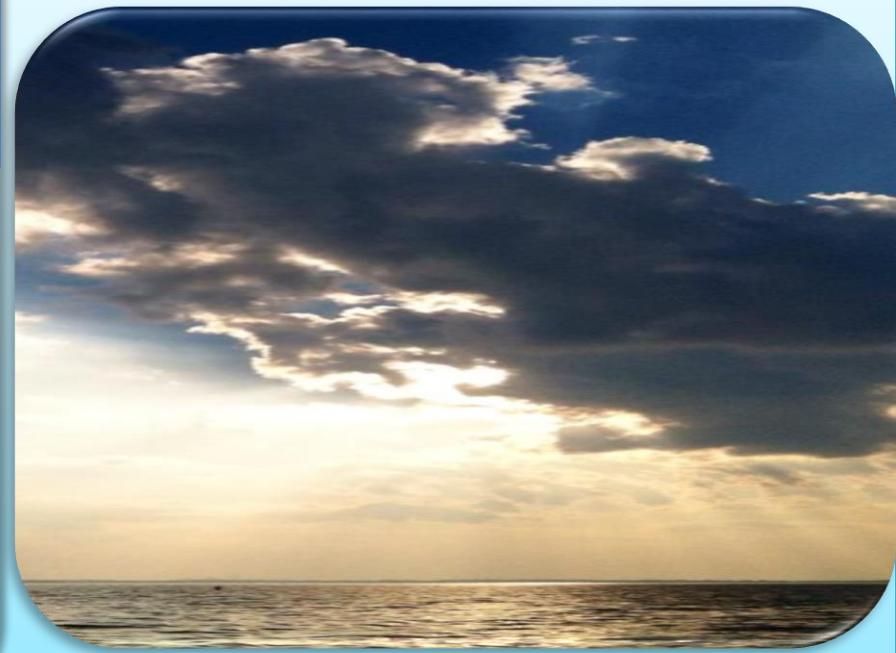


Status of Trading in Maryland

Susan Payne
Maryland Department of
Agriculture
January 8, 2016



TRADING PROGRAM OVERVIEW

Trading policy in Maryland developed in three phases:

- Phase I addresses Point Source-Point Source
Final issued March 2008 by MDE
- Phase II addresses Point Source-Nonpoint Source
Policy and Guidance issued May 2008 by MDA
Agricultural Certification Legislation June 1, 2010 and June 1, 2012 by MDA
Certification Program regulations published December 28, 2015 by MDA
- Phase III to address Nonpoint Source-Nonpoint Source
Urban NPS trading or Aligning for Growth to be finalized by MDE

POINT SOURCE TRADING

- Trading not allowed in lieu of Enhanced Nutrient Removal (ENR) upgrades

Chesapeake Bay Restoration Fund

- ENR facilities may generate point source discharge credits by:
 - Reducing effluent concentration
 - Maintaining flow at less than the design flow basis of wasteload allocation
 - Land application of wastewater with pretreatment and nutrient management controls
 - Upgrading an existing minor WWTP to BNR or ENR
 - Retiring an existing minor WWTP and sending its flow to an ENR facility
 - Retiring an existing Onsite Sewage Disposal System by connection to public sewer or cluster treatment

TRADING TO MEET REDUCTION REQUIREMENTS

Proposal for Trading Between Sectors:

These sectors may purchase reduction credits from eligible parties toward meeting a portion of their share of Bay pollution reduction requirements

- Septic System Sector
- Phase I MS4 Stormwater Sector
- Phase II MS4 Stormwater Sector
- Non-MS4 stormwater Sector

AGRICULTURAL NONPOINT SOURCE TRADING

Fundamental Principles

- To be eligible to trade, a generator of agricultural nonpoint source credits must meet a numeric baseline level of nutrient and sediment reduction which is the more stringent of either the applicable Chesapeake Bay or local TMDL as calculated on the entire farm in aggregate.
- Credit generators must be in compliance with all applicable local, state, and federal laws, regulations, and programs.
- BMPs funded by federal or state cost share or county mitigation banking programs cannot be used to generate credits during the lifespan specified in the cost-share contract.

AGRICULTURAL NONPOINT SOURCE TRADING

Fundamental Principles Continued

- Credits cannot be generated by taking whole or substantial portions of farms out of production for the sole purpose of generating credits.
- To ensure that a net decrease in loads is achieved, 10% of the credits sold in a trade will be retired and applied toward TMDL goals.
- An agricultural practice can generate credits only when it is installed and verified or placed in operation.

HOW TO GENERATE CREDITS

- Tradable credits can be generated from any planned agronomic, land conversion, or structural practice.
- Some practices (such as setbacks, fencing, manure incorporation) are excluded because they are required by nutrient management regulations.

NONPOINT SOURCE PROGRAM STRUCTURE

- Voluntary
- Market-driven
- Performance-based
- Uses an online suite of tools:
 - Calculator
 - Registry
 - Marketplace
 - Administrative module
 - Interactive mapping feature

Site-specific, farm-scale calculation tool (Chesapeake Bay Nutrient Trading/Tracking Tool or CBNTT)

- State-specific tools for MD (MNTT), VA, and PA
- USDA/NRCS Nutrient Tracking Tool (NTT)
- NutrientNet operations
- Chesapeake Bay Watershed Model

Chesapeake Bay Nutrient Trading Tool Load Calculations



Management Info
Spatial Info

NTT

NTT
Output
(Edge of
Farm)

Structural
BMPs

EOS
Delivery

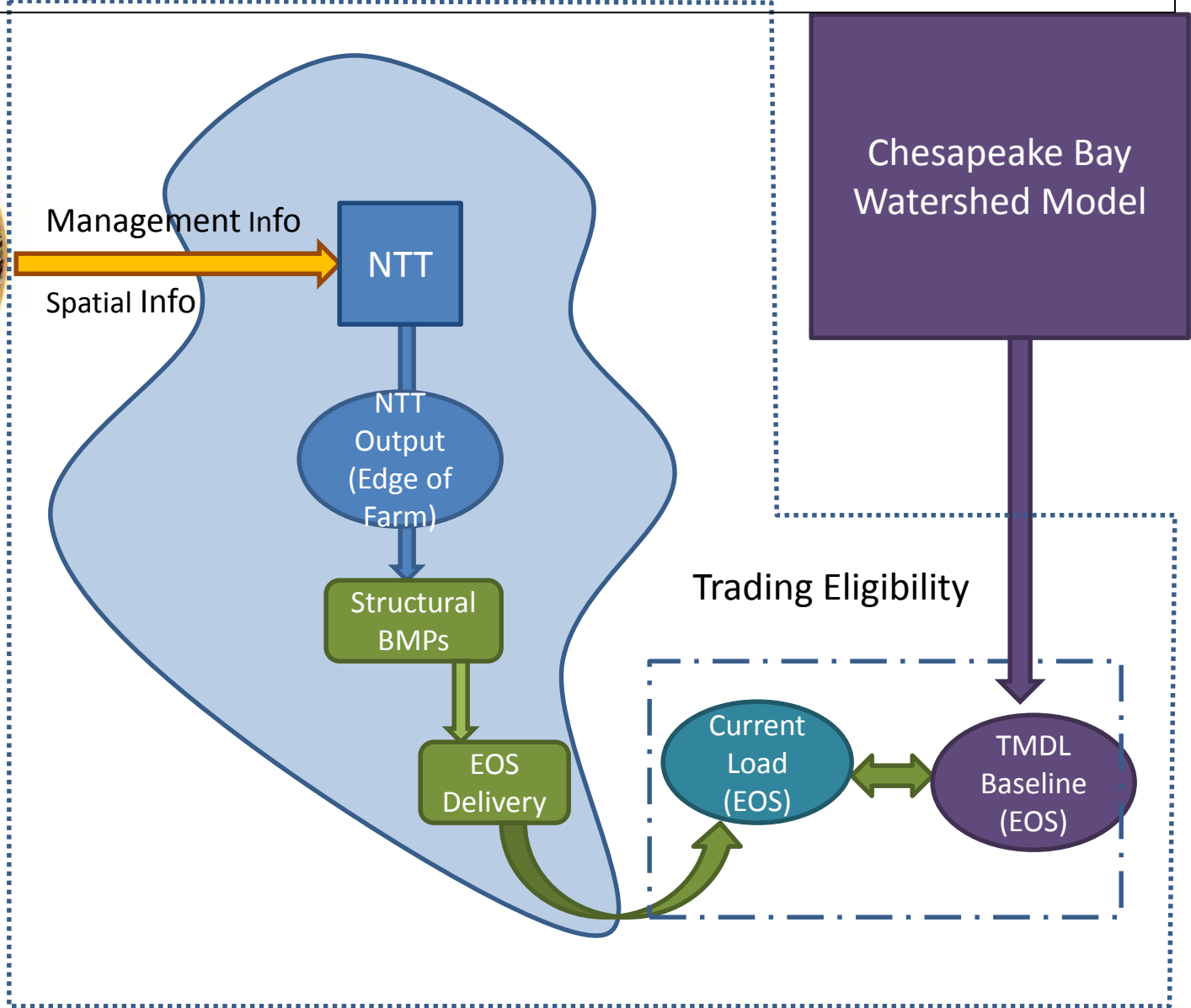
Chesapeake Bay
Watershed Model

Trading Eligibility

Current
Load
(EOS)

TMDL
Baseline
(EOS)

-  Nutrient Tracking Tool
-  NutrientNet Operations
-  Chesapeake Bay Watershed Model



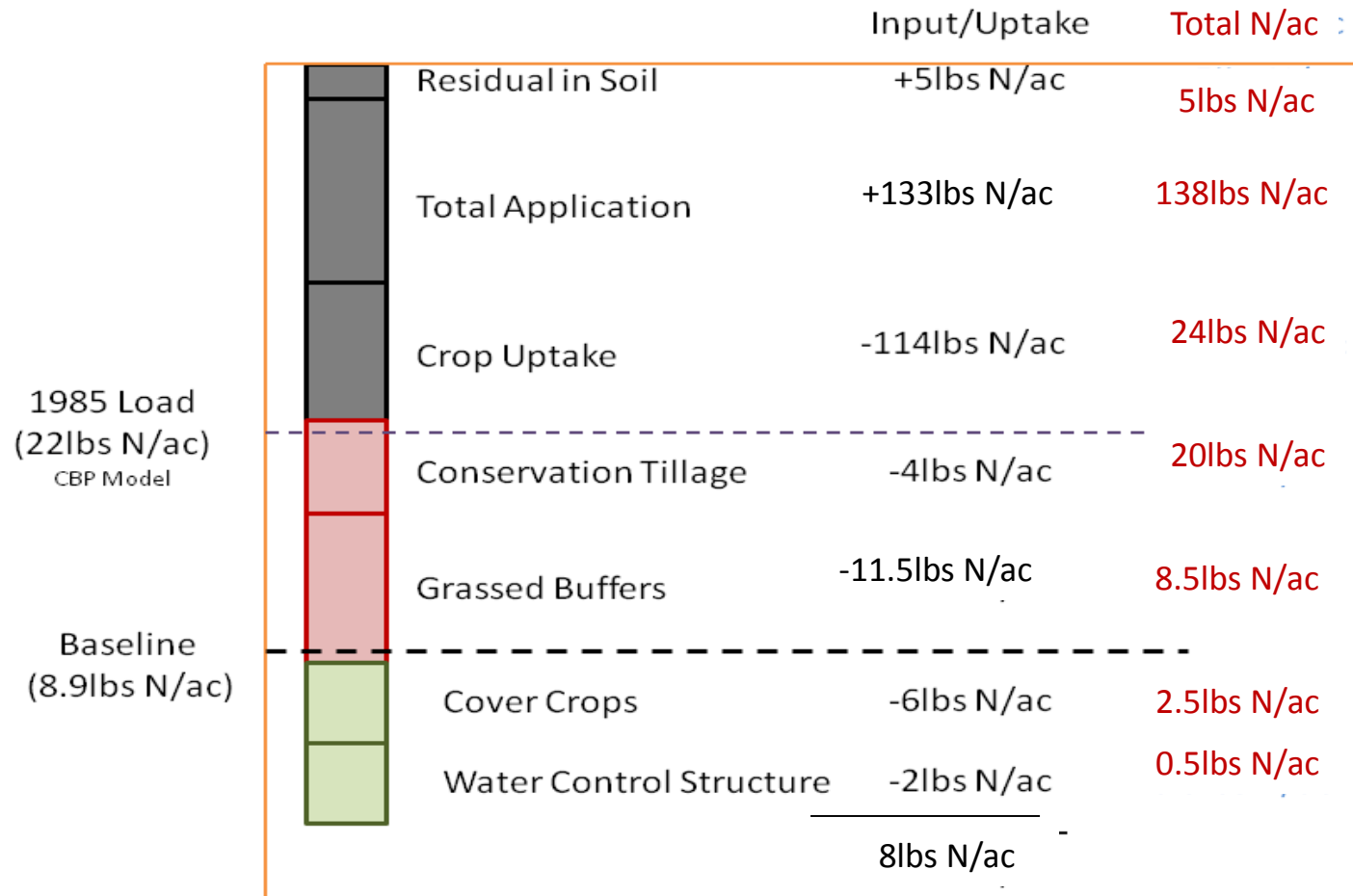
DIFFERENCES

NTT

Bay Model

Field/farm scale loads	Basin-scale average
Actual field nutrient inputs	Extension recommendations
Actual application (time and placement)	Fixed sequence of application and timing
Actual animals (type, number, and grazing time)	2012 Census county data
Actual yields	2012 Census regional data
Actual field soil types/slope	No soil types/slope
Actual residual "P"	No soil "P" residuals
Actual size and annual numbers of BMPs	Average BMPs
Fifty years of weather data	Ten years of weather data

BASELINE AND CREDIT CALCULATION EXAMPLE



[Email Friend](#)

WWW.MDNUTRIENTTRADING.COM

Welcome to the Maryland Nutrient Trading Program . . .

Please Read This Notice before Using the Maryland Nutrient Trading Tool

As of May 1, 2014, the Maryland Nutrient Trading Program launched the latest version of its online tools. The World Resources Institute (WRI), which partners with the Maryland Department of Agriculture (MDA) and the Texas Institute for Applied Environmental Research (TIAER), has utilized the Maryland trading platform as the template for a new multistate platform that can be accessed by users in Maryland, Pennsylvania, and Virginia. WRI and TIAER have transferred all existing accounts from the Maryland platform to the new multistate platform. They are also in the process of transferring the 253 farm worksheets for users who met the April 16 deadline for transfer requests.

To enter the new site, you can continue to use www.mdnutrienttrading.com or alternately you can switch to www.cbntt.org. However, it is recommended that you continue to use the former web address so that you can find specific information and/or learn about activities related to Maryland's program. **For those who had an existing account established before May 1, your account can be found under your current username, but you will have to change your password in order to access your worksheets.**

Because the latest version of the calculation tool incorporates any needed modifications since the last update, as well as changes required by current Maryland Nutrient Management regulations, there have also been some changes to the format for entries. You will have to make a few revisions to your worksheets to reflect the data entries for meeting the new setback, stream



Governor
Larry Hogan
Lt. Governor
Boyd K. Rutherford

[View Nitrogen and Phosphorous Credits](#)

[Login to CBNTT](#)
[Login to Market \(Under Construction\)](#)

Technical References & Guidelines

- [Guidelines for Agricultural Credit Sellers](#)
- [Guidelines for Agricultural Credit Buyers](#)
- [Policy for Point Source Buyers & Sellers](#)
- [NRCS BMP List \(PDF\)](#)





CHESAPEAKE BAY NUTRIENT TRADING

AGRICULTURAL PROJECT WORKSHEETS

Remember me

[Sign up](#)

[Forgot your password?](#)

[Didn't receive unlock instructions?](#)

CHESAPEAKE BAY NUTRIENT TRADING

Welcome, Susan Pa

AGRICULTURAL PROJECT WORKSHEETS

Home » Projects » My Farm4 » Edit location

Summary

Details

Edit Location

Fields

Review

Submit



CHESAPEAKE BAY NUTRIENT TRADING

Welcome, Susan F

AGRICULTURAL PROJECT WORKSHEETS

[Home](#) » [Projects](#) » [My Farm4](#) » [Fields](#) » 2

General

Soil

Current Crop Management

Current BMPs

Current Nutrient Load

Future Crop Management

FIELD INFORMATION

Enter field information.

Watershed: Chapel Branch-Choptank River**Land river segment:** A24011EM3_4321_0000**Major basin:** Eastern Shore**TMDL watershed:** N/A**Field number:*** 2**Field type:*** Select field type**Field is adjacent to stream/water body***

The term adjacent refers to land that is physically part of your land parcel.

Notes:

- Select field type
- Select field type
- Crop
- Permanent pasture
- Continuous hay
- Animal confinement
- Non-managed land

COMMERCIAL FERTILIZER APPLICATIONS

Enter all commercial fertilizer applications used on this field. Please enter the total nitrogen and total phosphorus values (not ammonium or phosphate).

[Add a Commercial Fertilizer Application](#)

MANURE FERTILIZER APPLICATIONS

Enter animal manure applications for the given year. If pasture, manure generated by livestock is automatically accounted for based on the information entered in the grazing livestock section.

Click [here](#) to see typical manure values.

[Add a Manure Fertilizer Application](#)


OTHER TILLAGE OPERATIONS

Enter tillage operations here. Tillage operations for incorporated fertilizer entered in the previous two sections are already accounted for, so do not enter fertilizer incorporation tillage operations here.

[Add a Tillage Operation](#)

HARVEST / END OF SEASON OPERATIONS

Enter the end-of-season harvest and/or termination date(s) for this crop. For annual crops such as corn, you should select 'Harvest and Terminate Crop.' Generally, a termination date should occur before the plant date of any subsequent crop in this rotation, though in some instances aerial seeding might be used to plant a subsequent crop before the final harvest and kill dates of an existing crop in which case the harvest and kill dates of the existing crop would come after the plant date of the subsequent crop.

End Of Season 1 

End of season operation type:*

Date:*

Harvest as silage:

Select end of season operation type

Select end of season operation type

Terminate Crop (No Harvest)

Harvest Only

Forest buffer:

Grass buffer:

FERTILIZER APPLICATION SETBACK

Setback in place:

Average width of setback:* ft

Linear feet of setback:* ft

Area of setback:* N/A ac

Planned:

WETLAND

Wetland in place:

OTHER LAND USE CONVERSION

Please indicate any non-riparian land conversion in place or planned on this field.

Acres converted: ac

Converted to:

Planned:

OTHER BEST MANAGEMENT PRACTICES

BMP 1



BMP type:*

Planned:

Select BMP type
Select BMP type
Decision/Precision Agriculture
Sorbing Materials in Ag Ditches

State: Maryland

County: Caroline

Watershed: Chapel Branch-
Choptank River

Major basin: Eastern Shore

TMDL: none

N LOAD INFORMATION

Farm meets N baseline:	Yes	Future N load for animal HQ (EOS):	0.00 lbs/yr
Baseline N load fields (EOS):	2,310.00 lbs/yr	Delivery Ratio:	1.0
Current N load fields (EOS):	1,043.81 lbs/yr	Total Reductions (EOS):	271.52 lbs/yr
Future N load fields (EOS):	772.30 lbs/yr	Eligible reductions:	271.52 lbs/yr
Current N load for Animal HQ (EOS):	0.00 lbs/yr	Credits:	272

P LOAD INFORMATION (EOS)

Farm meets P baseline:	Yes	Future P load for animal HQ:	0.00 lbs/yr
Baseline P load fields (EOS):	189.00 lbs/yr	Delivery Ratio:	1.0
Current P load fields (EOS):	45.62 lbs/yr	Total Reductions (EOS):	1.96 lbs/yr
Future P load fields (EOS):	43.66 lbs/yr	Eligible reductions:	1.96 lbs/yr
Current P load for Animal HQ (EOS):	0.00 lbs/yr	Credits:	2

SEDIMENT LOAD INFORMATION

Farm meets sediment baseline:	Yes	Future sediment load for animal HQ (EOS):	0.00 t/yr
Baseline sediment load fields (EOS):	16.32 t/yr	Delivery Ratio:	1.0
Current sediment load fields (EOS):	2.72 t/yr	Total Reductions (EOS):	1.41 t/yr

BAY TMDL

Agricultural Baseline Based on Model Version 5.3.2 (Edge of Segment)

	PTX	POT	SUS	WS	ES
N (lb/acre)	10.3	24.9	17.6	15.9	11.7
P (lb/acre)	1.3	1.8	0.9	1.1	1.0
TSS (t/acre)	51.4	552.6	48.6	89.3	117.5

Statewide N =16.7

Statewide P =1.3

Statewide TSS =171.9

BAY TMDL vs. LOCAL TMDL

	Eastern Shore Bay TMDL Nitrogen	Chester River (Middle) Local TMDL Nitrogen
Raw	29.96 lbs/acre	29.96 lbs/acre
TMDL	11.70 lbs/acre	6.91 lbs/acre
% Reduction	61%	77%
	Phosphorus	Phosphorus
Raw	2.01 lbs/acre	2.01 lbs/acre
TMDL	1.03 lbs/acre	0.49 lbs/acre
% Reduction	49%	73%

AGRICULTURAL PROJECT WORKSHEET

N LOAD INFORMATION

Baseline N load fields (EOS)	2,310.00 lbs/yr	Delivery Ratio	1.0
Current N load fields (EOS)	1,210.00 lbs/yr	Total Reductions	438.00
Future N load fields (EOS)	772.00 lbs/yr	Credits	438

P LOAD INFORMATION

Baseline P load fields (EOS)	180.00 lbs/yr	Delivery Ratio	1.0
Current N load fields (EOS)	75.00 lbs/yr	Total Reductions	29.50
Future P load fields (EOS)	45.50 lbs/yr	Credits	30

SEDIMENT LOAD INFORMATION

Baseline TSS load fields (EOS)	32,600.00 lbs/yr (16.32 t/yr)	Delivery Ratio	1.0
Current TSS load fields (EOS)	5,430.00 lbs/yr (2.72 t/yr)	Total Reductions	2,830.00 (1.40)
Future TSS load fields (EOS)	2,600.00 lbs/yr (1.31 t/yr)	Credits:	1

Application of Trading Ratios

Delivery Ratio Example

	Scenario 1	Scenario 2
Eligible Reductions	1,000	1,000
Delivery Ratio	X 0.58	X 0.80
Credits Available to Sell	580	800

Retirement Ratio Example

Credits Sold	500
Retirement Ratio (10%)	50
Total Credits Needed	550

CERTIFICATION

- Submission of Credit Registration and Certification form and accompanying documents to MDA for review
- Site visit **REQUIRED** to verify baseline conditions and appropriateness and effectiveness of credit generation proposal

VERIFICATION

Practices subject to verification three additional times:

1. For credits certified pending implementation, after installation to assure standards and specs are met and is fully operational
2. Annual inspection of baseline and credit generating practices by independent, third party
3. Random spot checks by MDA on 10% of all traded credits

Certified verifiers for initial visits and annual inspections

- Certified Nutrient Management Planner
- Qualified USDA /NRCS Conservation Planner, Level II
- Demonstrated competence in use of online assessment tool

REGISTRATION

- Approved credits are given a unique registration number and entered in the online Registry available to public.
- Registry lists owner of credits, quantity, type of pollutant, year, state ,county, and basin location, and duration
- When credits are posted to the Registry, all supporting documents and worksheets become subject to public inspection. These items will also be part of the documentation for permits as well.

[Home](#) / [Verifications](#) / [Index](#)

MANAGE VERIFICATIONS

[+ Add Verification](#)

This is a listing of all verifications that have been submitted. To submit a verification for an existing project, click the "Add Verification" button.































Project	Project ID	Site Checked	Verifier	Notes	Status	Actions
test project	51179-00001	2015-01-15	Sara		Compliant	👁 ⚡ ✖
test project	51179-00001	2015-04-21			Compliant	👁 ⚡ ✖
maryland project	24003-00001	2014-09-09			Compliant	👁 ⚡ ✖
maryland project	24003-00001	2014-12-02	Jill	approve	Pending	👁 ⚡ ✖
maryland project	24003-00001				Compliant	👁 ⚡ ✖
maryland project	24003-00001				Compliant	👁 ⚡ ✖
Jill's farm	24021-00001	2014-12-02			Compliant	👁 ⚡ ✖
apple farm	24009-00001	2015-01-07			Compliant	👁 ⚡ ✖
Frozen farm	24031-00001				Compliant	👁 ⚡ ✖
Happy valley	24033-00001		Zhou		Compliant	👁 ⚡ ✖

Home / Credits / Index

CREDITS

+ Add Credits

Credits listed in the public registry.

Project	Current Owner	Original Owner	Pollutant	Vintage	Quantity	Serial Numbers	Permanent/Term	Credit Type	Credit Status	Issued On	Actions
test project	Virginia Manager	person	N	2014	3	2014-N-VA1-51179-00043-2014-N-VA1-51179-00045	Term	ex-post	Retired	2014-02-05	  
test project	person	person	N	2014	19	2014-N-VA1-51179-00001-2014-N-VA1-51179-00019	Term	ex-post	Active	2014-02-05	  
test project	Virginia Manager	person	N	2015	3	2015-N-VA1-51179-00043-2015-N-VA1-51179-00045	Term	ex-post	Retired	2014-02-05	  
test project	person	person	N	2015	32	2015-N-VA1-51179-00001-2015-N-VA1-51179-00032	Term	ex-post	Active	2014-02-05	  
test project	Virginia Manager	person	N	2016	3	2016-N-VA1-51179-00043-2016-N-VA1-51179-00045	Term	ex-post	Retired	2014-02-05	  
test project	person	person	N	2016	32	2016-N-VA1-51179-00001-2016-N-VA1-51179-00032	Term	ex-post	Active	2014-02-05	  
test project	Virginia Manager	person	P	2014	4	2014-P-VA1-51179-00067-2014-P-VA1-51179-00070	Term	ex-post	Retired	2014-02-05	  
test project	person	person	P	2014	66	2014-P-VA1-51179-00001-2014-P-VA1-51179-00066	Term	ex-post	Active	2014-02-05	  
test project	Virginia Manager	person	P	2015	4	2015-P-VA1-51179-00067-2015-P-VA1-51179-00070	Term	ex-post	Retired	2014-02-05	  
test project	person	person	P	2015	36	2015-P-VA1-51179-00001-2015-P-VA1-51179-00036	Term	ex-post	Active	2014-02-05	  

NEW ONLINE OFFSET CALCULATION TOOL URBAN SECTOR

\$500,000 USDA/NRCS Conservation Innovation Grant

Expansion of the existing trading platform to accommodate a complementary calculation tool to estimate credit and offset needs in the stormwater sector and modification of the registry, marketplace, and administrative modules to meet programmatic changes, facilitate the ease of market participation for sellers and buyers, provide a transparent and accessible tracking and accounting system for credits and offsets, and generate reports for state entities and EPA.



Development Site		Flourmill Ct
Site Area		Acres 23.5
Impervious Area		Acres 0.0
Landuse	Open Space	Acres 0.3
	Pasture/Hay	Acres 4.5
	Row Crops	Acres 2.4
	Woods	Acres 16.2
Pollutant Load	TN	lb/year 83.2
	TP	lb/year 17.9
	TSS	tons/year 2.2



Development Site		Flourmill Ct	
Site Area	Acres	23.5	
Impervious Area	Acres	0.0	
Landuse	Open Space	Acres	0.3
	Pasture/Hay	Acres	4.5
	Row Crops	Acres	2.4
	Woods	Acres	16.2
Pollutant Load	TN	lb/year	83.2
	TP	lb/year	17.9
	TSS	tons/year	2.2

Single family, large lots, rural example (7 acres ag, 16 acres woods)

Pre development TN load = 83.2 lbs/yr

Post development TN load = 129.3 lbs/yr
(stormwater) + 212.8 lbs/yr (septic) =
342.1 lbs/yr

Net post development TN load = 342.1 –
83.2 = 258.9 lbs/yr

Per unit load = 258.9/14 = 18.5 lbs

Development Site		Flourmill Ct	
Site Area	Acres	23.5	
Impervious Area	Acres	3.5	
Landuse	Open Space	Acres	0.2
	Pasture/Hay	Acres	2.7
	Residential 1-acre	Acres	17.8
	Row Crops	Acres	0.8
	Woods	Acres	2.0
Pollutant Load (No BMPs)	TN	lb/year	133.9
	TP	lb/year	20.1
	TSS	tons/year	1.8
Forest Conservation	Areas within development site set aside for forest conservation credits.	Acres	-
% woods in good condition	Percentage of development site used for forest conservation.		-
ESD treatment	Areas within development site set aside for ESD treatment credits.	Acres	-
% ESD treatment	Percentage of development site used for ESD treatment.		-
Structural BMP treatment	Areas within development site set aside for BMP treatment.	Acres	2.0
% structural	Percentage of development site used for BMP treatment.		8.5
Pollutant Load (With BMPs)	TN	lb/year	129.3
	TP	lb/year	19.0
	TSS	tons/year	1.7
Septic Load	Number septic systems per site.	Units	14
	Amount of nitrogen from septic systems entering waterway dependent on system distance to waterway.	Delivery Ratio	50
WWTP Load	TN	lb/year	212.8
	TP	lb/year	0.0
Pollutant Export	TN	lb/year	0.0
	TP	lb/year	258.9
	TSS	tons/year	1.1
			-0.5

ENHANCEMENT OF REGISTRY AND MARKETPLACE

\$115,000 EPA/DNR Chesapeake Bay Implementation Grant

Improvement of the functionality of the registry and marketplace components to provide consistency and transparency in the certification, registration, and verification of credits, as well as the reporting of trades and relevant data within Maryland and among the Chesapeake Bay states.

CHESAPEAKE BAY NUTRIENT TRADING REGISTRY

Home / Projects / Public Index

PROJECTS

This is a listing of approved projects in the public registry.

Project	Project ID	State/County	Trading Basin	Date Submitted
test project	51179-00001	Virginia Stafford	Rappahannock	2014-02-05
test	51001-00001	Virginia Accomack	Eastern Shore	2014-02-10
maryland project	24003-00001	Maryland Anne Arundel	James	2014-09-15
Jill's farm	24021-00001	Maryland Frederick	Eastern Shore	2014-12-03

CHESAPEAKE BAY NUTRIENT TRADING REGISTRY

Home / Market / Index

MARKET LISTINGS

This is the public marketplace to buy and sell credits. To submit a new listing, click "Add Listing".

- All
- Buy
- Sell

Account	Email	Trading Basin	Pollutant	Trade Type	Quantity for Sale
superadmin	superadmin@kirstie.com	Potomac	Nitrogen	Buy	500
superadmin	superadmin@kirstie.com	Patuxent	Nitrogen	Buy	1000
superadmin	superadmin@kirstie.com	Eastern Shore	N	Buy	50



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MDA is a member of the National Network on Water Quality Trading

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