

New Jersey Department of Environmental Protection



Land Use Management

Improving Barnegat Bay



New Jersey Clean Vessel Act Program

- ***NJCVA Program administered by Division of Fish and Wildlife***
- ***NJCVA Steering Committee funds wastewater Pump Out facilities at marinas and Pump Out Boats***
- ***Over 60 Pump Out Facilities are operational throughout the Barnegat Bay/Little Egg Harbor Estuary***
- ***NJDEP Funded First Pump Out Boat in Ocean County 2000 (\$21K)***
- ***NJCVA Funded all additional pump out boats between 2002-2010***
- ***NJDEP Petitioned USEPA to establish No Discharge Zone for the BB/LEH Estuary on March 27, 2002***
- ***USEPA Approves NDZ May 2003***

Partners

- ***Ocean County Freeholders***
- ***Ocean County Utilities Authority***
- ***NJDEP- Watershed Management & Fish and Wildlife***
- ***NJ Marine Sciences Consortium***



Pump Out Boats Funded by NJCVA

- ***Circle of Life***
- ***Water Warrior***
- ***Bay Saver***
- ***Waste Watcher***
- ***5th Boat –Operational June 2010
Name TBD***



LAND USE MANAGEMENT

Coastal Management Office



COASTAL HAZARDS AND CLIMATE CHANGE

309 Assessment and Enhancement

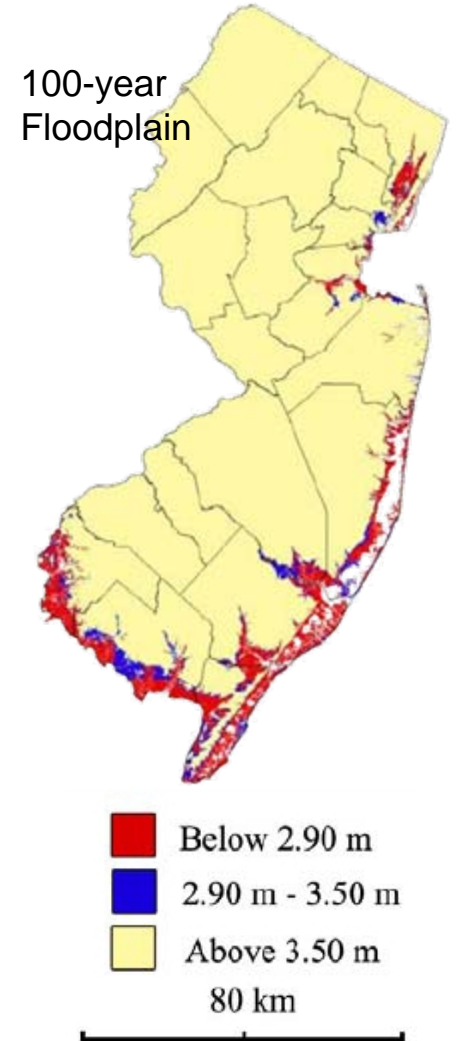
Goal: to characterize the vulnerability of the coastal landscape to inundation, erosion and future sea-level change.

- Coastal hazards
- Wetlands
- Cumulative and secondary impacts



Related Projects

- Land Acquisition
- Mid-Atlantic Coastal Wetlands Assessment
- Living Shorelines
- Montclair SAV project



Barnegat Bay Shellfish Restoration Program (BBSRP)

Purpose

To foster environmental education, outreach and stewardship through hard clam and oyster restoration activities in Barnegat Bay

Partner Organizations

- Rutgers NJAES Cooperative Extension
- NJDEP Division of Fish and Wildlife
- ReClam the Bay
- Barnegat Bay Partnership
- Ocean County
- American Littoral Society



Progress and Impact

- 4.5 million clam seed and 1 million oyster seed grown in nursery systems since 2005*
- 175 volunteers trained and devoting approximately 5,000 hours in annual activities supporting the program
- 15 acres of shellfish habitat enhanced with approximately 800,000 clam seed supporting recreational harvest in the Sedge Island Marine Conservation Zone
- 1 acre of historic oyster habitat enhanced with 8,000 bushels of shell and planting 450,000 oyster seed at Good Luck Point, near Toms River



* Only including seed purchases with DEP funding



LAND USE MANAGEMENT

Coastal Management Office



COASTAL AND ESTUARINE LAND CONSERVATION PROGRAM

A federally funded competitive program whose objective is to protect important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses.



The New Jersey Clean Marina Program is a voluntary program which encourages marina owners, yacht clubs, boatyards and boaters to adopt practices that help prevent adverse impacts to water quality, sensitive habitats and living resources in proximity to marinas.

Of the 34 Certified Clean Marinas in New Jersey 21 are in the Barnegat Bay Watershed.



Manahawkin Marsh 93 acres. 2005 \$781,193 in CELCP funding. Trust for Public Land was the major acquisition partner.



Potter Creek 115 acres. 2006 \$467,922 in CELCP funding. Trust for Public Land was the major acquisition partner.

State Land Acquisition - Summary Report by Year for Ocean County

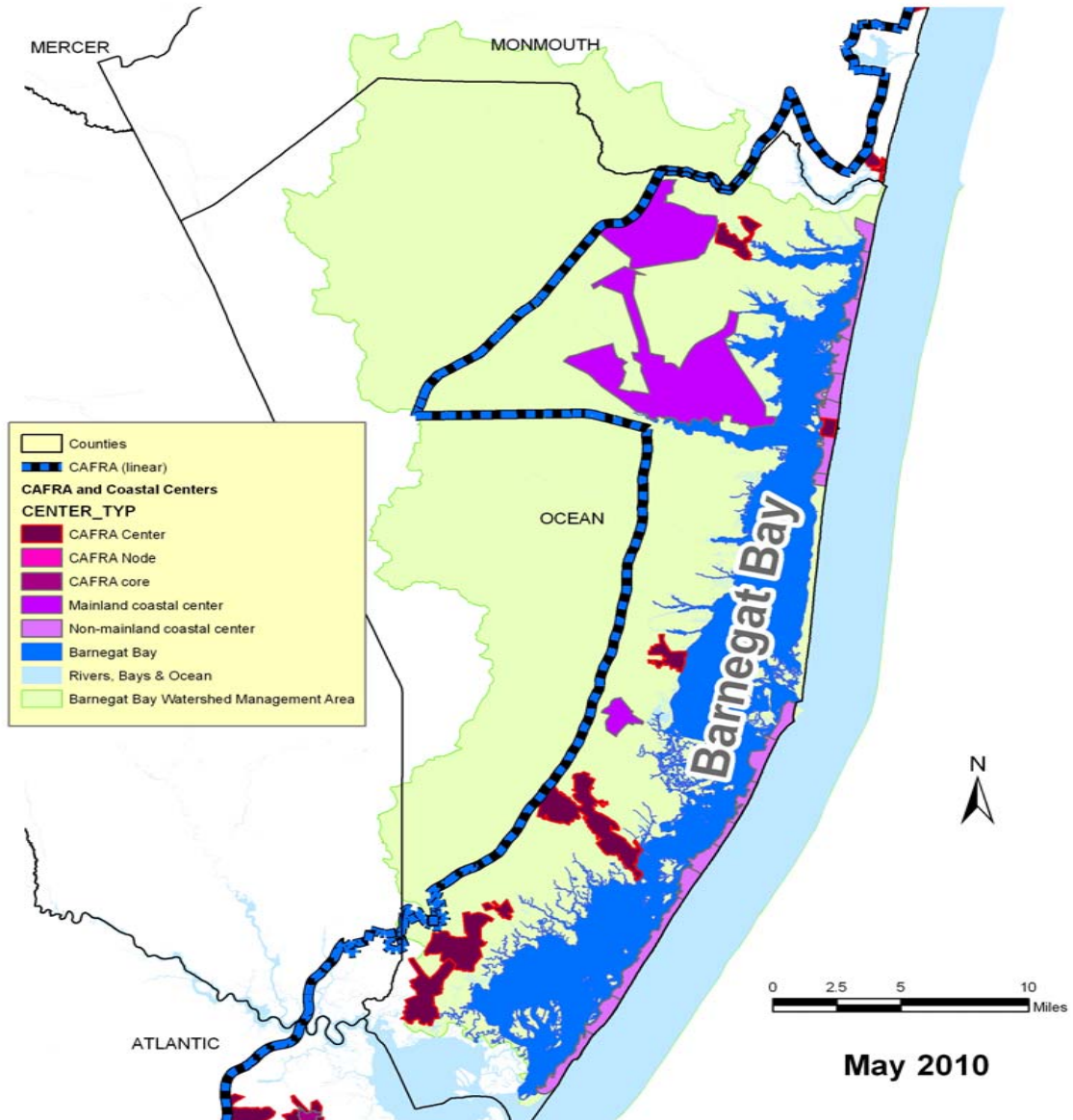
<i>Year</i>	<i>Acres</i>	<i>Acquisition Exenditures</i>
<i>2000</i>	<i>3,354.47</i>	<i>\$1,084,723.52</i>
<i>2001</i>	<i>1,969.48</i>	<i>\$6,219,768.00</i>
<i>2002</i>	<i>451.77</i>	<i>\$594,405.00</i>
<i>2003</i>	<i>1,567.14</i>	<i>\$1,779,760.00</i>
<i>2004</i>	<i>286.36</i>	<i>\$653,537.00</i>
<i>2005</i>	<i>1,150.54</i>	<i>\$9,568,455.00</i>
<i>2006</i>	<i>589.67</i>	<i>\$727,120.00</i>
<i>2007</i>	<i>282.22</i>	<i>\$2,116,731.00</i>
<i>2008</i>	<i>746.23</i>	<i>\$2,780,500.00</i>
<i>2009</i>	<i>106.31</i>	<i>\$635,700.00</i>
<i>Grand Total</i>	<i>10,504.20</i>	<i>\$26,160,699.52</i>

Number of Acquisitions 79

Ocean Co. Local - NP Acres - Yearly Summary Report - 2000-2009

<i>Payment Date by Month</i>	<i>ACRES</i>	
LOC		2,506.875
2000	78.910	
2001	35.390	
2002	410.304	
2003	214.442	
2004	10.000	
2005	774.170	
2006	168.882	
2007	312.010	
2008	490.884	
2009	11.883	
NON		1,818.291
2000	178.780	
2001	261.070	
2002	245.580	
2003	6.600	
2004	342.952	
2005	93.000	
2007	114.295	
2009	576.014	
Grand Total		4,325.166
<i>Number of Owners Paid</i> 75		

Barnegat Bay Watershed Management Area with CAFRA Boundary and Centers





LAND USE MANAGEMENT

Office of Planning & Sustainable Communities

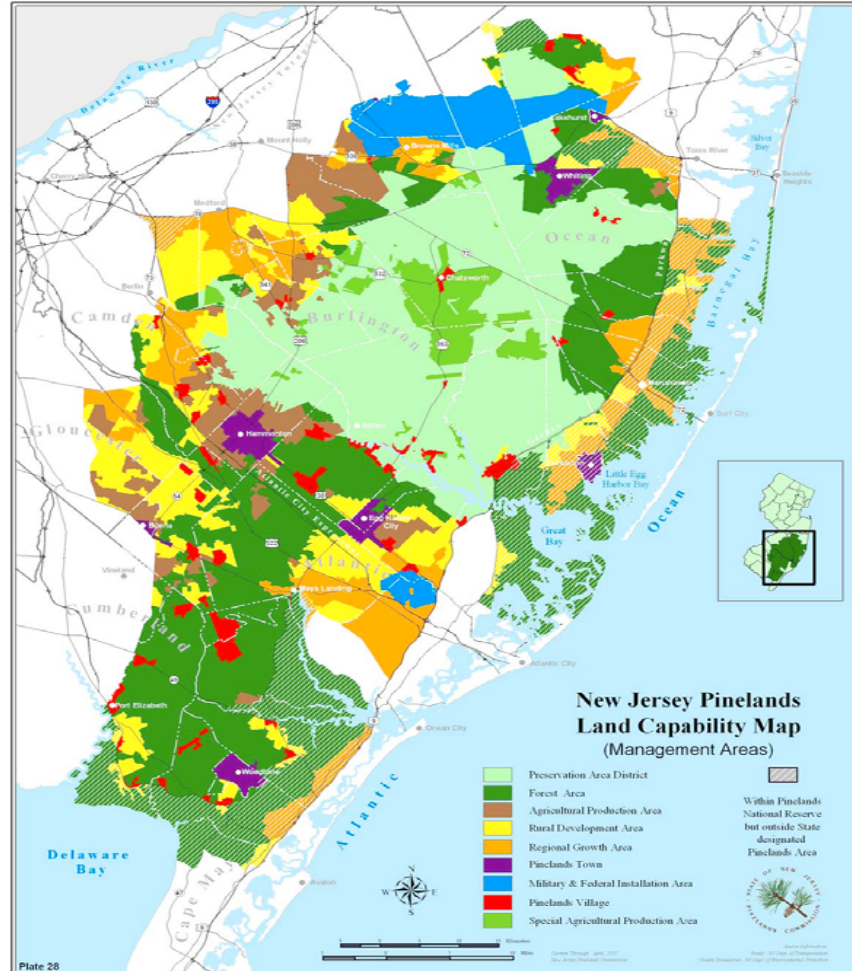
Despite our history, growing communities need to do their part to protect natural areas

Barnegat Bay Communities working with the State to protect natural systems and focus growth in appropriate places.

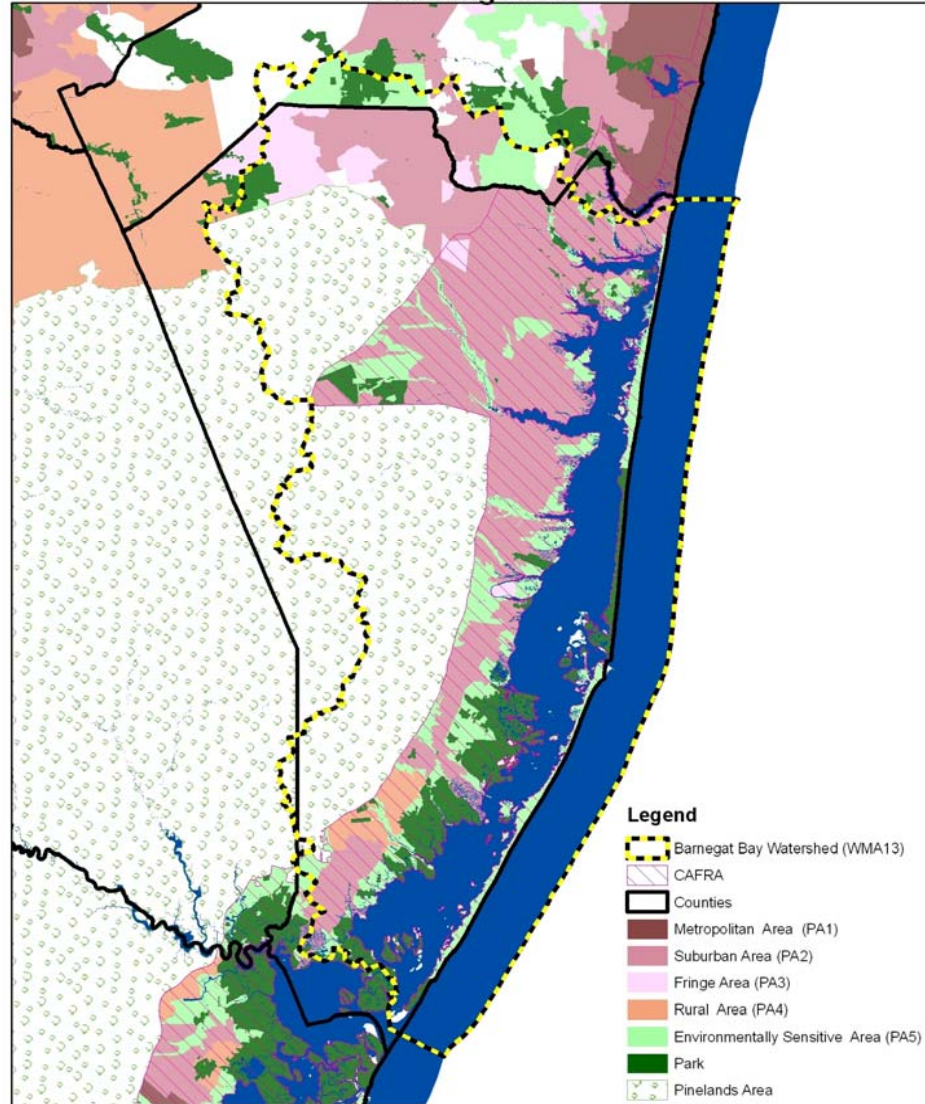
Brick
Lakewood
Toms River
Berkeley
Ocean
Barnegat
Stafford



Pinelands CMP



Barnegat Bay Watershed Planning Areas

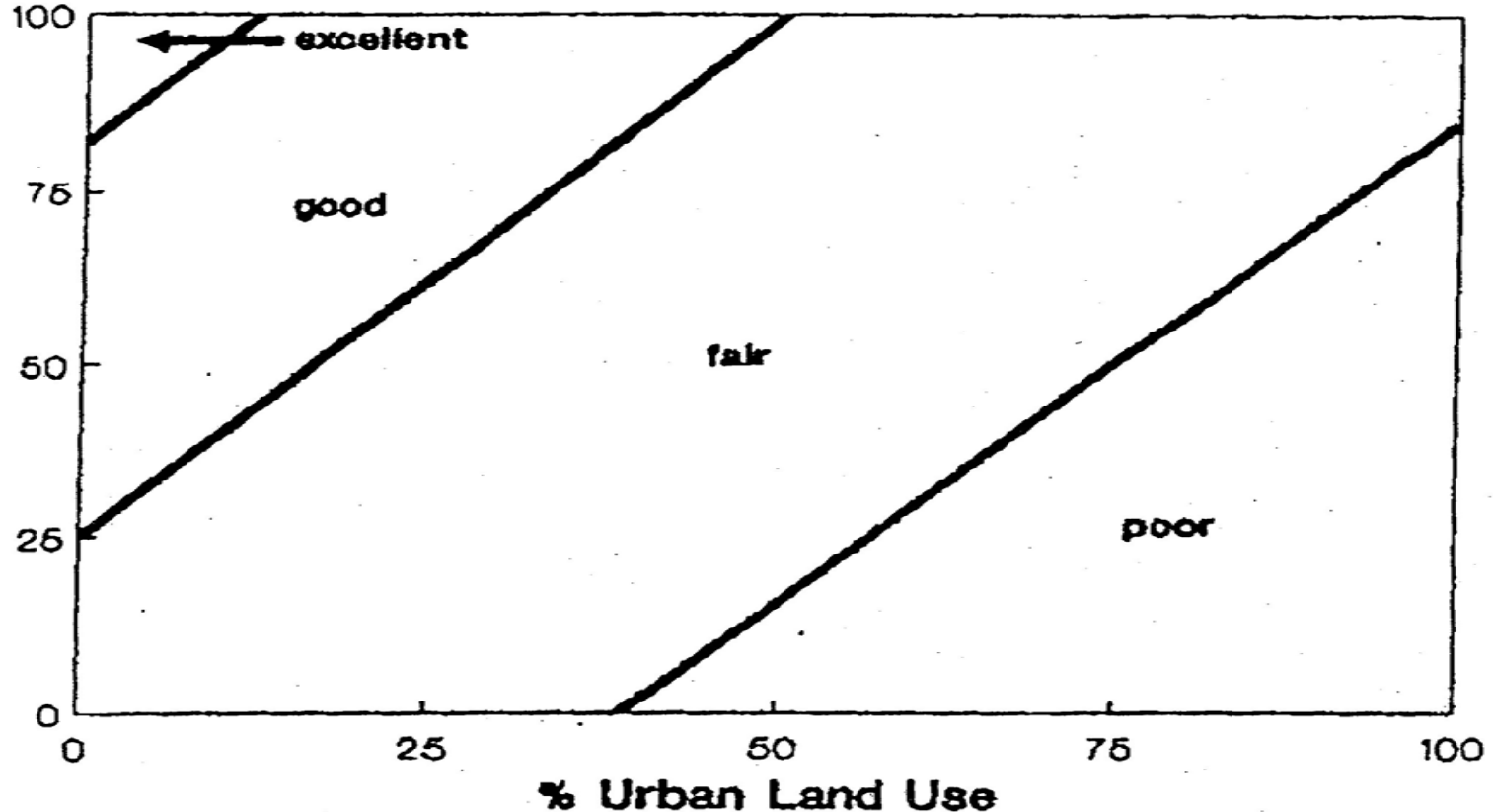


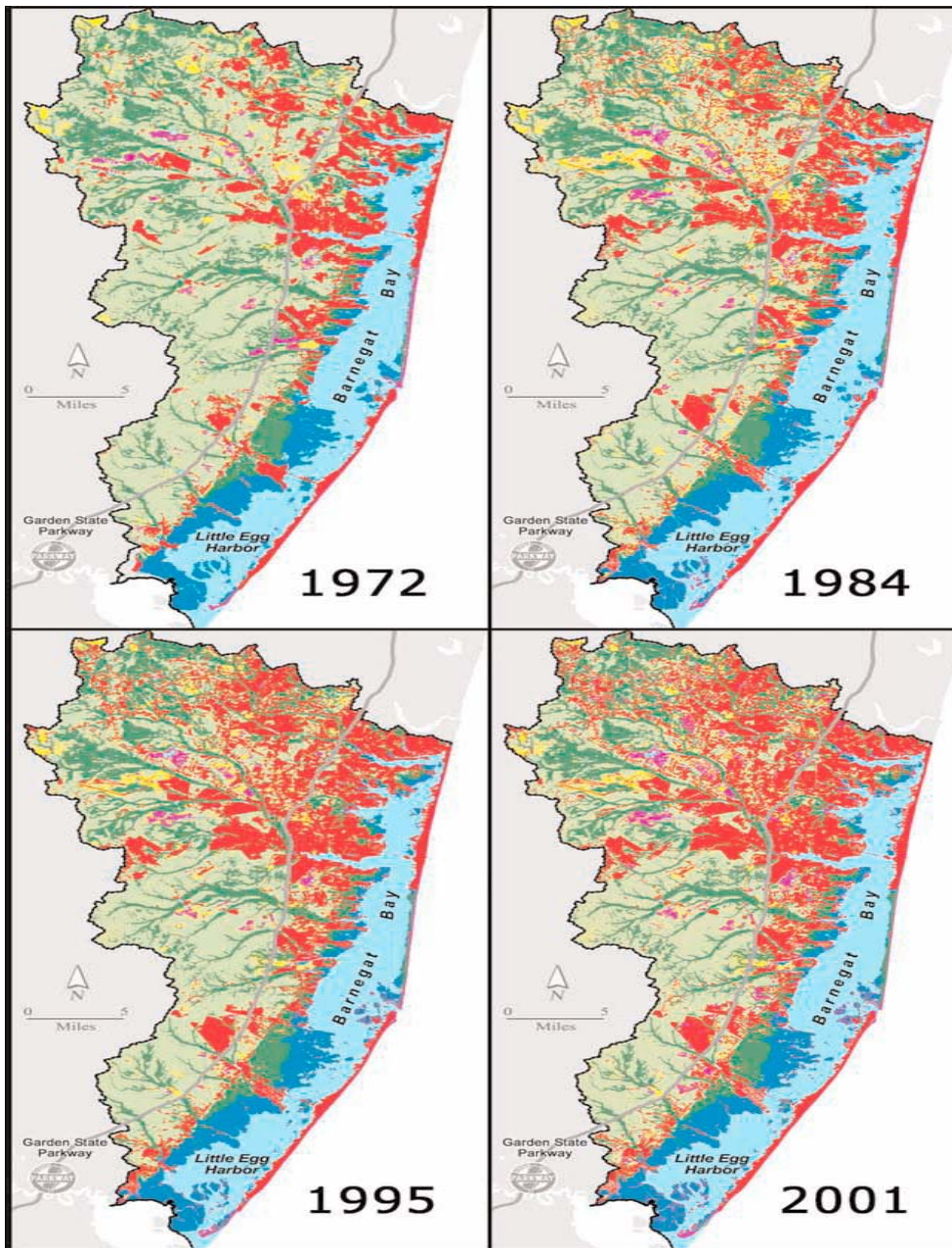
Coastal General Land Areas

- Centers / Metropolitan
 - 80 % IC, Maintain 10% Forest
- Suburban
 - 30 % IC, Maintain 35% + 5% Forest
- Fringe
 - 5% IC, Maintain 70% + 5% Forest
- Rural and Environmentally Sensitive
 - 3% IC, Maintain 70% + 5% Forest

Contour plot of qualitative IBI ratings as a function of urbanization and riparian forest (Steedman, 1988).

% Riparian Forest





Land Cover of the Barnegat Bay Watershed

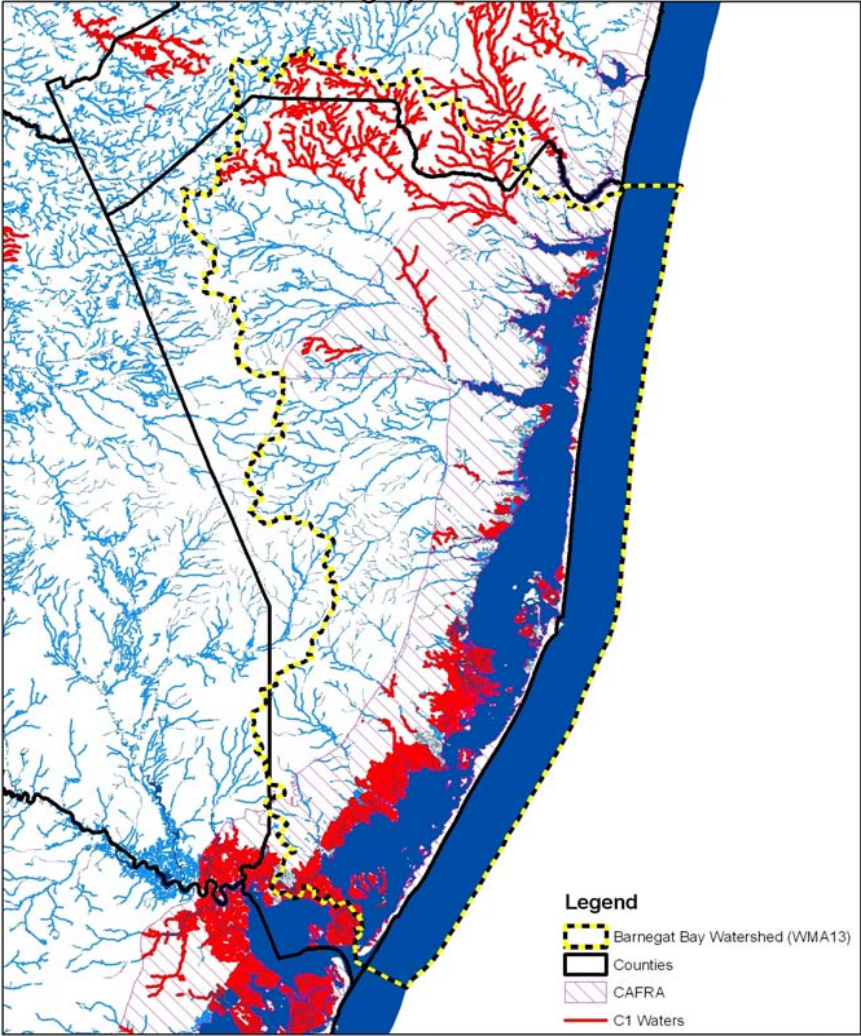
- Developed
- Cultivated/Grassland
- Upland Forest
- Bare Land
- Palustrine Wetland
- Salt Marsh
- Water



Data Source: CRSSA

Map composed by the Center for Remote Sensing and Spatial Analysis (CRSSA), Rutgers University, 06/2004

**Barnegat Bay Watershed
Category One Waters**





LAND USE MANAGEMENT

Division of Land Use Regulation

Riparian Zones

The Department adopted a rule to establish Riparian zones in the Stormwater Management Rules, Flood Hazard Area Control Act Rules and Coastal Zone Management Rules.

Riparian Zone functions include:

- **Removal of sediment, nutrients, & contaminants**
- **Stabilization of the banks of the waterway**
- **Habitat for wildlife**
- **Aesthetic value**
- **Recreation and education**

Riparian zones vary in width from 50, 150 to 300 feet depending on the associated resources.

Stormwater Management Nonstructural Strategies

■ Size, Planning Area

Step 1 - Provide Basic Major Development Site Information								
A. Specify Total Area in Acres of Development Site Described in Steps 2 and 3 =						Acres		
B. Specify by Percent the Various Planning Areas Located within the Development Site:								
State Plan Planning Area:		PA-1	PA-2	PA-3	PA-4	PA-4B	PA-5	Total % Area
Percent of Each Planning Area within Site:								
Note: See User's Guide for Equivalent Zones within Designated Centers and the NJ Meadowlands, Pinelands, and Highlands Districts								

■ Target Percentage for Pass Value

Site Area	PA-1	PA-2	PA-3	PA-4	PA-4B	PA-5
0 - 2 Acres	60% - 69%	75% - 84%	80% - 89%	84% - 93%	89% - 98%	95% - 104%
2 -10 Acres	69% - 80%	84% - 95%	89% - 100%	93% - 104%	98% - 109%	104% - 115%
>10 Acres	80%	95%	100%	104%	109%	115%

Stormwater Nonstructural Points System

Step 2 - Describe Existing or Pre-Developed Site Conditions							
A. Specify Existing Land Use/Land Cover Descriptions and Areas:							
Site Segment	Land Use/Land Cover Description	Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover Subtotals	Points
		HSG A	HSG B	HSG C	HSG D		
1	Wetlands and Undisturbed Stream Buffers					0.0	0
2	Lawn and Open Space					0.0	0
3	Brush and Shrub					0.0	0
4	Meadow, Pasture, Grassland, or Range					0.0	0
5	Row Crop					0.0	0
6	Small Grain and Legumes					0.0	0
7	Woods - Indigenous					0.0	0
8	Woods - Planted					0.0	0
9	Woods and Grass Combination					0.0	0
10	Ponds, Lakes, and Other Open Water					0.0	0
11	Gravel and Dirt					0.0	0
12	Porous and Permeable Paving					0.0	0
13	Directly Connected Impervious					0.0	0
14	Unconnected Impervious with Small D/S Pervious					0.0	0
15	Unconnected Impervious with Large D/S Pervious					0.0	0
HSG Subtotals (Acres):		0.0	0.0	0.0	0.0		Total Area: 0.0
HSG Subtotals (%):		0.0%	0.0%	0.0%	0.0%		Total % Area: 0.0%
							Points Subtotal: 0
							Total Existing Site Points: 0

Land Use Multipliers

Land Use/Cover Descriptions:	Land Use/Land Cover Points			
	A	B	C	D
Wetlands and Undisturbed Stream Buffers	900.000	600.000	410.000	330.000
Lawn and Open Space	500.000	331.000	230.450	180.750
Brush and Shrub	550.000	364.100	253.495	198.825
Meadow, Pasture, Grassland, or Range	650.000	430.300	299.585	234.975
Row Crop	400.000	264.800	184.360	144.600
Small Grain and Legumes	450.000	297.900	207.405	162.675
Woods - Indigenous	700.000	463.400	322.630	253.050
Woods - Planted	650.000	430.300	299.585	234.975
Woods and Grass Combination	600.000	397.200	276.540	216.900
Ponds, Lakes, and Other Open Water	700.000	463.400	322.630	253.050
Gravel and Dirt	300.000	198.600	138.270	108.450
Porous and Permeable Paving	500.000	331.000	230.450	180.750
Directly Connected Impervious	0.000	0.000	0.000	0.000
Unconnected Impervious with Small D/S	150.000	99.300	69.135	54.225
Unconnected Impervious with Large D/S	400.000	264.800	184.360	144.600

Barnegat Bay Watershed Partners

Barnegat Bay National Estuary Program

Ocean County College

United States Environmental Protection Agency

Jacques Cousteau National Estuarine Research Reserve

United States Fish and Wildlife Service

American Littoral Society

Marine Trades Association/New Jersey Clean Vessel Act

Monmouth University

Rider University

Brick MUA

Montclair State University

Brick Township MUA

Ocean County Utilities Authority

New Jersey Marine Sciences Consortium

Ocean County Extension Service

Ocean County Planning Department

Ocean County Soil Conservation District

Rutgers University

Clean Ocean Action

United States Geological Survey

Ocean County Health Department

Water Quality Studies / TMDLs

- Phosphorus TMDL Toms and Metedeconk, 2005
- Fecal TMDL Toms, Metedeconk and Tribs., 2003 / 2006
- Coastal Pathogen TMDL, 2006
- Pathogen TMDL for Lakes in Barnegat Bay, 2009

Watershed Restoration and Protection Planning and Research Projects

Planning and Research Projects Completed/Underway to Address TMDL's and Priority WQ/Resource Protection Areas

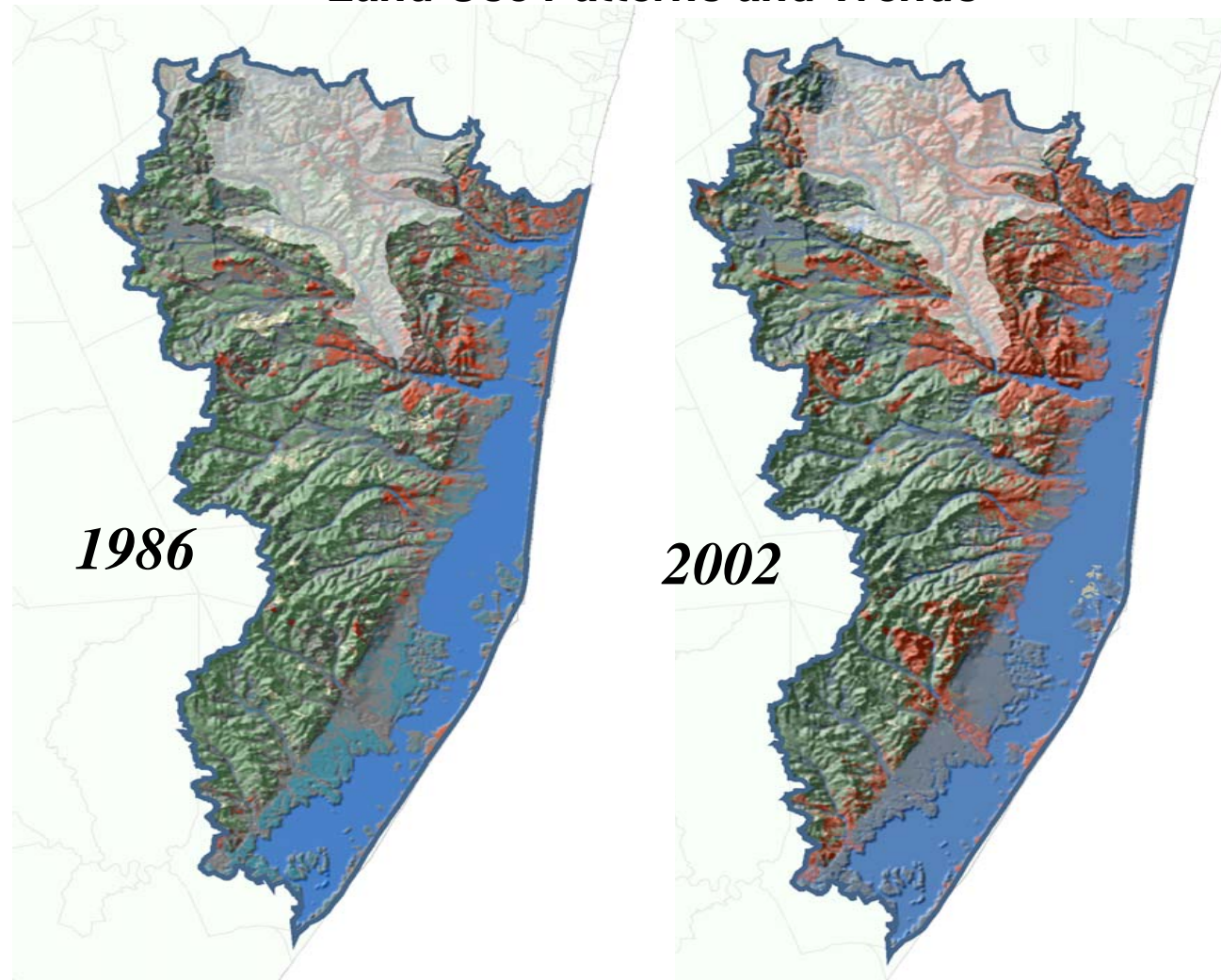
- 2006 Long Swamp Creek Restoration Plan(\$190K -319) - *source trackdown, TSS, SW retrofits, nutrient management, bioretention, recharge education. Implementation Underway*
- 2006 Lake Carasaljo Feasibility Study(\$100K 319) – *TSS, source trackdown, TMDL, nutrient management, SW retrofits, bioretention, forest preservation, stream buffers, education, lake mgt. Plan to be finalized through the Metedeconk WRPP effort described below*
- 2007 Lake Pohatcong Goose Management/WRPP (\$145K) - *TMDL, goose management, nutrient management, SW retrofits, vegetated buffers, public education. Ocean County to explore NPS funding options*
- 2009 Metedeconk WRPP (\$666K CBT) – *2 yr. project to develop a USEPA nine element WRPP. WRPP to address TMDL's, lake management, enhance C-1 designation, identify and implement the highest priority stormwater BMP projects (\$475K set aside to begin implementation)*
- 2010 Wetlands Assessment Project (\$150K 319) - *Assess the condition of coastal wetlands in Barnegat Bay/ Little Egg Harbor Estuary where they play a critical role in maintaining WQ/functioning as potential treatment zones. Supports Statewide Project*

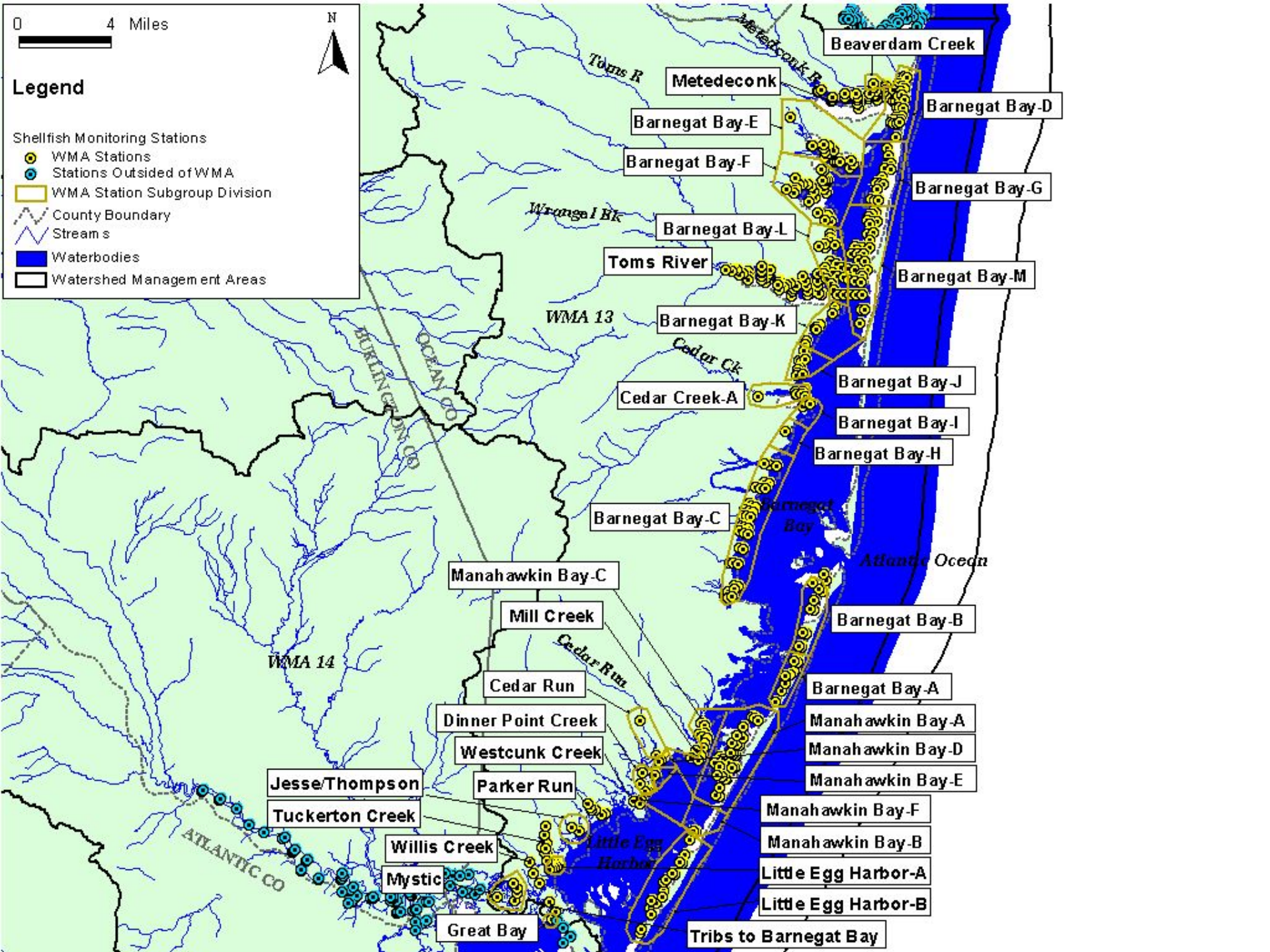


LAND USE MANAGEMENT

Division of Watershed Management

Barnegat Bay Watershed Analysis Land Use Patterns and Trends





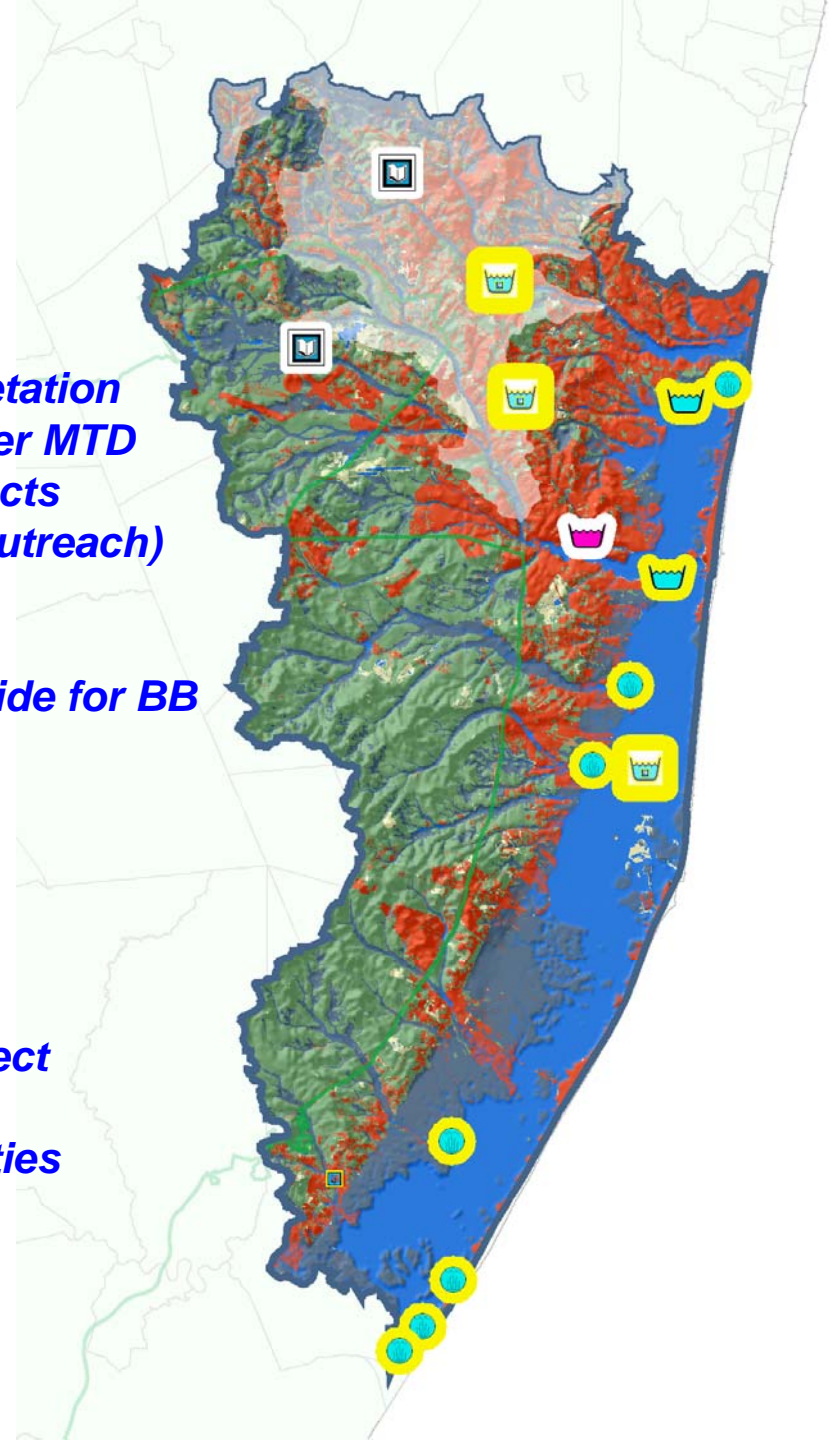
Watershed Restoration and Protection Implementation Projects

Implementation Projects Completed/Underway to Address TMDL's and Priority WQ/Resource Protection Areas

- 2002 Ocean County Planning (\$200K, CBT)- 2008 completed 15 SW retrofits in Long Swamp Creek and Toms River Watersheds
- 2000 Ocean County Soil Conservation District (~\$250K, 319) - 2006 completed shoreline stabilization NPS projects, public education outreach and SW demonstration projects, landscaping guide, stewardship for soil health
- 2003 Ocean County Planning (\$100K, CBT) - 2007 completed installation of MTD in Long Swamp Creek Watershed
- 2007 Ocean County Soil Conservation District (\$256K, CBT) - 4.5 yr. project completed 2 basin SW retrofits in Long Swamp Creek to enhance recharge and nutrient removal as it relates to soil health, SW demonstration projects public outreach and education
- 2009 Ocean County Planning Department (\$371K, 319) – 2 yr. project underway to undertake SW retrofits and BMP's in the upper portion of estuary to address targeting SW basin retrofits in the Lower Metedeconk , Kettle Creek, Silver Bay, Long Swamp Creek and Lower Toms River watersheds

General Location of Restoration Activities

Montclair State Univ. Submerged Aquatic Vegetation
Ocean County Planning Department Stormwater MTD
OCSCD Shoreline/Roadside Stabilization Projects
OCSCD Specific Activity Guide (Educational Outreach)
Lake Carasaljo Feasibility Study
OCSCD Stewardship of Soil Health
RU/OCSCD Low Maintenance Landscaping Guide for BB
Baywood Marina Stormwater BMP's
OCSCD District Shoreline Stabilization
OCPD Stormwater Basin Retrofits
Lake Pohatcong Feasibility Study
Long Swamp Creek(LSC) Restoration Plan
OCSCD LSC Subwatershed Action Project
Bey Lea Golf Course BMP Demonstration Project
OCVTS Wetland Enhancement Project
NJ Clean Vessel Act Program Pump Out Facilities



Watershed Initiatives and Restoration Activities
Ocean County Planning Department
Stormwater Basin Restoration Projects

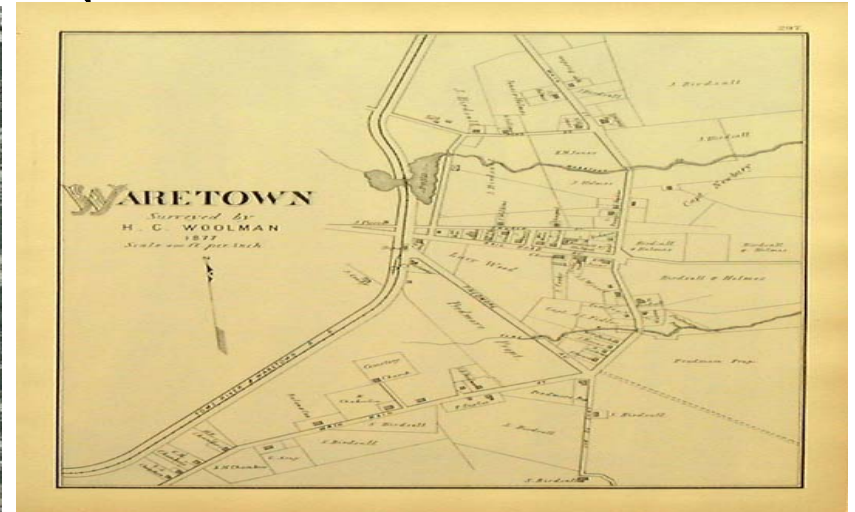




LAND USE MANAGEMENT

Office of Planning & Sustainable Communities

Our history shapes our future



- Regional land use patterns in the Barnegat Bay Watershed reflect 300 hundred years of settlement.
- Aggressively preserving lands and severely limiting new growth today will not be enough to reverse the degradation of the Bay's waters.