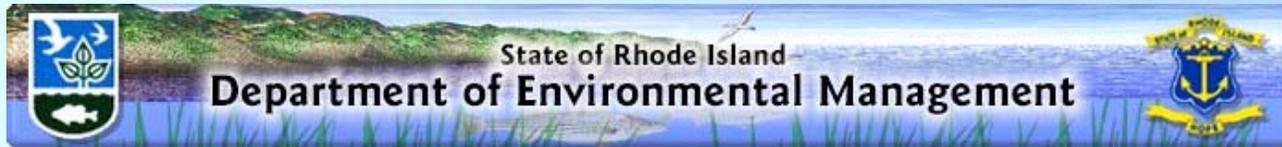


# Total Maximum Daily Load Analysis for Point Judith Pond Waters Pathogen Impairments

<http://www.dem.ri.gov/programs/benviron/water/quality/rest/pdfs/pjpond.pdf>

Rhode Island Department of Environmental Management  
Office of Water Resources

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# Overview of Tonight's Presentation

- Introduction
- Watershed Description
- Water Quality Data
- Required Pollutant Loading Reductions
- Pollution Sources
- Recommended Pollution Reduction Strategies
- Funding Sources
- Follow-Up Monitoring

# What is a TMDL?

- The Clean Water Act requires states to monitor the quality of their waters and identify waters that do not meet water quality standards and prepare a 303(d) List of Impaired Waters
- A prioritized schedule for completion of water quality restoration studies also appears in the 303(d) list
- The framework for these studies is the Total Maximum Daily Load (TMDL) program, administered by DEM in RI
- A TMDL is essentially a prescription designed to restore the health of a polluted waterbody by indicating the amount of pollutants a waterbody can receive and still meet water quality standards
- TMDLs identify corrective actions necessary to improve water quality and restore designated uses

# TMDL Development Process

**Compile/Collect Data to Characterize Impairment**

**Compare Existing Conditions to Applicable Water Quality Standards**

**Determine spatial and temporal extent of impairment  
Combine this with pollution source information**

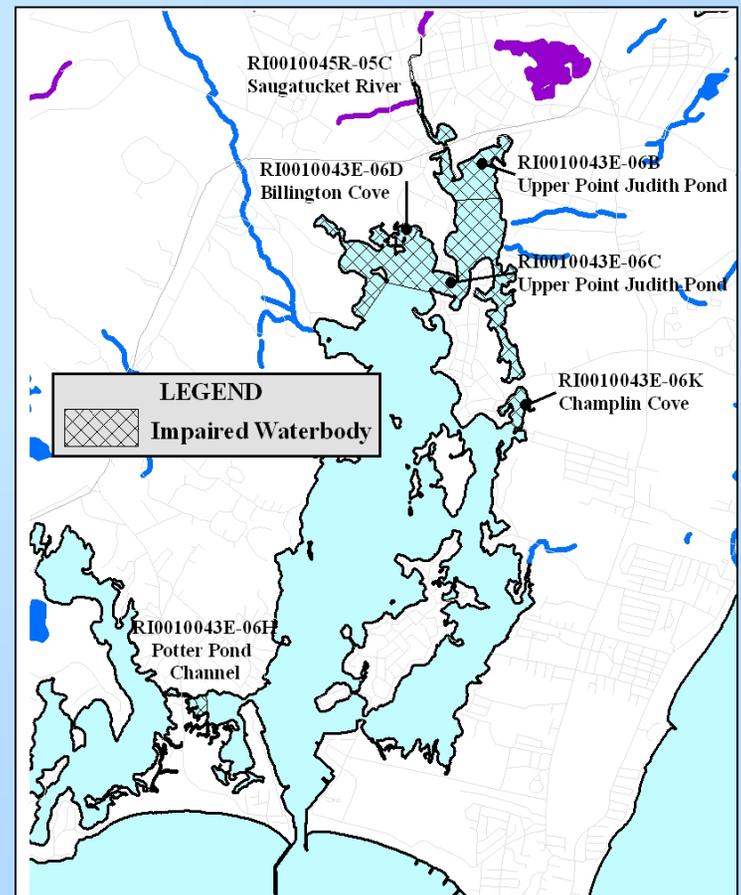
**Determine Pollution Reductions Needed to Meet Water Quality Standards**

**Establish/Recommend Pollution Reduction Strategies Meet Target Reductions**

**Recommend a Water Quality Monitoring Program to Ensure that Goals are Met**

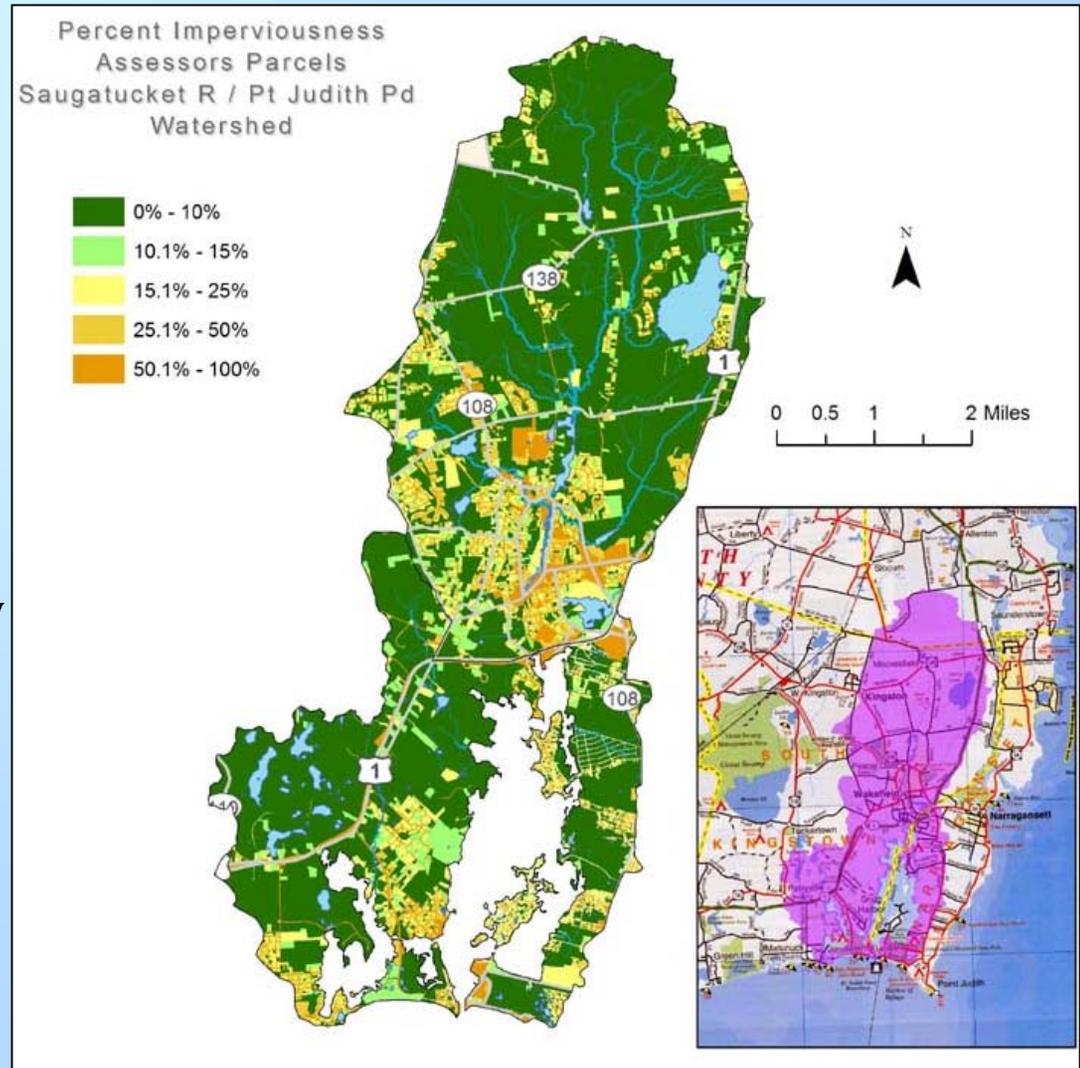
# Point Judith Pond Pathogen (Fecal Coliform Bacteria) Impaired Waters

- DEM 2006 303(d) List of Impaired Waters
  - Tidal Saugatucket River
  - Upper Point Judith Pond
  - Billington Cove
  - Champlin Cove
  - Potter Pond Channel



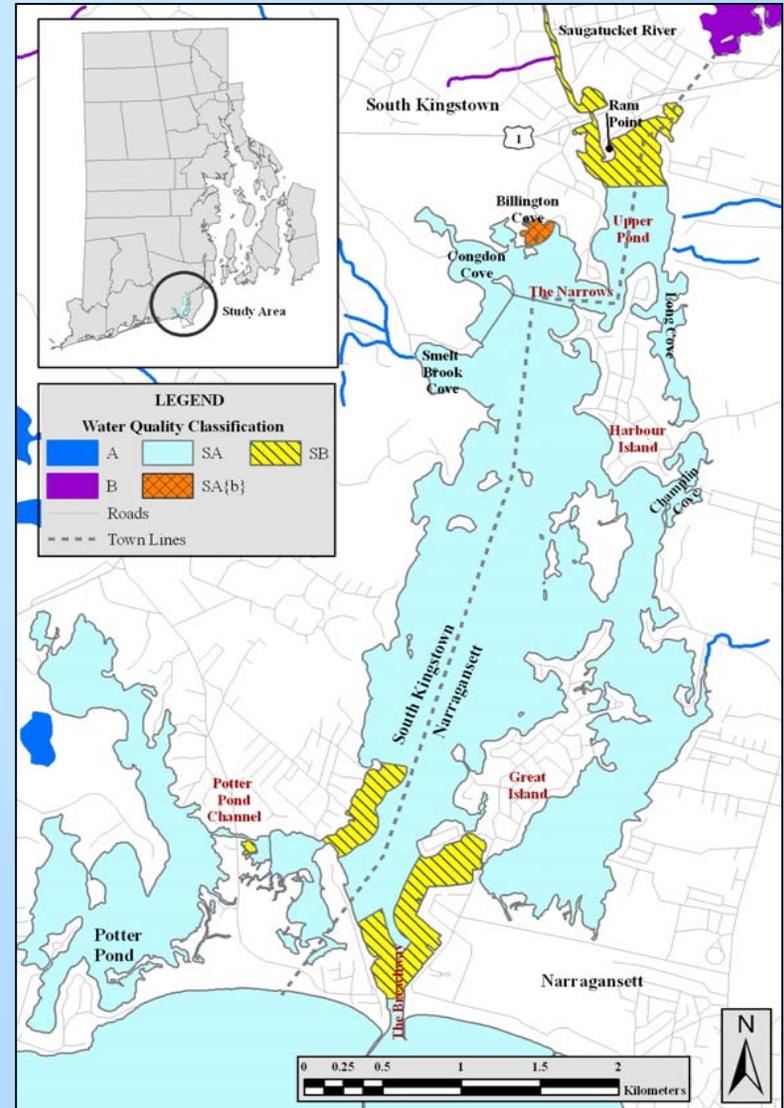
# Point Judith Pond Watershed

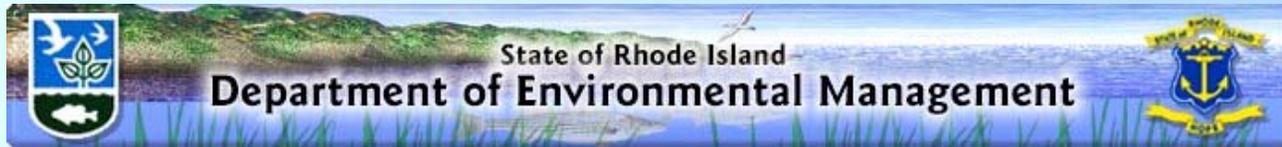
- **Point Judith Pond**
  - Total of 29 sq. mi.
  - 2.9 sq. mi. of water
  - Heavily influenced by the Saugatucket
- **Three Subwatersheds**
  - Saugatucket
  - PJP West
  - PJP East



# Water Quality Classifications and Standards

WQ Class	Geometric Mean fc/100 mL	Variability fc/100 mL
SA SA{b}	14	Not more than 10% to exceed 49
SB	50	Not more than 10% to exceed 400



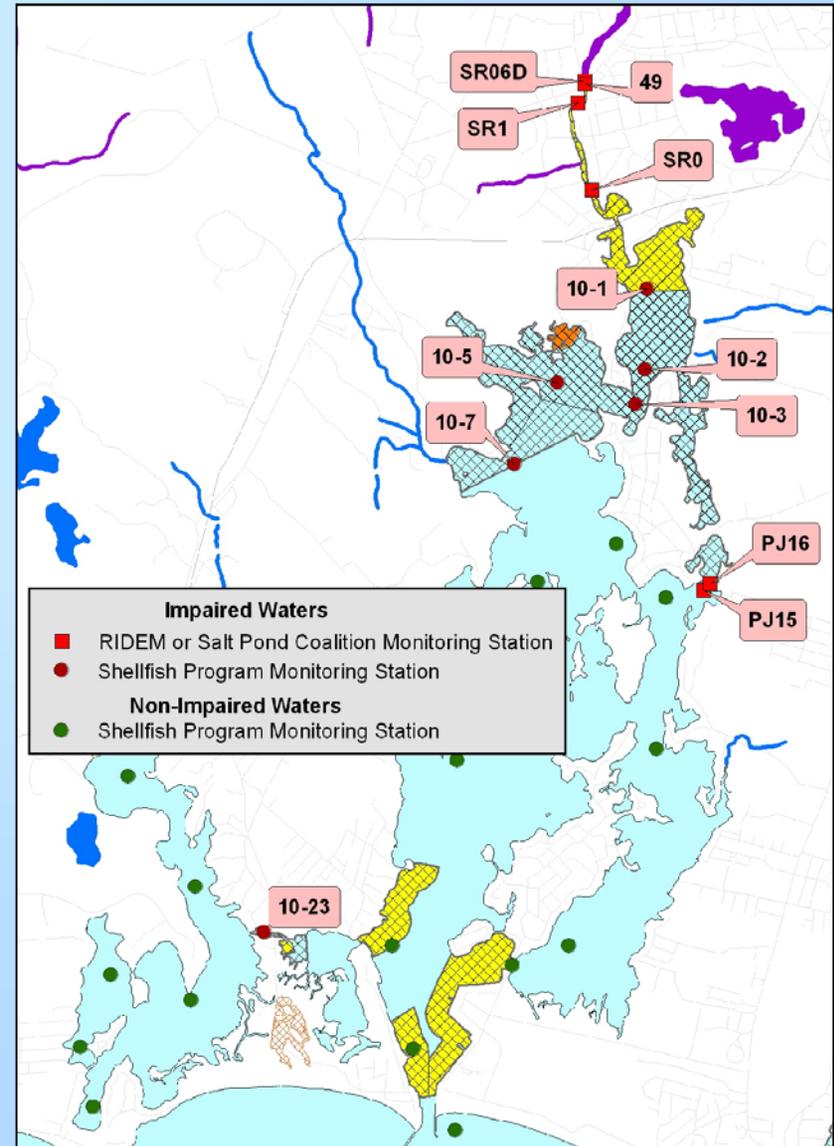


# Data Sources Used to Assess Current Water Quality Conditions

- **DEM Shellfish Program**
  - 23 stations in Point Judith Pond and Potter Pond
  - Six times per year (2002 - 2006)
- **Salt Ponds Coalition**
  - 3 Saugatucket River, 4 Point Judith Pond, 2 Potter Pond stations
  - Monthly summer samples (2000 - 2006)
- **DEM Shellfish and TMDL Programs**
  - Shoreline survey and follow-up sampling

# Water Quality

Station	WQ Class	Geometric Mean fc/100 mL	Variability fc/100 mL
SR06-D	SB	582	4000
49	SB	112	887
SR-1	SB	334	1600
SR-0	SB	290	1328
GA10-1	SA*	94	1100
GA10-2	SA	64	507
GA10-3	SA	32	309
GA10-5	SA	19	240
GA10-7	SA	13	240
GA10-23	SA	6	23
PJ-15	SA	26	131
PJ-16	SA	29	130



# Calculate Percent Reductions

- For each station, calculate geometric mean, variability, and percent reduction to meet water quality standards
- Determine reduction target for each waterbody ID
  - *reduction is highest calculated among all stations in waterbody unit*
  - *stations which discharge into waters with more stringent criteria must meet the more stringent criteria*

Waterbody ID	Waterbody Description	WQ Class	Percent Reduction
RI0010045R-05C	Lower Saugatucket River	SB	91%
RI0010043E-06B	Point Judith Pond	SA*	96%
RI0010043E-06C	Point Judith Pond	SA	90%
RI0010043E-06K	Champlin Cove	SA	63%

# Potential Bacteria Sources

- **Human Sources**

- Onsite Wastewater Treatment Systems
- Sanitary Sewers overflows/leaks
- Marine Sanitation Devices

- **Domestic Pets**

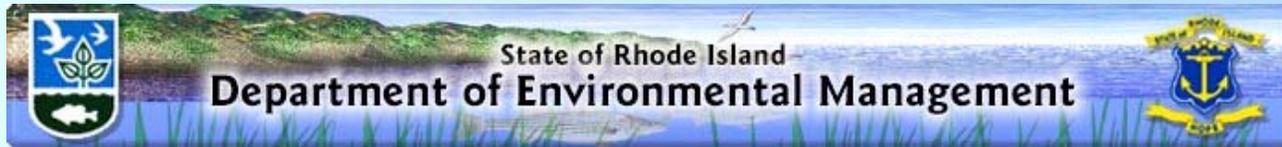
- **Waterfowl/Wildlife**

- **Farm Animals**



# Recommended Pollution Reduction Strategies

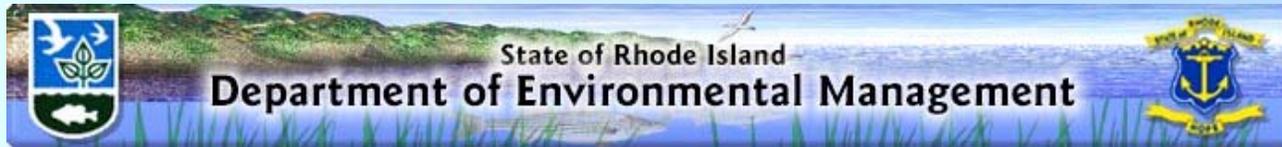
- **Stormwater Control**
  - Municipal Separate Storm Sewer Systems (MS4s)
    - *Stormwater Management Program Plans (SWMPP)*
      - six minimum measures
      - construction of Stormwater BMPs
  - Stormwater from industrial activities (marinas)
    - *Stormwater Pollution Prevention Plans (SWPPP)*
- **Wastewater Management**
  - On-site Wastewater Treatment Systems
  - *No Discharge* from Marine Sanitation Devices
- **Animal Source Control**



# Stormwater Control (MS4s)

## Phase II Six Minimum Measures

1. Public education and outreach program
2. A public involvement/participation program
3. Illicit discharge detection and elimination program
4. A construction site stormwater runoff control program for sites disturbing 1 or more acres
5. A post construction stormwater runoff control program for new and re-development disturbing 1 or more acres
6. Pollution prevention & good housekeeping program



# Stormwater Control (MS4s) Additional Phase II TMDL Requirements

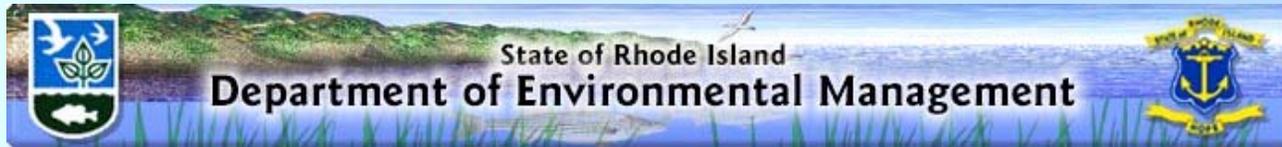
## Revised Stormwater Management Program Plan (SWMPP)

- Modify Six Minimum Measures consistent with TMDL recommendations
- Revise local ordinances to require:
  - *new development sites to use stormwater controls to prevent **any net increase in bacteria***
  - *re-development sites to use stormwater controls to reduce bacteria to the **maximum extent feasible***
- Use of LID (Low Impact Development) techniques wherever feasible

# Stormwater Control (MS4s)

## Additional Phase II TMDL Requirements

- For identified outfalls, structural BMPs must be installed to reduce the load of pollutants of concern and stormwater volumes to maximum extent feasible:
  - *Submit Scope of Work to conduct catchment area feasibility analyses to determine upland and end-of-pipe locations suitable for siting BMPs*
  - *Establish a schedule prioritizing storm drainage systems for design/construction of BMPs*
- Identify and assess all remaining discharges not specifically identified in the TMDL, determine relative contribution of each, and establish schedule for design/construction of BMPs



# Priority Outfalls for Construction of Stormwater BMPs

- **South Kingstown and RIDOT**
  - Outfalls previously identified in Saugatucket River TMDL
    - *off Greenwood Drive*
    - *swale on Kingstown Road below Rocky Brook Reservoir (RIDOT)*
    - *at Kingstown Road at Kingston Pizza (RIDOT)*
    - *at Railroad Street (RIDOT)*
    - *at Route 108, School Street and Indian Run Road (RIDOT)*
    - *at Church Street and Columbia Street*
- **Narragansett**
  - Briggs Farm and Wandsworth Road neighborhoods

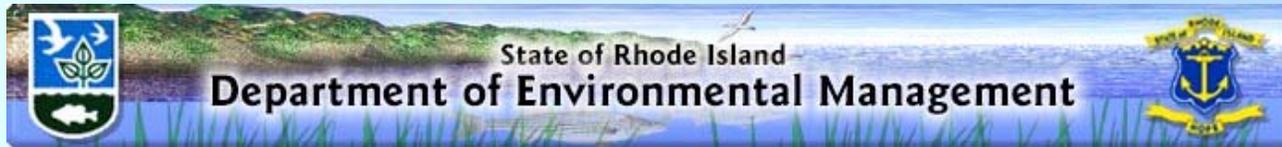
# Stormwater Control

## Industrial Activities (Marinas)

- Permittees must submit an updated SWPPP (Stormwater Pollution Prevention Plan) that:
  - Addresses the entire facility
  - Identifies potential sources of bacteria
  - Describes existing and/or proposed BMPs that include:
    - *frequent sweeping of roads, parking lots, etc.*
    - *effective management of solid waste and trash*
    - *regular inspection and cleaning of stormwater BMPs*
    - *other pollution prevention and stormwater BMPs*

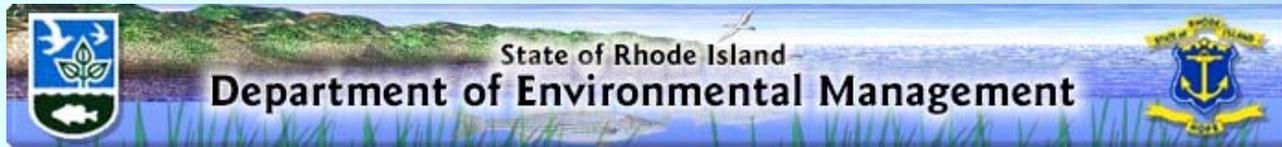
# Proper Operation and Maintenance of On-Site Wastewater Treatment Systems

- **Wastewater Management District Components**
  - Ordinance to ensure proper operation & maintenance of OWTS
  - Detailed property records
  - Requirements for the replacement of cesspools, substandard and/or failing OWTS
- **Town Specific**
  - South Kingstown adopted WWMD in 1999
  - Narragansett requires proof of pump-outs



# *No Discharge* from Marine Sanitation Devices

- **Current Activities**
  - Clean Vessel Act Program provides grants for infrastructure construction, repair, and replacement
  - DEM has coordinated outreach and education programs
- **Proposed Activities**
  - Continue to enforce *No Discharge* policy
  - Follow through with building 3<sup>rd</sup> pump-out facility
  - Make pump-out facilities mandatory
  - Develop policies towards inspecting boats



# Animal Source Control

- **Waterfowl and Wildlife**
  - Eliminate feeding by humans
  - Plant buffers to discourage easy access to the water
- **Pets**
  - Dispose of waste properly away from water
  - Make pet waste bags and containers available in public parks
- **Farm Animals**
  - Prevent direct access with streams, wetlands, etc.
  - Proper management of animal waste
  - Establish/maintain vegetative buffer between animal enclosures and waterbodies

# Potential Funding Sources

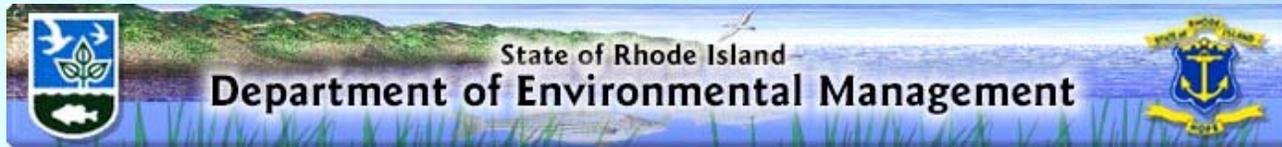
- Clean Vessel Act Grants (MSD pump-out facilities)
- EPA 319 Non-Point Source Grants
- Narragansett Bay and Watershed Restoration Bond Fund
  - Private property owners, South Kingstown, Narragansett and RIDOT are eligible for stormwater grants
- State Revolving Fund (SRF)
- Local Stormwater Utility District
  - Collects fees on the principle that those that contribute stormwater to the municipal storm sewer system must also contribute to the cost of maintaining and fixing that system

# Stormwater Utility Districts

- **Nationwide Facts**
  - Predicted that over 2,000 will exist nationwide in 2010
  - Currently about 6 districts in New England
  - Average rate is \$2 to \$4 per month for single family parcel
  - Usually address flooding and pollution aspects of stormwater
- **Rhode Island Stormwater Management and Utility District Act of 2002**
- **DEM intern project evaluated feasibility of Stormwater Utility District for Town of Narragansett**

# Follow-Up Monitoring

- **DEM Shellfish Program**
  - Six times per year
  - Shoreline surveys
- **Salt Pond Coalition**
  - Summer sampling



# Comments on the TMDL Document

<http://www.dem.ri.gov/programs/benviron/water/quality/rest/pdfs/pjpond.pdf>

**Send Comments before January 11, 2007 to:**

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