# CONSERVATION INNOVATION GRANTS
Final Progress Report

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| Grantee Name: Maryland Department of Agriculture (MDA) | |
| Project Title: Fostering a Sustainable Marketplace for Agricultural Water Quality Credits and Offsets for Intra and Interstate Trading | |
| Agreement Number: 69-3A75-12-219 | |
| Project Director: Jason Keppler | |
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| Period Covered by Report: 09/01/12 – 03/31/16 | |
| Project End Date: 03/31/16 | |

A) Purpose of Grant:

The purpose of the grant is to provide and promote additional opportunities for point and nonpoint sources to utilize Maryland's water quality trading market as a cost-effective, innovative option for improving and maintaining water quality in the Chesapeake Bay and its tributaries and ensuring consistency with the Bay Total Maximum Daily Load (TMDL), Maryland's Phase II Watershed Implementation Plan (WIP) strategies, and the requirements for a comprehensive offset program ("Accounting for Growth" or AfG) to accommodate new growth and development in the state. The project will identify elements of trading policies in need of revision and will re-evaluate, amend, and modify, where appropriate, the policies, market rules, and infrastructure to enable urban nonpoint sources to utilize water quality trading. The project will expand the existing agricultural credit assessment and trading platform to include the urban sector and establish the rules, tools, and processes that not only can be adopted and implemented in communities across Maryland, but also could be replicated, like all elements of the project, by other Chesapeake Bay states and jurisdictions. The project will gather the field-level data necessary to more effectively utilize Maryland's online assessment tool to determine urban credit demand and agricultural credit supply capacity in priority areas of the state. The project will structure outreach and educational activities to promote cooperation, information-sharing, and trust among stakeholder groups and engage both rural and urban community members.

B) Deliverables:

1. Development of models and protocols for estimating urban-based nutrient and sediment offset requirements, which will serve as the basis for trading with generators of agricultural credits;
2. Completion and dissemination of Maryland AfG policy and guidance documents;

3. Completion and dissemination of revised Phase I point source and Phase II agricultural nonpoint source trading policy and guidance documents to reflect AfG strategy;
4. Development and integration of a complementary online component that will enable the development community and Maryland jurisdictions to calculate the offsets required under the Bay TMDL loading caps and the modification of the registry and marketplace components to reflect programmatic changes and needs;
5. Compilation of an inventory and credit assessment of eligible farm properties in a minimum of three counties with an agricultural/urban interface;
6. Participation of a broad cross-section of stakeholders throughout the project to provide input and feedback for tool development, as well as test and demonstrate the enhanced online tools;
7. Creation of a link between urban and rural community water quality improvement efforts through a flourishing water quality trading market;
8. Submission of semi-annual reports;
9. Submission of supplemental narratives to support payment requests;
10. Submission of a final report;
11. Production of a Fact Sheet detailing the functions, capabilities, applications, and potential replication of the new online Maryland Development Stormwater Offset Tool; and
12. Participation in at least one Natural Resources Conservation Service (NRCS)-sponsored event during the period of the grant.

C) Summarize the work performed during the project period covered by this report:

1. The AfG proposals put forth by the Maryland Department of the Environment (MDE) in 2012 included plans to strategically allocate nutrient loads to upgraded wastewater treatment plants and offset any remaining loads through a combination of on-site practices and nutrient trading. During the latter half of the year, MDA staff joined their counterparts at MDE and the Maryland Department of Planning in holding a series of eight outreach meetings across the state to present the initial AfG proposals, but these meetings revealed a general lack of consensus on the fundamental issues. As a result, a workgroup comprised of stakeholders from the agricultural, environmental, development, and business communities, together with representatives from various jurisdictional levels within the state, was convened in January of 2013 to explore alternatives and make recommendations for revising the original AfG policies and guidelines.

   Besides participating in the eight half-day workgroup meetings scheduled from January through June, MDA attended nine additional meetings during that time of the team chosen to support the AfG workgroup. Members of the latter group were drawn from state and federal agencies, as well as local and national organizations, with the expertise necessary to further a comprehensive and informed discussion of the issues and options under consideration by the workgroup. MDA offered its perspective throughout the workgroup process and made several presentations on not only the existing agricultural trading program and infrastructure, but also its vision of AfG policies and their role in the development of the complementary offset calculation tool and modifications to other components of the online trading platform.

Although the original meeting timetable called for the AfG workgroup to wrap up its efforts at the end of June, the inability to find common ground on some key provisions necessitated three additional meetings in July. These extra sessions resulted in considerable progress but failed to produce a consensus on unresolved issues, and in August 2013, the workgroup issued a final report containing its recommendations in those areas where agreement had been achieved (See attached AfG Final Report). In an ultimately futile attempt to settle the remaining critical issues, most notably baseline and the treatment of phosphorus, representatives from state agencies and several other participating organizations held five more meetings during the balance of the year.

2. After an unsuccessful effort to use temporary secretarial staff to provide administrative support to the AfG Workgroup, MDA contracted with the Maryland Environmental Service (MES) to supply qualified, professional assistance to manage workgroup tasks and produce meeting reports, summaries, and permanent transcripts. Deliverables for that contract are detailed below.

    a) Provision of a project manager to direct assistance requested by MDA, MDE, and the workgroup;
    b) Attendance at all AfG meetings as scheduled;
    c) Documentation of task status and progress;
    d) Provision of supporting materials as requested or necessary to satisfy task performance and accounting requirements;
    e) Consultation with MDA, MDE, and the workgroup to provide solutions to any potential issues or challenges; and
    f) Submission of recordings, attendance sheets, and written summaries following each meeting to provide a permanent record of workgroup proceedings.

3. Despite the delays in finalizing AfG policies, MDA continued to meet with the contractors cooperating in the development of the new online assessment component for the stormwater sector, the enhancement of the remaining modules, and the provision of support services. A timetable was constructed for the completion of the necessary tasks through new contracts or the extension and expansion of existing ones to include the increased scope of work.

    Since MDE's Science Services Administration (SSA) had already created a template for one of the possible options for the format and functions of the urban offset calculation tool, a contract was signed in October 2013 with SSA to supply necessary data and technical support to MDA, other cooperating state agencies, and MDA vendors for use in the development of an urban calculation component and its integration into the current web-based platform. The deliverables of that contract are detailed below.

    a) Participation in gathering requirements for the calculation tool development and modifications, including data capture, approaches, analysis, and applications;
    b) Provision of existing offset spreadsheet to serve as a template for urban component development;

c) Cooperation in the tailoring of all elements of development and integration to the express policies of the Maryland trading program and the needs of its users;
d) Assistance in the review, revision, and refinement of calculation tool functions throughout the development, incorporation, and implementation process;
e) Participation in simulations and testing as appropriate and necessary at all stages of development and enhancement;
f) Assistance in addressing bugs and modifications and performance issues;
g) Participation in the identification and selection of stakeholders to test the beta and final versions of the tool;
h) Submission of beta and final versions of the tool, and
i) Submission of progress reports.

That same month, the existing agreement with Drive Current was extended to allow Drive Current to continue to host and support the trading program website until the spring of 2014, when the public release of the latest version of the online platform takes place and the site is transferred to the Texas Institute for Applied Environmental Research (TIAER). Additional funding was provided for the ongoing services. Also in October, the duration of the existing contract with the Maryland Association of Soil Conservation Districts (MASCD) was extended and its scope expanded to include the implementation of nonpoint to nonpoint trading and the promotion of a marketplace for agricultural offsets. These changes resulted in no additional costs.

4. In January 2014, discussions were held with SSA, WRI, and TIAER to explore preliminary design concepts for the new online tool and identify possible members of a group of stakeholders from both the public and private sectors to oversee the development process. At the request of MDE, the contract with SSA was revised in February to reflect changes in that agency's methodology for computing charges for salaries and related costs. MDA also took this opportunity to add a no-cost time extension to the agreement. The contract with Drive Current was extended once again in March to facilitate the transfer of the website and all existing accounts eligible for certification to MDA's server at TIAER and obtain the assistance necessary in re-establishing the links and mapping fields from the old database to the new one. Further compensation was provided to accomplish these tasks.

   Contracts were signed in August with WRI, TIAER, and Devereux Consulting detailing the work to be completed in the expansion of the online platform to accommodate the new stormwater offset assessment and calculation tool, as well as the enhancement of the functionality of the registry and marketplace components. Minimum expectations for the new suite of tools included the following:

   a) Provision of a secure log-in system with password reset and recovery features;
   b) Provision of user account and service support that allows saving and copying of projects and establishes an online link for the resolution of performance issues;
   c) Provision of an interactive mapping feature that allows the user to outline the area of proposed development and facilitates the estimation of the baseline load from that development;

d) Capability to estimate nitrogen, phosphorus, and sediment loads for stormwater and septic/wastewater discharges through the collection of user inputs about pre and post-development impacts and mitigation activities both on and off-site;
e) Capability to determine offset needs and/or credit generation capacity based on baseline requirements and development load estimates;
f) Capability to differentiate between sub-surface and surface drainage systems;
g) Capability to collect, store, and report data by project, displaying offsets purchased, source and type of offsets, and year purchased and inspected;
h) Capability to collect, store, and report data on land usage, urban best management practices, septic types, and treatment plant discharges; and
i) Provision of a marketplace broken out from the registry to facilitate trading by permitting both urban buyers and agricultural sellers to post credit needs/availability, along with contact information, in one central location.

The agreements with WRI and TIAER, which represent the major portion of budgetary contractual allocations, extended the scope and timetables of their existing contracts while a new agreement was negotiated with Devereux Consulting. At the same time, the existing contract with SSA was revised with no change in cost to bring contract duration and due dates for deliverables into conformity with the contracts for the other three vendors. Deliverables for each of the contracts with WRI, TIAER, and Devereux Consulting are outlined below.

WRI

a) Management and oversight of all aspects of the development of the urban calculation tool, the modification of the existing calculation tool, the enhancement of the registry and marketplace components, as well as the revision and refinement of the entire suite of components during integration into the trading program platform and website;
b) Cooperation with MDA, SSA, TIAER, and Devereux Consulting in gathering the requirements for the functionality and design of the urban calculation tool, including data capture, approaches, analysis, applications, and specific user interfaces and compilation of these requirements into a conceptual document for approval before the development of wire-frames for the proposed tool;
c) Identification of new features and added elements into the existing calculation tool and the enhanced registry and marketplace and the customization of these components to the express needs of the trading program and its users;
d) Provision of support and assistance to TIAER, SSA, and Devereux Consulting in the technical translation and documentation of tool requirements, the determination of load estimation and offset/credit calculation methodology, and the development and incorporation of an interactive mapping feature;
e) Participation in simulations and testing as appropriate and necessary at all stages of tool development and component enhancement;
f) Assistance in the selection and assembly of a user focus group to aid in the evaluation of the functionality to all components;

g) Conduct of beta testing and the compilation of bugs and issues to be addressed before final deployment;
h) Creation and delivery of a user manual based on the final version of the urban offset tool;
i) Participation in training for both new and existing users of the online platform;
j) Identification of ongoing maintenance issues and user support needs and cooperation with TIAER to implement response procedures;
k) Delivery of both beta and final versions of the enhanced suite of tools; and
l) Submission of quarterly progress reports.

TIAER

a) Provision of technical support to WRI, SSA, and Devereux Consulting in gathering requirements for the functionality and design of the urban calculation tool, including data capture, approaches, analysis, applications, and specific user interfaces and compilation of these requirements into a conceptual document for approval before the development of wire-frames for the proposed tool;
b) Assistance in the identification of new features and added elements into the existing calculation tool and the enhanced registry and marketplace and the customization of these components to the express needs of the trading program and its users;
c) Development of the urban calculation tool, modification of the existing online platform, and enhancement of the registry and marketplace components, as well as the revision and refinement of the entire suite of components during integration into the trading program platform and website;
d) Cooperation with WRI, SSA, and Devereux Consulting in the technical translation and documentation of tool requirements, the determination of load estimation and offset/credit calculation methodology, and the development and incorporation of an interactive mapping feature;
e) Compilation and processing of necessary data for the functionality of the calculation tool and other components and design of their look and feel and user interfaces in accordance with guidance from WRI;
f) Participation in simulations and testing as appropriate and necessary at all stages of tool development and component enhancement;
g) Assistance in the selection and assembly of a user focus group to aid in the evaluation of the functionality of all components;
h) Conduct of beta testing and the resolution of bugs and issues identified during that process;
i) Hosting of the new platform on MDA servers at the location of TIAER at Tarleton State University and the provision of ongoing maintenance and support for the online suite of tools and the website;
j) Provision of the technical documentation for the urban tool;
k) Delivery of both beta and final versions of the enhanced suite of tools; and
l) Submission of quarterly progress reports.

Devereux Consulting

a) Provision of technical support to WRI, SSA, and TIAER in gathering requirements for the functionality and design of the urban calculation tool, including data capture, approaches, analysis, applications, and specific user interfaces;
b) Cooperation with other vendors during tool development and integration in tailoring all elements of the tool to the express needs of the trading program and its users;
c) Provision of data from the Chesapeake Bay Watershed Model, including urban landuse loads, delivery factors, and BMP efficiency values to WRI and TIAER as needed;
d) Assistance to MDA, WRI, SSA, and TIAER in the review, revision, and refinement of calculation tool functions throughout the development, incorporation, and implementation process.
e) Participation in simulations and testing as appropriate and necessary at all stages of tool development and component enhancement;
f) Assistance in addressing the list of bugs and modifications supplied by WRI, as well as performance issues that arise;
g) Delivery of both beta and final versions of the enhanced suite of tools; and
h) Submission of quarterly progress reports.

5. The existing contract with Dr. Mark M. Bundy was also re-examined at this time. Dr. Bundy, former Assistant Secretary of Chesapeake Bay Programs at the Maryland Department of Natural Resources, facilitated the ongoing work of the Maryland Agricultural Nonpoint Nutrient Trading Advisory Committee in overseeing policy and infrastructure development since it was first formed in 2007. Dr. Bundy's expertise and institutional history proved to be valuable assets in providing continuity and support for the Advisory Committee, and as a consequence, his existing contract was not only expanded to include changes to trading program guidance and infrastructure necessitated by AfG policies, but also extended to afford additional time for the necessary work to be completed. Contract deliverables were revised to reflect the coordination and facilitation to two additional meetings of the Advisory Committee, and additional funding was provided for these services.

6. In May of 2015, following NRCS approval MDA's request for an extension in the grant's end date, MDA again reviewed all contracts with existing vendors and negotiated no-cost extensions with TIAER, MASCD, and Dr. Bundy. The agreement with Devereux Consulting was allowed to expire, and the funds originally allocated to that contractor were re-deployed in extending the timeline and expanding the scope of the work assigned to WRI and SSA.

7. On May 1, 2014, MDA launched the latest version of the online trading platform. Based on the components customized for Maryland, the new multi-state platform, which is now known as the Chesapeake Bay Nutrient Trading/Tracking Tool or CBNTT, can be accessed by users in Maryland, Pennsylvania, and Virginia. WRI and TIAER, with the

assistance of Drive Current, transferred all existing accounts and 253 individual user worksheets to the new platform over the ensuing months. The long-standing relationship with Drive Current was terminated upon completion of these tasks. Over the winter, extensive revisions, including a completely new screenshot section and accompanying instructions, were made to the user's guide to reflect the integration of the CBNTT. Copies of the revised guide were printed in January in preparation for the regional workshops scheduled to be held across the state later in the spring and for distribution to those who use the tool for other MDA initiatives, such as Conservation Tracker and the new Maryland Agricultural Certainty Program (MACP).

8. In March 2014, the first meeting of the stakeholder advisory group for the new urban tool was convened with all existing and prospective vendors in attendance. The agenda addressed expectations and requirements for tool function, on-site evaluation approaches, application of urban best management practices (BMPs), on-site mitigation, generation of potential credits, production of worksheets and maps, and the consequent enhancements to the registry, marketplace, and administrative modules. Following discussions several months later with staff from the soil conservation district offices and government agencies in Howard and Montgomery Counties, the stakeholder group was expanded to include representatives from these two highly urbanized areas.

   The stakeholder group held a second meeting in October to review recommendations from WRI for tool functionality and design options. As part of the discussion on tool features and optimal approaches, SSA gave a presentation of its spreadsheet methodology and Devereux Consulting provided a demonstration of the U.S. Environmental Protection Agency (EPA)'s Bay Facility Assessment Scenario Tool (BayFAST). The group agreed to WRI's outline of the proposed tool and decided that a mock up of the new tool, combining features drawn from both the SSA model and the BayFAST tool, should be fabricated and circulated. Early in 2015, the initial mockup version of the new urban tool was finished and circulated among vendors and stakeholders for review and comment.

9. After months of delay, MDA and its contractors were finally able to schedule a meeting in February of 2015 with staff from both EPA Region 3 and the Bay Program Office to consider not only options for adapting and incorporating portions of the BayFAST tool into the proposed urban offset tool, but also the latest calibration of the existing tool. A second meeting was held in June to present a refined mock-up of the urban tool and preliminary calibration results, as well as discuss additional changes to the registry, marketplace, and administrative modules.

   Despite expressing interest in linking the new urban offset tool and BayFAST, the EPA Region 3 and Bay Program Offices decided that staff priority needed to be given to the work required to produce the next version of the Chesapeake Bay Watershed Model scheduled for release in 2017. As a consequence, MDA and its contractors opted to proceed with the development of an urban tool prototype based on the features and functions of the calculator created by SSA during the AfG process. EPA contractors did, however, assist in the verification of scenario runs, the simulation of BMP methodology, and the review of final calculations. When the prototype was completed, an online test

site was established and a basic user guide was drafted to allow members of the stakeholder advisory group and others selected from state and county agencies to test the tool, identify bugs, and make recommendations for further improvements.

10. In April 2015, MDA convened a meeting of the stakeholder group overseeing the significant modifications to the registry and marketplace modules resulting from the prospective addition of the urban tool. Many of the members of this second group were already engaged in the urban tool development process, but since these components are expected to be used by Pennsylvania and Virginia, trading program personnel from the two states, along with staff from EPA Region 3 and the Bay Program Office, also were included. In anticipation of the meeting, WRI and TIAER reconfigured the existing registry to increase its functionality, established a dummy site and accounts, and drafted a simple user's guide to enable stakeholders and others to test the proposed system and offer feedback for further revisions and specific enhancements.

11. Work on the urban tool and the registry and marketplace components continued on parallel tracks, and the beta versions of the software for both projects were delivered in mid-December and made available for testing. To finish by the end of the year and facilitate testing, WRI created a shared Google document to record bugs and modifications and contracted with a short-term consultant to assist with flow and process, as well as communication with TIAER and SSA. WRI's consultant also amended the user's guides as ongoing changes to the functionality and features of the urban tool and the components were completed.

12. The final versions of the registry and marketplace modules were delivered in February 2016 and the final version of the urban tool was delivered at the end of March. Technical documentation of the tool has been completed by TIAER, and user and administrative guides have been finalized and printed (Copies of the three guides are attached). Copies of all materials also were distributed to the participating environmental agencies in Maryland, Pennsylvania, and Virginia.

13. Using the MDA format, a two-page Fact Sheet outlining the purpose, capabilities, and use of the Maryland Development Stormwater Offset Tool has been created and is available for distribution and replication (A copy of the Fact Sheet is attached).

14. Although definitive decisions on AfG polices and guidelines remained elusive and election-year politics added another obstacle in 2014, representatives from cooperating state agencies continued to meet periodically, and MDA and MDE began to develop a proposal to allow trading between source sectors for TMDL compliance. MDA and MDE collaborated throughout the summer to finalize the proposal, and in September, the draft proposal was presented to the state agency secretaries comprising the Bay Cabinet, and it received their provisional approval. When it became clear that the new cross-sector trading proposal endorsed by the Bay Cabinet lacked the necessary regulatory incentives to become a meaningful driver for the trading program, MDA and MDE began a series of meetings in the first half of 2015 to frame alternatives. One option proposed would allow jurisdictions with municipal separate storm sewer system (MS4) permits to

offset a portion of their restoration requirements through trading while another would offer the opportunity for credits to be purchased by the Bay Restoration Fund for use by targeted entities across the state.

Based on these proposals, MDA and MDE cooperated throughout the summer and early fall in crafting a framework for the development and implementation of a voluntary, market-based program to promote the use of water quality trading in accelerating and achieving pollutant reductions in the Chesapeake Bay and local waterways. A three-page "Maryland Water Quality Nutrient Trading Policy Statement" was released in October detailing the state's plans for making trading a reality in Maryland. And, key to the realization of an active trading program in Maryland is the policy statement's proposal to expand the original cross-sector strategy to include Phase 1 MS4 jurisdictions and allow them to meet part of their restoration requirements through trading.

Considerable time was spent by MDA and MDE staff during the remainder of the year in implementing the "Next Steps "outlined in the policy statement. These steps included the compilation of a draft comprehensive water quality trading policy manual (See attached Draft Maryland Trading and Offset Policy and Guidance Manual), the naming of the membership of the new permanent advisory committee to oversee the overall trading program and its infrastructure, and the organization of a state-wide trading symposium.

15. To help determine credit availability, soil conservation district and MDA field staff conducted assessments of farms in several of Maryland's most urbanized counties in order to create inventories of those eligible to participate in either the Certainty and/or the trading program. Data provided by MDE through the preparation of materials for the section of the draft manual dealing with MS4 trading were used to estimate credit demand.

16. The Maryland Agricultural Nonpoint Nutrient Trading Advisory Committee held what turned out to be its last meeting in September of 2014. At the end of 2015, the Agricultural Advisory Committee was disbanded and replaced by the Maryland Water Quality Trading Advisory Committee. Many members from the agricultural committee were named to the new trading advisory committee, along with former members of the AfG workgroup and widely respected representatives from the wastewater and stormwater sectors. During the first quarter of 2016 and the final quarter of the grant, this new committee held three of five scheduled monthly meetings devoted to the task of reviewing and refining the draft policy and guidance manual.

17. The Oversight Committee charged with developing the guidelines and regulations for the new Certainty Program held the first of eight scheduled monthly meetings in July of 2013. Since the MACP requires the use of the trading program's online assessment tool to determine a participant's baseline compliance and continuing eligibility, staff members associated with the trading program were tapped to help facilitate the process and serve as an informational resource for the Committee. The Committee finished its work by the following summer and final MACP regulations were promulgated in late December 2014 and became effective as of January 5, 2015.

18. When the MACP regulations were nearing completion, the draft administrative regulations for the Agricultural Nutrient and Sediment Credit Certification Program were also reviewed to assure consistency and conformity between the two initiatives. The controversy over MDA's new phosphorus management tool delayed the submission of final draft regulations until November of 2015, when they were approved by the Governor's Office and forwarded to the state's joint Administrative, Executive, and Legislative Review Committee. Following some minor changes to format and accompanying statements, the regulations were published in the *Maryland Register* of December 28.

19. Throughout the grant's duration and the evolution of the urban stormwater tool and the ongoing modifications to the registry and marketplace, demonstrations, testing sessions, and training workshops have been held in a number of locations across Maryland, in Pennsylvania and Virginia, and on the internet. Several of these sessions also offered the specialized training required by both the Certainty and Credit Certification Programs for individuals seeking MDA designation as Certified Verifiers in order to perform farm assessments and/or verifications of baselines and credit-generating activities. Attendees included federal, state, and county agency staff, MASCD and soil conservation district personnel, and consultants, aggregators, and other potential service providers, as well as representatives from national and regional environmental and conservation organizations, local agricultural producers and riverkeepers, and private industry.

    Demos/Testing/Training Workshops and Webinars

    03/10/14 Chestertown, MD
    03/10/15 Frederick, MD
    03/12/15 Chestertown, MD
    03/19/15 Owings Mills, MD
    01/22/16 Online Webinar
    01/26/16 Baltimore, MD (two sessions)
    01/29/16 Harrisburg, PA (two sessions)
    02/10/16 Richmond, VA (two sessions)
    03/01/16 Online Webinar
    03/14/16 Baltimore, MD (two sessions)

Besides the activities detailed above and earlier, MDA pursued every avenue and opportunity to not only promote water quality trading and Certainty and demonstrate the online suite of tools, but also educate and inform the agricultural community and the general public about the state's proposals regarding AfG and other trading-related plans and programs. Presentations were made at meetings and workshops sponsored by USDA/NRCS, MASCD, the LEAD Maryland Foundation, the Chesapeake Bay Program Scientific & Technical Advisory Committee, the Sustainable Forestry Council, The Conservation Fund, the Maryland State Soil Conservation Committee, the Montgomery County Soil Conservation District, the Maryland Agricultural and Resource-Based Industry Development Corporation, the Chesapeake Bay Foundation, and the Clean Water Coalition. Maryland's trading program was featured at a number of national, regional, and state conferences, and two of

them, A Community on Ecosystem Services (ACES) 2014 and the Soil and Water Conservation Society 2015 Annual Conference, were sponsored by NRCS and included Showcase events.

National, Regional, and State Conferences

Iowa Water Environment Association Annual Meeting, Dubuque, IA (06/13)
Chesapeake Bay Watershed Forum, Shepherdstown, WV (09/13)
Economics of the Ocean Conference, Washington, DC (12/13)
Maryland Planners Association Annual Meeting, Solomons, MD (10/14)
2014 Agricultural Outlook and Policy Conference Annapolis, MD (12/14)
ACES 2014 Conference, Arlington, VA (12/14)
Soil and Water Conservation Society 2015 Annual Conference, Greensboro, NC (07/15)
National Workshop on Water Quality Trading, Lincoln, NE (09/15)
Maryland 2015 Rural Summit, Annapolis, MD (12/15)
Maryland Nutrient Trading Symposium, Wye Mills, MD (01/16)

MDA attended multiple meetings of the Chesapeake Bay Water Quality Trading CIG Network, the organizational meeting of the National Network on Water Quality Trading and its later two-day retreat, the 2015 Maryland Agriculture and Environmental Law Conference, and the Maryland Farm Bureau Annual Conference. MDA joined in a series of meetings with the multi-state group that assisted WRI in the development of the CBNTT and held discussions with executives from EnergyWorks and staff from Watershed Stewardship, Inc., EPA's Region 3 and Bay Program Offices, Howard County's Office of Law, NRCS's Office of Strategic Resources, and the Maryland State Highway Authority. In addition, MDA participated in the University of Maryland (UMD)'s AfG webinar broadcast and the Bloomberg BNA-sponsored webinar on trading in the Chesapeake Bay, taught a mixed undergraduate/graduate class on ecosystem markets at UMD's College of Agriculture and Natural Resources, assisted MASCD and its partners with a stream restoration grant request from the Coastal Bays Trust Fund, and provided background for an article on the mechanics and economics of trading that appeared in the *Chesapeake Quarterly*.

MDA participated in the monthly EPA Trading and Offsets Work Group conference calls and attended the regular meetings of the Bay Cabinet, the Bay Cabinet Work Group, and the Chesapeake Bay Program Agricultural Workgroup. Through membership on the Maryland Commission on Climate Change (MCCC), MDA sits on the MCCC Steering Committee and both the Mitigation and Adaptation and Response Workgroups. MDA not only attends regular quarterly and monthly meetings of these groups, but MCCC membership has given the agency the opportunity to not only assist President Obama's State, Local, and Tribal Leaders Task Force on Climate Change and Resilience, but also join U.S. Senator Ben Cardin's roundtable dealing with climate change and the effects on Maryland agriculture resulting from increased coastal storm activity and sea rise.

D) Describe significant results, accomplishments, and lessons learned. Compare actual accomplishments to the project goals in your proposal:

1. As was indicated in MDA's grant application, water quality trading in Maryland was defined from its inception as an offset and reallocation program to accommodate population growth and new development under a loading cap. The main barrier to bringing nutrient trading to scale in Maryland has been the lack of demand from the sectors with potential offset needs. MDA has been frustrated in its efforts to promote trading activity by the failure of the state to finalize its long-overdue offset policies and regulations for addressing the added pollution from new growth and development as required under the Chesapeake Bay TMDL and the state's WIP. MDE contracted with WRI to conduct a preliminary feasibility study of stormwater-related nutrient trading in 2009, but nothing meaningful was done to furnish the necessary driver for the agricultural credit program until MDE offered its initial urban stormwater proposals and convened the AfG Workgroup. Although the Workgroup was able to resolve many of the pertinent issues, a number of critical ones, and most notably that of baseline, were left undecided. With the change of administrations in the state, the political will now appears to exist to conclude the AfG process. The Water Quality Trading Advisory Committee has been charged with this task and is expected to begin reviewing AfG policies and guidelines when it completes revisions to the draft comprehensive trading manual in the fall.

   It is interesting to note that the AfG Workgroup was the subject of a doctoral dissertation by Sonia Lorelly Solano from the University of Delaware. Entitled "Redefining the Network Management Model for Collaborative Public Policy Making: The Case of Maryland's Accounting for Growth Network," the dissertation, which was published in 2015, assesses the successes and failures of the AfG process and can be found at http://udspace.udel.edu/handle/19716/17722.

2. Despite the obstacles created by the lack of final AfG policies and the delays caused by EPA's indecision about access to BayFAST, MDA and its contractors were able to successfully complete the development of the new online urban tool and the modifications to the registry and marketplace. WRI and TIAER drew on the tool mock up from SSA's scoping calculator to create a web-based user interface and set up the calculation methodology. (Wherever guidance was missing, for example, on baseline, the contractors substituted a placeholder, in this case, a forest load, which can be replaced when the AfG process concludes later this year.) Like its agricultural counterpart, the resulting Maryland Development Stormwater Offset Tool is an interactive, site specific assessment tool that determines offset needs or credit generation capacity by translating on-the-ground conditions and BMPs into both edge-of-stream and delivered nutrient and sediment reductions. Similarly, it incorporates land uses and allocations from the Chesapeake Bay Watershed Model and applies approved Bay Program urban stormwater practices and reduction efficiencies. The calculator contains the most recent loading rates and delivery ratios from the Bay Model, and the tool automatically delineates drainage areas from the watershed segment identified by geographic location and allows users to import shape files.

The changes to the registry and marketplace entailed a redesign and reconfiguration of the two components to significantly improve their functionality for prospective users and provide a common tracking vehicle among the trading programs in Maryland, Pennsylvania, and Virginia. The new registry tracks term credits and permanent offsets across all sectors: agriculture wastewater, septic, and stormwater. It has been designed to ensure public accountability, transparency, and accessibility by tracking and displaying credit-generating projects, verification activities, credits, trades, and usage records for each state program. The marketplace, which serves as a central location to post available credits, advertise credit needs, and exchange information between potential buyers and sellers, is now a stand-alone component and is available separately or through the registry. Public access does not require an account to be established, but individuals and entities involved in trading can open accounts to facilitate the entire process from the submission of proposed projects for administrative or technical review to the notification of credit use by the buyer. The enhanced registry incorporates a number of advanced features:

a) Unique serial numbers for each credit that remain associated with the credit over its entire lifespan as it is issued, traded, and applied to meet a permit limit or offset needs;
b) State-specific policy requirements, such as customized trading ratios;
c) Accommodation of both edge-of-stream and delivered credits;
d) Document management;
e) Verification schedule management;
f) Search and reporting functionality that allows data to be summarized by various parameters, including credit term, pollutant type, trading basin, year, and permit type or number; and
g) E-mail alerts for registry users and administrators when an action is taken or needed.

The simultaneous work on urban offset tool and the registry, marketplace, and administrative components of the trading platform dovetailed well and allowed the contractors, who were involved in both projects, to accomplish their tasks more expeditiously than originally anticipated. The 35 members of the overlapping stakeholder advisory committees made invaluable contributions to the eventual configuration and functionality of the tool and the other components through their participation in the development and testing process. It should be noted, too, that an EPA Chesapeake Bay Implementation Grant supplemented the funding from this grant and facilitated the completion of additional improvements to the component modules.

3. The additions of the complementary Stormwater Offset Tool and significantly enhanced registry and marketplace to the existing agricultural calculation tool has created probably the most sophisticated trading platform in the nation. What is now essentially a "one-stop shop" for all buyers and sellers of credit and offsets can be accessed either through the trading program website, www.mdnutrienttrading.com, or directly at www.cbntt.org.

4. As was noted above, proposed Maryland water quality trading policy allows MS4 jurisdictions to meet a portion of their stormwater restoration requirements through trading. In order to link this urban-based demand for water quality credits with the agricultural producers who will be the likely suppliers of credits, the assessments of supply and demand focused on those counties with not only the population to be regulated under Phase I MS4 permits, but also sizeable areas devoted to agriculture. There are eleven Phase I MS4 permitted entities in Maryland, and of them, eight have significant rural areas. Through the 2015 permits, MDE has estimated the total number of acres that would be eligible for restoration through credit purchases, along with the estimated total number of nitrogen, phosphorus, and sediment credits needed to meet restoration requirements. The tables containing this data can be found in the attached draft manual, pages 32 to 34. Voluntary farm assessment efforts were begun by soil conservation district and MDA field staff in Anne Arundel, Howard, and Montgomery Counties with limited results. Howard County is the most complete at present. There are approximately 300 farms in Howard and two-thirds of them, or 200 farms, are protected in land preservation programs. Since preservation farms are already covered by permanent easements, they are ideal candidates for the generation of compliance offsets. Of the 100 farms that have been assessed in Howard, all of them are enrolled in preservation programs, and 82 of them meet baseline and are eligible to trade. MDA estimates that these 82 farms could produce at least 16,400 nitrogen credits, which would enable them to fully accommodate the estimated demand for 14,000 nitrogen credits. MDA does not have the requisite number of participants in the other counties to know if these results would be confirmed or not, but the process of assessing and inventorying farms is ongoing and more data will be acquired over time. MDA has recently added a new category of staff, Field Assessment Planners, to assist with this continuing effort.

5. Although MDA had already completed some updates to its policy documents, no further work was done until MDE and MDA joined together in mid-2015 to consolidate and revise the stand-alone trading policies and guidance that had been developed earlier for point sources and agricultural nonpoint sources. These three documents, "Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed" issued in 2008, "Maryland Policy for Nutrient Cap Management and Trading in Maryland Chesapeake Bay Watershed Phase II-A: Guidelines for the Generation of Agricultural Nonpoint Nutrient Credits" issued in 2008 and revised in both 2010 and 2012, and Phase II-B: Draft Guidelines for the Exchange of Nonpoint Credits, Maryland's Trading Marketplace" issued in 2008, have been incorporated into the new draft manual, along with the proposed guidance for regulated MS4 jurisdictions. The draft manual is in the process of being reviewed by the Water Quality Trading Advisory Committee, and when that work is finished, the remaining AfG issues will be addressed and those policies will be added to the manual as well.

6. The comment period on MDA's final proposed regulations for the Agricultural Nutrient and Sediment Certification Program closed on January 27, 2016. Following an internal review of the comments received, MDA filed the regulations for promulgation and immediately thereafter submitted a few revisions to definitions, together with other minor changes. The revised regulations are still pending.

7. The Maryland trading program has received considerable recognition over the years, and in 2013, was invited to sit on the National Network on Water Quality Trading. MDA is the only state department of agriculture to participate in the group, and last year, joined the Steering Committee. The trading program also was acknowledged internationally when it was one of four finalists for the 2013 Growing Blue Award, which is given for the advancement of public understanding of the importance of water not only in sustaining the environment, but also supporting economic and social growth. The Maryland program was nominated by *Global Water Intelligence*, a monthly magazine tracking worldwide water projects and trends, and cited for providing a model for incentivizing conservation, promoting growth, and protecting the Chesapeake Bay.

   By the end of the grant period, it is estimated that over 3,000 people attended various events or meetings where Maryland's trading program was featured and/or the online tools were demonstrated. In addition, 137 individuals received hands-on instruction in the use the trading platform tools and components, and six MDA and soil conservation district staff completed the requirements to be designated as certified verifiers for both the Certainty and trading programs.

8. Although no trades have been recorded to date, considerable progress has been made to bring Maryland near to realizing the cost-effective, cohesive, credible, and transparent program envisioned in the state's policy statement issued last October. The proposal to allow MS4-permitted entities to trade for compliance finally gives the program the driver that it has long lacked, and the commitment from Governor Hogan and two partner cabinet secretaries and advocates at MDE and MDE provides the program the political support it did not enjoy under the previous administration. The trading infrastructure is already in place, policies and regulations are soon to be finalized, and plans are under consideration for several pilots in one or more counties and possibly with the State Highway Authority. At this point, MDA anticipates that trading will begin by the end of the year or early next year.

E) Provide the following in accordance with the Environmental Quality Incentives Program (EQIP) and CIG grant agreement provisions:

All producers participating in the Maryland trading program would be eligible for EQIP, but there are no producers to identify and no dollars expended to report because no trades were effected during the life of the grant. Participants in the trading program may use EQIP and other federal and state financial assistance to meet baseline requirements. Under Maryland guidance and regulation, however, they cannot generate credits from any practice funded by cost-share monies until the contract covering the installation and maintenance of that practice expires. As both the Certainty and trading programs gain in popularity, it is expected that increasing numbers of producers will turn to cost-sharing to fulfill baseline requirements.

1. A listing of EQIP-eligible producers involved in the project, identified by name and social security number or taxpayer identification number;

   None

2. The dollar amount of any direct or indirect payment made to each individual producer or entity for any structural, vegetative, or management practices. Both biannual and cumulative payment amounts must be submitted.

   None

3. A self-certification statement indicating that each individual or entity receiving a direct or indirect payment for any structural, vegetative, or management practice through this grant is in compliance with the adjusted gross income (AGI) and highly-erodible lands and wetlands conservation (HEL/WC) compliance provisions of the Farm Bill.

   Not applicable

F) Budget

| Category | Budget | Match | Expenditures 12/31/15-03/31/16 | Cumulative to Date |
|---|---|---|---|---|
| Salary & Fringe | $ 175,000 | $ | $ 8,343.85 | $ 224,720.37 |
| Travel | 8,000 | | 385.08 | 3,425.32 |
| Outreach/Education/ Public Relations | 10,000 | | 3,972.65 | 10, 208.37 |
| Supplies | 1,000 | | 291.90 | 1,061.81 |
| Contractual | 300,000 | | 150,678.79 | 246,131.79 |
| Other Printing | 6,000 | | 4,305.48 | 5,473.47 |
| **Sub-Total** | **500,000** | | **167,976.75** | **491,021.13** |
| BMP Implementation | | 500,000 | | 600,022.62 |
| **Sub-Total** | | **500,000** | | **600,022.62** |
| **Total** | **$ 500,000** | **$ 500,000** | **$ 167,976.75** | **$ 1,091,043.75** |

# Final Report of the Workgroup on Accounting for Growth (AfG) in Maryland

**August 2013**

***Facilitated By:***

CouncilFire
Profit Redefined

***Staffed By:***

Maryland Department of Agriculture

MDE

Maryland Department of Natural Resources

Maryland Department of Planning

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## Accounting for Growth Acronyms and Terms

| | |
|---|---|
| 1KF | 1000 Friends of Maryland |
| AfG | Accounting for Growth |
| BAT | Best Available Technology |
| BMP | Best Management Practices |
| BNR | Biological Nutrient Removal |
| BRF | Bay Restoration Fund |
| CA | Critical Area |
| CBC | Chesapeake Bay Commission |
| CBF | Chesapeake Bay Foundation |
| CF | Council Fire |
| DNR | Department of Natural Resources |
| ENGOs | Environmental Representatives |
| ENR | Enhanced Nutrient Removal |
| EOS | Edge of Stream |
| FIL | Fee-in-Lieu |
| GF | Gordon Feinblatt, LLC |
| MACo | Maryland Association of Counties |
| MDA | Maryland Department of Agriculture |
| MDE | Maryland Department of the Environment |
| MDP | Maryland Department of Planning |
| MFB | Maryland Farm Bureau |
| MGPA | Maryland Grain Producers Association |
| MML | Maryland Municipal League |
| MSBA | Maryland State Builders Association |
| MSGC | Maryland Sustainable Growth Commission |
| N | Nitrogen |
| NAIOP | NAIOP Maryland, Commercial Real Estate Development Association |
| OSDS | On-site Disposal System (Septic System) |
| P | Phosphorus |
| SRF | South River Federation |
| SC | Sierra Club |
| TSS | Total Suspended Solids (Sediment) |
| WIP | Watershed Implementation Plan |

## Introduction and Background

As required by the State's Watershed Implementation Plan (WIP) and the Clean Water Act, Maryland is developing an Accounting for Growth (AfG) policy that will address any increase in the State's pollution load from population growth and new development. To restore the Bay, each of the watershed states, including Maryland, not only needs to reduce its current nutrient load, but also hold the line against new pollution. Maryland is expected to add an estimated 478,000 households by 2035. This growth may also lead to additional roadways, public buildings and other structures. The additional growth may add additional nutrient pollution to the Bay on an annual basis.

Maryland's plan for addressing pollution load from new development centers on: 1) the strategic allotment of nutrient loads to large wastewater treatment plants, upgraded to the best available technology, to accommodate growth; and 2) the requirement that all other new loads must be offset by securing pollution credits. The State is designing its AFG policy to account for any increased loads through a combination of on-site practices and through a nutrient trading market in Maryland that has the potential to lower pollution reduction costs for local governments, developers, tax and rate payers, and accelerate the Bay's restoration.

A previous draft of a proposed AfG policy was widely circulated through stakeholder meetings and documents posted online in 2012, however, extensive outreach and public comment in the summer and fall of 2012 revealed a lack of consensus on many fundamental issues. Therefore, a work group was established with key stakeholders to find common ground, clarify areas of disagreement and make recommendations for a revised AfG policy. Ten meetings of the Work Group were conducted, beginning January 18, 2013 and ending July 19, 2013. This report submitted in August 2013, describes the process followed by the Work Group and its recommendations.

For more information (e.g. meeting summaries, technical information, presentations and more) on Maryland's Accounting for Growth Work Group, please see MDE's AfG website.

### Supporting the Accounting For Growth Work Group

To enable a comprehensive discussion on the issues and options related to an AfG policy, the Work Group required resources that would provide experience, expertise and information to the process including technical information, data and case studies relevant to the issues at hand. The following agencies, organizations and individuals, known as the Support Team[1], were identified to support the AfG Work Group process:

- Baltimore County
- Council Fire
- Maryland Association of Counties
- Maryland Department of Agriculture
- Maryland Department of the Environment
- Maryland Department of Planning
- Maryland Department of Natural Resources

[1] A complete list of Support Team Members can be found in Appendix A.

- Maryland Municipal League
- University of Maryland
- US Environmental Protection Agency
- Washington County
- Other subject matter experts including scientists, land planners, and ecosystem credit brokers and bankers

The Support Team provided the following support to the Work Group process:

Council Fire was assigned to:

- Facilitate the Work Group by ensuring adherence to agendas and the AfG Work Group Charter, and promoting an exploration of the diversity of member opinions.
- Facilitate the Work Group in discovering ways to identify common ground and build consensus around issues and topics.
- Assist and organize the Support Team in conducting activities to best support the efforts of the Work Group.
- Allocate meeting time to accommodate discussions; prepare and distribute meeting agendas, meeting summaries and working documents; arrange for meeting space; and secure necessary materials and/or resources for meetings.
- Assist in the communications and logistics between Work Group Members and constituents, as appropriate.

State agencies and advisors were assigned to:

- Prepare and present the State's Guiding Principles for the Work Group process.
- Provide technical support, information and consultation regarding technical issues.
- Participate in discussions and provide perspective when appropriate.
- Interpret the Guiding Principles and provide context as needed.

### Members of the Accounting for Growth Work Group

To identify members for the AfG Work Group process, MDE created an initial list of key stakeholders who either worked on issues related to Accounting for Growth and/or were representative of a stakeholder network. Council Fire, MDE, and other participating agencies identified agricultural, development, environmental, local government and public interest communities as distinct broad stakeholder groups and selected individuals representative of these communities. MDE then began to contact the identified stakeholders to introduce the stakeholder Work Group process. During those interviews, stakeholders were asked to recommend other individuals who should participate in the work group process. The information was prioritized and 17 individuals were identified to constitute a balanced group, representative of the broad stakeholder community impacted by an Accounting for Growth policy.

**Agriculture Representatives**

| | |
|---|---|
| Yates Clagett | Farmer At-Large |
| Lynne Hoot | Maryland Grain Producers Association; Maryland Association of Soil Conservation Districts |

| | |
|---|---|
| Pat Langenfelder[2] | Maryland Farm Bureau (Valerie Connelly served as proxy) |

**Commercial and Residential Development Representatives**

| | |
|---|---|
| Tom Ballentine | NAIOP Maryland Commercial Real Estate Development Association |
| Katie Maloney | Maryland State Builders Association |
| Mike Powell[3] | Gordon Feinblatt, LLC |

**Environmental Community Representatives**

| | |
|---|---|
| Erik Michelsen | South River Federation |
| Alison Prost | Chesapeake Bay Foundation |
| Dru Schmidt-Perkins | 1000 Friends of Maryland |
| Josh Tulkin[4] | Sierra Club |

**Local Government Representatives[5]**

| | |
|---|---|
| Sandy Coyman | MACo; Talbot Co. Planning and Zoning Department |
| Cathy Drzyzgula | MML; Gaithersburg City Councilwoman |
| Mary Ann Lisanti | MACo; Hartford Co. Councilwoman |
| Shannon Moore | MACo; Frederick Co. Sustainability and Environmental Resources |

**Public Interest Representatives**

| | |
|---|---|
| Bevin Buchheister | Chesapeake Bay Commission |
| Stephen Harper | Public At-Large |
| Jon Laria | Maryland Sustainable Growth Commission |

## Decision-Making Process

To ensure balance, equity, consensus-building, and a structured approach to the process and individual meetings, rules of engagement including Work Group Member and Support Team roles, responsibilities, decision-making protocols, and other important elements of the effort were established in an AfG Work Group Charter and approved by the Work Group. This Charter[6] supported flexibility, forward thinking, respect and innovation among Work Group and Support Team Members, as well as providing a productive working environment for the effort.

Midway through the process, the Work Group agreed to form a subcommittee to meet separately from the full group and develop alternative recommendations for the Work Group to consider. The subcommittee met three times and reported back with recommendations to the full Work Group.

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[2] Valerie Connelly served as Ms. Langenfelder's alternate when absent.

[3] Jonas Jacobson served as Mr. Powell's alternate when absent.

[4] Claudia Friedetzky served as Mr. Tulkin's alternate when absent.

[5] Les Knapp and Candace Donoho served as the local government alternates when representatives were absent.

[6] The AfG Work Group Charter can be found in Appendix B and also includes Work Group Principles and Responsibilities.

## AfG Work Group Technical Information and Process

### AfG Work Group Schedule and Timeline

The AfG Work Group approved a meeting schedule and timeline that laid out a process to discuss issues and options related to an AfG policy. The timeline was updated as additional meetings and information were added to the schedule as needed.

| Meeting Date | Location | Topics |
|---|---|---|
| January 18th:<br>2pm to 5:30pm<br>Meeting Summary | Tawes State Office Building (DNR) in Annapolis (Conference Room C-1) | - Welcome and Introductions<br>- Leadership Remarks (Secretaries, EPA)<br>- AfG Framework<br>- Presentation of Management Principles<br>- Review of Stakeholder Timeline & Agenda<br>- Review of Team Charter<br>- Work Group: Identifying Common Ground |
| February 15th:<br>12:30pm to 4:30pm<br>Meeting Summary | Tawes State Office Building (DNR) in Annapolis (Conference Room C-1) | - Which nutrients need to be offset?<br>- Supporting data and baseline information (e.g. loading factors and loads to be offset)<br>- Nutrient Trading Introduction and available tools |
| March 22nd:<br>12:30pm to 4:30pm<br>Meeting Summary | Tawes State Office Building (DNR) in Annapolis (Conference Room C-1) | - Creating an AfG Trading Program (e.g. baselines, trading geographies, accountability measures) |
| April 19th:<br>12:30pm to 4:30pm<br>Meeting Summary | Aeris and Aqua Conference Rooms<br>Lobby level at MDE, 1800 Washington Blvd., Baltimore | - Fee-in-lieu (e.g. availability, limitations, who/ how/where fee is used)<br>- Effective date<br>- AfG Options Matrix |
| May 10th:<br>2:30pm to 4:30pm<br>Meeting Summary | Aeris and Aqua Conference Rooms<br>Lobby level at MDE | - Review and Discussion of Subcommittee Alternatives |
| May 31st:<br>9:00am to 1:00pm<br>Meeting Summary | Aeris and Aqua Conference Rooms<br>Lobby level at MDE | - What Allocation should be given to the Post-Development Load (Baseline)<br>▪ Discussion on the Implications of the Options<br>▪ Work Group Proposals<br>▪ Use MDE Calculator to demonstrate impact as needed |
| June 14th:<br>9:00am to 3:00pm<br>Meeting Summary | Aeris and Aqua Conference Rooms<br>Lobby level at MDE | - Finish Baseline Proposals<br>- How can the Post-Development Load be permanently offset<br>- Effective Date / Transitioning<br>- Which Pollutants<br>- Review of Recommendations-to-date |
| June 28th:<br>9:00am to 3:00pm<br>Meeting Summary | Aeris and Aqua Conference Rooms<br>Lobby level at MDE | - Trading and Offset Rules<br>- Applicability<br>- Calculating the Post-Development Load<br>- Review of Recommendations To Date |

| Meeting Date | Location | Topics |
|---|---|---|
| July 11th:<br>9:00am to 3:00pm<br>Meeting Summary | Aeris and Aqua Conference Rooms<br>Lobby level at MDE | - Sustainable Development Patterns<br>- Ratios to Increase Margins of Safety<br>- Review of Work Group recommendations and proposals |
| July 19th:<br>1:00pm to 4:00pm<br>Meeting Summary | MD Dept. of Agriculture<br>Conference Room 114 | - Review outstanding issues, recommendations and proposals<br>- Review AfG Work Group Report schedule |

### Maryland's Accounting for Growth Guiding Principles

Participating State agencies (MDE, MDA, MDP, DNR) worked together to develop Guiding Principles for the AfG Work Group. These principles provided a threshold of requirements that the State of Maryland must meet in crafting this program. As such, they provided a set of guideposts for Work Group consideration as it sought to develop its programmatic recommendations for the State. The Guiding Principles are set forth below:

1. Just as the Watershed Implementation Plan requires that existing loads of nitrogen, phosphorus and sediment must be reduced to meet the allocations in the Chesapeake Bay TMDL, it also requires that loads from population increase and economic growth that do not have load allocations under the TMDL be offset by an Accounting for Growth program.
2. The Accounting for Growth program cannot undermine other important state policies such as growing the economy, preserving agricultural and forestland, revitalizing communities, conserving energy, and addressing climate change.
3. The AfG program will encourage developers to plan and locate their developments to minimize pollution, and will require developers to offset the remaining pollution by securing reductions elsewhere.
4. Offsets must last as long as the new load exists, but the specific practices producing the offsets may change and the responsibility for maintaining the offsets may be shifted to another entity with its consent.
5. The AfG program needs to minimize market restrictions and barriers to participation while maximizing accountability and transparency.
6. Verifiability and enforcement are critical components to the AfG program.
7. A nutrient trading program will be established to offset new and increased loads and to spur innovation, accelerate pollution reductions, and reduce the overall cost of restoring and maintaining a clean Bay.[7]
8. The AfG program will establish a platform for trading with sufficient predictability and stability to satisfy the reasonable expectations of buyers, sellers and investors, and encourage innovation and a robust market.
9. Maryland's point and nonpoint trading policies and procedures will be fully integrated, with low transactional costs and manageable administrative burdens for the participants and the implementing agencies.

[7] Maryland already has a voluntary nutrient trading program that is administered by the Department of Agriculture. The State will leverage this current infrastructure to build a comprehensive trading platform to support the AfG policy.

### AfG Work Group Technical Materials

Throughout the process, the Support Team provided information to the Work Group related to issues and options for the elements of an AfG program. In addition, Work Group Members requested additional information during the effort based on discussions to support their deliberations.

The following foundational resources were provided to Work Group Members and can also be found on MDE's Accounting for Growth website:

1. Presentations on relevant issues including the most current information and data
2. Case studies on relevant programs implemented in other states and industries
3. AfG Matrix and Options:[8] Excel document with options related to an estimated 30 major issues identified for possible inclusion in an AfG Program
4. AfG Calculator Tool: Created by MDE to provide offset estimates of nitrogen and phosphorus based upon geographic location within the Bay watershed, pre-development land use assumptions, post-development land use assumptions and type of sewage treatment.
5. Maryland Nutrient Trading Tool: A web-based platform consisting of four components:
   - A Calculation Tool that determines baseline compliance and computes credits generated by agricultural best management practices;
   - A Registry of certified credits;
   - A Marketplace that can be used to post, trade, and track credits and manage individual accounts; and
   - An Administrative Module to assist in program supervision and the generation of relevant reports.

## Work Group Recommendations

The AfG Work Group developed general and specific recommendations on the elements of an AfG policy and program based on the issues discussed by the Members. These recommendations are offered to the State for their careful consideration as they formalize Maryland's program.

The table below sets forth each of the issues considered and the outcomes of the Work Group's deliberations. "Work Group Consensus" signifies all Work Group Members agreed with the proposed option. Where consensus was not met on a given issue, options that were considered are detailed and Work Group Member positions are defined.

The Work Group made considerable progress given the time constraints and complexities of the issues. Engagement and participation levels were extraordinarily high throughout the process and, despite the conclusion of the formal meetings, constituency representatives remain engaged in providing feedback to the State agencies on the details of specific recommendations as well as additional thoughts on issues where consensus was not reached.

[8] Appendix C provides definitions of key issues and terms used in the recommendations for the AfG policy.

As part of this on-going dialogue, all Work Group Members requested that MDE establish, prior to drafting and finalizing the program regulations, an ad hoc representative subcommittee of all impacted stakeholders (or consider using the BRF Advisory Committee provided it is representative of all impacted stakeholders) to consider the following issues:

- Fee-in-lieu (FIL)
  - The calculation of the "reduced" fee and sliding scale for the threshold for disturbed land between 5,000 or more sq. ft. but less than 43,560 sq. ft.
  - Language on what fee-in-lieu is, how it is used and how it acts as safety valve for the AfG Program
  - Assess ways to adjust FIL price over time
- Effective Date
  - Details on preliminary site plan documentation
  - Requirements for submittal of site plan and drop dead dates associated with grandfathering clause
- Exemption process for certain public works projects that meet specific criteria
  - Criteria may include the cost of the offsets versus the cost of the entire project, the amount of water pollution the project would generate, and the public benefits the project would create.
- Cross sector trading for TMDL compliance
- Verification, certification and transparency of urban credits

The balance of the issues, and the outcome of Work Group deliberations, are set forth in the table that follows.

| Issues | Outcome |
|---|---|
| **General Recommendations** | |
| 1.MDE will prioritize and streamline the process for setting nutrient and sediment TMDLs for impaired waters | Work Group Consensus |
| 2.Establish stakeholder group to review AfG program issues, including FIL, as the program is implemented and matures<br>• Consider using BRF Advisory Committee as the stakeholder group provided it is representative of all impacted stakeholders | Work Group Consensus |
| 3.Conduct triennial (once every 3 years) review of AfG policy and nutrient trading program | Work Group Consensus |
| 4.Effective and comprehensive communication of the AfG program to local governments and to the general public in advance of program implementation is necessary for success | Work Group Consensus |

| | |
|---|---|
| 5.The local government should have a right of first refusal for each fee collected, rather than a decision to run the entire FIL program. | Support: 1KF, CBC, Clagett, GF, Harper, Laria, MACo, MFB, MGPA, MML, MSBA, NAIOP, SRF<br>No Support: CBF<br>Undecided: None<br>Abstain: SC |
| **1. Applicability** | |
| **Triggers**<br>1.The alteration of land, or construction or alteration of a structure that creates a disturbed area equal to or above the threshold limit and (1) increases the wastewater load, or (2) increases the nonpoint source pollution coming from the parcel. Construction of agricultural-related structures on agricultural land would trigger the offset policy, but changes in agricultural practices or activities, such as the type of crop, do not trigger the offset policy. Change in land use alone does not trigger the offset policy.<br>2.The alteration of land, or construction or alteration of a structure that creates a disturbed area equal to or above the threshold limit and (1) increases the wastewater load, or (2) increases the nonpoint source pollution coming from the parcel. Construction of agricultural-related structures on agricultural land would **not** trigger the offset policy, nor would changes in agricultural practices or activities, such as the type of crop, do not trigger the offset policy. Change in land use alone does not trigger the offset policy. | Option 1<br>Support: 1KF, CBC, CBF, GF, Harper, Laria, MACo, MML, MSBA, NAIOP, SC, SRF<br><br>Option 2<br>Support: Clagett, MFB, MGPA<br><br>Undecided: None<br>Abstain: None |
| **Thresholds**<br>Projects that disturb 5,000 or more square feet of land<br>• Projects disturbing 5,000 or more sq. ft. but less than 43,560 sq. ft. (one acre) are subject to a set "reasonable" or "reduced" FIL per a sliding scale<br>○ The fee and sliding scale will be set by regulation with additional stakeholder input<br>○ A project subject to a reduced FIL may opt to pay the FIL or elect to undertake the required offsets<br>• Projects that disturb 1 acre or more of land are subject to full offset calculation analysis | Work Group Consensus |

| | |
|---|---|
| **Exceptions**<br>No exceptions<br>• Consider creation of specific criteria for public works project exceptions using subcommittee process | Work Group Consensus |
| **2. Effective Date** | |
| **Effective Date / Transitioning**<br>December 31, 2014<br>• Allow local government option to modify, by shortening the timeframe for, the grandfathering clause<br>Preliminary site plan submittal:<br>• Provide similar documentation to stormwater requirements (i.e. certain level of engineering and investment) for preliminary site plan<br>○ Need regulations to clarify definition of "submittal" requirements<br>Trigger dates<br>• MDE regulations finalized by Dec. 2013<br>• If a local jurisdiction must make revisions to a local policy or regulation, local jurisdictions have up to one year (until December 2014) to take the necessary steps (e.g. ordinances, regulations) to establish a program for accepting FILs and implementing offsets with those fees<br>• To be grandfathered, a preliminary site plan must be submitted within six months after county has established its program for accepting FILs or by June 2015, whichever is earlier<br>• End of construction "drop dead" date(s) – similar to stormwater regulation date(s)<br>• Alternative: Developer could submit preliminary site plan to the local jurisdiction for approval before the local jurisdiction has finalized its regulations or ordinances and be subject to only MDE regulations on offsets (not county regulations and ordinances on offsets)<br>The Work Group noted that loads generated between now and implementation date will be accounted for. | Work Group Consensus |

| **3. Fee-in-Lieu (FIL)** | |
|---|---|
| **Available or not, under what circumstances**<br>FIL is a permanent option. | Work Group Consensus |
| **Payable to whom, and for what purposes**<br>Establish a FIL for all nutrients that need to be offset. The Program goal is to get nutrient reduction on the ground as fast as possible to offset any increases in load.<br>• Local governments have the right of first refusal to run the FIL program<br>• Criteria must be in place for how/when fees are used to offset loads (using permanent or temporary BMPs)<br>• Whoever runs program is responsible for offsetting loads with BMPs and maintaining the practices<br>• Money and obligation should revert to BRF if funds are not used appropriately<br>• Need to define timeframe when party receiving the FIL funds must have practices in place<br>• Local water impairment issues must be addressed by FIL program<br>• Include provision for periodic review of price | Work Group Consensus |
| **Setting the cost of the FIL**<br>1.**Set initial price at $3000 per pound of nitrogen**<br>The Work Group did not discuss the cost of a FIL for phosphorus or sediment<br>2.**Set initial price at $3500 per pound of nitrogen**<br>The Work Group did not discuss the cost of a FIL for phosphorus or sediment | Option 1:<br>Support: None<br><br>Option 2:<br>Support: 1FK, CBC, CBF, Clagett, GF, Harper, Laria, MACo, MFB, MGPA, MML, MSBA, NAIOP, SRF<br>Undecided: None<br>Abstain: SC |
| **Setting the cost of the FIL**<br>Price is adjusted based on 3-year review and:<br>• Assess use of a continuous rolling average of actual costs on permanent practices (credit generation and/or WIP compliance practices) beginning in Year 3 of AfG Program | Work Group Consensus |
| **4. Which Pollutants** | |
| Offset nitrogen statewide and credit associated phosphorus and sediment reduction as to demonstrate no net load increase on a project by project basis;<br>Offset phosphorus, nitrogen and/or sediment wherever there is a local impairment at TMDL watershed scale. | Work Group Consensus |

| **5. Calculating the Post-Development Load** | |
|---|---|
| **Stormwater Loading Factors – Scale, Edge of Stream (EOS) and Delivered Loads**<br>1. Use 5-basin EOS loading factors, followed by Land River Delivery factors for segments not subject to a local TMDL. Use Edge of Stream loading factors for segments subject to a local nitrogen, phosphorus, or sediment TMDL, but only for the impairing substance.<br>2. Use Edge of Stream Loads | Option 1:<br>Support: CBC, Clagett, GF, Harper, Laria, MACo, MFB, MGPA, MML, MSBA, NAIOP<br><br>Option 2:<br>Support: 1KF, CBF, SC, SRF<br>Undecided: None<br>Abstain: None |
| **Stormwater Loading Factors – Adjustments for On-site Stormwater BMPs**<br>• Default – 50% reduction of nitrogen and 60% reduction of phosphorus for ESD to the MEP<br>• Recognize additional reduction if developer opts to demonstrate the use of more effective BMPs, using EPA's efficiencies<br>• Use Expert Panel to determine performance standards for new practices or default | Work Group Consensus |
| **OSDS (septic systems) Loading Factors – Location**<br>Use area specific EOS loading rate based on 3 zones (80% in Critical Area (CA), 50% within 1,000 feet of a stream but not in CA, 30% for all others) | Work Group Consensus |
| **OSDS Loading Factors Adjustments for efficiency of Nitrogen removal at Edge of Field**<br>Use MDE field-verified nitrogen reduction credits based on type of BAT system installed | Work Group Consensus |
| **Wastewater going to WWTP**<br>If BNR or ENR and/or Secondary Treatment with available nutrient capacity, no offset needed | Work Group Consensus |
| **Atmospheric Deposition**<br>Atmospheric Deposition will not be considered separately | Work Group Consensus |

| **6. Baseline** | |
|---|---|
| **What Allocation, if any, should be given to the Post-Development Load**<br>***Stormwater***<br>Options:<br>1. The offset = (the calculated post-development load) minus (the allocation in the 2025 WIP for the pre-development land use), except:<br>Active farmland (i.e., assessed as agricultural use) - use statewide average for pasture load, except that if the result is a negative number, it resets to zero.<br>Redevelopment – Projects that meet the stormwater management regulations definition of "redevelopment" would have either a minimal or no stormwater offset requirement. Projects that do not meet that definition, but where the pre-development impervious surface was between 20% and40% would have their stormwater offset based on a sliding scale<br>Infill - Projects that meet the definition of "infill" would have either a minimal or no stormwater offset requirement, however, infill needs to be further defined<br>Forest land - forest baseline<br>2. The offset = (the calculated post-development load) minus (the allocation in the 2025 WIP for the pre-development land use), except:<br>Active farmland (i.e., assessed as agricultural use) - use statewide average for pasture load, except that if, the result is a negative number, it resets to zero.<br>Redevelopment – Projects that meet the stormwater management regulations definition of "redevelopment" would have either a minimal or no stormwater offset requirement. Projects that do not meet that definition, but where the pre-development impervious surface was between 20% and40% would have their stormwater offset based on a sliding scale<br>Forest land - forest baseline<br>3. Forest load baseline for all offsets, that is, the offset = (the calculated post-development load) minus (the forest load) | Option 1:<br>Support: Harper, Laria<br><br>Option 2:<br>Support: CBC, GF, MACo, MML, MSBA, NAIOP, SRF<br><br>Option 3:<br>Support: 1FK, CBF, Clagett, MFB, MGPA, SC<br><br>Undecided: None<br>Abstain: None |

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| ***On-Site Disposal Systems (OSDS)***<br>Allocation should be equal to the load from any pre-existing OSDS, adjusted as if they had been upgraded to BAT | Work Group Consensus |
| ***Atmospheric Deposition***<br>Atmospheric deposition will not be separately considered | Work Group Consensus |
| **7. Permanency** | |
| **How can the Post-Development Load be permanently offset**<br>Offsets must be definably permanent and operation and maintenance for the offset must be guaranteed in perpetuity. | Work Group Consensus |
| **8. Post-Development Load** | |
| **When do the offsets have to be in place**<br>Except for BMPs to be installed on the development site, all the offsets must be installed to offset the load for each of the defined phases of the development before the grading permit is issued and construction of that phase can begin. See also FIL regarding BMPs installed using those fees. | Work Group Consensus |
| **When do the Post-Development load offsets have to be made public**<br>At an early stage in the process, the developer must propose the amount of offsets needed and the calculations used to arrive at the offset amount. | Work Group Consensus |
| **9. Encouraging Sustainable Development Patterns** | |
| **Definitions**<br>Redevelopment: If a project meets the stormwater management regulations definition of "redevelopment" it would have either a minimal or no (total exemption) stormwater offset requirement. Projects that do not meet that definition, but where the pre-development impervious surface was between 20% and 40% would have their stormwater offset based on a sliding scale. | Work Group Consensus |
| Infill: Include in policy but needs definition. | Support: Harper, Laria, SC<br>Does Not Support: CBC, CBF, Clagett, GF, MML, MACo, MGPA, MSBA, NAIOP, SRF<br>Undecided: None<br>Abstain: 1KF, MFB |
| **Exceptions**<br>No exceptions | Work Group Consensus |

| **10. Credit Trading Program** | |
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| **On-site Pollution Reduction Practices**<br>Enhance current approval process that streamlines additional/new BMPs available to reduce post-development load, including:<br>• On-site Credit Generation – All non-farm conversion development can generate tradable credits for sale to the trading market or use by the developer for future projects to the extent the post development load is lower than the AfG Program's baseline.<br>• Enhanced site design reduction practices, such as, fingerprinting of layout<br>• Preservation of forest practices beyond the requirements of the Forest Conservation Act (FCA)<br>• Reforestation/afforestation practices beyond the requirements the FCA or local riparian buffer requirements<br>• Reductions from on-site stream restoration would need to be approved by local jurisdictions to assure it fits with the local policy and restoration efforts<br>• Use of Expert Panel to assist existing process in reviewing and approving new or innovative BMPs in a timely manner<br>• The State should provide a list of acceptable on-site BMPs<br>Could be similar to the stormwater manual (which is incorporated by reference into the regulations) and include a provision for BMPs as used in Bay Model (MDE's accounting for stormwater document) | Work Group Consensus |

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| **Off-site Pollution Reduction Practices**<br>Establish approval process that streamlines additional/ new BMPs available for credit generation, so long as it does not conflict with local TMDL requirements including:<br>• Credit for capturing offsite drainage and providing treatment (retrofit). Credit based on loading to the new facility and the type of facility installed using the CBP document on stormwater retrofitting credits<br>• Expand and convert a SWM facility that is immediately adjacent to the project, would need land on the project to achieve the expansion<br>• Convert existing stormwater facilities for greater pollutant removal. This would need to be approved by local jurisdictions, but would probably involve the conversion to privately owned facilities<br>• Install denitrifying OSDS systems. Need to be sure it does not conflict with local TMDL requirements. Have owners register their systems as available for installation<br>• Assess possibility for a variety of offsite reforestation offsets<br>• Generate credits through exceeding the stormwater management requirements for redevelopment by installing greater SWM or planting. Maybe not available for revitalization projects<br>• Identify other local jurisdiction projects for urban credit options (connection of package treatment plant to WWTP with ENR, installation of spray irrigation for land application of treated wastewater, etc.)<br>• Use Expert Panel to assist established process in reviewing and approving new or innovative BMPs in a timely manner<br>• The State should provide a list of acceptable off-site BMPs<br>Could be similar to the stormwater manual (which is incorporated by reference into the regulations) and include a provision for BMP practices as used in Bay Model (MDE's accounting for stormwater document) | Work Group Consensus |

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| **Credit Certification, Verification and Transparency**<br>Option 1:<br>1. Establish independent reviewers (that are qualified, knowledgeable and truly independent) to certify and verify credits; additional checks and balances to avoid conflict of interest<br>2. All trades to be in a publicly accessible, on-line database established by State (MDE and MDA) and used to track progress<br>3. Leverage existing MDA certification and verification policies for development of urban practices and standards by MDE<br>4. MDE is ultimately responsible for verification, enforcement and transparency of permitting process and market trading program<br>○ MDA is responsible for certification, verification, and registration of agricultural credits<br>○ MDE is responsible for certification, verification, and registration of urban credits<br>5. All Credit Verifiers receive and are up-to-date with state certification for market trading program<br>Option 2:<br>All recommendations as Option 1 except #3 and #4. MDE should strengthen MDA's existing verification policies. | Option 1:<br><u>Support</u>: 1KF, CBC, CBF, Clagett, GF, Harper, Laria, MACo, MFB, MGPA, MML, MSBA, NAIOP, SRF<br><br>Option 2:<br><u>Support</u>: SC<br><br><u>Undecided</u>: None<br><u>Abstain</u>: None |
| **Regulation of Brokers and Aggregators**<br>• Establish third party review of aggregator practices<br>• Qualifications and best practices should be defined (bonding, certification, required percentage of reserve and more)<br>○ MDE should conduct additional research on best practices regarding aggregator/broker regulations | Work Group Consensus |
| **Restrictions on Trading Geographies**<br><u>Interstate</u><br>When available, allow interstate trading within the basin. However, the State of Maryland must verify that the other watershed states have consistent and compatible trading programs. | <u>Support</u>: All Work Group Members except for SRF<br><u>Undecided:</u> None<br><u>Abstain</u>: SC |

| | |
|---|---|
| In-State:<br>Option 1:<br>Use a hierarchical trading geography – limit trading to the affected basin first, then expand trading statewide if no credits are available; offset is required at TMDL watershed scale if there is a local impairment.<br>○ 3-year review to assess trading scale impacts<br>Option 2:<br>Allow trading statewide, unless the development occurs on a local segment subject to a TMDL for nitrogen, phosphorus, or sediment, then must be offset at local level for that nutrient; county has option to limit trading to smaller scale if they wish to do so.<br>○ Periodic review to assess trading scale impacts | Option 1:<br>Support: 1KF, CBF, CBC, Clagett, Harper, Laria, MFB, MGPA, SRF<br><br>Option 2:<br>Support: GF, MACo, MML, MSBA, NAIOP<br><br>Undecided: None<br>Abstain: SC |
| **Credit Stacking**<br>Horizontal credit stacking should be allowed. It is not acceptable to credit stack when meeting an obligation or environmental functional replacement like mitigation requirements.<br>• Vertical credit stacking should be evaluated at future date | Work Group Consensus |
| **Cross-sector Trading for TMDL Compliance**<br>The Work Group considered a policy of allowing, once an individual's TMDL requirements were met, any sector (primarily urban sector/local jurisdictions) to trade (buy credits) with another sector (primarily agricultural sector). However, the work group believed that more discussion was needed at a subcommittee level and does not endorse or prohibit cross-sector trading at this time. | Work Group Consensus |
| **11. Margins of safety** | |
| **Ratios to increase margin of safety and accelerate Bay restoration**<br>Require that the load be offset at a 1:1 ratio, with a 10% retirement ratio. | Work Group Consensus |

## Conclusion

In the face of an extremely complex and interrelated set of topics related to the development and implementation of an AfG program for Maryland, the Work Group successfully developed consensus recommendations for 28 of 36 issues that were discussed, including general recommendations. The remaining unresolved issues were not without progress. Often, the universe of options related to those issues was substantially reduced and plans have been secured for on-going dialogue between state agencies and

stakeholders as the regulations are developed between August and December 2013. The Work Group recognizes that its consensus recommendations may or may not be adopted, in full or in part, by the responsible State agencies, but offer them to provide strong program constituency guidance to Maryland.

In addition, the Work Group Members were strong proponents of using adaptive management techniques to help ensure that the program eventually implemented in Maryland would find success. As such, the Work Group recommended that the State conduct a program-wide periodic review and make subsequent adjustments based on performance, utility and impacts.

The Work Group Members are proud of their service to the State of Maryland and are pleased to have engaged in and successfully completed an effective process that brought understanding of key issues to major constituencies, achieved acceptable compromise on nearly 80% of program issues, further defined and limited options for non-consensus issues, and provided an excellent foundation for successful resolution of those outstanding issues. The Work Group is confident that these recommendations can form a strong and comprehensive foundation for the Accounting for Growth policy and the Members look forward to providing ongoing input to the State as the program is formalized and implemented.

# Appendix

## Appendix A: AfG Support Team List

| AfG Support Team Contact List | |
|---|---|
| Steven Stewart | Baltimore County; Dept. of Environmental Protection and Resource Management |
| George Chmael II | Council Fire |
| Kate Culzoni | Council Fire |
| George Kelly | Environmental Banc & Exchange |
| Doug Lashley | GreenVest, LLC |
| Les Knapp | Maryland Association of Counties |
| John Rhoderick | Maryland Department of Agriculture |
| Susan Payne | Maryland Department of Agriculture |
| David Costello | Maryland Department of the Environment |
| Brigid Kenney | Maryland Department of the Environment |
| Jim George | Maryland Department of the Environment |
| Lee Currey | Maryland Department of the Environment |
| Vimal Amin | Maryland Department of the Environment |
| Dinorah Dalmasy | Maryland Department of the Environment |
| Dave Goshorn | Maryland Department of Natural Resources |
| Helen Stewart | Maryland Department of Natural Resources |
| Joe Tassone | Maryland Department of Planning |
| Dan Baldwin | Maryland Department of Planning |
| Roger Venezia | Maryland Department of Business and Economic Development |
| Meg Andrews | Maryland Department of Transportation |
| Candace Donoho | Maryland Municipal League |
| Dusty Rood | Rodgers Consulting |
| Jeff Corbin | U.S. Environmental Protection Agency |
| Darrell Brown | U.S. Environmental Protection Agency |
| Dave Nemazie | University of Maryland |
| Julie Pippel | Washington County; Division of Environmental Management |

## Appendix B: Accounting For Growth Work Group Charter

### Process

To ensure balance, equity, consensus building, and a structured approach to the process and individual meetings, rules of engagement including Member and Support Team roles, responsibilities, decision-making protocols, and other important elements of the effort have been established. This Charter supports flexibility, forward thinking, respect and innovation among Work Group Members and Support Team as well as providing a productive working environment.

### Work Group Principles

The Members of the Work Group and Support Team unanimously agree to abide by the following principles:

- Work to achieve outcomes that serve the best interests of Maryland's economy, environment and its citizens.
- Abide by the concept that disagreement does not equal disrespect and treat all other Members of the Work Group and the Support Team, as well as all others participating in the process, with respect, honor, fairness and dignity.
- Bring any and all matters falling within the purview of the Work Group, as described herein, to the Work Group for consideration and resolution prior to pursuing the matter in other venues, including the media.
- Maintain an open mind and consider all perspectives before reaching a conclusion on a Work Group matter.
- Consider and strive to develop recommendations that meet the "Guiding Principles" set forth by the participating government agencies with responsibilities related to the Accounting for Growth Program.

### Responsibilities

The Members of the Work Group unanimously agree to meet the following responsibilities:

**Between meetings:**

- Review and be prepared to discuss all relevant topic and agenda information including all meeting materials and other communications delivered before each meeting.
- Maintain all provided information in a binder provided to each Work Group Member.
- Contact a member of the Support Team as soon as you discover that you are unable to attend a meeting.

**During Meetings:**

- Always act in accordance with Work Group Principles.
- Be on time and committed to engage and participate in meetings.
- Work to follow the agenda and process of each meeting.

### Work Group Meeting Procedures

The following meeting procedures shall guide the Work Group's activities:

- A quorum of Members is necessary to hold Work Group meetings. A simple majority of appointed Work Group Members shall constitute a quorum.

- Work Group decisions shall be made as follows:
    - Members shall work together to reach a recommendation on each topic and Members may offer a position on any matter before the Work Group.
    - Recommendations shall be made through a consensus building process where mutually acceptable and beneficial conclusions are first sought.
    - A "straw poll" (a facilitator-conducted verbal survey of Work Group Members in attendance) may be used to assess the degree of preliminary support for issues before the Work Group finalizes recommendations. Straw polls may lead to subsequent work by the group to revise the text of a recommendation and continue to explore ways to reach consensus.
    - If consensus decision methods are not feasible and/or consensus cannot be achieved on an issue, the meeting summaries will capture common ground achieved and all disparate opinion(s), along with the proffered rationale for each opinion(s), on matters considered by the Work Group.
- Work Group Members may bring others to assist them, but only Work Group Members and Support Team members shall be seated at the table.
- Other attendees will have an opportunity to provide comments to the group during a designated time at the end of each meeting.
- Meetings will be open to the public and posted on the MDE website.

**Support Team**

A Support Team, comprised of personnel from Council Fire, MDE, MDA, DNR, DBED, MDP and EPA has been established and will conduct the following activities in support of the Work Group process:

Council Fire Team will:

- Facilitate the Work Group by ensuring adherence to agendas and this Charter, and promoting an exploration of the diversity of member opinions. Council Fire Facilitator will help the group discover ways to identify common groups and build consensus around issues and topics.
- Allocate meeting time to accommodate discussions; prepare and distribute meeting agendas, meeting summaries and working documents; arrange for meeting space; and secure necessary materials and/or resources for meetings.
- Assist in the communications and logistics between Work Group Members and constituents, as appropriate.

MDE, DNR, MDA, MDP, DBED, EPA and advisors will:

- Prepare and present the Guiding Principles for the Work Group process.
- Provide technical support, information and consultation regarding technical issues.
- Participate in discussions and provide perspective when appropriate.
- Interpret the Guiding Principles and provide context as needed.

**Work Group Process Goal**

The Work Group's objective is to produce a set of recommendations by June for Accounting for Growth regulations to participating agencies that are created in a manner consistent with the processes and procedures set forth in this Charter.

- The Accounting for Growth Work Group's recommendations will be submitted to the relevant agencies and for consideration by the Bay Cabinet.

## Appendix C: Accounting for Growth Definitions

| | |
|---|---|
| Actual costs | The cost of design, construction and maintenance, including contract administration |
| Basin | An area of land that drains into a particular river, lake, bay or other body of water; also called a watershed |
| Certification | Confirmation that the estimated nutrient reductions are creditable and/or the nutrient reductions are being generated |
| Continuous rolling average | A way of calculating the mean whereby newer data displaces older data |
| Cross-sector | Between sectors (examples of sectors are agriculture, wastewater, forest, urban runoff) |
| Fee-in-lieu | Money paid to a public agency in place of having to secure a required offset; the agency uses the money to generate credits at least equal to the required offset |
| Fingerprinting | A planning tool used to design a development so that it minimizes impacts on sensitive natural resources and incorporates natural features of the site |
| Horizontal (credit) stacking | Horizontal stacking occurs when a project performs more than one distinct management practice on non-spatially overlapping areas and the project participant receives a single payment for each practice |
| Loading rate | The total amount of material (pollutants) entering the system from a source, expressed as weight per unit time. |
| Local impairment | A water body smaller than the Bay that does not meet one or more water quality standards and has been determined to require a Total Maximum Daily Load |
| Threshold (Applicability) | The minimum amount, for example, of disturbed acreage, that is sufficient to require a project to comply with a regulatory program |
| Trading geographies | Spatial areas within or between which credits can be traded |
| Trigger (Applicability) | The activity or the characteristics of the activity that bring a project within the ambit of a regulatory program |
| Verification | Confirmation by examination that specified baseline requirements have been met and that the credit calculation is correct |
| Vertical (credit) stacking | Vertical stacking occurs when a project participant receives multiple payments for a single management activity on spatially overlapping areas based on the multiple benefits |

# DRAFT
# MARYLAND
# TRADING and OFFSET
# POLICY and GUIDANCE
# MANUAL
# CHESAPEAKE BAY WATERSHED

January 2016

ACKNOWLEDGEMENTS

TBD

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5. Trading Ratios
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9. Compliance
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# SECTION I

Protecting and restoring the water resources of the Chesapeake Bay and the many tributaries within its watershed present a great challenge to Maryland's citizens and businesses, as well as State, county, and local governments. Nutrient trading offers an attractive alternative to more traditional approaches for improving water quality and can often achieve results faster and at a lower cost. Maryland's new trading program provides expanded opportunities for all point and nonpoint sources by giving them access to the water quality marketplace and flexibility in meeting and maintaining their load limits by purchasing credits and/or offsets generated from load reductions elsewhere.

The Maryland Nutrient Trading Policy Statement, released on October 23, 2015, detailed a roadmap for the development of a cross-sector, water quality-based trading program and manual that use innovation, economies of scale, and public-private partnerships to accelerate the restoration of the Bay and local rivers and streams. The new comprehensive Draft Water Quality Trading Manual builds on the significant work of the Maryland Departments of the Environment (MDE) and Agriculture (MDA) with input of the stakeholder groups and committees to develop both point and nonpoint source trading policies and guidelines for the generation and acquisition of water quality credits. This new phase of the trading program and the draft manual, once adopted, will provide the framework for local governments and State and federal agencies with Municipal Separate Storm Sewer Systems permits (commonly known as MS4 permits) to engage in trading. The 2016 Draft Trading Manual describes policies and provides guidance to ensure transparency and accountability of all water quality credit exchanges.

## Background

History, Goals, and Strategies

The original 1983 Chesapeake Bay agreement called for the signatory Bay jurisdictions of the states of Maryland, Virginia, and Pennsylvania and the District of Columbia to work cooperatively with the U.S. Environmental Protection Agency (EPA) and the Chesapeake Bay Program (CBP) to address pollution entering the Bay. Over the years, the first Chesapeake Bay Agreement was renewed and amended periodically, each time building off the last revision: adding numeric reduction goals in 1987; calling attention to not only the Bay itself, but also its tributaries in 1992; and in 2000, focusing on accelerating implementation by 2010 and capping/maintaining the loads. On December 31, 2010, the EPA set Total Maximum Daily Loads (TMDLs) for nutrients and sediment entering the Chesapeake Bay. In addition to setting these TMDLs, EPA required the Bay watershed jurisdictions to develop statewide Watershed Implementation Plans (WIPs) to explain how and when they planned to meet their assigned allocations by 2025. In June 2014, a new Chesapeake Bay Watershed Agreement was signed, adding both climate change and toxic contamination to the list of challenges whose solutions will ultimately increase the resiliency of the Bay and its tributaries.

In response to the Bay TMDL, Maryland developed 2010 Phase I and 2012 Phase II WIPs. Every two years the State also develops and implements milestones that, together with the WIPs, detail Maryland's strategies for meeting its two-year goals and allocations by 2025. The EPA, however, continues to have oversight responsibilities for the progress of Bay state jurisdictions toward the ultimate goal of restoring the Bay and its tidal waters by 2025, and the agency could further tighten regulatory enforcement in the future.

The Role of Trading

The EPA supports trading and has indicated that market-based approaches such as water quality trading provide greater flexibility in achieving water quality and environmental benefits, result in early reductions and progress toward water quality standards, and can reduce the cost of implementing TMDLs for impaired waters. In 2001, the CBP and its Bay partners established a policy framework for trading with the publication of "Chesapeake Bay Program Nutrient Trading Fundamental Principles and Guidelines." In 2003, EPA issued its own Water Quality Trading Policy detailing national guidelines and delineating the purpose and potential benefits of trading, along with common elements deemed essential to the development of credible, sustainable trading programs. These two documents provided the basis for the development of initial trading program in Maryland.

In January 2008, MDE finalized a document entitled "Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed" (2008 Cap Management Policy). Among the stakeholders who participated in the development of this policy under the leadership of MDE were the Maryland Association of Municipal Wastewater Agencies (MAMWA); the Waterkeepers Alliance; the Maryland State Builders Association and the National Association of Homebuilders; the Chesapeake Bay Foundation; representatives from the Maryland's Tributary teams; and MDA as well as the Maryland Departments of Natural Resources (DNR) and Planning (MDP).

During the development of point source policies, it was recognized that trading between point and nonpoint sources presented some unique issues. Therefore, a second stage was initiated with the MDA taking the lead in the development of Phase II Policy and Guidelines, which focused on policies and procedures for generating credits in the agricultural sector and exchanging those credits. To assist in this effort, the Maryland Agricultural Nonpoint Trading Advisory Committee was convened with representation from a cross-section of public, not-for-profit, and business interests. The Committee provided guidance during the formulation of policy and procedures and the development of the infrastructure to support trading in Maryland.

Taken together, Phase I and II policies and guidance provide the framework for trading by defining the requirements and obligations of credit users and generators, buyers and sellers, and intermediaries (aggregators and brokers). The policies defined eligibility rules for point and nonpoint sources, baselines, geographies, mechanisms of exchange, rules for verification and

assurance, and the process for the enforcement of trades. Trading policies require all pollution reduction trades to comply with local TMDL-based allocations and do not allow trading to cause or contribute to violations of local water quality standards. To ensure that trades result in a net decrease in loads, a retirement ratio is applied to trades at the time of sale and the credits so derived will be applied toward TMDL goals.

Maryland's Trading program has been developed to ensure reliable and transparent credit generation, certification, verification, and compliance. To facilitate trading with agricultural land owners and farmers, MDA developed and uses the Maryland Nutrient Tracking Tool (MNTT), which is a state-specific version of the web-based trading platform, the Chesapeake Bay Nutrient Trading/Tracking Tool (CBNTT). The CBNTT was built on the World Resources Institute's NutrientNet suite of tools, and incorporates both the Chesapeake Bay Watershed Model and county-specific agronomic data from the national Nutrient Tracking Tool developed by the U.S. Department of Agriculture (USDA)/Natural Resources Conservation Service (NRCS). In addition to the assessment tool, the online suite of components include: a registry to catalogue certified credits and completed trades; a marketplace to enable participants to post, track, and trade credits and manage individual accounts; an administrative module to assist in the supervision of the overall program and the generation of relevant reports; and an interactive mapping feature to delineate field boundaries and retrieve and forward allied information.

EPA's expectations for offset programs are articulated in Section 10 and Appendix S of the Chesapeake Bay TMDL. EPA conducted assessments of the Bay jurisdictions' trading and offset program and found the Maryland Trading Program to be consistent with the Clean Water Act (CWA) and the TMDL. In 2013, EPA began the process of developing Technical Memorandums (TMs) as guidance for the Bay Jurisdiction to consider when developing or updating various aspects of trading programs.

This document builds on Phases I and II of the 2008 Cap Management Policy, as well as on EPA policies and guidance. It provides options for the regulated community in accelerating water quality restoration and meeting loading limits and restoration requirements while maintaining consistency with requirements of the CWA. It will also provide options for offsetting impacts from new or increased loads of wastewater facilities. It supports teamwork, public-private partnerships and innovations.

Interstate water quality trading can be another opportunity for a cost-effective solution to the Bay restoration, but only if reciprocity among programs is established and protection of the local water quality is ensured.

# 1. Maryland Water Quality Nutrient Policy Statement

## Introduction

The Chesapeake Bay is the nation's largest estuary and one of the most complex ecosystems in the world. The Bay's vast watershed stretches across some 64,000 square miles and encompasses parts of six states and the entire District of Columbia. The cumulative impact of human activities throughout the watershed has caused increasing pollution from an overabundance of nutrients, primarily nitrogen and phosphorus, resulting in serious degradation of the waters of the Bay and the many rivers, streams, and creeks that flow into it.

Nutrient and sediment loads come from a variety of sources, including agriculture, wastewater treatment plants, septic systems, urban stormwater run-off, and atmospheric deposition. Despite extensive restoration efforts by the Bay states, the lack of significant progress prompted the EPA to establish the Chesapeake Bay TMDL, setting annual limits for nutrient and sediment loads and providing accountability through state WIPs detailing targeted reductions from all sectors.

Achieving these reductions and maintaining the loading caps while accommodating continuing economic and population growth will be both challenging and expensive. Total cost estimates for adopting best management practices and/or installing controls to reduce nutrient and sediment discharges are enormous and vary widely from sector to sector. Since the costs of meeting the TMDL will be borne by all segments of society and all levels of government, it is imperative to identify and implement strategies to lower those costs.

Nutrient trading has emerged as a promising strategy for introducing cost-effectiveness and market-driven efficiency to the realization of nutrient reductions. Under this approach, sectors are given the flexibility to meet and maintain their load limits by purchasing credits and/or offsets generated from load reductions elsewhere. The likelihood that this option will be selected increases if the credit purchase is less expensive than other alternatives and the purchased reduction is deemed credible and verifiable.

Accordingly, attention has shifted to the agricultural community and other sources where compliance may be accomplished and exceeded at a much lower cost per pound than pollution reduction on site. MDE and MDA have been working collaboratively to establish a voluntary, market-based program to promote the use of trading as a viable option for achieving the State's load reduction goals. This program envisions trading not only within and between sectors ("cross-sector trading"), but ultimately between Maryland and the other Bay states ("interstate trading").

## Guiding Principles

The State of Maryland is committed to a new trading program that:

- Accelerates the restoration of the Chesapeake Bay while reducing the cost of

implementation
- Maintains consistency with the federal Clean Water Act, Maryland law and regulation, and any other applicable requirements
- Offers competitive alternatives for accomplishing both regulatory and environmental goals
- Protects local water quality
- Uses the best available science and appropriate metrics to estimate and/or measure pollution reductions, manage risk, and ensure the validity of credits
- Provides accountability, transparency, and accessibility for all interested parties
- Includes necessary compliance and enforcement provisions
- Creates incentives for investment, innovation, and job creation
- Fosters collaborative partnerships between public and private entities and among diverse stakeholders, and
- Positions Maryland to participate in interstate trading activities

## Cross-Sector Trading

Maryland recognizes that the primary drivers for trading are the regulatory programs that require pollutant reductions. MDE opened the door to trading and the generation and use of nutrient credits and offsets in the point source sector by the wastewater treatment plants (WWTPs) under the auspices of the Cap Management Policy adopted in 2008. Given the advances made by MDA in developing a web-based suite of tools to support trading, it is time for the State to implement policies that will broaden the availability of trading among sectors.

A number of studies have shown that there is a potential for substantial cost savings when the scope and scale of trading expands and regulated stormwater sources participate in trading. Under Maryland's cross-sector trading program, trades may occur between point sources, including for the first time, the MS4 community (hereafter referred to as regulated MS4 jurisdictions), and between point sources and nonpoint sources, such as between MS4s (considered point sources as they are subject to the National Pollutant Discharge Elimination System (NPDES) permits) and agricultural operations. The regulated MS4 jurisdictions are now allowed to enter into cross-sector trading to meet a portion of their impervious surface restoration and Bay nutrient and sediment reduction requirements through the purchase of credits.

The trading framework for Maryland will facilitate trading by point and nonpoint sources for total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS). Cross-sector trading will be permitted in Maryland within three geographic areas: (1) the Potomac River Basin; (2) the Patuxent River Basin; and (3) the combination of the remainder of the Western Shore, the Eastern Shore, and the Susquehanna River Basin. Interstate trading will be developed incrementally to build capacity within Maryland and ensure reciprocity between trading programs of the Bay jurisdictions.

In addition to the above, there may be some benefits in common with carbon trading and practices that reduce greenhouse emissions. Since many of the agronomic, land use, and structural practices also store carbon and lower other greenhouse gas (GHG) emissions, the existing nutrient marketplace could provide a platform for the addition of a voluntary carbon component once it is fully developed and the nutrient marketplace is fully functioning.

## Private Sector Role

The development of a public marketplace for trading provides new employment opportunities for individuals and organizations offering services to support an emerging environmental restoration economy. Beyond the benefits of retaining and creating agricultural jobs and generating supplemental farm income, the assessment and verification of credits, the need for annual inspections, the design and installation of structures and systems, and the acquisition, management, and re-sale of credits are expected to be sources of revenue for consultants, technical advisors, engineers, contractors, aggregators, environmental bankers, and brokers.

## 2. Key Provisions

Credits generated by trading cannot be used to comply with existing technology-based effluent limits except as expressly authorized by federal regulations.

### 2.1 What May be Traded

MDE supports trading and through this policy seeks to specifically facilitate the trading of nutrients (TN, TP) and sediment (TSS) credits. Such trades should involve comparable credits (e.g. nitrogen traded for nitrogen). MDE may in the future consider authorizing cross-pollutant (nitrogen for phosphorus or vice-versa) trades but only in strict accordance with any new Chesapeake Bay Program recommendations and equivalency factors for these parameters and a public process to evaluate the recommendations for incorporation into trading policy.

### 2.2 Unit of Trade

The unit of trade, the pollution reduction credit, is expressed as mass per unit time (e.g. pounds per year or in the case of sediment tons per year). The lifespan of credits should be consistent with the time periods that are used to determine compliance with NPDES permit limitations or other applicable requirements.

### 2.3 Duration of Credits

Credits will be valid for one year and may be applied (used) only in the year the credits are generated in the context of the Chesapeake Bay watershed. This means that credits need to be

measured, verified, and accounted for according to that time period. Because practices will be installed at different times during the year, the total estimated annual credits generated from any practice installed within a given year will be considered to be generated the following year starting January 1. For example, installing a wetland in June of 2016 means that the annual credit will be given to that project beginning with calendar year 2017. Credits cannot be banked for future years. For example, if a best management practice (BMP) generates 100 credits each year and has a life span of five years, 500 credits cannot be applied to a permit in year five.

## 2.4 Who May Participate in Trading

- Point sources
  - WWTPs (Significant, Minor, Municipal, Industrial)
  - MS4 Juridictions
  - Industrial Stormwater Sources
- Nonpoint Sources
- State of Maryland
- Federal Agencies
- Any Person or Entity Engaged in Nutrient and/or Sediment Removal from the Environment
- Aggregators and Brokers
- Third Parties
- Any Combination of the Above

Subject to applicable laws, any person or entity may create, purchase, retire, or otherwise use credits for the purpose of securing long-term improvements in water quality. The State has the authority to deny any proposed trade, including any trade for the purpose of retiring credits, if the State determines such trade to be in conflict with or likely to impede other State policies.

## 2.5 Where Trading May Occur (Trading Regions)

Geographical boundaries for trading will be based on three large watersheds or "trading regions."

- Potomac Tributary Basin
- Patuxent Tributary Basin
- Eastern Shore and Western Shore Tributary Basins, including the Susquehanna watershed

In order to ensure equivalent water quality results, delivery factors will be applied to account for possible differences in delivered loads between the trading partners due to location.

### 2.5.1 Trading Priority Order for the Regulated MS4 Jurisdictions

Regulated MS4 jurisdictions will be required to implement trading with point or nonpoint sources in the following priority order:

1) Within a local watershed under a TMDL
2) Within the regulated MS4 jurisdiction's boundary
3) Within any eight-digit watershed that extends beyond the MS4 jurisdiction's boundary
4) Within Maryland Trading Regions (only after the three priorities above have been exhausted)

## 2.6 Regulatory and Environmental Goals

Regulated and non-regulated sources can use trading as an alternative solution/option to achieve their regulatory and environmental goals, and to comply with their TMDL allocations as long as the alternative conforms to this Trading Policy.

## 2.7 Consistency with TMDLs

All nutrient and sediment trades on behalf of Chesapeake Bay goals must be consistent with local TMDL-based allocations.

## 2.8 Local Water Quality Protection is Mandatory

Trades may not cause or contribute to local water quality impairments.

## 2.9 Net Improvements – Retirement Ratios

Trades for new or expanded loads are intended to result in a net decrease in loads. A portion of a trade will be retired and may be used for the purpose of securing long-term improvements in water quality. Other related purposes deemed appropriate by MDE may be considered, subject to applicable laws and input from a public participation process. Retirement ratios may be adjusted over time.

## 2.10 Credit Calculation and Verification

Credits will be quantified using metrics consistent with appropriate assumptions and provisions of the Bay TMDL and the Chesapeake Bay Watershed Model (CBWM) and verified to ensure that they are producing expected reductions.

## 2.11 Accountability and Tracking

Credits will be accounted and tracked with maximum transparency and accessibility to all interested parties.

2.12 Enforcement and Compliance

Trades involving waste load allocations (WLAs) must include appropriate compliance and enforcement provisions to ensure that credits are real, accountable, reliable, and enforceable.

2.13 Coordinated Framework and Stakeholder Participation

The trading program implementation includes a coordinated framework and collaboration with State and federal agencies and the public and private sectors, as well as access to trading program information, credit generation opportunities, and other relevant information via State-sponsored and /or required websites, press releases, and public outreach efforts.

2.14 Interstate Trading

Maryland's Trading Program is positioned to take advantage of interstate trading. For interstate trading to fully succeed, barriers to the trading market entry must be minimized through general consistency between states' programs and a resolution of the differences in the baseline approaches, standards, and methodologies.

# 3. Purpose of Draft Maryland Trading Manual (Trading Manual)

This manual serves several important purposes with the combined intent of enabling and promoting trading in Maryland.

First, it updates and consolidates three existing trading policy and procedure documents:

- The Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed:
    - Phase I, Point Source Policy, developed by MDE in April 2008
    - Phase II A: Guidelines for the Generation of Agricultural Nonpoint Source Credits, developed by MDA in 2008
    - Phase II B: Draft Guidelines for the Exchange of Nonpoint Credits, Maryland's Trading Marketplace, developed by MDA in 2008

Second, this document adds cross- sector trading policy that would provide more flexibility and additional options for the regulated MS4 jurisdictions in meeting a portion of each affected jurisdiction's impervious surface and Bay nutrient and sediment reduction requirements through the purchase of credits.

Third, this document establishes that non-MS4 jurisdictions and onsite sewage disposal systems (OSDSs), a.k.a., septic system sector, may achieve their share of the Chesapeake Bay load

reductions via the purchase of credits.

And fourth, this document not only builds on the regulatory tools, but supports and cultivates public-private partnerships, teamwork, innovation, transparency, and accountability.

## Effect of Policy

The policies and procedures outlined in this manual are intended to supplement existing requirements. Nothing in the policies or procedures reduces or replaces existing regulatory requirements.

The policies and procedures herein are not legislation or a regulation. This document outlines the framework for the generation and use of point and nonpoint source credits. It describes who is eligible to trade, where trading may occur, what may be traded, options for generating credits, and point source trade implementation by MDE via NPDES permits. Also included is MDA's administrative and regulatory discretion for the verification, certification, and registration of agricultural credits. The State will undertake program modifications and enhancements as deemed appropriate in the future. Neither the load allocations nor the credits generated or used under this policy are a property right.

Effective Date: April 17, 2008
Updated July 2016

## Authority

Federal:
Federal Water Pollution Control Act, 33 U.S.C. § 1251 et seq. (commonly referred to as "Clean Water Act").
Clean Water Act's NPDES using EPA's implementing regulations as delegated from EPA to MDE.
U.S. EPA's Final Water Quality Trading Policy, January 13, 2003.
U.S. EPA's Permit Writers Toolkit for Trading, August 2007.
Chesapeake Bay Program Nutrient Trading Fundamental Principles and Guidance (U.S. EPA, 2001).
Maryland:
MDE, Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed, 2008.
MDA, Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed Phase II-A: Guidelines for the Generation of Agricultural Nonpoint Nutrient Credits, 2008, 2010, 2012.
MDA, Voluntary Agricultural Nutrient Credit Certification Program. ch. 447, §§8–901 through 8–904, Annotated Code of Maryland, Agriculture, 2010.
MDA, Voluntary Agricultural Nutrient and Sediment Credit Certification Program, Agriculture

Article, §§2-103(b), 8-902, and 8-903, Annotated Code of Maryland, 2012.
MDA, Maryland Agriculture Certainty Program, §§8-1001 *et seq*., Annotated Code of Maryland, 2015.

# SECTION II

# Point Source (WWTPs) Cap Management and Trading

## Background

To achieve Maryland's water quality standards for the Chesapeake Bay Maryland developed WIPs which include strategies for each sector: point, urban, agricultural, and septics. The main aspects of the WIP's Point Source Strategy are: (1) continue to upgrade all significant and some minor WWTPs to state of the art Enhanced Nutrient Removal (ENR), and (2) maintain the nutrient load caps for all point sources. New and expanding loads had to be offset. MDE's 2008 Cap Management Policy, entitled "Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed", provided the framework for managing point source nutrient caps and offsetting new nutrient loads via trading with point and nonpoint sources.

In other states in the Chesapeake Bay watershed, nutrient trading has played a role in either reducing nutrient loads from point sources to meet Bay TMDL WLAs or to maintain them. In Maryland, 100 percent grant funding was made available by the Bay Restoration Fund (BRF) Act for ENR upgrades of significant and publicly owned WWTPs, and therefore, trading was not allowed as a substitute for the upgrades of significant facilities.

New or expanding wastewater treatment facilities with no allocation in the Bay TMDL are required to offset increased loadings. In Maryland, point source trading is primarily used to *maintain* point source WLAs, i.e., to offset increases in WWTPs loads associated with growth. MDE has issued a number of NPDES permits utilizing offset options outlined in the 2008 Cap Management Policy.

The Trading Manual outlines the main elements of the 2008 Cap Management Policy for point sources, including the list of trading options and implementation and enforcement of point source trades via NPDES permits. However, there are other sources that are considered point sources. Among them are the NPDES regulated stormwater discharges from three potential sources: MS4s, construction activities, and industrial activities. To distinguish between these two point sources, this manual will continue to refer to the NPDES-permitted discharges from sewage treatment plant or industrial facility as *point source*, and to regulated public stormwater dischargers as MS4 jurisdictions. Regulated MS4 jurisdiction trading guidelines are described in Section III of the Trading Manual.

## 1. Key Principles

In addition to the Guiding Principles and Key Provisions, which are delineated in Section I, and apply to all trading parties, the following Key Principles apply to point source trading:

## 1.1 Point Source Trade Implementation and Enforcement via NPDES Permits

A point source does not become eligible for trading until baselines (WLAs) are adopted in its discharge permit. Permit limits based on 2010 Bay and/or local TMDL WLAs serve as the baselines for generating credits for use in trading. The use of the discharge permit program ensures that the process is transparent and all credits are accountable, reliable, and enforceable. Permits provide the vehicle for enforcement of trade conditions.

## 1.2 Consistency with the County Water and Sewerage Plan

All point source trades must be consistent with the approved County Water and Sewerage Plan. Dischargers trading away credits must evaluate potential impacts on current and projected sewer capacity allocations using methodology consistent with MDE's Wastewater Capacity Management Plan Guidance.

## 1.3 All New and Expanded Point Source Nutrient Loads Must be Offset

New point source dischargers with no allocation in the 2010 Bay TMDL or point source dischargers requesting an increase in WLA must offset any increased point source loading. These nutrient loads can be offset via trading.

## 1.4 Duration of Credits

Because one purpose of trading is to accommodate new or expanded dischargers that have no WLA, credits acquired for use as discharge offsets must be certain and reliable for an extended time period. A new or expanding point source discharger submitting a trading proposal must demonstrate that it has secured credits for as long a period as is feasible. At a minimum, point sources must have secured the contractual right to credits for two (2) full five year permit terms. In addition, the facility must submit a plan showing how it intends to acquire the necessary credits for at least 10 years beyond the two permit terms for a total planning horizon of 20 years. At each subsequent NPDES permit renewal, the facility must demonstrate the securing of credits for the coming ten-year permit period, and update its plan for acquiring them over the subsequent 10-year horizon.

Industrial facilities must secure credits sufficient to cover a period of at least 10 years (2 permit cycles), to be updated with each permit renewal.

Other safeguards, as determined by MDE, may be required. This may include such things as backup plans and alternative options to address failures by nonpoint sources to provide the contracted credits.

## 1.5 Public Outreach/Stakeholder Participation

The implementation and enforcement of NPDES permits will provide stakeholders and the public with an opportunity to comment on and access information related to point source trading. MDE will indicate in the public notice when any conditions allowing trading have been included in the draft permit. These conditions, along with other conditions of the permit, will be subject to the normal comment process and period (usually 30 days).

### 1.6 Point Source Baseline Funding

State and federal grant funds can be used to upgrade point sources to meet their WLAs, which also serve as trading baselines.

### 1.7 Cost of Credits

The cost of credits or exchange arrangements/conditions of trade will be determined by the market.

### 1.8 Compliance with local TMDLs and Water Quality Standards

All trades must be consistent with any local TMDL-based allocations, and must not cause or contribute to any local water quality impairment or violate water quality standards. Point source trades are implemented through permits and through associated enforcement actions which contain conditions to achieve the assumptions of the WLAs.

### 1.9 Retirement Ratio

MDE will require a 5 percent retirement ratio applied to each point-source generated credit. This ratio may be adjusted over time. Retired credits may be used for the purpose of securing long-term improvements in water quality. Other related purposes deemed appropriate by MDE may be considered, subject to applicable laws and input from a public participation process.

### 1.10 Flow Management

A municipal wastewater authority may request to redirect flows among its facilities, together with their associated ENR based allocations, as part of an NPDES permit renewal or modification application. Such flow management is not considered trading when it involves a single owner and all facilities involved are facilities to be upgraded to ENR. Moreover, such flow management does not provide any relief from requirements for upgrading to ENR treatment and for consistency with the Water and Sewerage Plan and Capacity Management Plan.

## 2. Eligibility

A point source does not become eligible for trading until baselines are adopted in its discharge permit. Facilities with the State groundwater permits may also participate in trading once their

baselines are adopted in the State permit.

Municipal permittees trading away credits based on a determination that they have excess capacity must demonstrate that the trade is consistent with the applicable Water and Sewerage Plan and evaluate the impact on current and projected sewer allocations using methodology consistent with MDE's Wastewater Capacity Management Plan Guidance.

## 3. Trading Baselines

Maryland Phase I WIP, Appendix C, "NPDES Dischargers in the Maryland Bay Watershed", provides a comprehensive list of significant and non-significant municipal and industrial wastewater facilities within the State's Bay watershed area, along with locations and available permit information on these point sources. The individual or aggregate point source target loads for these facilities are included in Appendix B1, "Detailed Targets and Reduction Schedule."

Baselines for point sources that want to trade are based on 2010 Bay TMLD WLAs for significant facilities and are determined individually for minor facilities. Permittees that are regulated based on a local watershed TMDL will have two separate baselines whose applicability depends on the geographical area of a trading partner. To participate in trading, permittees must first achieve the applicable baseline before they can generate credits.

The State reserves its authority to adjust any new allocations if it is determined that there is a conflict with the implementation of State policies.

### 3.1 Significant Point Sources

Significant municipal WWTPs in Maryland are those with a design capacity of 500,000 gallons per day (gpd) or greater. Annual WLAs for significant facilities are based on design capacity consistent with the approved local water and sewer plan as of April 30, 2003 and an annual average concentration of 4.0 mg/l TN and 0.3 mg/l TP, a.k.a, ENR treatment. Facilities may have tighter limits based on local water quality requirements.

### 3.2 Minor Point Sources

Existing minor municipal WWTPs in Maryland are those with a design capacity of less than 500,000 gpd. The annual nutrient load goals for minors were established in 2004 Point Source Tributary Strategy, which was part of the Maryland's Chesapeake Bay Tributary Strategies Statewide Implementation Plan. These goals were based on the design capacity in 2000 or the projected flow for year 2020[1], whichever was less, and a concentration of 18 mg/l TN and 3 mg/l

TP. These goals were aggregated into WLA for minors in the Bay TMDL.

Minor dischargers that want an option to generate credits for trading through nutrient removal process upgrade at their own expenses will be assigned an annual WLA as effluent limits in their wastewater discharge permits based on the nutrient loading goals specified in the 2004 Tributary Strategy. This WLA will serve as a trading baseline.

Minor dischargers that want an option to generate credits for trading through nutrient removal process upgrade sponsored by BRF will be assigned an "adjusted" annual WLA in the wastewater discharge permits based on the design capacity consistent with the approved local water and sewer plan when the funding agreement was finalized and a concentration of 4 mg/l TN and 0.3 mg/l TP based on the standard ENR performance.

In either case, the WLA, baseline, assigned to minor point sources after the ENR upgrade process should not exceed either (1) the previously assigned 2004 Point Source Tributary Strategy loading goals for the facility, or (2) 6,100 lbs/yr TN load cap and 457 lbs/yr TP load cap, whichever is less. Loads in excess of 6,100 lbs/yr of TN and 457 lbs/yr of TP will revert back to the State and be reallocated by MDE on case by case basis.

For existing minors not participating in the trading program, 2004 Point Source Strategy loading goals will be assigned as permit goals instead of limits unless the permit involves an increase in design capacity to ≥0.10 mgd.

### 3.3 Significant Industrial Point Sources

WLAs for significant industrial point sources identified in the Maryland WIP for the Bay TMDL, are based on a combination of (1) historical performance levels; (2) the amount of loading reductions already achieved since the initial baselines established in 1985; and (3) establishment on a case by case basis of additional potential loading reductions. Industrial facilities with a minimum TN discharge of 75 pounds per day or minimum TP of 10 pounds per day had their annual load goals included as WLAs in their discharge permits.

## 4. Options for Generating and Acquiring Credits

Credits may be generated and/or acquired through any of the options listed below, as well as other options that may be proposed on a case-by-case basis through the NPDES public participation process:

- Upgrading an existing minor WWTP to BNR or ENR
- Retiring an existing minor WWTP after connecting to BNR or ENR facility
- Upgrading Industrial Point Sources
- Retiring an existing (as of April 2008 ) OSDS by connecting to an ENR facility

- Land application of wastewater with pre-treatment and nutrient management controls
- Implementing nonpoint source practices (agricultural credits, wetland restoration, other options)
- MS4 Jurisdiction credits

Other point source credit generation options include:

- Optimizing treatment operation
- Maintaining flow at less than the design flow basis of its nutrient WLA

## 4.1 Upgrading an existing minor WWTP to BNR or ENR

### 4.1.1 Minor WWTP upgrades without utilizing State grants

All existing minor WWTPs may generate credits for trading by upgrading to BNR or ENR without utilizing State grants. When a credit buyer, a new facility, or an expanding facility obtains consent of the minor facility to upgrade the existing facility to BNR or ENR, MDE will allocate the appropriate loading to that buyer/discharger as follows. The participating minor facility will be given a permit limit effective upon completion of the upgrade corresponding to WLAs not to exceed 6,100 TN load cap and 457 lbs/yr TP load cap, as discussed above. As a result, MDE will then allocate to the new discharger via a permit up to 95 percent of the difference between the previous allocation and the new reduced allocation of the upgraded minor. The remaining load will be retired for net water quality benefit. In addition, the minor facility may also choose to trade some of its resulting permit WLA consistent with this policy. [Note: A minor WWTP is not considered to have a specific nutrient load allocation for trading except where it has been included in a discharge permit as a limitation.]

### 4.1.2 Minor WWTP Upgrades with State grants

Minor facility upgraded to ENR using State grants may trade some of its permitted WLA.

## 4.2 Retiring an existing minor WWTP after connecting to BNR or ENR facility

MDE will allocate to the permittee, subject to ensuring the protection of local water quality, the same loading as though the existing minor sewage treatment plant had been upgraded to BNR/ENR prior to being taken off-line.

## 4.3 Industrial Point Sources

Technology-based upgrade requirements may be applied on a case-by-case basis or other appropriate approaches that generate credits through reductions in discharges, including, but not limited to, implementation of pollution prevention and recycling.

4.4 Retiring an existing (as of April 2008) OSDS by connecting to an ENR facility.

MDE may provide a nitrogen loading allocation to an ENR facility (or a facility with plans to upgrade to ENR) based upon 50 percent of the original OSDS load and proximity of the retired residential OSDS to surface waters. For an ENR plant producing effluent nitrogen of 4 mg/l, the transfer of flow from a residential OSDS to the treatment plant would generate the following credits:

A. In critical areas – 9.28 lbs/yr TN
B. Within 1,000 feet of any perennial surface water – 5.8 lbs/yr TN
C. All other – 3.48 lbs/yr TN

These credits are based on 5.3.2 model assumptions used by the CBP for nitrogen and phosphorus. MDE assumes an 80 percent delivery rate in critical areas; a 50 percent delivery rate within 1,000 feet from any perennial surface water; and a 30 percent delivery rate from distances greater than 1,000 feet from any perennial surface water (i.e., all other systems).

With regard to phosphorus, the CPB assumes the average residential septic system delivers *no TP*. Therefore, the allocation approval would require demonstration that the proposed significant ENR facility will meet its existing permit requirements for phosphorus after accounting for projected increased phosphorus loading of 0.23 lbs of TP per house connected.

MDE intends to hold minor facilities with BRF funded WLAs harmless from loadings from septic connections. If available, the State would use the surplus TP WLA coming from the minor upgrade to provide adjusted phosphorus WLA for a septic connection as long as no local hot spot is created by this arrangement. A phosphorus credit of 0.23 lbs per year per equivalent dwelling unit (EDU) will be the basis of the plant load allocation for septic connections to an upgraded facility. This credit will allow minor facilities to connect septics without the need to achieve lower than 0.3 mg/l TP concentration.

Credits for connecting non-residential systems will be established on a case-by-case basis. Credits may also be considered on a case-by-case basis when OSDSs are connected to a decentralized system that is highly efficient at removing nitrogen.

4.5 Groundwater Discharges

Facilities with state groundwater permits may request a permit loading cap for nitrogen and may participate in trading with other point sources. Land application of wastewater with appropriate pre-treatment and nutrient management controls may be used to offset new or expanding nutrient loads. An appropriate groundwater permit from the State of Maryland will be required. The permit will consider the yearly nitrogen balance calculations, the hydraulic loading rate, and the crop to be planted on the spray/drip fields, storage during the winter months, and other best management

practices (BMPs) in order to achieve targeted nitrogen concentration in the groundwater percolate and protect public health and the environment. Before MDE can process a municipal groundwater discharge permit, proposed municipal projects must be included in the County Water and Sewer Plan.

4.6 Optimizing treatment operation in Significant and Minor ENR facilities

MDE will implement trades involving optimized treatment operations through a permit modification[2] of the ENR facility's limits to reflect corresponding changes. The available credits shall be based on the existing permitted limits and WLAs for the facility (significant or minor) minus the nutrient loading calculated based on the projected achievable treatment performance level. The projected level shall not assume improved performance beyond demonstrated historical performance levels unless data from similar representative facility is available and relevant. In addition to the above, available credits shall account for the load allocations approved and reserved for new development. The reductions in nutrient allocations will then be reflected in the discharge permit as a revised nutrient loading limitations.

4.7 Maintaining flow at less than the design flow.

Eligible ENR facilities can generate credits by maintaining flow at less than the design flow basis of the assigned nutrient WLA. MDE will implement such trades through a permit modification[3] of the ENR facility's limit to reflect the corresponding reduction in its allocation. The available credits shall be based on WLA, baseline loading allocation for the facility, minus the nutrient loading calculated at the remaining flow capacity of the treatment system and the projected achievable treatment performance level. The projected level shall not assume improved performance beyond demonstrated historical performance levels unless data from similar representative facility is available and relevant. All credit exchanges must be consistent with the approved local Water and Sewerage Plan and, as appropriate, an evaluation of wastewater capacity consistent with the methodology provided in MDE's Wastewater Capacity Management Guidance.

4.8 Other Innovative BMPs

[2] This should be a minor permit modification, which does not require a public participation process. Any permit limit revised to be more stringent based on the request of the permittee is not considered a major modification under this trading policy because the less stringent requirement already went through public participation. The new or expanded facility's permit issuance would include standard public participation requirements.

[3] This should be a minor permit modification, which does not require a public participation process. Any permit limit revised to be more stringent based on the request of the permittee is not considered a major modification under this trading policy because the less stringent requirement already went through public participation. The new or expanded facility's permit issuance would include standard public participation requirements.

The options outlines in this manual do not preclude other practices from being used to generate credits. Established technologies such as septic system upgrades, wetlands restoration or creation and others may potentially generate credits. Similarly, the development of innovative and emerging technologies such as water reuse, oyster aquaculture, and algal farming is encouraged since they may become eligible for credit generation in the future.

MDE is also receptive to exploring an option for facilities to obtain credits through payments into new or existing State-managed funds. However, even that option shall require that an equivalent annual nutrient loading credit be implemented within the first year of discharge in order to qualify as an available offset for the new or expanding facility.

Finally, MDE is interested in third-party initiatives, public-private partnerships, and aggregators and water quality banks to create and provide credits for new or expanding point sources.

### 4.9 Trading with Agricultural Nonpoint Sources

Maryland recognizes the need and the advantages of using nonpoint source reductions to offset point source increases. Section IV of this Trading Manual provides specific details on trading with agricultural landowners and farmers. It describes the web-based suite of tools that helps farmers and landowners not only to determine baseline compliance and assess credit generating capacity, but also allows participants to post and exchange information on credit availability, credits desired, quantity, and price.

### 4.10 MS4 Jurisdiction Credits

Section III of this Trading Manual provides specific details on trading with MS4 jurisdictions.

## 5. Incorporating Trades in NPDES Permits

### 5.1 Individual Permits

Point source trades will be implemented and enforced through discharge permits. The trade itself or the process by which the trade is calculated must be specified within the permit, or the permit will have to be reopened to implement the trade.

### 5.2 Bubble or “Overlay” Permits

A Bubble or Overlay permit is an alternative group permitting approach available to owners of multiple facilities for implementing the nutrient caps. Instead of multiple caps, one for each facility in a watershed, the central owner may elect to receive a single permit with one nutrient loading cap for all of the facilities it operates in the watershed. Technology-based treatment requirements for nutrients at each of the individual facilities will be included either in the bubble permit or in the

permits required for each individual facility.[4] Any local TMDL-based limits applicable to facilities in sub-watersheds would continue to apply to the individual facilities in addition to the overall loading cap. Additionally, the bubble permit does not preclude any individual non-nutrient permit limits. All discharge flows must continue to be consistent with the local Water and Sewerage Plan as well as the permitted design flows for the individual facilities.

A single combined bubble permit may be issued to multiple owners in a watershed electing to form an association and obtain a single permit as co-permittees. Under any bubble permit approach, individual discharge permits issued to each individual facility would continue to specify monitoring and reporting requirements for nutrients as well as the requirements for other regulated pollutants.

# 6. Implementation

This section describes the requirements and the process for obtaining MDE's approval for permit modifications for nutrient trades. Section IV of the Trading Manual describes an application and approval requirements for generating and selling agricultural credits. Additional requirements may apply to point source trades with agricultural nonpoint sources and MS4 jurisdictions.

## 6.1 Identifying Trading Partners

Municipal or industrial facilities seeking to acquire or sell discharge credits are responsible for identifying trading partners. The pool of candidates consists of Maryland's WWTPs eligible trading partners identified in the Key Provisions of the Trading Policy. In addition, trading partners can be identified by contacting MDE, individual WWTPs, MDA, or third-party stakeholder groups such as MAMWA.

## 6.2 Application Process and Documentation Requirements

Point sources planning to utilize credits obtained from another point source or nonpoint source shall submit joint application(s) for modification of the NPDES permit(s) of trading partners to MDE. The application shall be composed of three parts: (1) specific details of the trade; (2) credit buyer documentation; and (3) credit seller documentation. The application and any standardized forms, along with information about the process for applications and documentation of trades may be obtained from MDE.

## 6.3 The Trading Application – Specific Details of the Trade

[4] The purpose of the overlay (or "bubble") permit is to allow a facility with excess capacity to share its capacity with another facility without a formal trade or permit revision; however, sharing unused capacity should not be a mechanism for allowing excess loadings to be discharged in any given year as a result of failure to optimize treatment levels.

The trading application shall provide specific information about the proposed trading arrangement. This information shall include the following:

- The owner of the credits
- The credits user and/or purchaser
- The trading area and basin
- The credit contract/agreement period (Duration of the contract)
- The source of the credits
- The number and type of discharge credits to be exchanged each year during this period
- The length of credit life (annual, seasonal, or permanent)
- The methodology for determining the number of required credits to be exchanged, and
- The general contractual arrangements

This policy does not necessarily require the disclosure of all contract terms, and the trading parties may keep some contract terms confidential. Section IV of the Trading Manual provides guidance on the acquisition/purchase of agricultural credits, buyer eligibility, trading mechanism, contracts, and other requirements. MDE will work with stakeholders to determine the minimum requirements for disclosure of contract terms that would allow for adequate review of the trade proposal.

### 6.4 Point Source Credit User Documentation

The facility acquiring discharge credits shall provide information on the following matters:

- The need for the trade, including WLA status, flow, and load projections
- The consistency of the trade with the following: the approved County Water and Sewerage Plan, planned service areas, priority funding areas, TMDLs, and once adopted, Water Resources Element of the Land Use Plan
- The location of the facility, including a facility location map, the eight-digit River Basin designation of the discharge point, and the Chesapeake Bay Program watershed model delivery factor
- The credit acquisition plan. A new or expanding facility must document contractual arrangements that secure an adequate number of credits for 10 years (i.e. two NPDES permit terms). In addition, it must provide a plan showing how it intends to acquire sufficient credits for the subsequent 10 years beyond the 10-year contractual period.
- Credit Generator/Supplier Information

### 6.5 Point Source Credit Generator/Supplier Documentation

The facility providing discharge credits shall provide the following information/documentation:

- How the discharge credits will be generated by the facility

- The consistency of the trade with the facility's growth and infrastructure planning, including the approved County Water and Sewerage Plan
- Evaluation of the impact of the trade on current and projected sewer allocation, using methodology consistent with MDE's Wastewater Capacity Management Plan Guidance
- The location of the facility, including a facility location map, the eight-digit River Basin designation of the discharge point, and the Chesapeake Bay Program watershed model delivery factor
- The credit life
- The contract terms
- The credit user information

MDE will review and evaluate permit application(s) to trade based on the requirements described in this manual. MDE may request additional information to evaluate trading proposals from MS4 jurisdictions and/or other trading partners. Unless additional information is requested, the application will be accepted, accepted with conditions, or denied. MDE approval is not final until the NPDES permits are modified as necessary to incorporate the trade.

## 7. Institutional Framework and Structure

MDE will be responsible for oversight and management of this trading program, including responsibility for policy decisions on issues such as eligibility, credit certification, verification, compliance monitoring, and enforcement. MDE may elect to contract some activities to third parties, such as credit verification or third party audits of transactions. Specific details of agricultural nonpoint source credit certification, verification, and registration are being codified in the proposed new Regulations, COMAR 15.20.12, Agricultural Nutrient and Sediment Credit Certification Program, and are addressed in Section IV.

Implementing this policy and procedures outlined in the Trading Manual, requires staff resources. It is MDE's intention to work with other State agencies to get a trading program established using available resources. As the program evolves, a fee-based approach may be adopted.

## 8. Stakeholder Involvement and Public Process

Maryland has been and will continue to work with a broad set of stakeholders in the development and implementation of this Trading Policy. Continuing program development will provide opportunities for both the public and stakeholders to provide input and comment on the development and implementation of the trading program. Program elements, such as the registry, will provide timely information about credit generation and use, credit certification and verifications, and results of credit inspections and water quality monitoring.

MDE and MDA believe that a clear and transparent process and presentation of results is key to establishing and maintaining credibility for the trading program. The use of NPDES permits by

MDE ensures transparency and tracking of point source credits. An opportunity for public notice and comment is included in the NPDES permit process. If an NPDES permit specifically or conditionally authorizes trading and the public has had an opportunity to comment on the proposed trading conditions during the draft permit public process, then no additional public outreach will be required and any subsequent trades meeting the conditions of the permit will be implemented without formally reopening the permit (i.e. implemented as a minor permit modification). Standard posting on the website will also be maintained.

MDA and MDE will continue working with EPA to support credit tracking for CBP modeling and reporting on the progress toward pollution reductions from all sources. MDE is currently collaborating with MDA in the development of a tracking process using the electronic registry and web-based system that already supports tracking of agricultural credits and publicizes agricultural trading opportunities, trade transactions, and program progress and performance.

MDE and MDA will track the actions of trading partners, compliance with trade agreements, and any enforcement action taken. The results of such individual and statewide program evaluations will be made available to the public as appropriate and through an online annual report.

# Section III

# Regulated MS4 Jurisdiction Trading

## Background

One of the goals of the Maryland Nutrient Trading Policy Statement is to provide additional options, flexibility and to allow MS4 jurisdictions to enter into cross-sector trading to meet a portion of each affected jurisdiction's impervious surface requirement and Bay nutrient and sediment reduction requirements described in the WIPs I and II strategies through the purchase of credits. Maryland's Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, the Guidance Document incorporated into Phase I MS4 permits to help guide restoration work, recognizes that alternative best management practices, new technology, and innovative methods may be utilized to meet permit restoration goals. Accordingly, the use of nutrient trading as such an alternative or innovative practice is authorized under current MS4 permits, and may be utilized in accordance with the options outlined in this manual.

Among potential credit generators are wastewater point sources and nonpoint sources that meet eligibility and baseline requirements. The Draft Trading Manual describes transactions that may occur either between regulated MS4 jurisdictions and WWTPs and/or between regulated MS4 jurisdictions and nonpoint sources (e.g., agricultural operations).

A regulated MS4 jurisdiction could also generate credits to sell once it meets eligibility requirements. Trading requires all credit trades to comply with any local TMDL allocations, and prohibits causing or contributing to any local violations of water quality standards.

The goals of Maryland's NPDES MS4 permits are to control stormwater pollution, improve water quality, and work toward meeting water quality standards. The permits require MS4 jurisdictions to perform watershed assessments, develop watershed restoration plans as part of the Chesapeake Bay TMDL urban stormwater strategy, and restore 20 percent of unmanaged impervious areas within the permit term. These plans provide a schedule for implementing BMPs to reduce pollution and work toward meeting water quality standards. The options described in this Draft Trading Manual will allow a portion of each regulated MS4 jurisdiction's impervious surface area restoration requirement and Bay nutrient and sediment reduction requirements to be achieved through BMPs implemented from the agricultural and wastewater point source sectors.

## 1. Key Principles

The NPDES MS4 permits require jurisdictions to restore impervious surfaces where there is little or no stormwater management as part of plans to implement BMPs to attain local WLAs in approved TMDLs. Under the 2015 Phase I MS4 permit (2015 permit), this portion is equal to 20 percent and is referred to as the 20 percent impervious area restoration requirement. Although the utilization of

urban BMPs will improve local water quality, the MS4 permits further require jurisdictions to establish restoration plans to eventually attain all local impairments. The use of trading does not relieve jurisdictions of the responsibility to address local water quality issues.

Regulated MS4 jurisdictions may choose to meet the 20 percent impervious area restoration requirement through a combination of acceptable stormwater management BMPs, alternative practices, or new, innovative practices according to MDE's "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", (August 2014 Guidance). As one such new practice, one-half of this impervious area restoration requirement per permit term is now allowed to be met through the purchase of agricultural nonpoint source or wastewater point source credits.

The following Key Principles apply to the acquisition and sale of credits by regulated MS4 jurisdictions:

- Regulated MS4 jurisdictions are allowed to meet one-half of the impervious area restoration requirement each permit term through trading with point and/or nonpoint sources.
- Point and nonpoint source credits can be acquired at any time during the permit term to meet up to 10percent of the MS4 jurisdiction's restoration requirement.
- Regulated MS4 jurisdictions will be responsible for ensuring continuing credit certification and verification.
- Regulated MS4 jurisdictions must acquire a sufficient amount of credits to meet retirement and other ratios as described by the Draft Trading Manual.
- Regulated MS4 jurisdictions must report both a number of acquired and/or sold credits in annual reports submitted to MDE.
- Regulated MS4 jurisdictions must acquire credits in perpetuity, or replace expired credits with new credits and/or eligible stormwater management BMPs of equivalent impervious acres.
- After a regulated MS4 jurisdiction has met its impervious area restoration requirement for a permit term (20 percent per the 2015 permit), but before the expiration of the current permit it may generate credits through the installation of BMPs according to the Guidance and then sell those credits.
- Credits sold by a regulated MS4 jurisdiction are not eligible to meet the seller's impervious area restoration requirement for the current NPDES permit term.

## 2. MS4 Eligibility Requirements; Trading Baselines

A regulated MS4 jurisdiction is eligible to purchase credits if no outstanding permit violations exist and the jurisdiction demonstrates to MDE that it is working toward meeting all other requirements of its permit. A regulated MS4 jurisdiction may not sell credits until it has met the full current permit impervious area restoration requirement, is working toward all other requirements of the permit, and has no outstanding permit violations.

## 3. Credit Requirements

The following requirements apply to all credits purchased or generated:

- Agricultural credits may be generated only from a pollutant reduction activity that has been certified, verified, and registered in accordance with provisions described in the Draft Trading Manual, consistent with the proposed new Regulations, COMAR 15.2012, Agricultural Nutrient and Sediment Credit Certification Program
- Agricultural credits shall meet all MDA requirements
- Stormwater management BMPs that are implemented in excess of MS4 impervious area restoration requirements can be used as credits
- Stormwater management BMPs can generate credits only when they are installed and fully functioning
- Credits may only be applied in the year in which they are generated and cannot be banked for future years
- Credits must not cause or contribute to any local water quality impairment or violate water quality standards

## 4. Applying MS4 Restoration Requirements to Trading

Under the 2015 permit, an estimated total of 34,280 impervious acres must be restored by all Phase I MS4 jurisdictions to fulfill the impervious area restoration requirement. With trading, one-half of each jurisdiction's impervious area restoration requirement per permit term is now allowed to be met through the purchase of agricultural nonpoint source or wastewater point source credits. As is shown in the table below, an estimated total of 17,140 acres is eligible for restoration through credit purchases for all Phase I MS4 jurisdictions under the 2015 permit. Table 1 outlines total acres of unmanaged impervious area, the required 20 percent (20%) impervious area restoration, and the ten percent (10%) impervious area eligible to be restored through credit purchases for each of Maryland's Phase I MS4 jurisdictions based on current estimates.

### Table 1. Example: Phase I MS4 Impervious Area Restoration Requirements and Acres Eligible for Trading Under 2015 Permit

| Phase I MS4 Permittee | Impervious area* (acres) | 20% of Impervious area (acres) | 10% of Impervious area (acres) |
|---|---|---|---|
| Anne Arundel | 14,877 | 2,975 | 1,488 |
| Baltimore City | 23,373 | 4,675 | 2,337 |
| Baltimore County | 28,983 | 5,797 | 2,898 |

| | | | |
|---|---|---|---|
| Carroll | 9,285 | 1,857 | 929 |
| Charles | 2,607 | 521 | 261 |
| Frederick | 6,725 | 1,345 | 673 |
| Harford | 8,308 | 1,662 | 831 |
| Howard | 11,453 | 2,291 | 1,145 |
| Montgomery | 21,460 | 4,292 | 2,146 |
| Prince George's | 22,020 | 4,404 | 2,202 |
| SHA | 22,301 | 4,460 | 2,230 |
| **TOTAL** | **420,273** | **34,280** | **17,140** |

*Impervious acres are estimates based on recent Phase I MS4 annual reports and are for illustrative purposes only.

MDE has developed a method in the Guidance to relate the reduction in pollutant loads from new and alternative treatment practices into an equivalent impervious acreage. For this Trading Manual, the load calculations from the Guidance have been updated to reflect new information provided in the CBWM version 5.3.2 and are to be used in estimating the number of credits needed.

The impervious area equivalent method is based on the difference in pollutant load, or the Delta, between one acre of urban impervious runoff and one acre of forested runoff. For example, when one acre of impervious land is converted through treatment to the equivalent of one acre of forested land, 12.26 lbs/acre/year of TN runoff is reduced at the Edge of Stream (EOS), (see Table 2 below). Because one agricultural credit, which can be generated by a variety of agricultural practices described in Section IV, is equivalent to one lb/acre/year of TN and TP, and one ton/acre/year of TSS, one equivalent impervious acre of restoration is achieved through trading for 12.26 TN credits, 1.62 TP credits, and 0.53 TSS credits.

## Table 2. CBP Pollutant Loads for Impervious and Forest Cover

| Parameter | Impervious (lbs/acre/yr) | Forest (lbs/acre/yr) | Delta (lbs/acre/yr) |
|---|---|---|---|
| TN | 15.34 | 3.08 | 12.26 |
| TP | 1.70 | 0.08 | 1.62 |
| TSS (tons) | 0.56 | 0.03 | 0.53 |

Source: CBWM 5.3.2 Maryland statewide average urban loading rates without BMPs provided by the Science Services Administration (SSA), MDE, 2015.

## 5. Trading Ratios

The following trading ratios will apply to regulated MS4 jurisdiction trading:

- Agricultural Retirement Ratio = 10%
- Point Source Retirement Ratio = 5%
- All applicable Delivery Ratios

The table below illustrates the estimated total number of credits, based on the impervious acre equivalent is 12.26 lbs of TN, 0.62 lbs of TP, and 0.53 tons of TSS, that can be applied toward meeting portion (10%) of the MS4 impervious area restoration requirement.

### Table 3. Estimated Total Number of Credits Needed to Meet 2015 Phase I MS4 Impervious Area Restoration Requirement

| Phase I MS4 Permittee | 10% of impervious acres | TN credits | TP credits | TSS credits |
|---|---|---|---|---|
| Anne Arundel | 1,488 | 18,243 | 2,411 | 789 |
| Baltimore City | 2,337 | 28,652 | 3,786 | ,1,239 |
| Baltimore County | 2,898 | 35,529 | 4,695 | ,1,536 |
| Carroll | 929 | ,11,390 | 1,505 | 492 |
| Charles | 261 | 3,200 | 423 | 138 |
| Frederick | 673 | 8,251 | 1,090 | 357 |
| Harford | 831 | 10,188 | 1,346 | 440 |
| Howard | 1,145 | 14,038 | 1,855 | 607 |
| Montgomery | 2,146 | 26,310 | 3,567 | 1,167 |
| Prince George's | 2,202 | 26,997 | 3,567 | 1,167 |
| SHA | 2,230 | 27,340 | 3,613 | 1,182 |
| **TOTAL** | **17,140** | **210,136** | **27,767** | **9,084** |

## 6. Ensuring Local Water Quality; Defining Trading Areas

One of the guiding principles of Maryland's Trading Policy is the protection of local water quality by the acquisition of credits. For example, the exchange of credits may not contribute to violations of any permit requirements, and both credit user/buyers and credit generator/sellers must demonstrate consistently that they are in compliance with all laws, regulations, and programs at the federal, state, and local levels.

It is important for regulated MS4 jurisdictions to address local water quality first when trading so that citizens can see the results from local expenditures, lending public support to the State's trading policies. Based on the principle of protecting local water quality, regulated MS4 jurisdictions are required to purchase credits in the following priority order:

1) Within a local watershed under a TMDL
2) Within the regulated MS4 jurisdiction's boundary
3) Within any eight-digit watershed that extends beyond the regulated MS4 jurisdiction's boundary
4) Within Maryland Trading Regions (only after the three priorities above have been exhausted)

## 7. Public Outreach and Stakeholder Involvement

All credit purchases and sales by the regulated MS4 jurisdictions will be reported in annual reports submitted to MDE as required under the MS4 permit. Each jurisdiction is required to make these reports available to the public by posting them on the jurisdiction's website.

## 8. Verification Procedures

MDA requires annual or bi-annual verification via the State or a third party for each credit generating practice. In addition, a spot check will be performed by MDA of at least ten percent (10percent) of all credits generated in any year. Additional verification is provided by MDE's SSA, which administers the State's Bay TMDL WIPs. SSA provides quality assurance checks while collecting, compiling and submitting agricultural nonpoint source BMP data to the Chesapeake Bay Program. Finally, MDE's Water Management Administration (WMA) will require regulated MS4 jurisdictions to produce proof of credit purchases by providing information on the number of acquired credits, MDA's certification of these credits, and locations of BMPs. This documentation must be recorded, tracked, and clearly posted on MDA's web-based registry as part of the public transparency protocols.

Regulated MS4 jurisdiction credit transactions with wastewater point sources will be formalized through permit modifications that specifically allocate point source credits for regulated MS4 jurisdiction compliance. Credits generated by wastewater point sources will be verified by MDE's WMA.

## 9. Compliance

As explained in the section "MS4 Eligibility Requirements; Trading Baselines", a regulated MS4 jurisdiction is eligible to purchase credits only if no outstanding permit violations exist and the jurisdiction demonstrates to MDE that it is working toward meeting all other requirements of its permit. In the event of default by another source generating credits, a regulated MS4 jurisdiction using those credits is responsible for complying with the permit requirements that would apply if the trade had not occurred. Any regulated MS4 jurisdiction that does not maintain compliance with all conditions of its MS4 permit is subject to MDE's enforcement procedures in accordance with Part V of Subtitle 3 of Title 9 of the Environment Article of the Annotated Code of Maryland.

## 10. Summary

Trading by Maryland's regulated MS4 community has great potential to promote the achievement of local and regional water quality goals in a cost effective way. MDE has developed a method based on NPDES MS4 permit impervious area restoration requirements and the CBP's pollutant loading rates to encourage sensible trading between the stormwater sector and the nonpoint and point source sectors. Furthermore, MDE believes that the policies enumerated above strike a reasonable balance between MS4 permit impervious area restoration requirements that must be achieved through traditional stormwater controls and those that can be achieved through trading. Ultimately, the exchange of credits by the regulated MS4 community with other nonpoint and point source sectors could encourage water quality improvements at a faster pace and lower cost for all involved.

# Section IV

# Agricultural Credit Generation and Acquisition Guidelines

Section I of the 2016 Trading Manual includes MDE Policy Statement, outlines Guiding Principles for Trading in Maryland, and delineates Key Provisions, which apply to all sources and trading partners. Section IV of the 2016 Trading Manual describes Key Principles and policy to provide guidance on the generation and exchange of agricultural nutrient and sediment credits.

## Background

Section IV uses the 2008 Phase II–A and Phase II-B Policy and Guidance documents governing the generation and acquisition of agricultural nonpoint source credits as its basis. The two documents have now been combined to provide essential information to all trading partners on the requirements and procedures for participating in trading. It is anticipated that the water quality trading with the agricultural community will provide financial incentives to farmers and landowners, who would be the credit generators and sellers, for the implementation of additional practices to reduce runoff and emissions. The potential users, or the buyers of agricultural credits, would be public and private entities, regulated and non-regulated sources, and other interested watershed stakeholders. The terms credit generators and credit sellers, as well as credit users and credit buyers, will be used interchangeably in the text below. This section is both an extension and an integral part of the Maryland Trading Policy.

## Maryland's Trading Registry and Marketplace

Maryland's agricultural trading program is a performance, not a practice-based, program. To provide the infrastructure to support trading activities, MDA developed the MNTT, now incorporated in the CBNTT. MDA is using the Maryland-specific calculation component of this web-based platform to determine baseline compliance, estimate nutrient and sediment loads and reductions, and compute credits generated by agricultural BMPs. In addition to the calculation tool, platform components include: a registry to record and track certified credits and catalogue completed trades; a marketplace to enable participants to post, track, and trade credits; an administrative module to assist in the supervision of the overall program and the generation of relevant reports; and an interactive mapping feature to delineate field boundaries and retrieve and forward allied information. The registry portion of the platform is being upgraded to include similar trading information for point sources and other nonpoint sources. The online trading platform can be found on the Maryland Nutrient Trading Program website (www.mdnutrienttrading.com).

## Credit Market Structure

The exchange of credits between nonpoint sources, point sources, and third parties will be conducted via individual agreements. As noted above, the website contains a marketplace where trading partners, both buyers and sellers, can post registered credits for sale, as well as credit needs and bids. While the State has made the electronic marketplace available, its use is not mandatory in the execution of trades.

The following provisions apply to Maryland Agricultural trades:

- Credit Pricing: Agricultural prices will be a function of market activities and will not be set by the State or other entity not party to the trade.
- The Role of Aggregators and Brokers: The State supports the role of aggregators who may work separately with operators/landowners to purchase and collect credits for purposes of re-selling these credits to entities in need of credits. The State also supports the role of brokers who may work to help negotiate bilateral trades between credit buyers and credit sellers.
- Registry/Public Record: The Trading Program will maintain a credit registry and track the generation and sale of agricultural credits, as well as other pertinent data. A subset of this information will be made publicly available.
- Retirement Ratio: An agricultural nonpoint source retirement ratio will be applied and represents the percentage of the total generated credits to be retired towards net water quality benefit. The retirement ratio applies to all credits sales and will be set at 10 percent of total credits in a transaction.

## 1. Key Principles

In addition to the Guiding Principles and Key Provisions, which are delineated in Section I, and apply to all trading parties, the following Key Principles apply to the generation and acquisition of agricultural credits.

- Trades must occur only between eligible parties
- Any generator of agricultural nonpoint source credits must first demonstrate that baseline water quality requirements for the watershed have been met. The entire farm tract in aggregate must meet the more stringent of the Bay TMDL for each watershed or the local TMDL that has been adopted for an impaired waterbody
- Agricultural credit generators and users must be in compliance with all local, state, and federal laws, regulations, and programs
- Agricultural trades cannot cause nor contribute to a degradation of water quality locally, downstream, or Bay-wide
- BMPs funded by federal or state cost-share or county mitigation banking programs cannot be used to generate credits during the contractual life span of the project

- Water quality trading is not intended to accelerate the loss of productive farmland. Therefore, credits will not be generated under this policy by taking whole or substantial portions of farms out of production solely to provide nutrient credits for use off site
- An agricultural practice can generate credits only when it is installed or placed in operation
- The exchange of credits between nonpoint sources, point sources, and third parties shall be conducted via individual agreements.

## 2. Agricultural Credit Generators/Sellers; Eligibility

There are two steps necessary for an agricultural trade. The first step consists of an assessment of eligibility to trade and the ability to generate credits above the baseline requirements. The second step involves the certification, registration, and verification of credits, and the administration of trades by the State of Maryland. Below are the eligibility and the baseline requirements, as well as guidelines for generating and selling agricultural nutrient and sediment credits.

### 2.1 Credit Generator Eligibility

In order to sell credits as part of this program, agricultural operations need to meet the following requirements:

- Must be in compliance with all applicable federal, state and local laws, regulations, and programs
- Must have a current Nutrient Management Plan (NMP), an implemented Soil Conservation Water Quality Plan (SCWQP), and, if applicable, a Waste Management System Plan (WMSP)
- Meet agricultural baseline requirements

### 2.2 Who May Sell Agricultural Credits

Generation of an agricultural credit for sale involves the reduction or prevention of a set amount of a pollutant from entering local surface or ground waters. Examples of generators and sellers include but may not be limited to the following:

- Farm owners
- Landowners
- Renters or lessees who can demonstrate permission from the owner to generate and sell credits
- Aggregators and brokers
- Maryland state entities
- Parties engaged in removing agricultural nutrients from the environment

### 2.3 Eligibility of Aggregators and Brokers

Any entity wanting to acquire and resell credits, such as an aggregator or broker:

- Must be in compliance with all applicable federal, state, and local laws, requirements, and programs
- Must demonstrate an intent and ability to acquire and deliver sufficient credits from multiple projects or sites to cover both the sale and reserve requirements

- Must be able to provide a written permission by the credit generator to resell credits
- Must provide documentation that the credit generator meets all compliance and eligibility requirements

## 3. Agricultural Trading Baselines

Maryland's agricultural nonpoint nutrient trading program requires operators of agricultural entities or other landowners wishing to generate credits to have achieved a level of nutrient or sediment reduction known as a baseline.

### 3.1 Baseline Requirements for Agricultural Nonpoint Sources

Baselines are applied to the crop or pasture fields being used to generate credits. To establish baseline compliance, a seller must first achieve the more stringent of:

a) The annual Chesapeake Bay TMDL allocation for agriculture in the applicable basin; or
b) The annual local TMDL allocation adopted for the watershed segment where the credits are generated.

An agricultural operator/landowner has to ensure that the entire farm operation in aggregate has achieved the appropriate loading rate. Any animal confinement area must be in compliance with specific practice-based requirements in order for the whole tract to meet baseline.

### 3.2 Baselines as Annual Loading Allocations

Baselines, or numeric per-acre annual loading allocations, for each of the State's five major basins are determined by the calculation of nitrogen, phosphorous, and sediment Edge-of-Segment Loads (in pounds per acre) derived from the CBWM 5.3.2 . Local TMDL load reductions for impaired watersheds are established by MDE.

### 3.3 Individual Nitrogen, Phosphorus, and Sediment Baselines

Nitrogen, phosphorus, and sediment baselines are calculated and treated individually. If baseline is met for one pollutant, credits can be generated and traded for that one pollutant, nutrient or sediment, even if the baselines for other pollutants are not met.

### 3.4 Baselines/Funding sources

An agricultural operator or landowner may utilize federal and state cost-share or county mitigation bank programs to implement BMPs used to meet the baseline nutrient reductions.

### 3.5 Eligible Practices

Any combination of current Bay Program-approved, Category I (see Section 5 below) agronomic and structural practices can be utilized to meet baseline load reductions. Baseline requirements may also necessitate implementation of additional BMPs to achieve the necessary load reduction.

### 3.6 Maryland Nutrient Trading Tool

Determination of whether the agricultural operation has reached the target per acre loading shall be made using the MDA-approved, performance-based calculation tool, the MNTT, that is a component of the CBNTT. The tool is available online at the trading program's website, www.mdnutrienttrading.com.

## 4. How to Generate Credits

Once an eligible landowner or operator has determined that baseline requirements for the watershed have been achieved, the implementation of additional water quality improvements can be considered as a tradable credit. Detailed below are the guidelines for the generation and sale of agricultural credits.

### 4.1 Generating Credits

Tradable credits can be generated from any Category I (see Section 5 below) planned agronomic, land conversion, or structural practice, which is shown to reduce nutrient and sediment loadings below the applicable baseline. Credits will be determined using BMP efficiency rates that utilize the latest science and technical information. MDA's approval will be contingent on the review of all aspects of the credit generation proposal and methods, as well as calculations for determining nutrient reductions that occur from activities that reduce nutrient application, increase nutrient uptake and retention, or result in net export of nutrients from the watershed.

### 4.2 Timing of Installation of Practice and Credit Generation:

A practice can generate credits only when it is installed and functioning. Because practices will be installed at different times during the year, the total estimated annual credits generated from any practice installed within a given year will be considered to be generated the following year starting January 1. For example, installing a wetland in June of 2015 means that the annual credit will be given to that project starting with calendar year 2016.

All practices must be installed and maintained according to USDA/NRCS or MDA's approved specifications. Consistent with the CBWM, multi-year projects with variable credit production capacity will be assumed to generate credits that reflect average annual performance.

### 4.3 Credits may only be applied in the year in which they are generated

Credits may only be applied in the year in which they are generated and cannot be banked for future years. For example, if an agricultural BMP generates an average of 100 credits per year and has a life span of five years, 500 credits cannot be applied in the fifth year.

# 5. Agricultural Credit Generating Practices

Agricultural credit-generating practices include Category 1 Practices.

## 5.1 Category 1 Practices-BMPs with the Bay Program Approved Load Reductions

There are practices that are currently in widespread use and have well-established and understood nutrient removal efficiencies. The installation and maintenance specifications for these practices are well documented. Currently, all "Approved BMPs" listed in Table 1 below are in this category. These practices have received a rigorous peer review by the Chesapeake Bay Program. Their efficiencies are discounted by varying percentages and given conservative value. They have been incorporated into online calculation tool, which will apply their appropriate loading rates.

Agronomic Practices

Credits can be generated from existing or planned Category 1 agronomic nutrient reduction practices that do not count towards the baseline requirements. Such agronomic practices reduce or minimize surface, groundwater, or air emissions, and examples include reductions in nitrogen fertilizer application, precision agriculture, cover crops, and no-till. Since these practices must be done every year to generate credits, they are considered annual practices for the year they are employed, regardless of what year the practices were first initiated.

Structural Practices

Planned structural Category 1 practices may generate credits and may generate them over multiple years as long as they are properly maintained. Such practices reduce or minimize nutrient or sediment loss through the construction or installation of physical edifices, barriers, or systems to trap, block, or filter pollutants and examples include manure sheds, grassed waterways, constructed wetlands Credits can be generated from existing structural investments that do not count towards the baseline requirements if the structure was funded through state or federal cost-share or county mitigation programs but has exceeded its "funded lifespan," i.e. the standard NRCS structural lifespan or Maryland agricultural cost-share (MACS) requirement, and is now being maintained by the owner/operator at his own expense. These latter structural practices will require re-certification to ensure that they have been properly maintained and are still functioning effectively.

Agricultural Land Conversion

Credits can be generated from the conversion of several types of agricultural land to a less nutrient-intense land use. Examples include: riparian forest buffer, riparian grass buffers, wetlands, and conversion to alternate crops. Credits cannot be approved for the idling of whole or substantial portions of productive farm for the sole purpose of providing nutrient credits. Credits can only be generated for conversions that do not count towards the baseline and meet all the eligibility criteria of a structural practice.

### 5.2 Potential Future Trading Options

Category 2 Practices - BMPs Requiring Technical Review

These are practices that are currently in use but require additional technical review to ascertain the appropriate nutrient removal efficiencies and installation and maintenance specifications. MDA and the trading program's Technical Review Committee reserve the right to adjust the uncertainty ratio applied to these practices to reflect a higher degree of uncertainty in nutrient removal efficiencies. Some of these practices, however, may be in the initial stage of the CBP peer review process and already may have been given interim efficiencies. Practices in this category are also listed in Table 1 below.

Category 3 Practices - Other BMPs

These are innovative practices that are not in widespread use and for which no recognized estimates of nutrient removal capacity exist. These practices will be examined by MDA and the trading program's Technical Review Committee to ascertain appropriate specifications for project installation, monitoring, and maintenance and to determine an appropriate uncertainty ratio. The approval process for these credits will likely take longer than that of the BMPs currently in use but requiring technical review. Potential practices that fall into this category are listed in Table 1 below.

Category 2 and 3 practices will be reviewed on a case-by-case basis and may include requirements for demonstration projects, the collection of sufficient data to evaluate results, and any other information needed to determine the validity of the credits. In some cases, development of the specifications and certification of the credits in these categories could be a multi-year process.

## TABLE 1. TRADEABLE BMP'S

| **Category 1**<br>**BMPs with Approved Load Reductions** | **Category 2**<br>**BMPs Requiring Technical Review** | **Category 3**<br>**Other BMPs Requiring Technical Review** |
|---|---|---|
| Riparian/Conservation Forest Buffers | Phosphorus Sorbing Materials | Bioreactors |
| Riparian/Conservation Grass Buffers | Oyster Aquaculture | Greenseekers |
| Wetland Restoration | Algal Turf Scrubbers | |

| | | |
|---|---|---|
| Tree Planting | Floating Wetlands | |
| Water Control Structures | Irrigation Management | |
| Stream Restoration | Manure Management | |
| Horse Pasture Management | | |
| Cover Crops (Early and Late Planting) | | |
| Commodity Cover Crops | | |
| Alternative Crops | | |
| Cropland Conversion | | |
| Dairy Precision Feeding | | |
| Precision Grazing | | |
| Decision Agriculture | | |
| Enhanced Nutrient Management | | |
| Conservation Tillage | | |
| Continuous No-Till | | |
| Animal Waste Management: Livestock | | |
| Animal Waste Management: Poultry | | |
| Barnyard Runoff Control | | |
| Loafing Lot Management | | |

Table 1 represents the most current list of practices for credit generation. This list is not inclusive and will be modified as needed.

## 6. Trading Ratios

Trading Ratios are used to calculate the credits that can be derived from nutrient reduction activity. They serve to 1) translate how various activities on a parcel of land result in delivered pollutant load reductions; 2) account for inherent uncertainties in nonpoint source load reduction estimates; 3) account for the BMP locations within the Bay watershed. MDA utilizes the following ratios:

### 6.1 Delivery Ratio

MDA uses the Delivery Ratio to simulate the diminished physical and biological processes that occur on nutrient loads as they travel downstream; thus, a pound of nitrogen that is released in the upper watershed has less impact on the bay than a pound of nitrogen released at the mouth. This is not necessarily the case for sediment.

Two types of Delivery Ratios are applied:

Edge of Segment Delivery Factor (EOS)

Edge of Segment Delivery Factor is the amount of land-applied nutrients expected to reach the surface waters at the boundary of the watershed model segment through surface runoff,

groundwater flows, and atmospheric deposition. The EOS factor represents an adjustment between the edge-of-field nutrient load as calculated by USDA's national Nutrient Tracking Tool (NTT) and the edge-of-segment load as defined by the CBWM.

In-Stream Delivery Factor (DF)

The In-Stream Delivery Factor is a function of the distance from the edge of the watershed segment to the fall line of the Chesapeake Bay. The delivery factor is derived from the CBWM and represents the pollutant effect of the reductions between upstream and downstream points.

### 6.2 Uncertainty Ratio

Uncertainty ratios are used to provide a margin of safety and ensure that water quality goals are being met. The efficiencies of BMPs in the Watershed Model are discounted by varying percentages and given conservative values to compensate for possible discrepancies in the relationship between credit generation models and actual resulting pollution reductions. The application of additional uncertainty ratios may be required by the State.

### 6.3 Retirement Ratio

A retirement ratio represents the percentage of the total generated credits to be retired towards net water quality benefit. The retirement ratio applies to all agricultural credits at the time of sale and will be set at 10 percent of total reductions and will be paid for by the buyer.

## 7. Agricultural Credit Certification Process

The completion of a Maryland Agricultural Nutrient Credit Certification and Registration Form (CCR), (Attachment A) is necessary to enable MDA to review all aspects of the credit generation proposal and to ensure that the existing farm conditions and proposed enhancements will meet the requirements of the agricultural nutrient trading program. CCR forms can be downloaded from the Maryland Nutrient Trading Program website (www.mdnutrienttrading.com). The completed form and all other required information should be submitted to the Maryland Department of Agriculture, 50 Harry S. Truman Parkway, Resource Conservation Operations, Annapolis, MD 21401 Attention: Nutrient Trading Program.

### 7.1 Application/Credit Review

A person who applies to MDA for approval of agricultural nonpoint source nutrient or sediment credits shall:

- Complete and sign the CCR form provided by MDA
- Furnish a copy of the Farm Summary Worksheet generated by the MNTT

- Provide a copy of the current NMP
- Provide a copy of the current SCWQP with a map identifying the location and boundaries of the operation and showing field identification numbers, field acreage, and the location of BMPs
- Provide the specifics of any credit generation proposal

MDA will review applications to verify that:

- Generator is eligible to sell credits
- All legal and regulatory compliance requirements are met
- Baseline requirements are met
- All credit generating improvements qualify for certification
- The landowner and the operator have consented in writing to all of the requirements and the waiver of confidentiality for any information the operation submits to MDA, including but not limited to the operator's NMP and SCWQP
- Credit calculations and all other information, are correct, and
- Necessary identifying and USDA/FSA tract information has been provided.

## 7.2 Credit Approval/Certification

MDA or its designee shall visit farm operation to verify that the baseline requirements are met and that the applicant's credit generation proposal is effective and appropriate for reducing the discharge of nutrients from the farm. In addition, credit certifications pending implementation of a BMP or other improvements are subject to further inspection to verify that the proposed generating practice is in place and functioning properly before final certification is granted.

Proposals for improvements for generating credits will be reviewed by MDA, and may include requirements for:

- Demonstration projects
- Collection of sufficient data to evaluate results, and
- Any other information needed to determine the validity of the credits

In some cases, as noted in 5.2 above, development of the specifications and certification of the credits could be a multi-year process.

Once verification is complete, MDA:

- May issue a pre-certification of credits based on pending implementation of the proposed improvements
- May request more information and will require a technically proficient and certified third-party verifier to conduct an on-site examination prior to the final certification of credits.

- May also require some additional contractual obligations and/or direct monitoring to ensure the load reductions are met

MDA shall only certify credits once the practice or practices generating those credits are installed and fully operational. All back-up documentation shall be maintained for a minimum of 10 years.

Upon completion of the review and approval of any application for agricultural nutrient and sediment credits, MDA will:

- Assign each credit a unique registration number, which will recorded in the Maryland's Trading Registry
- Track each registered credit

For projects not meeting MDA's certification standards, MDA will:

- Return documents which do not meet credit certification standards to the applicant with the reason(s) for non-approval
- Document the basis for denying an application and provide this information in writing to the applicant

As required by law, all records concerning the certification of credits shall be maintained by MDA and shall be made available for public review in accordance with requests made under the Maryland Public Information Act.

# 8. Verification

## 8.1 Annual Verification and Reporting

All trades involving agricultural credits certified by MDA require, at minimum, annual credit verification and reporting. Inspections will be scheduled as appropriate to practice type.
A person who buys certified credits shall employ an MDA-approved verifier who does not hold an interest in the agricultural operation generating the credits or was not in involved in the original application or qualification of the credits. Following the site visit to the agricultural operation, the verifier shall provide the following to MDA:

- Information as required on a Verification Report form, and
- Information following an inspection and review of the records for the agricultural operation including:
  - Review of the current NMP and documentation that it continues to be implemented in accordance with MDA's regulations
  - Review of the current SCWQP and documentation that it continues to be implemented and addresses all nitrogen, phosphorus, and sediment runoff and emission issues as specified

- Documentation that the agricultural management and BMPs implemented continue to meet baseline compliance and that all credit generating practices continue to be operated and maintained in accordance with the terms of the trading contract, and
- Confirmation that no deficiencies exist and no corrective measures are needed or a detailed description of deficiencies and required corrective actions.

MDA and MDE, the buyer and the seller, and the owner and/or operator shall receive a copy of the report prepared by the verifier conducting of any inspection and records review within 30 days. MDA may issue a corrective action order which allows a time period for repairs or other remedies to bring any deficiencies into compliance. MDA may require additional inspections and written substantiations that corrective measures have been taken. Any such action(s) by MDA does not preclude MDE from exercising its authority when agricultural credits are incorporated into issued discharge permits.

Within 30 days of receiving a copy of the report, an owner or operator may dispute information in the report that owner or operator believes is in error or does not accurately represent the condition or management of the operation and may address these concerns by writing to MDA and copying the verifier.

MDA shall schedule site reviews and records inspection on at least 10percent of all traded credits annually.

## 8.2 Verifiers

MDA shall maintain a list of approved verifiers who:

- Meet MDA's qualifications as described below
- Do not hold an interest in the agricultural operation generating certified credits; and are not the same individuals who conducted either the assessment or verification of the operation at the time of application

## 8.3 Verification Process Requirements

Verifiers approved by MDA to conduct interim inspections and reviews shall:

- Contact the operator in advance of the inspection to make an appointment so the operator or his representative can be present and have records available for the review
- Present a photo identification at the time of the inspection as proof of credentials, and
- Adhere to all biosecurity and other measures necessary to protect health and safety at the operation

An owner or operator may dispute information in the report that the operator believes is in error or does not accurately represent the condition or management of the operation and may address these concerns in writing to MDA and copying the verifier within 30 days of receiving a copy of the report.

MDA may conduct an investigation that may include additional inspections to determine the actual condition and management of the operation.

8.4 Verifier Approval Protocol

An individual may not be approved to act as a verifier unless the individual meets the following requirements:

- Education and experience
- Training, and
- Continuing education

MDA may approve a verifier who meets the following eligibility requirements:

- Has three (3) or more years of experience developing SCWQPs or qualifies as a USDA/NRCS Conservation Planner, Level II
- Is certified in Maryland to prepare NMPs, and
- Has completed MDA's training in the use of the MNTT

A verifier may only remain eligible to perform verifications by completing at least 6 hours of MDA's approved training within the first year, and 12 hours thereafter every three years.

After the opportunity for a hearing, MDA may deny, suspend, or revoke the approval of any verifier who:

- No longer meets eligibility requirements
- Violates any of the regulatory requirements of this chapter
- Provides MDA with any misleading, false, or fraudulent report
- Fails to promptly provide any report or any record required to be kept by this chapter
- Fails to meet the continuing education requirements for verifiers
- Is determined to be negligent or incompetent, or
- Fails to act in such a manner that MDA determines provides other good cause to deny, suspend, or revoke approval

## 9. Enforcement

9.1 Suspension or Revocation of Credit Certification.

MDA may suspend or revoke certification of an agricultural nonpoint source nutrient credit for any violation of Title 8, Subtitle 9 of the Agriculture Article, Annotated Code of Maryland, or the following:

- Failure to adopt or install any practice or activity certified pending implementation in conformity with standards and specifications or to differ substantially from the original credit generation proposal
- Failure to maintain any practice or activity as required by the operation's SCWQP
- Failure to take timely steps to remedy any deficiencies reported by the verifier, in response to a corrective action order by MDA, or as a result of MDA's review
- Failure to continue to meet baseline
- Failure to sell credits during their certified lifespan, and
- Performance of any other action or failure to act in such a manner that MDA determines provides other good cause to suspend or revoke the certification

MDA will initiate the decertification process with a corrective action order and will notify MDE of the intent to decertify credits. Failure to resolve the situation in a timely manner and pass re-inspection will result in the issuance of a decertification notice from MDA to the registered credit owner, MDE and all other affected parties. Notice of decertification will also be published on the trading program website.

An owner or operator may dispute findings of violations or failures by requesting an opportunity to be heard in writing to the Secretary of Agriculture within 30 days of receiving notice. Suspension or revocation of credit certification does not preclude any other punitive action that may be taken by another public or private entity.

## 10. Mechanism to Sell Credits

While trading in Maryland is based on a free market system, the State, as described earlier in this section, supplies the infrastructure to support trading. MDA utilizes an online, central registry to record and track agricultural credits that have been certified and assigned unique registration numbers. The registry also catalogues completed trades and serves as a transparent, public forum for conveying relevant information about credits and trades to all interested parties. The marketplace component provides a central location for the exchange of nitrogen, phosphorus, and sediment credits. Sellers may post credits to the individual market for each pollutant and buyers may post the type of credit needed. Its use is not mandatory, but the marketplace affords a readily accessible setting for both parties to negotiate and effect credit transactions.

## 11. Agricultural Credit Buyers/Users; Eligibility

The sale of certified agricultural credits to potential buyers/users is described below. The sale/exchange of credits between nonpoint sources, point sources, and third parties will be conducted via individual agreements. The buyers, users of the agricultural credits, will have to meet the following eligibility guidelines:

### 11.1 Who May Buy Credits?

Trading may take place between any combination of eligible parties (point sources, farmers, landowners, NGO's, or aggregators and brokers). Both public and private entities are eligible to participate in trades. Any credit buyer/user must be in compliance with all local, state, federal laws, regulations, and programs. The following are the general categories of eligible buyers:

- Point sources needing to offset new or expanded discharges (major and minor).
- MS4 Jurisdictions
- Parties required or wanting to offset new source loads
- Private or public parties wanting to buy credits.
- Maryland State Entities
- Aggregators
- Private credit banks

11.2 The State reserves the right to limit the quantity and type of credits bought by any entity.

11.3 Trades can occur both within and outside of NPDES permits.

## 12. Aggregators

An aggregator is a person or entity that collects and compiles credits from individual agricultural nonpoint sources to resell them. An aggregator pools together credits from multiple projects so they can be bundled and sold as a larger package. The creation of a diverse portfolio of projects and credits also is likely to provide better protection from project default or loss than projects from a single credit seller.

Aggregators in Maryland will be required, as a minimum, to self-insure their credits against natural disasters and/or landowner default as follow:

- Acquire and maintain credit reserve, equal to at least 25 percent more credits that are necessary to satisfy all active contracts
- Purchase an insurance policy against loss

## 13. Trading Mechanisms: Contracts

The sale/purchase of credits between nonpoint sources, point sources, and third parties shall be conducted via individual agreements. These agreements will take the form of legally enforceable contracts between the parties in one of the following combinations: credit buyer/user and credit seller/generator; credit buyer/user and credit aggregator; or credit aggregator and credit seller/generator. The contracts must contain all of the applicable minimum requirements stipulated in this policy.

The minimum requirements of the three types of contracts are as follow:

13.1 Contract Confidentially*:*

Any provisions of a contract that are not required by this policy do not have to be submitted for review and can remain confidential if the parties so desire.

13.2 Contract Format:

Use of standardized contracts will not be required. However, the required provisions that are submitted as part of the trade approval process must include the elements as specified below.

13.3 Contracts between Credit Buyer/User and Credit Seller/Generator:

- Identification and contact information of the parties, with signatures
- Location of credits
- Duration of the contract in years
- Quantity of credits to be exchanged in each year of the contract
- Methods of credit generation
- Credit prices
- Obligations of the seller, including agreement to:
  - Properly maintain BMPs or other specified facilities
  - Allow regular inspections
- Comply with all applicable federal, state, and local requirements
- Continue to meet and maintain baseline compliance
- Obligations of the buyer, including agreement to:
  - Perform required annual or biannual inspections through a certified third party
  - Provide annual inspection reports to MDE and MDA
  - Purchase additional credits necessary to meet mandated 10percent retirement ratio
  - Make prompt payment based on contract provision
- Provisions for violation of the contract terms, including monetary compensation and/ or delivery of alternative credits

13.4 Contracts between Credit User/Buyer and/or Credit Aggregator and Credit Generator/Seller and/or (Credit Aggregator):

- Identification and contact information of the parties, with signatures
- Location of credits
- Duration of the contract in years
- Quantity of credits to be exchanged in each year of the contract
- Methods of credit generation
- Credit prices
- Obligations of the seller and or Aggregator, including agreement to:

  - Ensure proper operation and maintenance of BMPs or other specified facilities
  - Supply sufficient credits in accordance with the contract/agreement
  - Provide annual inspection report to buyer and/or
  - Ensure that regular inspections are allowed
  - Comply with all applicable federal, state, and local requirements
  - Ensure baselines maintenance and compliance
- Obligations of the buyer, including agreement to:
  - Perform annual or biannual inspections through a certified third party
  - Provide, as a minimum, annual inspection reports to MDA and MDE
  - Make prompt payment based on contract provisions
  - Purchase additional credits necessary to meet mandated 10percent retirement ratio
  - Make prompt payment based on contract provisions
- Provisions for violation of the contract terms, including monetary compensation and/or delivery of alternative credits.

In addition to the minimum requirements, the parties may add supplementary elements and requirements to the contracts to address their individual requirements or preferences. This may be done so long as the additional provisions do not conflict with the contractual requirements listed above.

### 13.5 Accountability, Annual Verification and Inspection Process

All trading contracts shall require annual BMP verification and reporting. For annual agricultural practices, such as cover crops, inspections will be required a minimum of twice during the annual life. Independent verification by certified third parties is mandatory. For point sources, the NPDES permit is the mechanism by which trades are implemented and tracked. NPDES reporting requirements will be stipulated by MDE in the permit.

In addition, MDA or its designee will perform annual spot check inspections on a minimum of 10percent of all sold certified agricultural credits

## 14. Liability

### 14.1 Permitted NPDES Trades

It is anticipated that some of the demand for agricultural credits will come from permitted sources and trades will be incorporation into the NPDES permit. Under the CWA, the responsibility for meeting all permit requirements and the liability for violating them rests solely with the permittee. Hence, CWA liability for noncompliance with the trading provisions of a permit, including failure of the credit supplier to produce the required quantity of credits, remains with the permittee and any

necessary CWA enforcement action will be taken against it. The permittee's contracts with credit supplier should include provisions to address credit supplier violation of the contract terms, or failure of the credit supplier to produce the required quantity of credits, which may include monetary compensation and/or delivery of alternative credits.

### 14.2 Non-NPDES Trades

For non-NPDES trades, MDE and MDA require that contracts between trading partners contain provisions for violation of the contract terms. The agencies, however, do not impose specific provisions or requirements, leaving them to the trading parties to determine. Both credit purchasers and suppliers should consult their legal counsel when negotiating the contractual remedies. In the event of default by an agricultural credit supplier or an aggregator to a non-permitted entity, the contract is legally enforceable for monetary damages.

### 14.3 Credit Supplier Self-Insurance:

This policy recognizes credits provided by agricultural non-point sources are estimated pollution reductions and that credit suppliers, particularly credit aggregators, should maintain inventories of credits sufficiently large and diverse that the supplier could be considered to be self-insured. While it is up to the credit buyer to make this judgment, the existence of such self-insurance capability would further reduce the risk to the purchaser.

## 15. Trade Approval Process

Contractual arrangements between potential buyers and sellers can be negotiated at any time. They can be done before or after credit certification. Upon approval of the trade, the trade will be recorded and tracked in the Trading Registry located online at the Trading Program's website. Documents that are not approved will be returned to the applicant with a reason for non-approval.

If the trade is with a generator/seller of agricultural nutrient credits and a non-permitted buyer/user, MDA will provide review and enter trade into central registry.

The trading applications for non-permitted buyers shall provide specific information about the proposed trading arrangement. This information shall include the following:

- The owner of the credits
- The purchaser of the credits
- The trading basin
- The time period for the trading arrangement
- The number and type of discharge credits to be exchanged each year during this period
- How the number of required credits to be exchanged was determined
- Source of the credits, and

- The essential contractual arrangements as described above

Documentation of the contractual arrangements for all buyers interested in obtaining credits must be submitted with the request to MDA. The essential portion of the contract (s) between the buyer and the credit seller, whether it is a credit generator or an aggregator, must be submitted to fulfill this requirement. In addition, MDA will require submittal of an approved CCR form.

MDA or its agent may require more information or an onsite examination prior to approval of a trade. MDA also may require some additional contractual obligations and/or direct monitoring to ensure the load reductions are met. All back up documentation shall be maintained for a minimum of 10 years.

## 16. Future Trading Options

Innovative Practices

Some practices that are currently in use require additional technical review to ascertain the appropriate nutrient removal efficiencies and installation and maintenance specifications. There are also innovative practices that are not in widespread use and for which no recognized estimates of nutrient removal capacity exist. Both are described further in this Section as Category 2 and Category 3 practices. These BMPs cannot be incorporated into the NTT and will require the Technical Panel's review. In some cases, development of the specifications and certification of the credits could be a multi-year process. These practices are potential future credit generating practices.

Carbon Trading

Just like the nutrient and sediment markets, carbon trading offers entities under regulatory requirements a potentially more cost-effective means to meet their obligations while providing farmers and landowners the opportunity to receive compensation for implementing and maintaining conservation practices. MDA is charged under the Greenhouse Gas Emission Reduction Act of 2009 with adding carbon credits and enhanced nutrient credits to the Maryland Nutrient Trading Program. Carbon and enhanced nutrient credits would be "stacked" onto existing nutrient and sediment credits as tradable commodities, thereby increasing the potential value of the total credit package and taking another incremental step in creating a comprehensive environmental marketplace. A public and private stakeholder advisory group started meeting in November 2009 to assess carbon mitigation activities, determine a menu of eligible practices, and develop the policies and guidelines to implement a carbon trading program, but that effort was discontinued in 2012 with the worldwide collapse in carbon credit prices. There are plans to re-convene the carbon advisory group when the nutrient marketplace is fully functioning.

# Attachment A


**State of Maryland**
**Maryland Department of Agriculture**
**Nutrient Credit Certification and Registration Form**

**1.** Applicant Information: _____
First Name MI Last Name

_____
Company Name (if applicable) Title

**2.** Applicant Address: _____
Number Street

_____
Town State Zip

**3.** Property Information:
If the applicant is not the property owner or renter with control, enter the name of the owner or party in control of the property: _____
First MI Last

**4.** Property Address: _____
Number Street

_____
Town State Zip

**5.** Property Description (optional): _____

_____

**6.** Property County: _____ Watershed: _____

Tract Number: _____ Watershed Segment ID: _____

MD Property View Acct. ID(s): _____ Latitude: _____
_____ Longitude: _____
_____
_____

**7.** Total Annual Credits Generated: _____ (N); _____ (P)

Total Years: _____

**8.** Indicate BMPs that will be used to generate credits:

| # | Land Conversion/Streambank BMPs | | Acres |
|---|---|---|---|
| ☐ | Wetland | | |
| ☐ | Land use conversion: hay | | |
| ☐ | Land use conversion: grass | | |
| ☐ | Land use conversion: forest | | |
| ☐ | Land use conversion: perennial crop* | | |
| ☐ | Forested buffer/fencing | | |
| ☐ | Grass buffer/fencing | | |
| ☐ | Streambank restoration | Feet | |

| # | Field Management BMPs | | Acres |
|---|---|---|---|
| ☐ | Conservation tillage* | | |
| ☐ | Continuous no-till* | | |
| ☐ | Enhanced nutrient management* | | |
| ☐ | Decision agriculture | | |
| ☐ | Water control structure | | |
| ☐ | Cover crop* | | |
| | | Type | |
| ☐ | Commodity cover crop* | | |
| | | Type | |

| # | Livestock Area BMPs |
|---|---|
| ☐ | Clean water diversion |
| ☐ | Heavy use area protection |
| ☐ | Heavy use area pad |
| ☐ | Runoff collection & infiltration |
| ☐ | Vegetated swales |
| ☐ | Water control structure |
| ☐ | Treatment wetland |

| # | Ammonia BMPs |
|---|---|
| ☐ | Lagoon cover |
| ☐ | Poultry litter treatment |
| ☐ | Biofilters |
| ☐ | Vegetated environmental buffers |

| # | Pasture BMPs | Acres |
|---|---|---|
| ☐ | Alternative watering facility | |
| ☐ | Horse pasture management | |
| ☐ | Prescribed grazing/PIRG | |
| ☐ | Fencing (forest buffer) | |
| ☐ | Fencing (grass buffer) | |

**Manure Management**
Dairy precision feeding*
Manure export*
Poultry/swine phytase*
Manure injection*

* These BMPs are reflected in crop management scenarios as differences in crop rotation, tillage practices, manure N/P concentrations, nutrient application regimes, etc.

**9.** Describe any BMP used to generate credits that is not listed above:

_____

_____

**10.** If any BMPs are not fully implemented, list below those planned and contingent on sale, along with contingency sale date:

_____

_____

**11.** Category 2 and 3 BMPs (consult BMP list in Users Guide) require additional analysis and technical review. List below any BMPs in those categories:

_____

_____

**12.** Compliance Statements:

**A.** I attest that all occupied lands under my operation (owned or rented) are in compliance with Maryland Nutrient Management requirements and I maintain a current Soil and Water Quality Plan, and if applicable, a Waste System Management Plan. Furthermore, I confirm that I am following all recommendations of my plan(s). _____ (initial)

**or**

**B.** I attest that I have the authority to represent the owner or controlling party named above and affirm that the referenced lands are in compliance with Maryland Nutrient Management requirements and operate under a current Soil and Water Quality Plan, and if applicable, a Waste System Management Plan. Furthermore, I confirm that all recommendations in any of those plan(s) are being followed. _____ (initial)

**C.** I attest that all existing BMP's submitted to generate credits are not or no longer subject to contractual obligations under funding provided by any NRCS or MACS program: _____ (initial)

**13.** Any other pertinent information or additional comments may be entered in box below:

| |
|---|
| |

**This Form Must be Accompanied by Farm Summary Worksheet from the Maryland Trading Program Website (or Similar Document) and Any Project Proposals for Planned BMPs**

**14.** Signature: _____ _____
Date

# GLOSSARY

**Aggregator:** A person or entity that collects and compiles credits from individual agricultural nonpoint sources to resell them.

**Agronomic Practices:** Annual crop and/or soil practices that reduce or minimize the probability of nutrient or sediment loss into surface and/or ground waters.

**Agricultural land**: Land used to produce food, feed, fiber, sod, animals, plants, trees, or plants in containers, or for out-of-ground production. Such land has an Agricultural Use Assessment as determined by the Maryland Department of Assessments and Taxation.

**Baseline (Trading Baseline):** Pollutant control requirements, practices, actions, loading rates or levels of reductions that must be in place before credits can be generated. All credit generators and/or sellers must first meet trading baseline, as defined in the Trading Policy, before they can enter trading market and participate in a trade, exchange or sale of credit.

**Best Management Practice or BMP**: BMPs include, but are not limited to, agricultural and urban, structural and nonstructural pollution control, operation, and maintenance procedures and practices that prevent or reduce pollutants and/or mitigate flooding.

**Biological Nutrient Removal (BNR):** A biological wastewater treatment technology capable of reducing the nitrogen in wastewater effluent to no more than 8 milligrams per liter, as calculated on an annually averaged basis.

**Bubble or "Overlay" Permit**: A NPDES permit issued to a group of point source dischargers that supplements individual permits by establishing permit limits and other requirements for one or more pollutant of concern that are not fully addressed in the existing individual permits. A "bubble" or "overlay" permit is an alternative group permitting approach available to either multiple owners or single owners of multiple facilities for implementing the nutrient caps. Instead of multiple caps, one for each facility in a watershed, the central owner may elect to receive a single permit with one nutrient loading cap for all of the facilities it operates in the watershed. Technology-based treatment requirements for nutrients at each of the individual facilities may also be included in either the overlay permit or in each of the required individual permits.

**Cap:** A legally enforceable aggregate mass load limit contained in a discharger's permit.

**Chesapeake Bay Watershed Model:** The Hydrologic Simulation Program used to simulate the surface water run-off, groundwater flow, and the transport of nutrient and sediments to the Chesapeake Bay.

**Credit or Pollutant Reduction Credit:** A measured or estimated unit of pollutant reduction per

unit of time at the discharge location that can be generated and sold or exchanged in a trade. A credit is a unit of trade equal to one pound per year of nitrogen, phosphorus, or sediment adjusted to account for applicable trading ratios. A credit is created by a credit generator, in accordance with provisions and requirements of the Trading Policy, by controlling its discharge beyond what is needed to meet its baseline.

**Credit Generators/Sellers:** Sources that reduce pollution above and beyond their baseline requirements, and generate credits that can be exchange or sold to credit users/buyers.

**Credit Users/Buyers**: Entities that acquire and/or purchase credits to meet their regulatory obligations; offset new loads; or contribute towards water quality improvements, or as a reserve, insurance against credit failures.

**Edge of Segment (EOS) Load:** The amount of land-applied nutrients expected to reach the surface waters at the boundary of a Chesapeake Bay Watershed Model segment through surface runoff, groundwater flows, or atmospheric deposition.

**Effluent Limitation Guidelines and Standards (ELGs)**: A regulation published by EPA under section 304(b) of the CWA that establishes national technology-based effluent requirements for a specific industrial category.

**Enhanced Nutrient Removal (ENR):** A wastewater treatment technology that is capable of reducing the nitrogen and phosphorus concentrations in wastewater effluent to achieve permit limits equivalent to concentrations of no more than 4 milligrams per liter TN and 0.3 milligrams per liter TP, as calculated on an annually averaged basis.

**Expanded Point Source:** Point Source approved by the local government requiring a higher wasteload allocation than the nutrient wasteload allocation approved in the Bay TMDL.

**Floating Cap**: An effluent limitation applicable to an ENR facility financed by the BRF. The floating cap is calculated at the end of each calendar year using the actual annual flow for the facility times a concentration of 4 mg/l TN or 0.3 mg/l TP and converted to units of pounds per year (lbs/yr).

**Industrial Stormwater**: Stormwater runoff from industrial activity

**Impervious surface:** Any surface that does not allow stormwater to infiltrate into the ground.

**Impervious surface area:** The total extent of all impervious surfaces.

**Major Permit Modification:** A permit revision requiring a formal public participation process, including public notice of application received and opportunity for informational meetings and public hearings.

**Minimum Control Level**: The pollutant controls, including Technology Based Effluent Limitations (TBELs), that a point source credit user/buyer must implement before using credits to meet the facility's WLA.

**Minor (Non-significant) Point Source:** WWTPs with the design capacity of less than 500,000 gallons per day.

**Minor Permit Modification:** A discharge permit revision not requiring a formal public participation process.

**Municipal separate storm sewer system (MS4):** A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body…having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes…; or (ii) Designed or used for collecting or conveying storm water;" [CFR 122.26(b)(8)].

**New Point Source:** A point source with no waste load allocation in the 2010 Chesapeake Bay TMDL.

**Non-MS4 stormwater**: Stormwater runoff from a conveyance or system of conveyances owned or operated by a municipality or other public body not covered under a NPDES MS4 permit.

**Nonpoint Source:** A source of pollution that is not from a single point of origin or from a specific outlet, i.e., not a point source. Diffuse pollution sources (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by stormwater. Common nonpoint sources are agriculture, forestry, urban sites, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

**Nonpoint Source Discharge Credit** (see Credit or Pollutant Reduction Credit (Nonpoint Source Discharge Credit))

**Trading**: A market-based approach to achieving water quality standards which involves a transaction, the sale or other exchange, through a contractual agreement between credit generators and/or credit sellers and credit users and/or credit buyers that have been approved and/or certified verified and registered by the State agencies. The credits must reflect pollutant load differential below the credit generator's baseline.

**Nutrient Reduction:** (see Pollutant Reduction)

**Offset:** 1.) n. Offsite treatment implemented by a regulated point source for the purposes of meeting its permit limit. 2.) n. Load reductions that are acquired by a new or expanding point

source from other point sources, and/or nonpoint sources, or load reductions obtained through the transfer of flow from an OSDS to an ENR facility to offset the new point source discharge within an impaired watershed, such as the Chesapeake Bay or a local tributary. 3.) v. to compensate for increased loads beyond the facility's loading baseline.

**Onsite Sewage Disposal System (OSDS):** Any system that disposes of sewage effluent beneath the soil surface.

**Regulated Phase I MS4**: A municipal separate storm sewer system owned and operated by a municipality or other public body with a population of greater than or equal to 100,000 and covered under a National Pollutant Discharge Elimination System (NPDES) MS4 permit.

**Regulated Phase II MS4**: A municipal separate storm sewer system owned and operated by a municipality or other public body with a population of less than 100,000 and covered under a National Pollutant Discharge Elimination System (NPDES) MS4 permit.

**Point Source**: An NPDES-permitted discharge to surface water from a sewage treatment plant or industrial facility

**Pollutant Reduction (Nutrient and/or Sediment Reduction):** The difference in nutrient and/or sediment discharges to surface and/or ground waters achieved by activities such as best management practices or technical upgrades, compared to the current load or the applicable baseline after meeting eligibility requirements. In addition, point sources may generate credits by maintaining flow at less than the design flow basis of the assigned nutrient WLA.

**Registry:** A system utilized to record, manage, and track certified credits and other pertinent data.

**Regulated MS4 jurisdiction/regulated MS4 community:** A municipality or other public body or group of municipalities or public bodies covered under a Phase I or Phase II NPDES MS4 permit.

**Retirement Ratio** (see Trading Ratios)

**Significant Point Source:** A publicly-owned treatment works (POTW) or a federal or privately owned sewage treatment plant with a design capacity of 500,000 gallons per day or greater, or an industrial point source with daily discharge loadings of nitrogen or phosphorus equivalent to a significant POTW.

**Stormwater**: Water that originates from a precipitation event.

**Structural Controls (Agriculture)**: Practices with multi-year life spans that are engineered and installed to meet or exceed NRCS Standards in order to reduce or eliminate the introduction of pollutants into surface and/or ground waters.

**Technology-Based Effluent Limitation (TBEL):** A permit limit for a pollutant that is based on the capability of a treatment method to reduce the pollutant to a certain concentration. TBELs for POTWs are derived from the secondary treatment regulations (40 Code of Federal Regulations Part 133) or state treatment standards. TBELs for non-POTWs are derived from national effluent limitation guidelines, state treatment standards, or on a case-by-case basis from the best professional judgment of the permit writer.

**Third Party:** Any entity or person that assist in facilitating credit exchanges and/or verifying Best Management Practices (BMPs).

**Total Maximum Daily Load**: A calculation for an impaired waterbody of the maximum amount of a pollutant the waterbody can receive and still meet applicable water quality standards

**Trading ratios:** Discount factors applied to pollutant reductions to account for uncertainty, water quality, delivery or special need concerns. The following are examples of trading ratios:

**Delivery Ratios:** Delivery Ratios apply discount factors to compensate for a pollutant's travel over land or in water (or both) and may be applied to all, point and nonpoint ,sources. Delivery ratios generally account for attenuation (i.e., the rate at which nutrients are reduced through natural processes, such as hydrolysis, oxidation, and biodegradation, on their way through tributaries to the mainstem of the water body). The ratio varies depending on the location of the source from the mainstem. Generally, the greater the distance the pollutant has to travel, the greater the pollutant loss will be. This ratio would work to equalize a trade between a source in the headwaters and one near the mainstem. This ratio is also often termed as "location ratio." Delivery ratios will be based on information from applicable and accepted data sources, such as the CBWM.

**Retirement Ratio:** The retirement ratio represents the percentage of the total generated credits to be retired to contribute toward net water quality benefit. The retirement ratio applies to all credits generated and will be set at 5 percent (5percent) of total reductions for point sources and 10 percent (10percent) for nonpoint sources. The percent retirement ratio may be adjusted over time.

**Uncertainty Ratios:** Uncertainty ratios are intended to account for variation in the expected reliability and efficiency of the source or type of reduction being applied toward credit for another. They are calibrated to create a margin of safety or otherwise attempt to ensure that the credited practice provides a minimum level or reductions, even if actual reduction efficiencies and units removed are on the low end of an expected range. In some instances uncertainty ratios will not be employed because they are already accounted for in quantification methods. Trades involving nonpoint sources may use uncertainty ratios of greater than 1:1.

**Wasteload Allocation (WLA):** The portion of receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs implemented in discharge permits constitute a type of water quality-based effluent limitation (40 CFR 130.2(h)).

## Table of Acronyms

| | |
|---|---|
| **BMP** | best management practice |
| **BNR** | biological nutrient removal |
| **BRF** | Bay Restoration Fund |
| **CBNTT** | Chesapeake Bay Nutrient Trading/Tracking Tool |
| **CBP** | Chesapeake Bay Program |
| **CBWM** | Chesapeake Bay Watershed Model |
| **CWA** | Clean Water Act |
| **ENR** | enhanced nutrient removal |
| **EOS** | edge of stream |
| **EPA** | U.S. Environmental Protection Agency |
| **GPD** | gallons per day |
| **LA** | load allocation |
| **MDA** | Maryland Department of Agriculture |
| **MDE** | Maryland Department of Environment |
| **MDP** | Maryland Department of Planning |
| **MGD** | million gallons per day |
| **MNTT** | Maryland Nutrient Tracking Tool |
| **MS4** | municipal separate storm sewer system |
| **NRCS** | Natural Resources Conservation Service |
| **NPDES** | National Pollutant Discharge Elimination Systems |
| **OSDS** | onsite sewage disposal system |
| **POTW** | publicly-owned treatment works |
| **SSA** | Science Services Administration |
| **TBEL** | technology based effluent limitations |
| **TM** | technical memorandum |
| **TMDL** | total maximum daily load |
| **TN** | total nitrogen |
| **TP** | total phosphorus |
| **TSS** | total suspended solids |
| **USDA** | U.S. Department of Agriculture |
| **WMA** | Water Management Administration |
| **WIP** | watershed implementation plan |
| **WLA** | wasteload allocation |
| **WQBEL** | water quality based effluent limitations |
| **WWTPs** | wastewater treatment plants |

# FACT SHEET:

## ADDRESSING STORMWATER IMPACTS ON WATER QUALITY AND THE CHESAPEAKE BAY

# Maryland Development Stormwater Offset Tool

## BACKGROUND

### A NEW TOOL FOR URBAN PLANNERS AND MUNICIPALITIES

The Maryland Water Quality Trading Program is a voluntary, public marketplace for the sale and purchase of nitrogen, phosphorus, and sediment credits. The program's aim is to help bring Maryland into compliance with Total Maximum Daily Load (TMDL) pollution limits established by the U.S. Environmental Protection Agency for the Chesapeake Bay. As economic and population growth occurs within the watershed, it will create additional nutrient or sediment impacts. These impacts must be mitigated on-site or "offset" by load reductions from other sources. The Maryland trading program allows municipalities, wastewater treatment plants, and developers the flexibility to meet load limitations by purchasing offset credits created by farmers who have reduced their runoff through the adoption or installation of best management practices (BMPs). The program is a valuable option not only for regulatory compliance, but also for the introduction of cost-effectiveness and market-driven efficiencies to the realization of pollutant reductions. To facilitate water quality trading between developers or municipalities wanting to purchase urban stormwater offset credits and eligible farmers with offset credits to sell, the Maryland Department of Agriculture (MDA) has expanded its web-based trading platform to enable users to determine offset needs for new growth and development projects.

## FEATURES

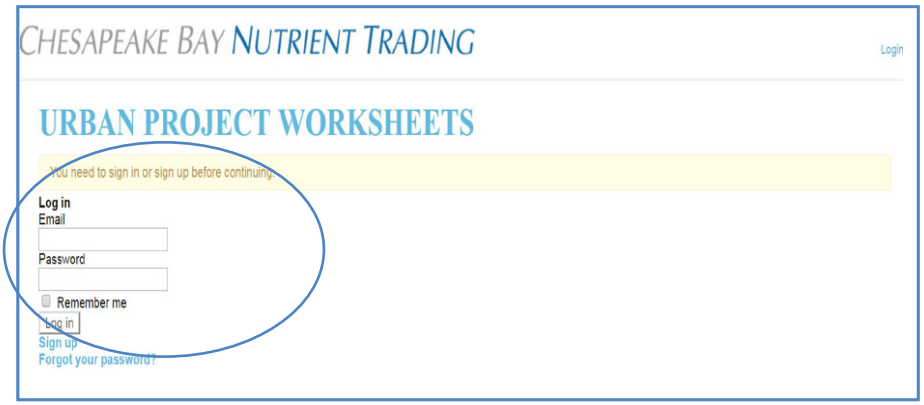
### TRANSLATES ON-THE-GROUND CONDITIONS AND BEST MANAGEMENT PRACTICES

The Maryland Development Stormwater Offset Tool is an interactive, site-specific assessment tool that determines offset needs or credit generation capacity by translating on-the-ground conditions and best management practices into both edge-of-stream (EOS) and delivered nutrient and sediment reductions. The tool incorporates land uses identified by the Chesapeake Bay Watershed Model, along with allocations for new development and redevelopment projects. It applies urban stormwater practices approved by the Chesapeake Bay Program Partnership, as well as their reduction efficiencies. Builders, local jurisdictions, and agency staff can access the tool through the trading program's central website at **www.mdnutrienttrading.com**. Also, buyers and sellers can use the same website to find credit information and make connections through the online credit registry and marketplace.

## USER INSTRUCTIONS

### A BRIEF GUIDE TO USING THE MARYLAND DEVELOPMENT STORMWATER OFFSET TOOL

***Step 1*** *From the website, log onto the tool or sign up to create a new account.*




Maryland
Department of Agriculture
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50 Harry S. Truman Parkway
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410.841.5865
www.mdnutrienttrading.com

# FACT SHEET:

## ADDRESSING STORMWATER IMPACTS ON WATER QUALITY AND THE CHESAPEAKE BAY

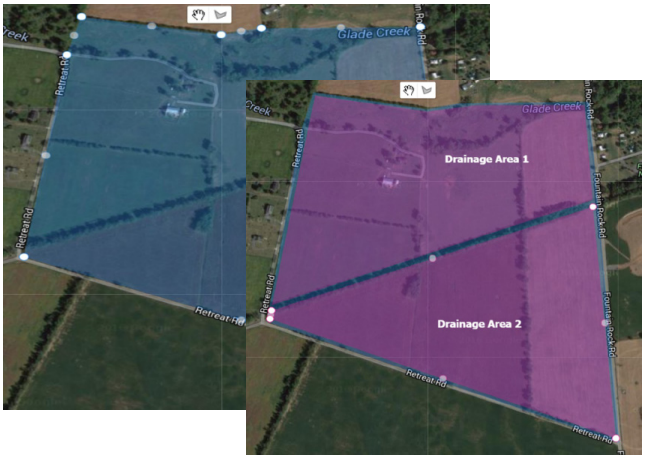
USER INSTRUCTIONS

### *Step 2*

*To add a new project into the tool, click the + sign and enter the name, address, zip code, and county of the project, along with any notes about the project and its location.*

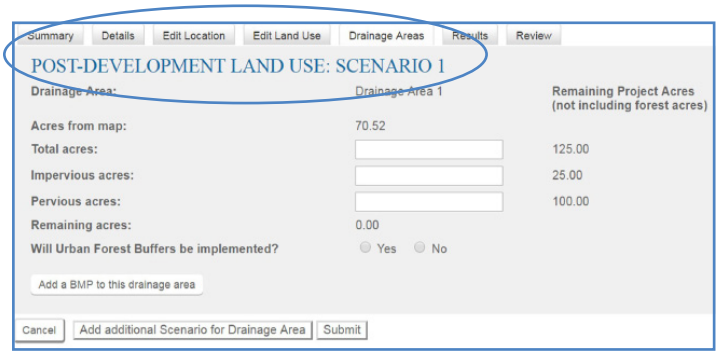

### *Step 3*

*Outline the project location and each individual drainage area using the interactive mapping feature or importing GIS shapefiles of the parcel and/or drainage areas.*




### *Step 4*

*Complete the requested worksheet information about land use acres, wastewater treatment, and urban BMPs for both the pre-development conditions and the post-development plans within the parcel and the individual drainage areas. Throughout the process, the tabs at the top of each screen can be used to navigate through the tool to review and edit data.*




ADDITIONAL FEATURES

### *Helpful Tips*

*Up to three scenarios may be created for each drainage area. This function allows users to test pollution reduction impacts for different BMPs or redistribute acres between pervious and impervious acres. The tool provides calculations for nitrogen, phosphorus, and sediment and compares the load for each scenario to the site's allocation to determine offset needs or credits generated. There is a printable summary review page that may be submitted in the application and compliance process.*

Summary | Details | Edit Location | Edit Land Use | Drainage Areas | Results | Review

RESULTS

| | *Nitrogen* Scenario 1 | Scenario 2 | Scenario 3 |
|---|---|---|---|
| Stormwater allocation provided, EOS: | 649.82 | 649.82 | 649.82 |
| Post-development stormwater load, EOS: | 1952.8 | 500.46 | 832.62 |
| Post-development stormwater load (with required BMPs only), EOS: | 1952.8 | 1194.94 | 1328.68 |
| Reductions from required erosion control BMPs (lb/yr, EOS) | 0.0 | 0.0 | 0.0 |
| Creditable reductions from erosion control BMPs (lb/yr, EOS) | 7.5 | 7.5 | 7.5 |
| **Total offset needed** | | | |
| Fee units (EOS lbs/yr) | 1302.98 | N/A | 182.8 |
| Delivery factor | 0.46 | 0.46 | 0.46 |
| Market units (DEL lbs/yr) | 598.44 | N/A | 83.96 |
| **Credits generated** | | | |
| Fee units (EOS lbs/yr) | N/A | 149.36 | N/A |
| Delivery factor | 0.46 | 0.46 | 0.46 |
| Market units (DEL lbs/yr) | N/A | 68.71 | N/A |

## FOR MORE INFORMATION

The Maryland Development Stormwater Offset Tool was developed by MDA in collaboration with the World Resources Institute, the Texas Institute for Applied Environmental Research, and the Maryland Department of the Environment. It is available for replication and use by other Bay states or as a prototype for trading programs with similar needs.

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# *Chesapeake Bay Trading Registry and Marketplace*

## Administrator's Manual

**Revised 2/29/16**

# Table of Contents

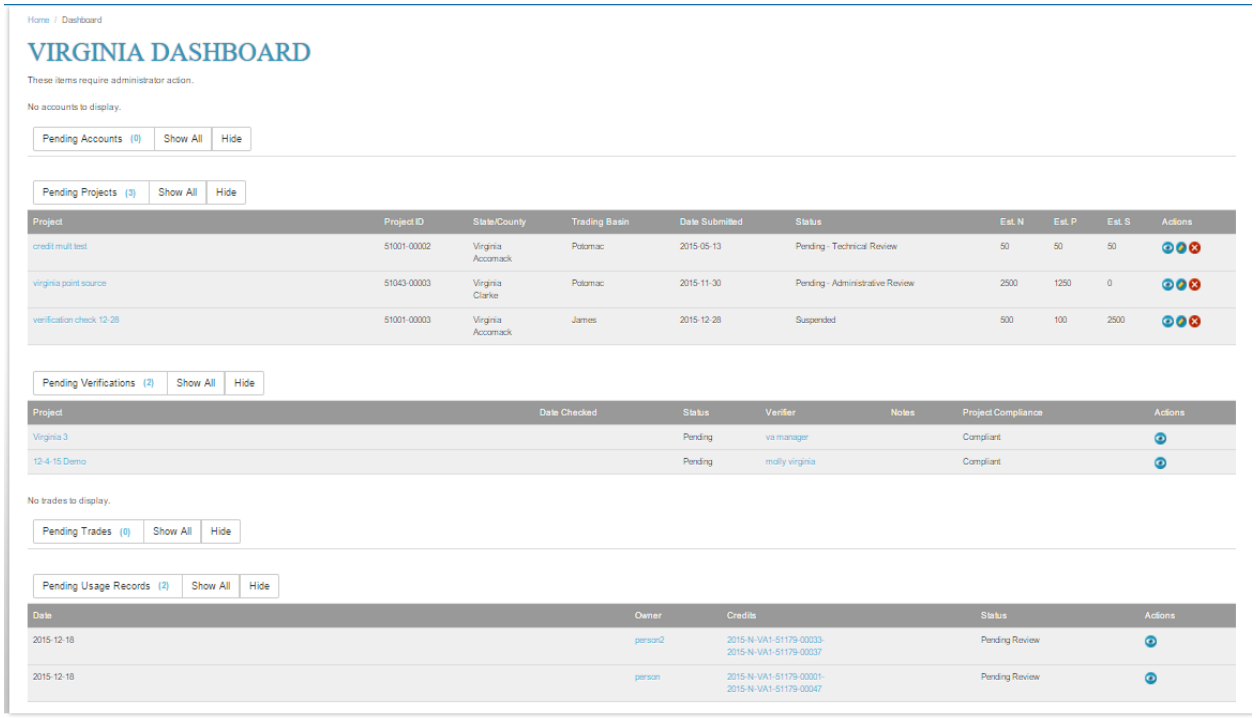
# Account Creation and Access

State administrators must create an account. Go to [cbntt.org](cbntt.org) and click on the Registry link and then click on "Sign up now!"

In order to create a new account, the administrator must provide the requested information and choose "Government" as the account type. Next, type in the text in the security box. The state account will be approved and provided with administrator privileges for the respective state by the website administrator.

# Registry and Marketplace Overview

## Home: Administrator Dashboard




After logging in as an administrator, the user will see the state *Home* page or "Dashboard." The Dashboard lists all accounts, projects, verifications, trades, and usage records that are pending administrator review. Under "Actions" the administrator can view any pending request. Administrative users can edit some information. To review a request for approval, click on the view button (eye symbol).

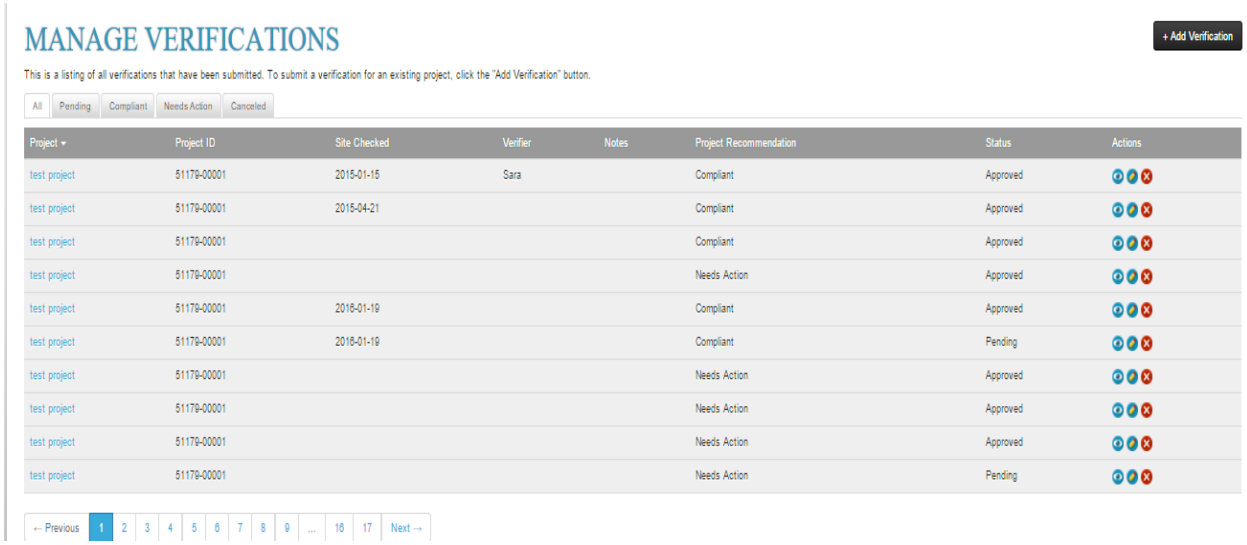
## Accounts


Under the *Accounts* tab, administrative users will be able to see details about different individual account holders and also have the option of editing and adding accounts. All accounts are displayed under "All," but for administrative user's convenience, the accounts also are segregated into "Pending" and "Approved." Administrative users may view details, edit, and activate accounts of users in only his or her own state.

## Projects

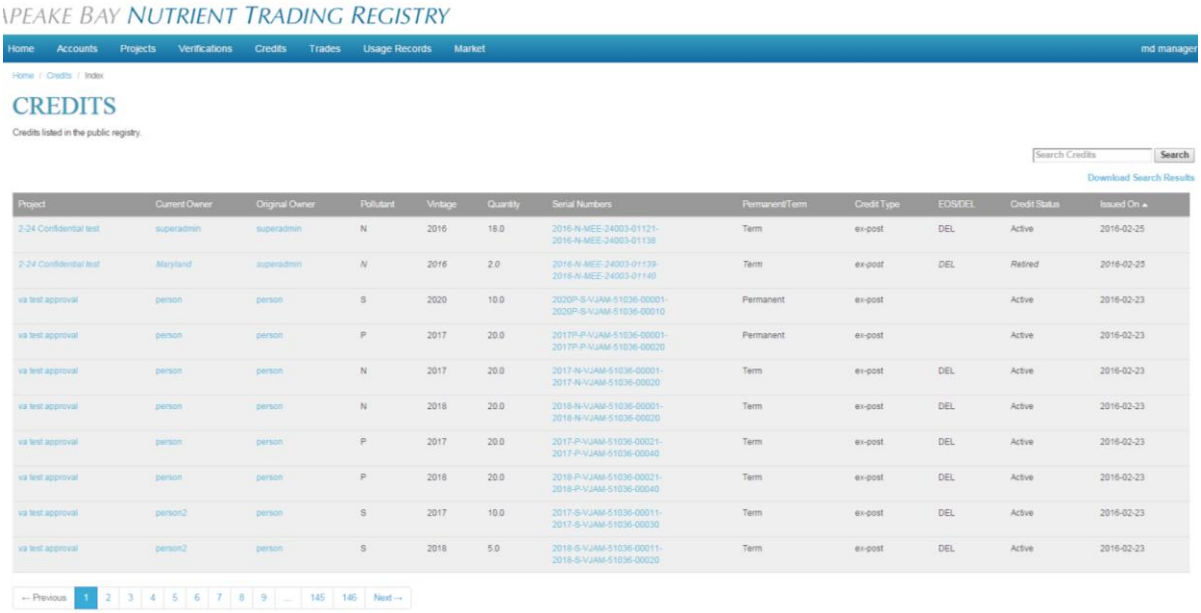

Under the *Project*s tab, administrative users can see all the projects that have been submitted to the registry, with the option of viewing separate tabs for those that are pending, approved, suspended, and implemented. A project represents one or more best management practices or other nutrient and/or sediment reduction activities that, collectively, are proposed for generating credits on a single site. From this page, the administrative user can edit project information and change the status of pending projects.

## Verifications




Under the *Verifications* tab, an administrative user can view all verifications that have been submitted, with the option of using separate tabs for those that are pending, compliant, in need of action, or canceled. Verifications are on-site inspections generally conducted by a third party or the administering agency to ensure that the required land-based activities are in place and operating properly. Verifications may be submitted at the project onset before a project is approved and at regular intervals over the project's lifespan. From this page, an administrative user can also add a verification.

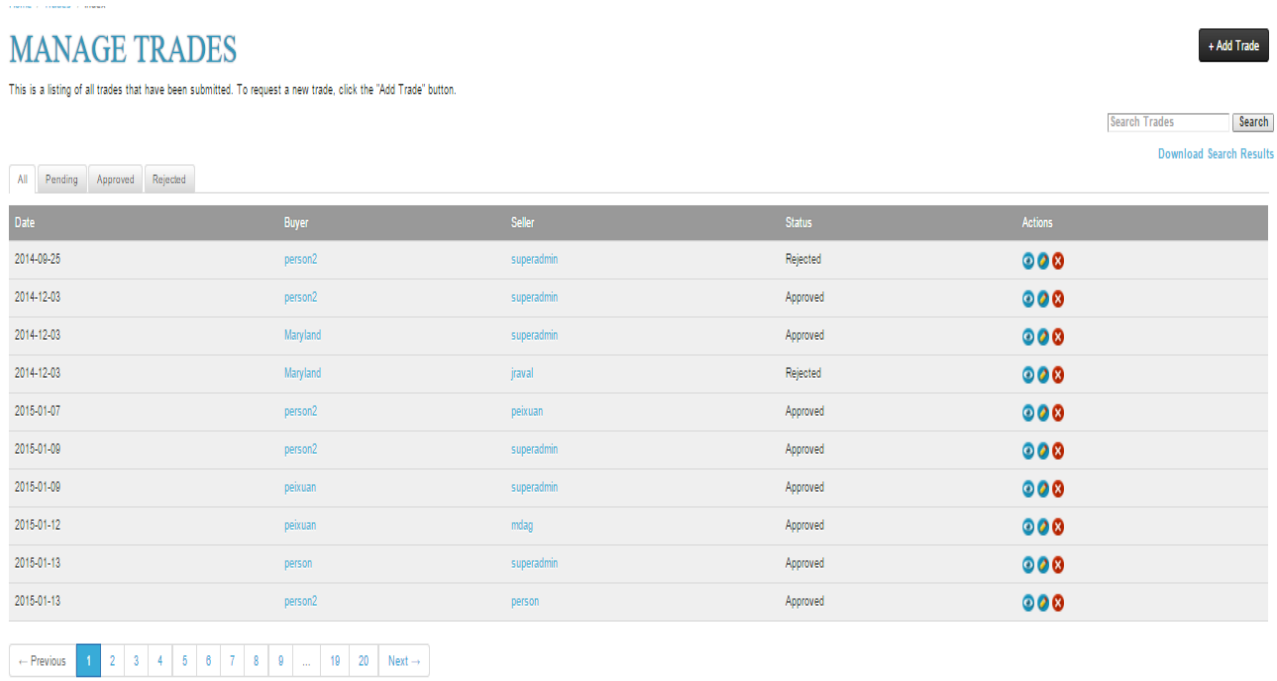
## Credits




Under the *Credits* tab, the user can view all credits that have been issued to a credit generator. The listing of credits displays the project name which generated the credits, the current and original owners, the pollutant, vintage year, and quantity of credits that were issued together. The serial number reflects the credit vintage followed by a "P" if the credits are permanent, the state-basin in which the credits were generated, the FIPS county code, and a unique identifier series for the credit block. By clicking on the serial number, users can view the history of the credit block. This page also displays the credit lifespan (term or permanent), whether the credits were issued at edge of stream (EOS) for trades within local watersheds or delivered (DEL) for trading with Chesapeake Bay delivery ratios. Finally, the credit status is displayed as well as the issue date. Credits may have the following statuses:

- Pending: credits issued to planned projects (only applicable for MD-based projects)
- Active: credits have been issued for implemented, approved, and verified credit-generating projects. Credits may or may not have been traded.
- Retired: credits have been applied to meet a permit or offset requirement (via a usage record) or have otherwise been retired for water quality benefit (e.g., using MD retirement ratio)
- Expired: credits have reached the end of their vintage year and have not been applied to meet a permit or offset requirement, so they are no longer valid
- Reserved: credits are held in an insurance pool (only applicable for PA-based projects)
- Uncertainty: credits that were set aside to account for nonpoint source uncertainty
- Suspended: a project and its associated credits have been suspended (e.g., due to major issues uncovered during verification), so credits cannot be traded until status changes to active
- Canceled: project, and credits, have been canceled (e.g., due to non-compliant verification report)

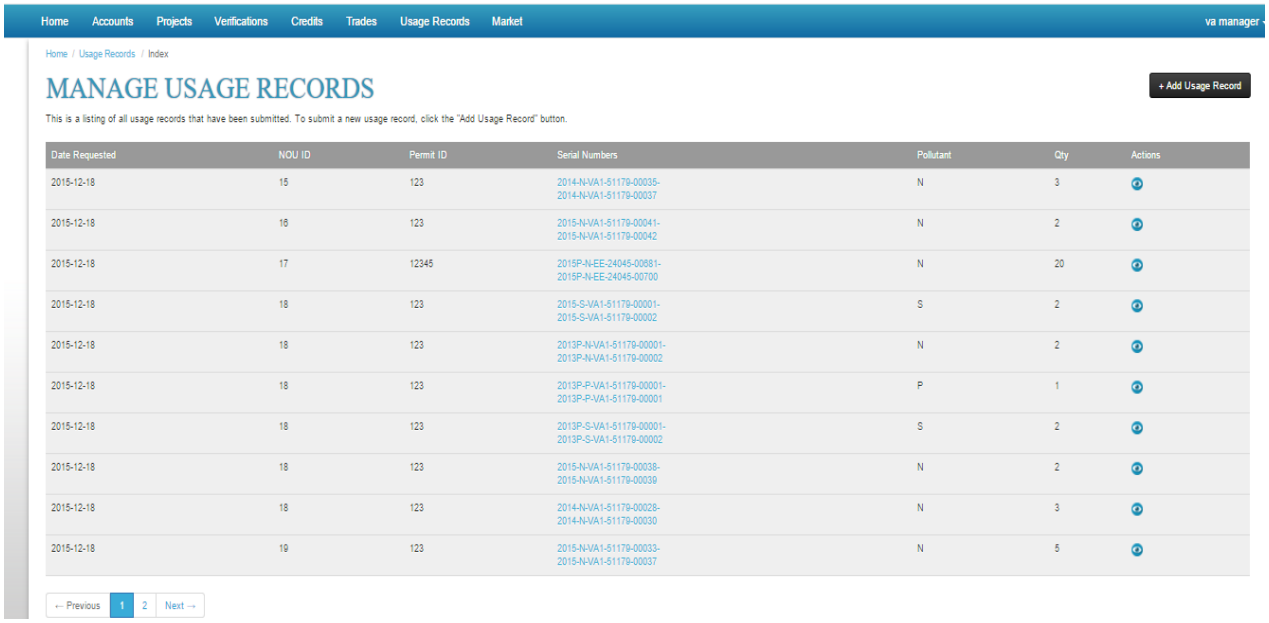
## Trades




Under the *Trades* tab, administrative user can view all trades that have been submitted, with the option of using separate tabs for those that are pending, approved, and rejected. From this page the administrator can upload additional documents to individual trades or add a new trade to the registry.

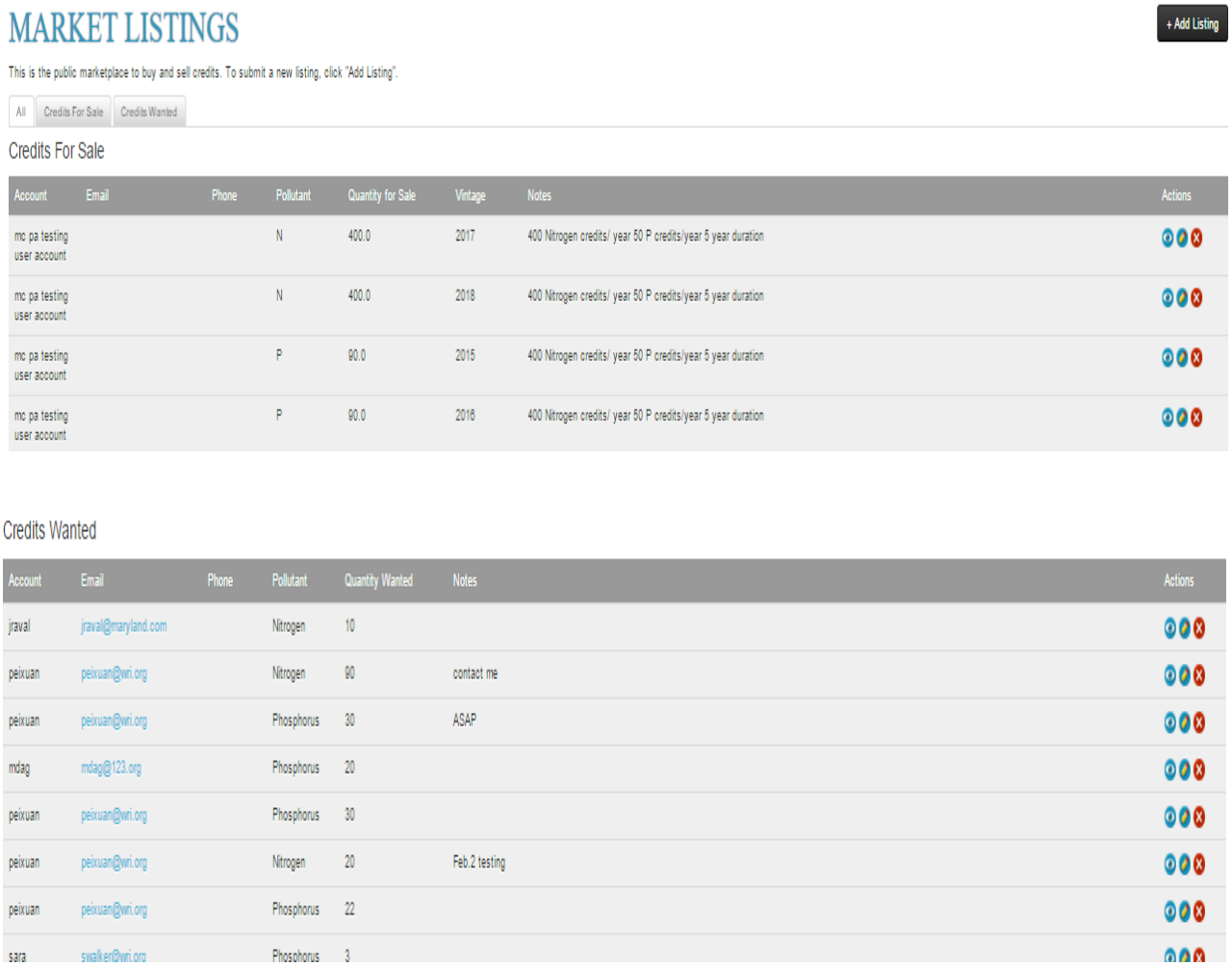
## Usage Records

CHESAPEAKE BAY NUTRIENT TRADING REGISTRY




Under the *Usage Records* tab, an administrative user can view and approve the credit usage records that have been submitted. Usage records indicate that a credit has been used or applied. Information is tracked for the entity name and location, the user of the credits, the year in which the credits were used, how the credits are used (e.g., to meet an NPDES permit limit or to offset new loads from a development site), and the permits to which they were applied, if applicable. From this page, the administrative user also can add new usage records.

## Market



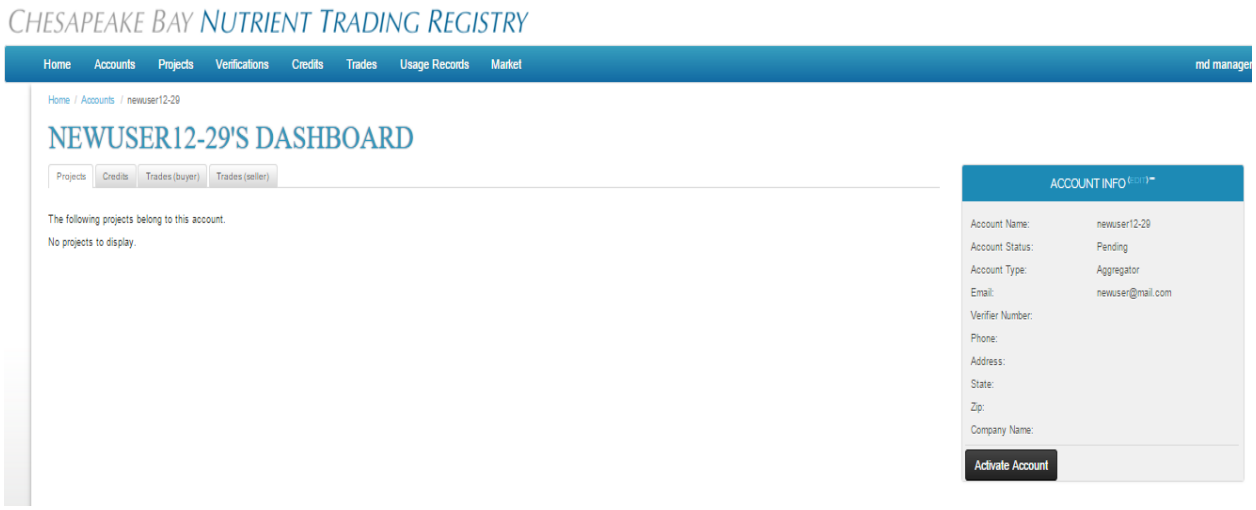

Under the *Market* tab, the administrative user can view credits that are posted for sale or credits that are wanted. From this page, an administrator can add listings to the market or edit existing entries.

# Using the Registry

## Account Approval

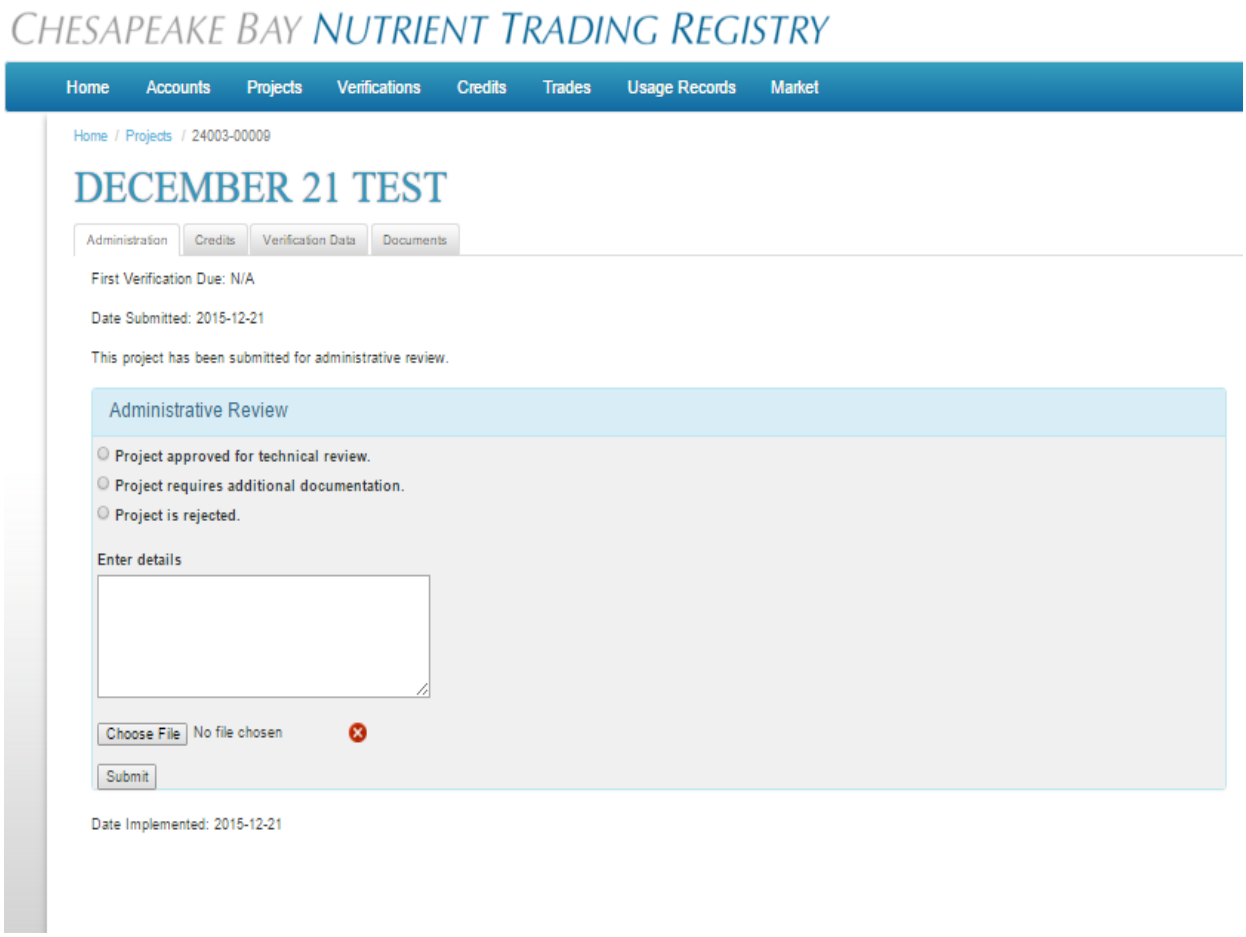
A new user creates an account. The state administrator must approve the pending account displayed in the "Pending Accounts" section of the administrator's dashboard. From the "View" button on the dashboard, the administrator will see the screen below. The administrator selects "Activate Account."

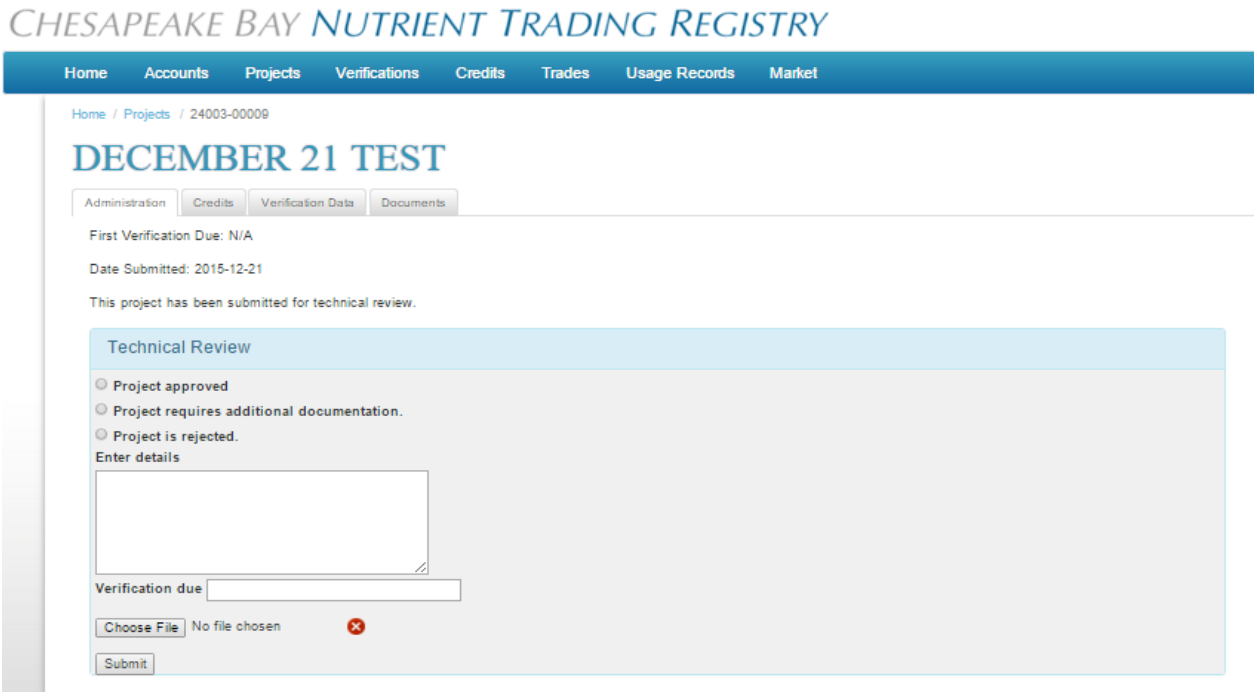
Then, where necessary, the administrative user can edit the account info and change the account role from a regular user account to a verifier (with verifier privileges) or manager (with administrative privileges).



## Reviewing and Approving Projects

A new user will create a project and submit it first for administrative approval. The administrator will see the pending project in the Dashboard. The administrative user selects the "View" button to start the review and approval process. The first step of project approval is the administrative review (checking for application accuracy and completeness). If the review is successful, the administrator selects "Approved for technical review." The technical review, which may include a careful look at the credit quantification materials and other details not examined during the administrative review, is then completed. If these two steps are not successful (documents missing, or the site visit reveals that project is not feasible), administrator can request additional documentation or reject the project.





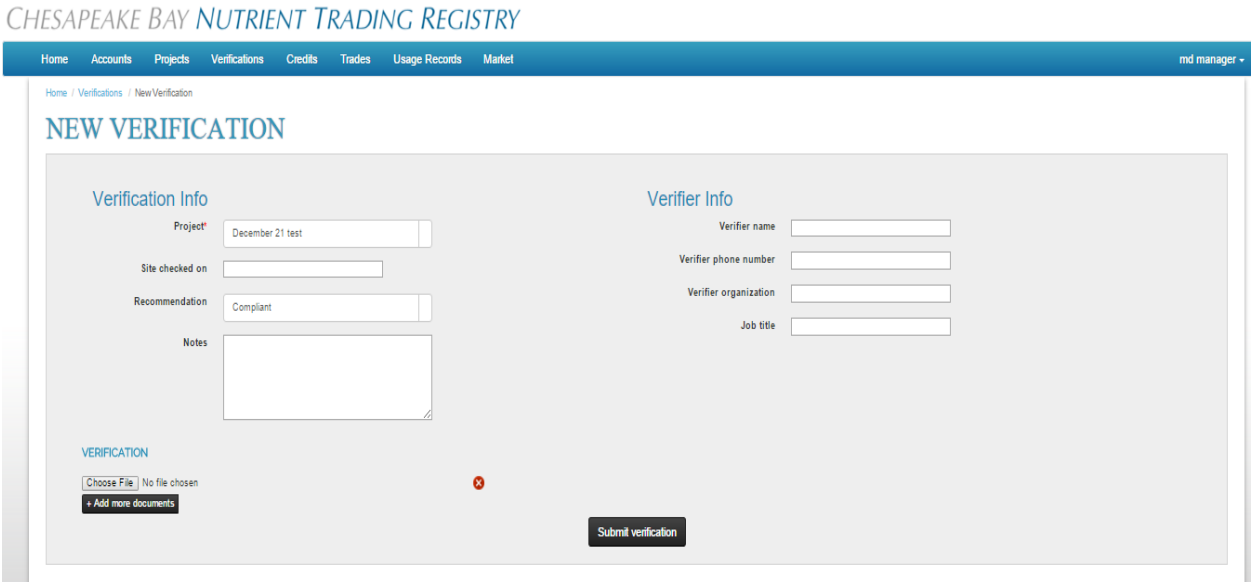

At both the administrative and technical review, the administrative user has three choices: approve, request additional documentation, or reject project. If the project requires additional documentation for approval, the status of the project will change to "Admin Review- needs action" or "Technical review- needs action" to alert the project owner. The project owner would then make the necessary adjustments to the project application or technical review information and resubmit. At the technical review step, the administrative user can provide a verification date/schedule. Both steps have the option for the state administrator to upload documents or provide comments in a comment field. The administrator can mark which documents can be viewed publicly. Once a project is approved (after technical review stage), the project information and non-confidential documents become publicly viewable on the registry.

## Verifications

After the project is approved, a verification will need to be submitted. In Maryland, in the case of a planned project, the verification would demonstrate that the existing management activities and practices are in line with the application materials and that the plans for implementing additional practices to generate credits are realistic given current conditions. For already implemented projects in all states, the verification process also ensures that the credit-generating activity is in place and operating properly. In either case, this step is the initial verification.

Once the initial verification is conducted and approved by the administrator, ongoing verifications will occur according to program policy on a regular basis. The verification schedule can be dictated by the state administrator at the technical review stage. The project owner will be sent an e-mail notification of when the verification is due and a reminder when the verification date gets closer.

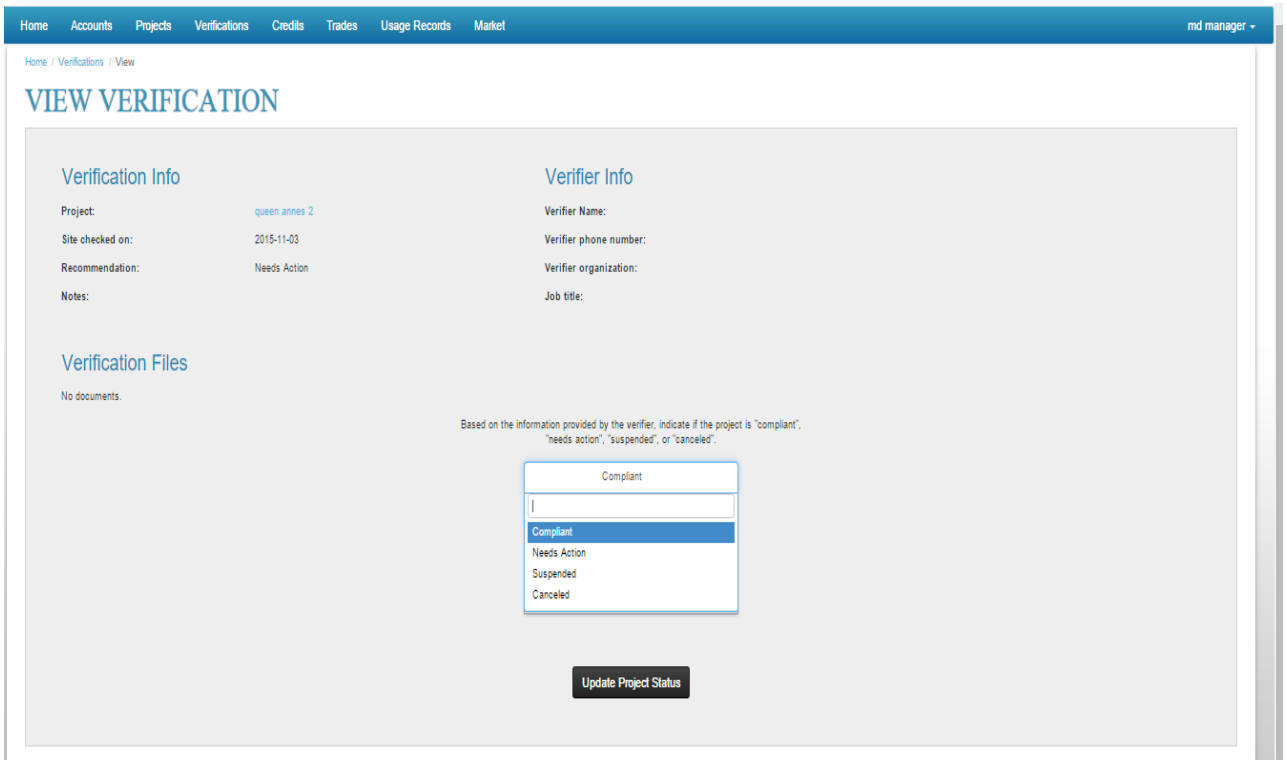
The verification will likely be submitted by a third-party or an administrator. A third-party verifier submitting the verification will need to have an account on the Registry. In order to submit the verification, the verifier will navigate to the *Project* heading at the top of the page. This will bring up the list of projects that have been entered into the Registry. The verifier will navigate to the specific project and open the project details page by clicking on the project name. The verifier indicates if the project is "Compliant" or "Needs Action" and completes the necessary information. The verifier can upload associated documentation. The verifier can then click "Submit Verification."




The state administrator then receives the recommendation from the verifier and identifies the project status as compliant, in need of action, suspended, or canceled.

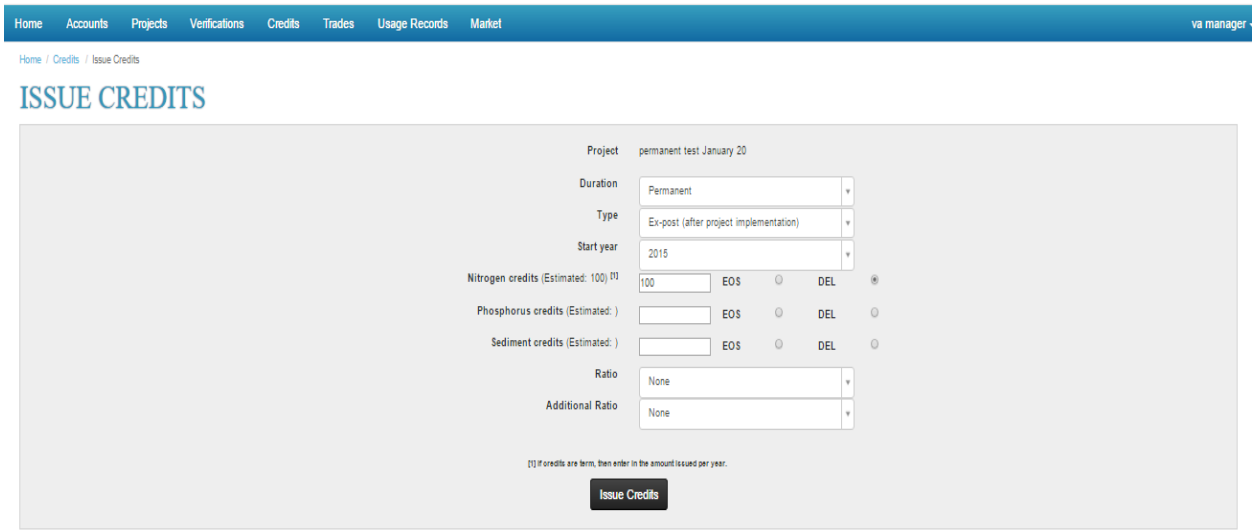
- "Compliant" means the project is in compliance and the status of the project remains the same, "Approved."
- "Needs Action" is used if the administrator needs more information (or if verification deadline has been missed). The status will indicate "Admin review- needs action."

- "Suspended" is a flag that temporarily suspends the project and changes status of all associated credits to suspended (and they cannot be traded). Once appropriate actions on the project have been taken, the flag can be lifted. For term credits, this would only impact credits from the date of flag onwards.
- "Canceled" means that project is no longer valid. All credits associated with the project are canceled as well. If it is a term project, only credits from the date of cancellation onward are canceled.



## Issuing Credits

After successful verifications, all states can issue credits. To issue credits, the administrative user locates the project under the *Project* tab to view it. Then, administrator clicks on *Issue Credits*. There are two types of credits: term credits and permanent credits. Term credits are generated annually and expire after one year. In the cast of multi-year projects, administrators may issue all credits at this time or choose to only release credits for the first year. Permanent credits have a beginning date but no expiration and can be applied against a permanent offset requirement. For term projects, the administrative user will select the start year for the credits and the number of years for which the credits are being issued. The annual credit quantity must be entered. The estimates that the project owner provided in the project information will be displayed. The administrator must indicate whether the credits are being issued as "EOS" or "DEL" (edge of stream or delivered) by clicking the appropriate bubble for each pollutant. Generally, credits are issued DEL, but in cases of trades within local watersheds with low delivery ratios, for example, trades may conducted locally using EOS credits. When the credits are issued, the state administrator has the option of adding a trade ratio (or two) to be applied at the time of credit issuance.

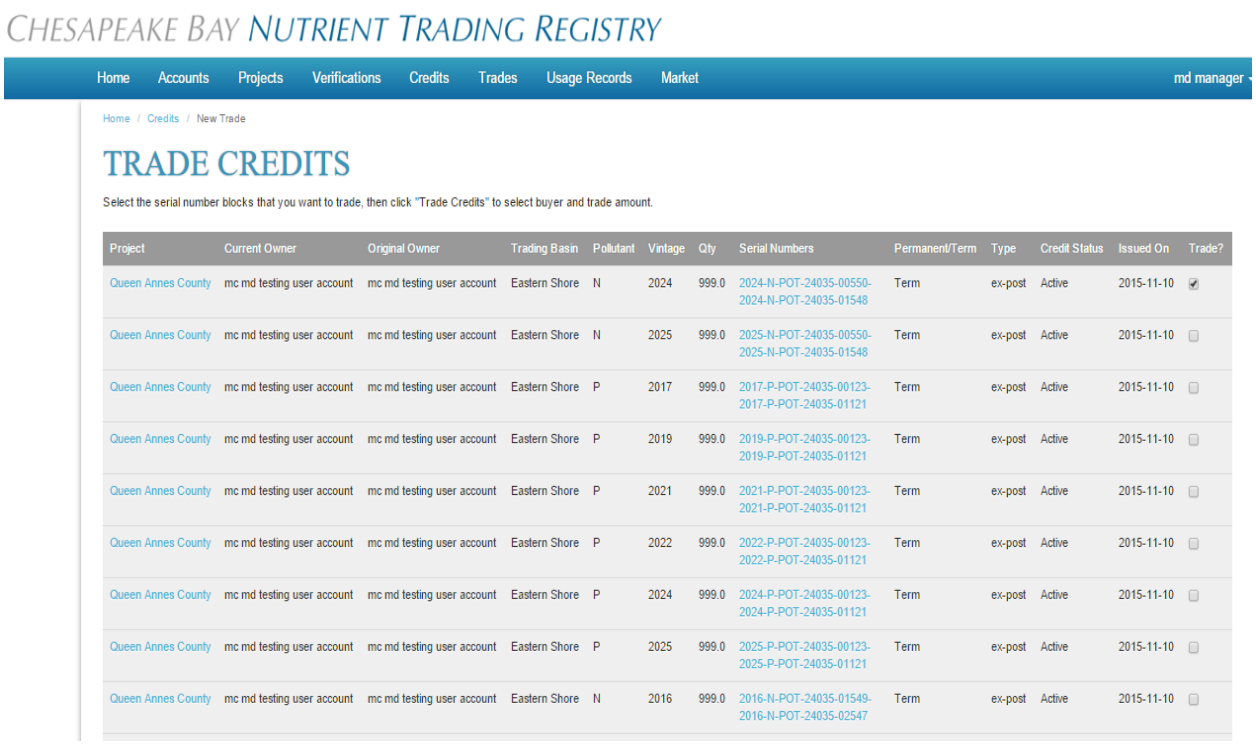



### Trade Ratios:

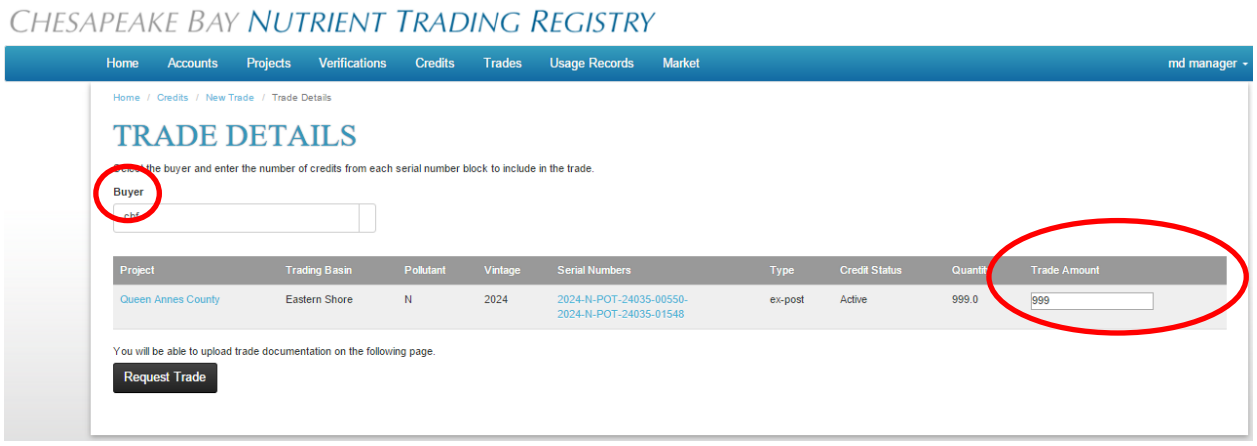
To apply any ratio, the state administrative user selects the ratio type and enters in the ratio percentage. The credits that are issued via the ratio will be automatically given the status selected (Reserve, Retirement, or Uncertainty). For example, if 100 credits are issued, the "Reserve" ratio entered is 10%, and the "Uncertainty" ratio selected is 50%, 10 credits will be sent to state holding account with "Reserved" status, 50 will be sent to the state holding account with "Retired" status, and the project owner would then receive the remaining 40 credits.

## Adding and Approving Trades

Administrative users can add trades and approve trades for a project owner. Trades can also be requested by the project owner. Trades can be added from the *Trades* tab using the "Add Trades" button at the top right. The administrator selects the seller whose available credits are then displayed. Credits to be sold are then selected by clicking the box on the right. The administrator then clicks "Trade Credits" at the bottom of the credit list. The next step is selecting the credit block.

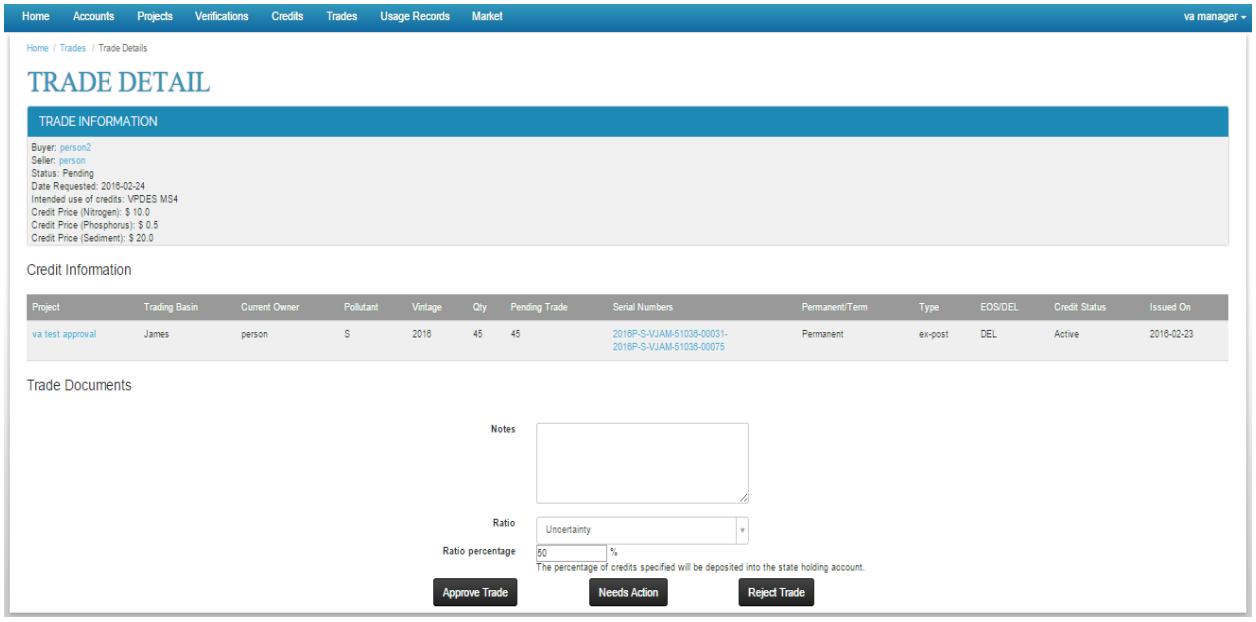



The administrator or user initiating the trade then selects the credit buyer and must enter the trade (credit) amount in the table. The administrator will then have the option to upload documents, such as a trade contract.

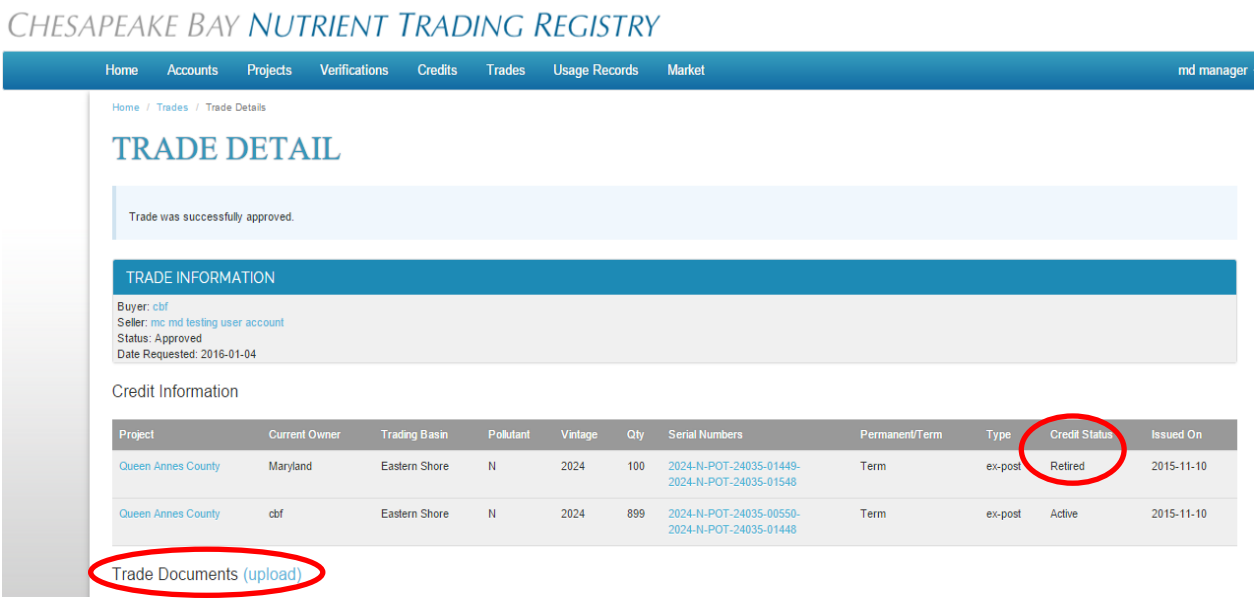


State administrators must review and approve all trades. Pending trades will appear in the state administrator's user dashboard under the *Trades* table. The state administrator may approve the trade, reject the trade, or indicate that the trade request needs action before approval.

In Virginia, a state administrator approving the trade (see below) has the option of applying a trade ratio. A "retirement" ratio or an "uncertainty" ratio may be applied. The state administrator enters the percent of the traded credits that will be sent to the state account at the time of the trade.




If the trade is approved by the administrator, the trade is added to the Registry's list of trades and the trade is listed in the associated credit block's credit history. Both lists are publicly viewable. Trade documents can be added by the administrator or project owner after the trade is approved by opening up the *Trade Details* page (see next page).

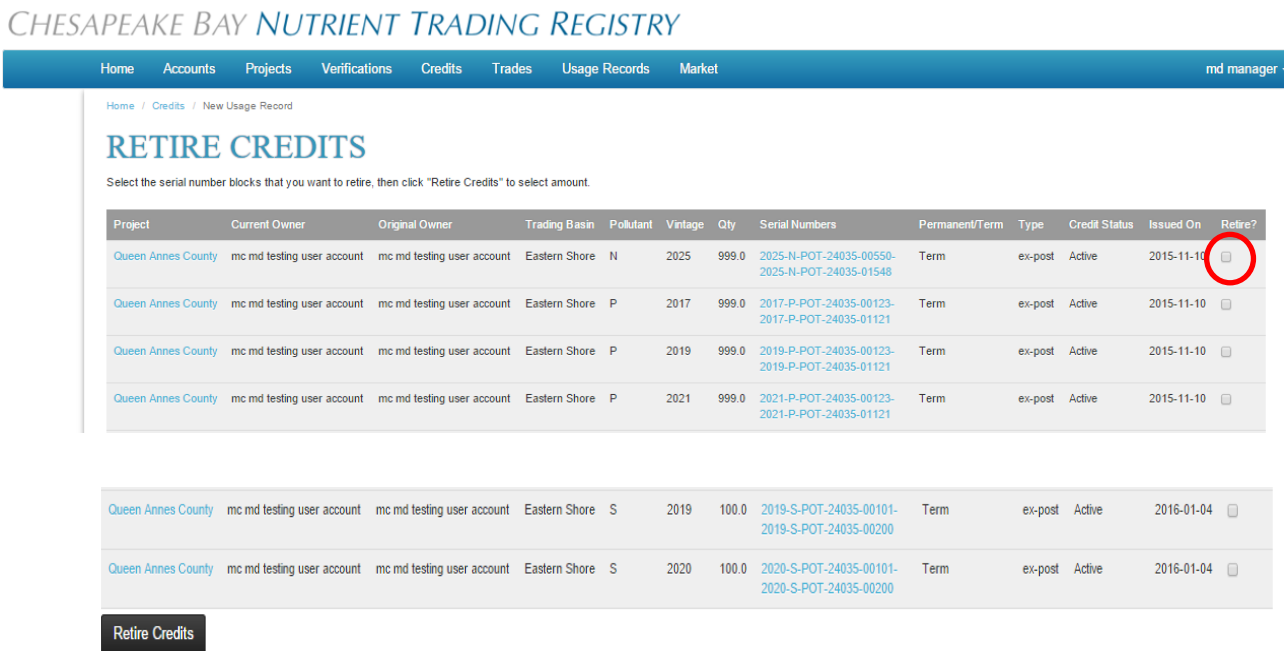



Note: for Maryland trades, an automatic 10% retirement ratio for nonpoint source credits and a 5% retirement ratio for point source credits are applied at the time of the trade. The discounted amount purchased is transferred to the buyer's account, and the credits for the trade ratios are automatically transferred to the state's account and labeled as "retired."

## Usage Records

Usage Records, or Notices of Use (NOU), are the final stage in the life of a credit. The Notice of Use (usage record) will generally be submitted by the purchaser of a credit once those credits are applied to a permit or used to meet an offset requirement. In some cases, they also may be added by a person who develops a project and uses those credits himself or by a banker on behalf of a developer.

First, the credit owner is selected. Then credits used in the trade are selected from the list of credits and user clicks "Retire Credits."




Then, the user enters the number of credits applied to a permit or retired and clicks on "Select Credits."


The user provides information regarding the use of the credits (e.g., to offset new development or to retire for water quality benefit) and the permit (if any) to which the credits will be applied.

Once the notice of use is submitted, it will be displayed as “Pending” on the administrator’s dashboard for review. The administrator may approve or cancel the notice. If approved, the credits indicated in the notice of use will be labeled as ‘retired’ and are no longer eligible to be traded or used in another notice of use, and the usage record becomes publicly viewable on the registry.