

City of Sanibel Principal Water Quality Improvement Projects

Why implement water quality improvement projects?

Sanibel Island is a world renowned tourism destination frequently ranked among the top beach tourism destinations in the world. Our pristine beaches and natural environment provide a quality of life for our citizens that is second to none. Our unique plant species, plentiful wildlife, and shell-covered beaches attract visitors from all over the world to enjoy our good nature. Stormwater runoff from urban landscapes and golf courses is a major source of nutrients contributing to algae blooms and water quality impairments in Florida. Poor water quality not only impacts wildlife habitat and the quality of life for island residents, but it can directly impact our local economy by reducing property values and the overall experience of visitors to our island. Protecting Sanibel's water quality is of paramount concern to the City of Sanibel.

While the City has taken a very proactive role in improving water quality, the Sanibel River and many residential and golf course lakes on Sanibel remain "impaired" for nutrients such as nitrogen and phosphorus. Waters that do not meet the state's water quality standards are deemed "impaired" by the Florida Department of Environmental Protection (FDEP) under the Florida Impaired Waters Rule (Ch. 62-303, F.A.C.). Through the TMDL (Total Maximum Daily Load) Program, local governments with impaired waterbodies within their jurisdictions will be required to participate in a Basin Management Action Plan (BMAP) process and will be required to address pollutant sources that are contributing to the impairment.

How do we identify what nutrient sources are contributing to poor water quality?

In 2013, the City of Sanibel contracted with the Sanibel-Captiva Conservation Foundation (SCCF) Marine Laboratory to develop a Comprehensive Nutrient Management Plan (CNMP) aimed at reducing fertilizer laden stormwater runoff and removing nutrients from the Sanibel River and other Island waterbodies. In Phase 1, all available and existing data was analyzed, potential problem areas ("hot-spots") were identified, and a list of recommended actions integral to development of a successful plan was developed. In Phase 2, Sanibel-specific nutrient loading estimates were developed. Phase 3 (currently underway) includes sampling and analysis of groundwater to determine its impact on nutrient loading and flow –monitoring to assess the impacts of outflow from the Sanibel River on the coastal waters. Based on these data, the final plan will recommend additional Best Management Practices (BMPs) and water-quality projects to reduce future nutrient loading to the Sanibel River and the coastal waters.

In addition to providing direction for future projects, the CNMP process and analysis of existing data has provided support for and validated a number of initiatives previously undertaken by the City. One particularly noteworthy finding was that nitrogen (inorganic) and phosphorus levels in the Sanibel River decreased after Sanibel's fertilizer ordinance was implemented in 2007. Land-use analyses demonstrated that Sanibel's three golf courses account for a small-percentage of Sanibel's land mass, but a disproportionately large percentage of the nutrient load, providing support for the Golf Course BMP and Report Card Program initiated in 2008.

What programs/initiatives have resulted in the biggest benefits?

Native Plant/Habitat Protection

Since the City's incorporation in 1974, Sanibel has been committed to the preservation of native plants and wildlife habitat. Native plants are adapted to local environmental conditions, provide a food source and habitat for wildlife, and need no fertilizer or supplemental irrigation. Vegetation canopy and cover directly reduce stormwater runoff. The City's native plant protections take a variety of forms, including vegetation ordinances and permit requirements, specific protections for activity in the beach dune and mangrove habitats, a volunteer advisory Vegetation Committee, a landscaper licensing program, invasive plant management programs, and others. Land acquisition efforts by the City and its conservation partners (SCCF and USFWS "Ding" Darling National Wildlife Refuge) have also protected native plants and wildlife habitat (~67% of Sanibel is conservation land). In turn, these lands are no longer able to be developed, thereby limiting impervious coverage and associated runoff.

Sanibel Sewer Expansion Program

Centralization of Sanibel Island sewer services began in 1974 by the private sector. After several transitions, the City acquired the consolidated wastewater system in 1991. With acquisition, the City completed several cycles of master planning for the future operation and expansion of the system. Since the acquisition, the City has been proceeding with the expansion of wastewater collection, transmission, treatment, and disposal as planned and as impacted by conditions. Sanibel Sewer Expansion Program's main goal has primarily been to protect the island's sensitive environment. To date, the program has expanded a centralized sewer system to roughly 99% of existing ERC's (Equivalent Residential Connection). Only 42 properties remain to be converted from septic systems (some developed, some vacant). Additionally, after connecting customers of two privately owned and operated wastewater treatment package plants (Sanibel Bayous & Sea Oats) to the central sewer system, the City decommissioned the plants and obtained grant funding for site restoration.

Residential/Commercial Fertilizer Ordinance

The City of Sanibel adopted a fertilizer ordinance in March 2007, restricting the timing, content and quantity of fertilizers containing nitrogen and phosphorus applied on residential and commercial properties. Professional fertilizer applicators must be licensed with City and obtain a fertilizer applicator competency card. Code Enforcement and Natural Resources staff regularly conduct inspections/site visits to ensure compliance with the fertilizer ordinance requirements.

Golf Course Fertilizer and Lake Management Recommendations Report Card Program

Managing stormwater runoff from golf courses is critical to ensuring that fertilizer and other chemicals used to maintain turfgrass do not inadvertently impact sensitive areas such as lakes, wetlands, and coastal waters. In October 2008, in an effort to improve the quality of water discharged from Sanibel's golf courses, City Council adopted a list of Nutrient Management Recommendations that were based on the Florida Department of Environmental Protection's *Best Management Practices (BMPs) for the Enhancement of Environmental Quality on Florida Golf*

Courses (2008). These recommendations provide specific guidance for golf course managers on how to reduce fertilizer use and improve water quality within their respective golf course lakes. Since their adoption, City staff has worked closely with each golf course to provide technical assistance to help implement these recommendations.

What additional water quality improvement projects are on the horizon?

Reclaimed Water—Nutrient Reduction and Homeowner BMPs

- *Donax Wastewater Reclamation Plant 1 Upgrades:* Will reduce nitrogen and phosphorus concentrations in re-use water used for residential and golf course irrigation. Upgrades would bring Plant 1 up to the same operating efficiency as Plants 2 and 3. All plants are currently operating within the required regulatory requirements. However, existing regulatory requirements do not reduce nutrient concentrations to a level that prevents inadvertent nutrient loading to surface waters by end-users.
- *Denitrification Modifications to the Donax Wastewater Reclamation Plant:* Will reduce total nitrogen (TN) concentration in re-use water provided to island golf courses, condominiums and limited residential properties. This project would effectively reduce nutrient loading to the impaired Sanibel River and coastal waters.
- *Reuse water BMPs and Education Program:* Educate golf courses and homeowners on reuse water and its potential environmental impacts if not applied properly.

Jordan Marsh Water Quality Treatment Park

The goal of this project is to create a water quality treatment park/filter marsh to treat water coming from the commercial district along Periwinkle Way and Casa Ybel Road; and pull in water from the impaired Sanibel River for treatment. When constructed, the facility would be open to the public and would help to educate residents and business owners about passive stormwater treatment technology that could be used in communities to treat stormwater before it is discharged to community lakes.

Homeowner's Community Lakes BMP Program

The goal of this program is to educate homeowners on Best Management Practices (BMPs) to reduce nutrient loading to community lakes, canals, wetlands, adjacent coast waters, and the impaired Sanibel River. This will include a traditional and web-based media campaign to educate island residents, through the Homeowner's Association where applicable, on BMPs related to reducing stormwater runoff, excessive fertilization, appropriate use of municipal reuse water, and lake management practices that will help remove nutrients from the community lakes.