An aerial photograph of a coastal region. A large, irregularly shaped body of water, possibly a bay or lagoon, is the central feature. The water has varying shades of blue and green, indicating different depths or vegetation. To the left, a road or highway runs along the coastline, with some buildings and land parcels visible. The right side of the image shows a narrow strip of land or a causeway extending into the water. The overall scene is a mix of natural and developed areas.

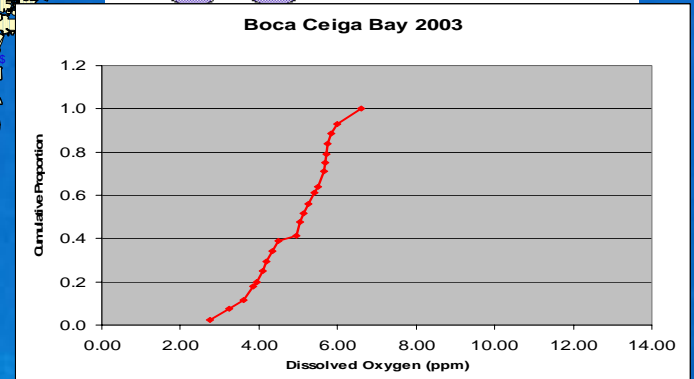
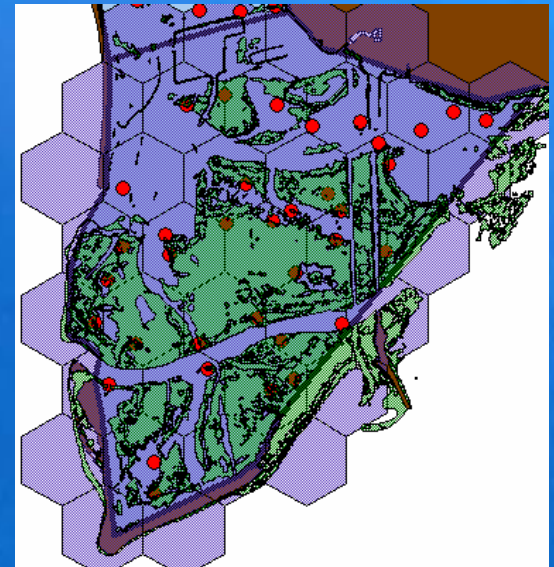
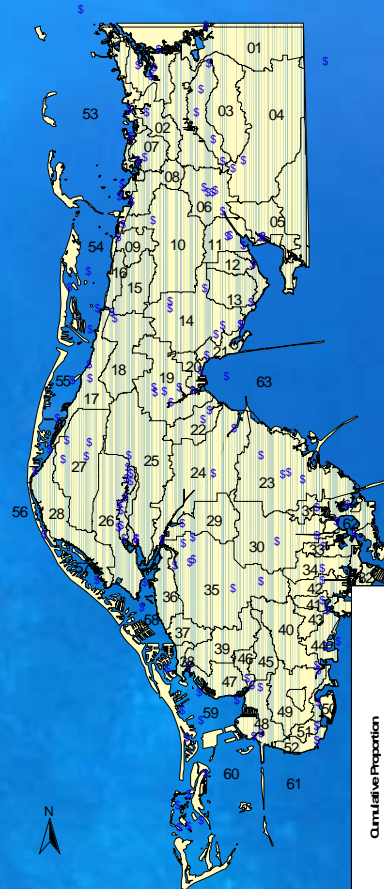
Assessing Pinellas County Surface Water Quality Using a Probabilistic Design

Kelli Hammer Levy, Andrew P. Squires and Mark Flock,
Pinellas County Department of Environmental Management
And

David Wade and Anthony Janicki,
Janicki Environmental, Inc.

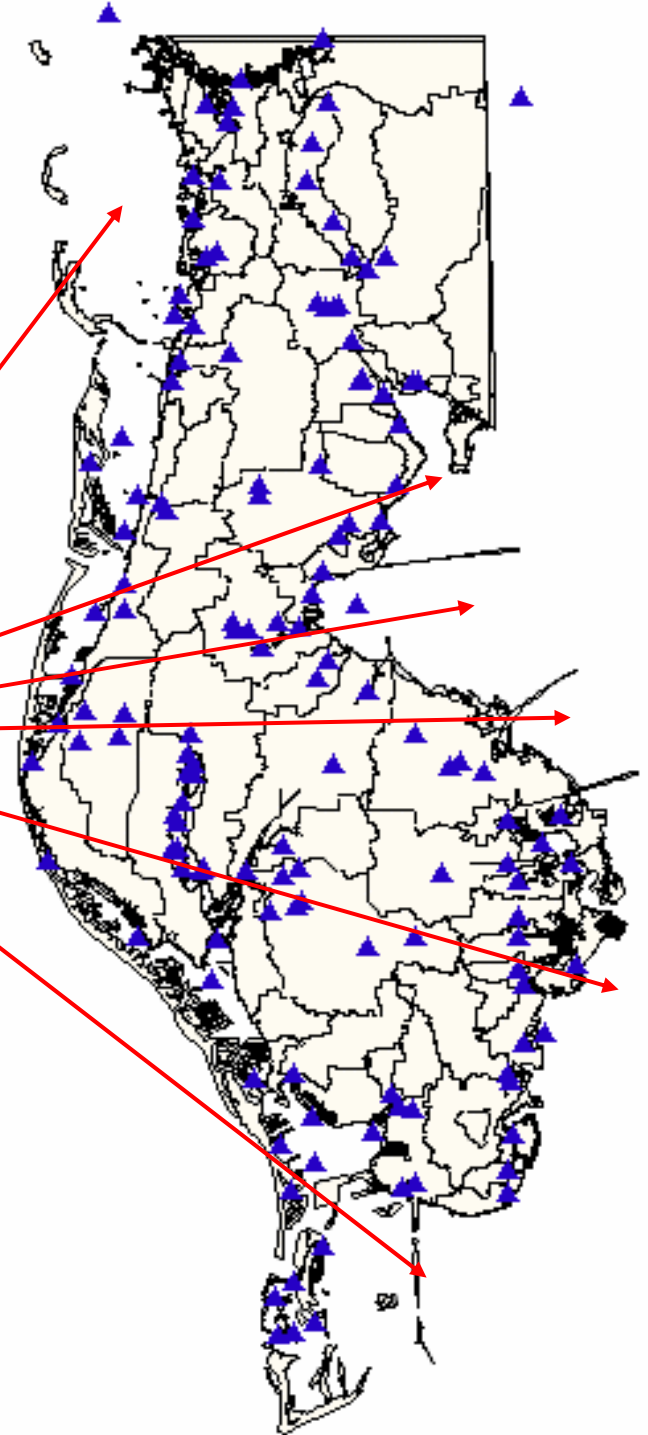
Water Quality Monitoring in Pinellas County

- Past
- Present
- Future



Past (1991-2002)

- Fixed site program;
- Professional judgement;
- Gaps in coverage;
- Tidal influences; and
- Limited trend analysis.



Present (2003)

Three-Tiered Monitoring Approach

- **Probabilistic monitoring design;**
- **Fixed site monitoring program; and**
- **EMC development.**

Probabilistic Design Objectives

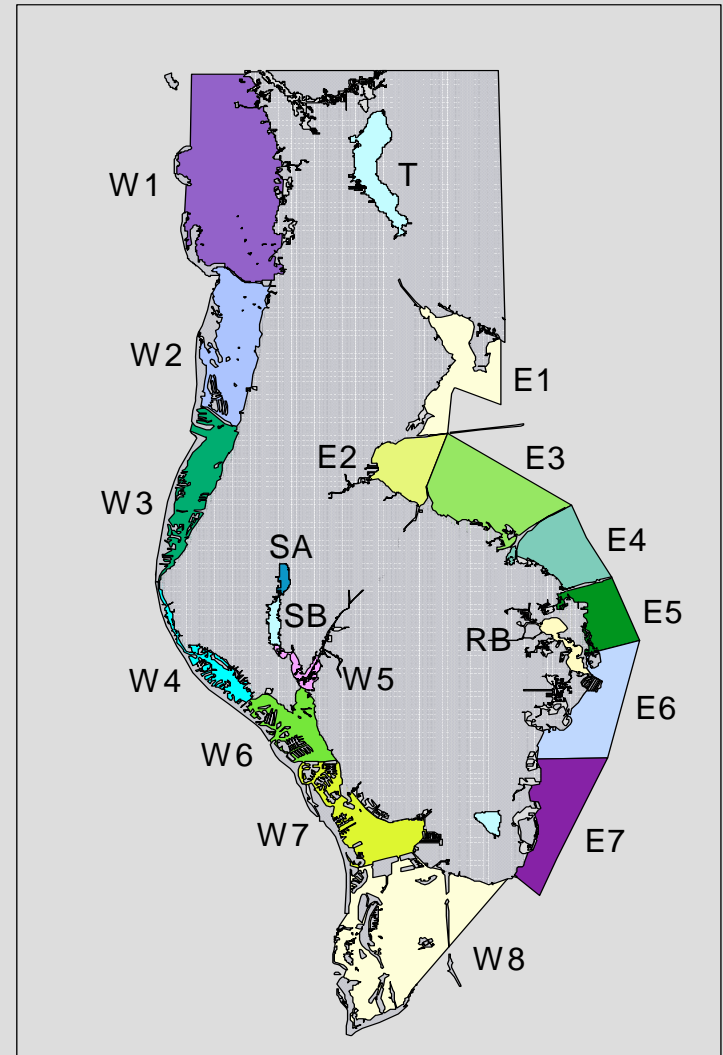
- **NPDES permit obligations;**
- **Status and trend information;**
- **Reporting;**
- **State Policy and County Comprehensive Plan requirements;**
- **Identify problems;**

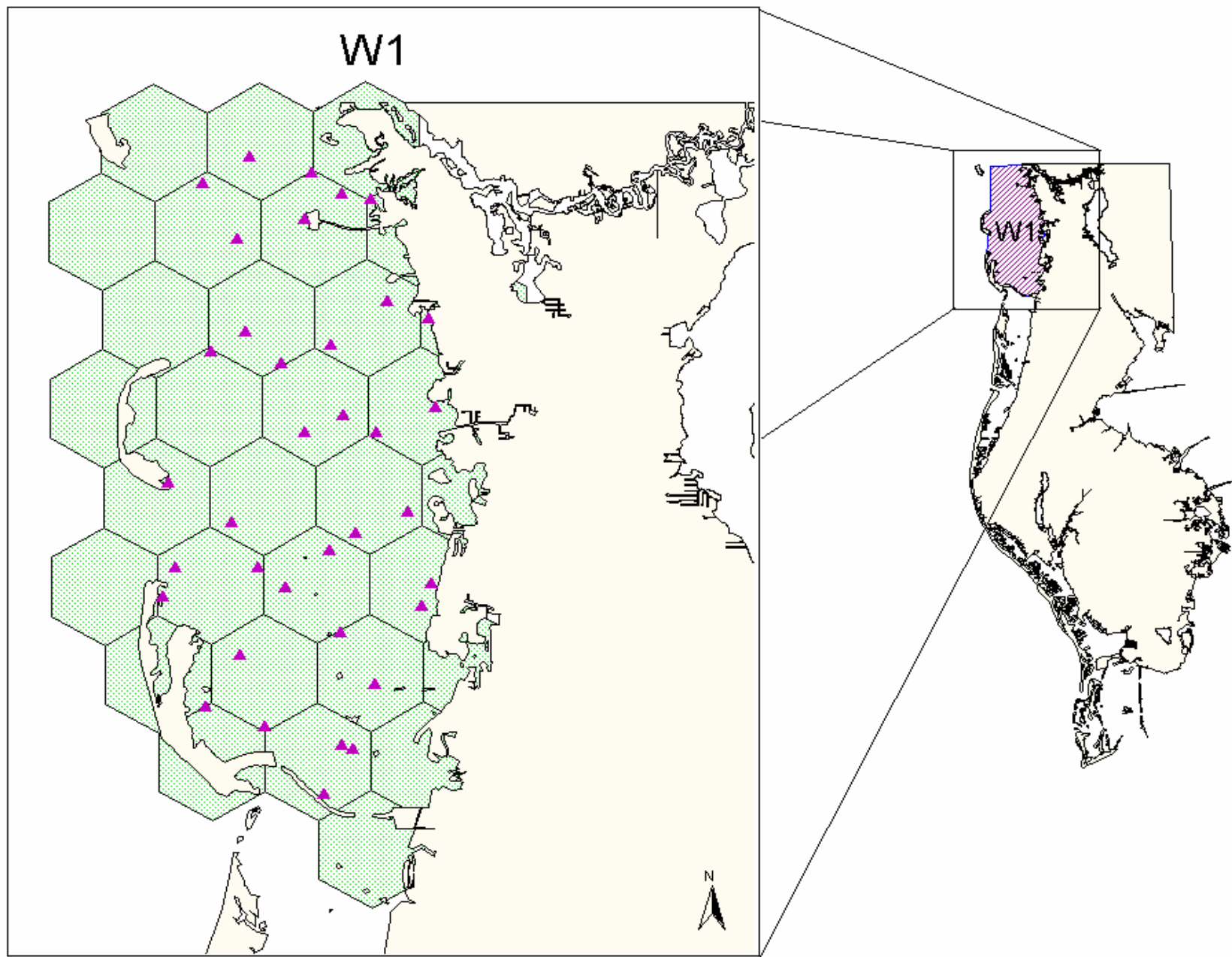
Probabilistic Design Objectives

- Measure improvements;
- Prioritization of management efforts;
- Maximize effort and fill data gaps;
- Develop quantitative water quality targets;
- Aerial estimates of water quality; and
- Magnitude and direction of change.

Probabilistic Program Design Elements

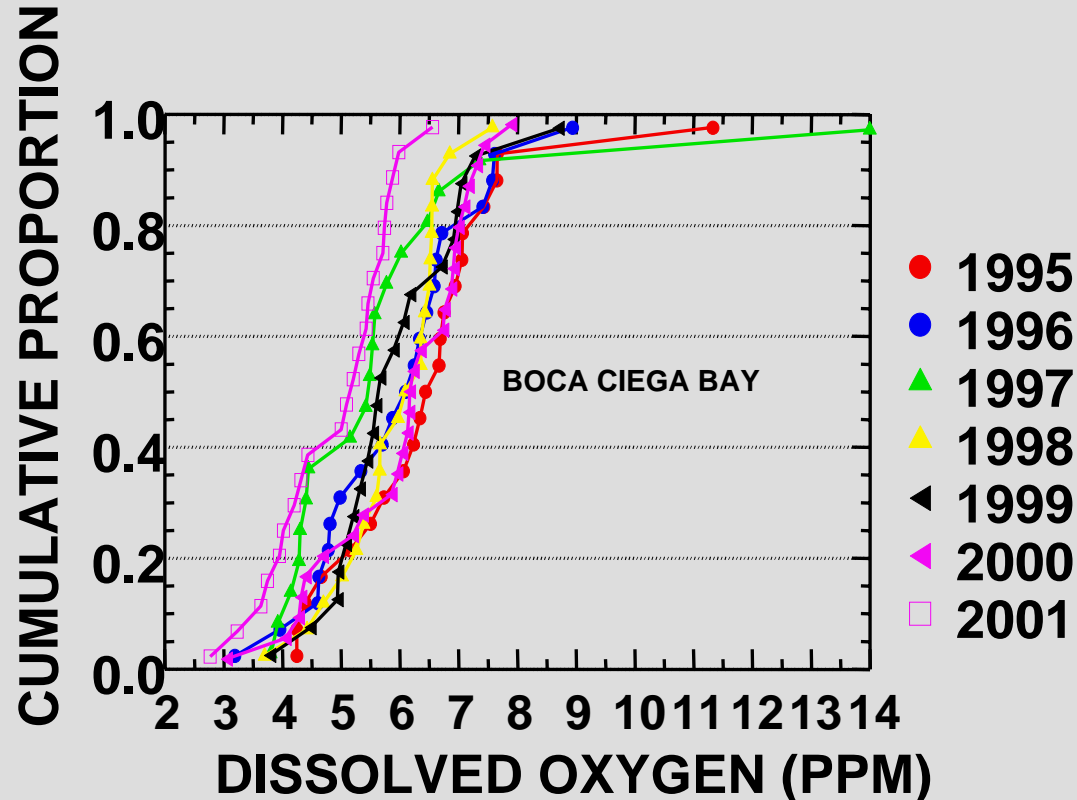
- Temporal sampling units
- Spatial sampling units
- Populations of interest





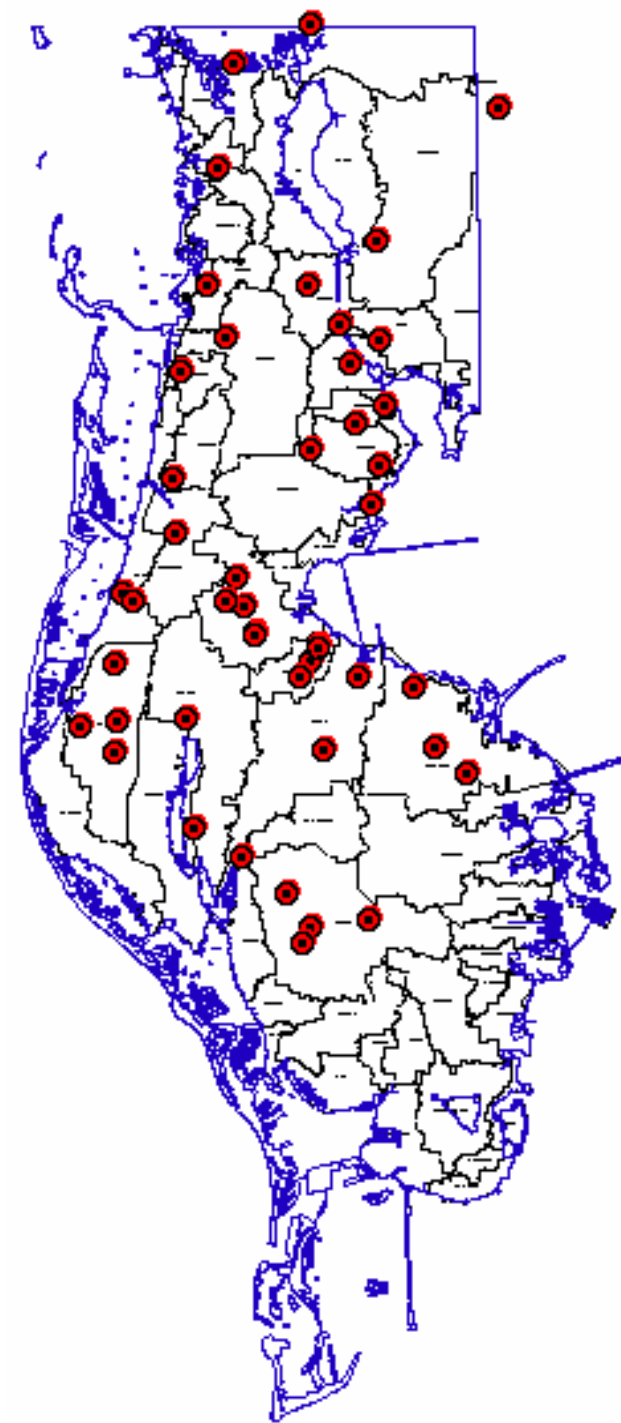
Future Reporting

- Annual summaries;
- East vs. West, grouped or individual strata and TBEP bay segments;
- Wet and dry season statistics;
- Cumulative frequency distributions;
- Impaired waters rule;
- Problem areas; and
- Adjustments to program.



Fixed Monitoring Program

- 47 fixed stream sites located in 22 basins;
- Water quality samples, Hydrolab[®] parameters, and flow measurements;
- Loading estimates.





Water quality and flow site in Cedar Creek, Dunedin, FL.

EMC Development



Evaluating stormwater treatment efficiency; Lake Seminole Watershed, Seminole, FL.



Pinellas County Program

- Statistically defensible open water monitoring program;
- Stream loading estimates; and
- Basin specific EMC data and BMP evaluations.

Questions ?

For additional information contact:
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Water Resources Management Section
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Clearwater, FL 33756
(727) 464-4425
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Janicki Environmental, Inc.

