibiting companies.

The show kicked off with its Annual Golf Tournament benefiting Operation Helping Hand. The tournament set a new record of 115 players.

To date, the FGWA has donated more than \$70,000 to Operation Helping Hand, not including the funds raised from the 2022 Tournament.

On Friday and Saturday, more than 300 groundwater professionals attended continuing education classes, renewing and/or obtaining a Florida Water Well Contractor License. Friday was the FGWA Annual Business Meeting, the 2022-2023 FGWA Board of Directors election, and the FGWA's “Dottie Mixon Roberts Member of the Year Award” went to Merritt Partridge from Partridge Well Drilling. Friday concluded with the Annual Reception and Silent Auction where the 2022 John Kriska Memorial Scholarship recipients were honored. Saturday was jammed packed with continuing education sessions.

Thanks to everyone who supported the FGWA Annual Convention & Trade Show. ●



FDEP offers mid-year's resolution for Florida's Springs

By DR. ROBERT KNIGHT

The Florida Department of Environmental Protection (FDEP) is the state's lead agency for environmental management and stewardship and is tasked to protect the state's air, water, and land. Reading from FDEP's website, its vision is "... to create strong community partnerships, safeguard Florida's natural resources, and enhance its ecosystems." (www.floridadep.gov)

Headquartered in Tallahassee, but with staff state-wide, FDEP has about 3,000 employees and an annual budget of about \$1.5 billion. Composed of 13 divisions, including the Division of Parks and Recreation, FDEP oversees all aspects of Florida's 175 state parks. Those parks, preserves, and recreational areas encompass more than 800,000 acres and have won top honors nationwide four of the past 20 years. Annual visitation to Florida's state parks exceeds 30 million visitors.

Twenty-seven of Florida's award-winning state parks encompass springs, including most of the largest artesian springs in Florida and the United States. Many of these springs' parks were Florida's earliest tourist attractions — Silver, Wakulla, Rainbow, Weeki Wachee, Homosassa, Volusia Blue, and more than a dozen other popular natural destinations. There is no doubt that FDEP managers and staff are fully cognizant of the wealth of natural resources that are under their supervision and care.

I recently read a copy of FDEP's glossy,



Photo courtesy of Florida State Prks

Annual visitation to Florida's state parks exceeds 30 million visitors. Blue Spring State Park is home one of the largest winter gathering sites for manatees in Florida.

two-sided springs' brochure titled Springs — Purely and Uniquely Florida. This brochure provides the following helpful information

for springs' visitors: What Makes Florida's Springs Unique? with details on What is a spring?, Did you know your neighborhood

could affect a spring?, and Why is it important to protect springs?

The last page of this brochure caught my attention with Together we can protect and restore Florida's springs and You can help — individual actions make a difference. The current springs' problems summarized in the brochure could not be more clearly stated:

- "Over time, the water quality and flow of Florida's springs have been impacted by both human and natural factors.
- Nutrient pollution from sources such as fertilizer, human and animal waste can be greatly reduced with better practices and management of wastewater.
- Water conservation efforts can restore spring flows to levels that support healthy ecosystems."

And the final honest statement in this pamphlet is: Florida's laws require springs protection.

The rest of the text is disappointing. After repeating the truth that Florida's springs, even in state parks, no longer support healthy ecosystems and are impacted by human activities, including excessive groundwater diversions and nutrient loads, the brochure includes blatant untruths, including FDEP is restoring springs by setting limits on nutrient pollution and Florida's water management districts protect springs by regulating water use. These statements beg the question that the public has been asking for decades: If FDEP and the water management districts

To SPRINGS Page 19

Proposed Resolutions

No. 1

FDEP will restore spring flows to levels that protect their ecological health by placing a protective cap on groundwater pumping, require metering of all groundwater uses, and charging an Aquifer Protection Fee for all groundwater withdrawals in Florida.

No. 2

FDEP will restore groundwater and springs water quality by placing a cap on all nitrogen fertilizer use in Florida, require reporting of all fertilizer sales, and charge an Aquifer Protection Fee for all fertilizer used in the state.

Florida OKs lands for gopher tortoise recipient sites

By RALPH DeMEO
Guilday Law Firm and
MACIE CODINA,
Law Clerk at Guilday Law



Similar to the establishment of environmental mitigation banks, the state understands that the high market demand for development will have a detrimental effect on the environment and gopher tortoise population.

As a result, the state created gopher tortoise recipient sites to promote conservation and private land-owner participation by creating a loophole that allows for continued development in exchange for conservation efforts elsewhere. Here, by establishing more gopher tortoise recipient sites, land developers are able to continue developing their land in exchange for relocation fees and funding for the tortoise on a regulated reservation.

Currently, the high demand for new development has also spiked the demand for recipient sites as well as the relocation fee per tortoise. With a high demand for recipient sites and recipient sites beginning to quickly fill up, recipient sites are able to charge thousands of dollars per tortoise they receive. As a result, the 2022 Legislature enrolled Senate Bill 494, Fish and Wildlife Conservation Commission, which allows for more land to be set aside for gopher tortoise recipient sites to both protect the species and reduce the burden of relocating the species on developers. See Senate Bill 494: Fish and Wildlife Conservation



Photo courtesy of Florida Fish and Wildlife Conservation Commission

Private and public landowners play a key role in conserving and restoring gopher tortoise habitat by receiving permits designating their lands as gopher tortoise recipient sites.

Commission.

The proposed bill was introduced for the purpose of alleviating the "geographical and capacity constraints on available gopher tortoise recipient sites" due the extreme migration and development in Florida. See Senate Bill 494: Fish and Wildlife Conservation Commission. Under the bill, each lead land-managing agency is encouraged to consider the feasibility of using a portion of

state lands greater than 40 contiguous acres for tortoise recipient sites. Based on the land-managing agencies' recommendation, the Fish and Wildlife Conservation Commission will further determine the site's feasibility based on the site's compliance with the primary management objectives of the lands, the land-management plan, and the economic feasibility of establishing the recipient site to ensure that the initial and recurring costs of the site do not create an increased recurring expense for the agency.

The FWC wildlife biologist also must assess the feasibility of land proposed to be used as a recipient site. See Senate Bill 494: Fish and Wildlife Conservation Commis-

To DeMeo Page 18

What is a recipient site?

Recipient sites are privately or publicly owned lands of 25 acres or more permitted to accept gopher tortoises needing relocation out of harm's way from development.

Shrimping offers fun, marine biology lessons and more

By CAPT. MATT BADOLATO

Streetlights zip by in the moonless night. We turn off the highway, the trailer bumping along the county road towards the boat ramp. Shrimp nets rattle in the truck bed.

Tonight, we're dip netting for shrimp on the Mosquito Lagoon near Oak Hill. I brought my boss along — she showed an interest in catching a bucket of crustaceans, and I figured it'd be a good chance to connect outside of work. I've prepped her with Forest Gump-esque stories of past shrimp conquests — tales of shrimp flowing through in such numbers they resembled schools of fish streaming by in the current.

We arrive at high tide — the shrimp start their nighttime migration towards the ocean as the water retreats back to Ponce Inlet.

We launch my small skiff into an alien scene. The water shimmers and shines beneath the navigation lights of a hundred boats with the same idea as ours. A current rolls along briskly. Green LED lights

anchored to the bottom emit a glowing halo illuminating the water beneath every hull.

In theory, shrimping is pretty simple: Throw out lights, see shrimp swim by, net the shrimp.

But in reality, regularly coming home with a coveted "full pull" — one's 5-gallon boat limit of the sweetest wild-caught brown-and-white shrimp to have ever tapped a taste bud — is an underestimated skill packed full of nuanced tricks and local knowledge.

Shrimp aren't attracted to light. In fact, they detest even a full moon's delicate lace of light. You would, too, if your eyes protruded from a stalk on your head and perceived nearly 360 degrees around you all the time.

Aware of this, modern shrimpers suspend



lights near the bottom. As the shrimp swim along the bottom with the current, the lights force them to the surface. Backlit by the glow from below, their silhouettes make easy targets for a human with a net. It's like netting butterflies.

Hanging a kerosene lantern over a bridge and blasting light downward may have worked great thirty years ago when untold billions of shrimp and crabs were the norm in waterways across the state, but the modern harvester must employ modern ways in less fruitful waterways.

On a good night and strong tide, there are a lot of shrimp. Seriously, it's an insane force of nature one must see to believe. One after another, shrimp boil up from the bottom, chased to the surface by their fear

of light. It's back-breaking work, swishing the net back and forth in the current. When they're running hot and heavy, one can fill a five-gallon bucket in a couple of hours.

They come in all sizes, from 3-inch "dinks" to 7-inch jumbos. My brother and I started calling the largest ones "hot dogs." There are not many opportunities in life to yell "here comes a hot dog" at 2 a.m., delirious from lack of sleep.

But catching shrimp is just half the fun. At night, the marine biology is really in-your-face. The water swarms with life floating by. Crabs, flounders, eels, Mantis shrimp, rays, squids, and more swim through lights. Giant foot-long, bottom-dwelling gobies cruise along the surface — rarely seen during daytime.

We shrimp for a few hours, filling up a five-gallon bucket. We swap small talk — a luxury we're too busy for during the workweek.

Our forearms burn from dipping shrimp. This is one of those good nights. •

Time, money spent on loss prevention will more than pay for itself

By J DAVID NAUGHTON, CIC

How do I keep my company's insurance premiums down long term?

"I love talking about insurance," said no one ever! But it is a necessary evil in today's world, and it's usually one of the top four expenses of any business. So maybe taking just a little bit of time to discuss it might be worthwhile?

The only tried-and-true method for keeping insurance premiums down over the long term is to develop a culture of safety throughout the entire organization. There MUST be buy-in at every level. And this means safety, not only for employees, but also for everyone your organization may touch. Inward and outward safety practices are vital to preventing losses and therefore keeping costs down.

OSHA suggests that the true cost of loss is between three and five times the

actual loss payment. Remember the iceberg illustration: The paid loss is only the little piece visible above the water. The true costs are much larger. The more losses your company has, the more your insurance program will cost. Insurance carriers don't want to pay losses, so when they see you have issues, they will decline to quote for you; therefore, the competition for your business suffers. Keeping losses down will increase competition for your business, a very good thing.

The insurance marketplace is fluid: It moves from hard (expensive) to soft (less expensive) continually. And the only way to stay at the least-expensive end of that market swing is to have as few losses as possible. And the only way to mitigate losses is with a workforce fully engaged in risk management and safety.

Your Workers Compensation policy will show a direct numerical credit or debit via your own individual Experience Modification (your "MOD"). This is essentially your specific rank in losses as compared to your peers. If your experience is bad, it will be a number above 1.00. So if you have a 1.15 MOD, it means you are paying 15 percent more than the standard rate, which will adversely affect your ability to remain competitive when pricing jobs. However, if your loss experience is good, it will generate a "credit" MOD. I have seen MODs as low as .60. Imagine the competitive advantage of earning a 40 percent discount on your

Workers Compensation premium as compared to your competitors!

Other lines of insurance may not show a direct credit or debit in the form of a MOD, but those credits and debits manifest themselves in the form of competition from carriers for your business. The better your loss experience, the more carriers will be looking to provide you proposals. The more carriers competing for your business, the better terms and conditions you (or your broker) can negotiate.

So hopefully by now you are asking yourself, "How do I develop my own risk management program?" Start by taking advantage of resources you already have at your disposal. Remember: Insurance carriers do NOT want to pay losses so they are very willing

to help you. The carriers have entire divisions devoted to this; most are called Loss Control or Risk Management divisions. Your broker/agent may also have resources for you, and the majority of resources from the carrier will be at no cost to you. So before you consider hiring an outside safety consultant, make sure to take advantage of the resources offered by your carrier and broker.

Some areas to consider:

Do I have an employee safety manual?
Do I provide and require PPE for my employees?

Do I provide comprehensive job- and safety-training programs for my employees?

Do I have comprehensive job descriptions including physical requirements?

Do I have a Drug-Free Workplace program in place?

Do my hiring processes include prior injury and background checks?

Do I have a vehicle-maintenance program in place?

Do we have regular safety meetings?

Do we have a program to regularly inspect equipment and facilities?

Do we report claims in a timely manner?

Do we have a specific procedure for following up on claims?

Do we have a specific procedure for dealing with claims when they happen?

Again, communicate with your carriers,



who will be happy to help you with these issues. Remember that helping you keep your losses down is also helping them pay less for losses.

In summary, the time and expense spent on loss prevention will more than pay for itself in long-term savings on your overall insurance program.

When asked "Why are we here?" Albert

Einstein replied, "To help each other."

I hope you found this helpful. •
J David Naughton, CIC, has been working with Environmentally sensitive companies and their risk management programs for over 30 years. Naughton is one of those rare and twisted individuals who actually enjoys talking about insurance and hopefully helping others.

Naughton can be reached at 904-662-9895 or email at David.naughton@acentria.com.

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Long odds offer opportunities for Anuvia's Amy Yoder

STAFF & WIRE REPORTS

Catching up with the ever-busy Amy Yoder, CEO, Anuvia Plant Nutrients, is no small feat. We were fortunate to chat with her the day after the running of the 148th Kentucky Derby, her one indulgence. Yoder shared with the *Florida Specifier* that she always places a single bet, the minimum \$2, on the long-shot. This year, the long-shot — Rich Strike — won.

Then, hours after watching that most exciting Run for the Roses race, Yoder headed to Washington, D.C., to meet with the EPA and USDA regarding a proposed \$250 million grant slated to promote the manufacture of U.S. domestic-based products focused on sustainability.

Don't be fooled by derbies and D.C., though. If you ask Yoder, she'll tell you first and foremost she's a 6th-generation farmer. And, she is. The McManus farm in Michigan sits on its Irish immigrant ancestors' original homestead and is currently worked by Amy (nee McManus) Yoder's brother and her 75-year-old father, producing crops of corn, wheat, and soybeans. Yoder is an accomplished businesswoman, entrepreneur, college graduate, wife, and friend . . . but first and foremost, she's a farmer.

Yoder is the first in her family to go to college, Michigan State University. There she recognized that agriculture is in her blood and wanted to learn more about it from a science and chemistry aspect to complement what she lived and learned "hands-on" working the family farm.

Yoder graduated Michigan State University in 1989 with a degree in Agricultural Systems & Technology Management. As a junior, she interned with Soil Conservation Service, now known as NRCS. As a senior, she interned with DuPont. And, not surprisingly, DuPont wanted Yoder on its team, and her internship led to her first job out of college. She worked for DuPont for several years, always learning, always seeking to understand how science and chemistry worked in agriculture.

Enter Monsanto . . . offering Yoder an opportunity to work out of its Seattle, WA, office where she was involved in its Forestry and Aquatics Division. Ever the farmer, applying herself, and looking to learn and grow, working in Seattle led to her running Monsanto's Northwest division, then its West Coast division, and then its entire U.S. Forestry/Aquatics portfolio nationwide.

With a solid practical and educational foundation, Yoder was adding to her professional acumen vis a vis a "Who's Who" in agri-business. Working at Monsanto led to Yoder being involved in a number of



Photo courtesy of Amy Yoder

Amy Yoder is the CEO of Anuvia Plant Nutrients, a rapidly growing AgTech startup that is trying to fight climate change through its revolutionary technology. While it can take nature up to two years to convert manure into usable nutrients, Anuvia's patented technology achieves the same result in minutes.

PROFILE IN INDUSTRY

agri-turnarounds and scale-ups, growing product lines and profitability. Always learning. Always growing.

Domestic opportunities led to international opportunities for Yoder, who routinely and repeatedly oversaw revenue growth from \$30 million to \$300 million, and converting generic commodities into branded product offerings.

All impressive. All preparation for her next challenge: Anuvia.

Anuvia was different. Anuvia was a pure start-up. Anuvia is a bio-solutions company, not necessarily a product company. As a bio-solutions company, the emphasis is on biologically-based products that enhance the growth of crops. A healthy farm isn't about this generation; rather, it's about ensuring it's around for the next generation. Yoder is a big proponent of sustainability, moving from

chemicals to biologicals.

The challenge for the Anuvia start-up was looking for a technology that could be applied to "big crops" on a wide scale. Initially, Anuvia was focused on technology that transforms waste materials to fertilizer. Sustainability. Transforming waste to the soil, adding organic matter back to the soil . . . and as an added benefit, producing less greenhouse gas.

Anuvia's origins were lab-based, starting in 2015. Once lab-tested, Anuvia was faced with a proof-of-concept challenge that saw the start-up opening a 50,000-ton facility in Zellwood, FL, to produce its GreenTRX and SymTRX products, the former for the turf industry and the latter for the agriculture sector. Both are based on Anuvia's slow-release delivery system called the Organic MaTRX, which mimics a slow-release similar to the natural process when organic matter breaks down in soil. All Anuvia products help farmers increase productivity and yields as well as improving the soil, reducing nutrient loss, and reducing greenhouse gases.

Fast-forward to today. Anuvia has re-opened a Mosaic plant in Plant City, Florida.

This second facility is larger than the Zellwood location, a 1.2 million-ton capacity vs. 50,000-ton capacity.

While it's rewarding that the market has been receptive to Anuvia's products, which requires a larger production facility, Yoder is especially pleased that one of the major learnings from Anuvia has been how to retro-fit mothballed plants and "bolt-on" the Anuvia process, giving shelved facilities a new life. This is both pragmatic and profitable: As Anuvia's products are more and more in demand, idle facilities can be identified nation-wide and brought back, creating jobs, serving markets, and advancing the overall goal of Anuvia's waste-to-benefit mission.

For Yoder, it's the culmination of her personal challenge; she always wants to make a difference. In her free time, what there is of it, she loves being with her horses. She adopts horses, raises horses, rehabilitates horses, all at her AYR Farms, which she owns with her husband. Horses are her passion . . . win, place, or show. But Yoder isn't a long shot, not by any stretch of the imagination. ●

FTA releases new transit greenhouse gas emissions estimator

By **BLANCHE HARDY, PG**

In celebration of Earth Day, the U.S. Department of Transportation Federal Transit Administration (FTA) released an updated Transit Greenhouse Gas (GHG) Emissions Estimator. The updated estimator includes added functionality to generate estimates of lifecycle energy use in the construction, operation, and maintenance phases of a transit project.

According to the USEPA, transportation has exceeded electricity production as the largest source of GHG emissions in the U.S. In 2020, transportation accounted for 27 percent of GHG emissions while electricity generation accounted for 25 percent.

The GHG Estimator version 3.0 includes 100 percent renewable energy as an electricity source and has updated GHG emissions factors. The GHG Estimator is a Microsoft Excel-based spreadsheet tool designed for use with the Greenhouse Gas Emissions from Transit Projects: Programmatic Assessment guidance published in January 2017.

FTA also developed a new companion tool to complement the GHG Estimator. The new Transit Bus Electrification tool allows users to estimate the partial lifecycle GHG emissions savings associated with replacing standard bus fleets with low-emission or zero-emission transit buses.

The two spreadsheet tools support the President's Jan. 20, 2021, Executive Orders on "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis" (EO 13990) and "Tackling the Climate Crisis at Home and Abroad" (EO 14008).

These tools help transit agencies generate project-level GHG emissions estimates for their National Environmental Policy Act (NEPA) reviews. NEPA requires federal agencies to disclose and analyze the environmental effects of their proposed actions. Agencies seeking federal funding are regularly required to comply with NEPA standards.

Use of the GHG tool may not be required, but the FTA recommends transit

agencies in Florida work with their regional FTA office in Atlanta, Georgia, to determine whether to conduct project-specific analyses of GHG emissions and the best approaches.

In issuing the guidance document, the FTA expressed its belief that assessing the effects of greenhouse gas emissions and climate change for transit projects at a programmatic level is practicable. The resulting programmatic assessments serve to report on whether certain types of proposed transit projects merit detailed analysis of their GHG emissions at the project level and provide FTA with a source of data and analysis for use in future environmental documents for projects where detailed, project-level GHG analysis is not critical.

The tool provides a resource to generate coarse but informative estimates of GHG emissions using limited project information and can be used for a broad range of transit projects. The FTA considers the total annual GHG emissions for a transit project as the sum of amortized construction emissions, annual maintenance emissions, and annual

operations emissions, minus annual displaced emissions.

In addition to added functionality to generate estimates of lifecycle energy use and the addition of "100 percent renewable energy" as an electricity source, the 2022 Emission Estimator updates included removal of gas-powered bus/Bus Rapid Transit (BRT) as a vehicle choice, and updated GHG emissions factors.

Using the Estimator involves the following basic steps: • Select the location (state) of your project • Select the analysis period (years) • Enter construction inputs • Enter facility operation inputs • Enter vehicle operations and maintenance inputs • Enter displaced emissions inputs • Calculate and review results.

Detailed instructions for each step are provided in the Transit Greenhouse Gas Emissions Estimator v 3.0 User Guide available at <https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/ftas-transit-greenhouse-gas-emissions-estimator>. ●

Most in favor of restoring of Ocklawaha River ecosystem

By LISA RINAMAN

The St. Johns River flows north 310 miles along Florida's east coast from west of Vero Beach to Mayport, shaping communities and driving the economy. The lower 100 miles area of the St. Johns is one of Florida's most productive estuaries and the nursery grounds for numerous species of commercially harvested fish and shellfish that are the foundation of northeast Florida's thriving seafood industry.

Shrimp spawn offshore, but once their eggs hatch, the larvae migrate back to the ideal habitat of the St. Johns estuary to grow and mature. As a result, commercial and sport shrimpers enjoy the river's bounty between Palatka and Jacksonville.

Blue crabs, the largest fishery in the river, release their eggs in the marine waters near the mouth of the river. Wind and tides will eventually carry the larvae upstream where they will find refuge in the submerged grasses that will nurture them. During the warmer months, blue crabs reach as far south as Lake George.

The St. Johns' delicate tidal balance of salt and freshwater has historically enabled healthy underwater grasses to thrive, providing habitat for fresh and saltwater species that have attracted sportsmen from near and far.

In 1968, that critical balance was altered when the Rodman Dam was constructed across the Ocklawaha River as part of the failed Cross Florida Barge Canal, severing this critical tributary from the St. Johns River.

Building the Rodman Dam (now known

as the Kirkpatrick Dam) resulted in the clearing and flooding of about 7,500 acres of floodplain forests, while submerging over 20 springs and 16 miles of the Ocklawaha beneath a massive pool of water. The federal government eventually halted the boondoggle canal project, but the obsolete dam across the Ocklawaha and the impounded pool of water remain after all these years.

The dam put a tourniquet on the natural flow of freshwater from Silver Springs and the Ocklawaha — flow that is essential to the health of the lower St. Johns River and its fisheries.

As seas rise and saltwater continues to push farther upstream, the impacts from the loss of freshwater from the Ocklawaha and its springs — including the disappearance of important underwater grasses — are only getting worse.

In 2017, an unprecedented amount of submerged aquatic vegetation (SAV) was lost in the river from Lake George through Palatka to just south of Jacksonville. The dramatic decline occurred following Hurricane Irma and subsequent storms. Poor water-quality conditions and algae blooms have restricted sunlight from reaching the bottom and prevented the recovery of eelgrass and other important aquatic plants. This loss of submerged grasses reduces fish habitat and natural filtration, increasing the threat of toxic blue green-algae throughout the lower St. Johns.

Fortunately, there is a cost-effective opportunity to reverse this damage and restore four unique ecosystems in central and north Florida.

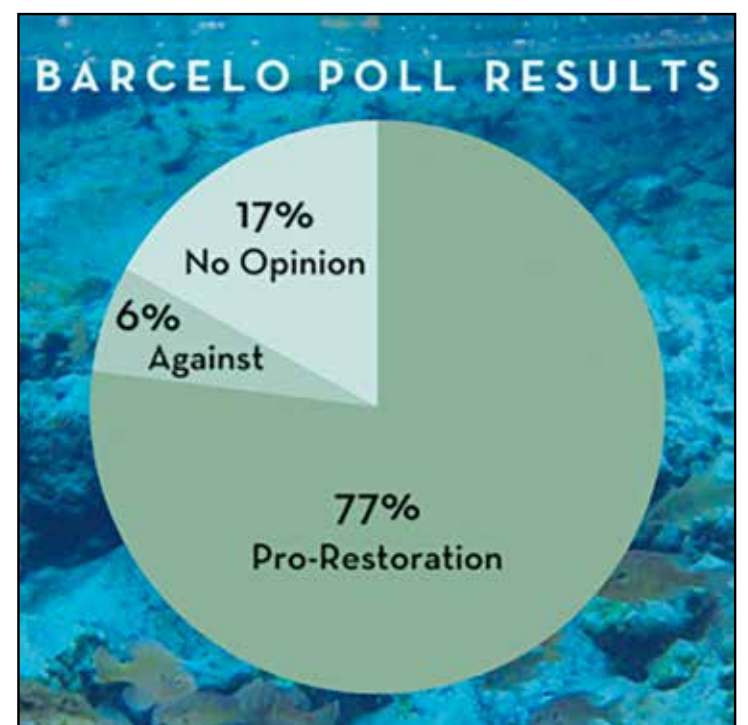
Reuniting the natural connection and

flow of Silver Springs, the Ocklawaha River, and the St. Johns will restore more than 150 million gallons of fresh water a day to the St. Johns, improving water quality, offsetting saltwater intrusion, and restoring habitat for fish and wildlife.

A free-flowing Ocklawaha will also restore a lost migratory pathway used by numerous fish species that historically migrated between the Ocklawaha River and the South Atlantic Bight. Many species once migrated far up the St. Johns and into the Ocklawaha River to feed and reproduce, including American shad, striped bass, American eel, and mullet. The construction of the dam across the Ocklawaha severed this migratory pathway, and native fish populations in Silver Springs have sharply declined.

It is quite rare for one project to offer such far-reaching benefits including the restoration of wetlands and numerous springs, expansion of manatee habitat and wildlife corridors, restoration of fisheries and historic migratory fish pathways, and the mitigation of saltwater that continues to move farther up the St. Johns due to sea level rise and dredging activities.

The science is clear, and there is overwhelming public support based on the St.



Johns River Water Management Survey conducted in October 2021, where more than 85% of the participants expressed a desire to restore the Ocklawaha River. An independent scientific poll reinforced this finding with 77% of voters in Marion and Putnam counties in support of restoration and only 6% in opposition.

Now, the dam is past its life expectancy and is putting our waterways and more than 500 homes at risk of flooding downstream. It is time to correct this 50-year-old wrong and the damage that resulted.

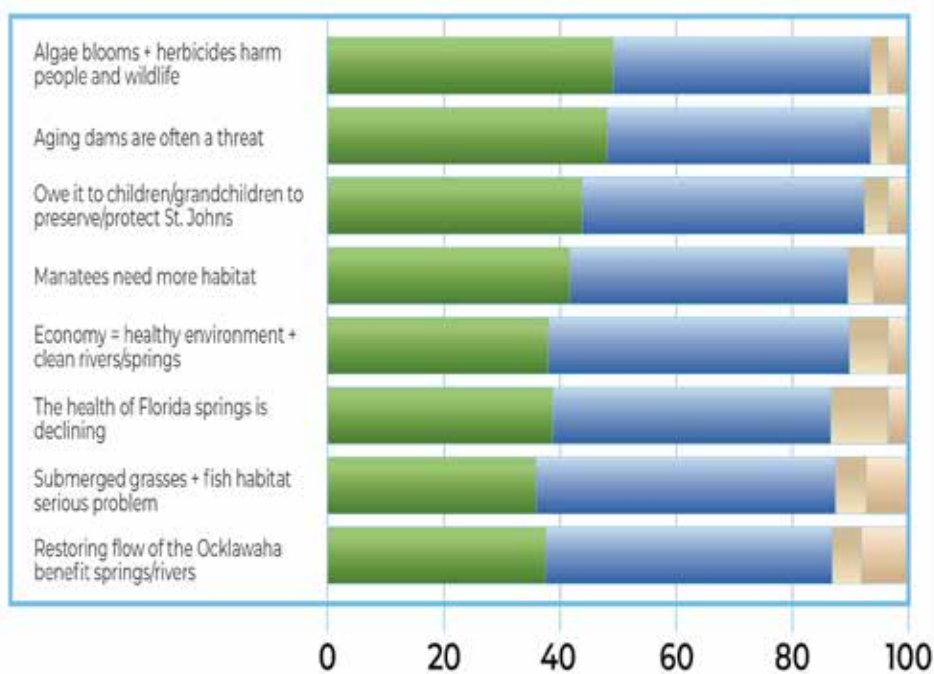
The time has come to finally restore the largest tributary of our St. Johns River to unleash the significant ecological and economic benefits of a free-flowing Ocklawaha. •

For more information or a tour, visit stjohnriverkeeper.org or freetheocklawaha.com.

Agree/Disagree Series

For each statement, please tell me whether you agree or disagree, and then whether you feel strongly.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DK/NR
Algae blooms + herbicides harm people and wildlife	50%	45%	2%	0%	3%
Aging dams are often a threat	49%	45%	3%	0%	3%
Owe it to children/grandchildren to preserve/protect St. Johns	44%	49%	4%	0%	3%
Manatees need more habitat	42%	48%	5%	0%	5%
Economy = healthy environment + clean rivers/springs	38%	52%	5%	1%	4%
The health of Florida springs is declining	39%	48%	6%	0%	7%
Submerged grasses + fish habitat serious problem	36%	51%	5%	0%	7%
Restoring flow of the Ocklawaha benefit springs/rivers	38%	50%	5%	0%	8%



■ Strongly agree
 ■ Agree
 ■ Disagree
 ■ Strongly Disagree
■ DK/NR

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Despite laws, humans often are No. 1 predator for raptors, owls

By CLINIC FOR THE REHABILITATION OF WILDLIFE



At CROW, 60 percent of our intakes are avian species, including seabirds such as brown pelicans and laughing gulls, and birds of prey such as owls, eagles, vultures, ospreys, kestrels, and kites.

Commonly, these raptors suffer injuries from vehicle or window strikes, which can result in minor to severe fractures and head trauma. Raptors also are susceptible to secondary rodenticide poisoning.

Unfortunately, our clinic admits a fair number of raptors that have suffered gunshot-wound injuries. According to the Florida Fish and Wildlife Conservation Committee, all birds of prey are protected under the Federal Migratory Bird Treaty Act and under Florida law. This means the birds themselves, as well as their nests and eggs, are provided protection at both the state and federal level. Although this means it is illegal to shoot any raptor, birds still are admitted with embedded pellets or other types of ammunition.

Birds of prey play a critical role in the environment by helping to mitigate the population of small rodents that many consider to be pests, such as mice and rats, along with other quickly reproducing mammals such as rabbits, raccoons, opossums, and squirrels. Raptors will even eat other raptors occasionally and frequently consume reptiles such as lizards and frogs. Additionally, raptors such as vultures

can provide free environmental cleaning services through the consumption of carrion while simultaneously eradicating disease. These birds are not only beautiful, but vital in maintaining a healthy ecosystem from which we all benefit. These birds have incredible adaptations to maintain their status as top predators in their environment. They use their sharp talons, incredible gripping force, sharp beaks, and strong wings to help them fly miles each day in search of prey.

Humans are the No. 1 predator for raptors, especially in urbanized areas. Nests and habitats can be damaged or removed all together through habitat destruction and expanding development. Lead poisoning from bullets also can kill birds of prey. Usage of radiographs at CROW not only allows staff to determine fractures and other internal injuries but can also help staff discover foreign metal objects such as pellets. Depending on the severity of the wound and the depth of the bullet, veterinarians can attempt to remove the metal fragments, although in some cases, removing the fragments could be detrimental to

the bird's health.

On Jan. 16, 2022, an adult Barred Owl (No. 22-149) was admitted to CROW from Moore Haven after being hit by a car. Upon physical examination, veterinarians found the bird suffered a lens displacement of the left eye and two fractures in the left wing. They also discovered an old, healed stable left-leg fracture and a lower leg fracture with metal fragments.

Staff suspect the owl likely was shot a while back and recovered from the gunshot injury only to be hit by a car resulting in the wing fractures and head trauma seen upon admission. The owl was given anti-inflammatory-pain medications, and it was placed in an oxygen chamber for support. Hospital staff placed a wing splint and body wrap to stabilize the fractures while they healed. The owl received weeks of physical therapy to improve the range of motion in its injured wing and underwent surgery to remove the left eye due to chronic pain. The owl still is at CROW and recently has been moved to an outdoor enclosure to begin flight conditioning. Moving to an outdoor enclosure means the

owl is one step closer to returning to the wild.

To help protect and save raptors, individuals can report civilians who actively shoot birds of prey. Additionally, knowing the location of your nearest wildlife rehabilitation facility can be crucial in getting help for any injured animal. •



Courtesy photo

The red-shouldered hawk is a medium-sized raptor (also known as a bird of prey), with a small head, hooked bill, and reddish/rust colored "shoulders," chest, and belly.

Highly Pathogenic Avian Influenza (HPAI) closing Florida aviaries

By DANIEL J. TORRES

Zoos across Florida have closed the doors to their aviaries in response to an outbreak of Highly Pathogenic Avian Influenza (HPAI) — commonly called bird flu.

Wild birds tested positive in parts of the Carolinas, Kentucky, Virginia, and in January, Palm Beach County, where a blue-winged teal tested positive for the H5 2.3.4.4 strain, confirmed by samples collected by the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Wildlife Services Agency.

Avian influenza A is a viral infection that occurs naturally among wild aquatic birds worldwide, and it has been isolated from

The FWC has urged people not to handle sick or dead wildlife and to prohibit contact between domestic and wild birds, in order to prevent the spread of Highly Pathogenic Avian Influenza (HPAI). HPAI is not treatable and is easily transmitted in wild birds.

more than 100 different wild bird species around the world. Wild birds can carry the virus, but might not always get sick, while some domesticated birds such as chickens and turkeys can become infected, often fatally.

Infected birds can shed the avian influenza A virus through saliva, nasal secretions, and

feces. Susceptible birds typically become infected through contact with the virus as it is shed by infected birds. Birds also can become infected through contact with surfaces contaminated with the virus from infected birds.

In February, state officials reported deaths of several ducks, including the lesser scaup,

black vultures, and other avian species in Brevard County, while other birds have been found dead south of Flagler County.

The Florida Fish and Wildlife Conservation Commission is investigating deaths they believe to be connected to the HPAI bird flu, while also monitoring the cause of death in birds that are found sick or dead from unknown causes.

The agency is working with the U.S. Department of Agriculture-Wildlife Services, the Florida Department of Agriculture and Consumer Services, the University of Florida, and the National Wildlife Health Center, among other organizations and wildlife rehabilitation facilities to investigate the recent deaths associated with the H5 2.3.4.4 strain, first documented in the U.S. in 2021.

The Brevard Zoo, in Viera, closed its free-flight walk-through aviary until further notice, while the Marine Science Center in Ponce Inlet has also ceased its avian exhibits following three aquatic birds testing positive for HPAI. While Florida has only recorded infections in wild birds, the avian influenza outbreak has spread to commercial and backyard flocks in six U.S. states, with 10 states reporting the virus in wild birds.

The FWC has urged people not to handle sick or dead wildlife and to prohibit contact between domestic and wild birds, in order to prevent the spread of HPAI. HPAI is not treatable and is easily transmitted in wild birds, and under the recommendation of the FWC, many state hospitals and rehabilitation facilities, like the Back to Nature Wildlife Refuge, have stopped admitting birds. Animal services in Orange and Osceola counties also have ceased transport on any birds due to the detection of HPAI throughout the state.

There is a low risk of HPAI transmission to humans and, so far, there have been no known human infections in North America. All bird deaths should be reported to <https://app.myfwc.com/FWRI/AvianMortality/> in order for the agency to conduct an investigation into bird die-offs. •

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FWC OKs regulation changes for several fish species

By **CAPT. MATT BADOLATO**

The Florida Fish and Wildlife Conservation Commission (FWC) has approved regulation changes for several fish species.

Cobia

A recent stock assessment determined the cobia stock is undergoing overfishing, and as a result, reductions in current harvests are needed.

These changes for commercial and recreational harvesters in state and federal waters are necessary to end overfishing, improve stock abundance, and ensure future cobia fishing opportunities.

Therefore, effective July 1, 2022, the minimum size limit will increase from 33 inches to 36 inches fork length for all state waters.

The commercial bag limit will be reduced from two fish to one fish per harvester, and the vessel limit for both recreational and commercial will be reduced from six fish to two fish per vessel per day.

These changes are consistent with pending regulations in Gulf of Mexico and Atlantic federal waters.

Redfish

At its May meeting, the FWC approved proposed management regions and regulation changes for redfish in state waters.

A major East Coast change includes the separation of the Indian River Lagoon system as its own management region and allowing only catch-and-release fishing for redfish.

On the Gulf Coast, the bag limit will increase to two fish per person in the Big Bend region.

The eight-fish vessel limit will be reduced to four fish in the Panhandle, Big Bend, and Northeast regions.

The vessel limit will be reduced to two fish per vessel in Tampa Bay, Sarasota Bay, Charlotte Harbor, Southwest, and Southeast management regions.

"With this new management approach, this agency is committed to continuing to work with our partners and stakeholders in finding solutions for redfish," said FWC Chairman Rodney Barreto.

The modification of redfish-management regions and regulations, as part of the new management approach, will better capture regional differences and improve angler satisfaction.

Staff plans to continue to gather input on the proposed rules and will return to the Commission for a Final Rule Hearing later this year.

Dolphinfish

New regulations for dolphinfish (mahi-mahi) are a proactive conservation measure intended to help address stakeholder concerns regarding declines in the dolphinfish fishery, which are supported by FWC recreational landings analyses in southeast Florida and the Florida Keys.

FWC continues to work with the South Atlantic Fishery Management Council to revisit recreational dolphinfish limits in Atlantic federal waters.

Starting May 1, the current 10 fish recreational daily bag limit will be reduced to five fish and a 30 fish per vessel private recreational daily limit vessel will go into effect in Atlantic state waters.

Southwest Coast Snook, Redfish, and Seatrout

Snook and redfish will remain catch-

and-release through Aug. 31, 2022, in southwest Florida for Sarasota Bay through Gordon Pass in Collier County.

Normal regulations for recreational spotted seatrout harvest have resumed with the addition of a six-fish recreational vessel limit.

Commercial harvest has also resumed, but harvest is held to the recreational three-fish bag and six-fish vessel limits.

The Commission is currently considering long-term regulation changes for redfish, which could take effect when harvest reopens on Sept. 1, 2022.

Normal regulations for snook and seatrout will resume on Sept. 1.

The catch-and-release measures for snook, redfish, and spotted seatrout in all waters from Sarasota Bay through Gordon Pass were put in place as part of the response to the prolonged 2017-19 red tide event.

Fellsmere Water Management Area Bass

At its May meeting, the Florida Fish and Wildlife Conservation Commission approved largemouth bass regulation changes for Fellsmere Water Management Area (commonly known as Headwaters and Egan Lakes).

The rules include catch-and-release of all largemouth bass in the Fellsmere Water Management Area and the required use of circle hooks when fishing with natural bait greater than three inches in length.

"Fellsmere is a success story for our state's fisheries," said FWC Commissioner Gary Lester. "Our iconic trophy bass will benefit from these management decisions."

The 10,000-acre manmade lake lies in Indian River County adjacent to Stick Marsh/Farm 13.

Water levels are managed by the St. Johns River Water Management District (SJRWMD), and extensive habitat work was conducted by the FWC and SJRWMD prior to flooding the lake.

The bass population has flourished in this habitat-rich environment.

Red Snapper

Florida's 2022 recreational red snapper season will open June 17 and run consecutively through July 31; it also will open for five weekends in October and November.

This season applies to recreational anglers fishing from private vessels in Florida Gulf state and federal waters.

For-hire operations that do not have a federal reef fish permit may also participate in the season but are limited to fishing for red snapper in Florida Gulf state waters only.

The Direct Enhancement of Snapper Conservation and the Economy through Novel Devices Act of 2020 (DESCEND Act) requires persons on commercial, for-hire, and private recreational vessels to have a venting tool or descending device rigged and ready to use when fishing for reef fish species in Gulf of Mexico federal waters.

In Florida's Atlantic federal waters (3-200 nautical miles), the red snapper season will open July 8, 2022, if determined allowed by NOAA Fisheries.

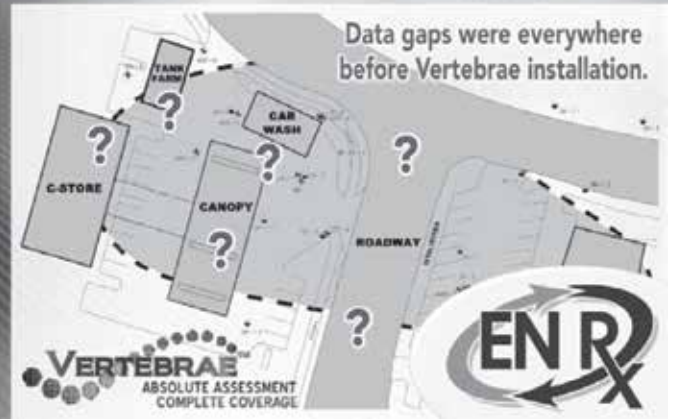
The Atlantic recreational season was open for three days in 2021. ●

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From SMART Page 1

In addition to environmental and aesthetic benefits, maximizing access to natural light and outdoor views has been demonstrated to improve health and wellness. Dr. Mariana Figueiro, the director of the Mount Sinai Icahn School of Medicine, Light and Health Research Center, said the Center's team recently completed the REVOLV study, involving 20 residents of the Exo apartments in Reston, Virginia.

The study participants were evaluated during equal periods of time while living in residences equipped with View Smart Windows. The smart windows were turned on for one week and then off for one week, acting as standard windows equipped with half-drawn blinds.

Participants were equipped with sleep-tracking devices and wore Daysimeter light monitors to record activity patterns and personal light exposure during daylight hours.

The test subjects also completed surveys on their health and wellbeing every four hours throughout the day on the first and last days of each residency cycle, with and without smart windows (blinds condition).

Saliva samples were collected from each participant in the evening hours under a researcher's supervision and sent to the Mount Sinai laboratory for dim light melatonin onset analysis to determine the start of melatonin production in the body.

Melatonin is a hormone that controls the sleep-wake circadian rhythm cycle.

Production and release of melatonin in the brain are connected to time of day, increasing when it's dark and decreasing when it's light. Rising melatonin levels in the evening promote sleepiness.

The REVOLV study found study participants went to sleep 22 minutes earlier, resulting in a total of 16 minutes more sleep each night, in the smart windows condition. Their sleep was also more consistent from one day to the next, indicating good sleep hygiene.

Wellbeing analyses indicated participants were 11% less anxious and 9% less stressed while in the smart windows condition than when they were in the blinds condition.

They consistently demonstrated a distinct cycle of high morning and daytime vitality and low energy at night from the start to end of the week.

In the blinds condition, they exhibited a delay in peak vitality, higher nighttime energy levels, and lower morning vitality at the end of the week compared to the start.

"The REVOLV study demonstrates the impact of daylight on the physiological, behavioral, and subjective measures of circadian health in a real-world environment.

The findings highlight the importance of ensuring people are exposed to circadian-effective electric light or daylight indoors as well as outside for human health and wellbeing," Figueiro reported. •



Photo courtesy of Florida Fish and Wildlife Conservation Commission

The gopher tortoise is one of five North American tortoise species and is the only tortoise naturally found east of the Mississippi River. Gopher tortoises occur in parts of all 67 Florida counties.

From DeMeo Page 12

sion.

Furthermore, according to the Committee on Environment and Natural Resources Staff Analysis, owners of lands where a conservation easement or other less-than-fee interest have been acquired by the state or local government may apply to become a recipient site if the operation will not interfere with the land's management plan for the easement, and the land owner complies with all state and federal permitting requirements. Under this bill, the Fish and Wildlife Conservation Commission is required to update and improve its review process of recipient-site applications for public and private sites to promote the efficient allocation of tortoises by Dec. 31, 2022.

Accordingly, all requests for additional information regarding the establishment of a recipient site must be received by the applicant within 45 days, and the commission must approve or deny all applications within 45 days. The bill also requires FWC to institute a continuing effort to establish recipient sites on private lands throughout Florida as well as create an online dash-

board that will show the available capacity of approved recipient sites to assist with the efficient relocation of the species by Oct. 31, 2023.

Finally, the bill requires the commission to submit a report to the head of the House and Senate by Feb. 1, 2023, regarding the progress made in establishing new sites, the average time to approve or deny an application, any federal action taken to modify the species's endangered status, and any other relevant information regarding the species and the gopher tortoise conservation program. See Senate Bill 494: Fish and Wildlife Conservation Commission.

SB 494 was substituted for its companion bill, HB 323, and passed as amended by the House with 112 yeas and 1 nay on March 4, 2022. The bill was minorly amended and passed by the Senate with 37 yeas and zero nays on March 9, 2022.

After a final concurrent amendment, the bill passed the House with 116 yeas and zero nays on March 10, 2022. Gov. Ron DeSantis approved House Bill 494 on May 26, 2022. The Fish and Wildlife Conservation act will take effect July 1, 2022. •

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Wekiva Parkway, partners create 8,000 feet of animal crossings

By **BLANCHE HARDY, PG**

Animals and motorists will be a little safer while crossing and driving on the Wekiva Parkway.

The Florida Department of Transportation (FDOT), Central Florida Expressway Authority (CFX), Florida's Turnpike Enterprise, and regional stakeholders in Central Florida's Wekiva Parkway (S.R. 429) toll road development have achieved a long-awaited milestone.

On March 7, the FDOT and the partners celebrated the completion of a series of several wildlife crossing bridges in the Wekiva River Basin. The highway segments are elevated and designed to protect wildlife and to allow access to the greater Central Florida Wildlife Corridor.

Reducing vehicle wildlife conflicts also protects motorists using the highway, as it crosses through the critical wildlife corridor.

The new crossings provide about 1.5 miles of open space for animals to travel underneath the roadways between the Seminole State Forest and Rock Springs Run State Reserve. The FDOT is building a multi-use trail in conjunction with the

The new crossings provide about 1.5 miles of open space for animals to travel underneath the roadways between the Seminole State Forest and Rock Springs Run State Reserve.

parkway. This trail will cross over the Wekiva River on the new high-span bridge constructed under strict environmental control to protect the Wekiva River from exposure to construction stresses and sedimentation. The Wekiva River is a National Wild and Scenic River and Florida Outstanding Waterway.

The Wekiva Parkway trail will connect to a proposed extension of the West Orange Trail in Orange County, the Lake-Wekiva Trail in Lake County and an extension of the Seminole-Wekiva Trail in Seminole County.

From the inception of the Wekiva River Parkway Coordinating Committee several years ago, the Wekiva Parkway was planned and designed to facilitate the unique natural features of the Wekiva River and spring shed. Environmental work to establish the roadway's alignment began

almost 20 years ago. The corridor was authorized by the 2004 Wekiva Parkway & Protection Act.

Creation of the Wekiva Parkway included preserving more than 3,400 acres of land for conservation. The protection included the purchase of large undeveloped and agricultural tracts of land that otherwise could have been developed in the environmentally sensitive area.

The new wildlife crossings and improvements to existing wildlife facilities within the area of the project will provide nearly 8,000 feet of safe crossing areas for animals, and add nearly 100 times more wildlife-access area. In addition to the wildlife facilities constructed as part of the Wekiva Parkway, the FDOT realigned a mile of County Road 46A through the Seminole State Forest; CR 46 and CR 46A directly intersect or closely follow the new

highway.

The realignment was part of the environmental protection criteria required in the 2004 Wekiva Parkway and Protection Act. Closing this portion CR 46A through the Seminole State Forest is intended to improve habitat connectivity in the forest and reduce the risk of conflicts between vehicles and wildlife. The partner project will not be part of the toll system. The portion of the new roadway was built below grade and a vegetative buffer was maintained to minimize impacts to the adjacent community. The FDOT also installed hundreds of native or sustainable trees and plants to further enhance the corridor.

The Wekiva Basin provides habitat for many rare or threatened species such as the Florida black bear, bald eagles, burrowing owls, sandhill cranes, gopher tortoises, Florida scrub jays, and eastern indigo snakes among other iconic wildlife that migrate, reside, and range in the Wekiva Wildlife corridor and broader associated Florida Wildlife.

The Parkway is a \$1.6 billion project that will connect SR 429 to SR 417, completing the beltway around Central Florida. ●

From PART 2 Page 7

ally, including at a DSCP site in St. Petersburg recently awarded closure by the FDEP.

FDEP's PFAS Pilot Study suggests

that many drycleaning businesses in Florida could be required to address PFAS. If history is a guide, MNA augmented with enhanced attenuation remedies that achieve plume stability and ensure no exposure risk,

will be the primary strategy to pursue regulatory closure for PFAS.

PlumeStop CAC injection is a sustainable enhanced attenuation approach that binds mixtures of PFAS and chlorinated solvents to aquifer materials at or near the source zone. The approach has widely demonstrated the complete

and long-term treatment of PFAS, chlorinated solvents, and commingled PFAS/solvent plumes. With the recent discovery of PFAS at Florida drycleaning facilities, the patented CAC technology¹², used in combination with MNA, gives remediation practitioners a solution to this complex problem. ●



Photo courtesy of Florida State Parks

The temperature of the spring at Ruth B. Kirby Gilchrist Blue Springs State Park is a constant 72 degrees year.

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are protecting Florida's springs, why are nearly all our springs unhealthy and continuing to decline?

As I have stated in previous op-eds and a dozen springs-restoration plans, the answer to this question is simple — because Florida's springs-preservation efforts are not sufficient to achieve the goal of springs restoration and protection. FDEP's springs Basin Management Action Plans intended to reduce nutrient pollution are ineffective. And, under FDEP's supervision, the water management district governing boards tasked with protection of springs and environmental flows have not reduced or put a cap on excessive groundwater extractions.

I would like to suggest two mid-year's resolutions for the public servants at FDEP who are entrusted with "... safeguarding Florida's natural resources and enhancing its ecosystems":

As you can see in the box, if strictly followed, these two mid-year resolutions will restore much of the original beauty and ecological functionality of Florida's priceless springs natural resources. Fulfilling these promises will allow Florida's springs state parks to truly shine again. Continuing to publish platitudes about the public's role in solving these problems is not helpful. The responsibility for springs protection rests squarely on the shoulders of our elected leaders and the agencies they direct. ●

Bob Knight is Executive Director of the Howard T. Odum Florida Springs Institute located in High Springs — "Gateway to the Springs."



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Basalt fiber the future of concrete reinforcement

STAFF & WIRE REPORTS

Florida made the news about a year ago for an unfortunate reason: the Surfside Condo collapse. And recently, it made the news again, for an almost \$1 billion settlement to the families of those who perished in the rubble.

While the “why” of the collapse remains under investigation, Fred Tingberg, Jr., Director and CTO of Basanite Industries, cites the public’s keen awareness of failing infrastructure, especially along coastal communities. Basanite, Inc. of Pompano Beach has a portfolio of products that use basalt fiber,

Basalt Fiber Reinforced Plastic is 2.5 times stronger than steel, and weighs about 25 percent of its ferrous counterpart.

reinforced with a polymer, as a replacement for traditional steel/rebar.

As unconventional as it sounds, Basanite, Inc. has engineered, developed, and manufactures a portfolio of sustainable, lightweight, non-corrosive, composite concrete-reinforced products from basalt as an alternative to traditional steel.

What is basalt? Basalt rock is one of the most common materials on the planet. More than 90 percent of the volcanic rock on Earth is basalt. Basalt is an extrusive igneous rock formed from the rapid cooling of low-viscosity lava, rich in magnesium and iron. One internationally acclaimed deposit is the Giants Causeway in Northern Ireland; however, highly pure deposits of basalt occur naturally throughout the United States.

The purity and fine-grained nature of basalt rock allow for it to be melted down at 1500°C and extruded through proprietary

equipment to create long filaments or “rovings.” These rovings are then chopped into small fibers, woven into fabric, and processed with an epoxy composite material into what is known as Basalt Fiber Reinforced Plastic (BFRP).

BFRP enjoys a strength 2.5 times that of steel, a weight about 25 percent of its ferrous counterpart, yet this “green” material remains inert in acids, caustics, salt, and sulfide gas. This “next generation infrastructure material” is perfect for corrosion-proof concrete reinforcement applications.

Basalt non-ferrous rebar excludes corrosion as a design consideration. Basalt fiber reinforcement materials allow for the substitution of effective, competitive, and chemically inert materials in concrete reinforcements. Applications include sewer manholes, catch basins, panels, and slabs where cracking in reinforced concrete expos-

es steel to sulfide gas, salt water, alkaline or acid corrosion. In seawalls, roadways, bridges, concrete storm and sanitary structures, pilings, beams, and decks, BFRP technology serves wherever reinforcement is desired while corrosion is not.

This emerging technology is compelling in light of the structural failures in road and bridge construction that are making world news on a daily basis. While cracking concrete is a design parameter, exposed steel rebar serves as a major liability being neither inert nor immune from the effects of salt water, sulfide gas, and other aggressive chemicals.

Basanite’s portfolio of products is economical, practical, and a “green,” sustainable, “low carbon footprint” means of structural reinforcement. These materials are produced in all common rebar sizes, as a reinforcement mesh, as well as loose fibers for inclusion into concrete products ranging from catch basins to manholes to vertical construction panels to slab-on-grade applications. In a sign of adoption, the DOT now includes these products categorically within its Standards for Road and Bridge Construction.

Regarding supply chain and rising commodity prices coupled with scarcity, these products are American-made, competitive with steel, and available in a time when construction materials have fallen into short supply.

It’s not just theory...

The 300-acre island municipality of Indian Creek Village, the City of Pompano Beach, and Broward County utilities have recently chosen environmentally friendly, high-performance composite construction materials (BasaFlex™ and BasaMesh™) for use in fortifying sea walls, concrete catch basins, and sanitary sewer structures. Many Florida communities have one thing in common: salt water. The basalt fiber reinforced polymer will significantly strengthen and extend the life of existing concrete structures – for example, seawalls – where rising tide considerations are coming under scrutiny, requiring renovation and elevation modification. The high strength-to-weight ratios of BFRP also allow for placement of additional “cap material,” in lieu of full replacement of the seawalls. This is especially significant to the many residents who are forced to bear the cost of seawall modifications to accommodate rising tides.

More recently, a common theme challenging the construction industry is the shortage of steel and other raw materials. “Buy America” clauses prohibit the use of foreign steel, which exacerbates the already long lead times. Basalt fiber, as well as the full portfolio of Basanite’s products, are domestically produced and readily available. At the time of this writing, Basanite is constructing a 100-piece underground concrete-structure network where the steel required had an 18-week lead time. The Basalt fiber reinforcements used in lieu of rebar had a far more practical lead time of 30 days.

There is extensive testing on BFRP by FDOT, University of Miami, University of Sherbrook, and other approval bodies as Basalt Fiber Reinforced Polymer solutions become more widely known, accepted, and sought. These products weigh about 25% of their steel counterparts while exceeding tensile properties necessary for concrete reinforcement. Add supply chain concerns, reduced trucking cost, and installation efficiencies to the primary benefit, which is “non-corrodible” in salt water and sulfide gas environments, and this lighter, environmentally greener and cost-saving product group is emerging as a major player in today’s construction markets. It will be making exponential gains as awareness expands and the number of projects adopting basalt-based solutions increases. ●

Livestream June 28

Please join us on Facebook as we Livestream our Technical Symposium from 10am to noon June 28. Talk with the experts about the latest developments in Basalt Fiber Technology from academia and commercial viewpoints.

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Low Carbon
Reinforcement Materials**



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Sustainable and Eco-Friendly 100+ year product
Similar thermal expansion coefficient as concrete; an excellent choice in freeze/thaw environments
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Optimal for use in harsh applications
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BasaFlex™
BFRP Composite Rebar



BasaMix™
BFRP Fiber Reinforcement



BasaMesh™
BFRP Geo-Grid Reinforcement



BasaLinks
BFRP Stirrups & Shapes

**Headquartered in Pompano Beach, Florida,
Basanite Industries, LLC is a business formed to meet the market opportunity, and increased acceptance and use of Fiber Reinforced Polymers (FRPs) in civil, precast and general construction.**

For inquiries contact Fred Tingberg at Ft@basaniteindustries.com

Basanite Industries, LLC, is a wholly owned subsidiary of Basanite, Inc.; a publicly traded company : OTCQB-BASA

