Implications of Putting the 17 Million Chesapeake Bay Watershed Residents on a Regulatory Pollution Diet

Rich Batiuk
Associate Director for Science
U.S. Environmental Protection Agency
Chesapeake Bay Program Office
Annapolis, Maryland USA

EMECS 9 August 28, 2011
Get Full Buy-in on What Defines Restored Water Quality

- Sunlight
- Minimal Nitrogen, Phosphorus and Sediment Inputs
- Balanced Algae Growth
- Healthy Bay Grasses
- Healthy Oyster Reef
- Adequate Oxygen
- Healthy Habitat

- Excessive Nitrogen, Phosphorus and Sediment Inputs
- Algal Bloom
- Reduced Bay Grasses
- Algae Die-off
- Algae Decomposition
- No Oxygen
- Unhealthy Habitat
- Barren Oyster Reef
- No Benthic Community
Rethink ‘Fishable/Swimmable’ in Terms the Public Can Relate to

Bay Grasses Habitat

Rockfish, Bluefish Menhaden Habitat

Oyster, Crab, Croaker and Spot Habitat

Shad, Herring, Perch and Rockfish Spawning Habitat

Summertime Crab Food Habitat

Local “Zoning” for Bay and Tidal River Fish, Crab and Grasses Habitats
# Use Best Available Science to Quantify WQ Conditions Protective of Uses

## Bay Dissolved Oxygen Criteria

<table>
<thead>
<tr>
<th>Deep Channel</th>
<th>Deep Water</th>
<th>Shallow and Open Water Areas</th>
<th>Migratory Fish Spawning &amp; Nursery Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

- **Striped Bass**: 5-6
- **American Shad**: 5
- **White Perch**: 5
- **Yellow Perch**: 5
- **Hard Clams**: 5
- **Alewife**: 3.6
- **Bay Anchovy**: 3
- **Crabs**: 3
- **Spot**: 2
- **Worms**: 1
- **White Perch**: 5
- **American Shad**: 5
- **Striped Bass**: 5

Use Best Available Science to Quantify WQ Conditions Protective of Uses.
Address **All** Pollutant Sources Equitably
Connect Water Quality Impairments with Upland (and Upwind) Sources
Apply a Suite of Models and Tools to Connect Sources-Management Actions-WQ Responses

Chesapeake Bay Airshed Model
Chesapeake Bay Land Change Model
Chesapeake Bay Watershed Model
Chesapeake Bay Water Quality and Sediment Transport Model
Chesapeake Bay Filter Feeder Model

Parameters
- BMP type and location
- Land use
- Remote Sensing, NASS/Crop land Data layer
- Crop acres
- Yield
- Animal Numbers (Ag Census or state supplied)
- Land applied biosolids
- Septic system (lbs)

Inputs
- BMP type and location
- Land use
- % Bare soil, available to erode
- Nutrient uptake
- Manure and chemical fertilizer (lbs/segment)
- N fixation (lbs/segment)
- Septic loads

Outputs
Do What is Needed to Reach Agreement on Equitable Distribution of Responsibility
Reach Agreement with Partners/Stakeholders on an Equitable Allocation Methodology

INPUTS
- BMP Data
- LU Data
- Point Sources Data
- Septic Data
- U.S. Census Data
- Agricultural Census Data

MODEL-DERIVED
- Airshed Model
- Land Use Change Model
- Precipitation Data
- Meteorological Data
- Elevation Data
- Soil Data

SCENARIO BUILDER

WATERSHED MODEL

CHESAPEAKE BAY MODEL

MEET WQS?
- NO
- YES

ALLOCATION METHODOLOGY

Reduce/Readjust Loads to Meet Standards
Assign Pollutant Load Responsibility Closest to the Actual Source as Possible

Table B2. Format for Submitting Phase I Watershed Implementation Plan Outputs

<table>
<thead>
<tr>
<th>St. Ref</th>
<th>Maj. Basin</th>
<th>Impaired Segment Drainage</th>
<th>Unique Code</th>
<th>Source Sector</th>
<th>Type</th>
<th>NPDES Permit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD</td>
<td>W. Shore PAXTP</td>
<td>MWPTP</td>
<td>Agriculture-CAFO</td>
<td>Agg, WLA</td>
<td>MD356913</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Agriculture-CAFO</td>
<td>Ind, WLA</td>
<td>MD612345</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Agriculture</td>
<td>LA</td>
<td>MD613543</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Subtotal: Agriculture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wastewater: POTW #1</td>
<td>Ind, WLA</td>
<td>MD821672</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wastewater: POTW #2</td>
<td>Ind, WLA</td>
<td>MD853653</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Subtotal: Wastewater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Urban/Suburban Runoff: MS4</td>
<td>Ind, WLA</td>
<td>MD546155</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Urban/Suburban Runoff: Non-MS4</td>
<td>LA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Subtotal: Urban/Suburban</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Forest</td>
<td>LA</td>
<td>MD82614</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Agriculture-CAFO</td>
<td>Agg, WLA</td>
<td>MD85669</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Agriculture</td>
<td>LA</td>
<td>MD54732</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Subtotal: Agriculture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wastewater: POTW #1</td>
<td>Ind, WLA</td>
<td>MD56679</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wastewater: POTW #2</td>
<td>Ind, WLA</td>
<td>MD546469</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Subtotal: Wastewater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Urban/Suburban Runoff: MS4</td>
<td>Ind, WLA</td>
<td>MD58578</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Urban/Suburban Runoff: Non-MS4</td>
<td>LA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Subtotal: Urban/Suburban</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Forest</td>
<td>LA</td>
<td>MD85669</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reserve for Growth</td>
<td>WLA/LA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Land areas do not reflect the actual area draining into a segment with 100% accuracy but are basically correct at the map scale.
Go as Local with Your Allocations as Your Scientific Understanding Enables You to

Virginia Bay TMDL Segmentsheds
Put in Place an Institutional Structure Which Provides a Seat at the Table for Many

**Chesapeake Executive Council**
Chair – Lisa Jackson, EPA

**Principals’ Staff Committee**
Chair – Shawn Garvin, EPA

**Management Board**
Acting Chair
Jim Edward, EPA

**Communications Workgroup**
Chair--Courantz, NOAA
Vice-- Waugh, VaDCR

**Goal Implementation Teams**

- **Sustainable Fisheries**
  Chair: Robertson, NOAA
  Staff: Vogt, NOAA

- **Protect & Restore Vital Habitats**
  Chair: Miranda, USFWS
  Staff: Davis, CRC

- **Protect & Restore Water Quality**
  Chair: Korancic, (co-chair) EPA
  Staff: Hansen, (co-chair) UDel

- **Maintain Healthy Watersheds**
  Chair: Bryer, NGO(TNC)
  Staff: Hall, MdDP

- **Foster Chesapeake Stewardship**
  Chair: Maounis, NPS
  Staff: Barrett, PaDCNR

- **Enhance Partnering, Leadership**
  Chair: Foreman, VaDCR
  Staff: Bisland, EPA

**Independent Evaluator**

- **Science, Technical Analysis, and Reporting**
  Dennison, UMD
  Bennett, USGS
  Tango, USGS
  Barnes/Gorka, CRC

**Local Government Advisory Committee**
Chair – Mary Ann Lisanti
Harford County

**Citizens’ Advisory Committee**
Chair - Jim Elliot
Hunton & Williams LLP

**Scientific & Technical Advisory Committee**
Chair – Denise Wardrop
PSU
**Build in Adaptation From the Start**

- **Major basin jurisdiction loading targets**: Oct 2009
- **Bay TMDL Public Meetings**: November-December 2009
- **Draft Phase I Watershed Implementation Plans**: November 2009 – Sept. 1 2010
  - **July 1 and August 13 Allocations**
- **Draft TMDL**: Sept. 24, 2010 (45 days)
- **Local Program Capacity/Gap Evaluation**
- **Public Review And Comment**
- **Final TMDL Established**: December 2010
- **Provide Local Planning Targets for smaller Watersheds, Counties, Sources**: December 2010
- **Phase II Watershed Implementation Plans**: Starting 2011
  - **Starting 2011**
  - **2-year milestones, reporting, modeling, monitoring**
- **2017 60% of Practices in Place - Phase III WIPs to meet 2025 Goal**
Watershed Implementation Plans identify nutrient and sediment targets that meet water quality standards. Plans include:

Evaluation of Program Capacity necessary to fully restore water quality.

Federal Actions

if insufficient Watershed Implementation Plans or 2-year milestones are not met

Chesapeake Bay TMDL:
Set Pollution Reduction Goals for Point and Non-point Sources to Meet Bay Water Quality Standards

2-Year Milestones with program enhancements and nutrient and sediment reduction commitments

Identification of Gaps between needed and existing program capacity

Schedule and Strategies to enhance programs and reduce nutrients and sediment

Model and Monitor to assess progress
Recognize
There is a Need
for Basic
Behavior Changes and
Act on this Need

“Well, Timmy, it looks like you’ve just earned yourself 10 minutes in the cage with Mr. Whiskers.”
Never, Ever Forget Who You Need to Work with and Who You are Really Working For
Questions
Rich Batiuk
Associate Director for Science
U.S. Environmental Protection Agency
Chesapeake Bay Program Office
410-267-5731
batiuk.richard@epa.gov
www.chesapeakebay.net