

Barneгат Bay Water Quality Assessment 2013

Bureau of Water Quality Standards and Assessment
Division of Water Monitoring and Standards
New Jersey Department of Environmental Protection

February 6, 2013

Biennial Statewide Water Quality Assessment

305b

Statewide Water
Quality Report
(305(b) Report)

**Integrated
Assessment**

NJ - Since 2002

303d

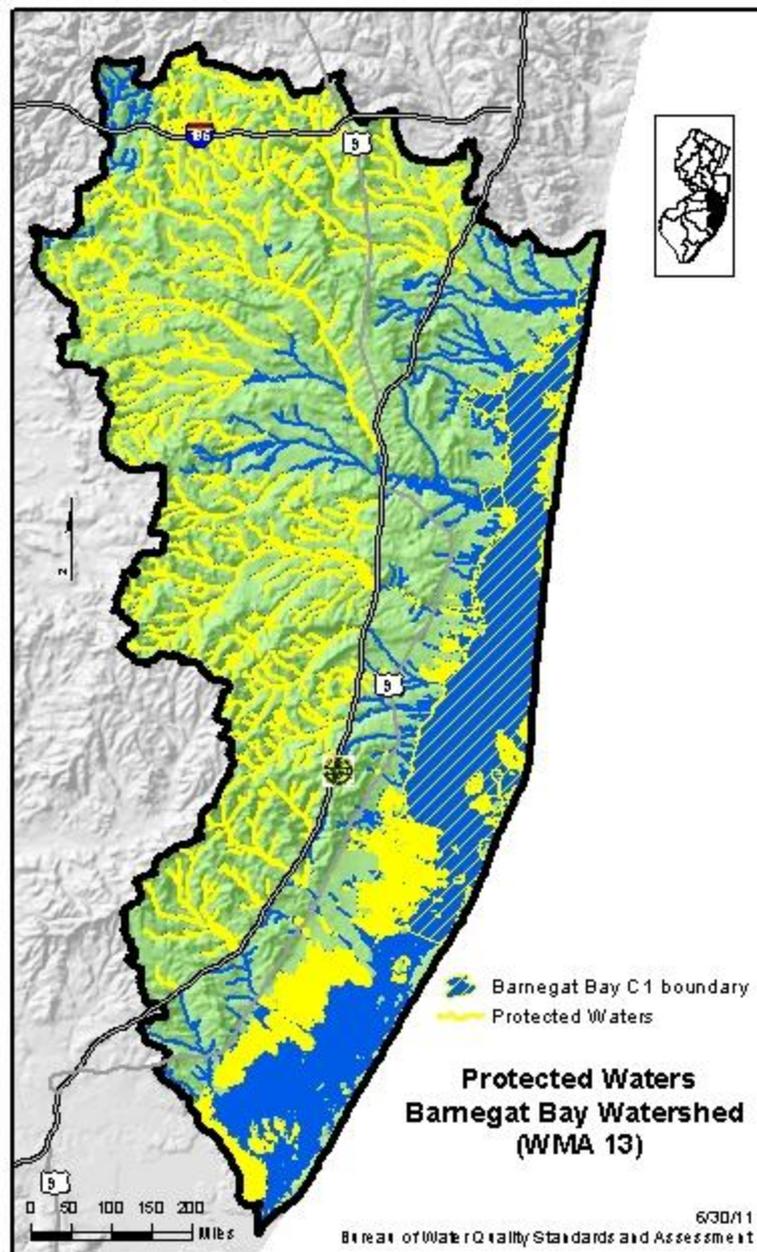
List of Water
Quality Limited
Waters (303(d)
List)

General Assessment Process

- Collect and compile physical, chemical and biological monitoring data
- Assign stream classifications to individual stations
- Develop scientific methods for sample collection and data analysis
- Compare results to Surface Water Quality Standards (SWQS)
 - Identify impaired waters and list on 303(d)
 - Identify waters no longer impaired and delist
 - Identify waters with insufficient information
- Evaluate water quality trends

Barnegat Bay Action Plan

“...establish a process to further assess and address water quality impairments in Barnegat Bay” by 2013



Superstorm Sandy

Mantoloking, Oct. 31, 2012



View from Google Earth

Photo: Doug Mills/AP

<http://gizmodo.com/5958416/hurricane-sandy-the-craziest-before-and-after-shots>

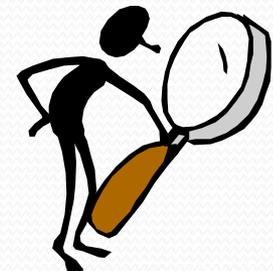
Old Approach

- Conservative listing approach of “two exceedances” at any station in an assessment unit is not an accurate representation of water quality
 - Too many “false positives” resulted in listings
 - Insufficient data - Doesn’t address normal fluctuation/natural variability which results in pattern of listing/delisting
 - Doesn’t address “transient events” or natural conditions



Assessment Process pre-2012

- Accepted data in spreadsheet format and DEP reformatted data
- Used GIS to assign stations to Assessment Units
- Used GIS to determine stream classification and applicable criteria
- Used the computer to identify parameters by station with two exceedances of a water quality criterion in previous five years



Transformed Process

Screen

- Compiled New Water Quality Data (2008-2010)
- Identified HUCs with changes at station level =
- Potential New Listings/Delistings

Coordinate

- WMS: Assessment, Monitoring, TMDL
- DEP: NJPDES, Stormwater, Restoration (319), SRP, Coastal, Shellfish, Water Supply, USGS, Office of Science (fish advisories)

Assess

- Reviewed all new/historical data in watershed to evaluate natural conditions, transient events, frequency of exceedance, weight of evidence, etc.: HUC boundaries, station locations, stream classification, SWQS criteria, land use/land cover, NJPDES, site photos, AMNET and FIBI data sheets, field notes, severe weather events, etc.

2012 Barnegat Bay Assessment

- Planned to use new 2011 data
- Proposed to delist DO at Barnegat Bay North above Rt. 37 based on erroneous continuous data at one station. DO data at all other stations and new continuous data meet criteria.
- Proposed to add DO at Manahawkin Bay/LEH (to Westecunk Creek) and Manahawkin Bay/LEH (Mill Creek to Turtle Cove) based on new data 2011.
- Based on Comments – No new delistings or listings in 2012.
- Will address issues in 2013 Barnegat Bay Assessment

New Approach Needed

- Focus on Assessment of Use Support/Attainment
 - Use Data to Focus Immediate Action
 - Get out in front of formal TMDL process to avoid delay
 - Only list “well-documented” water quality problems on the 303(d) List
 - Prioritize “Suspected” impairment for further monitoring/assessment and ACTION
 - Review stations locations and relocate as needed



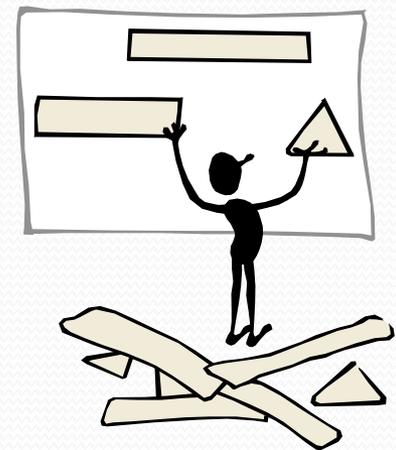
Lessons Learned from the Barnegat Bay Ambient Monitoring Project

- Intensive monitoring needed for robust data set
- Must QA data before entering into the database
- Need to review entire data record to identify potential problems - data entry errors and equipment malfunction
- Don't assume current SWQS stream classifications and criteria are perfectly aligned—new science
- Monitoring design should address all potential sources – not just “usual suspects”



Changes needed

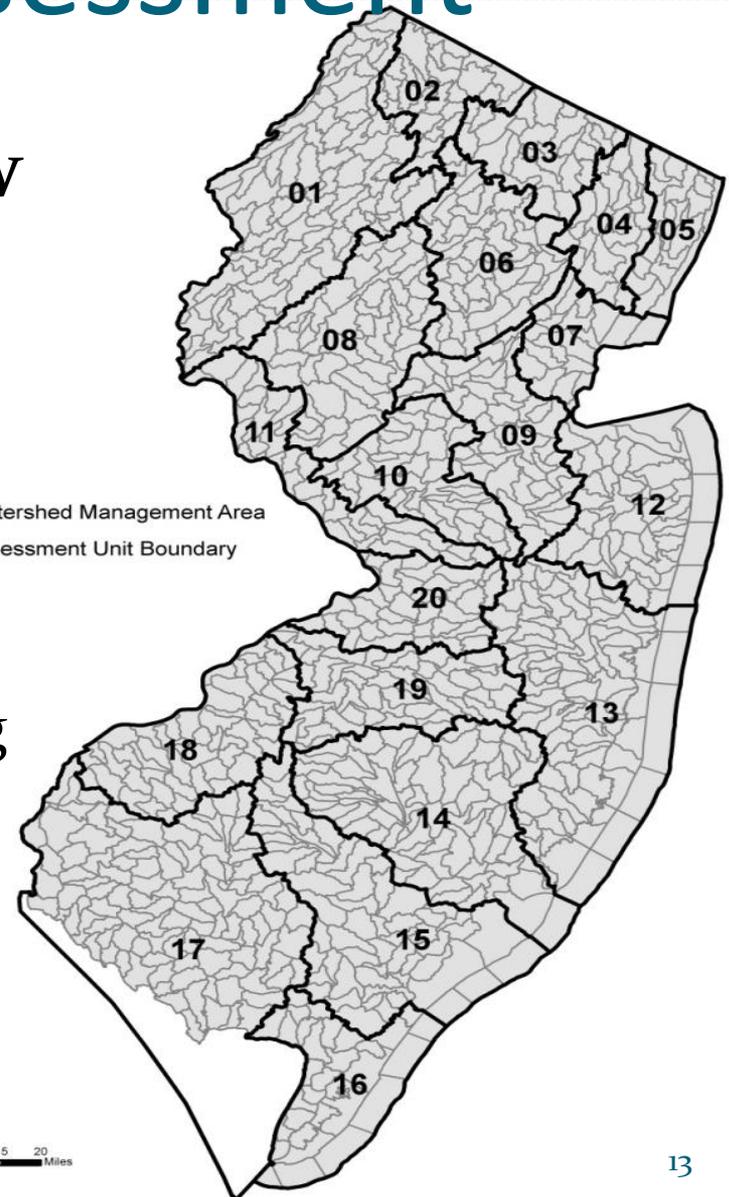
- Focus on using data to identify stressors and sources so that immediate action can be taken
- TMDLs are only one of the tools/responses to an impairment; use judiciously, need to take immediate action
- Prioritize actions where improvement is likely
- Protect high quality waters - eliminate the need for restoration



New: State-wide Assessment

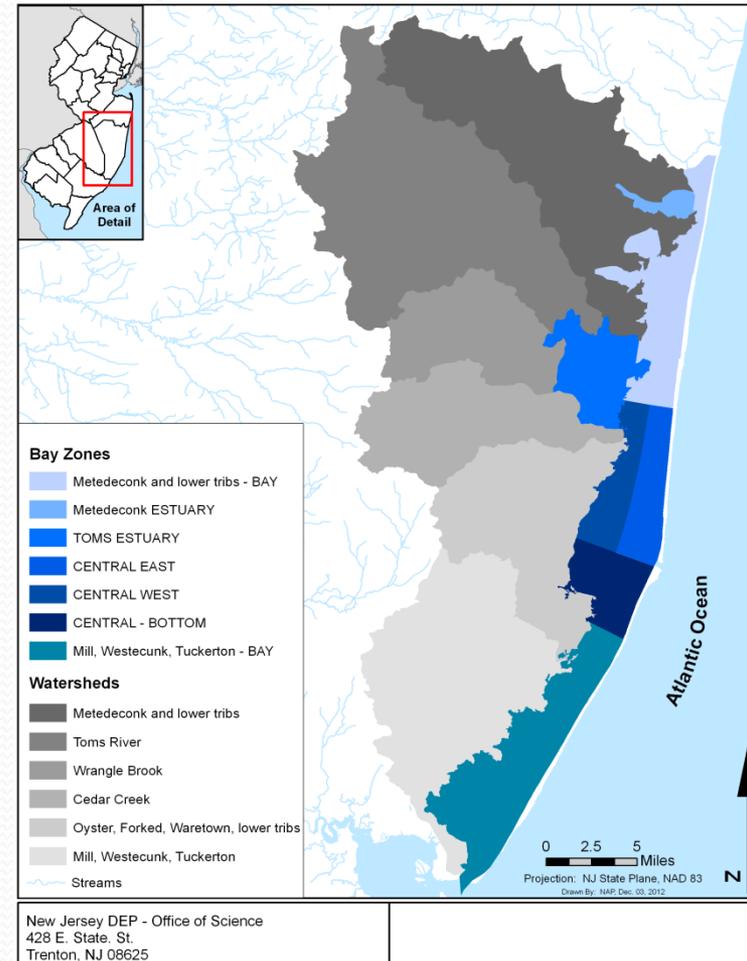
Statewide Screening of New Data (2011-2012):

- 952 AUs (ave. 8 sq. miles)
- **Over 5,000 Monitoring Stations Statewide**
 - NJDEP, USGS, USEPA
 - Counties
 - Volunteer and Other Monitoring Partners
 - Regulated Community (wastewater and water supply)



New: Regional Comprehensive Assessment – Barnegat Bay

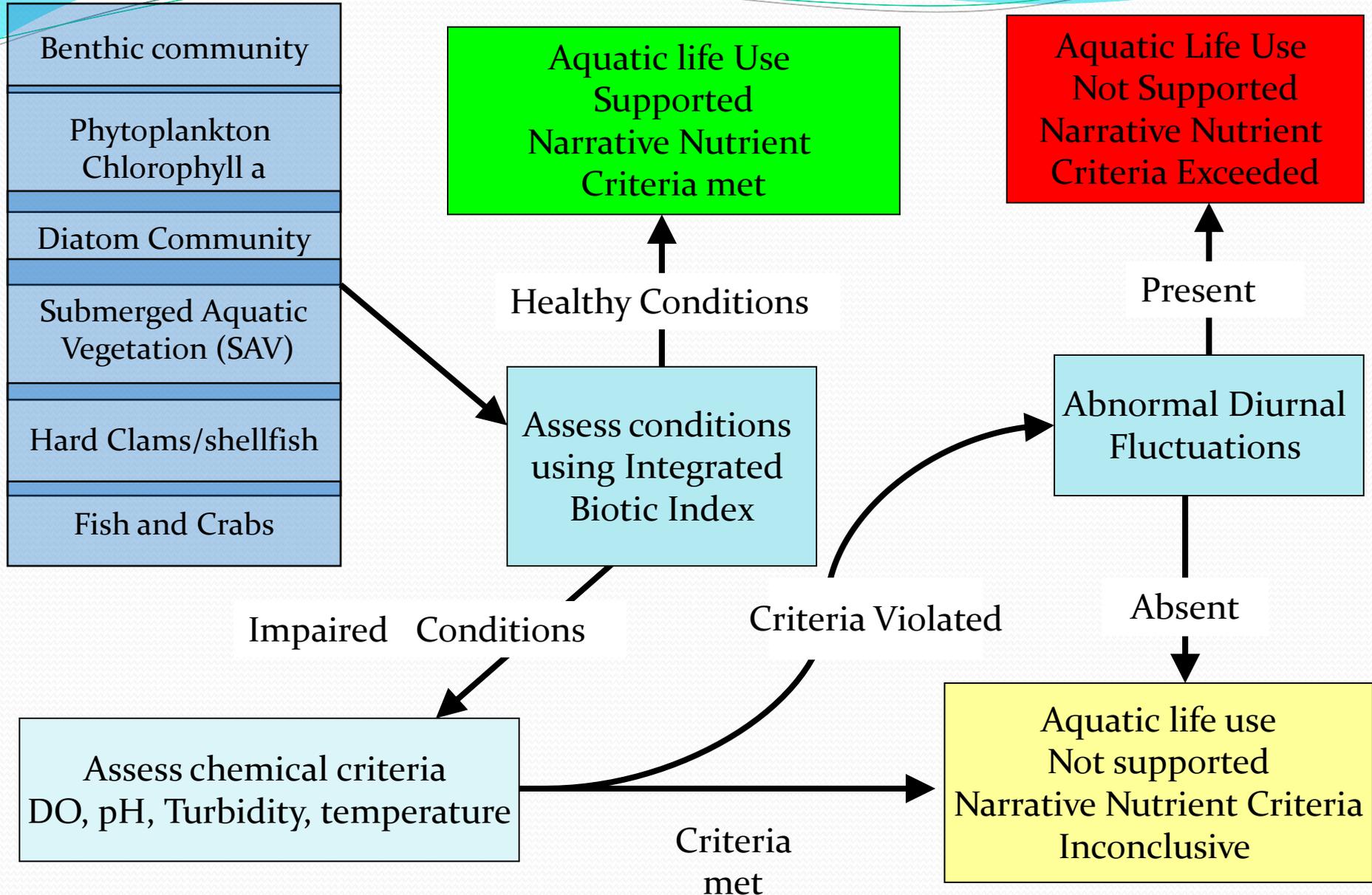
- **Lots of data from**
 - 10 Research Projects
 - 27 new stations (2011-2012)
 - Continuous Monitoring
 - Remote Sensing
 - 834 “old” stations (pre-2010)
- **85 HUCs reorganized into**
 - 5 Bay Assessment Units
 - 6 Freshwater Tribs
 - 2 River/Estuary segments



Barnegat Bay Assessment for 303(d)

Parameter	Criteria
Dissolved Oxygen	Minimum of 4 mg/L or daily average of 5 mg/L
pH	6.5 – 8.5
Temperature	29.4 degrees C as summer seasonal average
Turbidity	Maximum of 30 NTUs or 10 NTUs as monthly average
Pathogenic Indicators	35 Enterococcus colonies/ml as a geomean
Narrative Nutrient Criteria	?

Narrative Nutrient Criteria Assessment



Goal and Schedule for 2013 Barnegat Bay Assessment



- Prepare Comprehensive Assessment of water quality conditions
- Continue funding for biological research projects
- Identify areas for immediate action
- Re-evaluate 303(d) listings/delistings for 2014 303(d) List
- Continue to work on developing methods to evaluate narrative nutrient criteria

2013 Barnegat Bay Assessment

- Status and trends both short term and longer for multiple environmental indicators
- Shellfish Stock Assessment
- Wetlands Conditions
- Municipal Stormwater Management
- Boating Impacts
- Effects of Fertilizer Ordinance
- OTHER?

2014 and Beyond

Integrated Assessment

Off Year State-wide (2013): Computer screening of all new data to identify

- Potential delistings
- “Suspected” impairment – 2 or more exceedances of SWQS but need more data to confirm

Off Year Targeted (2013 – Barnegat Bay)

- Use the comprehensive assessment to evaluate water quality conditions, identify new listings and add to 303(d) and delist as appropriate

Even Year – Integrated Report due (2014)

- Initiate monitoring of suspected impairments in next targeted area
- Finalize Integrated Report – 303(d)/305(b) and submit to EPA

Questions?

