
North Palm Beach County Pollutant Loading and Abatement Analysis

Palm Beach County, FL



Client/Owner: Florida Dept. of Environmental Protection

Project Location: Palm Beach County, FL

The Comprehensive Everglades Restoration Plan includes a surface water hydrology management project in the North Palm Beach County region extending 765 square miles along the southeastern coast of Florida to the eastern shore of Lake Okeechobee. This project is assessing surface water management alternatives for preventing excess stormwater discharges to the Lake Worth Lagoon, capturing excess stormwater in surface impoundments, redirecting surface flows to restore natural systems in Loxahatchee Slough and Loxahatchee River, and providing improved levels of flood control. GPI is a part of a team led by Tetra Tech that is providing input to the Florida Department of Environmental Protection by performing modeling and analysis of the North Palm Beach study area. Our contribution to the project is to identify quantitative surface water quality targets. These quantitative water quality targets will allow planners, regulators, and local stakeholders to evaluate various alternatives for protecting and enhancing stream flow and water quality within the basin and related impacts on the downstream slough and estuary.

GPI utilized the water quality data to develop statistical approaches to define appropriate water quality targets for both the freshwater and estuarine portions of the study area. GPI has identified several alternative approaches to define the water quality targets and GPI developed a decision-making framework to facilitate the application of the targets. The water quality targets are being developed based on four independent lines of reasoning: a standards based approach that applies the Florida Impaired Waters Rule, a reference system based approach that statistically compares conditions in the study area to a pristine reference system, a historical based approach that statistically compares pre-anthropogenic impact conditions to post-anthropogenic impact conditions, and a living resource base approach that models the water quality responses in the estuary to discharge and nutrient loading from the upstream systems. For the living resource based approach, GPI developed an empirical model to predict surface water quality conditions (e.g., chlorophyll-a concentrations) based on freshwater discharge (i.e., residence time) and nutrient loading using a Vollenweider type approach.