

# Stormwater Program Water Quality Project Descriptions

## Sweetwater Trailhead LID Parking Area Project

Issue: Runoff from the entrance road and the intersection of SW 16<sup>th</sup> ST and Waldo Road was discharged into Sweetwater Branch without any water quality treatment. The runoff also caused erosion where it is discharged in the Preserve that is causing the existing storm sewer to fail. The reconstruction also provided better parking for the Preserve. The new stormwater system provides water quality treatment using Low Impact Design (LID) stormwater management and fixed the erosion problem. The LID features consist of two biofiltration areas and pervious pavers for the parking stalls.

Project Description: This project redesigned the dead-end portion of SW 16<sup>th</sup> ST into a parking area using LID practices including pervious pavement, bioretention and biofiltration. The existing outfall to Sweetwater Branch was reconstructed and stabilized to address an existing erosion problem. A biofiltration area was constructed on the GRU power line easement that runs between the preserve and Waldo Road and is monitored by UF to determine nutrient 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 was completed in fiscal year 2022.

## Landscape Contaminant Leaching Study

Issue: Alternative landscape practices have been proposed as alternatives to mineral fertilizers. These 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: This is a joint project 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 project was completed in 2022.

## **Poe Springs Nutrient Source Evaluation**

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 was completed in 2022 and assessed potential sources of nitrogen in the springshed potentially using surface load estimates and existing groundwater quality data. Initial recommendations on potential mitigation projects and strategies were identified and recommendations for a second phase of work were made. The second phase will focus on specific nutrient reduction projects selected from the initial recommendations.

## **Newnans Lake Initiative**

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 was a modification of the weirs installed on Little Hatchet Creek to optimize performance and address lessons learned since construction.

## **UF LID Performance Study**

Issue: 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: This is a joint project between Alachua County EPD and the University of Florida Agricultural and Biologic Engineering Departments. 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. Sampling began in 2022 after construction will be completed in 2023.

## **Main Street Detention Pond Outflow Filter**

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 has been sent out for bid. Installation will take place in the fall of 2022.

## **Critical Infrastructure and Land Use Climate Vulnerability Analysis**

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 to citizens property and critical infrastructure in the County. Another significant potential impact is changes to annual rainfall patterns which could potentially affect water quality through increased runoff and transport of pollutants. Other potential effects include increased drought frequency that can also affect surface water quality and availability of groundwater for use, wildfire risk, impacts due to high temperatures, and impacts to agricultural production resulting in increased fertilizer use and irrigation which may result in increased pollutant transport to ground and surface waters.

Project Description: This project reviews 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 impact to critical infrastructure, as defined by Statute. The impacts to water quality in our surface waters and groundwater resulting from changes in annual rainfall patterns will also be assessed. The risk of increased drought and wildfires will also be assessed. Impacts 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. The project began in 2022 and will be completed in 2023.

## **Lochloosa Lake Nutrient Source Evaluation, CR 2082 and SE 152<sup>nd</sup> ST Stormwater Improvements, and future Lochloosa Lake Water Quality Improvement Projects**

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 was completed in fiscal year 2021 and involved a watershed assessment to determine the origin of external nutrient loads to the lake. The primary focus areas were Lochloosa Creek, West Hawthorn Branch, and septic systems along the eastern shore of the lake. The assessment also evaluated phosphorus fate and transport to the lake and review of FDEP's loading model.

The second phase of the assessment began in fiscal year 2022 and focuses on identifying water quality improvement projects for the lake. Both phases are expected to identify potential projects to mitigate nutrient sources. The first of these projects to be evaluated will be a stormwater project along County Road 2082 and SE 152<sup>nd</sup> ST. It is planned for this project to begin design in 2023. A second project is anticipated to begin design in 2027.

## **Lake Santa Fe Nutrient Source Evaluation and Trout Street Stormwater Improvement Project**

Issue: Lake Santa Fe is not currently considered impaired but has seen declining water quality in recent years. 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: The first phase of the nutrient source project began was completed

in 2021 and assessed potential sources of nutrient pollution in the lake along with analysis of water quality trends in the lake. Runoff from development along the shoreline and effluent from septic tanks from the development were identified as nutrient sources.

The second phase of the assessment began in fiscal year 2022 and focuses on identifying water quality improvement projects for the lake. The first of these projects to be evaluated will be a stormwater project addressing runoff discharged into the lake from Trout Street. It is planned for this project to begin design in 2023.

## **Parker Rd. Water Quality Project**

Issue: A low area on Parker Road (SW 122<sup>nd</sup> 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 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 in other locations. Such an approach would be useful in reducing nitrogen load to the aquifer where the County does not own retention ponds.

## **Library Branch LID Retrofits**

Issue: Library District sites have stormwater systems that can be retrofitted to incorporate more LID techniques to improve water quality. In addition, several branch sites have drainage issues that can be addressed.

Project Description: These projects are intended to retrofit Library branch sites to incorporate LID stormwater practices. Several Library sites have already incorporated LID techniques and these projects will build upon those efforts. Existing drainage issues will also be resolved. Design for stormwater improvements at the Library Headquarters and High Springs Branch will begin in 2023.

## **Lochloosa Slough Erosion Control**

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**

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.