Lessons Learned in Restoring Chesapeake Bay WQ



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

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Get Full Buy-in on What Defines Restored Water Quality



Rethink 'Fishable/Swimmable' in Terms the Public Can Relate to



Local "Zoning" for Bay and Tidal River Fish, Crab and Grasses Habitats

Use Best Available Science to Quantify WQ Conditions Protective of Uses



Connect Water Quality Impairments with Upland (and Upwind) Sources





Do What is Needed to Reach Agreement on Equitable Distribution of Responsibility





Address All Pollutant Sources Equitably



Build/Maintain Long Term Monitoring Networks



Apply a Suite of Models and Tools to Connect **Sources-Management Actions-WQ Responses**



Chesapeake Bay Airshed Model



Chesapeake Bay Watershed Model



Chesapeake Bay Land Change Model



Chesapeake Bay Water Quality and Sediment Transport Model

Parameters BMP Type and BMPs, # and location (NEIEN/State supplied) BMP types and efficiencies Land acres Land use change (BMPs, others) Remote Sensing RUSLE2 Data: % Leaf area and NASS Crop land residue cover Data layer Plant and Harvest dates Crop acres Best potential yield Yield · Animal factors (weight, phytase Animal Numbers feed, manure amount and (Ag Census or state composition) supplied) Crop application rates and timing Land applied Plant nutrient uptake biolsolids Time in pasture Septic loads Septic system (#s) Storage loss Volatilization Inputs Animal manure to crops N fixation Septic delivery factors

location

Land use

erode

% Bare soil,

available to

Nutrient uptake

Manure and

chemical

fertilizer

N fixation

(lb/segment)

(lb/segment)

Outputs

Chesapeake Bay Scenario Builder



Chesapeake Bay Filter Feeder Model

Reach Agreement with Partners/Stakeholders on an Equitable Allocation Methodology



Assign Pollutant Load Responsibility Closest to the Actual Source as Possible

St.	Maj. Basin	Impaired Segment Drainage	Unique Code	Source Sector ^b	Type ^c	NPDES Permit
MD	W. Shore	PAXTF	MWPTF	Agriculture-CAFO	Agg. WLA	
				Agriculture-CAFO	Ind. WLA	MD356913
	· · · ·			Agriculture	LA	
	1.1.1			Subtotal: Agriculture		
				Wastewater: POTW#1	Ind. WLA	MD012452
				Wastewater: POTW#2	Ind. WLA	MD013943
				Wastewater: Indus #1	Ind. WLA	MD821672
				Wastewater: Indus #2	Ind. WLA	MD853653
		1.0		Subtotal: Wastewater	1	
				Onsite	LA	
				Urb/Suburb Runoff: MS4	Agg. WLA	MD546195
		-1		Urb/Suburb Runoff: Non-MS4	LA	
	L			Urb/Suburb Runoff: MS4	Ind. WLA	MD892645
				Industrial Stormwater	Agg. WLA	
				Industrial Stormwater	Ind. WLA	MD246139
				Construction	Agg WLA	
				Subtotal: Urb/Suburb		
				Forest	LA	
MD	W. Shore	SEVMH	MWSeM	Agriculture-CAFO	Agg. WLA	MD382614
				Agriculture	LA	
				Subtotal: Agriculture		
				Wastewater: POTW#1	Ind. WLA	MD083699
				Wastewater: POTW#2	Ind. WLA	MD054732
				Wastewater: Indus #1	Ind. WLA	MD836679
		1		Wastewater: Indus #2	Ind. WLA	MD854469
				Subtotal: Wastewater		
				Onsite	LA	
				Urb/Suburb Runoff: MS4	Agg. WLA	MD588578
				Urb/Suburb Runoff: Non-MS4	LA	
				Subtotal: Urb/Suburb		
		0	-	Forest	LA	
MD	W. Shore		-	Reserve for Growth	WLA/LA	
MD	W Shore		MW	Total		



are basically correct at the map scale.

Created 09/24/09 by HW.

80 Miles

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 Citizens' Advisory Chesapeake Executive Council Committee Chair – Lisa Jackson, EPA Independent Chair - Jim Elliot **Evaluator** Hunton & Williams LLP **Principals' Staff Committee** Chair – Shawn Garvin, EPA Local Government **Advisory Committee Action Teams** Chair - Mary Ann Lisanti Harford County **Independent Evaluator Management Board** Chair – Horan, MdDNR Scientific & Technical **EC/FLC** Alignment Acting Chair **Advisory Committee** Chair - Bisland, EPA **Communications** Jim Edward, EPA Chair – Denise Wardrop ChesapeakeStat/Adptv. Mgt. Workgroup PSU Co-Chair – Stewart, MdDNR Chair--Courantz, NOAA Co-Chair - Muller, USNA Vice-- Waugh, VaDCR **Goal Implementation Teams** Science. **Technical Analysis**, Protect & Restore **Sustainable** Protect & Maintain Foster Enhance and Reporting Vital Habitats **Restore Water** Healthy Chesapeake Partnering, **Fisheries** Watersheds Stewardship Quality Leadership **Robertson** Miranda Korancai (co-chair) **Bryer** Maounis Foreman Dennison Chair NOAA USFWS NGO(TNC) NPS VaDCR **EPA O'Connell** Horan Hansen (co-chair) Hall Barrett **Bisland Bennett** ViceChair MdDP MODNR PadCNR MdDNR **FPA** UDel USGS Cdtr Vogt Greiner Fritz Handen Allen Tango Antos NOAA USFWS EPA EPA EPA **NPS** Staff **Davis** Hession Streusand/Kilbert **Brzezinski Barnes/Gorka** Burnett Harris CRC CRC CRC CRC CRC CRC Implementation Implementation Implementation Implementation Implementation Implementation Workgroups Workgroups Workgroups Workgroups Workgroups Workgroups

Build in Adaptation From the Start



Build and Institutionalize an Accountability System



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."

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Never, Ever Forget Who You Need to Work with and Who You are Really Working For



Pollutant Loads in the Chesapeake — It's All in the Stakeholder Process

Knee Capping Protecting Public Participation Warming Trends Strict Implementation of Existing Statutes? **EPA HAPs Rule** Standards Would

Standards Would Place Strict Limits

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