Review for Presenting TMDL WLAs and LAs by 303(d) Segment

Water Quality Goal Implementation Team Call
Attachment B
November 30, 2009

Bay Segments

Chesapeake Bay Segmentation Scheme
(For 303d listing - 92 segments)
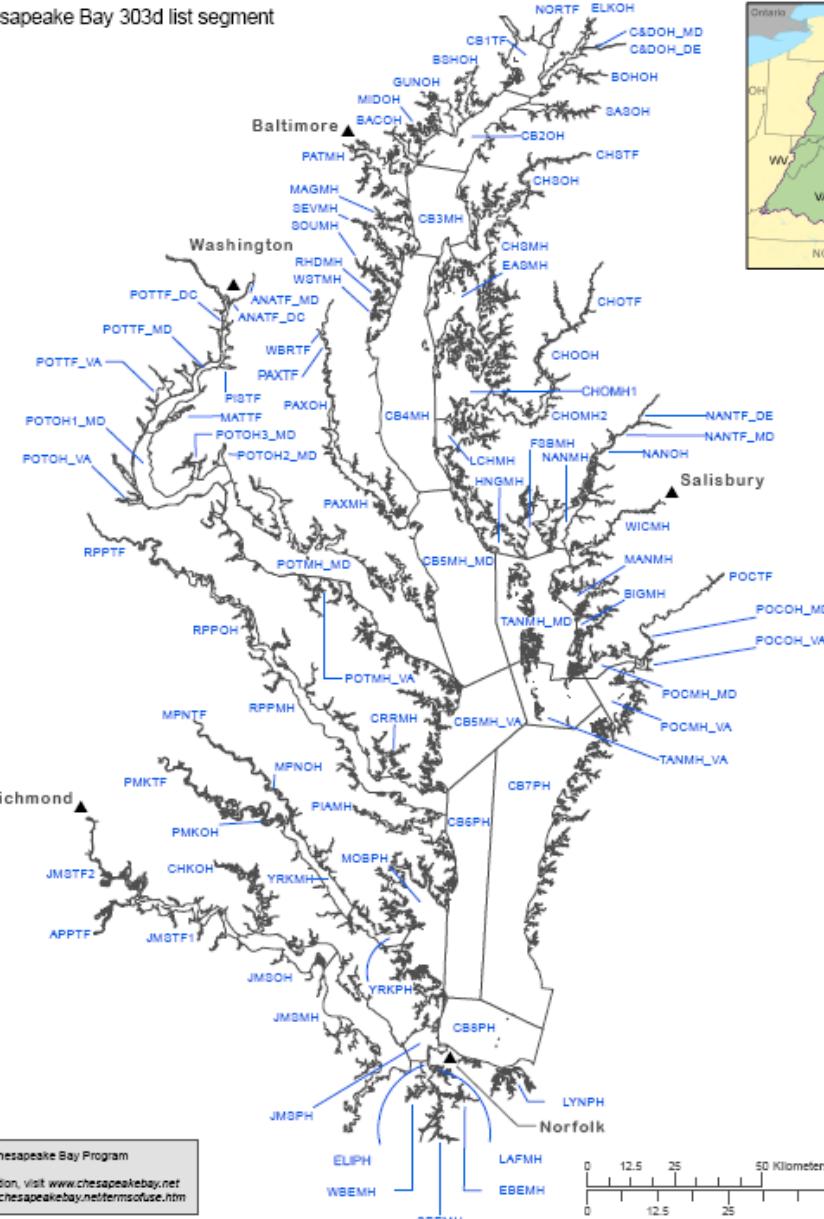
Bay Segment Drainage Areas
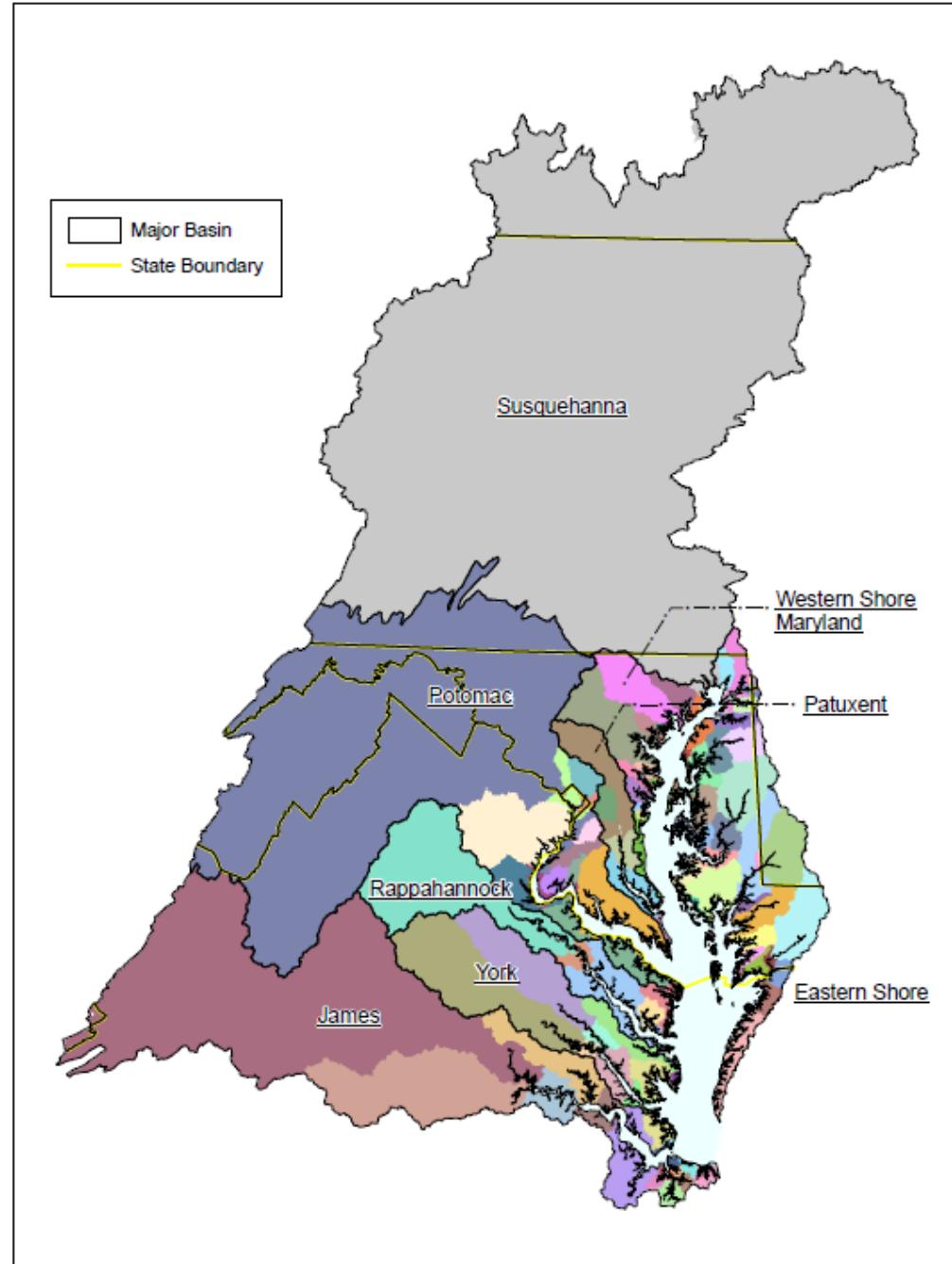
Segment TMDLs

- EPA Regulations require TMDLs for each impaired Water Quality Limited Segment
- Since deliver pollutant loads to segments listed as impaired, also TMDLs for tidal segments that are not on 303(d) list

$$TMDL_{SD} = \sum WLA_{SD} + \sum LA_{SD} + MOS$$

$TMDL_{SD}$ = Segment Drainage TMDL

WLA_{SD} = WLA from Segment Drainage

LA_{SD} = LA from Segment Drainage

MOS = Margin of Safety (implicit)

- Net fluxes (transport load) between segments are inherent in the model and will not be explicitly included in the TMDL equation

Chesapeake Bay Watershed Nitrogen TMDLs (Average Annual)

	Bay Segment	State	Nutrient	LA from Segment Drainage (lbs/yr)	WLA from Segment Drainage (lbs/yr)	MOS (lbs/yr)	TMDL (lbs/yr)	Comments
99	POTOH	VA, DC & MD	Nitrogen	6,000,000	3,000,000	Implicit	9,000,000	
100	POTTF	VA, DC & MD	Nitrogen	400,000	200,000	Implicit	600,000	
101	POVMH	VA						
102	POVOH	VA						
103	POVTF	VA						
104	RHDMH	MD						
105	RPPMH	VA						
106	RPPOH	VA						

Bay TMDL Allocation Scale in TMDL

- Tidal States (MD, VA, DE) and DC
  - Individual WLAs for point sources
    - Possible aggregate WLAs for certain point source types (i.e. MS4s, CAFOs, non-significant wastewater facilities, etc.)
  - Separate LAs for nonpoint source sectors
- Non-tidal States (PA, NY, WV)
  - Gross WLA and LA to each basin contributed to by each jurisdiction if supported by Watershed Implementation Plan with sufficient detail
  - EPA can assign WLAs to individual point sources or LAs to separate nonpoint source sectors, if necessary
  - Non-tidal states may choose the tidal states approach (detailed WLAs and LAs within the TMDL) to facilitate state program implementation

Wasteload Allocation

For Tidal Fresh Segments:

WLA_{SD} = ∑ individual WLAs (tidal state) + ∑ aggregate WLAs (tidal state) + Gross WLA (nontidal state)

Other Segments:

WLA_{SD} = ∑ individual WLAs (tidal state) + ∑ aggregate WLAs (tidal state)

- WLAs would be determined by each state's Watershed Implementation Plan and would include:
    - Municipal Wastewater Facilities (significant and non-significant)
    - Industrial Wastewater Facilities (significant and non-significant)
    - MS4s   - Industrial Stormwater
    - CAFOs   - Construction Outside MS4 Areas
    - Future Growth (may not include separate allocation if States, DC provide process for offsetting future growth)
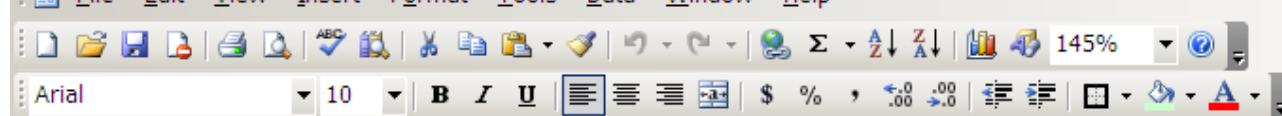
Chesapeake Bay Watershed Wasteload Allocations

	Bay Segment	State	Nutrient	PERMIT	Allocated Load (lbs/yr)	Allocated Concentration (mg/L)	Permit Type
3	POTTF	MD	Nitrogen	MD#######1	52000	1.0	POTW
4	POTTF	MD	Nitrogen	MD#######2	8000	1.0	POTW
5	POTTF	MD	Nitrogen	MD#######3	10000	1.0	MS4
6	POTTF	MD	Nitrogen	Aggregate WLA	20000	8.0	Non-significant WLA Aggregate
7	POTTF	MD	Nitrogen	Future Growth	10000	1.0	Future Growth WLA Aggregate
8	POTTF	DC	Nitrogen	DC#######1	20000	1.0	POTW
9	POTTF	DC	Nitrogen	DC#######2	20000	1.0	MS4
10	POTTF	DC	Nitrogen	Aggregate WLA	30000	8.0	Non-significant WLA Aggregate
11	POTTF	VA	Nitrogen	VA#######1	3000	1.0	POTW
12	POTTF	VA	Nitrogen	VA#######2	17000	1.0	POTW
13	POTTF	VA	Nitrogen	Aggregate WLA	8000	8.0	Non-significant WLA Aggregate
14	POTTF	PA	Nitrogen	Gross WLA	1250	NA	Gross WLA for PA
15	POTTF	NY	Nitrogen	Gross WLA	0	NA	Gross WLA for NY
16	POTTF	WV	Nitrogen	Gross WLA	750	NA	Gross WLA for WV
17	POTTF	ALL	Nitrogen	Total WLA	200000	NA	Total WLA for POTTF

Note:

May not include separate allocation for future growth if states/DC describe process for offsets

Load Allocation

For Tidal Fresh Segments:

LA_{SD} = Source Sector LAs (tidal state) + Gross LA (nontidal state)

Other Segments:

LA_{SD} = Source Sector LAs (tidal state)

- Source Sector LAs would be based on each state's and DC's Watershed Implementation Plan and would include:
    - Non-CAFO Agriculture
    - Urban/Suburban Runoff not subject to NPDES permits
    - Onsite Systems
    - Forest
    - Atm. Dep. to Bay (Atm. Dep. to watershed assumed within other WLAs and LAs)
    - Future Growth (may not include separate allocation if States, DC provide process for offsetting future growth)

Microsoft Excel - CB TMDL Nitrogen Example_113009.xls

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Chesapeake Bay Watershed Nitrogen Load Allocations

Bay Segment	State	Nutrient	Agri. Allocated Load (lbs/yr)	Forest Allocated Load (lbs/yr)	Other NPS Allocated Load (lbs/yr)	Atm. Dep Directly to Bay Allocated Load (lbs/yr)	Urban/Reds/Road Allocated Load (lbs/yr)	Future Growth Allocated Load (lbs/yr)	Onsite Systems Allocated Load (lbs/yr)	PA Gross Load (lbs/yr)	NY Gross Load (lbs/yr)	WV Gross Load (lbs/yr)	Allocated Load Sum (lbs/yr)
POTTF	MD	Nitrogen	150000	50000	35000	30000	20000	5000	5000				295000
POTTF	VA	Nitrogen	75000	25000	25000	15000	15000	5000	5000				165000
POTTF	DC	Nitrogen	0	50000	10000	14000	20000	500	500				95000
POTTF	DE	Nitrogen	0	0	0	0	0	0					0
POTTF	PA	Nitrogen								20000			20000
POTTF	NY	Nitrogen									0		0
POTTF	WV	Nitrogen										25000	25000
POTTF Total Allocated Load	ALL	Nitrogen	225000	125000	70000	59000	55000	10500		20000	0	25000	600000

Notes:

EPA responsible for direct atmospheric deposition to tidal waters; atmospheric deposition to the watershed assumed within allocations to agriculture, forest, and urban lands

May not include separate allocation for future growth if states, DC provide process for offsets

Bay Cap

- The Bay Cap will be set for each pollutant (N, P, and sediment) to meet water quality standards at critical conditions for the entire Bay as well as localized impairments.

  Bay Cap = $\sum$ Bay Impaired Segment TMDLs + $\sum$ Bay Unimpaired Segment Loads

- (i.e., Bay Cap based on Initial Target Loads would be 200 MPY for N and 15 MPY for P)