



Integrating Nitrogen Management with Planning

Suzanne Cooper, AICP
Principal Planner
Tampa Bay Regional Planning Council

Tampa Bay in the 1970s



What caused the Bay's decline?

- Poorly treated sewage
- Unrestricted dredging and filling
- Untreated stormwater runoff and industrial discharges



The common pollutant:
NITROGEN



Tampa Bay Estuary Program's Priority:

Reduce Nitrogen



Improve Water Quality



**Regain Seagrass/
Restore Ecological Health**

Tampa Bay Nitrogen Management Consortium

Formed in 1996

A Public/Private Partnership of:

- local governments,
- regulatory agency participants,
- local phosphate companies,
- agricultural interests, and
- electric utilities

The logo for the Tampa Bay Nitrogen Management Consortium (NMC). It features the words "Tampa Bay" in a blue, serif font with a white outline, positioned above the letters "NMC" in a larger, bold, blue, serif font with a white outline. The entire logo has a soft blue glow.

45+ NMC participants are responsible for meeting
nitrogen load reduction goals

Many projects have improved the Bay

- 430 projects were implemented between 1992-2011 (~952 tons/yr); at a cost > \$760 million

Projects included:

- Decreased industrial discharges
- Upgrades to sewage plants
- Improvements to air quality at power plants
- Better handling of materials (fewer spills/releases)
- Added stormwater treatment



GET THE SCOOP ON POOP

Clean Parks, Great Water, Clean Parks, Clean Shores

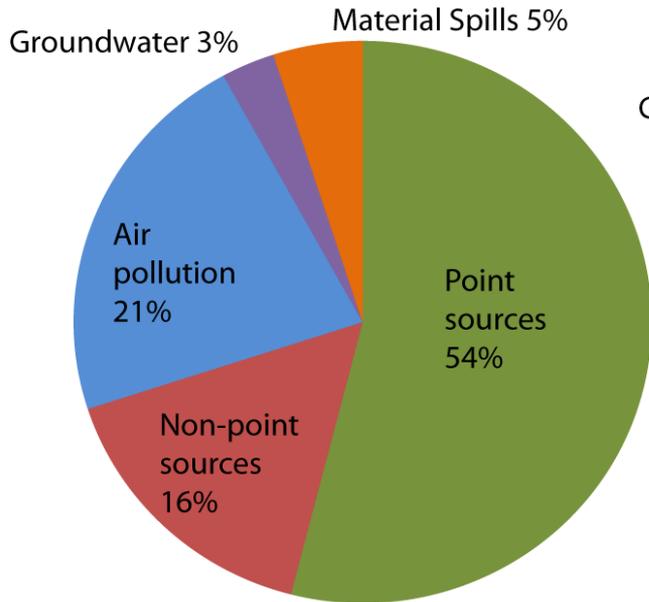
Did You Know:

- ▶ Dog poop can transmit disease to other dogs and to humans. One ounce of dog feces contains about 23 million microorganisms of bacteria. Leaving it on the ground can spread salmonella, E. coli, roundworms, hookworms and more to children & adults who share the grass.
- ▶ Unscopied dog poop washes off into waterways and provides nutrients (pollutants) that may cause algae blooms and fish kills. Stormwater runoff may become your drinking water.
- ▶ Approximately 95% of the fecal coliform found in urban stormwater was nonhuman in origin. Pet waste contributes between 20 to 30% of water pollution in America.
- ▶ Four in ten U.S. households have at least one dog. Pinellas County has approximately 185,000 dogs.
- ▶ Each dog creates between 1/3 to 3/4 pound of excrement per day.
- ▶ Pinellas County dogs generate between 31 and 69 tons of poop per day.
- ▶ Roughly 40% of Americans do not pick up their dog feces. In Pinellas this means 12-28 tons of poop per day is left unscopied.

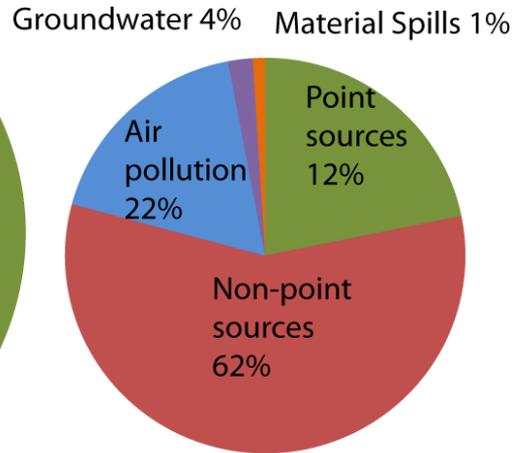
What Can You Do To Help?

Please clean up after your pet and place waste in a trash receptacle.

Nitrogen loading has decreased



1970s: ~10,000 tons nitrogen/year



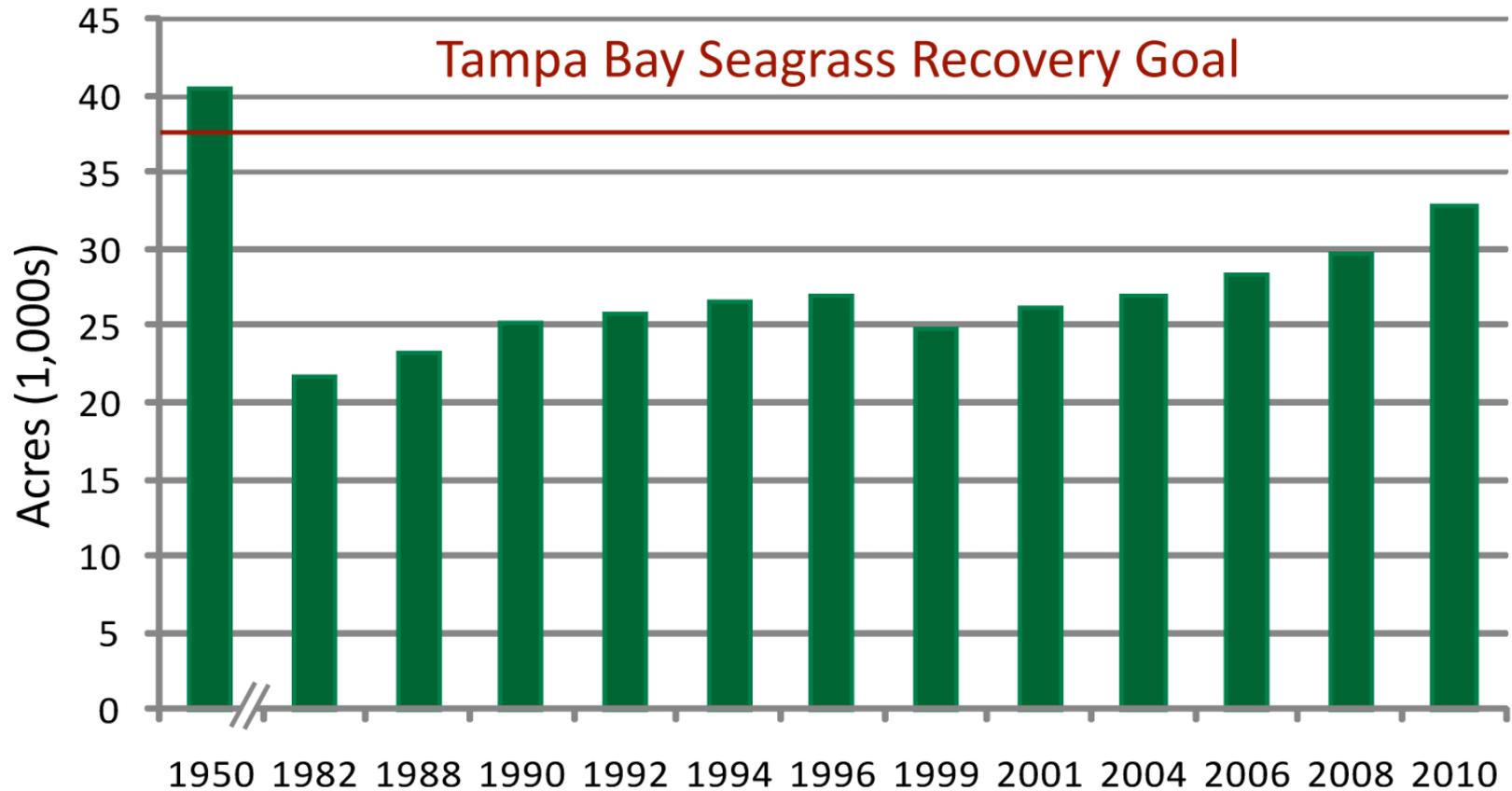
2000s: ~4,500 tons nitrogen/year

Water quality has improved

(= Chlorophyll-a limits met)

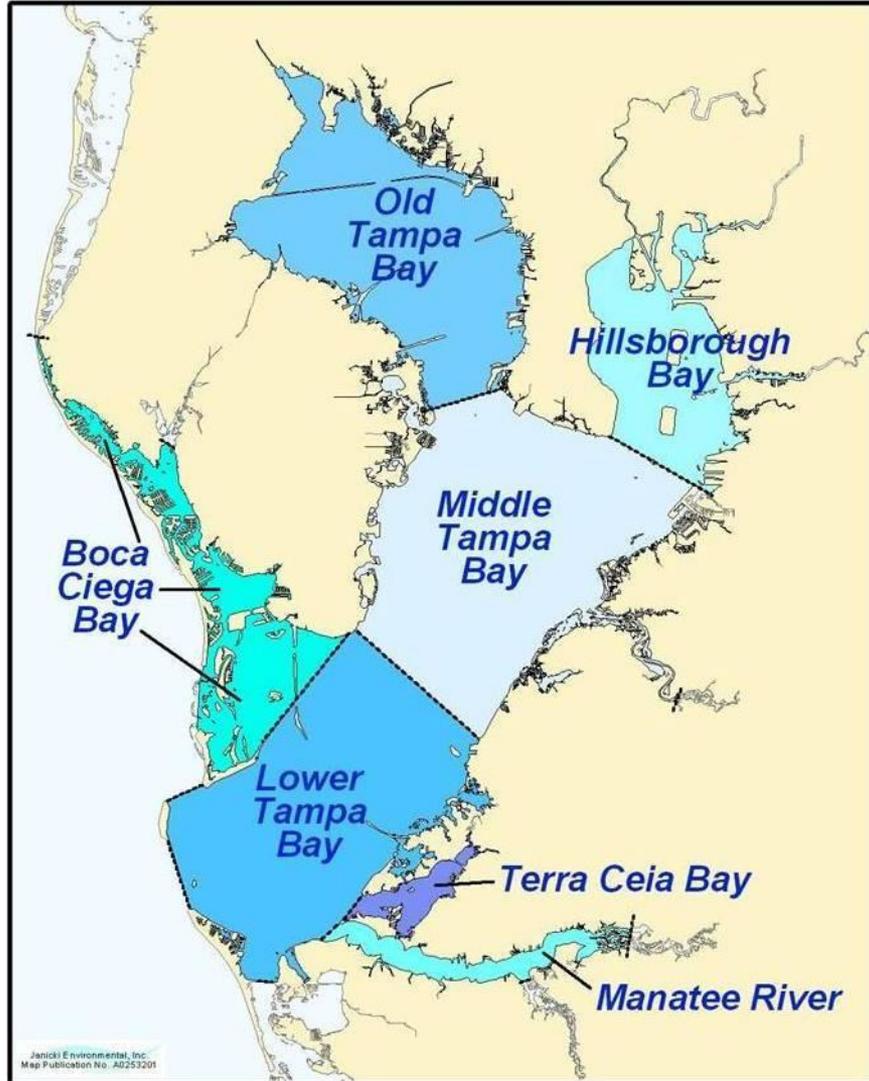
Year	Old Tampa Bay	Hillsborough Bay	Middle Tampa Bay	Lower Tampa Bay
1974	No	No	No	Yes
1975	No	No	No	Yes
1976	No	No	No	Yes
1977	No	No	No	No
1978	No	No	No	Yes
1979	No	No	No	No
1980	No	No	No	No
1981	No	No	No	No
1982	No	No	No	No
1983	No	No	No	No
1984	Yes	Yes	No	Yes
1985	No	No	No	Yes
1986	No	No	Yes	Yes
1987	No	Yes	No	Yes
1988	Yes	Yes	Yes	Yes
1989	No	Yes	Yes	Yes
1990	No	Yes	Yes	Yes
1991	Yes	Yes	Yes	Yes
1992	Yes	Yes	Yes	Yes
1993	Yes	Yes	Yes	Yes
1994	No	No	No	No
1995	No	No	No	Yes
1996	Yes	Yes	Yes	Yes
1997	Yes	Yes	Yes	Yes
1998	No	No	No	No
1999	Yes	Yes	Yes	Yes
2000	Yes	Yes	Yes	Yes
2001	Yes	Yes	Yes	Yes
2002	Yes	Yes	Yes	Yes
2003	No	Yes	Yes	Yes
2004	No	Yes	Yes	Yes
2005	Yes	Yes	Yes	No
2006	Yes	Yes	Yes	Yes
2007	Yes	Yes	Yes	Yes
2008	Yes	Yes	Yes	Yes
2009	No	Yes	Yes	Yes
2010	Yes	Yes	Yes	Yes

And seagrasses have responded



Data: SWFWMD

Tampa Bay's Total Max. Daily Load



1998- U.S. EPA Region 4 approved Total N loads of 1992-1994 as the TMDL for N for Tampa Bay.

2008- U.S. EPA required that allocations be incorporated into FDEP regulatory permits in 2010

FDEP allowed the Nitrogen Mgmt. Consortium to collaboratively develop recommended allocations for all sources within the watershed.

Tampa Bay Reasonable Assurance

The 45+ public and private NMC partners from throughout the watershed **developed and agreed to voluntary limits** on nitrogen loads for all sources to meet regulatory water quality goals (U.S. EPA TMDL) in 9/2009. **The State approved this in 12/2010.**

U.S. EPA has been accepting revised permits with the allocations identified.

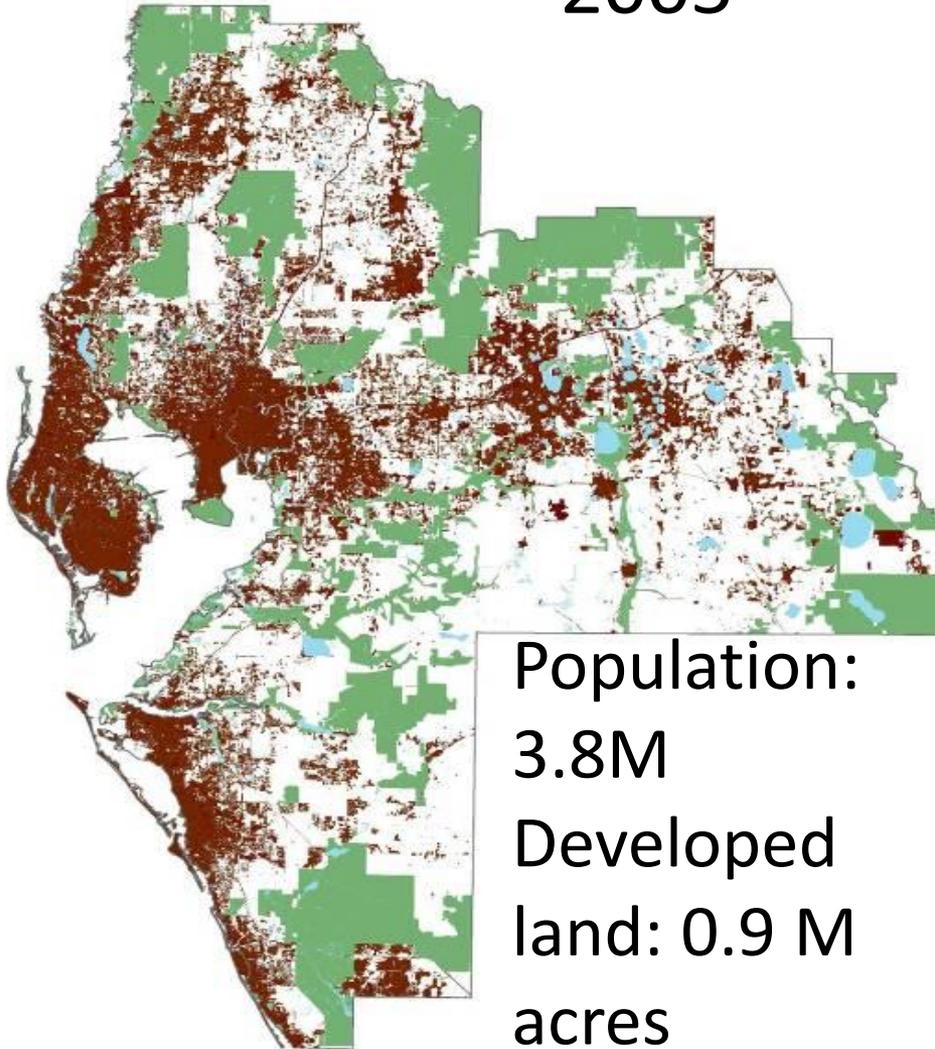
	<p>TAMPA BAY NITROGEN MANAGEMENT CONSORTIUM PARTNERSHIP FOR PROGRESS Tampa Bay NMC</p>
	<p>FINAL 2009 Reasonable Assurance Addendum: Allocation & Assessment Report</p> <p>Prepared for: Florida Department of Environmental Protection 2600 Blair Stone Road, MS 3500 Tallahassee, FL 32399</p> <p>Prepared by:  Tampa Bay Estuary Program 100 8th Ave. SE St. Petersburg, FL 33701 &  Janicki Environmental, Inc. 1155 Eden Isle Drive NE St. Petersburg, FL 33704</p> <p>September 11, 2009</p>

Implications for local governments and point sources

- Existing regulations require no additional nitrogen loading (e.g. changes in land use; new business discharges; increased discharges from waste water or stormwater).
- Tampa Bay management strategy has been successfully meeting this requirement since 1996.
- **Near term:** Continuing the existing management strategy will compensate for new growth or discharges to Tampa Bay through 2013, by offsetting expected new loads of 17 tons/yr.

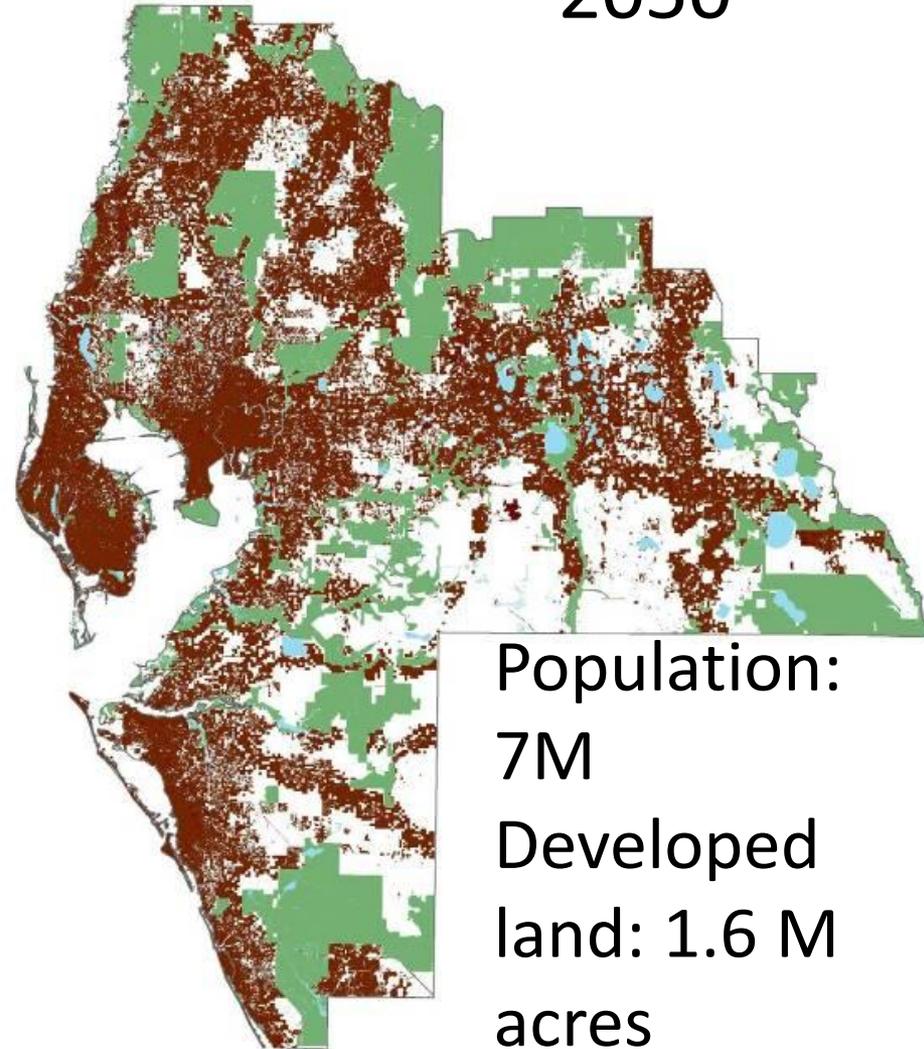
The Challenge Ahead: Maintaining N loading with population growth

2005



Population:
3.8M
Developed
land: 0.9 M
acres

2050



Population:
7M
Developed
land: 1.6 M
acres

What has been the status quo?

- Stormwater treatment ponds sized to provide fill and minimize areal extent.
- Infrastructure designed to drain land and streets quickly.
- Increasingly rigid design standards and landscape controls for all types of development.
- Sprawl development with high-maintenance lawns and landscape, compacted soils generating lots of runoff.
- Continued reliance on past practices without incorporation of tested and confirmed best management practices.



Today's alternatives

Many techniques that reduce runoff and remove nutrients more efficiently than treatment ponds.

Stormwater models accepted by SWFWMD evaluate runoff nutrient loads and treatment efficiencies for specific BMPs.

These models can evaluate water quality parameters such as Total Suspended Solids, Total Nitrogen, Total Phosphorus and Total Zinc.

Also evaluate the cost implications associated with the application of these systems.

Stormwater Models ///////// Best Management Practice	BMP SELECT (a planning level tool)	BMPTRAINS
Retention, incl. Bioretention	X	X
Dry Detention	X	X
Swale	X	X
Green Roof		X
Filter Strip, incl. Grass Buffer	X	X
Permeable Pavement	X	X
Sand Filter	X	X
Water Harvesting		X
Wet Detention	X	X
Wetland	X	
Rain Garden, incl. Tree Wells		X
Exfiltration		X

How can local govts meet the required N loading limits and continue to attract new jobs, grow and redevelop, and limit costs to public & private sectors?

- Revise Land Development Code to allow Best Management Practices / Low Impact Development techniques that reduce runoff;
- Review parking requirements to reduce pervious surface;
- Incentivize the use of stormwater reduction techniques;
- Revise Comprehensive Plans to recognize the importance of protecting water quality, limiting nitrogen loading, and promoting wise land development practices for the long-term future of the community. And...

How can local govts meet the required N loading limits ... (continued)

- Adopt fertilizer control and landscape maintenance ordinances;
 - Educate the citizenry;
 - Require certification of commercial lawn/ landscape care workers; and
 - Provide monitoring & enforcement to improve effectiveness.

- Encourage clustered development patterns, the Maintenance of native vegetation, and the Use of Florida-friendly landscape standards.

- Incorporate BMP and LID practices into all public projects; as teaching tools and models for private-sector use.

TBRPC's role

- Educate elected officials and staff about the required N loading limitations.
- Provide resources to guide the review and revision of Land Development Codes and Comprehensive plans and related ordinances.
- Provide information on BMP / LID techniques best for our region's climate and soils and what other jurisdictions are doing to implement.
- Provide materials that can be used for education and training purposes.



**When can I meet with
your Board, Council,
or Commission, and
your staff to get started?**

**Suzanne Cooper
suzanne@tbrpc.org
727-570-5151 x 32**