The Maryland Nutrient Trading Program Baselines

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Key Principles

Establish the foundation of any trading program. They are essential for an equitable, environmentally protectable, yet viable, trading program.

Key Principle

- Any generators of agricultural non-point source credits must first demonstrate they have met the baseline water quality requirements for nitrogen and phosphorus levels in their watershed. These include the minimum level of nutrient reductions outlined in the Bay TMDL or applicable local TMDL requirements. Baselines provide assurance that participants are at a minimum level of conservation stewardship and are not currently impacting local water quality.

Setting the Baseline

- Baseline is the maximum load of nutrients that can be lost from agricultural land while still achieving the Bay TMDL/WIP goals.
- Baseline was determined by calculating the basin-wide average load per land-use acre that needs to be achieved in order to achieve TMDL/WIP goals.

	Pre TN (lbs/ac)	**TMDL TN** (lbs/ac)
Crop	29.86	23.44
Pasture	9.56	8.03
Hay	7.51	5.52
Average Ag Load	25.50	19.20

Bay TMDL
New Ag Baseline Based on Model Version 5.32 (Edge of Segment)

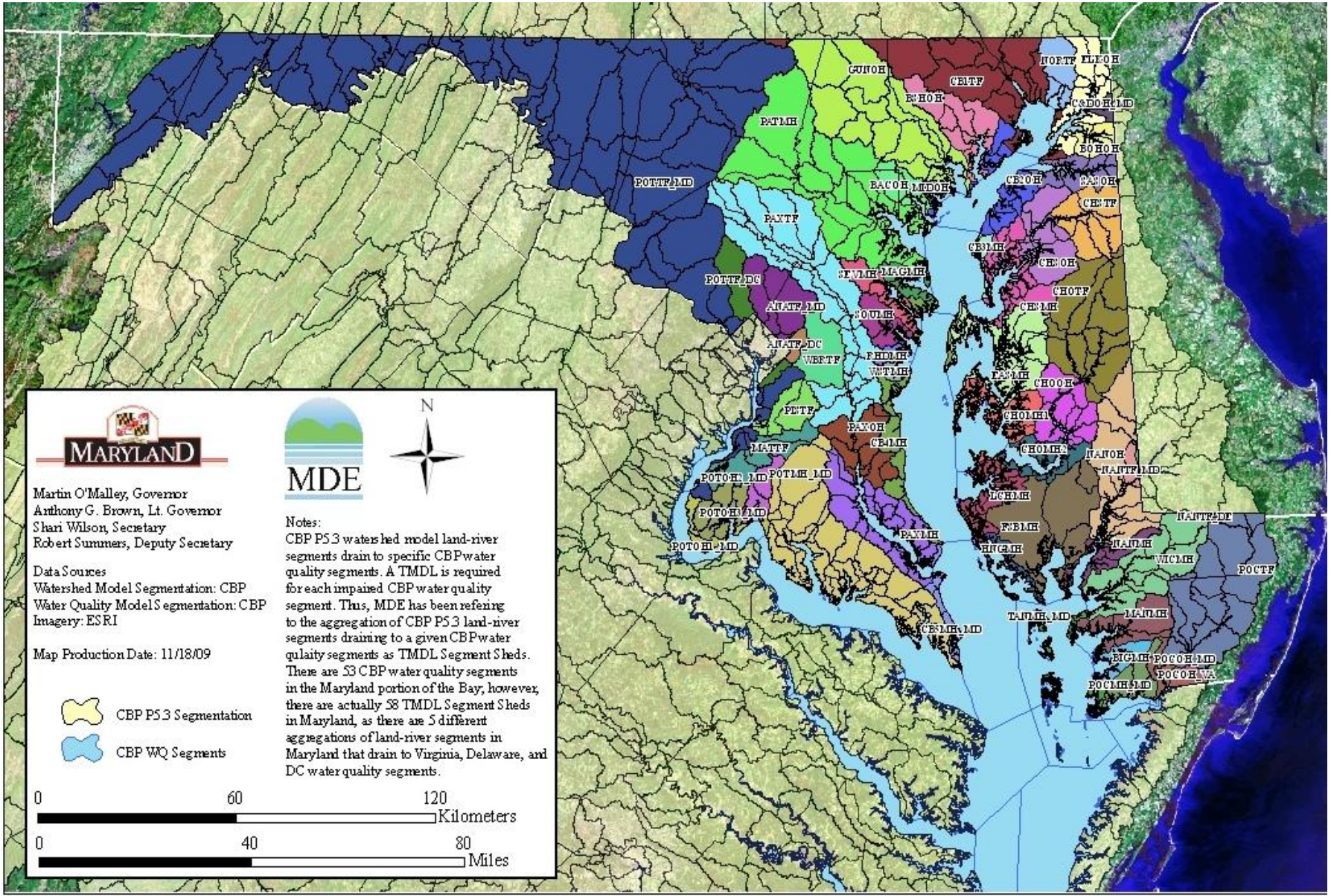
	PTX	POT	SUS	WS	ES
N =	10.3	24.9	17.6	15.9	11.7
P =	1.34	1.78	0.9	1.1	1.0
Sediment =	51.35	552.56	48.58	89.25	117.50

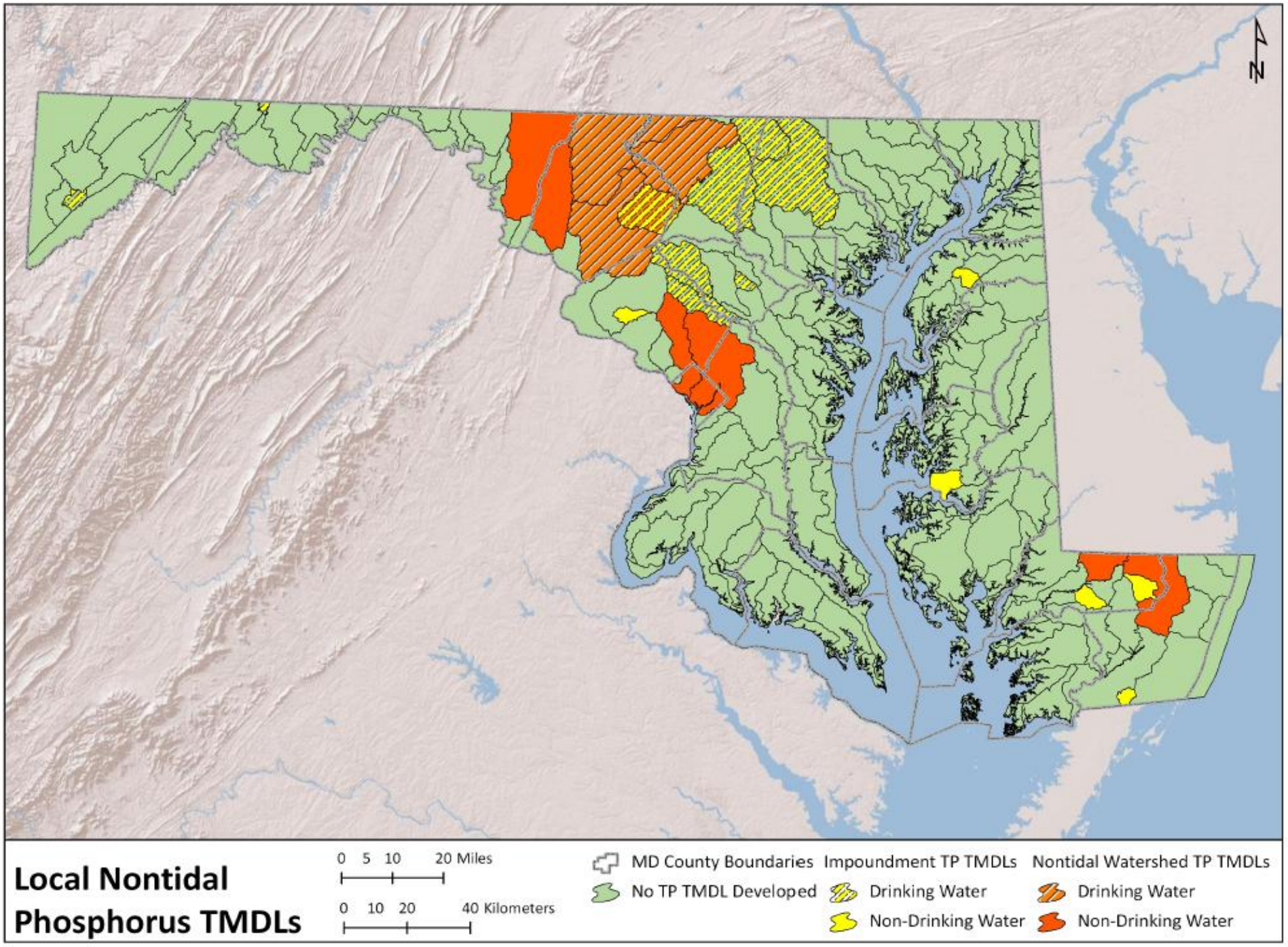
Statewide N =	16.7
Statewide P =	1.3
Statewide Sediment =	859.24

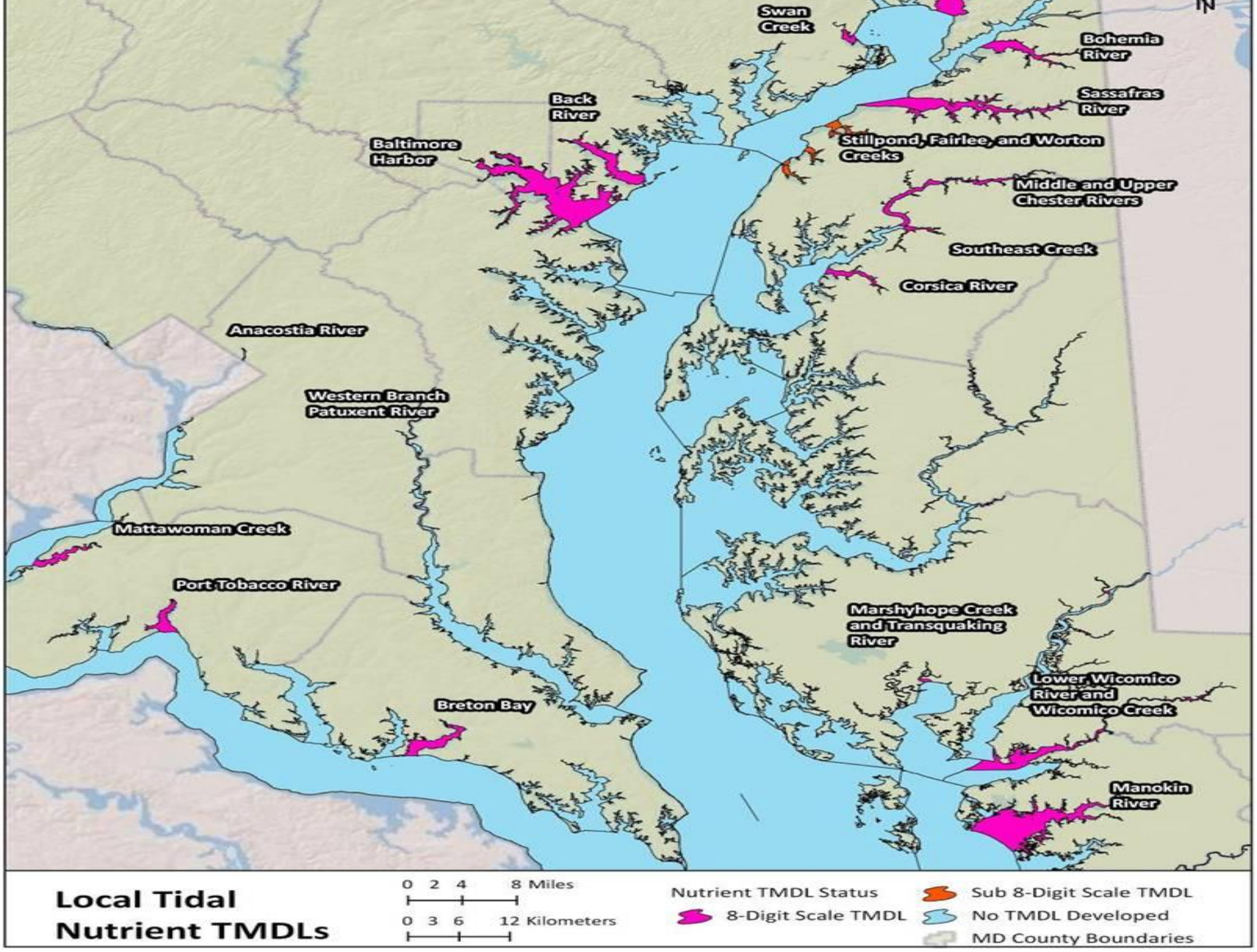
Addressing Local Water Quality Impairments vs. Chesapeake Bay TMDL

- MDE has developed 42 local nutrient TMDLs and 26 sediment TMDLs
- 26 of the local nutrient TMDLs require Ag load reduction lower than the Bay TMDL for nitrogen, phosphorus, and sediments

58 Sub-Allocation (TMDL) Segmentsheds




N
Local Nontidal Phosphorus TMDLs
0 5 10 20 Miles
0 10 20 40 Kilometers
MD County Boundaries
No TP TMDL Developed
Impoundment TP TMDLs
Drinking Water
Non-Drinking Water
Nontidal Watershed TP TMDLs
Drinking Water
Non-Drinking Water


Swan Creek
Bohemia River
Sassafras River
Back River
Baltimore Harbor
Stillpond, Fairlee, and Worton Creeks
Middle and Upper Chester Rivers
Southeast Creek
Corsica River
Anacostia River
Western Branch Patuxent River
Mattawoman Creek
Port Tobacco River
Marshyhope Creek and Transquaking River
Lower Wicomico River and Wicomico Creek
Breton Bay
Manokin River
N
Local Tidal Nutrient TMDLs
0 2 4 8 Miles
0 3 6 12 Kilometers
Nutrient TMDL Status
8-Digit Scale TMDL
Sub 8-Digit Scale TMDL
No TMDL Developed
MD County Boundaries

Local TMDL vs. Bay TMDL Examples

Western Shore Bay TMDL Nitrogen		Prettyboy Reservoir Local TMDL Nitrogen
Raw	26.86 lbs/acre	–
TMDL	15.90 lbs/acre	–
% Red	41%	–
Phosphorus		Phosphorus
Raw	2.01 lbs/acre	2.01 lbs/acre
TMDL	1.1 lbs/acre	0.56 lbs/acre
% Red	52%	83%

Local TMDL vs. Bay TMDL Examples

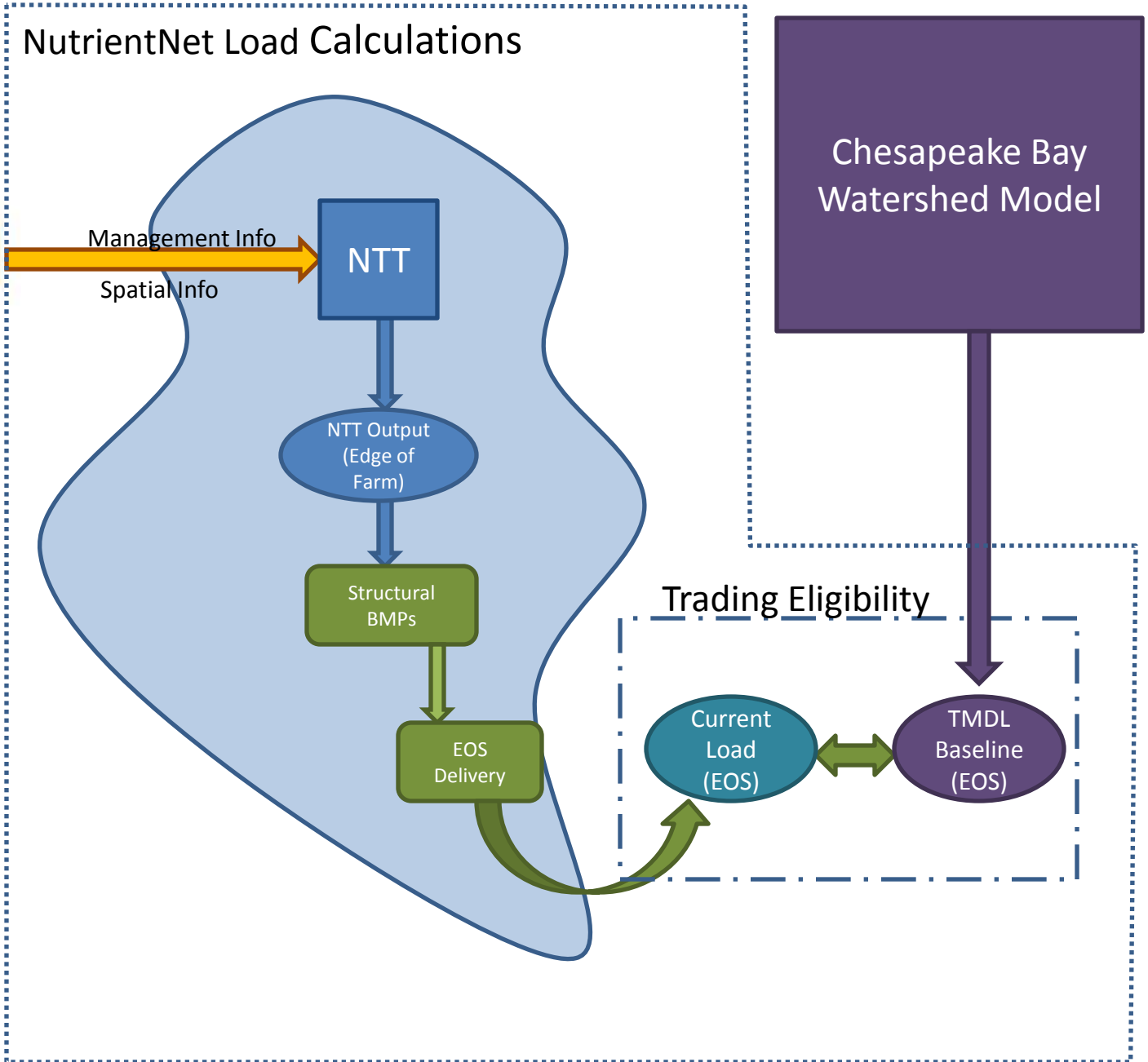
Eastern Shore Bay TMDL Nitrogen		Chester River (Middle) Local TMDL Nitrogen
Raw	29.96 lbs/acre	29.96 lbs/acre
TMDL	11.7 lbs/acre	6.91 lbs/acre
% Red	61%	77%
Phosphorus		Phosphorus
Raw	2.01 lbs/acre	2.01 lbs/acre
TMDL	1.03 lbs/acre	0.49 lbs/acre
% Red	49%	73%

Agricultural Nutrient Trading Credit Calculation Tool

Nutrient Tracking Tool

NutrientNet Operations

Chesapeake Bay Watershed Model

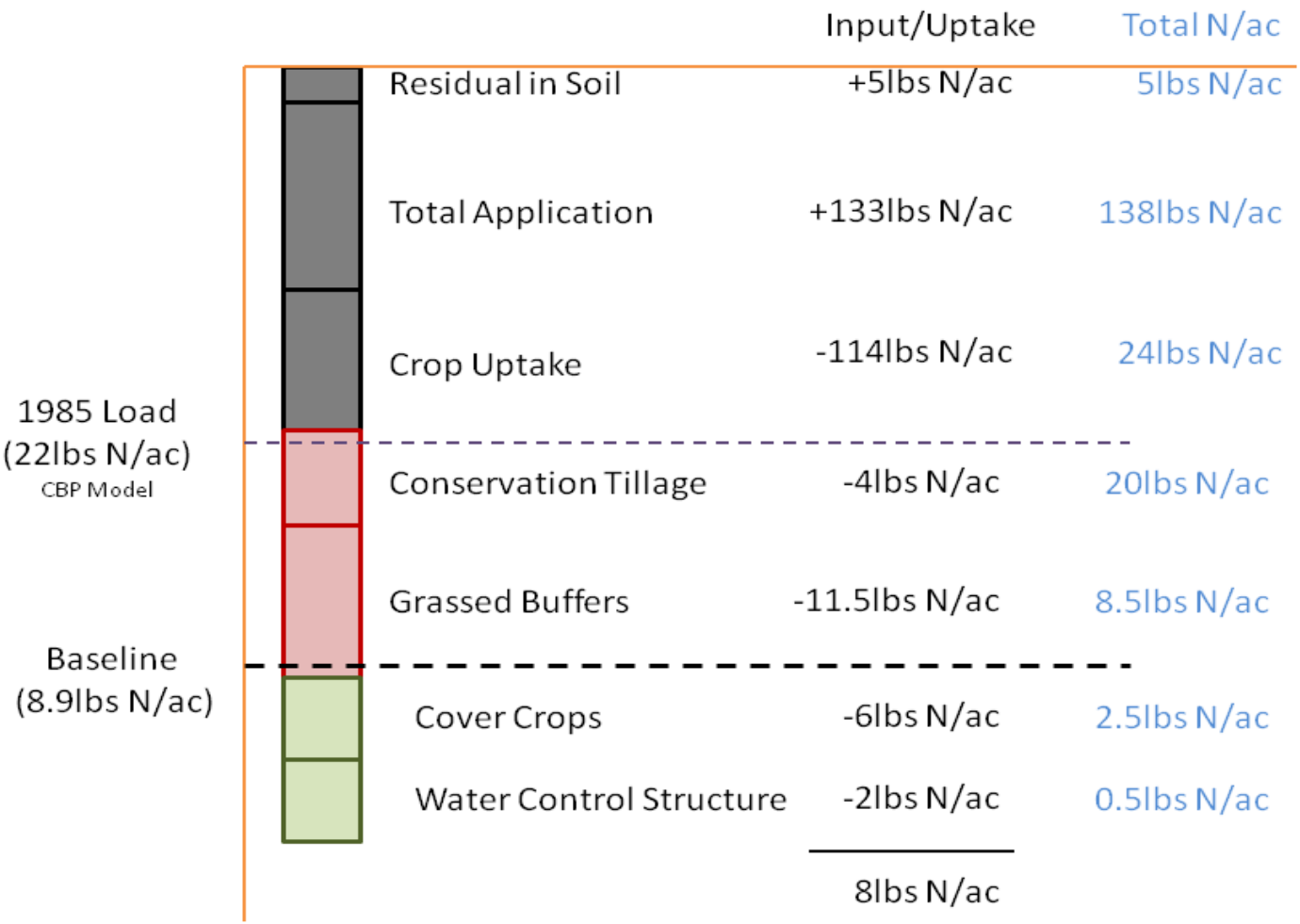


NTT - APEX

- The NTT application specifically arrays the output of the APEX model in terms of *delta* products or the difference between existing conditions and proposed conservation.

Existing Condition - Proposed Conservation = Nitrogen and Phosphorus Saved

Baseline and Credit Calculation Example



NutrientNet - Online Nutrient Trading System - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://nutrientnet.mdnutrienttrading.com/

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NutrientNet - Online Nutrient Trading...

MARYLAND NUTRIENT TRADING

Username:

Password:

Login

Create Account | Reset Password

Water Quality Marketplace

How do I get started?
View Nitrogen Marketplace
View Phosphorus Marketplace
View Certified Credit Registry

Welcome to NutrientNet, Maryland's online trading tool. NutrientNet is developed by World Resources Institute and Tarleton State University, TIAER in cooperation with the Maryland Department of Agriculture and Maryland Department of the Environment.

NutrientNet is comprised of two main components:

Calculation Tools: Calculate credits generated by agricultural management practices.

Trading Marketplace: Trade nutrient credits.

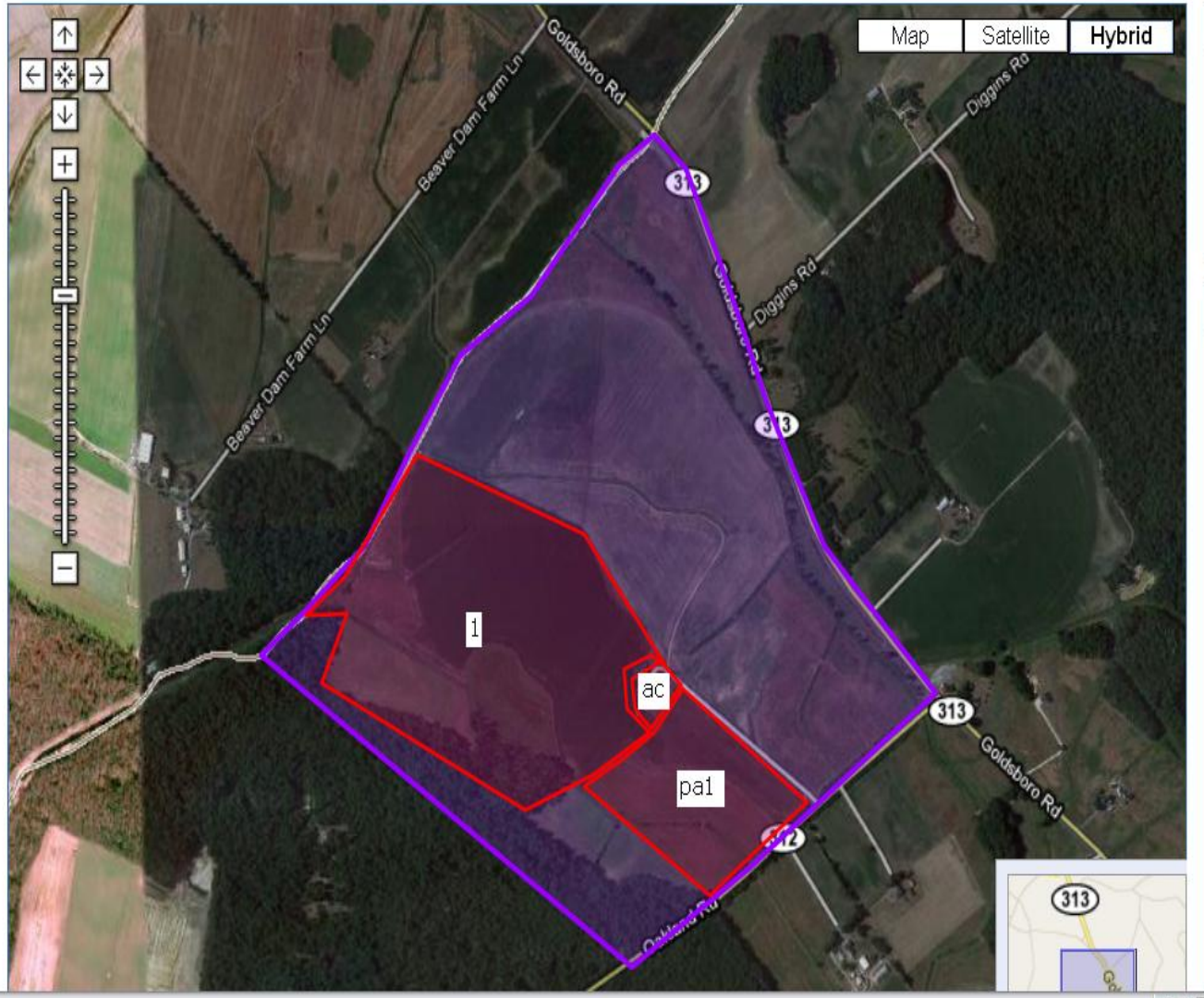
Please feel free to contact us for more information.

Return to Maryland's Nutrient Trading Program.

Done

Secure Search

McAfee



Map Navigation

Use the map navigation controls or county and ZIP code lists below to find your area.

Zoom to a County:

Zoom to a ZIP Code:

Farm Field Tools

To add a new parcel or field, click the **New** button and then click on the map. To stop drawing it, double-click or click on the first (or last) point.

To edit a parcel or field, first activate it using the **Editing Options**. To edit its boundary, move mouse over it and drag the points. Click on a point to delete it.

Click the **Submit** button to proceed, once the parcel and/or fields are delineated.

Editing Options:

- Parcel
- Fields: pa1

Keppler Farm 2 > Field 1 > Land

Worksheet PCL-000318

General | Soil | Baseline Crop Management | Baseline BMPs | Baseline Nutrient Load | Future Crop Management | Future BMPs | Future Nutrient Load

Soil Characteristics

Enter soil information. If the soil information below, derived from the farm's location, is incorrect, complete one or more of the soil characteristic survey questions below.

Field area	80.00 ac	From map: 80.08 ac
Map unit	Ingleside loamy sand, 2 to 5 percent slopes (1600079)	
Soil component	Ingleside (1229499)	
Map symbol	IeB	
Hydrologic group	B	
Mehlich-3 P test value	41 ppm	Average across field. Typically, in the range of 20-200 ppm. If you have a unitless Mehlich-3 FIV (Fertility Index Value), no conversion is required to express in ppm.
Slope optional	2.00 %	If you do not know the slope of this field, leave this blank and a default slope for this soil type will be used.
Tile drainage depth	3.00 ft	

Crop Rotation Summary

The crops in this field's current crop rotation are listed below. You may add a crop to the rotation or click on a specific crop to edit it.

	Crop	Grazing Livestock	Commercial Fertilizer Applications	Manure Fertilizer Applications	Tillage Operations	Harvest Operations	
Crop 1	Corn	-	2	-	-	1	delete
Crop 2	Soybeans	-	1	-	-	1	delete

Add a Crop to Rotation

Crop 1

Crop Category

Enter information for the entire the life cycle of this crop.

Crop Category Corn, Grains, Cereal Grains

Crop Corn

Plant date Year 1 | 4: Apr | 30

place.

If the nitrogen load reduction calculated for alternative watering facility is greater than that for buffers, it will be used instead.

Show Buffer BMP Descriptions

Forest buffer in place ☑

Area of buffer 3 ac

Linear feet of buffer 500 ft

Planned ☐

Check this box if this BMP is not currently in place but *will be implemented* in the future to meet baseline load requirements.

Grass buffer in place ☐

Area of buffer ac

Linear feet of buffer ft

Planned ☐

Check this box if this BMP is not currently in place but *will be implemented* in the future to meet baseline load requirements.

~~Planning to convert grass buffer to trees~~ There is no grass buffer to convert.

Edge of Segment Baseline Load Summary

Summary of edge-of-segment load before planned BMPs are implemented. If current load is higher than the baseline load, you must implement BMPs sufficient to reduce your load below baseline in order to generate credits. For any field to generate credits, every field in the farm must meet baseline.

This field meets the baseline load requirements. Additional planned BMPs will allow you to generate credits.

Nitrogen

Baseline Load (EOS):	889.6 lb	11.1 lb/ac
Current Load (EOS):	718.5 lb	9.0 lb/ac

This field meets the nitrogen load requirements.

Phosphorus

Baseline Load (EOS):	89.6 lb	1.1 lb/ac
Current Load (EOS):	61.5 lb	0.8 lb/ac

If the nitrogen load reduction calculated for alternative watering facility is greater than that for buffers, it will be used instead.

Show Buffer BMP Descriptions

	Baseline	Reduction
Forest buffer planned	Yes	☐
Area of buffer	3	ac
Linear feet of buffer	500	ft

	Baseline	Reduction
Grass buffer planned	No	☑
Area of buffer		5 ac
Linear feet of buffer		750 ft

	Baseline	Reduction
~~Planning to convert grass buffer to trees~~		There is no grass buffer to convert.

Keppler Farm 2 > Field 1 > Reduced Load

Worksheet PCL-000318

Reduced Load for Field

Review the nutrient reductions and credits generated by this project.

Nitrogen Summary

Baseline Load (EOS):	889.6 lb	11.1 lb/ac
Current Load (EOS):	718.5 lb	9.0 lb/ac
Planned Load (EOS):	497.2 lb	6.2 lb/ac
Reduction (EOS):	221.4 lb	2.8 lb/ac
Reductions Eligible to Generate Credits (EOS):	221.4 lb	2.8 lb/ac
Delivery Ratio:	1.00	
Reductions to Chesapeake Bay:	221.4 lb	2.8 lb/ac
Credits Generated:	221 credits/yr	

Phosphorus Summary

Keppler Farm 2 > Field 1 > Reduced Load

Worksheet PCL-000318

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Review the nutrient reductions and credits generated by this project.

Nitrogen Summary

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Phosphorus Summary