

The following is a summary of activities completed by SCCF Marine Lab as of May 18, 2009 under the TDC Captiva Water Quality (WQ) Assessment Project:

- Hired staff and purchase of all needed equipment and supplies.
- Developed sampling protocols related to this effort, including coordination with Lee Co. Environmental Lab staff. All equipment, methods and protocols set up for turbidity and chlorophyll-a analyses at SCCF Lab.
- Collected and reviewed pertinent regional water quality data, including SCCF's RECON real time network data. This effort included extensive data from cities, counties, state and other agencies going back at least three years.
 - Physically examined all wastewater treatment plant locations in the area and reviewed DEP reports and citations for each plant.
 - Identified and mapped possible pollutant sources on Sanibel and Captiva Islands through on the ground surveys and public records.
 - Obtained the latest weekly sampling data from FL Department of Health (FOH's 6 beach sites on Sanibel-Captiva) for bacteria (FIBs) on beaches and used results to develop efficient monitoring design. This information helped us to design a monitoring plan capable of identifying human versus non-human source(s) responsible for episodes of higher bacterial levels in nearshore waters.
 - Specifically, we found that concentrations of indicator bacteria are:
 1. Significantly higher during spring tides than neap tides;
 2. Significantly higher during wet versus dry season;
 3. Significantly greater within 3 days of a significant rainfall event;
 4. Are not significantly different during ebb versus flood tides.
 - Incorporated 14 months of Bayous Preservation Association (BPA) monitoring at their 4 sites near Blind Pass into above effort and have begun sampling for BPA for the 12 months following the opening of Blind Pass.
 - Development of database for management and analyses of the above WQ data.
 - Preliminary analyses of existing WQ data to guide in development of WQ monitoring plan and site selection.
- Received and analyzed City of Sanibel NPDES water quality data relevant to the TDC project.
- Developed a WQ monitoring plan and related sampling protocols for project, including "sentinel" sites, "storm event" sites, and beach bacteriological sites guided by above findings. The monitoring plan includes:
 - Sampling stormwater runoff events after rainfall of at least 0.5 inches for worst case scenario.
 - Sampling sentinel sites on late ebb tide for worst case conditions.
 - Sampling beach study sites during spring tides for most probable hits. Sampling sand as well as water due to possibility sand acts as media for bacteria.
 - Sampling near possible pollutant sources which were identified during pre-sampling monitoring design period.
- Sampling activities October 2008 through April 2009:
 - Storm event sampling: 2 events (12-1-08, 12-12-08), 26 sites, total of 260 analyses to date.
 - Sentinel site sampling: 3 events (11-17-08, 2-09-09, 4-27-09), 10 sites and 420 analyses to date.
 - Beach study sampling: 3 events (11-25-08, 12-12-08, 4-23-09), 4 sites and 50 analyses to date.

- Public Outreach
 - Formal presentations to Captiva Community Panel January (CCP) 1/13/09 at Tween Waters Resort, Captiva Community Association (CCA) 2/24/09 at Captiva Public Library and several others at SCCF.
 - Attended and commented during several Blind Pass project meetings (e.g., 3/18/09 at Captiva Yacht Club, 5/6/09, Tween Waters).
- Began a related effort funded by FL Sea Grant to evaluate the results of the opening of Blind Pass on water quality and seagrasses using this project's data, and additional sampling, along with relevant data from Bayou Preservation Association (BPA) and the City of Sanibel. Redfish Pass and SCCF RECON data are being used for comparison.
- Generated a Year 2 proposal with CCP, including obtaining quotes for doing source tracking analyses in Year 2 of the proposed two year overall effort.
- Developed protocol for source tracking bacteriological contaminants during periods of high bacteria concentrations.
- Evaluated data received to date and developed list of priority areas for adaptive monitoring strategy. More sampling effort will be directed toward these areas which have shown periods of higher relative pollutant concentrations.
- Storm event sampling underway
- We are just entering our first rainy season of sampling. Most beach closures appear to have occurred during rainy season and DOH data show a significantly higher bacterial (FIBs) concentration in nearshore waters during wet season. In addition, chlorophyll-a concentrations, which can be an indicator of nutrient pollution, are significantly higher during previous wet season monitoring.
- Continuously analyzing all pertinent water quality data from all available sources.

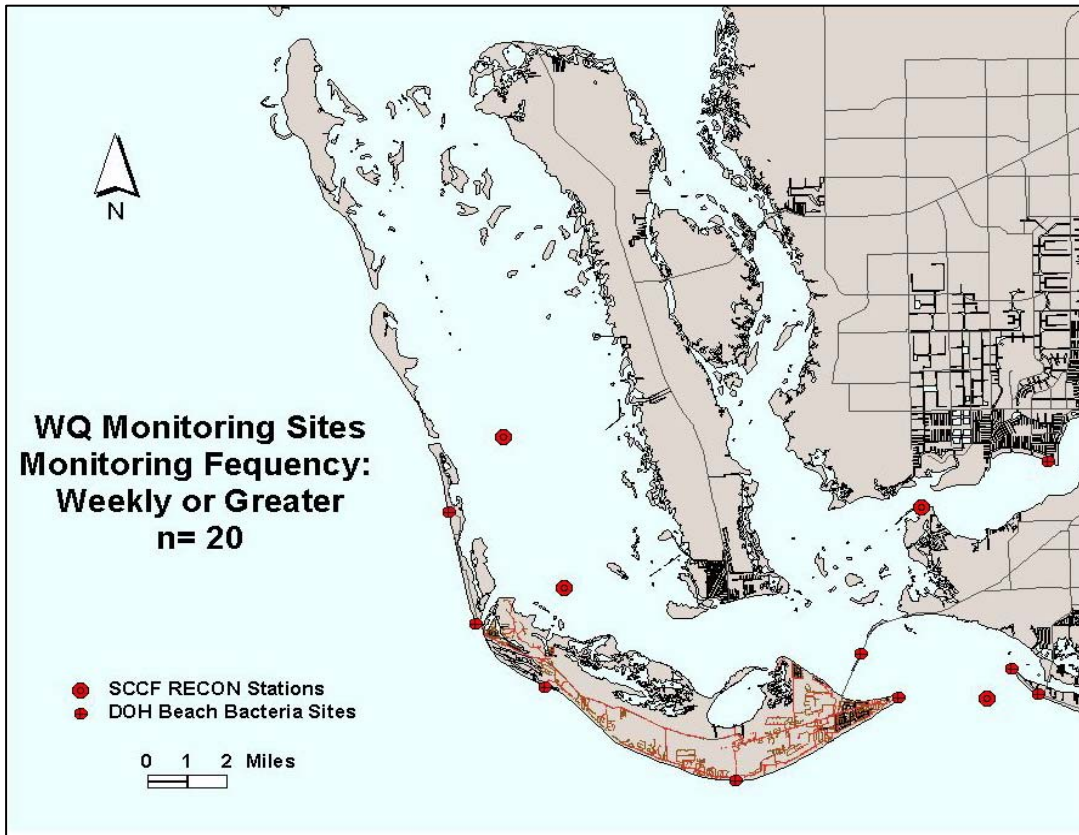
OVERVIEW

Year 1

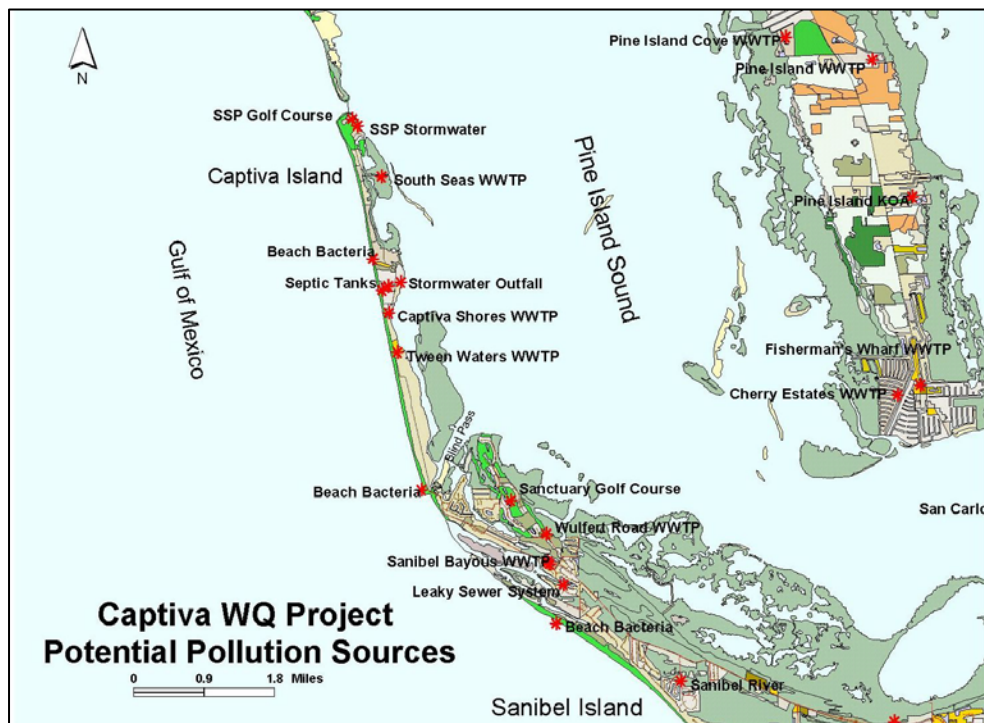
- Summarize and analyze existing and current data
- Identify potential sources of pollutants (seasonal, locations)
- Illuminate 'problem' areas for later source tracking potential
- Monitor seagrasses and oysters (as indicators of habitat quality)

Year 2

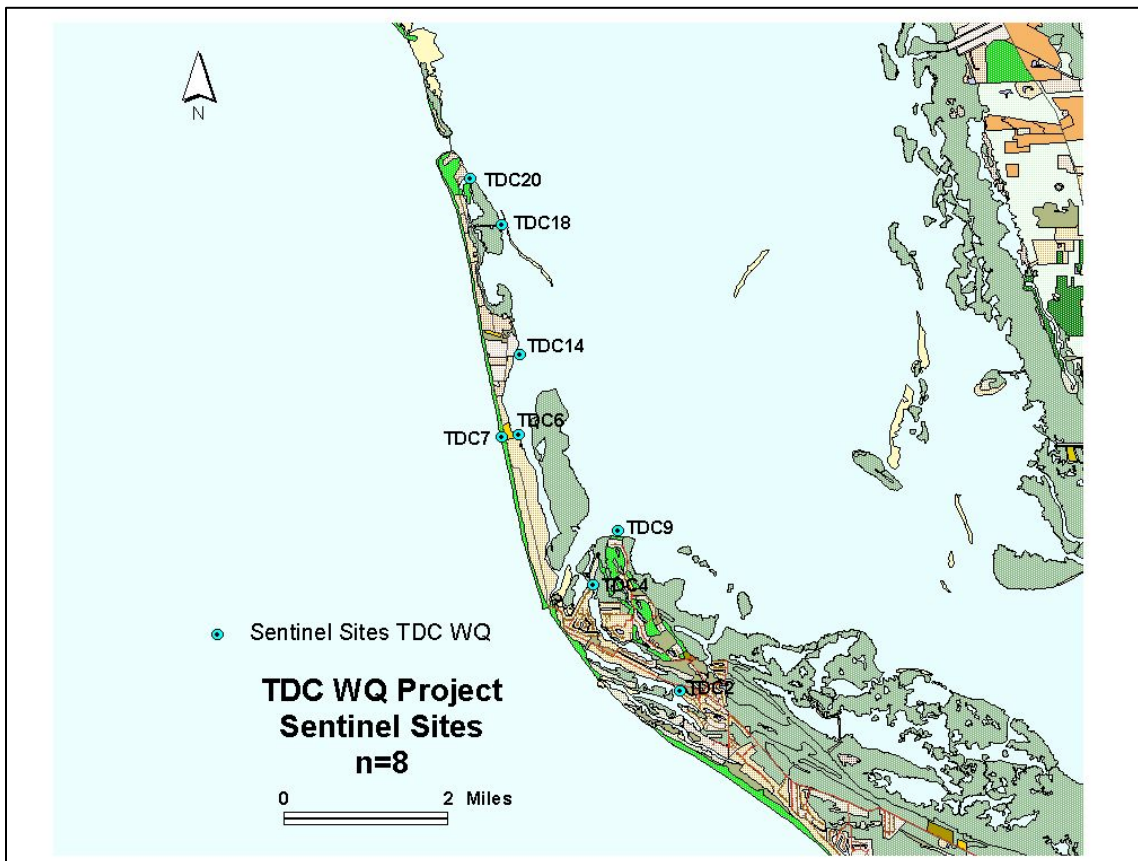
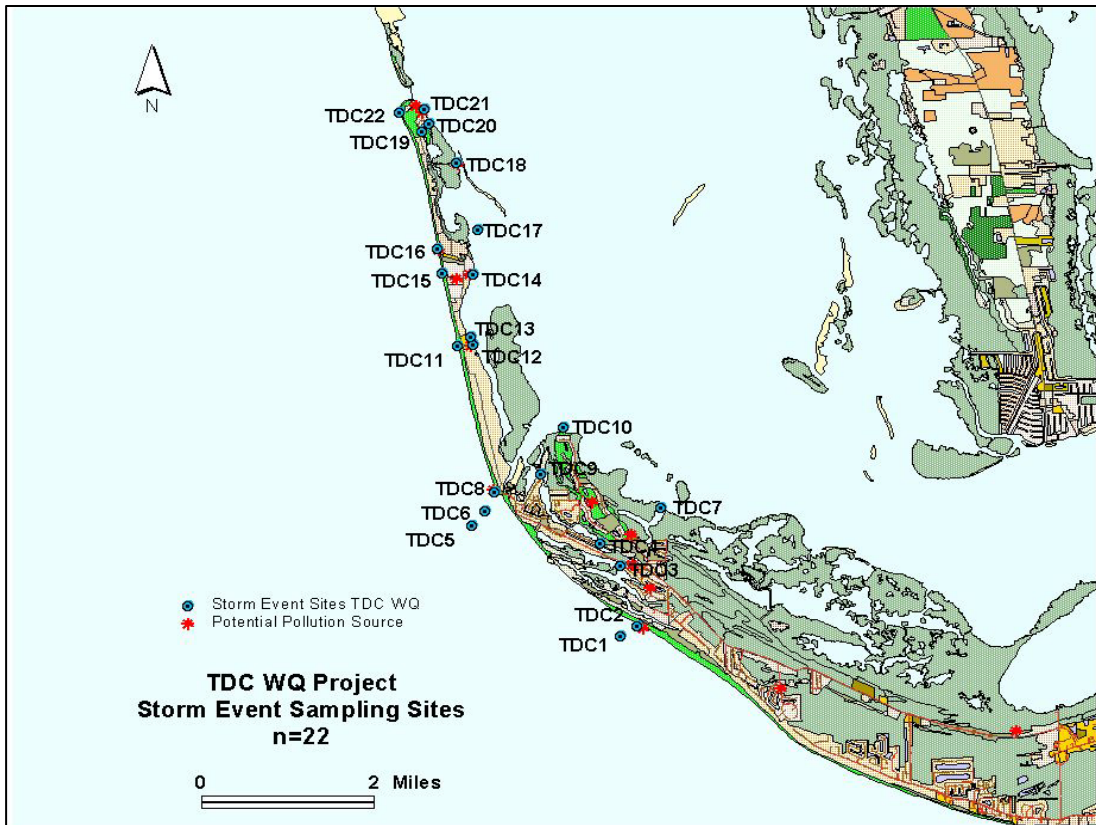
- Narrow focus of WQ sampling based on year 1 findings
- Develop and use proper source tracking methods
- Monitor seagrasses and oysters (as indicators of habitat quality)
- Tie in other efforts (RECON, Blind Pass sampling around opening, CHNEP, Refuge, City, County and State WQM programs)

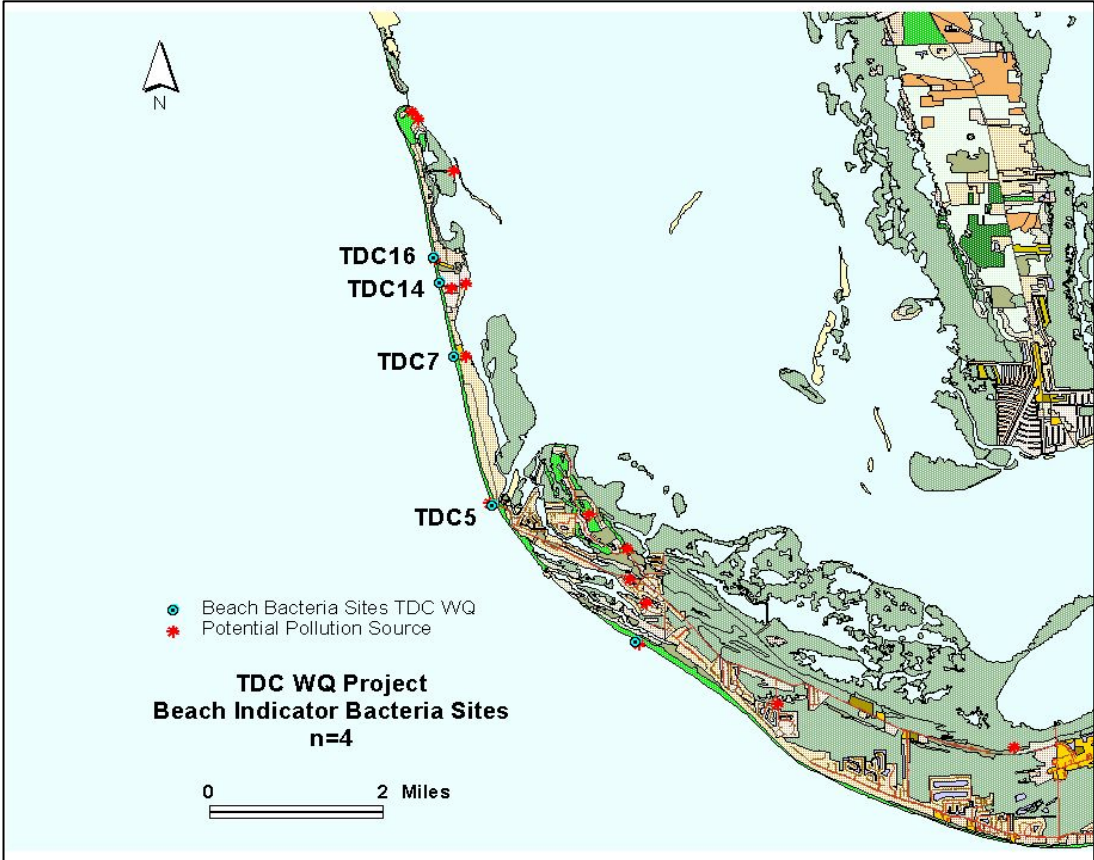


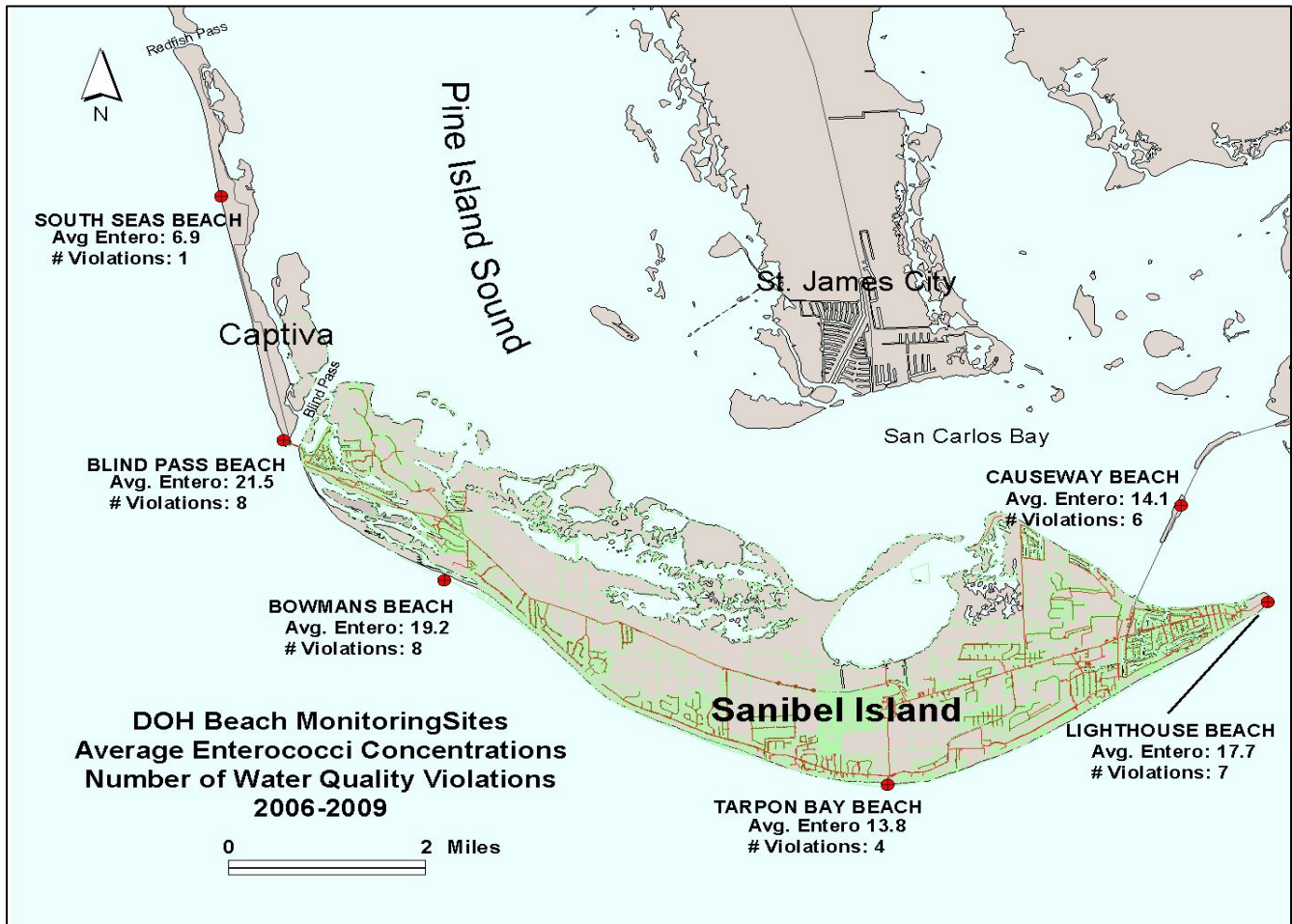
Captiva Water Quality Monitoring and Assessment Program
Identify Potential Pollution Sources



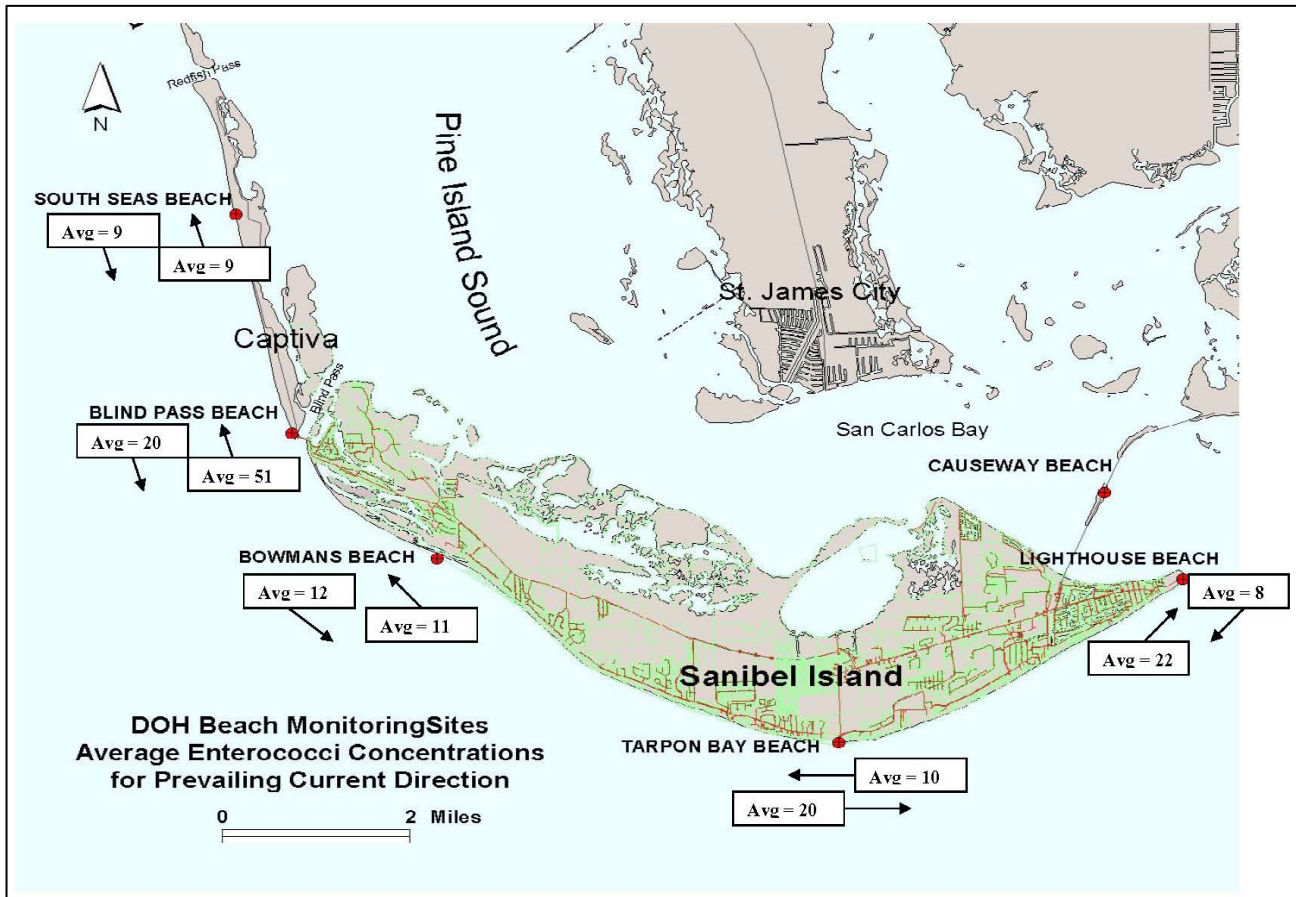
Three Types of Sampling for Captiva Water Quality Project







Summary of FL Department of Health’s (DOH) results showing average weekly Enterococci concentrations from sampling events from January 2006 through March 2009, along with total violations during this assessment period. Violation totals derive from the number of times fecal indicator bacteria (FIBs) concentrations exceeded state water quality criteria. Actual beach closures occurred five times at Blind Pass, six times at Bowman’s Beach, two times at Tarpon Bay beach and one time at Lighthouse Beach during this period. Only one closure, Blind Pass in August 2008, have occurred since the decommissioning of the Bayous WWTP in 2008. Finally, note that DOH samples beaches only, not inshore waters on the Pine Island Sound side of Sanibel-Captiva.



Summary of FL Department of Health's (DOH) results showing average concentrations of Enterococci for the prevailing current direction at time of sampling. For DOH sampling events from January 2006 through March 2009 this figure shows the average enterococci concentrations for times when currents flowed from left to right at beach compared to concentrations at times when current was flowing right to left.. Note the prevailing current direction on Captiva is north to south along the beach.