

## LSJR TAC Meeting

November 8, 2022, via Teams

10:00 am – 11:33 am

### Attendees

Katie J. Bizub, JEA  
Russell Brodie, FWC  
Tiffany Busby, Wildwood Consulting  
Vincent Clark, DEP-NED  
Ed Cordova, JEA  
Kathryn Craver, DEP-NED  
Darrell Damrow, CCUA  
Dean Dobberfuhl, SJRWMD  
Brian G. Davis, DEP-NED  
Paul Duff, DEP-NED  
Melissa Long, COJ  
Ted Hughes, DEP-NED

Jim Maher, DEP-NED  
Lori McCloud, SJRWMD  
Tina McIntyre, UF-IFAS  
Joni Petry, DEP-NED  
Gerry Pinto, JU  
AJ Reisinger, UF-IFAS  
Kelly Smith, UNF  
Lissa Strohecker, SJRWMD  
Steve Swann, Atlantic Beach  
Riley Timbs, SJRWMD  
Katrin Villinger, DEP-NED  
Heather Webber, CCUA

### Welcome and Introductions

Tiffany Busby welcomed everyone to the meeting and reviewed the Microsoft Teams controls. Everyone introduced themselves.

### ***Nitrogen Load Reductions and Economic Impacts Resulting from Fertilizer Workshops, A.J. Reisinger and Tina McIntyre, University of Florida—Institute of Food and Agricultural Sciences (UF-IFAS)***

A.J. started off the presentation. He thanked Seminole county and funded by the Florida Department of Environmental Protection (FDEP) and the U.S. Environmental Protection Agency (EPA) Section 319 grant. Tina's position employed by Seminole County at UF-IFAS Extension. They hope to extend this effort beyond Seminole County.

A.J.'s research focuses on nitrogen and phosphorus loading and how to reduce them and how to show the effects of reductions. There are water quality issues within and outside Florida. Urbanization tends to be a main driver of nutrient issues. A.J. showed a map of the night sky and where people are living which matches where turfgrass is located. The green spots on the map represent where turfgrass is located.

We are coming to live together in large communities, and we usually have turfgrass. More than 90% of Florida's population live in urban and developed communities. A.J. showed two maps of urban areas in 2010 with 18 million people and the projected urban areas in 2070 with 34 million people. He showed a photograph of a typical suburban landscape.

We know that population development can have an impact on water quality. A.J. showed a SWFWMD graph from a 2002 Weeki Wachee looking at the nitrate concentrations and the population curve. The concentrations are a mirror image of the population growth with a 15-year delay. This does not show causation but a correlation between population growth and increasing nitrate concentrations.

Nationally, we see nitrate concentrations increase when you have more intensive urbanization, including loading from wastewater, not just stormwater. Tina is working on specific stormwater issues in Seminole County.

Tina explained that there are water quality impairments in Seminole county. There are several BMAPs—Wekiwa Springs, Lake Jesup, and Lakes Harney and Monroe. There are also additional total maximum daily loads (TMDLs). The sources of nitrate in the Wekiwa Basin include 26% from urban turfgrass fertilizer. We can do something about the public behaviors associated with urban turfgrass fertilizer. The Florida Friendly Landscaping (FFL) Program in Seminole County, the Public Works Department, Watershed Division, and the seven cities in the county have a strong partnership through their National Pollutant Discharge Elimination System (NPDES) stormwater permit.

Seminole County passed a fertilizer ordinance in 2017. From 2017 to 2020 a FDEP Section 319 grant was received to facilitate residential fertilizer education. From 2021 to 2024 another Section 319 grant was received by Seminole County to facilitate fertilizer education for professionals and retailers. Both grants provided for the hire of a fertilizer educator to report to the FFL UF-IFAS Agent.

Public workshops on fertilizer were conducted—some are two hours long but can be condensed. The workshops were held from September 2018 to August 2022. The focus is on best management practices where they receive a bag of fertilizer of at least 50% slow-release fertilizer, which matches the ordinance and is recommended by UF-IFAS. FDACS licenses professionals so they have targeted those with an FDACS license. Also approved for multiple categories of training. They also created some public service announcements.

A.J. explained how they calculated the impacts for educational programs related to fertilizer. Over a two year period, they figured out a way to calculate the impacts of the workshops. They published an extension document called SL492.

The objectives of the tool were to be scientifically based and defensible; be translatable across programs; be user friendly; and be as accurate as possible. They did not want it to be dependent upon Tina’s specific project so that others could use it. Perfection was not a primary objective-an estimate was fine.

The tool was developed in May 2020. Tina shared a Qualtrics survey she used to evaluate her fertilizer workshops. In October, Tina shared follow up surveys documenting behavior change. The surveys showed how many participants had a behavior change. The surveys showed how many participants adopted behavior changes. So, then the question is “How much reduction do these behaviors amount to?”

To calculate a load reduction, you need certain data:

- How much nitrogen was originally being applied?
- how much would leach under normal circumstances?
- How much was being applied under the new behavior?

A.J. showed a table that outlined how he performed the calculations. They used the UF-IFAS application rates with high and with a low value. They calculated nitrogen leaching for several fertilizer products: soluble release nitrogen, quick release nitrogen, and total nitrogen forms from different fertilizer formulation types.

Based on the recommendations from the workshops and using 50% slow release fertilizer, the savings of removing that nitrogen from the environment were calculated.

Fertilizer ordinance calculations. In Seminole County, if you followed the fertilizer ordinance, they estimated you would skip one of the applications. They calculated the loading and cost savings. They calculated that following the UF-IFAS recommendations on over-the-counter fertilizer products to

following the UF-IFAS recommendations reduces nitrogen leaching by 0.05 to 0.60 pounds of nitrogen per 1,000 square feet per year. There is a tool anyone can use to calculate the benefits. We can then calculate the benefit of a 50% switch to slow release fertilizer. Based on the survey, they calculated how many people switched and using the difference in leaching rates, they calculated the nitrogen reduced (323 lbs nitrogen/year) and the cost savings of treating that load based on a cost of \$500 per pound per year. The total savings were estimated at \$161,500 per year.

They also looked at the summer fertilizer ban—how many applications would be skipped? For this, they estimated that one fertilizer application would be skipped. They ran both 100% and 50% slow release fertilizer being used. They also ran two different soil types. The leaching avoided due to the workshop ranges from 62 lbs nitrogen/year to 874 lbs nitrogen/year. The cost savings were estimated to be from \$31,000 to \$437,000.

The spreadsheet tool is available to anyone. The extension agents have the spreadsheet tool. They can use this as part of their annual reporting.

This is a work in progress. There is other research underway. There are some assumptions underlying the tool.

Tina talked about the results and impacts on her program. Through the 70 classes held, 2,142 people were educated about fertilizer BMPs. Of those, 97% increased their knowledge. They reported 98% intended to fertilize their yard appropriately. They also did a 6-month follow up survey and had a decent response rate. In the behavior change follow up, they have documented 613 participants they had used 50% or more slow release nitrogen product. This is estimated to reduce nitrogen leaching by 600 pounds and a benefit of about \$300,000. For those that follow the restricted period, which leads to 1,700 pounds of nitrogen reduced and a \$870,000 cost savings.

Tina encouraged locals to work with their local extension, which is in every county, to use or create a Florida Friendly Landscape Program.

**Question:** In terms of the size of the lawn and the square footage, how did you determine the size of the lawn?

**Response:** A.J. responded the size of the lawn was based on personal knowledge with extension agents and the typical lot size.

**Question:** Can you change the lot size in the tool?

**Response:** Yes, you can change the lot size in the tool. The Excel spreadsheet can be modified. There are three cells highlighted in yellow that can be changed—one is from the survey results, one is the dollar value for 1 pound of nitrogen removed, and one is for the lot size.

**Question:** How was the leaching measured?

**Response:** That was the biggest impediment in the study. It was based on literature studies from lab column experiments. One value is based on bare soils with no grass (no plant uptake) and the other based on extremely healthy St. Augustine grass to estimate both extremes. Most yards are going to be somewhere in the middle. They used the average values. They also did a study in Alachua County with actual measurements, but they have not compared the results yet. Tina noted that it does call for more research.

**Question:** There is a question about the longevity of the behavior change. It was nice that you calculated the cost savings to the homeowner to promote a more permanent change.

**Response:** Tina felt that the behavior change will be more lasting than six months. They could perform additional follow up on their early participants. For those that see the billboards and the public service announcements (PSAs), those help to reinforce those lessons. That knowledge seems to remain. The challenge is reaching the 500,000 people in the county.

**Question:** Paul Duff asked if you see a benefit to using organic fertilizer to reduce nutrients.

**Response:** Tina just attended the outside collaborative that has developers, landscapers, and landscape architects and they discussed how to be more Florida friendly. There is active research underway in Osceola County. Can we enhance and amend soil before homeowners move in? There are folks looking for alternative fertilizers during the blackout period. A.J. noted that there are lots of distinct kinds of fertilizers, including biosolids. Compost is also organic. The slow release version is like an organic form of nitrogen. We have found that if you stop all synthetic fertilizer and just use compost, using industry standards, you do not leach as much but you still leach more than 30 times the natural loading. Even just having a lawn with no fertilizer. Just having a lawn with no fertilizer application leaches 15 to 20 times more nitrogen compared to a pristine or conservation area.

Tina noted that we may need to consider getting rid of the lawn entirely when we reach higher population levels.

Tiffany commented that crediting public education is a policy issue in the basin management action plans. Currently, DEP credits 3% of the starting load for having the Florida Yards and Neighborhood Program, which assumes a certain level of engagement. It also makes it hard to credit efforts that enhance public education and engagement because we are unsure what the baseline education efforts achieve.

#### **Northeast Florida Wastewater Facility Plans to Meet Senate Bill 64 Requirements, Ted Hughes, Florida Department of Environmental Protection**

Ted looked at all the facilities that discharge directly into the tributaries or the main stem of the St. Johns River. To estimate the current average annual loading for total nitrogen (TN) and total phosphorus (TP), Ted reviewed the effluent limit and the annual average concentration limit. He also included those facilities that are permitted through an aggregate permit.

Then he calculated the effluent limit and the annual average limit for TN and TP. The effluent limit is the permitted capacity flow times the number of days in a year, times the permitted capacity. The TMDL mass daily load was calculated based on the water quality based effluent limit (WQBEL) times the permitted flow. For those with aggregate permits, he took the facility permitted flow divided by the aggregate flow times the TMDL limit for the entire aggregate permit.

Ted predicted how the facilities and their plans to meet Senate Bill 64. Ted showed a bar chart of the estimated current capacity with the load in pounds per year (for both TN and TP) and the estimated Senate Bill 64 capacity. For TN, the estimated reduction is from 20,000,00 TN lbs/yr to 5,000,000 TN lbs/year (15,000,000 lbs/yr reduction). This is a 75% TN reduction. For TP, the estimated reduction is from about 5,500,000 TP lbs/yr to 2,000,000 TP lbs/year (3,500,000 lbs/year reduction or a 63% reduction).

Most facilities will be sending their effluent to reuse instead of discharging the effluent directly to surface waters. Many facilities will be using the APRICOT Act with allows a discharge of 30% of its reuse capacity if they have advanced wastewater treatment (no more than 3 mg/L TN and 1 mg/L TP) and high level disinfection. Some facilities will use deep well injection. The reductions are scheduled to occur by

January 1, 2032. The estimated values are subject to change and facilities can modify their plans to comply with the bill.

**Question:** The 2032 deadline seems far away but for utilities to design and build these upgrades, the deadline is very speedy. Are the facilities that are concerned about the 2032 deadline?

**Response:** There is not a zero discharge requirement. For the APRICOT Act, they are allowed to discharge up to 30% of their reuse. The schedule is very expedient.

Ed Cordova responded that JEA will try to meet the deadline but the schedule is unfeasible. There are not enough well drillers and additional technical issues. They will work to meet the deadline. It is likely the legislature will amend the statutes. Ted added that there will also be limitations to how much water can be injected. Ed answered that JEA plans to use three avenues to use the water: existing and expansion of their reuse system; indirect potable reuse (~30 million gallons per day [mgd]); and deep well injection.

Steve Swann noted that Atlantic Beach is maxed out on places to use reuse nor is it technically feasible to use underground injection, nor economically viable. In the meantime, they will continue to plan and see what happens. There was discussion about the possibility of creating trades and water quality credit trading from Melissa Long and Steve Swann.

Ted will be invited back to talk about biosolids disposal.

Ed suggested that the first JEA project is to build a demonstration plant on the south side with 1 mgd reverse osmosis will take reuse water, treat the effluent further, and put it back into the reuse system. Eventually, it will be used to create indirect potable reuse. The plant will be designed for public education—places for school tours, etc. The demonstration plant is in the initial stages of planning.

## **Technical Updates and Announcements**

### *City of Jacksonville*

Melissa Long did not have any updates to share. The city is still working in the tributaries to address bacteria pollution.

### *St. Johns River Water Management District Update*

Riley reported they completed the annual submerged aquatic vegetation (SAV) survey and are working on the reports. The SAV is still present where it is usually found but is largely absent in Lake George, Crescent Lake, and Doctors Lake.

For water quality and we do not have the results yet from Hurricane Ian, but based on past data from Hurricane Irma, they expect to see high discharge, water levels, and high color (dark water) for a long time. They have been receiving reports of SAV washing up onshore in the Black Creek area. After Hurricane Irma, the water levels and color levels were high for a year.

Dean Dobberfuhr gave a report on behalf of Derek Busby. Dean reported that for county and city partners, the district's cost share program applications are opening on December 1 and applications are due by January 31<sup>st</sup>. Project benefits can include water quality, water quantity, flooding, and natural systems. Fifty percent of the funding is for water conservation. Please contact Derek Busby if you need more information.

Also, the Black Creek Water Resource Development Project is off the ground. The project's goal is to skim high flow water from Black Creek and reroute the water south to Alligator Creek and the Etoniah Chain of Lakes. This is a three phase project. The pump station began construction two weeks ago. They have bids for the building pipeline. The treatment facility at the end of the pipe is being designed. The

design for the treatment facility is currently 60% complete. The flows are expected to go live at the end of 2023 or in 2024.

#### *Florida Department of Environmental Protection (FDEP) Update*

Jim Maher was pleased to report how well the utilities were able to manage the Hurricane Ian. They had no sanitary sewer overflows (SSOs) to the St. Johns River. There were a few SSOs in the coastal area, but none in the St. Johns. Let us hope we have the same outcome for Tropical Storm (TS) Nicole.

The U.S. EPA is putting a great emphasis on environmental justice. They have tools to identify those communities and work on building capacity to help their involvement in ongoing decisions. An important tenant of environmental justice is called "Justice 40." The objective is that 40% of the funding should be directed to environmental justice communities. FDEP is working on how to implement these provisions and creating information online. There will be grant funding available; you can reach out to Jim Maher for more information.

Jim noted that he is retiring on December 16, 2023.

#### *Fisheries Independent Monitoring/Florida Fish and Wildlife Conservation Commission*

Russ Brodie reported they had a busy summer for routine monthly sampling. Plus, they are involved with a three year grant looking at South Atlantic Red Snapper from April through July. Currently, they are catching up after all their summer field work.

They are working on their 2022 data and the annual report for the U.S. Army Corps Tributaries Assessment Report for the Mill Cove, Trout River, Arlington River, and Ortega River. They are also prepping for TS Nicole.

#### *U.S. Army Corps of Engineers Update*

No report.

#### *Local Government Updates*

No report.

#### *St. Johns River Report*

Gerry Pinto mentioned the latest River Report is out and the website is updated. There is a new highlights section in the report that talks about resiliency. There are also some maps looking at the socially disadvantaged areas. They welcome any feedback. There is also a StoryMap posted online.

#### *Clay County Utility Authority*

Heather Webber noted that for the CCUA Doctors Lake septic-to-sewer project, they have now connected 57 of the 79 eligible homes.

### **Adjournment**

The meeting ended at 11:33 am.