

# **DEVELOPING MULTIJURISDICTIONAL TMDLS**

## **AN UPDATE ON THE EFFORT TO DEVELOP *A NATIONAL POLICY MEMORANDUM***

**US EPA Office of Water**

**Office of Oceans, Wetlands and Watersheds**

**Headquarters, Washington DC**

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**New Orleans, Louisiana**

# *National MJTMDL Policy Memorandum Team*

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# Purpose of MJTMDL Policy Memorandum

- **Provide recommendations to TMDL practitioners for:**
  - Making assumptions about *pollutant loadings at jurisdictional boundaries*,
  - Developing MJTMDLs that must *consider varying water quality standards*,
  - Determining the legal and geographical limits for *the assignment of Wasteload Allocations (WLAs)*,
  - Defining the expectations for *incorporating Reasonable Assurance (RA)* into the final TMDL,
  - *Coordinating TMDL schedules and implementation* goals across multiple jurisdictions, and
  - Coordinating the *outreach and public review* process

# OGC Disclaimer

- This **DRAFT Memorandum** that provides **amazingly clever and really neat approaches** to MJTMDL development is neither a **regulation** nor does it impose any **legally binding requirements** on EPA, the States or authorized tribes.



# Nawlins Fun Fact #1



Is held to mark the beginning of the  
Lent season.  
It begins on 12<sup>th</sup> night and ends on  
"Fat Tuesday."



# Defining a MJTMDL

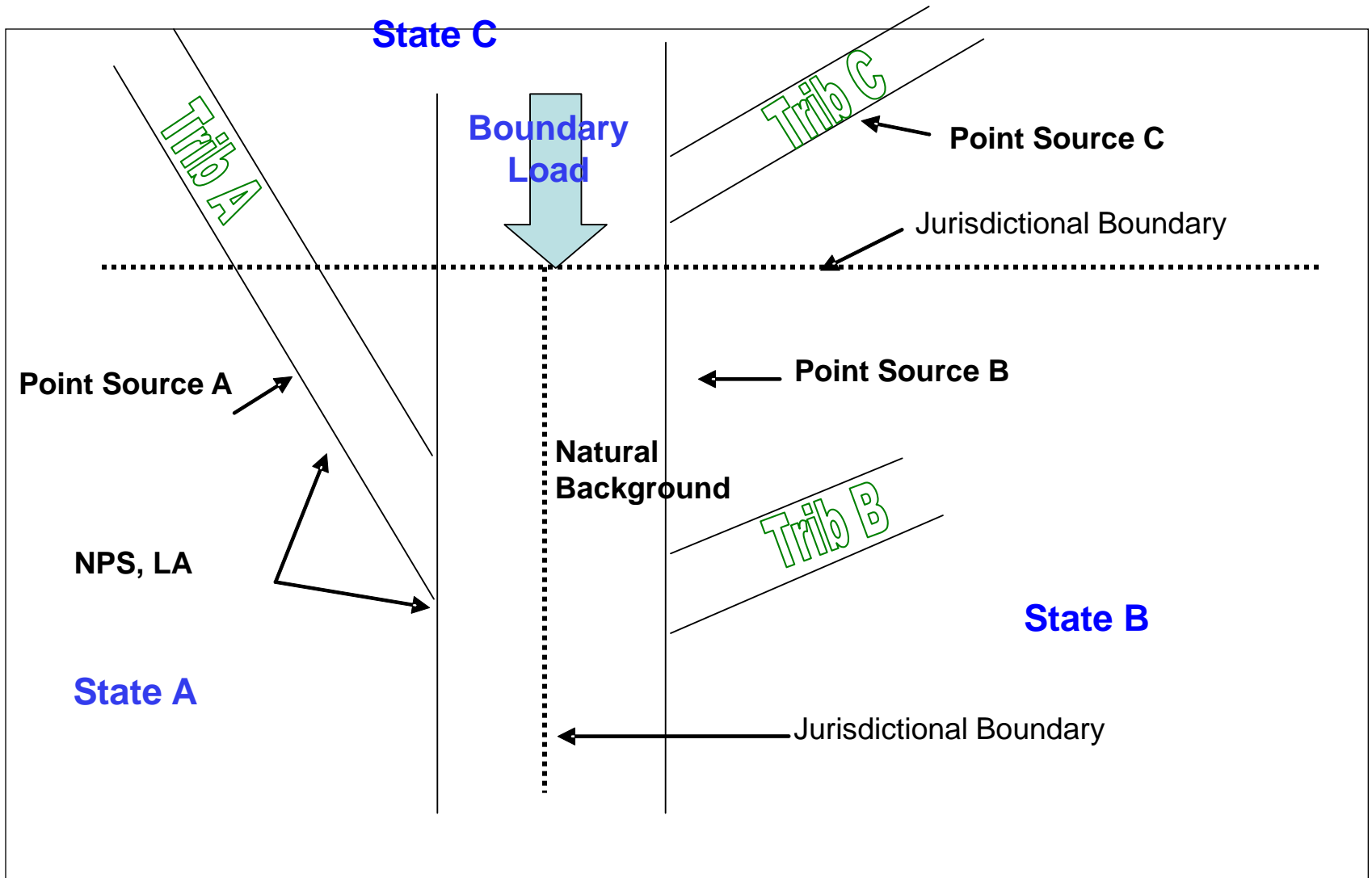
- **“Generic” definition of a TMDL 40 CFR 130.2(i)**
  - .....“the TMDL is the sum of the WLA plus the LAs for any nonpoint sources of pollution and natural background sources, *tributaries, or adjacent segments.*”
  
- **Highlights importance of considering:**
  - the *boundary loadings* of the pollutant of concern
  - from *tributaries and adjacent segments* when developing TMDL.
  - However, does not distinguish whether trib. loadings are from *one or more jurisdiction*

# Defining a MJTMDL

- **A TMDL** developed for one or more waterbodies in a watershed that is ***located in more than one jurisdiction***.
  - **Impaired segments** addressed in the TMDL may be located ***in one or more jurisdiction***.
  - The ***pollutants and sources causing and/or contributing*** to the impairments may originate in one or more jurisdictions.
  - The pollutant allocations ***result in the attainment of all applicable water quality standards*** in the watershed.
  - The TMDL may be ***developed by one or more jurisdictions***, or ***established by EPA*** (one or more Regions).
  - Contains all the ***“Bells & Whistles”*** of any TMDL



# Multi-jurisdictional Scenarios





# Legal Basis for MJTMDL



## **CWA Section 319(g) –**

States can petition EPA to convene a conference between States/Tribes to resolve disputes regarding nonpoint pollutant source load reductions **to meet a downstream State's water quality standards.**

## **CWA Section 402(b)(5) –**

**To issue permits which...insure that any State (other than the permitting State), whose waters may be affected by the issuance of a permit may submit written recommendations to the permitting State (and the Administrator) with respect to any permit application and, if any part of such written recommendations are not accepted by the permitting State, that the permitting State will notify such affected State (and the Administrator) in writing of its failure to so accept such recommendations together with its reasons for so doing;**

## **CWA Section 518 (e)(3) –**

The Administrator shall...consult **affected States sharing common water bodies** and address...consequences that may arise as a result of **differing water quality standards** that may be set by States and Indian tribes **located on common bodies of water.....**shall provide for explicit consideration of **... the effects of differing water quality permit requirements on upstream and downstream dischargers.....**

## **40 C.F.R. 122.4(d) –**

Upstream and adjacent State point sources cannot **cause or contribute to a violation of a downstream State's water quality standards.** No permit can be issued when the imposition of conditions **cannot ensure compliance with the applicable water quality requirements of all effected states,**

## **40 C.F.R. 122.44(d)(1)(i)–**

Each NPDES permit shall include conditions that achieve water quality standards established under 303 of the CWA..." for pollutants which the director determines **are or may be discharged at a level which will cause, or contribute to an excursion above any state water quality standard...**"

## **40, CFR 131.10 (b)**

Provides that "In designating uses of a water body and the appropriate criteria for those uses, the State **shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the water quality standards of downstream waters.**"

# Nawlins Fun Fact # 2

## Louisiana State Doughnut

- The beignet (ben-YAY) became Louisiana's state doughnut in 1986. A beignet is a square, puffy doughnut sprinkled with powdered sugar. It does not have a hole in the middle.



# Challenges Associated with a *Multijurisdictional TMDL*

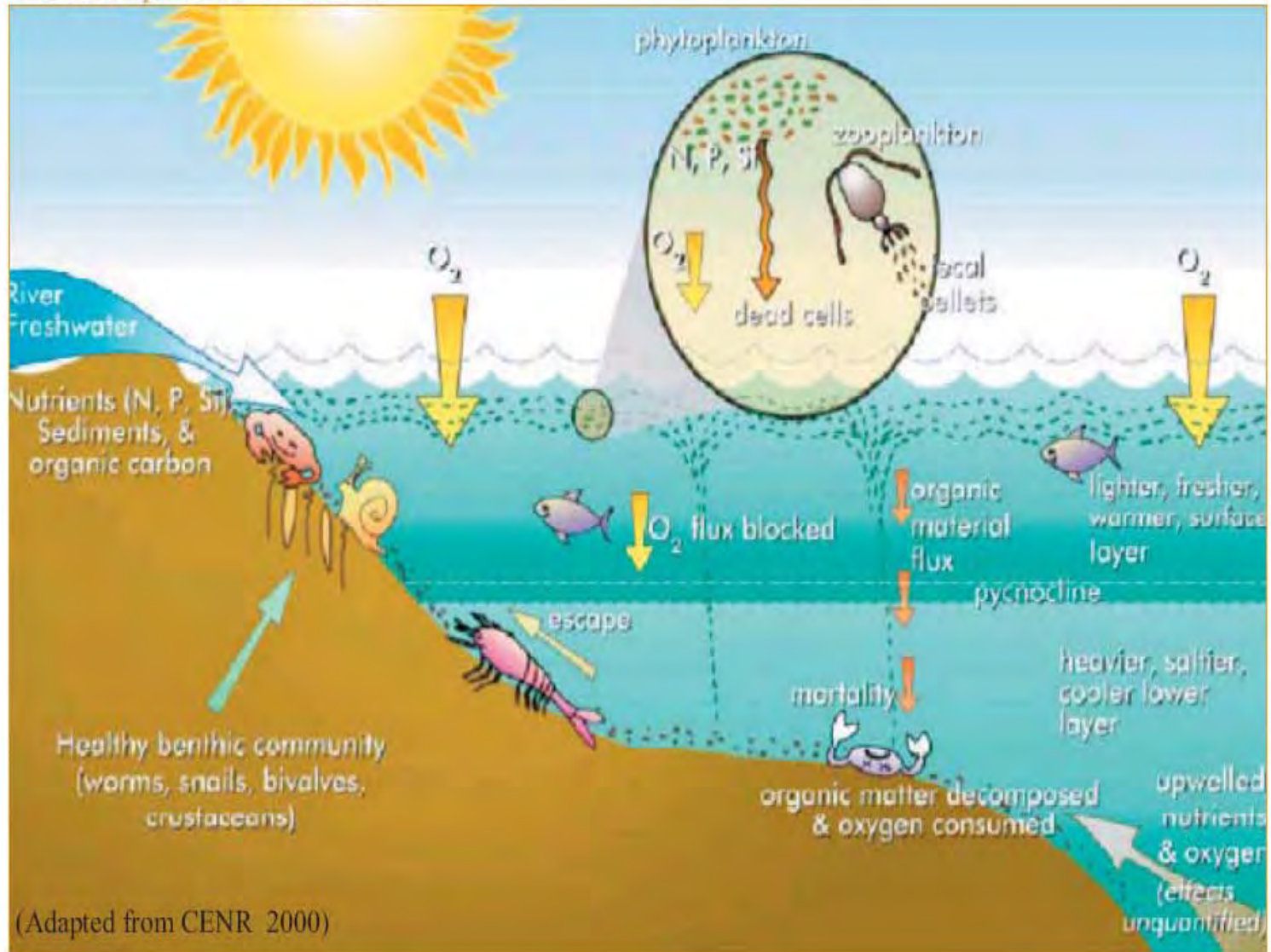
- **Quality & quantity of data** may vary by jurisdiction
- Jurisdictions may have significantly **different WQS**
- **303(d) Listing** of waters/watershed of concern may vary
  - May be **considered impaired in one jurisdiction but not in all**
  - **Schedules and Priorities** for developing TMDLs may differ
- **Source(s) of the pollutant** causing the impairment(s):
  - May be within only one jurisdiction or in more than one jurisdiction
- TMDL needs to **address both near/far field impacts**
  - Must demonstrate that **all wqs within water body/watershed are attained and maintained**

# Challenges Associated with a *Multijurisdictional TMDL*

- ***Authority for NPDES permitting*** may vary by jurisdiction
- ***Ability to control non point sources*** may vary by jurisdiction
- ***Public processes for review/comment*** may vary by jurisdiction
- May involve ***one or more EPA Regions***



## The Eutrophication Process ~



# CHESAPEAKE BAY NUTRIENT BUDGET

## CONCEPTUAL MODEL

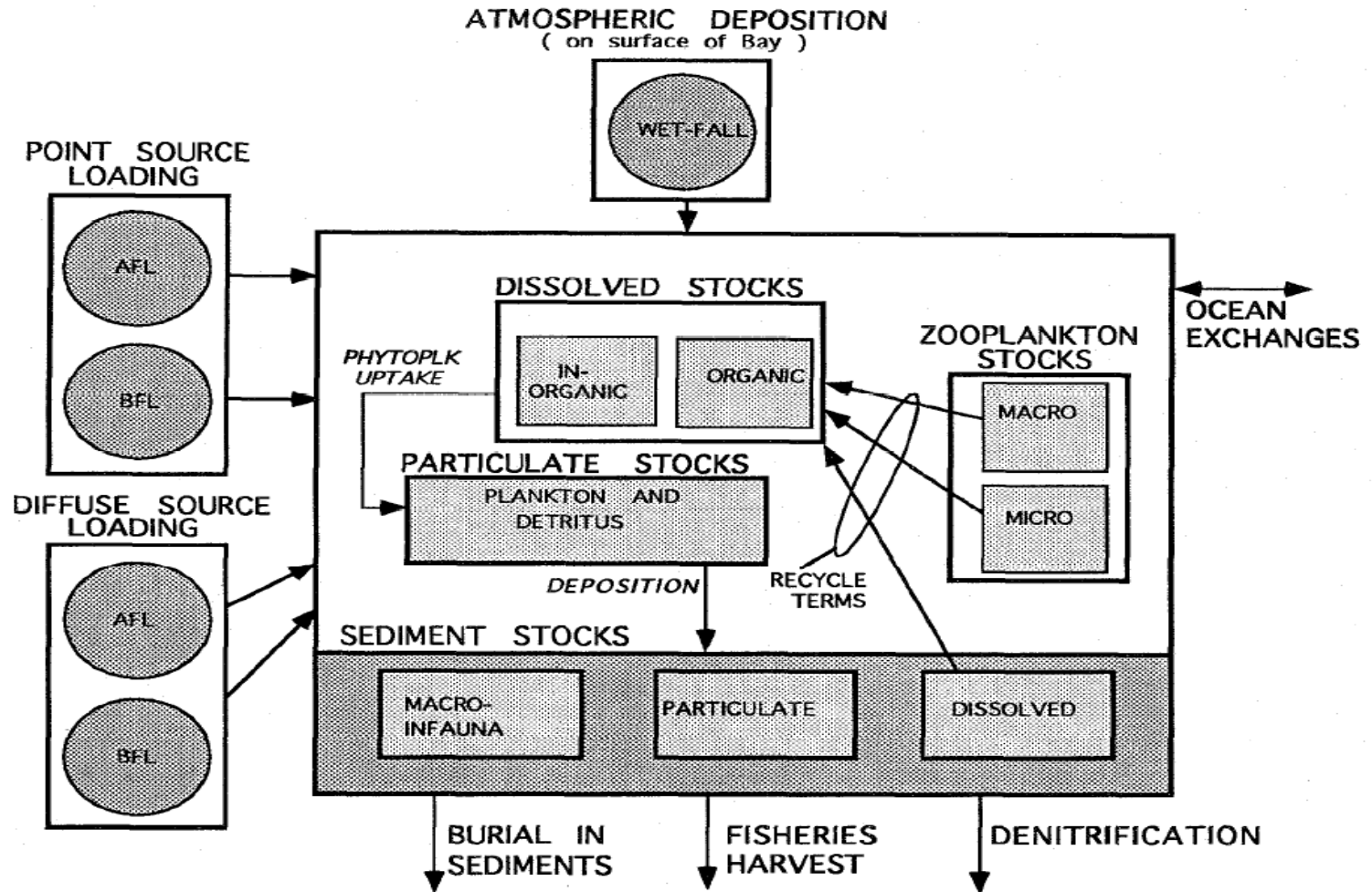


Fig. 1. A schematic diagram of nutrient budgets. Nutrient sources, storages, recycle pathways, internal losses, and exchanges across the seaward boundary are indicated. The pathways labeled in italics were not evaluated but were included in the diagram for completeness. The designations AFL and BFL refer to above and below hydrologic fall-lines, respectively. Further description of components of the budget is provided in Table 1.

## *Nawlins Fun Fact # 3*

# Louisiana Wetlands are Disappearing

- Coastal Louisiana is eroding at the rate of four football fields every day.
- Many endangered species make their homes in our wetlands.

# MJTMDL In the Chesapeake Bay

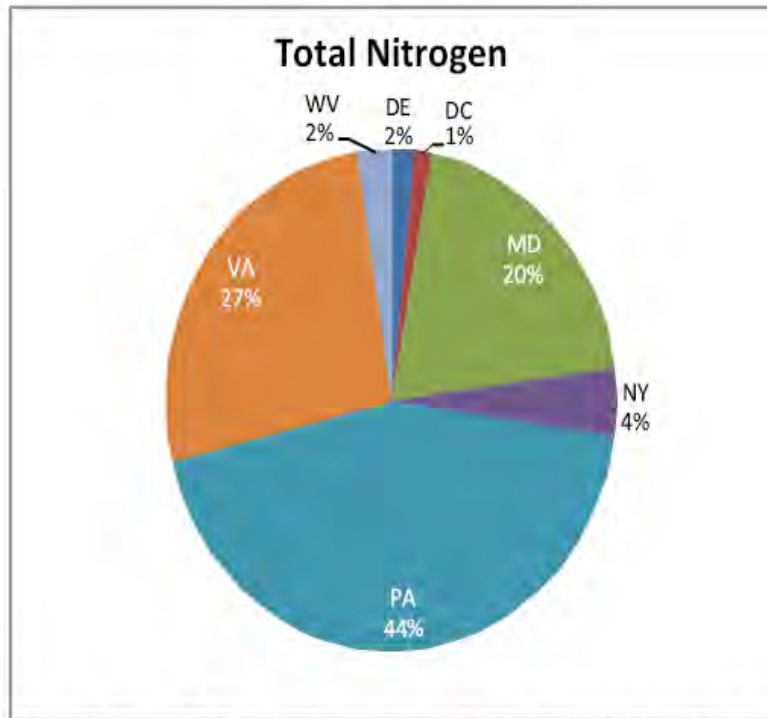
## Chesapeake Bay Watershed- By the Numbers

- Largest U.S. estuary
- Six-states and DC, 64,000 square mile watershed
- 10,000 miles of shoreline (longer than entire U.S. west coast)
- Over 3,600 species of plants, fish and other animals
- Average depth: 21 feet
- \$750 million contribution annually to local economies
- Home to 17 million people (and counting)
- 77,000 principally family farms
- Declared “national treasure” by President Obama

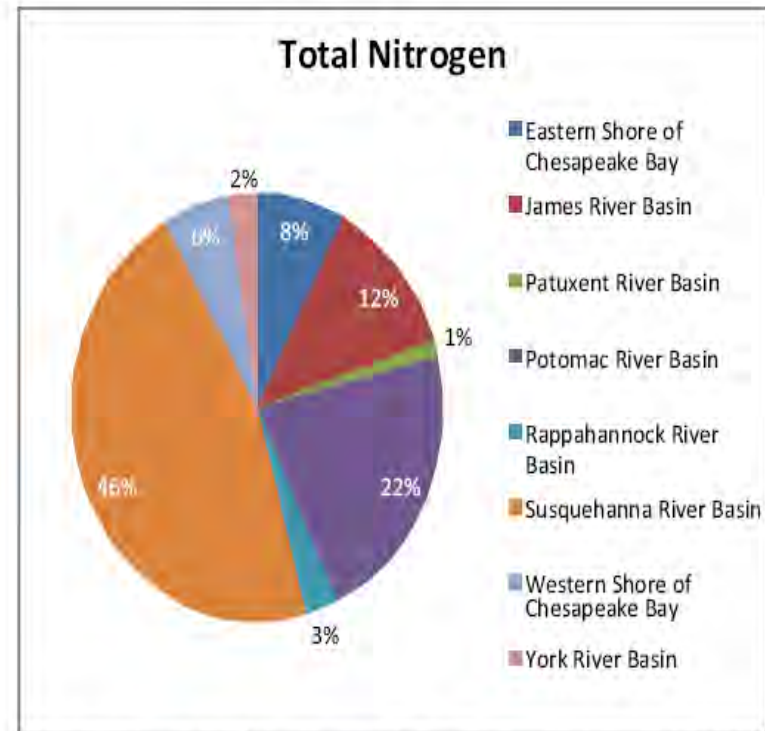




# Relative TN Loading by State and River Basin



Source: Phase 5.3 Chesapeake Bay Watershed Model 2009 Scenario



Source: Phase 5.3 Chesapeake Bay Watershed Model 2009 Scenario

# Taking Responsibility for Load Reductions



**Identify basinwide target loads**

**EPA, States, DC**

**Identify major basin by jurisdiction target loads**

**EPA, States, DC**

**Identify tidal segment watershed, county and source sector target loads**

**States, DC, local governments & local partners**

# Principles & Guidelines for N&P Basin Allocations in the Chesapeake Bay TMDL:

- ▣ Allocated loads result in attainment of all WQS in all segments of the Bay mainstem, tributaries
- ▣ Major river basins that contribute the most to the Bay water quality problems must do the most
- ▣ Account for geographic/source loading influence of individual river basins on tidal water quality
- ▣ Relate controllable load with ***relative effectiveness*** to determine allocations

# Assessing Relative Effectiveness

- ▣ Used Bay WQ & WS Model to estimate attenuation of N&P load through the watershed.
- ▣ Assessed results of ***relative effectiveness***:
  - Northern major rivers have greater influence than southern major river on central Bay and lower Potomac River DO levels
  - N & P from southern rivers have less influence on main stem Bay WQ because of proximity to mouth of the Bay.
  - Long riverine estuaries, with longer water residence times, allow nitrogen and phosphorus attenuation (burial and denitrification)

# Relative Effectiveness of N and P

## □ Relative effectiveness:

- Accounts for the role of geography/origin of N & P load
- Management measure on water quality in the Bay, varies depending on the location of its implementation within the watershed
- Relative effectiveness evaluates the effects of both **estuarine transport** (location of discharge/runoff loading to the Bay) and **riverine transport** (location of the discharge/runoff loading in the watershed)
- EPA determined the relative effectiveness of each contributing river basin in the overall Bay watershed on DO in mainstem Bay and key Tributary segments



# Relative Effectiveness of N and P

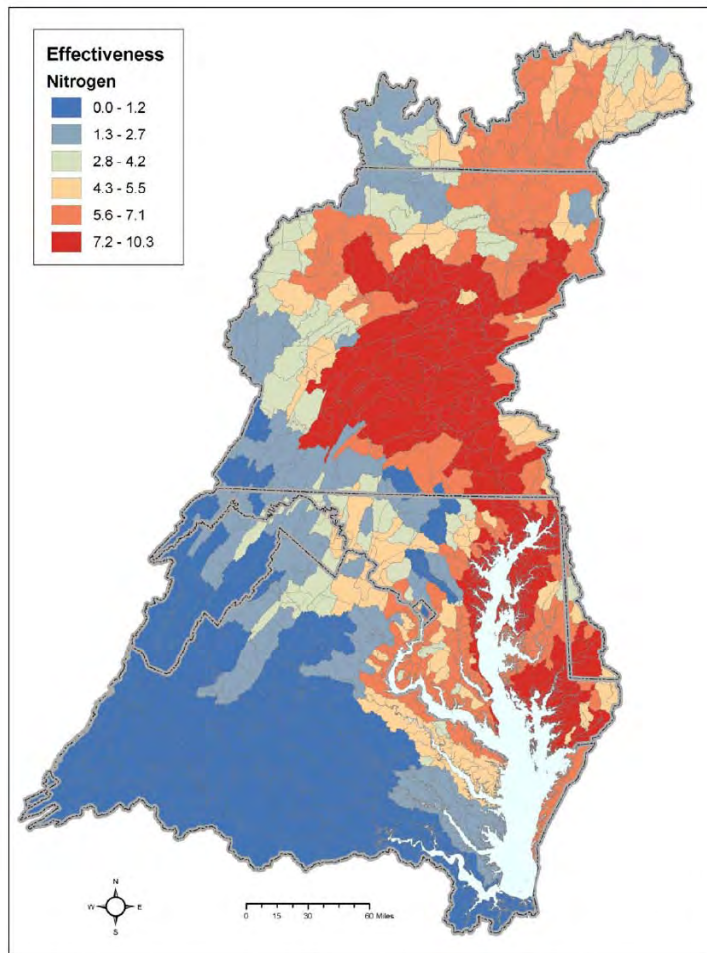


Figure 6-5. Relative effectiveness illustrated geographically by subbasins across the Chesapeake Bay watershed for nitrogen.

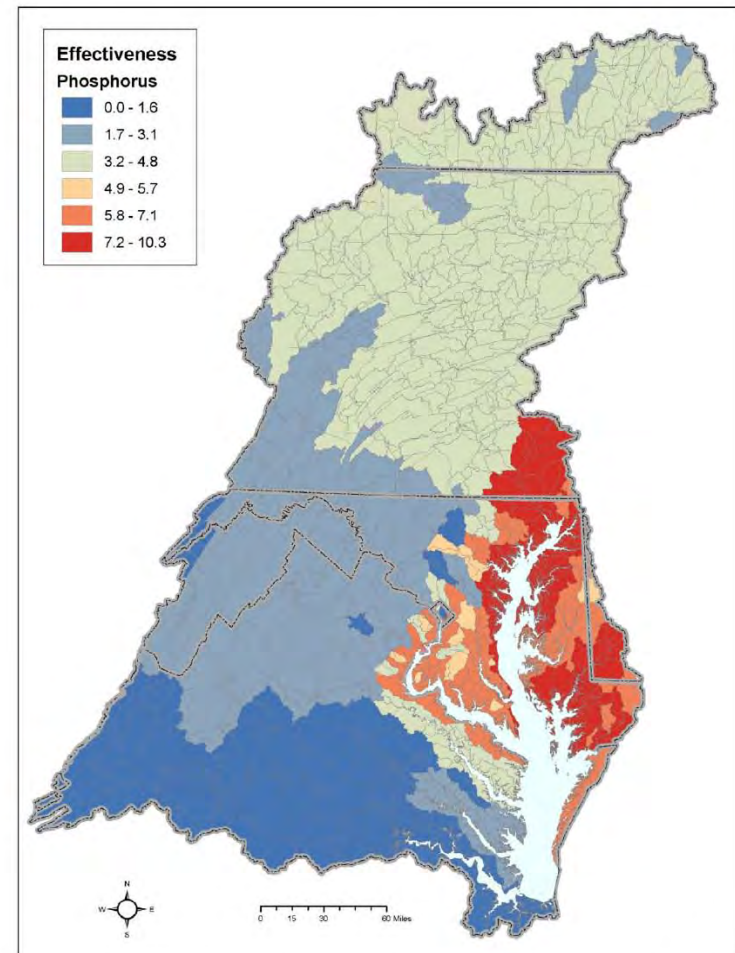
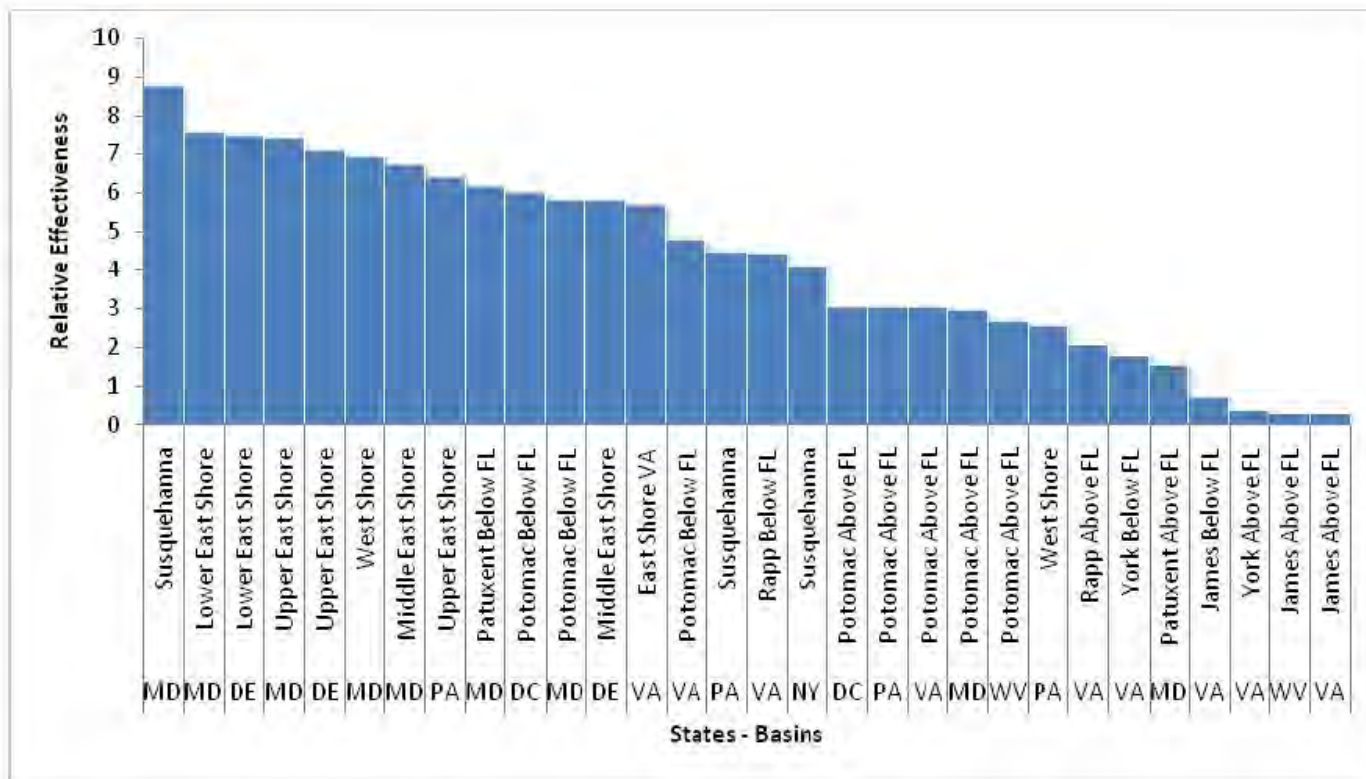


Figure 6-6. Relative effectiveness for illustrated geographically by subbasins across the Chesapeake Bay watershed for phosphorus.

# Relative Effectiveness for N&P Major River Basins



Source: Table 6-3

Figure 6-4. Relative effectiveness for nitrogen for the watershed jurisdictions and major rivers basins, above and below the fall line, in descending order.

# Loadings Resulting from Relative Effectiveness for N&P By Jurisdiction

Table 4-1. Percentage of total nitrogen delivered to the Bay from each jurisdiction by pollutant source sector

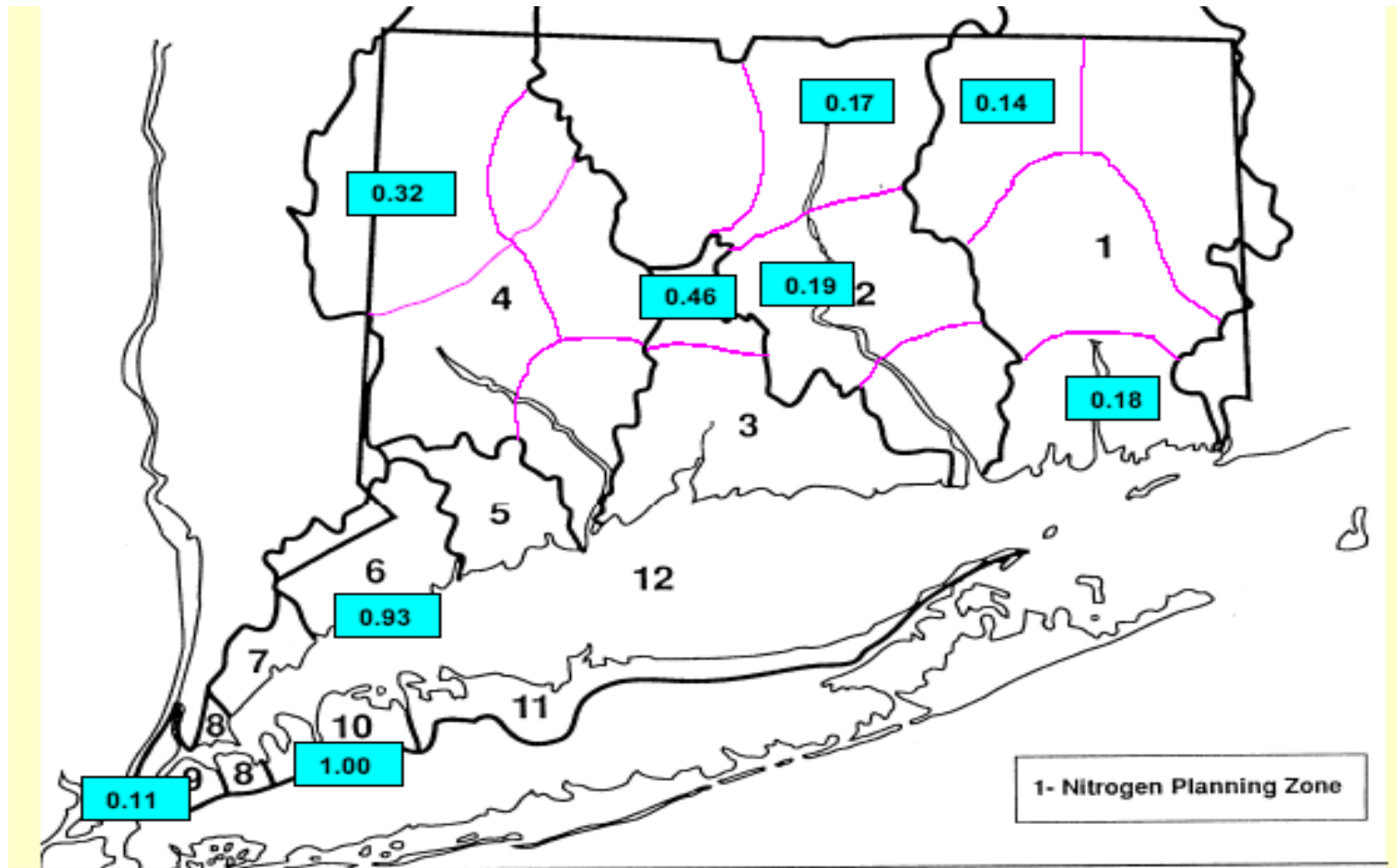
Jurisdiction	Agriculture	Forest	Stormwater runoff	Point source	Septic	Nontidal deposition
Delaware	3%	1%	1%	0%	2%	1%
District of Columbia	0%	0%	1%	5%	0%	0%
Maryland	16%	14%	28%	27%	36%	27%
New York	4%	7%	3%	3%	5%	5%
Pennsylvania	55%	46%	33%	25%	30%	42%
Virginia	20%	27%	33%	39%	24%	25%
West Virginia	3%	4%	2%	1%	2%	1%
Total	100%	100%	100%	100%	100%	100%

Source: Phase 5.3 Chesapeake Bay Watershed Model 2009 Scenario

Note: Nontidal deposition refers to atmospheric deposition direct to nontidal surface waters.



# Relative Effectiveness in Long Island Sound TMDL



# Nawlins Fun Fact #4

## Louisiana State Tree

- The Bald Cypress, growing in the swamps of our state, was designated as the state tree in 1963.
- The bald cypress got its name because it loses its leaves in the winter.
- Bald cypress trees growing in water sometimes have bumps in their roots called "knees."



# Some “Back of the Envelope” Number Crunching

- **Presents both Opportunities and Challenges**
  - ▣ Opportunity for more cost effective TMDLs
    - Lower cost per impaired segment
    - Potential to optimize reductions by source and location
  
- **Total number of TMDLs needed – 71,000**
  - ▣ Total Nutrient related – **18,000\***
    - Represents approximately 25% of all remaining TMDLs
  
- **Assume that 10% of impairments are multistate**
  - ▣ Over 7,000 MJTMDLs for all pollutants
  - ▣ Over 1,800 MJTMDLs for Nutrient related pollutants
    - Total all pollutants - **540-875/year**
    - Nutrient related – **140-225/year**

\* Nutrients, organic enrichment, turbidity, noxious plants, algal growth and ammonia

# EPA Recommended Approaches for MJTMDLs

- **Spatial extent of the watershed modeling approach**
  - ▣ Reflect collective goals/objectives of all hydrologically linked jurisdictions
  - ▣ Conduct watershed-wide modeling/analysis to assess all pollutant loadings in all jurisdictions.
  - ▣ Watershed approach has highest probability of producing equitable and implementable allocations to sources
  
- **Geographical limits for individual WLAs and LAs**
  - ▣ Allocate individual WLAs & sector-specific LAs throughout
    - Assures attainment of WQS
    - Informs issuance of NPDES permits for all dischargers
    - Provides FYI WLAs & LAs for consideration during future TMDL development and NPDES permitting actions

# EPA Recommended Approaches for MJTMDLs

- **Pollutant loadings at jurisdictional boundaries**
  - Loads set at levels that do not cause/contribute to impairment of WQS at that boundary or downstream
  - Most informative approach is to conduct modeling/analysis at the watershed scale, incorporating loads from all contributing jurisdictions
  
- **Targeting multiple water quality standards.**
  - States/Tribes jointly develop TMDL target to protect the most sensitive use
  - If needed, EPA serves as facilitator in resolving state differences/conflicts
  - Where it is not possible to resolve differences in developing the TMDL, or to develop consistent standards in the short term, it may be appropriate for EPA to serve as the lead in developing the TMDL.

# EPA Recommended Approaches for MJTMDLs

## □ **Incorporating reasonable assurance.**

- MJTMDLs that consider pollutant loadings from both point and nonpoint sources must include reasonable assurances that nonpoint source control measures will achieve expected load reductions.
- Watershed TMDL framework provides mechanism for targeting non point source controls and facilitating identification of feasible allocation options

## □ **Coordinating TMDL schedules across multiple jurisdictions.**

- Initiate cooperative approaches for both MJTMDLs during development 303(d) list Integrated Report submission to EPA
- Coordinate prioritization and scheduling of TMDL development



# Next Steps in MJTMDL Guidance

- Recently completed Regional review
  - ▣ Comments received ***February 10***
  - ▣ Open to additional comments until ***March 1***
  
- State and other Stakeholder review
  - ▣ Work through ASIWPCA and ECOS to make Draft available for comment until ***mid to late April***