Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Florida

Retrofits in Roberts Bay Result in Removal of Nutrient Impairment

Waterbody Improved

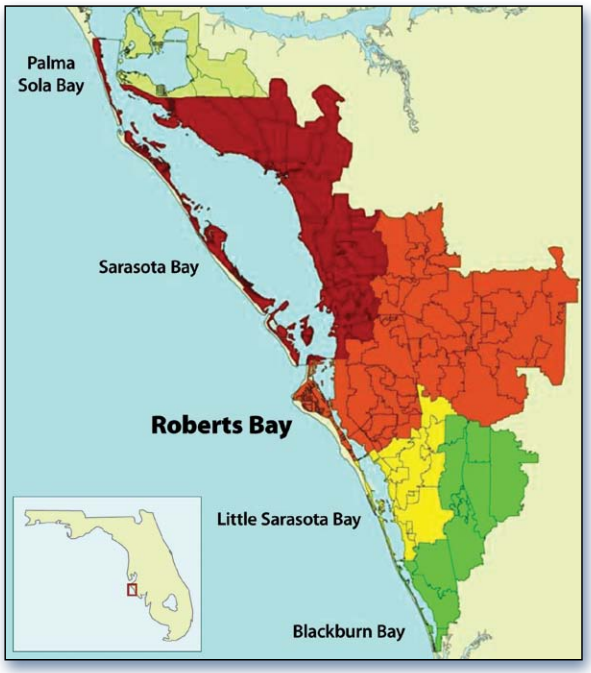
Nutrient loading from both point and nonpoint sources led the Florida Department of Environmental Protection (DEP) to add Roberts Bay to Florida's 1998 Clean Water Act (CWA) section 303(d) list of impaired waters for exceedances of the historical minimum chlorophyll-*a* value threshold. Project partners implemented numerous nonpoint source pollution management strategies, including installing nutrient-separating baffle boxes and promoting the "Florida-Friendly Landscaping" (FFL) education program. Chlorophyll-*a* levels dropped as a result, prompting Florida DEP to remove Roberts Bay from the state's impaired waters list (for nutrient impairment) in 2010.

Problem

Roberts Bay (Figure 1) is in the Sarasota Bay-Peace-Myakka River watershed in northwest Sarasota County, Florida. Roberts Bay is a Class III marine water body, designated for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. It receives drainage from a 65-square-mile area, including the urbanized Philippi Creek Basin and urbanized areas of Sarasota County. Predominant land uses in the Roberts Bay watershed are residential (50 percent), urban (17 percent) and agriculture (11 percent).

The U.S. Environmental Protection Agency designated the Sarasota Bay system, including Roberts Bay, an Estuary of National Significance in 1988 and initiated the Sarasota Bay National Estuary Program in 1989. DEP designated the estuary an Outstanding Florida Water, and the South Florida Water Management District placed Sarasota Bay on its Surface Water Improvement and Management (SWIM) Program list of priority water bodies for protection or restoration in 1995.

In 1998 DEP included Roberts Bay on the state's CWA section 303(d) list for nutrient impairment. Key point sources of nutrients in the basin included four domestic wastewater treatment facilities; nonpoint sources included atmospheric deposition, ground water discharge to streams, ground water seepage, septic systems and surface water runoff. In 2001, in accordance with Florida's Identification of Impaired Surface Waters Rule (IWR), the state's Environmental Regulation Commission adopted a new methodology to verify water body impairments. The IWR listing methodology verifies estuary nutrient impairment if (1) the annual average



Source: Sarasota Bay Estuary Program

Figure 1. The Roberts Bay Basin (orange) lies along the Gulf of Mexico in Florida's Sarasota County.

chlorophyll-*a* (a measure of algal biomass) values exceed the estuarine threshold of 11 micrograms per liter (μg/L) in any year within the verification period (1/1/1997–6/30/2004) or (2) the annual average chlorophyll-*a* values during the verification period increase by more than 50 percent over the historical minimum value (the lowest average chlorophyll-*a* value from 1992–1996) for at least two consecutive years.

Roberts Bay was verified as impaired for nutrients in 2005 because annual mean chlorophyll-*a* values in the verification period were more than 50 percent

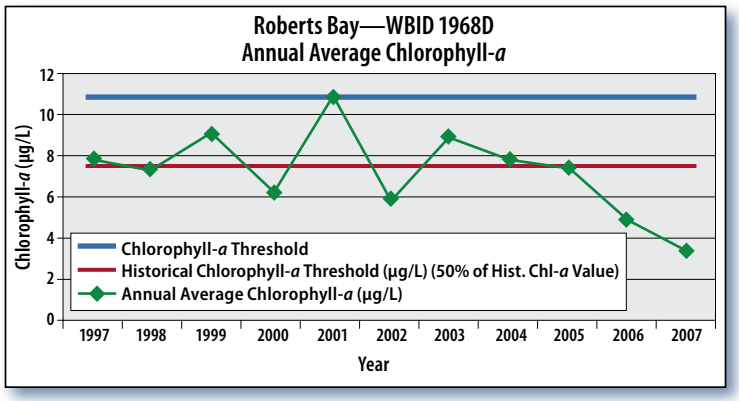


Figure 2. Annual average chlorophyll-*a* values in Roberts Bay (1997–2007).

above the historical minimum value of 4.8 µg/L in 1997, 1998, 1999, 2001, 2003 and 2004 (Figure 2). In 2005 DEP developed a total maximum daily load (TMDL) for nutrients in Roberts Bay. The objective of the TMDL was to reduce the chlorophyll-*a* annual average to below 50 percent above the historical minimum value, or to below 7.2 µg/L. In 2009, DEP increased the assessment threshold from 7.2 µg/L to 7.5 µg/L as a result of updated monitoring data.

Project Highlights

Sarasota County implemented two CWA section 319(h) projects (FY2002 and FY2004, both completed in 2006) to install 13 nutrient-separating baffle boxes, which capture and separate organic matter (including vegetation and litter) and sediment from runoff in the stormwater system. These projects also funded the installation of pump station/sewer enlargements and inlet traps (to filter solids such as trash and organic debris). Implementing these best management practices (BMPs) resulted in the following estimated pollutant load reductions: 267 pounds per year (lb/yr) total nitrogen (TN), 186 lb/yr total phosphorus (TP), and 53,892 lb/yr total suspended solids (TSS). A SWIM project completed in 2004 also funded the installation of two additional nutrient-separating baffle boxes. One additional CWA section 319(h) project, expected to be completed in 2013, is funding the installation of eight nutrient-separating baffle boxes and bioretention junction boxes. These BMPs will lead to additional estimated load reductions of 2,607 lb/yr TN, 242 lb/yr TP, and 135,882 lb/yr TSS.

In 1992 Sarasota County began its FFL program (formerly known as "Florida Yards & Neighborhoods"), an educational campaign designed to improve water quality by integrating landscaping BMPs in homeowners' and green industries' fertilizer/pesticide use and irrigation practices. This highly successful and popular statewide program has been funded with base CWA section 319(h) funds since 1994. In 2009 the Florida Legislature designated the program the official state landscaping BMP program. Legislators find the program so critical to the public welfare that deed restrictions, covenants and local ordinances are void if they prohibit an owner from implementing FFL practices on their land. The FFL program has led to a significant cultural change to more environmentally friendly landscaping throughout the state, including Sarasota County, thus preventing further nutrient loading in Roberts Bay.

Results

Thanks to the effort of numerous stakeholders, pollutant loads have dropped in Roberts Bay (see Figure 2). Water quality data show that the bay's chlorophyll-*a* annual average did not exceed 50 percent of the historical chlorophyll-*a* threshold of 7.5 µg/L in three consecutive years—2005 (7.5 µg/L), 2006 (5 µg/L), and 2007 (3.6 µg/L). As a result, DEP removed Roberts Bay from Florida's impaired waters list (for nutrient impairment) in 2010. Additional improvements can be seen regionally: Five other water bodies in nearby Sarasota Bay, Little Sarasota Bay and Blackburn Bay were delisted for chlorophyll-*a* or historical chlorophyll-*a* between 2005 and 2010.

Partners and Funding

The Sarasota County Environmental Services, Sarasota County Drainage Operations Division, City of Sarasota, City of Venice, Sarasota County Cooperative Extension Service, FFL Program, Sarasota Bay National Estuary Program, Sarasota County Neighborhood Environmental Stewardship Team, Southwest Florida Water Management District, and numerous other partners and participants contributed to improvements in Roberts Bay and surrounding estuaries. A total of $1.6 million in CWA section 319(h) funds and $5.2 million in local funds were directed to projects to implement BMPs, monitor post-construction loading, and implement education components. Between FY2002 and FY2009, an additional $3.8 million in CWA section 319(h) funds supported the statewide FFL program, with an official match of $3.3 million and a significantly higher unofficial match (including Sarasota County funds).

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