

# Stormwater Program Water Quality Project Descriptions

## **Newnans Lake Initiative - Phase II through VI (\$462,000)**

Issue: Newnans Lake is impaired for total phosphorus and nitrogen. The recent amendment to the Orange Creek BMAP allocated specific load reductions to the County. FDEP has set a requirement to have projects identified to meet the TMDL by 2028. Project construction/implementation must also be underway by this date.

Project Description: Phase 2 of the Initiative was a pilot project that involved the construction of weirs and bio-reactors on Little Hatchet Creek to remove phosphorus leaching into the stream from exposed portions of the Hawthorne group formations as the result of erosion and development in the watershed. Phase 2 was funded in fiscal year 2019 through an inter-fund load from the Stormwater Assessment that will be repaid from grant funds. Extensive permitting was required for this project and was completed in 2020. Construction of this phase was begun in the last quarter of fiscal year 2020 and completed in the first quarter of fiscal year 2021.

Phase 3 of the Initiative was a feasibility study for a constructed treatment wetland to treat the water in the lake. Other potential projects to study further, such as rehydration of Gum Root Swamp, were also identified. The goal was intended to identify options to address the recycling of nutrients that have accumulated in the lake sediments. This study was completed in fiscal year 2020. .

Phase 4 is planned as a modification of the weirs installed on Little Hatchet Creek to optimize performance and address lessons learned since construction.

## **Sweetwater Trailhead LID Parking Area Project (\$615,000)**

Issue: The Sweetwater Trailhead uses a 44 foot wide dead end section of 16<sup>th</sup> Street as an informal parking area. This project will reconstruct the entrance to the Sweetwater Preserve trailhead off of Waldo Road. Runoff from the entrance road and the intersection of SW 16<sup>th</sup> ST and Waldo Road runs onto the site and is discharged into Sweetwater Branch without any water quality treatment. The runoff has also caused erosion where it is discharged in the Preserve that is causing the existing storm sewer to fail. The reconstruction will also provide better parking for the Preserve. The new stormwater system will provide water quality treatment using Low Impact Design (LID) stormwater management and stop the erosion problem. The LID features will consist of two biofiltration areas and pervious pavers for the parking stalls.

Project Description: This project will redesign the dead end portion of 16<sup>th</sup> Street into a parking area using LID practices including pervious pavement, bioretention and biofiltration. The existing outfall to Sweetwater Branch will be reconstructed and stabilized to address an existing erosion problem. A biofiltration area will be constructed on the GRU power line easement that runs between the preserve and Waldo Road that will be monitored by UF to determine nitrogen removal effectiveness. Gainesville has

plans for a trail connecting Depot Park and Sweetwater Wetlands that will also run along the power lines. This will provide an opportunity to create a nexus linking Sweetwater Preserve with the two city parks and provide education opportunities. The project is funded with 2019 assessment funds and will begin construction in the last quarter of fiscal year 2021.

### **Soil Nitrogen Leaching Investigation and LID Design for Nutrient Removal (\$36,000)**

Issue: The nitrogen load infiltrating directly to groundwater from residential landscape turf is not well quantified for Alachua County conditions. LID best management practices, such as bioretention, can include structural design elements or engineered soils to improve nitrogen removal from stormwater. Alachua County site performance data is lacking particularly for karst areas.

Project Description: These are joint projects between Alachua County EPD and the University of Florida Soil and Water Science and Agricultural and Biologic Engineering Departments.

The first phase of the leaching study assessed the leaching of nitrogen from residential turf. The project involves core sampling of residential turf on a variety of soil and management practices. Lysimeters will be installed on a smaller subset of turf sites for year-long seasonal sampling. This portion of the project began in the spring of 2019 with the installation of lysimeters and collection of the first samples. Sampling was completed in 2020.

The LID design study will assess the nitrogen removal performance of a modified biofiltration design first developed in North Carolina and an open source engineered soil mix. The Sweetwater Trailhead LID Parking Area project will be used as the test site. This project began in the summer of 2019 with UF providing input on the design and will perform water quality monitoring after construction of the Sweetwater site.

### **Landscape Contaminant Leaching Study (\$98,000)**

Issue: Alternative landscape practices have been proposed as alternatives to mineral fertilizers. This include bio-solids based fertilizers and compost. However, the potential for leaching of nitrogen and other compounds such as hormones, pharmaceuticals and PFAS is not fully established.

Project Description: These are joint projects between Alachua County EPD and the University of Florida Soil and Water Science Department.

This study began in fiscal year 2021 and will compare the difference in nitrogen and various pharmaceuticals, hormones and PFAS leached from differing lawn treatments. The treatments include conventional mineral fertilization, top dressing with compost, and a bio-solids based fertilizer product. The study will also include leaching of the same contaminants from reclaimed water application. Three natural areas are also included for baseline conditions. The lysimeters installed in the previous study will be used for this study.

## **Climate Vulnerability Assessment (\$500,000)**

Issue: Climate change is likely to affect Alachua County through changes to average temperature, rainfall patterns, intensity, and frequency of large storm events. One potential impact is the potential for increased flood damage. Another potential impact is changes to groundwater levels and water levels in the County's lakes and waterbodies. Such changes could potentially affect internal water quality and availability for use by the County residents. Other potential effects include increased drought frequency, wildfire risk, health risk due to high temperatures, and impacts to agricultural production.

Project Description: This project will review current available climate research focusing on changes expected in north central Florida. The projected changes in rainfall will be used models to determine the potential changes to flood risk and the impacts to water levels and quality in our surface waters and groundwater. The risk of increased drought and wildfires will also be assessed. Impacts to human health due to higher temperatures and potential impacts to agricultural production will also be included in the vulnerability analysis. The distribution of these impacts at the neighborhood or census block scale will be investigated to identify communities that are at greater risk from climate change.

## **Lochloosa Lake Nutrient Source Evaluation and Lochloosa Lake Initiative (\$1,500,000)**

Issue: Lochloosa Lake is impaired for nitrogen and phosphorus. The lake has been incorporated into the Orange Creek BMAP. The recently adopted amendment to the BMAP made specific load reduction allocations to the County. FDEP has set a requirement to have projects identified to meet the TMDL by 2028. Project construction/implementation must also be underway by this date.

Project Description: The first phase of the nutrient source evaluation began in fiscal year 2020 and involves a watershed assessment to determine the origin of external nutrient loads to the lake. The primary focus areas are Lochloosa Creek, West Hawthorn Branch, and septic systems along the eastern shore of the lake. The assessment will also evaluate phosphorus dissolution and transport in the lake and review of FDEP's loading model. The second phase of the assessment is expected to begin in fiscal year 2023 and will focus on potential groundwater sources of nutrients in the lake. Both phases are expected to identify potential projects to mitigate nutrient sources.

Potential project sites to reduce nutrient loads have identified in the draft final report. The first of these project to be evaluated will be a stormwater project along County Road 2082 and SE 152nd Street. It is planned for these projects to be designed and constructed in fiscal years 2022 through 2026.

## **Lake Santa Fe Nutrient Source Evaluation (\$150,000)**

Issue: Lake Santa Fe is not currently considered impaired but has seen declining water quality. Development along the lake shore and in the lake's watershed is a potential source of nutrients from landscape fertilizer and septic systems. Mitigation actions now may prevent the lake from becoming impaired in the future.

Project Description: This project began in fiscal year 2021 and is expected to be similar to the efforts currently underway for Lochloosa Lake. The project will assess potential sources of nutrient pollution in the lake, develop a nutrient balance and identify potential mitigation projects.

### **Poe Springs Nutrient Source Evaluation (\$200,000)**

Issue: Poe Springs is not currently considered impaired but surrounding springs in the Santa Fe River are impaired for high nitrate levels. Development activity and, agriculture continues in the springshed. There is potential for the spring to become impaired which could negatively affect its use by the public as a park. Mitigation actions now may prevent the spring from becoming impaired in the future.

Project Description: This project began in fiscal year 2021 and will assess potential sources of nitrogen in the springshed potentially using surface load estimates and existing groundwater quality data. In order to identify sources this project may include installation of groundwater monitoring wells. The sources of nitrogen will be categorized by land use (urban versus agricultural) and waste water disposal method (treatment plant effluent versus septic). Potential mitigation projects and strategies will be identified.

### **Library and Collection Center LID Retrofits, Santa Fe Park Septic Upgrade (\$1,700,000)**

Issue: Rural Collection Center and Library District sites can be retrofitted to incorporate more LID techniques. Several collection center sites have significant drainage issues that need to be addressed. The Santa Fe Park rest rooms are being relocated and a new nitrogen reducing septic tank constructed.

Project Description: These projects are intended to retrofit County facilities to incorporate LID. Several Library sites have already incorporated LID techniques and these projects will build upon those efforts. The Rural Collection Centers have varying degrees of drainage issues which can be resolved using LID. Conceptual design are being developed by Wood. The initial site planned to be retrofitted in fiscal year 2022 will be the North Central Collection Center in conjunction with drainage improvements funded by Solid Waste.

The new septic tank at Santa Fe Park will be a nitrogen reducing aerobic treatment unit (ATU). The use of an ATU will reducing nitrogen loads to Lake Santa Fe.

### **Main Street Detention Pond Outflow Filter (\$237,000)**

Issue: The wet detention pond at the corner of NE 35<sup>th</sup> Ave and NE 4<sup>th</sup> St. receives runoff from Main Street and discharges to Springstead Creek a tributary of Hogtown Creek. The treatment performance of wet detention ponds can be improved using upflow filters.

Project Description: Outflow from the pond was sampled by Wood during the summer of 2018. The sampling results will be used to design an upflow filter enhance water quality discharged from the pond. Design began in fiscal year 2020 and is complete. The filter

installation is now planned for late fiscal year 2022.

### **NE 22nd Lane Erosion Control (\$340,000)**

Issue: NE 22<sup>nd</sup> Lane is a limerock road that has had significant erosion problems after large rain events and required multiple repairs. Eroding limerock and sediment is deposited in a wetland known as Morans Prairie.

Project Description: The project will involve an assessment of the current stability of the shoulders and recommendations for additional stabilization to prevent future erosion. In the past erosion has resulted in deep gullies along the sides of the road which are a hazard to the residents. The eroded limerock and sand that has accumulated in Morans prairie and will be assessed for removal as part of the project.

### **Parker Rd. Water Quality Project (\$317,000)**

Issue: A low area on Parker Road (SW 122nd St.) accumulates untreated runoff from residences along Parker Road and NW 1<sup>st</sup> LN where it infiltrates. Sampling in this year indicated the potential for high nitrogen in the runoff. This makes the site an ideal location for a pilot project on treating runoff in County road right-of-way.

Project Description: Along Parker Road, runoff is infiltrated in swales and a depression on the east side of the road under a power line easement. Engineering design began in fiscal year 2020. Survey and geotechnical investigation of the site is complete. The intent is to amend the soils with Biosorptive Activated Media (BAM). This will serve as a pilot project on feasibility of treating runoff infiltrating through swales in County right-of-way. Such an approach would be useful in reducing nitrogen load to the aquifer where the County does not own retention ponds.

### **Lochloosa Slough Erosion Control (\$425,000)**

Issue: Sediment from erosion on SE 225<sup>th</sup> DR. discharged to Lochloosa Slough.

Project Description: The project will identify the major areas of erosion on SE 225<sup>th</sup> Dr. and will involve drainage improvements and stabilization of the road shoulders to prevent future erosion.

### **Old Bellamy Road Erosion Control (\$340,000)**

Issue: Sediment from erosion on Old Bellamy discharged to the Santa Fe River.

Project Description: The project will identify the major areas of erosion on Old Bellamy Road and will involve drainage improvements and stabilization of the road shoulders to prevent future erosion.