Chesapeake Bay Program Partnership's Tidal and Non-Tidal Monitoring Networks and Assessments

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Management Board Meeting
January 10, 2012
Annapolis, MD

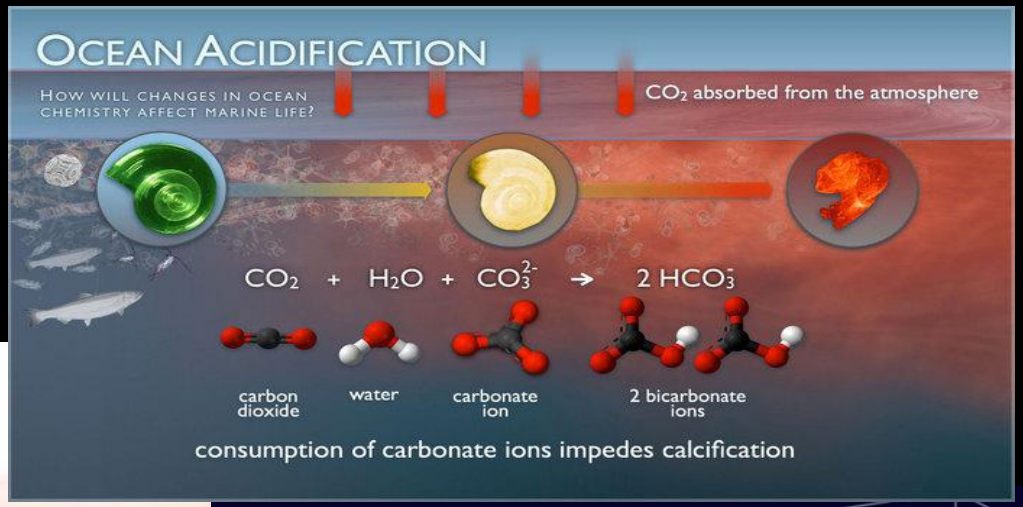
USGS
science for a changing world

Chesapeake Bay Program
A Watershed Partnership

Outline

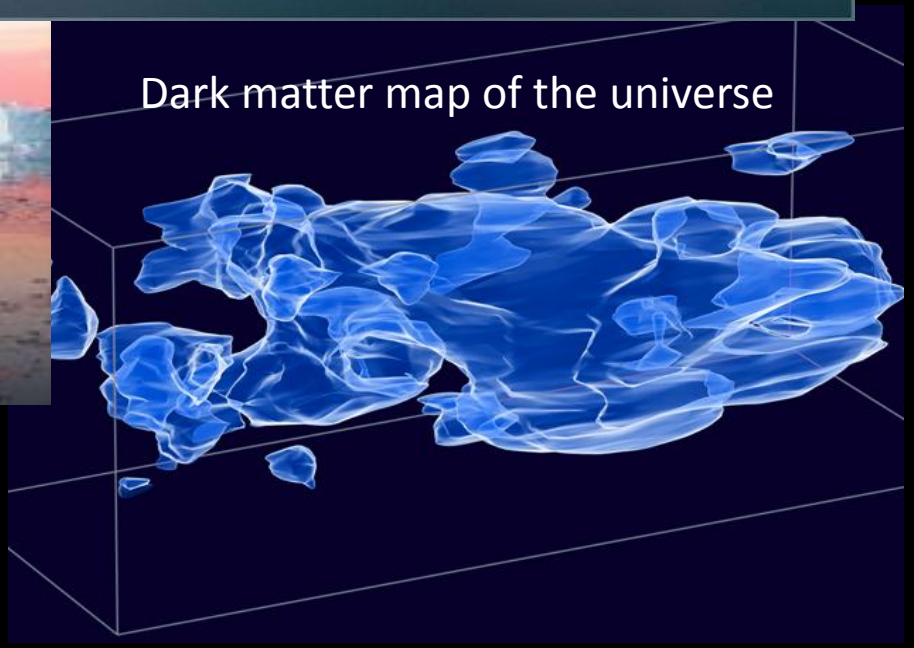
- 2007-2009 Monitoring Realignment:
  - Background review of Management Board role and decisions.
- 2010-2012 transition and implementation monitoring update
- 2012: How did we do meeting 2009 recommendations?
- 2012 Partner meeting findings
  - Target decisions for next steps in the Bay and basin monitoring networks.

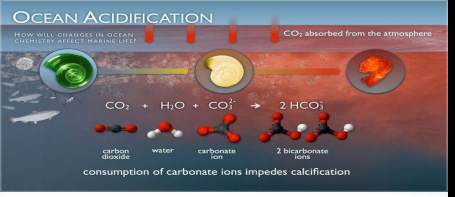
2007 Top Science Stories – trends and events changing our understanding of the world

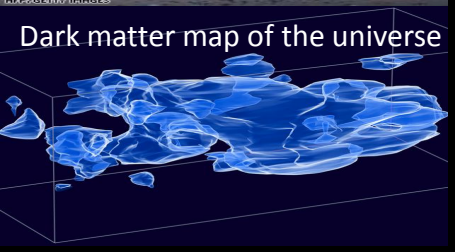


Arctic thaw

Dark matter map of the universe



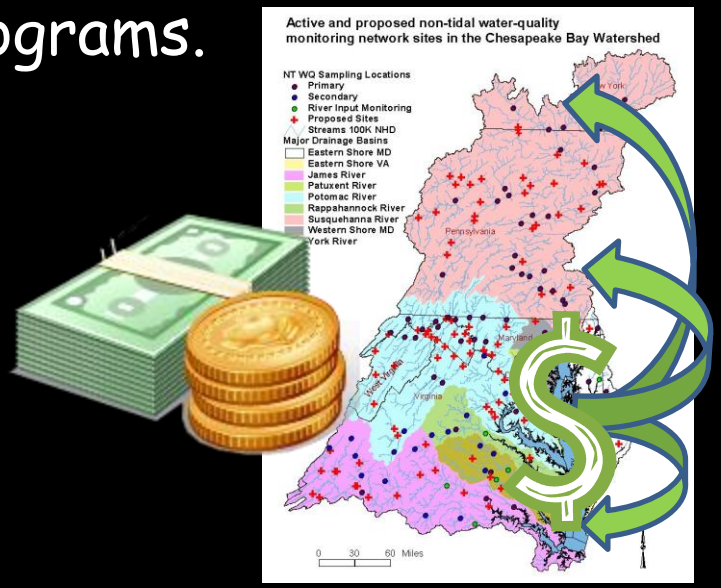




2007 Chesapeake Bay Monitoring news

- CBPO budget considerations included a major resource shift to watershed states.

- The internal reallocation plan proposed at the BSC showed a substantial reduction to tidal Bay monitoring and other programs.



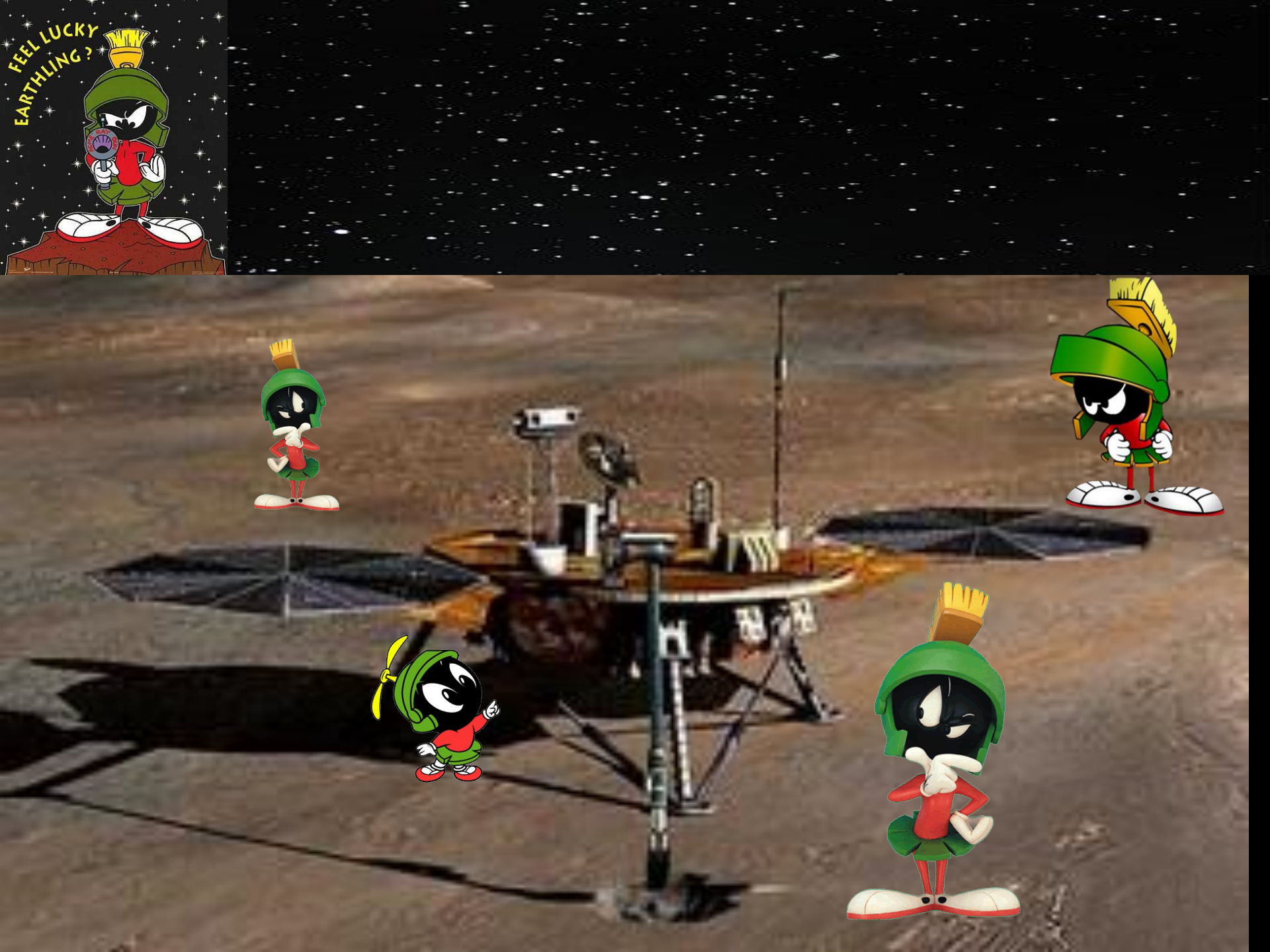
Chesapeake Bay Program

A Watershed Partnership

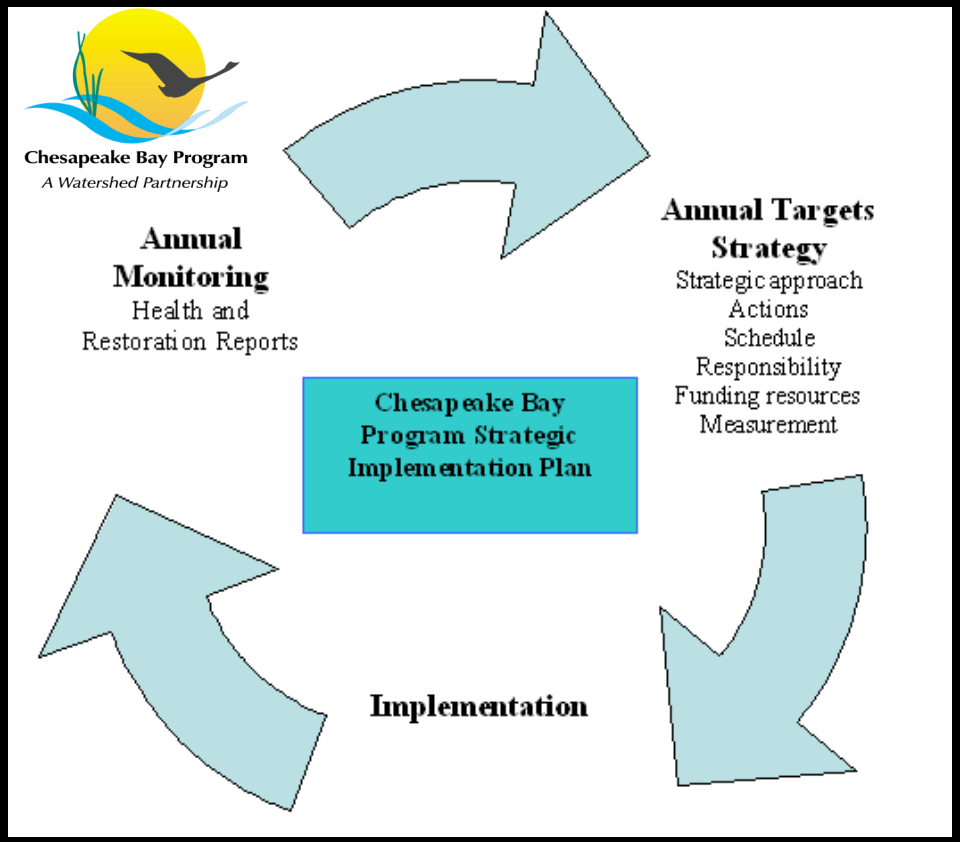
2007 Monitoring Program Budgets

- Tidal Monitoring $3.4M program
  - 1984-2007: Approximately 150 stations, 12-20 cruises per year, water quality and living resources.
- Nontidal Monitoring $0.9M program
  - 2004 to 2007: 85 station network including River Input Monitoring stations. MOU among watershed states to unify protocols for select stations to create a region-wide assessment.

2008 Top Science Stories:
Phoenix Lands on Mars

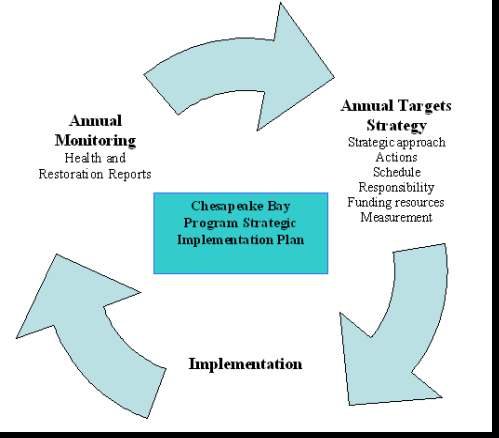

FEEL LUCKY
EARTHLING ?

2008 Chesapeake Bay Monitoring News



Adaptive Management Cycle

- 3 CBP STAC Monitoring Review Workshops.
- Workshops designed to provide a framework for establishing priorities and objectives of the monitoring programs as requested by CBP.

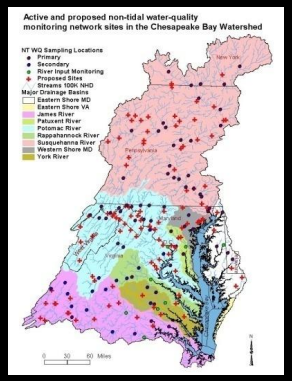


2009

STAC 2009 Report: Development and Implementation of a Process for Establishing Chesapeake Bay Monitoring Program Priorities and Objectives: Conclusions

- Continuing the status quo monitoring program is unacceptable.
- Monitoring priorities:
  - Delisting the tidal segments of the Bay.
  - Determining effectiveness of management actions in the watershed.
- It is possible to obtain the type of information necessary to answer the management priority endpoints.
- Some balancing between monitoring for the two priorities is necessary.
- This initial monitoring review is the beginning of a process

Chesapeake Bay Program Monitoring Networks: 2009 Management Board Decision Points



Watershed Monitoring

Bay Water Quality Monitoring

March 13, 2009

The Management Board accepted the principle findings of the STAC Review

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April 14, 2009

The Management Board accepted the proposal to establish a Monitoring Realignment Action Team charged with:

* engaging the monitoring community in evaluating program and budget realignment options

* returning recommendations in October.

April 10, 2005

This Image is Available at Maryland DNR's www.eyesonthebay.net

Image courtesy of MODIS Rapid Response Project at NASA/GSFC
250 meter resolution
http://rapidfire.sci.gsfc.nasa.gov/subsets/?AERONET_Wallops/

Shallow Water Habitat

Living Resources Monitoring

The MRAT Process
Spring-Fall 2009

MRAT Process

- Synthesis Team + 4 Focus Teams: Watershed, Partnership, Communications and Optimization.
  - Opening Workshop meeting in May.
  - Nearly weekly conference calls with the monitoring community.
  - Summit Workshop in October.
- Integrated team reports were developed to support re-alignment options
  - Challenges: State budget impacts (-), Presidential Executive Order (+/-)

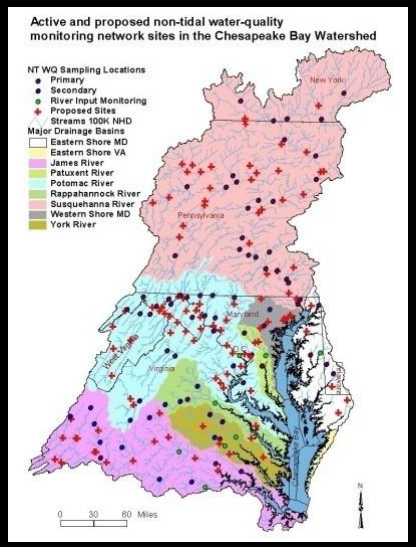
MRAT Process
November 9, 2009

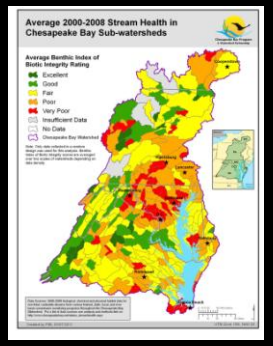
- 3 Re-alignment Options presented.
- Decision for disinvestment-reinvestment and future investments was made.
  - 432K in State funding support was disinvested due to budget issues
  - An additional

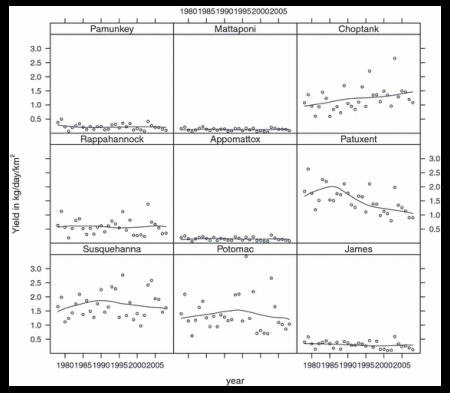
The MRAT Process provided the Roots of the Decision Framework to Enhance Accountability and enable Adaptive Management

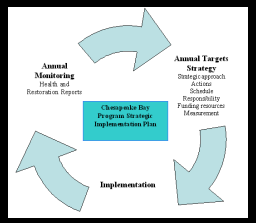
2007-2012 Monitoring program process

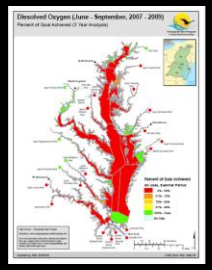
- Goals were stated by Senior Managers for assessing Bay criteria and evaluate progress in the watershed.
- Funding resources adjusted to maintain Bay network for criteria assessment, expand nontidal network in source sectors, enhance analysis and communication.
- Monitoring assessments underway and outcomes evaluated.
- Analysis and reporting is conducted on measured watershed and Bay conditions
- Feedback to management decision making is ongoing with new analyses and products. Meetings held with partners to envision next steps in the monitoring programs.

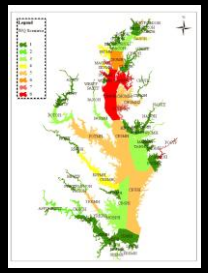












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2007-2012 Monitoring program

- Goals were stated by Senior Managers for assessing Bay criteria and progress in the watershed.
- Funding resources adjusted to maintain Bay network for criteria assessment, expand nontidal network in source sectors, enhance analysis and communication.
- Monitoring systems and outcomes
- Analysis and reporting on measured watershed and Bay conditions
- Feedback to management decision making is ongoing with new analyses and products. Meetings held with partners to envision next steps in the monitoring programs.

Decision Framework today

- Clear, unambiguous goal statements.
- Plan activities sufficient to achieve goal
- Monitoring the targeted system/environmental outcome
- How and when do we expect the system to respond
- What are potential changes to management efforts if the system does not respond as expected?

Since 2009, how have we addressed our recommendations?

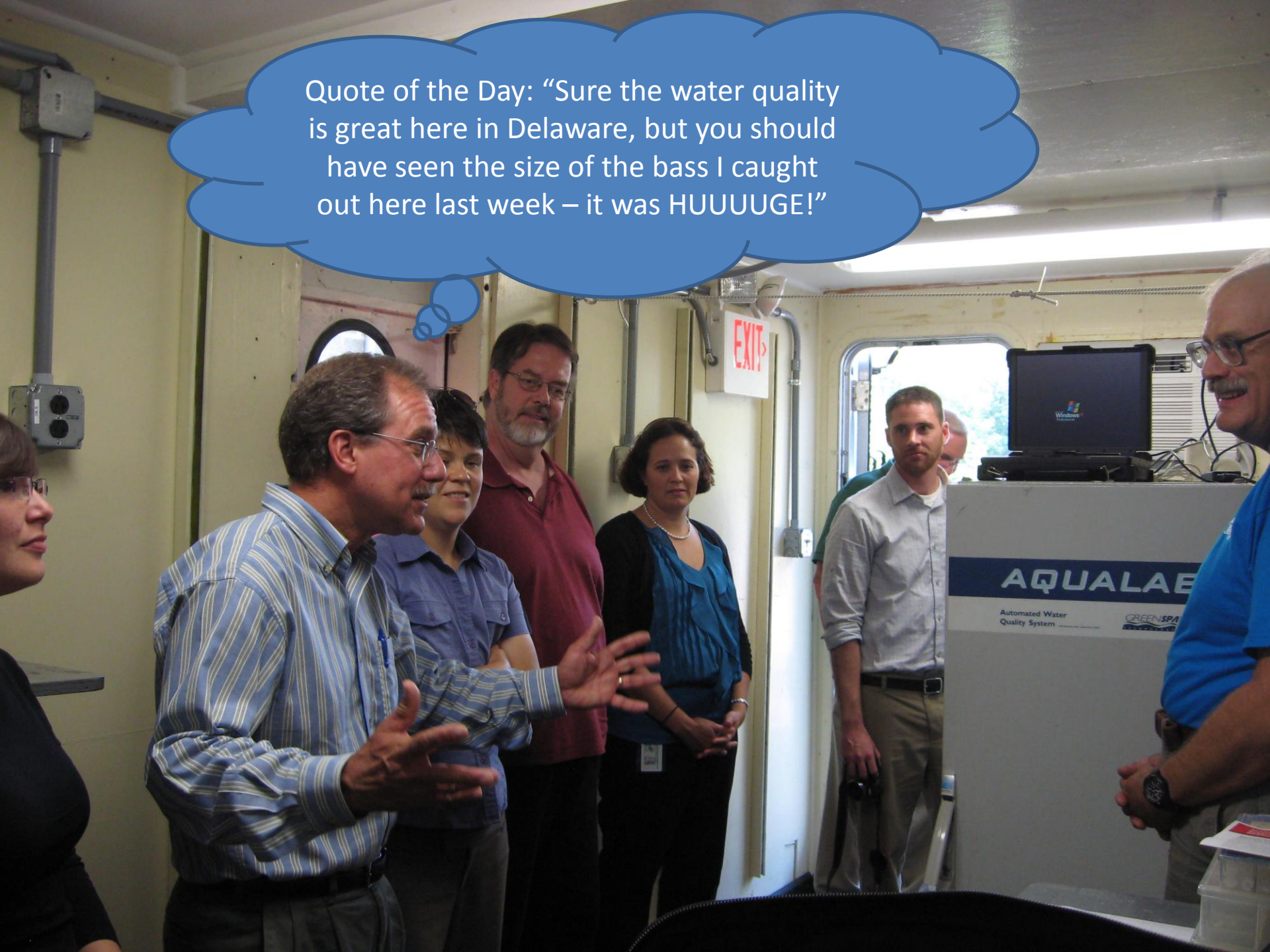
Recommendation	Status
Maintain continuity and increased stewardship of the existing nontidal network (NTN)	The original network has been maintained.
Make strategic improvements to the NTN including small watersheds: Watersheds with predominantly urban or ag land use (6-18 sites) Basins in the coastal plain (6-12 sites) Watersheds with significant BMPs (6-12 sites)	EPA $2M was acquired supporting approximately 35 new sites in ag, urban, coastal plain and high BMP watersheds across the Chesapeake Bay basin.
Synthesize lessons learned from small watershed studies	2012 STAR team effort has produced a draft report and presentations on lessons learned. A completed report is expected in 2013.
Enhance data analysis of the NTN data; improve status and trends reporting	WRTDS for load trends, short and long term trend techniques plus relative status have been/are being published
Increase tracking of important watershed activities for explainability of trend results.	Modeling world and NEIEN
Improve communication products	Stream Health Index, loads and trends summaries on concentration and load support the Bay Barometer.

2012 Water Quality Monitoring Program Review Continuing the Adaptive Management Process

- CBP visited watershed partners
- Assessed their updated program status
- Collected visions for next steps

Spring, Summer, Autumn 2012
Partner visits

- Meeting rooms, laboratory and field visits


Quote of the Day: “Sure the water quality is great here in Delaware, but you should have seen the size of the bass I caught out here last week – it was HUUUUGE!”
EXIT
AQUALAB
Automated Water Quality System

State of the Monitoring Program: Recent Program Highlights

- Increase from 85 to approximately 120 watershed network water quality monitoring stations
- New watershed trend indicators presentation
  - addressing concentrations and loads
  - addressing long term and short term time periods
- Storm-response monitoring and summaries
  - Irene, Lee, Sandy
- 303d listing assessments
- Restored 2nd July cruise for water quality profiles (key management effect period).
- Umbrella Criteria Assessment

Partner by Partner rundown of 2012 Monitoring Review Meetings

Maryland

- Watershed –

  Issue:
  - In 2012, the Sassafras River was planned for the next priority water quality monitoring station for expanding their nontidal network.
  - In-state funding was eliminated from DNR that supported 3 new watershed network stations in 2011.

  Action:
  - The 61K planned for starting up the Sassafras River was directed for maintaining the 3 'yearling' stations.
  - Sassafras R. is first priority for MD for additional funding.

Maryland

- Tidal

  Issue:

  – Phytoplankton programming supporting the Bay-wide Phytoplankton IBI reporting has been completely defunded.
    - Samples collected from 2012 need $50K for processing.

  Action:

  – A letter was developed through TMAW and supported by STAR requesting funding support from NOAA, USFWS, CBPO to process the 2012 samples.

Maryland

- Tidal

  Issue

  – Benthic IBI identified need for recalibration.

  Action

  - The recalibration has been tasked with Jackie Johnson as lead working with the benthic assessment leads in 2013.
  - The issue is on the CAP WG issues list to be completed and presented in the next technical water quality addendum.

Virginia

- Watershed
  - Proposing up to 5 sites for storm sampling to go from 2º to 1º
  - Interest in analysis of Stressor i.d.
- Tidal
  - Welcome Cindy Johnson as VADEQ Monitoring Director.
  - Equipment needs: 3 regional offices are in need of boats.

West Virginia

Meetings

- Watershed Monitoring Review plus 2 days of WIP meeting input.
- 4 new stations up and running

Issues

- 4-5 more stations would provide near complete load coverage and some process-oriented evaluations.
  - Mon Mtg Top 3: New Creek, Little Cacapon River, Sleepy Creek
  - WIP Mtg Top 3: Opequon Crk, Lower Opequon Crk, Tuscarora

Delaware

- 2 network sites.
  - No other suitable sites to add to the network.
- Bucks Branch, Pocomoke River – key BMP effectiveness assessment site. (Clune et al. USGS).
- Realtime monitoring complementing network monitoring for Nanticoke R. @ Bridgeville
- **Issue**: No network-wide protocols for evolving realtime water quality monitoring.

Pennsylvania

- **Issues**
  - 2 river flow gages are threatened by budget cuts. Gage network stability after this FY is a concern.
  - Opportunities for efficiencies between agencies if we can coordinate site swap activities (USGS/PADEP/SRBC)
- **Actions**
  - Any additional budget support will first support maintenance for threatended gages.
  - Prepare site swap adjustments in the new grant cycle

New York

- Opportunities beyond existing network sites:
  - 5 sites in the Binghamton region: assessing the impact of the urban ecosystem
  - Elk Creek – presently there is load estimation without storm sampling. High community interest site.

Washington DC

Issues

- Extended period of site selection due to challenges monitoring urban streams.
- Site lists exchanged between USGS and DC
- Pilot monitoring initiated

Actions

- November 2012 call discussed site selection preferences and challenges toward finalizing DC sites.
- December 2012 conference call finalized site selection on 3 locations. (Hickey Run, Watts Branch, Broad Branch near interection with Rock Creek).

General Program Challenges

- Lab costs to support going to NELAC QA standards.
- Rising gas costs
- Aging boat fleet
- Integrating nontraditional programs
- Data/QA management expansion

General Program Challenges

- Diversification of funding to *maintain* our networks. Challenges:
  - Rising gas costs.
  - Flow gages threatened by budget cuts annually though not equitably across the watershed.
  - NELAC standard lab efforts enhance costs.
  - Aging boat fleet on the Bay.
  - Growing need for QA support for the program
  - Balance of monitoring and analyses.

Management Board Decision Request

- Request STAR review the partner meeting findings.
  - STAR to develop and provide a prioritization list for implementing new stations.
  - STAR provide suggestions for prioritizing partner requested actions across the monitoring networks.
  - STAR returns recommendations to the Management Board in Summer 2013.

Thank you

Upcoming Decisions and Actions

- Gap filling priority sites for the network – you make the call. Recommendations included:
  - NY (up to 6), MD (1), VA (up to 5), DE (BMP site)
- Nontraditional partnering – direct action on:
  - Realtime monitoring protocols (E.g. Hudson R. consortium?)
  - Nongrantee programming – options.