



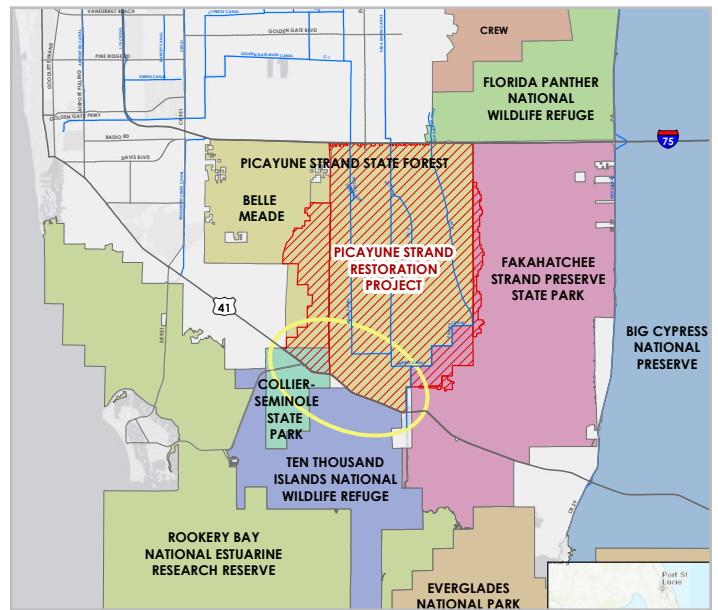
Improving Water Quality in the Picayune Watershed



Background

The Florida Everglades was once a natural system of vast marshes, dense mangroves, towering cypress, alligator holes and tropical fauna. Beginning in the early 1900's, settlers, developers and farmers started to drain the land, severely damaging the ecosystem. Today, the Comprehensive Everglades Restoration Plan (CERP) is working on regional restoration projects throughout South Florida to restore a more natural flow pattern, improve water quality and protect vital aquatic habitat within and downstream of the Everglades.

The construction of the Picayune Strand Restoration Project as part of the overall CERP is expected to result in improved flows south of US 41 through existing and planned culverts through plugging of canals historically excavated to drain the land for development. This will increase the flow of water from upstream sources to the south in the Outstanding Florida Waters (OFWs) of Collier Seminole State Park, Ten Thousand Islands National Wildlife Refuge and the Rookery Bay National Estuarine Research Reserve. This increased flow, along with nutrients derived from upstream sources, will be identified and addressed through a combination of Best Management Practices (BMPs) and water quality projects which are the focus of this report. Long term reduction in nutrients for the downstream OFWs will require a multi-pronged approach. In conjunction with the proposed project(s) identified in the feasibility study, future monitoring to identify nutrient contributions and parallel efforts for regional source controls will help inform future decisions as land and resources become available to effectively implement the tools identified in this report. Public-Public partnerships between state and local agencies, Public-Private Partnerships, and cost share funding programs will be used to most effectively leverage funding of infrastructure projects designed to use increased flows for ecological benefits, while identifying and treating sources of excess nutrients and enhancing stakeholder associated projects.



Objectives

- 1 Better understand opportunities to improve the quality of water received from the north of US 41 prior to the water entering the Outstanding Florida Waters of the Collier Seminole State Park, Rookery Bay National Estuarine Research Reserve, and the Ten Thousand Islands National Wildlife Refuge.
- 2 Improve aquatic habitats to restore the Florida Everglades ecosystem.
- 3 Increase historic freshwater input to the Ten Thousand Islands National Wildlife Refuge.

Next Steps

The South Florida Water Management District completed a study to identify opportunities to improve water quality in the Picyaune Watershed. With several opportunities now identified, additional water quality data are necessary to determine the best approach to deploying water quality improvement projects in the watershed.

To improve the quality of water received from sources north of US 41, a series of innovative treatment technologies may be constructed in phases to reduce nutrient and metal concentrations discharged from US 41 culverts to protect the Outstanding Florida Waters to the south.

Some types of treatment technologies that can be combined into a treatment train to improve water quality and their benefits are outlined below. Placement of these proposed treatment components is dependent upon identification of suitable land availability in the vicinity of the project area, which is a significant challenge for implementation of this project. Public-Public and Public-Private Partnerships will be critical in resolving this issue.

Treatment Train Component	Description	Benefits
Treatment Wetlands	Creation of human-made wetlands to allow plant uptake of nutrients to improve water quality.	<ul style="list-style-type: none">• Wetlands constructed in uplands to mimic the function of natural wetlands• Plants remove nutrients• Provide habitat value for aquatic wildlife
Spreader Berms and Canals	A berm or canal system allows water to spread out and flow downstream over a wide area in a sheetflow pattern instead of discharging at a single point.	<ul style="list-style-type: none">• Eliminates scouring point sources• Rehydrates historic wetlands that were disconnected from their water supply• Allows natural wetlands to further treat discharge waters through plant and tree uptake of additional nutrients
Sedimentation Basins and Polishing Ponds	One or multiple ponds that slow inflow water, allowing sediments and associated nutrients and contaminants to settle out before water flows to the next stage of a treatment system.	<ul style="list-style-type: none">• Reduces sedimentation• Significant improvements to water quality
Biofilters	Biofilters are typically used towards the end of a treatment train to promote the growth of bacteria that remove nutrients from inflow water, either by converting the nutrients to gases or by binding the nutrients to the biofilter materials.	<ul style="list-style-type: none">• Provide enhanced nutrient removal in a relatively small area



Marsh habitat in the northern Ten Thousand Islands National Wildlife Estuary