

Sanibel Golf Course Nutrient and Lake Management Recommendations Annual Report Card



July 2012



This report was specifically prepared for:

The Sanctuary Golf Club

Introduction

Stormwater runoff from urban landscapes and golf courses are 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. As a result, protecting Sanibel's water quality is of paramount concern to the City of Sanibel.

The Florida Department of Environmental Protection (FDEP) is the state agency responsible for protecting Florida's waters. Waters that do not meet the state's water quality standards are deemed "impaired" under the Florida Impaired Waters Rule (Ch. 62-303, F.A.C.). To address these impairments, the FDEP is developing Total Maximum Daily Loads (TMDL) for each waterbody that does not meet minimum water quality standards. The TMDL is the maximum amount of a pollutant that a waterbody can assimilate on a daily basis without causing an imbalance in the natural flora and fauna. As part of the TMDL process, all local governments with impaired waterbodies within their jurisdiction 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. It is anticipated that over the next few years a TMDL will be developed for the Sanibel River and the coastal waters surrounding Sanibel Island.

The City of Sanibel has taken several measures to improve water quality throughout the island. These measures include acquisition of environmentally sensitive lands, mangrove protection, native plant protection and sod limitations, beach and dune protection, conversion from septic to central sewer, responsible development through reductions in impervious surfaces and onsite stormwater management, implementation of the National Pollutant and Discharge Eliminations System Program, island-wide water quality monitoring, adoption of an urban fertilizer ordinance, and nutrient and lake management recommendations for golf courses. 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.

Managing stormwater runoff from golf courses on Sanibel is critical to ensure that that fertilizer and other chemicals used to maintain turf do not inadvertently impact sensitive areas such as lakes, wetlands, and coastal waters. While we realize that that each golf course is unique and was designed and permitted to function in a very specific way, all of the golf courses on Sanibel have the potential to discharge into natural waterbodies. As a result, the City has taken additional measures to ensure that water leaving golf course lakes meet the water quality standards of the receiving waters.

In an effort to improve the quality of water discharged from Sanibel's golf courses, in October 2008 City Council adopted a list of Nutrient Management Recommendations that were based on the Florida Department of Environmental Protection's *Best Management Practices 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 to help improve water quality within their respective golf course lakes. Over the past three and half years since their adoption, City staff has worked closely with each of the golf courses to provide technical assistance to help implement these recommendations with varying levels of success.

On June 14, 2012, City Natural Resources Department staff met with Kyle Sweet, Golf Course Superintendent, of the Sanctuary Golf Club to review their status of implementing the City's Golf Course Nutrient and Lake Management Recommendations. As a result of that meeting, the City has updated the Annual Report Card and shoreline vegetation map for the Sanctuary golf course (see attached documents). This Annual Report Card has been developed for each of the island's golf courses to provide feedback on progress towards implementing the City's recommendations. This report will be provided to each golf course on an annual basis to help track progress and guide implementation.

This Report Card uses a point system to evaluate performance. For each recommendation or best management practice (BMP) implemented, 1-5 points are awarded based on the level of implementation. Out of a total of 13 BMPS, a maximum of 65 points can be awarded. The score is calculated as follows: 0 – 80% - Not in Compliance, 81 – 90% - Partially in Compliance, 91 – 100% - Full Compliance.

The Sanctuary Golf Club received **63** out of a total of 65 points, resulting in a score of **97%**. This indicates that the Sanctuary is in **"Full Compliance"** with the City's recommendations (see report card below for details). **This year's score represents a 6% improvement over last year.**

BMP Matrix / Staff Recommendation	Score
Education	
Require that each superintendent ensure that all course employees are trained in the <i>Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses</i> (FDEP 2007), including water quality related issues and environmentally sensitive areas around the golf course.	5
Lake Management	
Within 5 years of adoption, a minimum of 30% of the littoral zone of each golf course lake must be planted and maintained with submerged or emergent aquatic vegetation on a minimum of 3' centers.	5
Require that golf courses monitor the water quality in their lakes 2x/year (wet season/dry season) and provide the data to the City's Natural Resources Department. Minimum parameters should include dissolved oxygen (DO), total nitrogen (TN), total phosphorus (TP), chlorophyll a (chl-a), and copper (Cu). If nutrient or heavy metal concentrations are excessive, City staff will meet with golf course management staff to review and determine a mitigation plan.	5
Require that all fish kills and algae blooms are reported to the City's Natural Resources Department.	5
Fertilizer Management	
Limit soluble nitrogen applications to ½ lb/1000ft ²	5
Identify and map environmentally sensitive areas within the golf course and identify no fertilizer buffer zones around all of the waterbodies and map drainage patterns.	5
Require 25-foot native plant or unfertilized grass buffers around environmentally sensitive areas such as lakes and wetlands, where practical. When a 25-foot buffer is impractical, a minimum 10-foot buffer is required.	4
Require that grass buffers around environmentally sensitive areas such as lakes and wetlands be mowed 2" higher than the other grass to slow and filter overland flow to waterbodies.	4
Require that all washdown facilities have runoff properly treated prior to discharge off of the site.	5
Require periodic inspections of fertilizer storage areas and washdown facilities by DNR staff.	5
Require that all golf courses on the island maintain annual fertilizer and copper sulfate logs and make them available to the City's Natural Resources Department.	5
Irrigation and Fertigation	
Require that all reuse water be setback 25-feet from all waterbodies and that all irrigation heads using reuse water or fertigation (application of fertilizer through an irrigation system) be setback 25-feet from a waterbody. When a 25-foot buffer is impractical, a minimum 10-foot buffer is required.	5
Require that golf courses quantify their water use and differentiate between reuse and potable water supplies. This information can be used to account for the nutrients in reuse water when making fertilizer calculations.	5
Total Points (out of a maximum of 65 points):	63

Areas currently meeting the City's recommendations:

- 1.) Best Management Practices training for golf course staff. In May 2011, the Sanctuary developed a formal BMP training program for golf course personnel. As of May 24, 2011, all employees have been through the training and have signed off that they have been trained and understand the basic principles of the *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses*.
- 2.) Planting of shoreline vegetation along golf course lakes to facilitate nutrient removal. Within 5 years of adoption of the City's recommendations, all golf courses are supposed to have a minimum of 30% of the shoreline of each lake vegetated with submerged or emergent aquatic plants. All of the Sanctuary golf course lakes have a minimum of 30% of the shoreline vegetated with submerged or emergent aquatic plants, many of the lakes are closer to 75%.
- 3.) Water quality monitoring and reporting. Since October 2008, the Sanctuary golf course has been collecting water quality data on a semi-annual basis and has provided the results to City staff. This data is used by staff to help track water quality in the golf course lakes. Data analysis indicates that there were improvements in the water quality of lakes 1, 2, 3, 5, 6, and 7, with reductions in both total nitrogen and total phosphorus when comparing November 17, 2011 to June 14, 2012. Lake 4 showed improvements in TN, but TP increased slightly in June, compared to November.
- 4.) Reporting of fish kills and algae blooms in golf course lakes. All fish kills and algae blooms have been reported to City staff.
- 5.) Limit soluble nitrogen applications to ½ lb/1,000 ft². Golf course staff has indicated that they currently limit application of soluble nitrogen to ½ lb/1000 ft². This minimizes the potential for runoff of soluble nitrogen into golf course lakes available to algae.
- 6.) Identify and map environmentally sensitive areas around golf course lakes. Formal mapping was completed in November 2011. A map showing drainage patterns and all environmentally sensitive areas was provided to City staff on June 14, 2012.
- 7.) Require 25-foot native plant or unfertilized grass buffers or 10-foot buffers where 25-foot is impractical around environmentally sensitive areas. Minimum 10' buffers have been established around most of the environmentally sensitive areas, including lakes and wetland areas.
- 8.) Require that grass buffers around environmentally sensitive areas such as lakes and wetlands be mowed 2" higher than other grass to slow and filter runoff. Grass is allowed to grow 1.5" higher than grass on greens, fairways and tees to slow water and nutrient runoff.

9.) Proper maintenance of washdown facilities and runoff. The Sanctuary Golf Club uses a self contained re-circulating system that reuses washdown water. At the time of the staff inspection, all facilities were in good working order and there were no signs of washdown water being discharged from the site.

10.) Allow City staff to conduct periodic inspections of golf course facilities. Sanctuary staff has been very cooperative and have provided full access to the golf course and all of its facilities for annual inspections. During the most recent inspection, all fertilizer and chemicals were properly stored and the maintenance facility and washdown area appeared to be in good working order.

11.) Maintain and make available fertilizer records and copper sulfate logs. Sanctuary staff maintains annual fertilizer and lake management records, including copper sulfate logs. This data was made available to City staff.

12.) Require that all irrigation heads using reuse water be set back 25' from all waterbodies or 10' where 25' is impractical. The Sanctuary golf course irrigation heads are all set back a minimum of 10' from all waterbodies and staff conducts periodic audits of the irrigation system to ensure proper operation.

13.) Quantify golf course water use and the source of water used. The Sanctuary Golf Club quantifies all water use. Water used to irrigate the course includes reuse water provided by the City and onsite wells permitted by the SFWMD.

Areas needing improvement:

1.) Continue to increase native plant or unfertilized grass buffers around environmentally sensitive areas such as lakes and wetlands to achieve a minimum 25-foot buffer, or 10-foot buffer where 25 feet is impractical.

Progress on 2011–2012 Interim Goals

The Sanctuary golf course 2011–2012 interim goals included:

1. Begin harvesting 10 – 20% annually of the established emergent shoreline vegetation in each of the lakes to help facilitate nutrient removal.
2. Complete formal mapping of the environmentally sensitive areas along the golf course.

The Sanctuary is currently harvesting 10–20% of their emergent vegetation annually. In an effort to assist the other island golf courses in implementing the BMPs, the Sanctuary provided more than 2,500 emergent aquatic plants to the Dunes golf course for planting along their shoreline.

The Sanctuary Golf Club has completed mapping of drainage patterns and environmentally sensitive areas along the golf course.

For 2012–2013, no interim goals were established for the Sanctuary. The Sanctuary should continue current practices and implementation of existing BMPs.

Compliance with Golf Course Nutrient and Lake Management Recommendations

Adopted by Sanibel City Council October 2008 - Updated July 30, 2012

Staff Recommendation	Sanctuary Golf Course
Education	
Require that each superintendent ensure that all course employees are trained in the <i>Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses</i> (FDEP 2007), including water quality related issues and environmentally sensitive areas around the golf course.	Staff developed a formal BMP training program. All employees trained annually and have signed agreement developed by Sanctuary Golf Course Superintendent that they have been trained and understand the BMPs.
Lake Management	
Within 5 years of adoption, a minimum of 30% of the littoral zone of each golf course lake must be planted and maintained with submerged or emergent aquatic vegetation on a minimum of 3' centers.	All lakes meet or exceed the the 30% requirement. During staff inspection lakes look very well maintained and have the greatest coverage of emergent and submerged plants of all of the golf courses surveyed.
Require that golf courses monitor the water quality in their lakes 2x/year (wet season/dry season) and provide the data to the City's Natural Resources Department. Minimum parameters should include dissolved oxygen (DO), total nitrogen (TN), total phosphorus (TP), chlorophyll a (chl-a), and copper (Cu). If nutrient or heavy metal concentrations are excessive, City staff will meet with golf course management staff to review and determine a mitigation plan.	Has been accomplished and results have been provided to Natural Resources Department staff biannually. Data analysis indicates that there were improvements in the water quality of lakes 1, 2, 3, 5, 6, and 7, with reductions in both total nitrogen and total phosphorus when comparing November 17, 2011 to June 14, 2012. Lake 4 showed improvements in TN, but TP increased slightly in June, compared to November.
Require that all fish kills and algae blooms are reported to the City's Natural Resources Department.	All fish kills and algae blooms have been reported
Fertilizer Management	
Limit soluble nitrogen applications to ½ lb/1000ft ²	Currently limiting soluble nitrogen to 1/2 lb/1000 ft2.
Identify and map environmentally sensitive areas within the golf course and identify no fertilizer buffer zones around all of the waterbodies and map drainage patterns.	Formal mapping was completed in November 2011. A map showing drainage patterns and all environmentally sensitive areas was provided to City staff on June 14, 2012.
Require 25-foot native plant or unfertilized grass buffers around environmentally sensitive areas such as lakes and wetlands, where practical. When a 25-foot buffer is impractical, a minimum 10-foot buffer is required.	Buffer zones around lakes and wetland course edges are rough grass and carefully managed.
Require that grass buffers around environmentally sensitive areas such as lakes and wetlands be mowed 2" higher than the other grass to slow and filter overland flow to waterbodies.	Grass height of roughs along sensitive areas is currently maintained at 1.5".
Require that all washdown facilities have runoff properly treated prior to discharge off of the site.	Equipment washdown facility is self-contained and inspected by Natural Resources staff annually.
Require periodic inspections of fertilizer storage areas and washdown facilities by DNR staff.	All facilities inspected by Natural Resources staff annually.
Require that all golf courses on the island maintain annual fertilizer and copper sulfate logs and make them available to the City's Natural Resources Department.	Fertilizer and copper sulfate logs are maintained and provided to Natural Resources staff annually.
Irrigation and Fertigation	
Require that all reuse water be setback 25-feet from all waterbodies and that all irrigation heads using reuse water or fertigation (application of fertilizer through an irrigation system) be setback 25-feet from a waterbody. When a 25-foot buffer is impractical, a minimum 10-foot buffer is required.	Irrigation design addresses this requirement and periodic inspections are conducted.
Require that golf courses quantify their water use and differentiate between reuse and potable water supplies. This information can be used to account for the nutrients in reuse water when making fertilizer calculations.	The Sanctuary Golf Club quantifies all water use. Water used to irrigate the course includes reuse water provided by the City and onsite wells permitted by the SFWMD.