Methodology for the Phase III WIP Planning Targets

Gary Shenk - CBPO

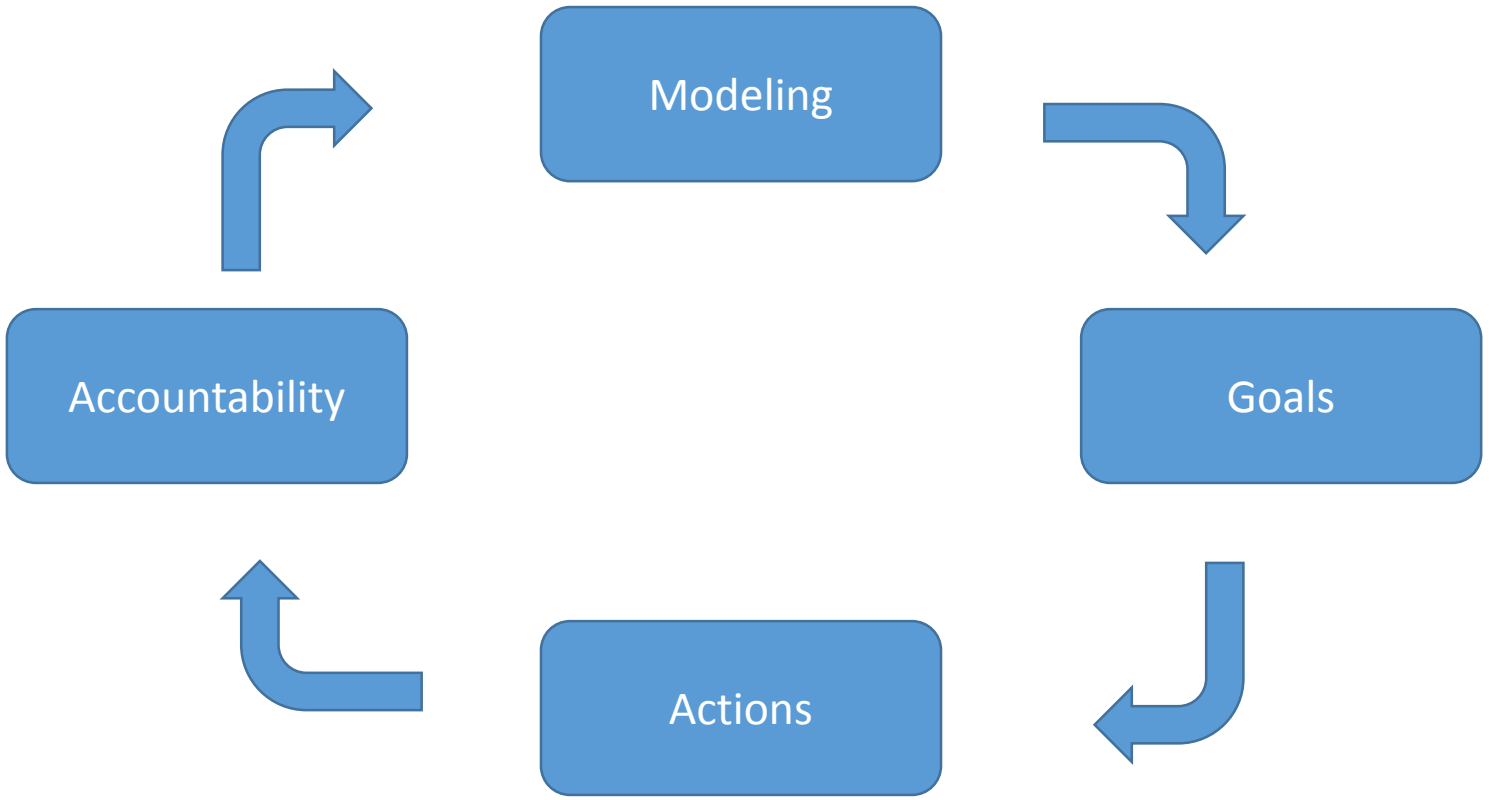
Decisions

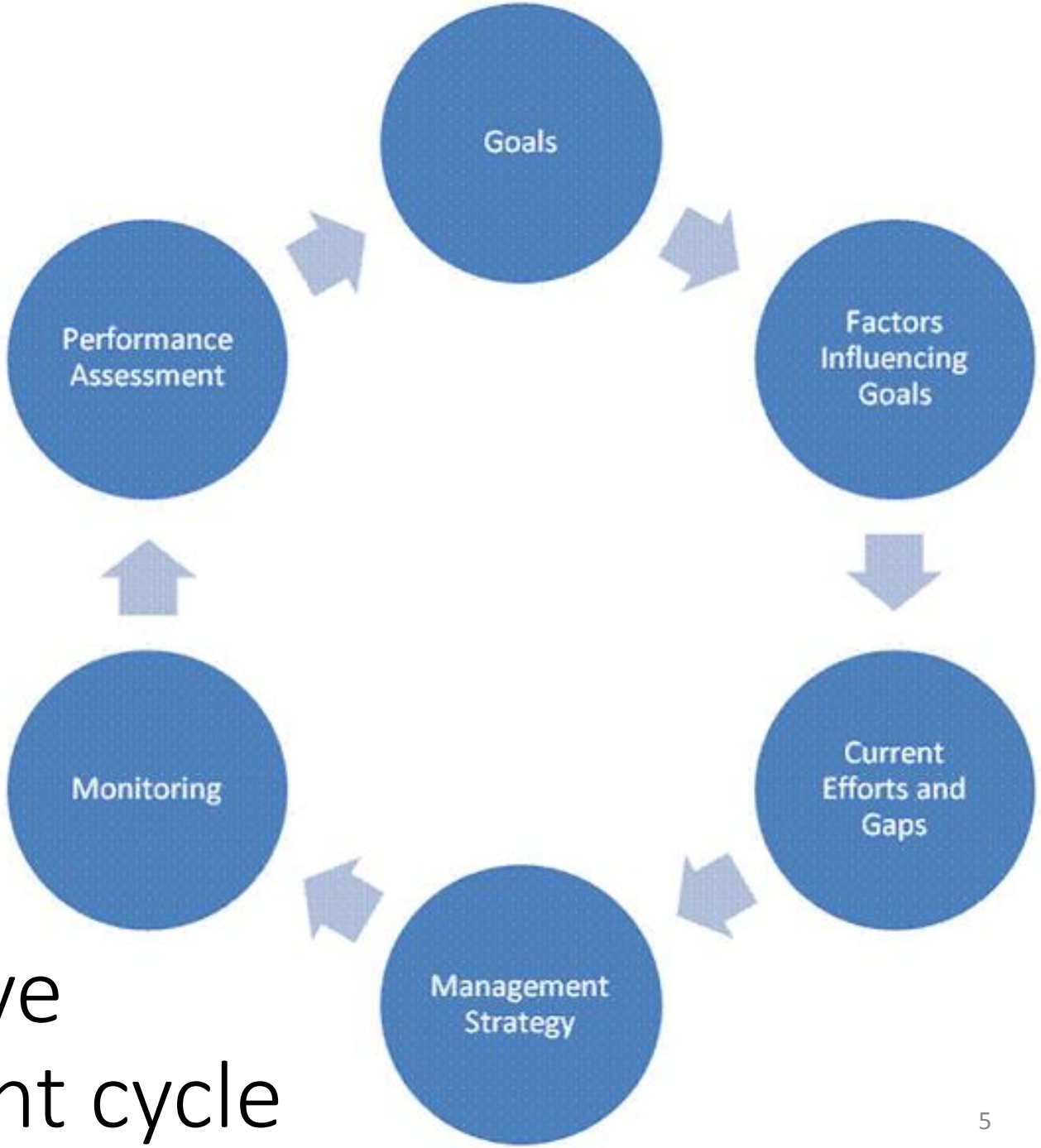
- Timeline - WQGIT to make decision on the planning target methodology in June of 2016
- What additional information would you like to see in order to make the decision?
- Approval includes WQGIT, MB, and PSC

New Targets ?!?!

Year	Model Phase	Goal
• 1987	0	40% reduction
• 1992	2	40% of controllable loads
• 1997	4.1	Confirm 1992 loads
• 2003	4.3	Reallocation
• 2010	5.3.0	TMDL
• 2011	5.3.2	Phase 2 WIP targets
• 2017	6.0	Phase 3 WIP targets

Virtuous Cycle?

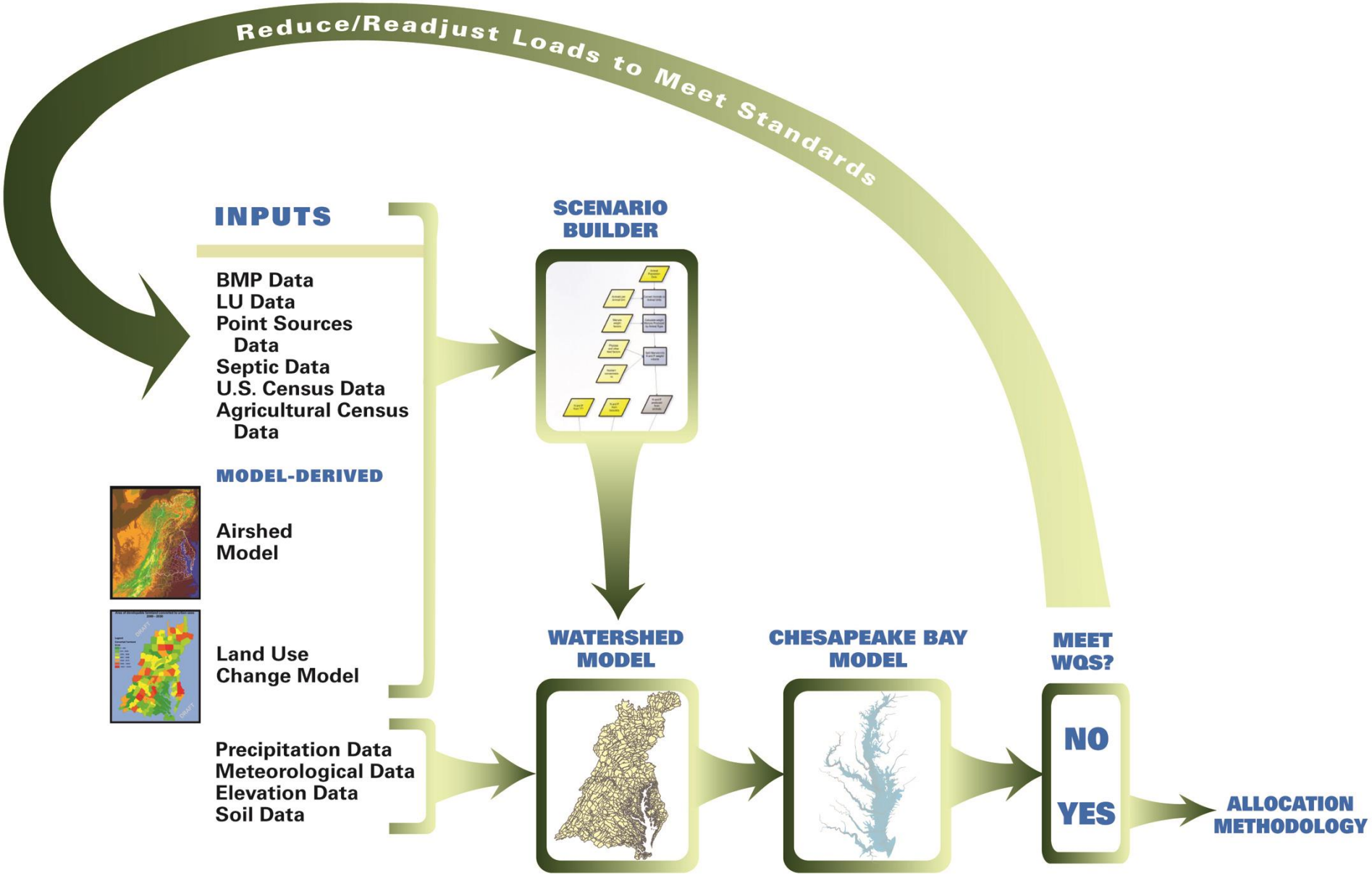




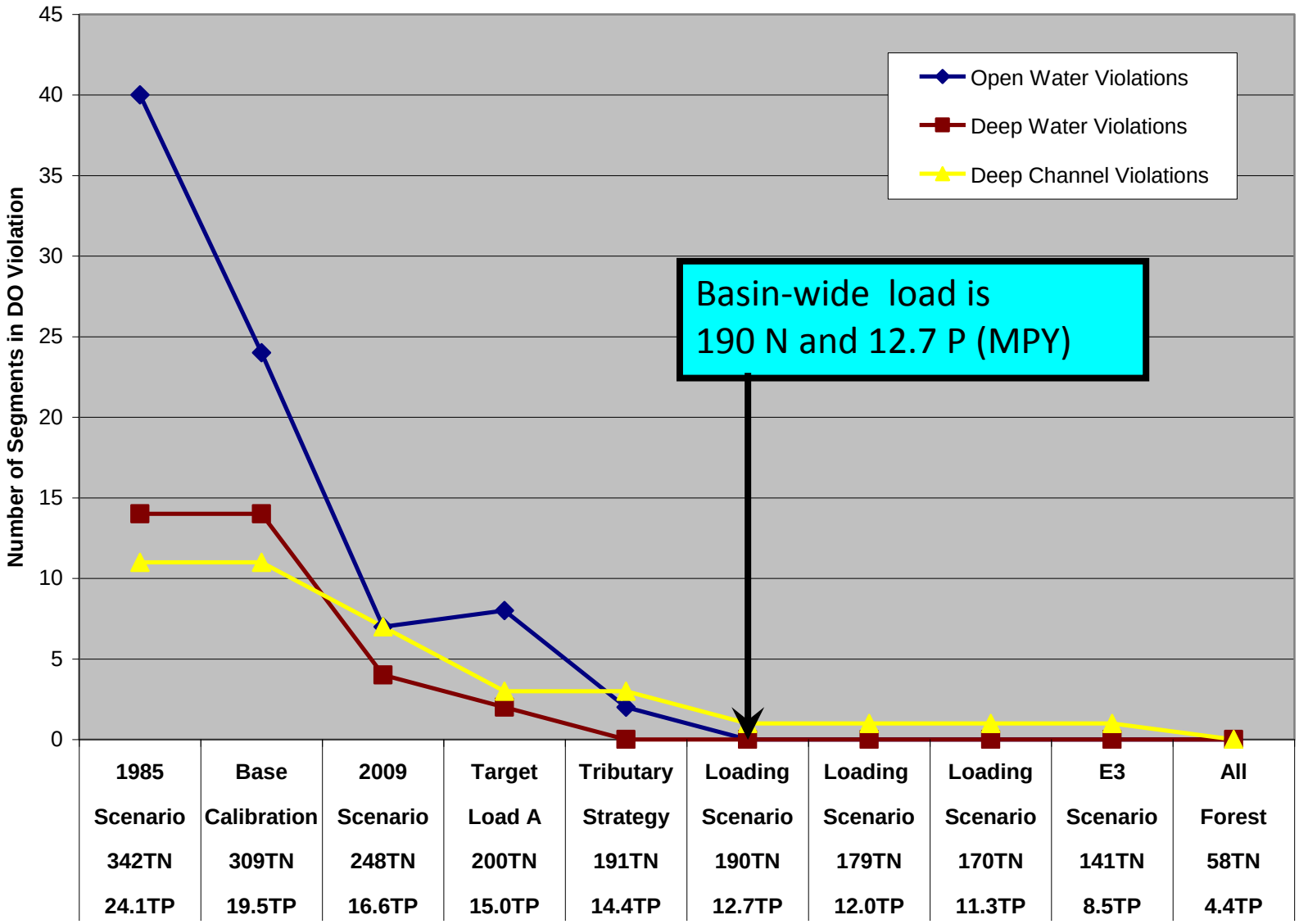
CBP Adaptive Management cycle

Default Method: Principles

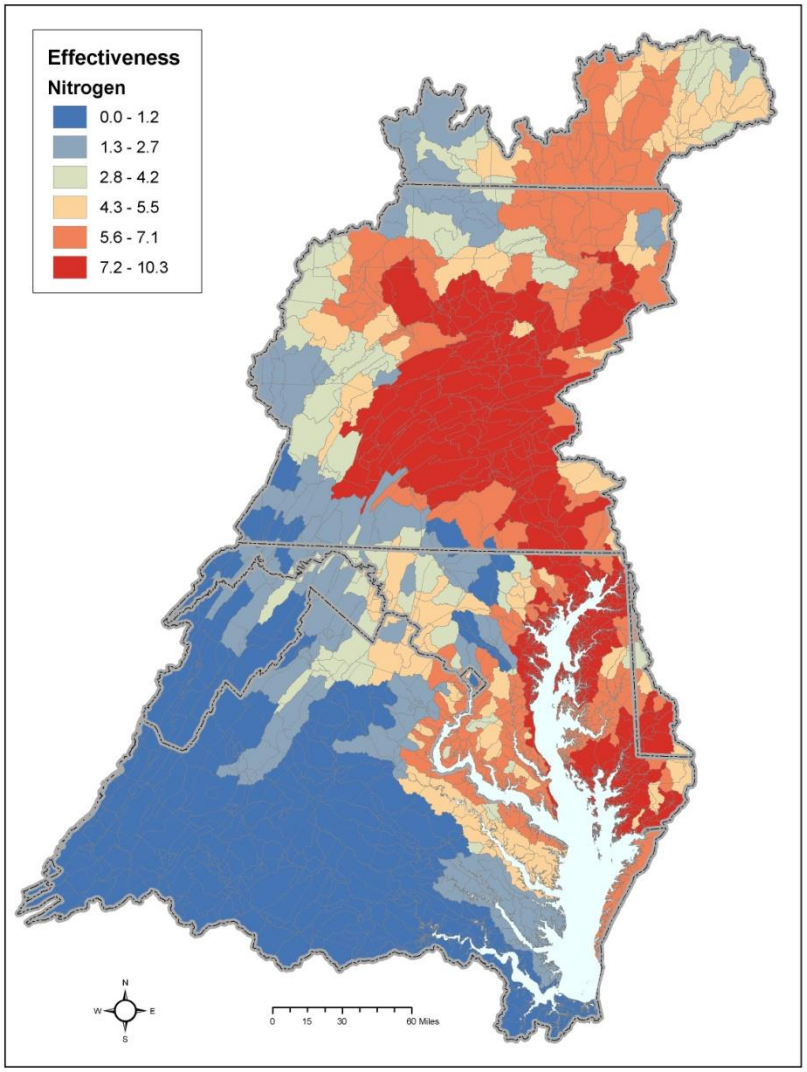
- Attain WQ Standards
- Areas that contribute the most to the Bay water quality problems must do the most to resolve those problems (on a pound-per-pound basis).
- All tracked and reported reductions in nitrogen and phosphorus loads are credited toward achieving final assigned loads.

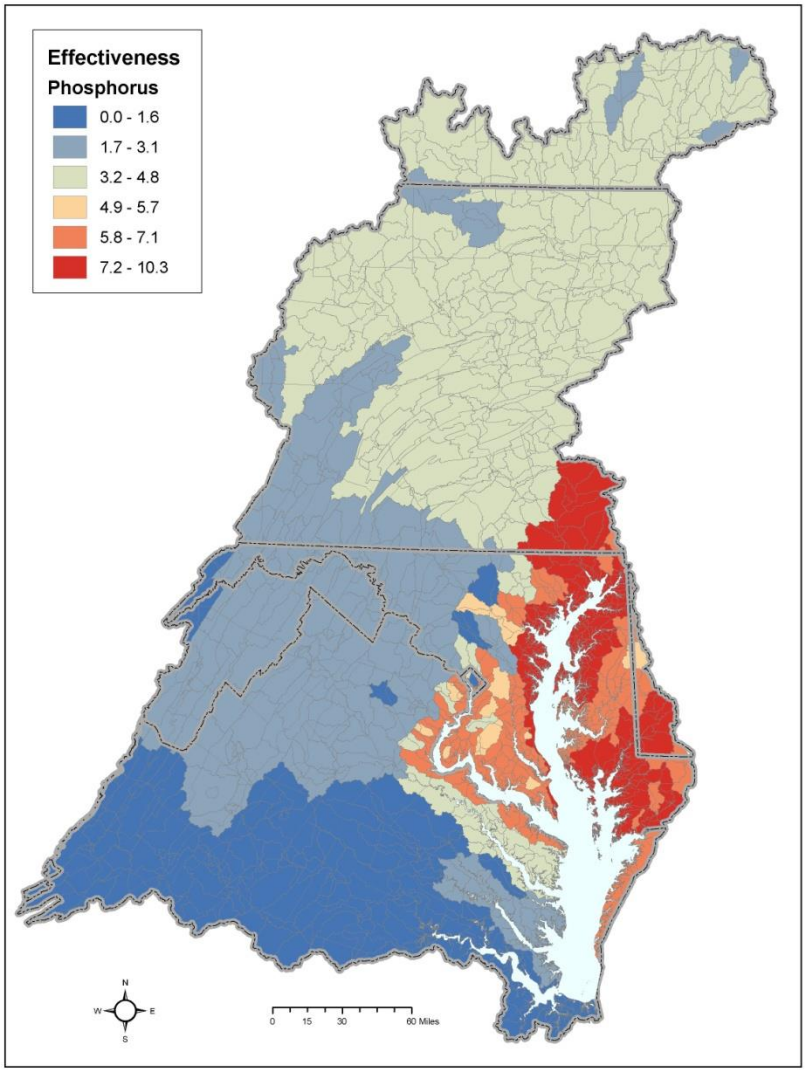

Reduce/Readjust Loads to Meet Standards
INPUTS
BMP Data
LU Data
Point Sources Data
Septic Data
U.S. Census Data
Agricultural Census Data
MODEL-DERIVED
Airshed Model
Land Use Change Model
Precipitation Data
Meteorological Data
Elevation Data
Soil Data
SCENARIO BUILDER
WATERSHED MODEL
CHESAPEAKE BAY MODEL
MEET WQS?
NO
YES
ALLOCATION METHODOLOGY

Dissolved Oxygen Criteria Attainment

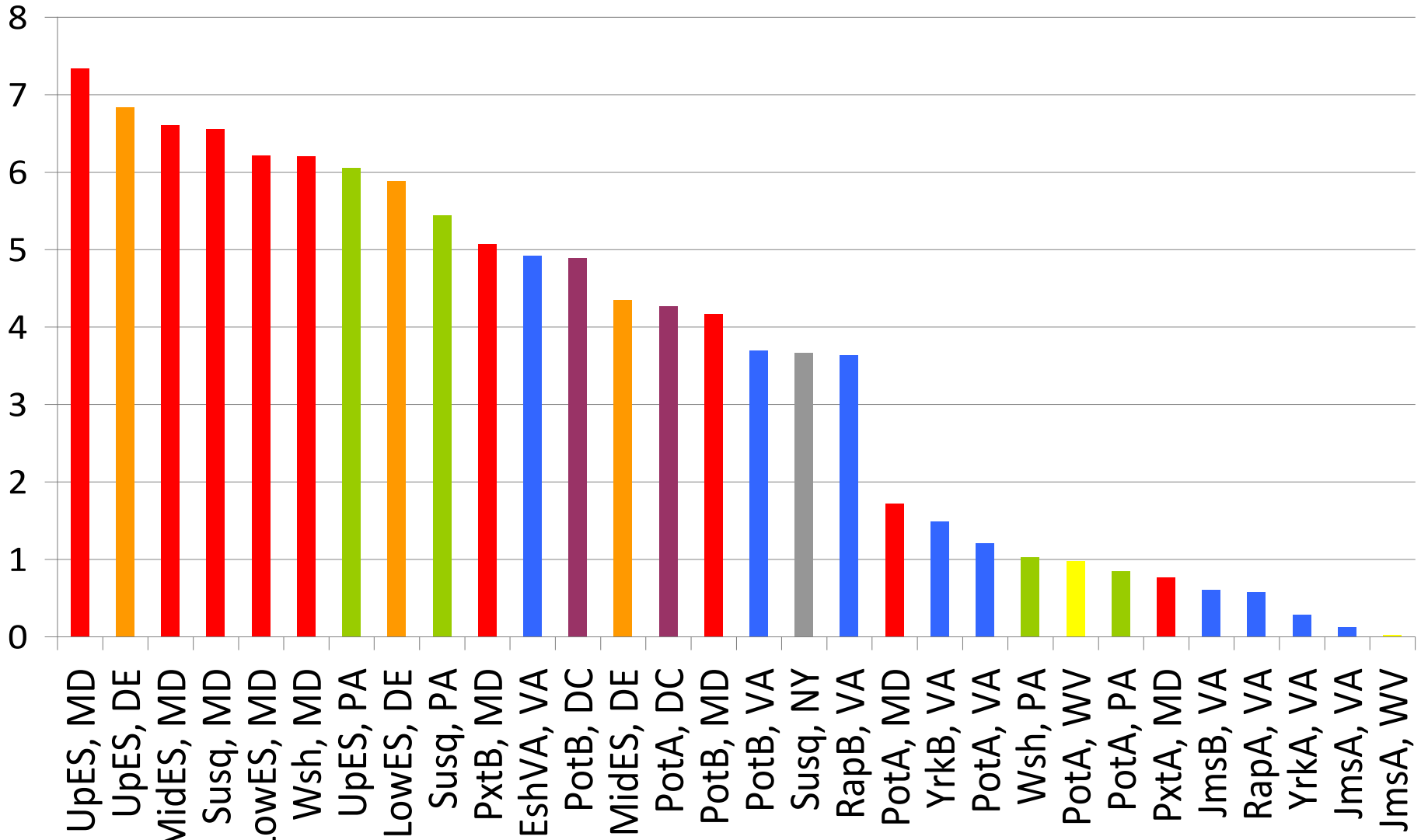


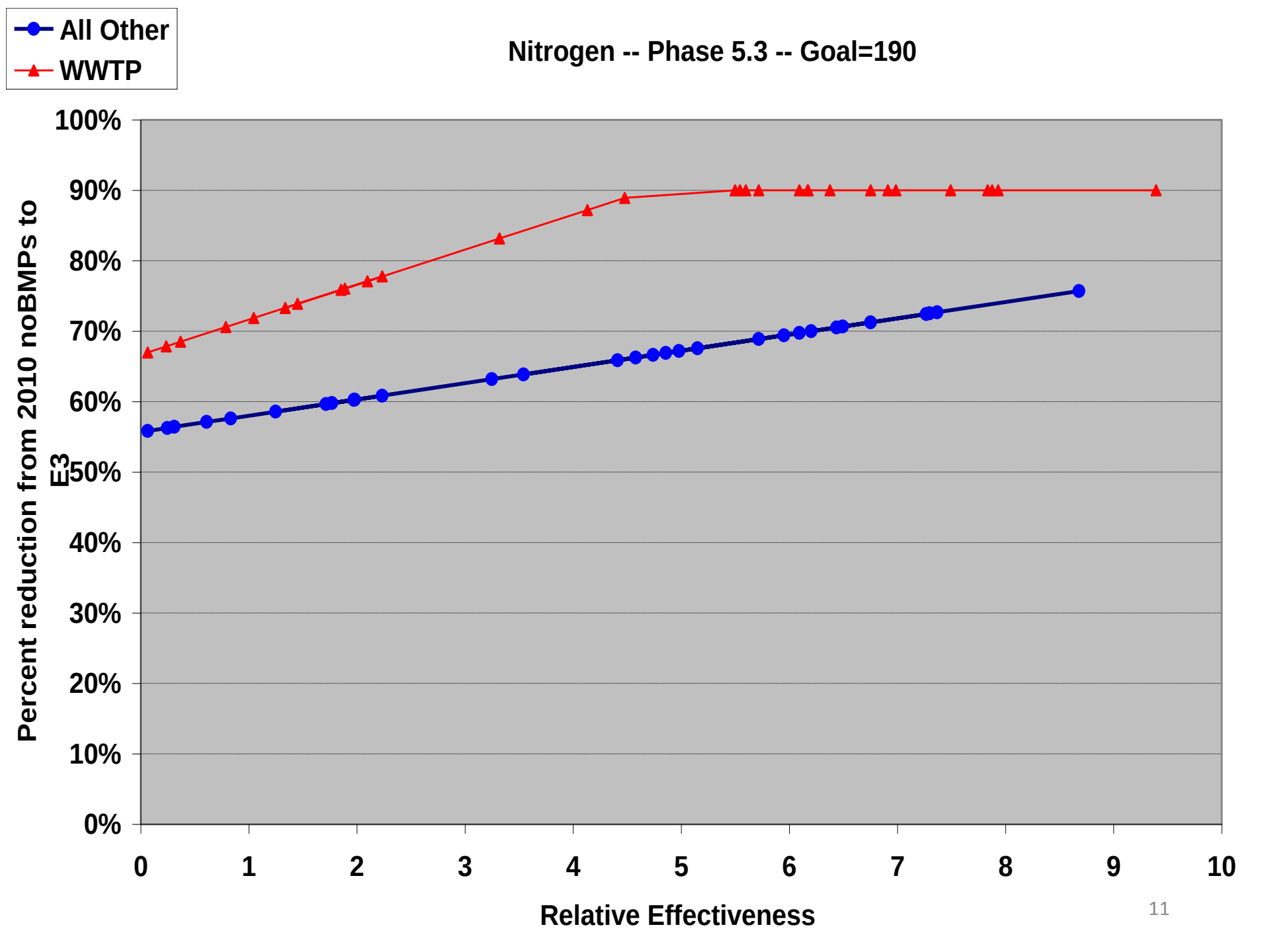
Relative Effect of a Pound of Pollution on Bay Water Quality

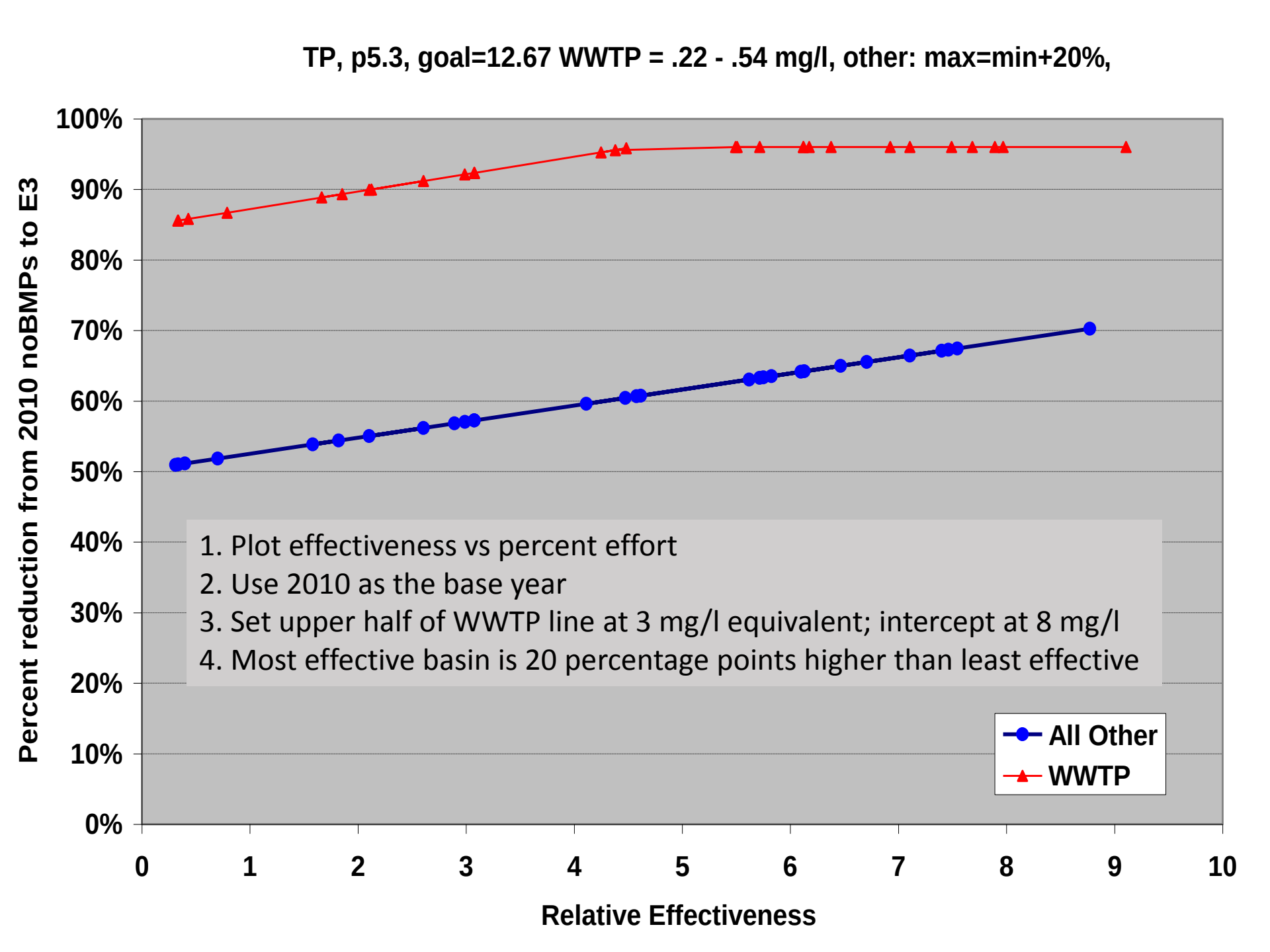




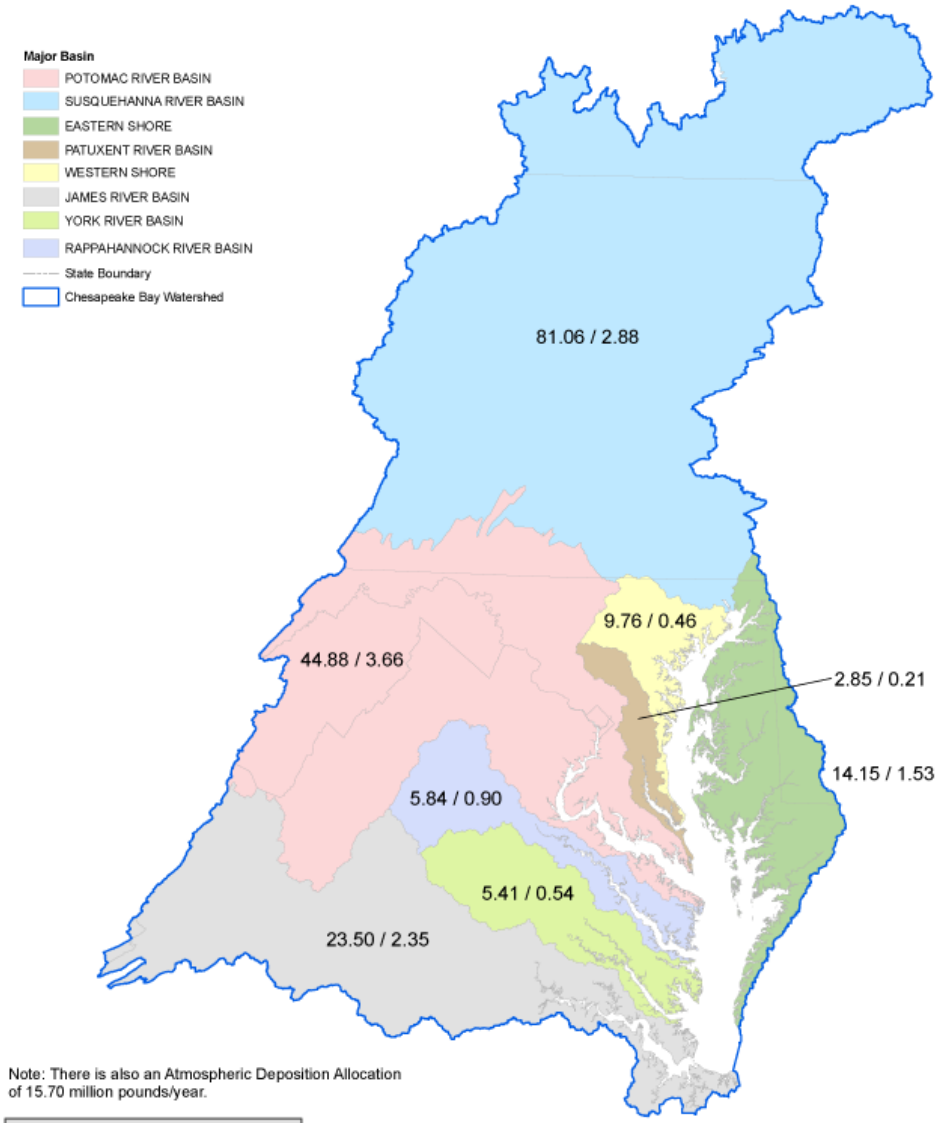
Major River Basin by Jurisdiction Relative Impact on Bay Water Quality



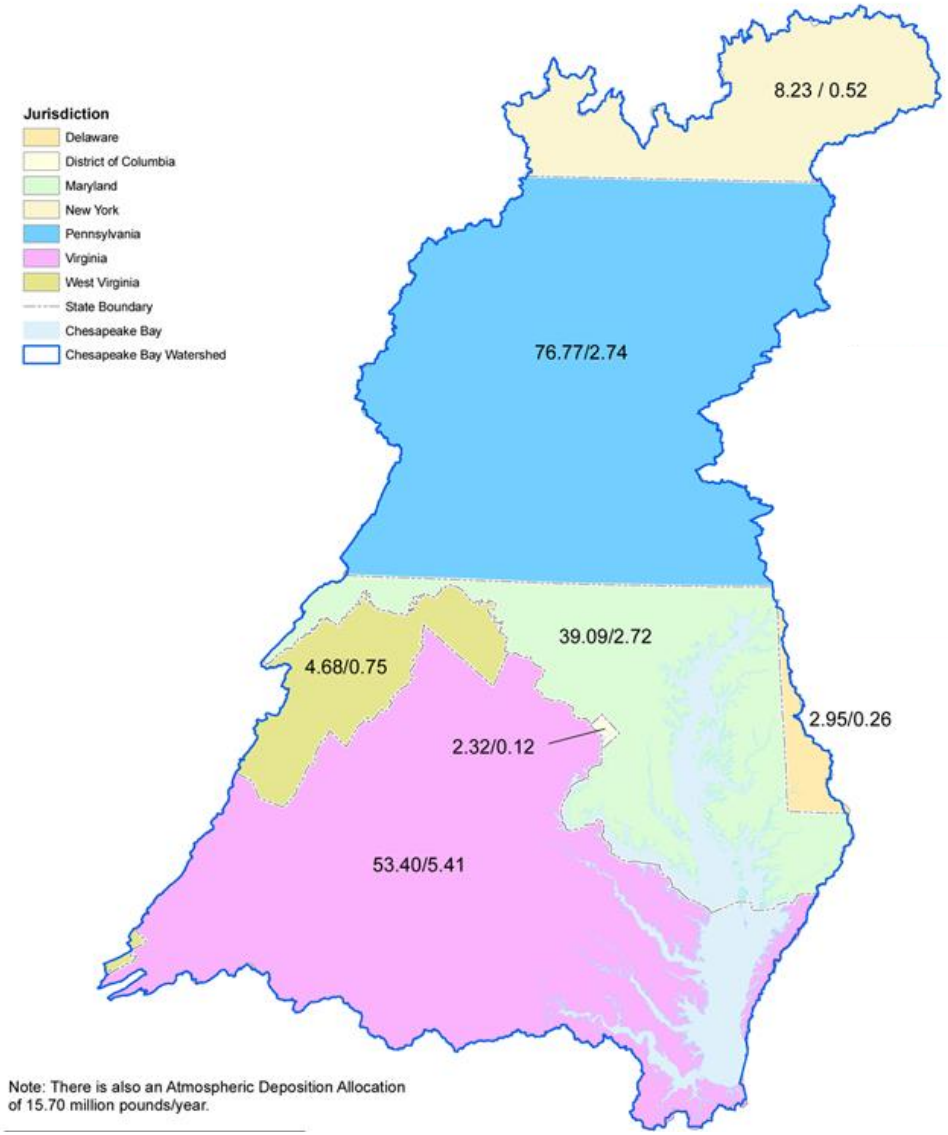

All Other
WWTP
Nitrogen -- Phase 5.3 -- Goal=190
Percent reduction from 2010 noBMPs to E3
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0
1
2
3
4
5
6
7
8
9
10
Relative Effectiveness


TP, p5.3, goal=12.67 WWTP = .22 - .54 mg/l, other: max=min+20%,
Percent reduction from 2010 noBMPs to E3
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0
1
2
3
4
5
6
7
8
9
10
Relative Effectiveness
1. Plot effectiveness vs percent effort
2. Use 2010 as the base year
3. Set upper half of WWTP line at 3 mg/l equivalent; intercept at 8 mg/l
4. Most effective basin is 20 percentage points higher than least effective
All Other
WWTP

Pollution Diet by River



Pollution Diet by State

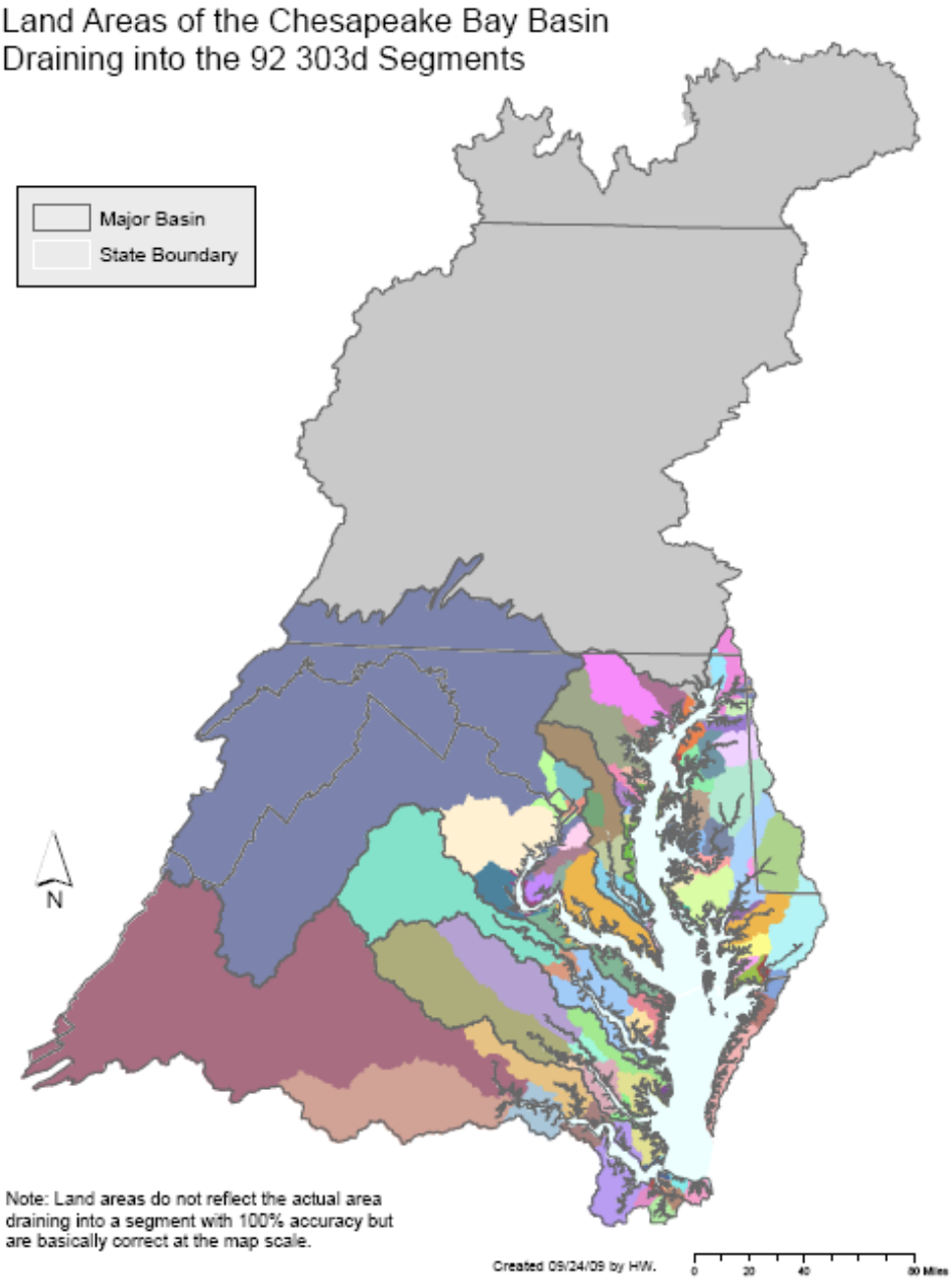


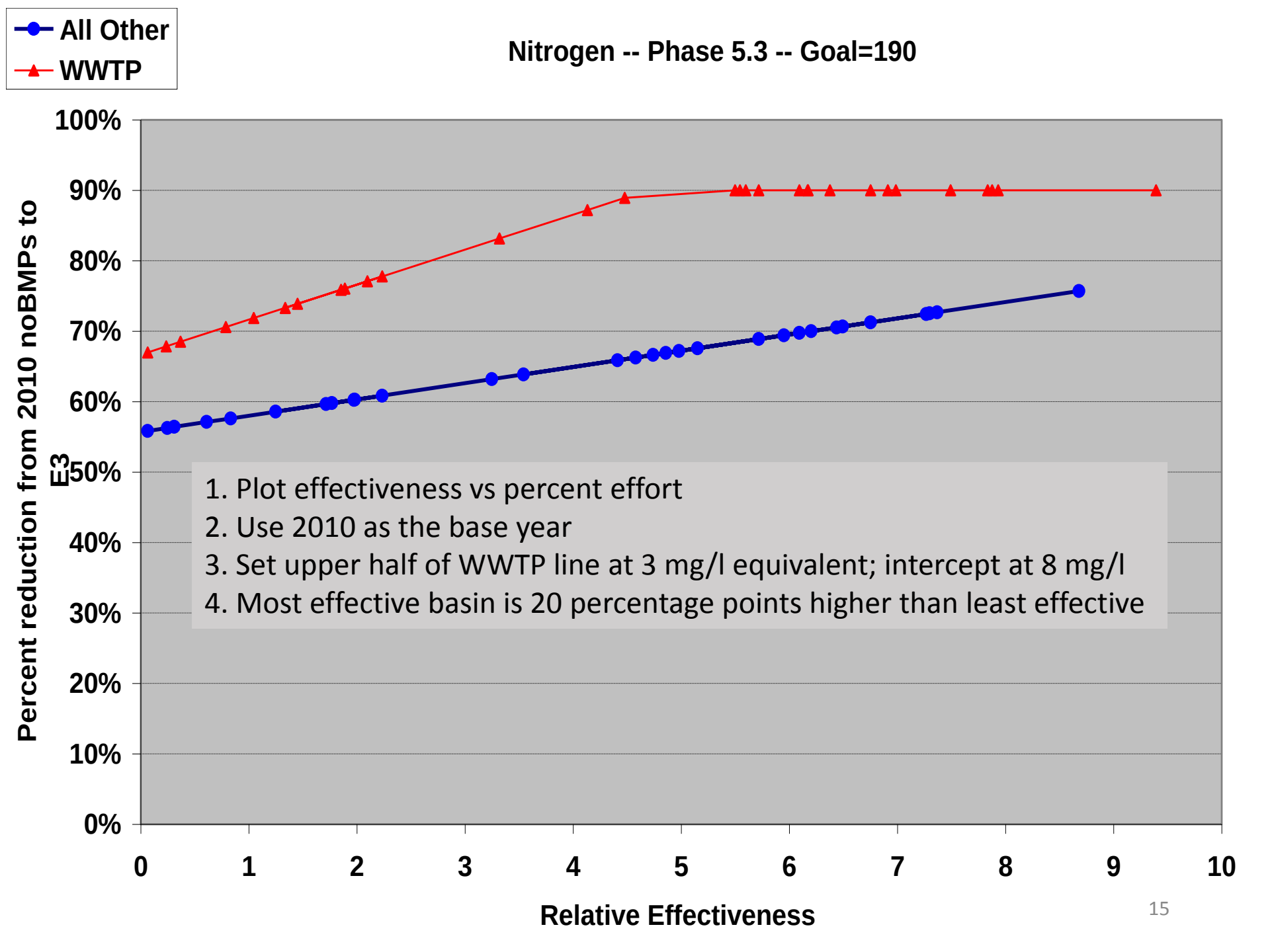
Jurisdictions' Watershed Implementation Plans

92 Individual TMDLs

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

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	
				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
				Subtotal: Wastewater		
				Onsite	LA	
				Urb/Suburb Runoff: MS4	Agg. WLA	MD546195
				Urb/Suburb Runoff: Non-MS4	LA	
				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
				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		
				Forest	LA	
	...					
MD	W. Shore			Reserve for Growth	WLA/LA	
MD	**W Shore**		**MW**	**Total**		




All Other
WWTP
Nitrogen -- Phase 5.3 -- Goal=190
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent reduction from 2010 noBMPs to E3
0
1
2
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Relative Effectiveness
1. Plot effectiveness vs percent effort
2. Use 2010 as the base year
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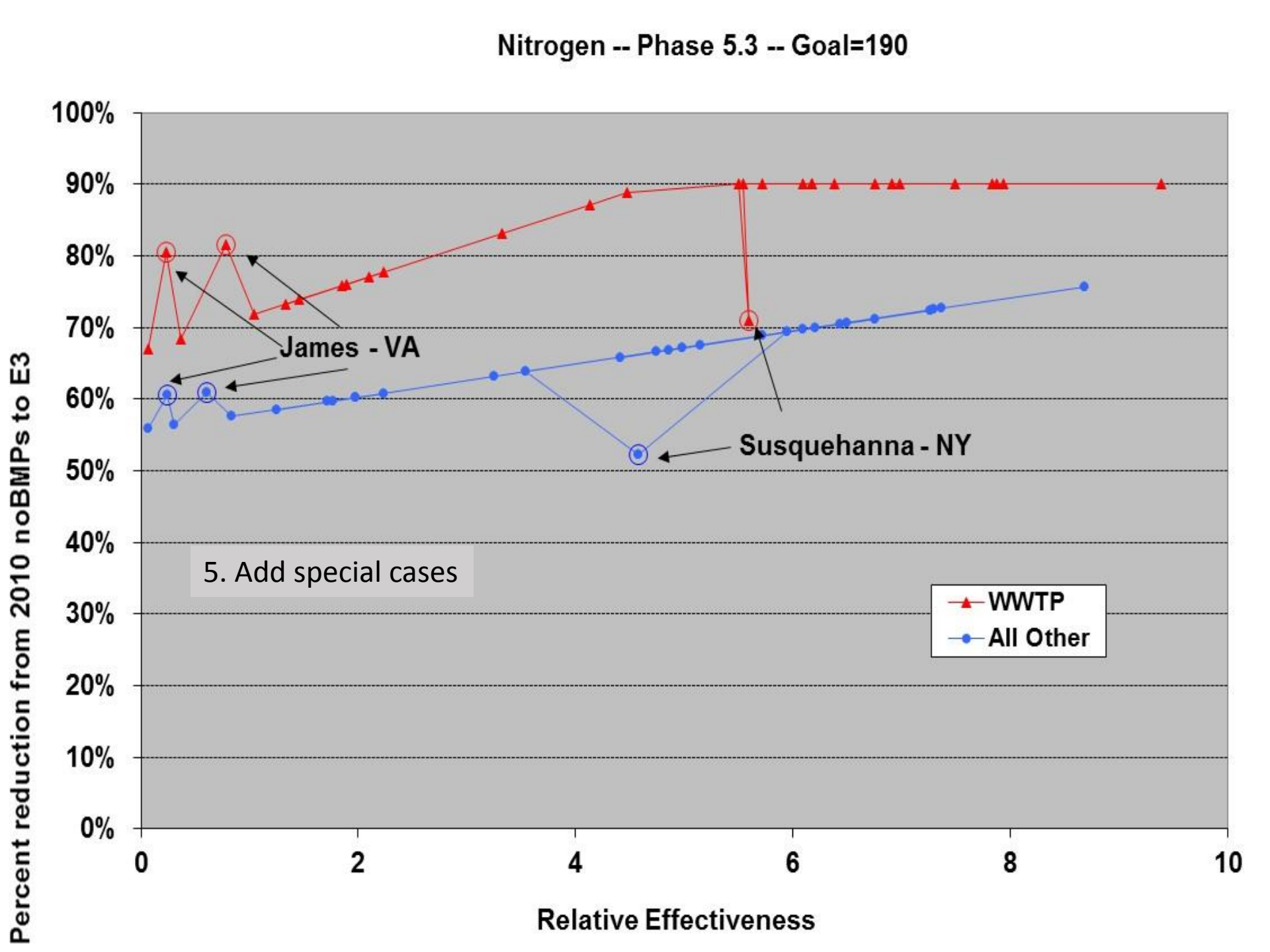
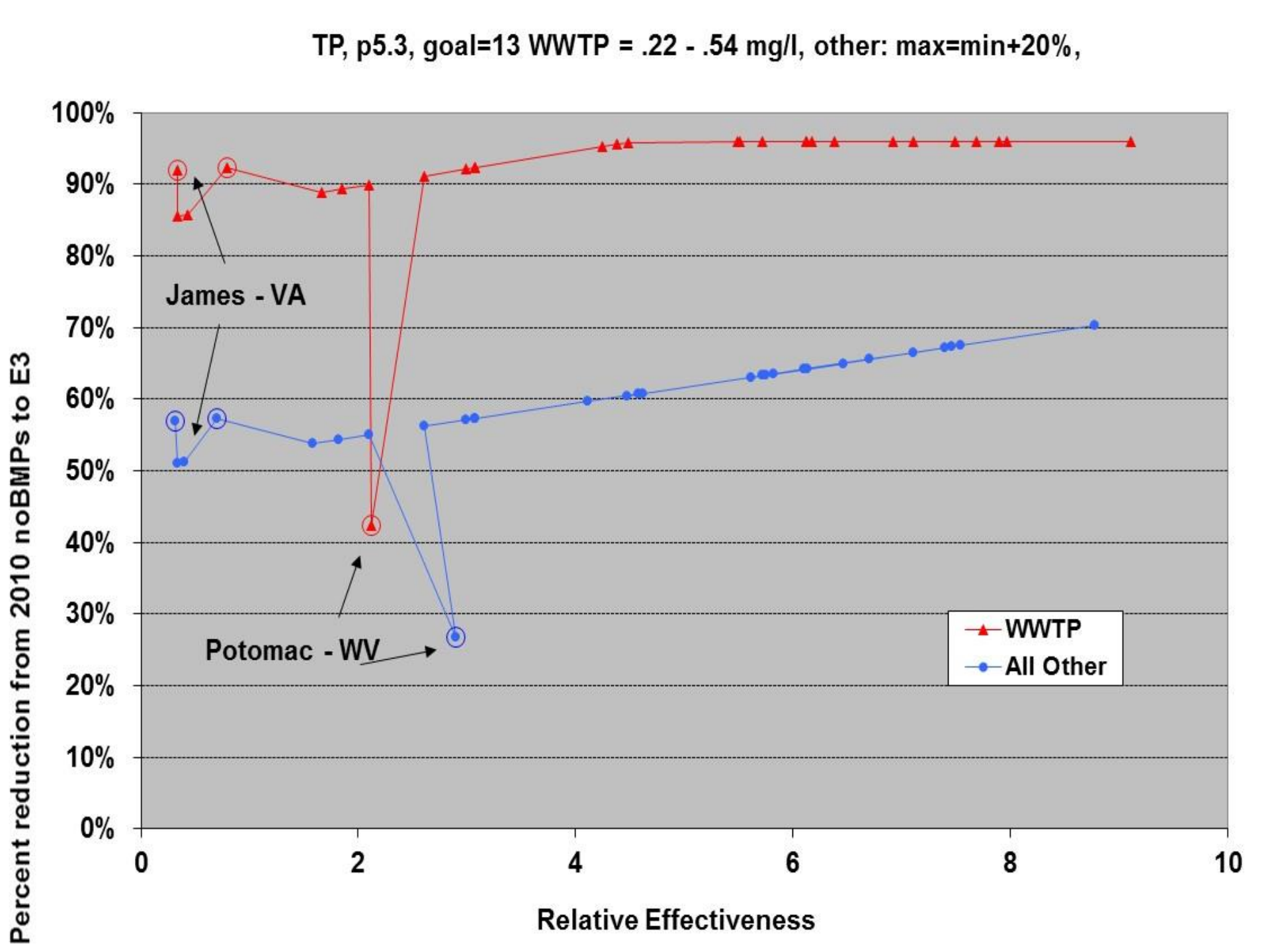
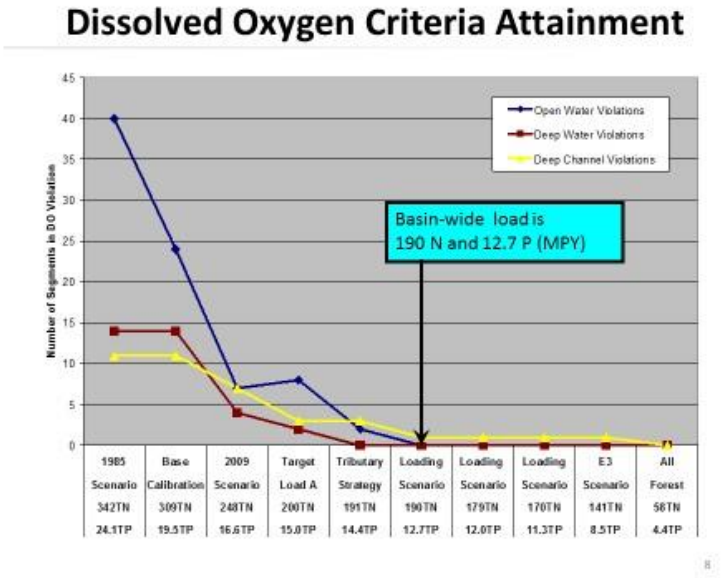
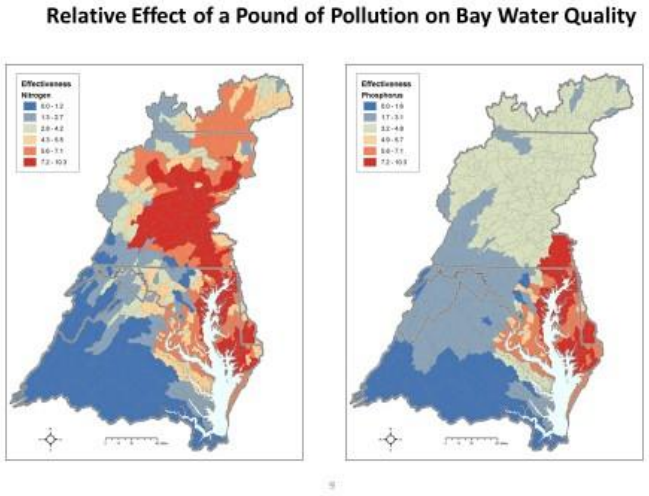
4. Most effective basin is 20 percentage points higher than least effective


Nitrogen -- Phase 5.3 -- Goal=190
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent reduction from 2010 noBMPs to E3
0
2
4
6
8
10
Relative Effectiveness
James - VA
Susquehanna - NY
5. Add special cases
WWTP
All Other


TP, p5.3, goal=13 WWTP = .22 - .54 mg/l, other: max=min+20%,
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent reduction from 2010 noBMPs to E3
0
2
4
6
8
10
Relative Effectiveness
James - VA
Potomac - WV
WWTP
All Other

Changes


Dissolved Oxygen Criteria Attainment
Number of Segments in DO Violation
Open Water Violations
Deep Water Violations
Deep Channel Violations
Basin-wide load is
190 N and 12.7 P (MPY)
1985 Scenario 342TN 24.1TP
Base Calibration 309TN 19.5TP
2009 Scenario 248TN 16.6TP
Target Load A 200TN 15.0TP
Tributary Strategy 191TN 14.4TP
Loading Scenario 190TN 12.7TP
Loading Scenario 179TN 12.0TP
Loading Scenario 170TN 11.3TP
E3 Scenario 141TN 8.5TP
All Forest 58TN 4.4TP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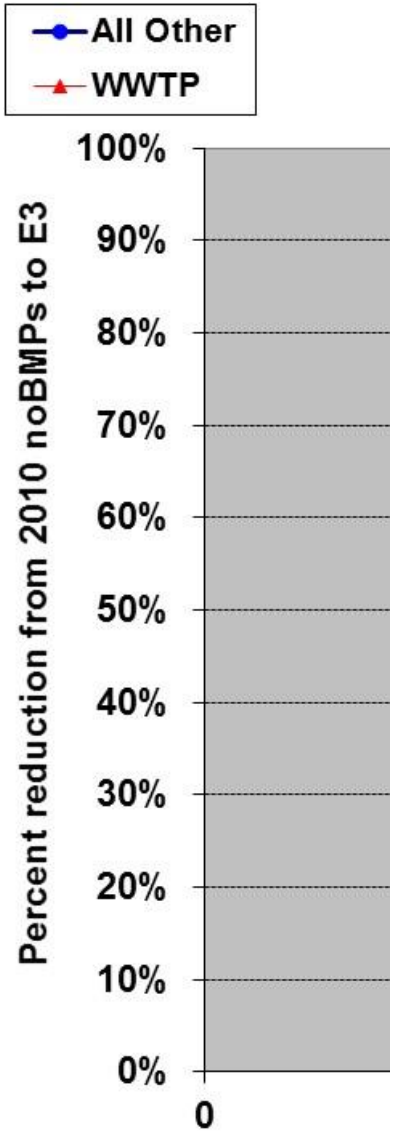
All Other
WWTP
Percent reduction from 2010 noBMPs to E3
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0

Components of the Default Method

- Plot effectiveness vs percent effort
- Use 2010 as the base year
- Set upper half of WWTP line at 3 mg/l equivalent; intercept at 8 mg/l
- Most effective basin is 20 percentage points higher than least effective for ‘all other’ line
- Special cases

Decisions

- Timeline - WQGIT to make decision on the planning target methodology in June of 2016
- What additional information would you like to see in order to make the decision?
- Approval includes WQGIT, MB, and PSC