



The Maryland Nutrient Trading Program Goals and Baselines

Susan Payne

Maryland Department of Agriculture

Agricultural Nutrient Trading

Nutrient trading offers a new source of revenue for the financing of agricultural practices and providing supplemental farm income while improving the water quality of the Chesapeake Bay and its tributaries.

- A. The practices provide offsets to address new or increased loads associated with a growing population.
WWTP, Development, Industrial Facilities
- B. Private purchase of nutrient reduction projects and practices (retirement credits)
Chesapeake Bay Foundation
Ducks Unlimited

Key Principles

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

Key Principle #1

- 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 are the more stringent of 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.

Key Principles

Key Principle #2

- Agricultural generators must be in compliance with all local, state, federal laws, regulations and programs. The credit purchaser and generator can not cause or contribute to water quality effects locally, downstream, or bay wide.

Key Principle #3

- BMPs funded by federal or state cost-share can not be used to generate credits during their contract life. However, these BMPs can count toward baseline and can generate credits after the funded lifespan has expired.

Key Principles

Key Principle #4

- The Agricultural Trading Program is not intended to accelerate the loss of productive farmland. Therefore, credits will not be generated under this policy for the purchase and idling of whole or substantial portions of farms to provide nutrient credits.

Key Principle #5

- Trades must result in a net decrease in loads. 10% of the agricultural credits sold in a trade will be retired and permanently applied toward TMDL goals.

Key Principle #6

- An agricultural practice can generate credits only when it is installed or placed in operation.

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 5.3.2 (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

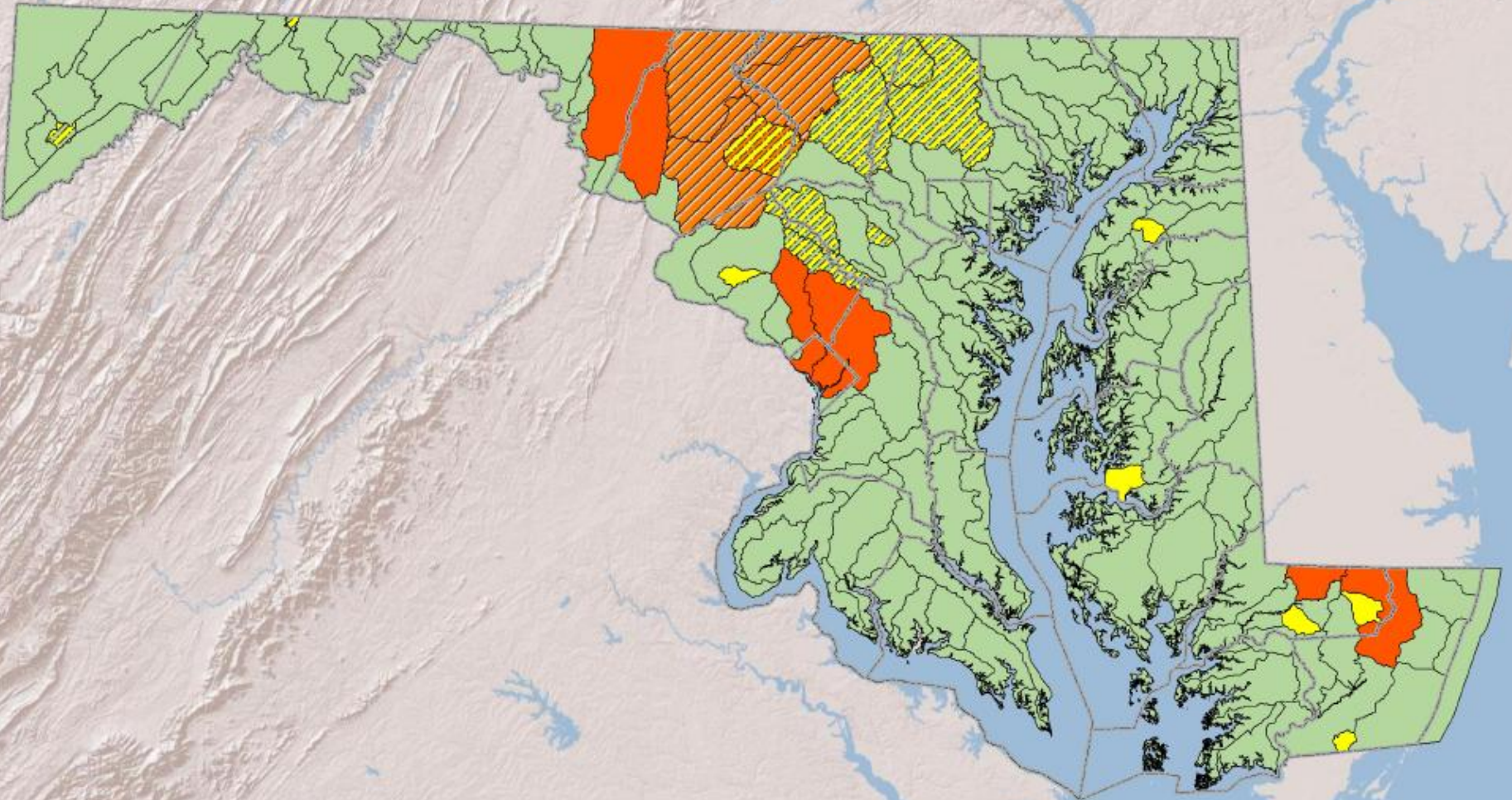
Statewide N = 16.7

Statewide P = 1.3

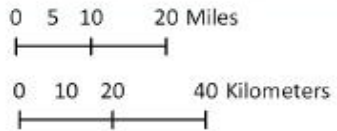
Statewide Sediment = 171.9

Addressing Local Water Quality Impairments vs. Chesapeake Bay TMDL

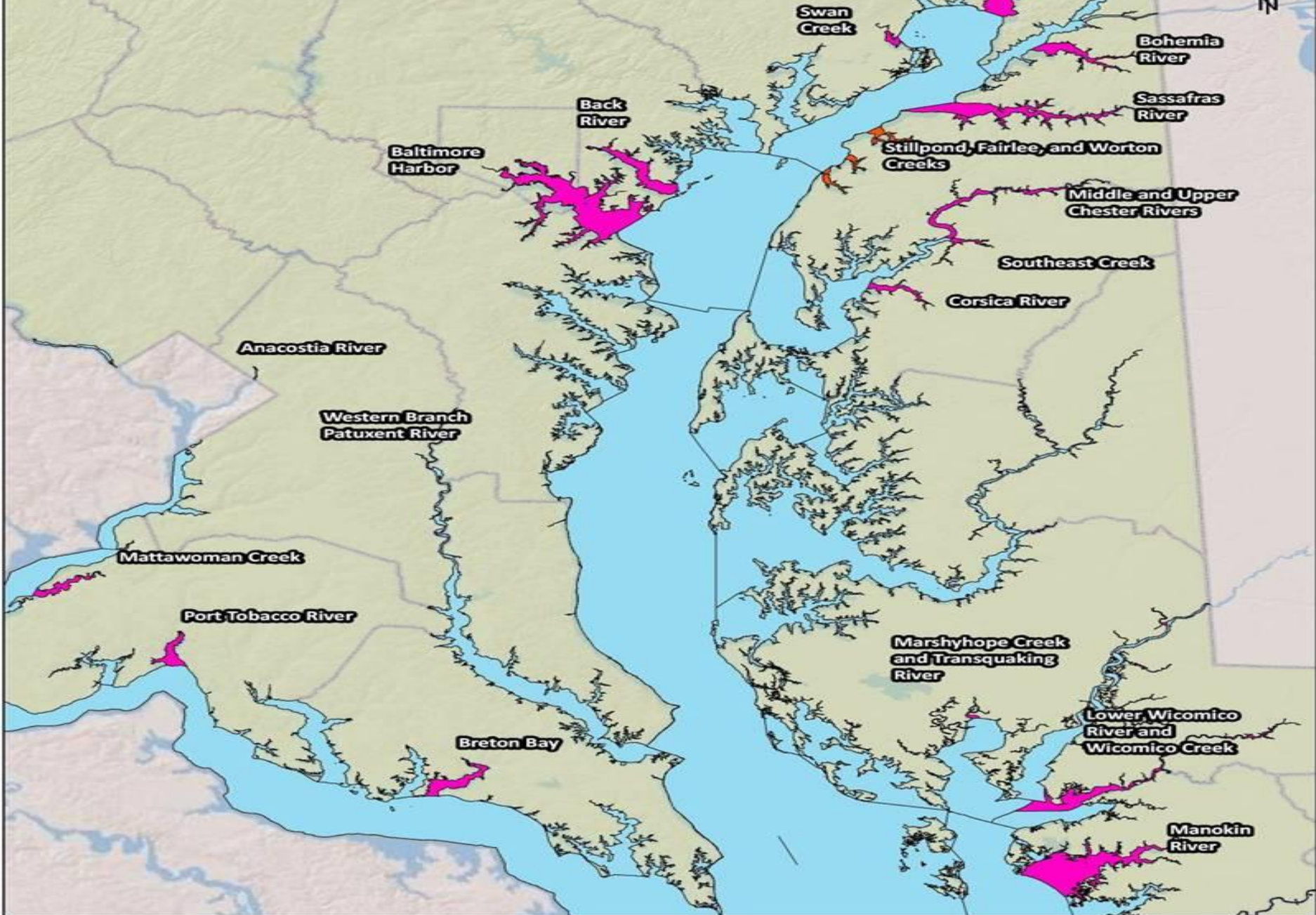
- MDE has developed 42 local nutrient TMDLs and 26 sediment TMDLs
- 26 of the local nutrient TMDLs require Ag load reduction lower than the Bay TMDL for nitrogen, phosphorus, and sediments



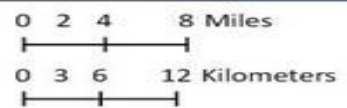
Local Nontidal Phosphorus TMDLs



- | | | |
|----------------------|----------------------|-----------------------------|
| MD County Boundaries | Impoundment TP TMDLs | Nontidal Watershed TP TMDLs |
| No TP TMDL Developed | Drinking Water | Drinking Water |
| | Non-Drinking Water | Non-Drinking Water |



Local Tidal Nutrient TMDLs



- Nutrient TMDL Status**
- █ 8-Digit Scale TMDL
 - █ Sub 8-Digit Scale TMDL
 - █ No TMDL Developed
 - █ MD County Boundaries

Local TMDL vs. Bay TMDL Examples

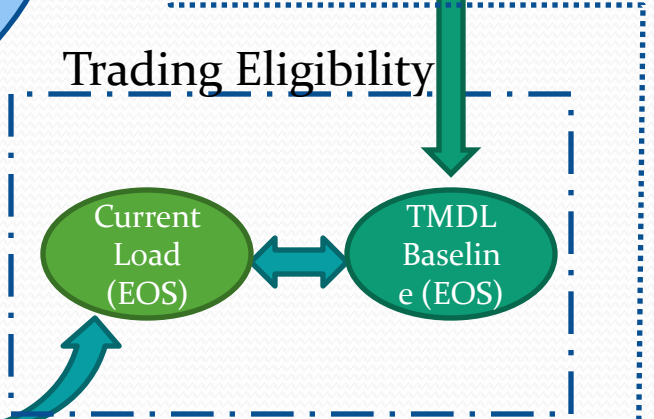
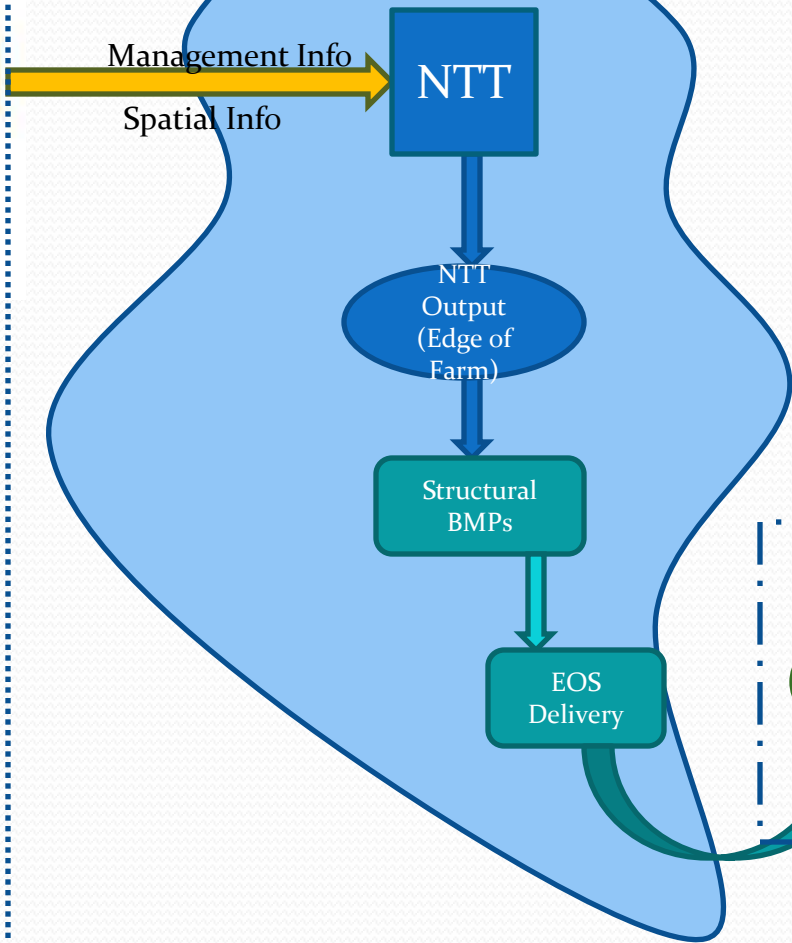
Western Shore Bay TMDL Nitrogen		Prettyboy Reservoir Local TMDL Nitrogen
Raw	26.86 lbs/acre	–
TMDL	15.90 lbs/acre	–
% Red	41%	–
Phosphorus		Phosphorus
Raw	2.01 lbs/acre	2.01 lbs/acre
TMDL	1.1 lbs/acre	0.56 lbs/acre
% Red	52%	83%




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

NutrientNet Load Calculations



-  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

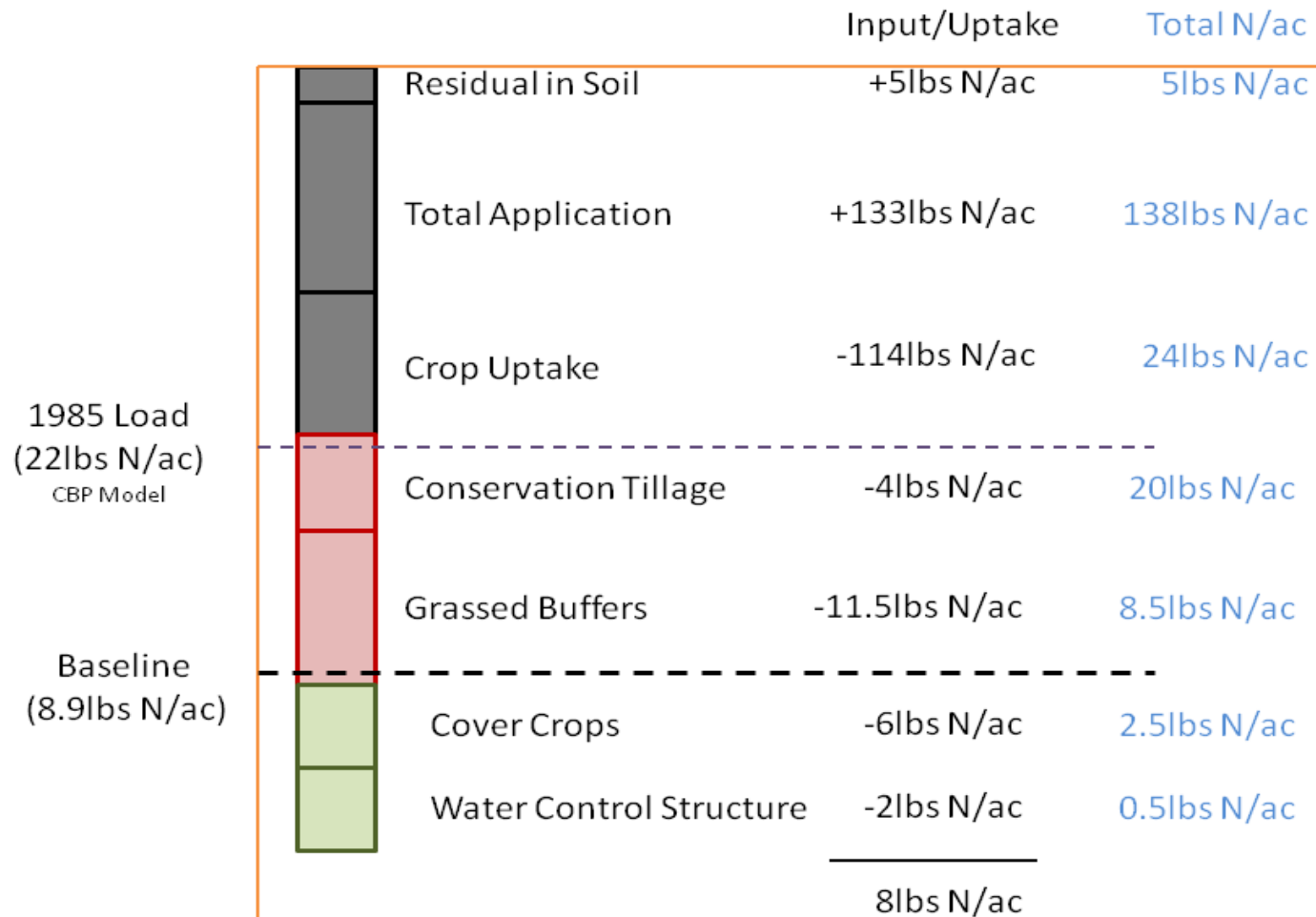
-

Proposed
Conservation

=

Nitrogen and
Phosphorus
Saved

Baseline and Credit Calculation Example





MARYLAND NUTRIENT TRADING

[Problem Solver](#) | [Maryland.gov](#) | [Online Services](#) | [State Agencies](#) | [Phone Directory](#)

Search

Username: Password: [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 [Tarlton State University, TIAER](#) in cooperation with the [Maryland Department of Agriculture](#) and [Maryland Department of the Environment](#).

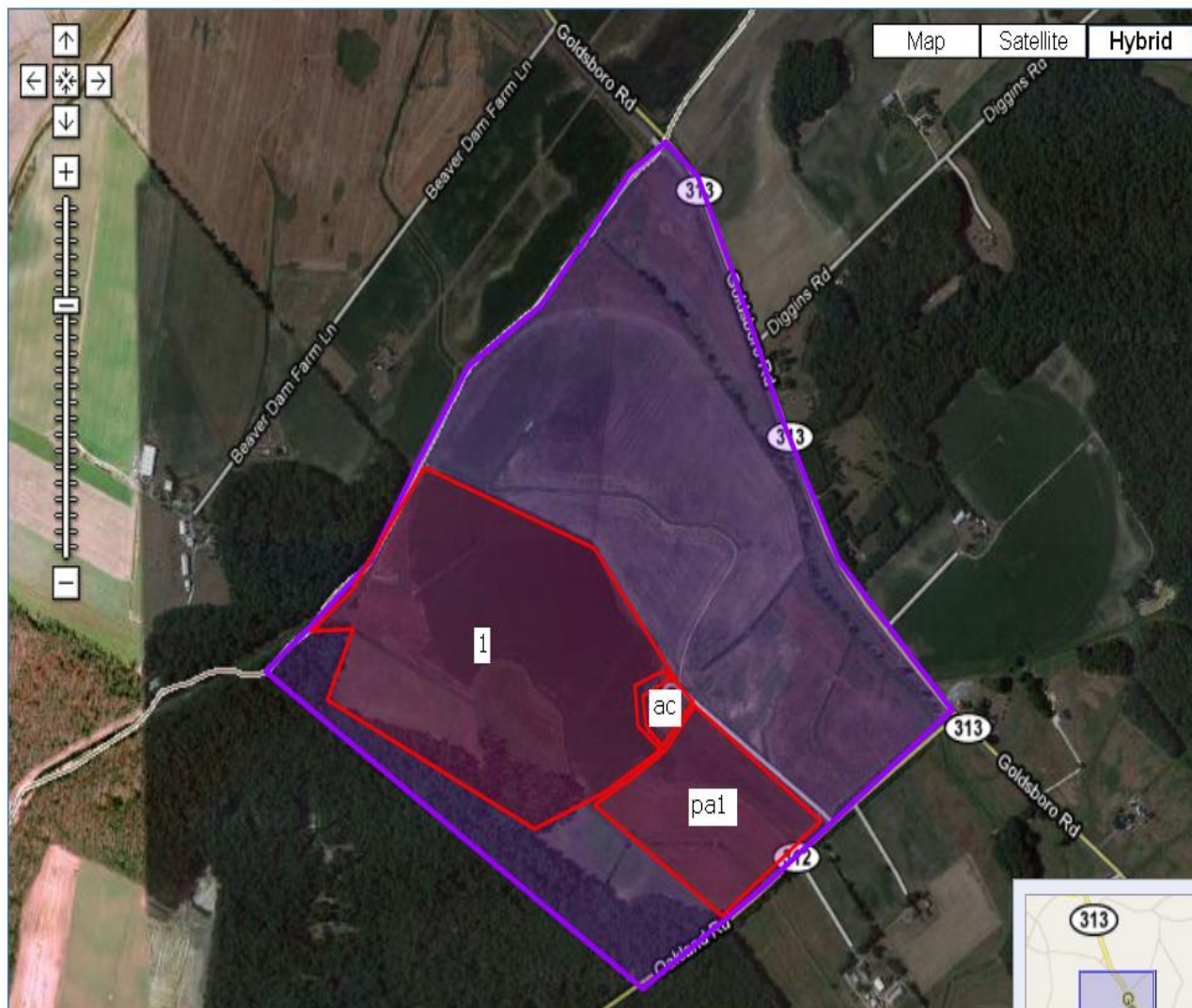
NutrientNet is comprised of two main components:

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](#).



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:

Keppler Farm 2 > Field 1 > Land

Worksheet PCL-000318

General

Soil

Baseline
Crop ManagementBaseline
BMPsBaseline
Nutrient LoadFuture
Crop ManagementFuture
BMPsFuture
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 ac

From map: 80.08 ac

Map unit Soil component Map symbol Hydrologic group Mehlich-3 P test value 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

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 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

Crop

Plant date Year 1

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

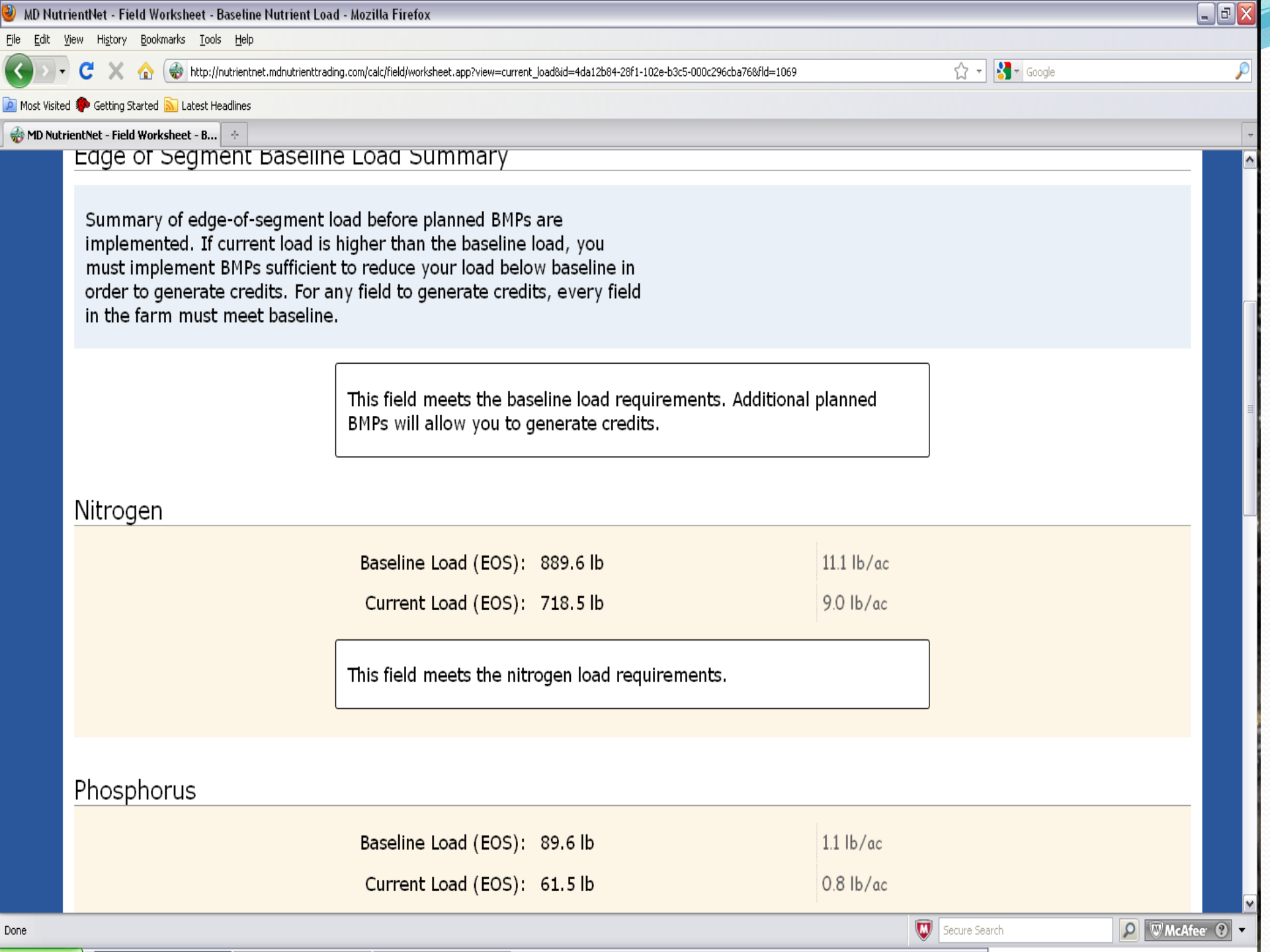
Area of buffer ac

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 or 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