Chesapeake Conservation Innovation Grant Project Description 2012
Alliance for the Chesapeake Bay
Facilitating Forest-based Offsets in Water Quality Offsets and Trading

The following proposal outlines an innovative and timely approach for integration of existing forest mitigation and water quality trading programs with emerging efforts to establish forest-based practices as offsets for future pollutant loads under the Chesapeake Bay TMDL. Harmonizing existing and emerging regulatory rules and protocols and establishing mechanisms for easing the use of forest-based practices in these programs will provide opportunities for landowners and producers to achieve implementation of needed conservation practices while also receiving income from mitigation and offset projects.
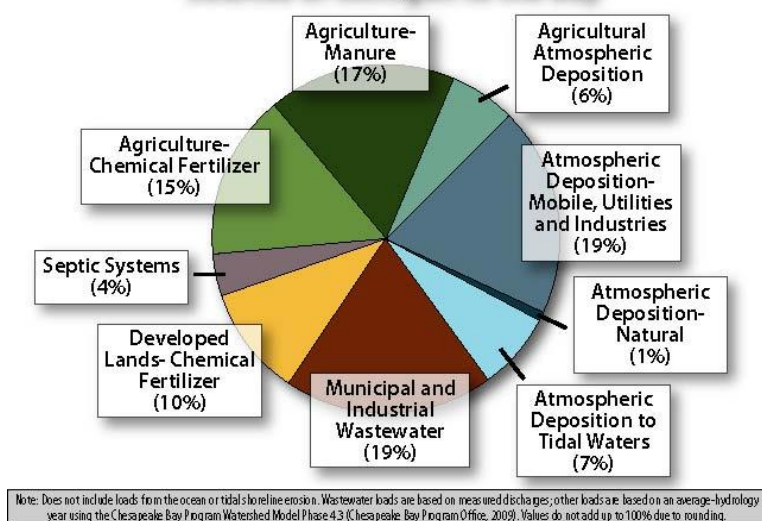
1. **PROJECT BACKGROUND**
Of the 17 million people that call the 64,000 square mile Chesapeake Bay watershed home, it is the woodland owners and the agricultural operators that have perhaps the largest role to play in the long-term health of the Chesapeake Bay and its watershed. There are more than 87,000 agricultural operations on over 9 million acres of farmland across the Bay watershed. Based on Chesapeake Bay Program models, agricultural cropland and animal operations generate just under 40 percent of the nitrogen, 45 percent of the phosphorus and 62 percent of the sediment loads entering the Chesapeake Bay annually. Given this relatively large amount of loadings to the Bay, implementing agricultural best management practices are critical to restoration goals

Cities contribute about twice the nitrogen and phosphorus load per acre as agriculture to the Bay. Urban storm water runoff accounts for about 30% of phosphorus, 14% of nitrogen and 9% of sediment loads to the Bay. Urban runoff loads of chemical contaminants (such as metals) rival or exceed loads from industries, federal facilities and wastewater treatment plants. Urban storm water runoff is responsible for impairments in over 1,570 miles of streams in the Bay watershed and has caused flooding, stream bank erosion, and habitat and living resource degradation in areas with as little as 2% impervious surfaces.

Likewise, there are more than 900,000 family forest owners and over 18 million acres of privately owned forestland across the Chesapeake Bay watershed. Based on Chesapeake Bay Program models, forest land accounts for 15 percent of the nitrogen, 2 percent of the phosphorus and 20 percent of the sediment loads entering the Chesapeake Bay annually. Forests cover 58% of the Bay watershed and are the least polluting of all land uses. Maintaining this coverage and expanding where appropriate is also a

Sources of Nitrogen to the Bay

Agriculture-Manure (17%)
Agricultural Atmospheric Deposition (6%)
Agriculture-Chemical Fertilizer (15%)
Atmospheric Deposition-Mobile, Utilities and Industries (19%)
Septic Systems (4%)
Atmospheric Deposition-Natural (1%)
Developed Lands-Chemical Fertilizer (10%)
Municipal and Industrial Wastewater (19%)
Atmospheric Deposition to Tidal Waters (7%)

Note: Does not include loads from the ocean or tidal shoreline erosion. Wastewater loads are based on measured discharges; other loads are based on an average-hydrology year using the Chesapeake Bay Program Watershed Model Phase 4.3 (Chesapeake Bay Program Office, 2009). Values do not add up to 100% due to rounding.

key restoration goal. There is a strong connection between forest cover and agriculture as 40% of "family-owned" forests occurs as part of a farm.

Importance of forest-based practices in Watershed Improvement Plans
Given the unique ability of forests (i.e., riparian buffers, urban tree canopies, suburban woodlands and upland forests) to immediately improve water quality and provide multiple ecosystem services at the same time, each of the Bay states is also relying on substantial increases in forest cover to meet their nutrient and sediment reduction objectives under the TMDL.

Forests are the largest portion of the Chesapeake Bay watershed's green infrastructure--the natural support system that sustains the environment and contributes to public health and quality of life. This green infrastructure constantly supplies a host of ecosystem services such as storing and cycling nutrients, filtering and cooling water, cleaning the air, regulating climate, and providing habitat for pollinators.

Sources of Phosphorus to the Bay

Agriculture-Manure (26%)
Natural Sources (3%)
Agriculture-Chemical Fertilizer (19%)
Municipal and Industrial Wastewater (21%)
Urban/Suburban Runoff and In-stream Sediment (31%)

Note: Does not include loads from the ocean or tidal shoreline erosion. Wastewater loads are based on measured discharges; other loads are based on an average-hydrology year using the Chesapeake Bay Program Watershed Model Phase 4.3 (Chesapeake Bay Program Office, 2009).
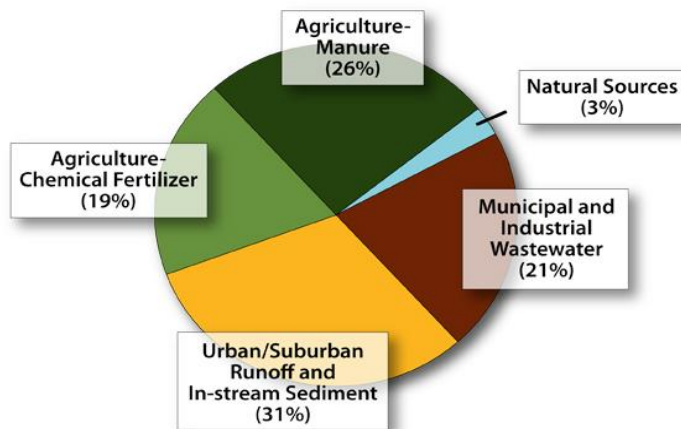
Maryland, Pennsylvania, West Virginia and Virginia propose to plant over 380,000 acres of new riparian forest by 2025 (i.e., 689 miles of 100 foot buffers per year) in their plans to meet the TMDL (Watershed Implementation Plans, WIP). This represents a significant acceleration of current efforts as the same states combined for only 350 new stream miles in 2010.[1]

States are using the following programs to help meet these WIP goals:

Sources of Sediment to the Bay

Agriculture (60%)
Natural Sources (21%)
Urban/Suburban Runoff and In-stream Sediment (19%)

Note: Does not include loads from the ocean or tidal shoreline erosion. Loads are based on an average-hydrology year using the Chesapeake Bay Program Watershed Model Phase 4.3 (Chesapeake Bay Program Office, 2009).
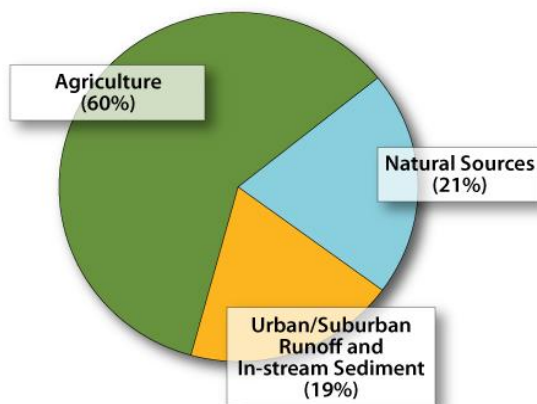
Water Quality Trading
State water quality trading programs rely on forest-based practices to generate nutrient and stormwater offsets for new development. The Pinchot Institute for Conservation and World Resources has shown that both agricultural producers and forest landowners have potential to

---

[1] Chesapeake Bay Program, Forestry Workgroup. "Forest Buffer Targets in State WIPs." 2011

generate nutrient credits using forest-based practices. Potential credit generating practices include tree planting, riparian forest buffers, stream restoration and wetland restoration.

While forests are the best land cover for water quality, woodland owners are at a disadvantage when it comes to generating credits in a water quality trading market. Credits are generated by implementing *additional* practices that reduce nutrient loads. In general, *existing* practices cannot be credited in water quality trading markets because they do not represent additional reductions. This means that a landowner cannot currently generate credits for the existing nutrient reduction services provided by standing forests. Through practices such as tree planting and wetland restoration, a landowner can generate credits that will last for the life of the project and provide a reliable and diverse source of income.

Given the larger potential nutrient loads, agricultural producers have more of an opportunity to generate forest-based nutrient offsets. Riparian buffers, tree planting and wetland restoration generate nutrient benefits through a combination of land use change and nutrient removal efficiencies. In addition, the long lifespan of many of the forestry best management practices means that these credits can be generated over long periods of time. The long-term nature of these credits is attractive to many buyers and aggregators who need to guarantee long-term credit supplies in order to apply them towards multi-year permits or offsets for new growth.[2]

The 2010 Executive Order #13508, "*Strategy for Protecting and Restoring the Chesapeake Bay*," includes many forest-based strategies as well:
- Accelerate conservation adoption by working with partners to leverage conservation funding and simplify
- program participation
- Restore forest buffers in priority watersheds
- Explore alternative payment mechanisms for incentivizing the installation of targeted riparian forest buffers.
- Restore forest habitat in priority areas
- Develop a Bay wide strategy to reduce the loss of farms and forests
- Expand outreach to private forest

Stormwater Reduction Regulations

Stormwater runoff is the fastest-growing source of pollution for the Chesapeake Bay. When land is developed, rich soils and vegetation that once absorbed and filtered rainwater are replaced by turf grass and impervious surfaces. Roads, parking lots, driveways, sidewalks, roofs and cars and lawns all contribute to the problem. Given projections regarding urban and suburban growth and the increase in impervious surfaces in the watershed, managing urban storm water runoff is one of the most important priorities local governments in the Bay region will undertake to improve water quality and sustain progress in restoring vital habitats and living resources throughout the Bay watershed

---

[2] Selman et al. "Private Landowner Involvement in Water Quality Markets." Unpublished research from "Nutrient Trading in the Chesapeake Bay Watershed: An Analysis of Supply and Demand." Pinchot Institute for Conservation. 2010.

Until recently, the focus of storm water management has been on controlling runoff quantity to prevent flooding, rather than focusing on controlling pollution in runoff, or stormwater quality. The vast majority of land developed prior to the early 1980's in the Chesapeake Bay watershed lacks any storm water quality controls. Technologies to better control and treat storm water runoff are still evolving but green infrastructure approaches such bioretention and Low impact Development or LID have emerged as preferred strategies. Existing regulatory requirements and management practices must be enhanced with new innovative technologies to effectively prevent storm water runoff pollutant loads and impacts, especially in older urbanized areas where storm water treatment has not been implemented. These regulations use predevelopment (or forested) conditions as a benchmark for stormwater management performance.

Under the recently adopted Chesapeake Bay TMDL, local governments are required to reduce stormwater runoff and associated pollutants as well as offset the potential pollutants associated with new growth and development. Developers and local governments face significant challenges meeting the new criteria and will need to rely on offset approaches to address potential impacts.

Municipalities are looking to long-term green infrastructure solutions to meet stormwater pollution reduction and future growth offset needs. For example, the Watershed Implementation Plan (WIP) for Anne Arundel County, Maryland, calls for the reduction of 293,000 lbs/year of N from urban stormwater and projects that current land use plans call for future growth that will produce up to 550,000 lbs/year in new loads that will have to be offset. The Anne Arundel County WIP envisions significant reductions from stream, forest buffer, reforestation and forest retention practices as well as other green infrastructure practices.

Maryland's Forest Conservation Act
Maryland's Forest Conservation Act is one of the oldest market-based conservation mechanisms in the Chesapeake region. In short, the Act requires developers to replace trees cut because of development through afforestation or reforestation. Developers must first consider replacement of trees on-site. However, if on-site reforestation is not possible, the developer may reforest off-site, use a mitigation bank or pay into a county fee-in-lieu fund. Working with private landowners can add time and money to forest mitigation projects, so home builders and governments often meet requirements by mitigating on land already owned or by paying into the county fee-in-lieu fund. Forest banking is a conservation tool that involves the relinquishment of development rights by a landowner on newly planted or potentially on threatened forest, which generates mitigation credits that can be exchanged for a payment

Private landowners face difficulties in creating forest mitigation banks. Through landowner, county and service provider interviews, Pinchot Institute and Alliance for the Chesapeake Bay has discovered that the use of mitigation banking by private landowners is limited for a few reasons. First, county planning offices administer the Forest Conservation Act, but most do not have the resources to market the banking option to landowners. In addition, most landowner outreach organizations (e.g. conservation districts, service foresters, watershed organizations, etc.) do not have the experience to adequately present banking as a conservation option. Second, there are substantial, upfront, bank establishment costs that act as a barrier to entry for most private landowners. These costs include tree planting, attorney fees, easement costs, etc. An assessment

by Maryland's Department of Natural Resources also noted that an absence of a banking option in certain counties, presence of competing fee-in-lieu program and a lack of landowner interest as barriers to improving the program's potential.[3]

<u>Maryland's Critical Area Protection Act</u>
Established in 1984, the Critical Area Protection Act regulates land use within 1,000 feet of tidal waters and wetlands. The Act regulates forest cover like the Forest Conservation Act, but also mandates retention and mitigation for forest interior dwelling habitat, riparian forest buffers and stormwater. If developers are unable to meet the Act's requirements on site, private mitigation banks can be used to provide offsets. Despite the Act's longevity, no transactions have occurred to date due to underdeveloped market infrastructure.[4]

<u>Virginia's Chesapeake Bay Preservation Act</u>
The Chesapeake Bay Preservation Act, commonly known as "The Bay Act" in Virginia, was adopted by the Virginia General Assembly in 1988 to protect the Chesapeake Bay and its tributaries. It requires counties, cities and towns of Tidewater Virginia to incorporate water quality protection measures into their comprehensive plans, zoning ordinances and subdivision ordinances and define and protect certain lands, called Chesapeake Bay Preservation Areas. The "Bay Act" requires a 100 foot buffer or resource protection area around perennial streams ad tidal shorelines. Enforcement of the Bay Act by local governments has been mixed and options for offsets to increase flexibility in local decision-making have been long discussed but no common protocol for quantitative application of offsets has been consistently implemented.

<u>U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) criteria</u> LEED's "Sustainable Sites Credit 5.1: Site Development—protect or restore habitat criteria" provides provisions for offsite land conservation if the criteria cannot be met onsite. Offsite projects must be equal to 60% of the previously developed area (including the building footprint). This criterion has not been used consistently to date.

Each of the regulatory, legislative or program drivers mentioned above presents an opportunity for agricultural producers to generate conservation investment through the implementation of forest-based practices on their property and a potential source of income from mitigation of development impacts. Yet, these programs are not well coordinated and landowner outreach is minimal or non-existent.

Market Infrastructure
Numerous tools have been developed to engage landowners and facilitate offset and mitigation project development in the last several years. These tools range from single market applications to attempts to facilitate multiple markets. These tools include:
- *LandServer* (www.landserver.org): LandServer provides landowners with a quick and easy estimation of potential to participate in ecosystem service markets and other conservation programs. The tool also aids conservation plan development by providing valuable natural

---

[3] Maryland Department of Natural Resources. "Ecosystems Services Working Group, Interim Report." 2010.
[4] Maryland Department of Natural Resources. "Ecosystems Services Working Group, Interim Report." 2010.

resource information about a landowner's property. This project will build off LandServer's existing services to educate landowners about the wide array of forest banking opportunities.

- *The Nutrient Tracking Tool*: The Nutrient Tracking Tool/Nutrient Net (http://nn.tarleton.edu/NTTWebARS/(S(ctfetpn53xroemaefnwjcfes))/default.aspx or http://nutrientnet.org/) can assist producers in designing, developing, selling and registering water quality trading projects. NTT will be utilized to evaluate land conversion and buffer practices and their potential nutrient benefits across the project area. Currently, NTT is limited in its application for other forest-based practices.
- *Ecosystem Crediting Platform* (http://baybank.ecosystemcredits.org/): The ECP helps project developers estimate credit potential and design projects and then facilitates credit verification, certification, issuance and registration. The Ecosystem Crediting Platform is designed to interact with the Markit Environmental Registry and was jointly developed with the Willamette Partnership in Oregon.
- *Conservation Marketplace* (http://thebaybank.org/): The Marketplace provides practical services for landowners, service providers and credit buyers on the availability of water quality trading and other ecosystem service markets as well as conservation programs in the Chesapeake region. The Marketplace provides:
  - Market specific information on requirements, costs of project implementation, credit prices, etc.
  - A Service Provider Matching Tool that allows landowners to find conservation districts, service foresters and other natural resource professionals that can help them with a variety of projects
  - A credit listing service that allows landowners to post available credits or "expression of interests." Interested buyers can contact landowners through a secure email system.
- *Conservation registry* (http://www.conservationregistry.org/): This tools helps users track project implementation.

These tools are nationally unique and have potential to facilitate landowner involvement in water quality trading and other ecosystem services. Like the programs that promote forest-based offsets and credits, these tools are not well coordinated but can be integrated and repositioned to support forest offsets in trading and mitigation programs.

2. PROJECT OBJECTIVES

Given the effectiveness of forest-based practices to reduce nutrient and sediment loads and the projection these practices will be a significant part of offsets for future growth, this proposal seeks to accelerate their use in the water quality trading and mitigation programs that support the Chesapeake Bay restoration effort. To do achieve this goal, this proposal has four major objectives:

- Harmonize state and local agency forest mitigation and trading requirements to ease adoption by agricultural producers, aggregators and credit buyers like developers
- Test and refine market infrastructure, so it is immediately useful for landowners, public programs and credit buyers

- Complete 8-10 forest-based practice pilot projects with EQIP-eligible producers in Southern Maryland to test forest protocols and market infrastructure
- Assist local governments in meeting the nutrient and sediment goals in their Watershed Implementation Plans by simplifying the implementation of forest based offsets and credits and easing their workload by establishing the Chesapeake Forests Offset Bank.

3. PROJECT METHODS

Task 1. Create a Forest Mitigation and Offsets Working Group

The Alliance will hold at least ten meetings throughout the project period with its stakeholders to harmonize existing mitigation programs and develop offset and trading requirements in order to develop the most appropriate market rules and protocols and to guide the piloting of demonstration projects that generate and certify forest-based offsets. The working group will include local and state program leads, technical experts, and landowners to ensure that final products meet individual requirements that will allow rapid adoption and integration in policy.

This effort builds off existing state, federal and private stakeholder groups established by the Pinchot Institute through its Bay Bank program and particularly for Maryland's Forest Conservation Act, Critical Area Act and water quality trading. A USDA NRCS Conservation Innovation Grant supported some of this prior work.

Task 2. Analyze Market Supply and Demand

The Alliance for the Chesapeake Bay and its partners will assess supply and demand for forest-based offsets for a variety of ecosystem service programs by evaluating past studies[5,6,7] and conducting new assessments on the state of stormwater, Forest Conservation Act and Critical Area Act markets for pilot counties. This new research will expand on an existing effort by the Pinchot Institute Maryland Home Builders Association to assess supply and demand for forest-based offsets in Maryland. Supply and demand can be assessed using the annual reports that Maryland counties provide to the state on market volume and fee-in-lieu payments for each of these programs. The Alliance will work with local and state partners in Virginia to assess the market volume potential of Virginia's Chesapeake Bay Preservation Act and the U.S. Green Building Council's LEED program.

Task 3. Establish and Harmonize Market Rules

The Alliance for the Chesapeake Bay will use the Forest Mitigation and Offsets Working Group to harmonize market rules for forest-based offsets and establish rules where necessary. The Working group will need to consistent methods to:

- Evaluate Existing and proposed mitigation, trading and offset programs: Synthesize information on forest and water quality mitigation and trading programs and stormwater regulations in Virginia, Pennsylvania, and Maryland to frame protocol design.

---

[5] Selman et al. "Private Landowner Involvement in Water Quality Markets." Unpublished research from "Nutrient Trading in the Chesapeake Bay Watershed: An Analysis of Supply and Demand." Pinchot Institute for Conservation. 2010.

[6] Maryland Department of Natural Resources. "Ecosystems Services Working Group, Interim Report." 2010.

[7] Jones et al. "How Nutrient Trading Could Help Restore the Chesapeake Bay." State assessments for Maryland, Virginia and Pennsylvania. World Resources Institute. 2010.

- Calculate offset credits: A unified metric will be developed that provides consistency across programs on how credits for forest-based offsets will be calculated. These elements will include location in priority areas, forest quality and duration of the project.
- Verify project implementation: A standard and mechanisms will be developed to facilitate third-party verification
- Register projects: A unified registry that will allow regulators and the public to track projects and better allow local governments to take credit for nutrient and stormwater reductions in their Watershed Implementation Plans
- Monitor projects: A multiple monitoring protocol that will allow for more cost-effective (one monitor can review multiple programs) reviews.
- Establishing landowner eligibility: Each program will have specific eligibility requirements. The Working Group will synthesize this into an easy-to-understand rule set.

These and other market rules will be incorporated into general forest protocol that will provide the basis for non-program specific offsets (e.g. voluntary action by developers, energy companies, etc.). Program specific protocols will build off the general protocol to meet the needs of state water quality trading and other ecosystem service programs such as Maryland's Forest Conservation Act.

Task 4. Landowner Pilots
The Alliance for the Chesapeake Bay and its partners will use the newly established forest-based offset protocols to develop a Chesapeake Forest Offset Brokerage. This program of the Alliance will be an independent, non-profit broker and aggregator that faciitates the implementation of forest-based offsets in water quality trading, offsets, and other ecosystem service markets. The Offset Brokerage will help coordinate outreach and utilize market tools established by states and conservation groups in the Chesapeake.

The Alliance will use the Chesapeake Forest Offsets Brokerage to help Prince George's, St. Mary's, and Anne Arundel counties in Maryland meet their forest mitigation needs. Expansion will be pursued for Calvert and Carroll counties once the project is underway. In addition to mitigation needs from new development, the Alliance can assist each of these counties in delivering their fee-in-lieu funding to landowner willing to implement forest offset projects. Counties have difficulty in using fee-in-lieu funding. For example, Prince George's County had $1,000,000 in unspent Forest Conservation Act funds in 2011 and St. Mary's County currently has $160,000 in unspent Critical Area Act funds. Through its landowner network, the Alliance has identified landowners in St. Mary's and Prince George's County that are interested in participating in mitigation programs. In addition, the Alliance will hold landowner workshops in partnership with county staff to identify additional pilot project sites in all pilot counties. This strategy has been successful in attracting landowners in Southern Maryland.

The Offset Brokerage will develop forest mitigation projects for each of the pilot sites. This includes project design, implementation, coordination of third-party verification, county certification, registration and monitoring. Credit registration will take place through modification of the Bay Bank's partnership with Markit Environmental Registry. Any water quality credits will be registered with the appropriate state registry.
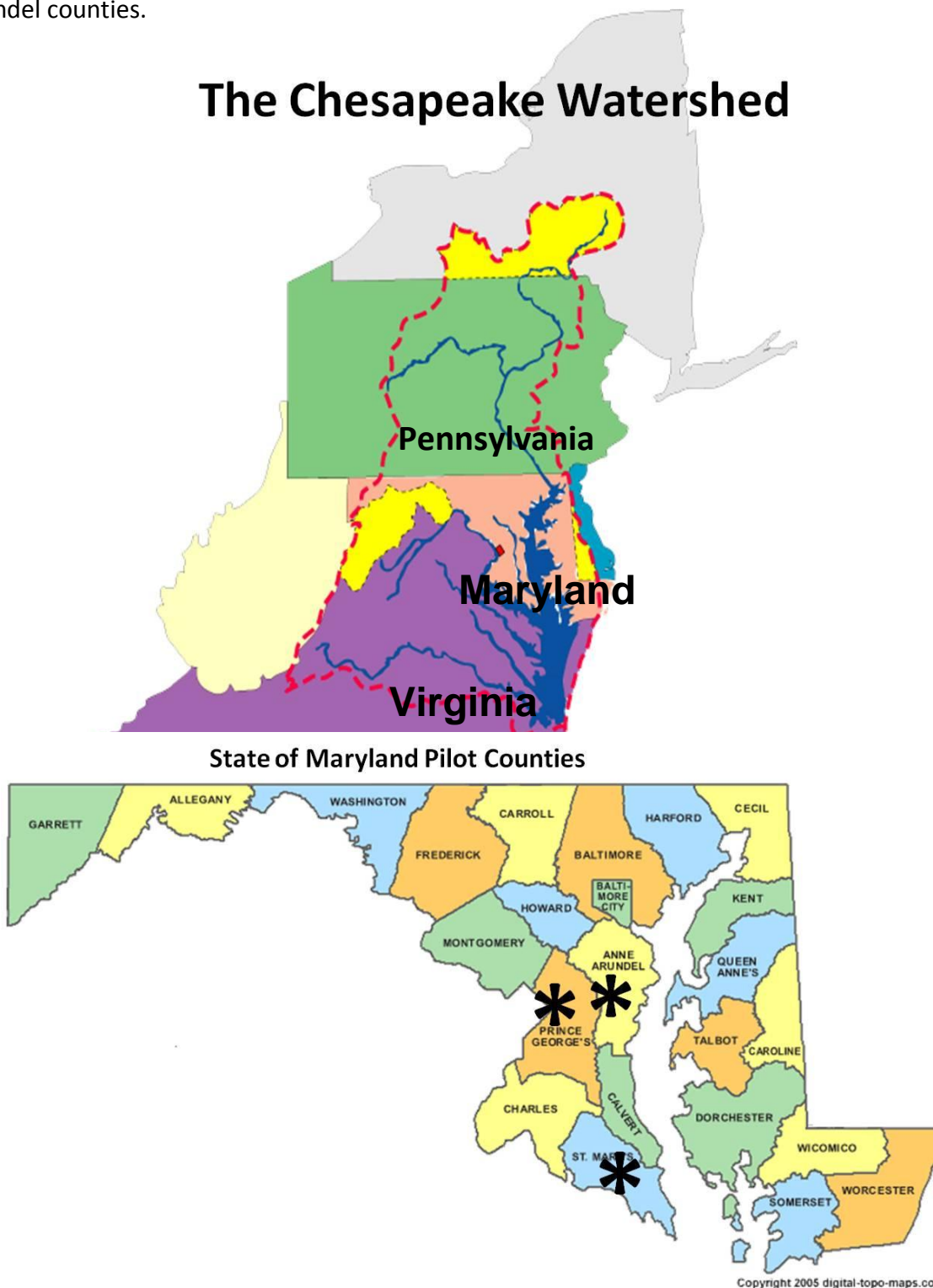
The landowner pilots will be facilitated through the use of the conservation tools described in Project Background. Each tool will be evaluated and updated as possible to address the newly developed forest-based offset protocols including credit calculations.

4. LOCATION AND SIZE OF PROJECT AREA

Scope of project involves three states within the Chesapeake Bay watershed: Maryland, Pennsylvania and Virginia. Landowner pilots will take place in Prince George's, St. Mary's and Anne Arundel counties.

The Chesapeake Watershed

State of Maryland Pilot Counties

Copyright 2005 digital-topo-maps.com

5. PRODUCER PARTICIPATION

This proposal will implement pilot projects with 8-10 EQIP eligible producers. These producers will also be targeted in landowner workshops held in Southern Maryland. We estimate these sessions will reach an additional 50 producers. At the same time, the Chesapeake Forests Offset Bank will set the stage for all EQIP eligible producers in Maryland, Delaware, Virginia and Pennsylvania to more easily participate in programs that pay landowners for implementation forest practices.

6. PROJECT ACTION PLAN AND TIMELINE

Timeline	Actions	Deliverables/Milestones
September to December 2012	Conduct outreach to stakeholders. Convene key working group members and refine project objectives. Synthesize regulatory requirements, program criteria and current market rules.	Establish Chesapeake Forest Offsets Working Group and refined project schedule. Fact Sheet Produced for Outreach Ccompilation of offset program demand framework and common elements.
December to January 2013	Launch Offsets Working Group Gather data and evaluate potential supply and demand for forest-based practices. Begin Protocol development and analysis of options.	Meeting of Offsets Working Group Report on state-wide supply and demand for offsets and forest-based practices and detailed county-level stormwater and future growth demand studies. Definition of forest-based practices.
January to July 2013	Analysis of tools for credit calculation. Integration of tools and protocol requirements. Meeting of Offsets Working Group	Documentation of credit calculation methodology Semi-Annual Report
July to September 2013	Compilation and evaluation of verification and certification process and criteria for offset trading relative to program needs.	Draft Forest Offset Protocol Framework Participation in CIG?NRCS Conference
September to December 2013	Meeting of Offsets Working Group Agency and program review of Protocol, tools and methodologies.	Final Forest Offset Protocol Framework Semi-Annual Report
January to March of 2014	Evaluate successful banking models and develop business plan for NGO Offsets bank.	Business Plan for Forest Offsets Bank Semi-Annual Report
March to June of 2014	Work with pilot counties to implement and test protocol for establishment of forest-based offsets integrated with	Certification of forest-based credits and document application to all regulatory and mitigation programs.
September 2014	Final review and closeout with Working group	Final Project Report

7. PROJECT MANAGEMENT

The Alliance for the Chesapeake Bay has assembled a project team that has the technical expertise and experience to design, implement and manage a forest-based offset development process and pilot implementation.

Alliance for the Chesapeake Bay

The Alliance is a regional NGO with offices in Maryland, Pennsylvania, Virginia and DC. The mission of the Alliance is to engage diverse groups in developing and implementing collaborative solutions to improve and protect the Bay and its rivers and streams. In delivering its mission, the Alliance works with local governments, watershed and citizen groups and the federal/state Chesapeake Bay program. The Alliance will provide project direction and oversight for all aspects of the project.

Key Personnel:

Albert Todd, Executive Director. Al came to the Alliance from the USDA Office of Environmental Markets where he served as Chesapeake Bay Team Leader and worked with an intergovernmental team to foster market-based approaches to conservation. Prior to working with OEM, Al was the Director of Ecosystem Services and Watershed Program Leader for the US Forest Service where he coordinated forest-related programs within the Chesapeake Bay watershed for nearly 20 years.

Craig Highfield, Forestry for the Bay Coordinator. Craig developed and coordinates outreach and education for farm and forest landowners throughout the Chesapeake Bay watershed. This program improves the sustainability of working lands and connects landowners with conservation programs and resources. Before coming to the Alliance, Craig was an educator for the Chesapeake Bay Foundation.

Nissa Dean, VA State Director. Nissa coordinates Alliance Program delivery in the State of Virginia. Prior to coming to the Alliance, Nissa was the Regional Manager for the Office of Stormwater Management for the 12 counties in and around the City of Richmond and worked with the State Department of Conservation and Recreation for 8 years and served in county government.

Eric Sprague, Director, Chesapeake Forests program. Eric heads the Alliance's efforts to accelerate the role of forests in the Bay restoration effort. The Chesapeake Forests program works with partners to help private landowners, businesses and governments use forests to meet their environmental, economic and community objectives. Eric has been promoting forest conservation in Bay for several years. He helped develop The State of Chesapeake Forests report, draft the Chesapeake Forest Conservation Directive and has developed new tools including LandServer and the Bay Bank Conservation Marketplace and partnerships to help landowners conserve and restore forests. Welcome aboard, Eric.

Chesapeake Stormwater Network

The Chesapeake Stormwater Network (CSN) works to reform federal, state and local laws, permits, regulations and design manuals to promote more sustainable stormwater. The interactive network integrates the efforts of thousands of individuals working on the stormwater problem across the Bay watershed. The CSN seeks to improve on-the-ground stormwater management and environmental site design practices in each of 1,300 communities and seven states in the Chesapeake Bay Watershed.

Key Personnel:

Tom Schueler, Network Director. Tom has more than 25 years experience in practical aspects of stormwater practices to protect and restore urban watersheds. Tom founded the Center for Watershed Protection in 1992, but departed in 2007 to launch the Chesapeake Stormwater Network. Tom has written or co-written more than a dozen local and state stormwater engineering design manuals, and developed or refined the first design specifications for bioretention, wet ponds, constructed wetlands, filtering systems and dry swales.

Chesapeake Bay Trust

The Chesapeake Bay Trust is a Maryland state supported Trust that provides grants to local and non-profit organizations to benefit the environment and communities of the state. Funded primarily by state "Bay Plate" licensing fees the Trust has a rich diversity of grant programs totaling over $10 million per year.   In particular, the Trust has established urban greening and other forest planting programs.

Key Personnel:

Dr. Jana Davis is the Executive Director of the Chesapeake Bay Trust and previously the Program and Partnerships Director.

Hieu Truong is the Program Manager for Green Streets and Green Jobs and Urban Greening Grant Programs. Ms Truong has been working with local governments in MD to coordinate greening programs with county fee in-lieu programs under the FCA.

Maryland Critical Area Commission

The Critical Area Act, passed in 1984, was significant and far-reaching, and marked the first time that the State and local governments jointly addressed the impacts of land development on habitat and aquatic resources.   The law identified the "Critical Area" as land within 1,000 feet of the Mean High Water Line of tidal waters or the landward edge of tidal wetlands and all waters and lands of the Bay and its tributaries.

Key Personnel:

Mary Owens is Commission Education and Conservation Coordinator and provides state oversight of County Programs. Mary has worked for years in helping to establish mitigation banks for local development that can provide enhanced habitat for Forest Interior Dwelling Birds (FIDs) and worked to expand the use of mitigation banking as a tool for county regulatory programs.

Chesapeake Legal Alliance

The Chesapeake Legal Alliance, Inc. is a non-profit organization dedicated to strengthen the laws that govern pollution and development that adversely affects the Bay, and coordinate a resource of private lawyers who care about the health of the Bay and are consequently willing to contribute time and effort, pro bono publico, toward its improvement.

Key Personnel:

Jackie Guild and Ridgeway Hall are attorneys who have legal analysis skills and extensive knowledge of state/federal regulations that govern water quality improvement and resource management.

Maryland Department of Natural Resources – Forest Service

MD DNR Forest Service is the agency directly responsible for forest conservation, riparian buffer restoration, forest management and forest technical assistance to landowners.

Key Personnel:

Steve Koehn is State Forester and provides state leadership of all programs related to forest conservation, restoration, and management as well as supervision of state forest lands.

Marion Honezcy is the assistant Director for Urban Forestry and the Forest Conservation providing specific expertise on implementation of state forest conservation act regulations.

Dr. Anne Hairstan-Strang, is Forest Hydrologist and lead for Chesapeake Bay related programs.

ADDITIONAL COOPERATORS

The following agencies and individuals will be consulted and invited to participate in a project working group, advisory committee or project activities.

Virginia Department of Forestry

Pennsylvania Bureau of Forestry
Maryland Department of Agriculture
Maryland Department of the Environment
Virginia Department of Conservation and Recreation
Virginia Department of Environmental Quality
Anne Arundel, Prince Georges and St. Mary's County
Pennsylvania Department of the Environment
Pennsylvania Department of Conservation and Natural Resources

8. **PROJECT DELIVERABLES/PRODUCTS**
The proposal includes the following technical products and activity-related deliverables:
- A generalized forest-based offset protocol and nine specialized offset protocols tiered to the following programs:
    - Maryland, Virginia and Pennsylvania nutrient trading
    - Maryland, Virginia and Pennsylvania state stormwater regulations
    - Maryland's Forest Conservation Act
    - Maryland's Critical Area Act
        - Forest cover
        - Riparian forest
        - Forest interior dwelling habitat
        - Stormwater
    - U.S. Green Building Council's LEED
    - Virginia's Chesapeake Bay Preservation Act,
- Forest-based offset protocols and calculators integrated into the following tools:
    - LandServer, Bay Bank Conservation Marketplace and Ecosystem Crediting Platform
    - Conservation Registry
    - Nutrient Tracking Tool/Nutrient Net and state water trading platforms
- An Alliance-led Chesapeake Forest Offset Bank to manage program delivery and implementation for forest-based offsets,
- 8-10 forest-based offset transactions with EQIP eligible landowners,
- Semi-annual reports,
- Supplemental narratives to explain and support payment requests
- Final report,
- Performance items specific to the project that indicate progress,
- New technology and innovative approach fact sheet and
- Participation in at least one NRCS sponsored event during the period of the grant.

9. **BENEFITS OR RESULTS EXPECTED AND TRANSFERABILITY**
Since forests can provide long-term nutrient and sediment reductions and many other ecosystem services, Maryland, Pennsylvania and Virginia are relying on forest-based practices to help them meet the Chesapeake Bay TMDL. These states and their local governments manage a number of related, but uncoordinated programs that are designed to retain, manage and protect forests. This proposal will accelerate the use of forest-based offsets and lead to long-term nutrient and sediment reductions by coordinating these programs and improving existing market infrastructure

in order to ease program implementation. Facilitating program implementation will help agricultural producers access diverse funding streams and promote a vibrant agricultural economy.

The restoration of the Chesapeake is moving towards 40 years. In this time, private and public institutions have developed a myriad of programs and requirements to protect forest-provided nutrient and sediment benefits. This proposal seeks to clarify this patchwork of programs. Other locations that do not yet have many of these programs in place will be able to use the findings from this project to proactively build cost-effective and efficient strategies.

This project will also directly benefit from past investments by using market infrastructure funded in large part by the USDA NRCS CIG program.

10. PROJECT EVALUATION
This project will be evaluated on the successful completion of the following key deliverables:
- A generalized forest-based offset protocol and nine specialized offset protocols,
- The integration of forest-based offset protocols and calculators into existing market infrastructure and
- The completion of 8-10 pilot projects with EQIP eligible agricultural producers.

In addition to the evaluation of the larger project objectives, the pilot projects will also be evaluated through the use of third-party verification, certification and monitoring.

ADDITIONAL INFORMATION

Assessment of Environmental and Social Impacts
This project will implement forest practices on 8-10 properties in Southern Maryland and accelerate the pace of forest practice implementation across Maryland, Virginia and Pennsylvania in future years. The Alliance and its partners have not yet selected project types for the pilot projects, but forest-based practices such as riparian forest buffers, tree planting and wetland restoration can have significant and varied environmental benefits including reducing nutrient and sediment loadings to streams, removing pollutants from the air and providing habitat for wildlife and plants. Below are two scenarios to assess the potential environmental impacts to water quality using Maryland's nutrient trading program:

Scenario 1. Tree Planting
A landowner acquires 20 acres of pasture on Maryland's Eastern Shore and decides to re-forest the property. The landowner would be eligible to generate credits equal to the difference between the average annual nutrient loads for the pasture land use vis-à-vis the forest land use. On the Eastern Shore (part of the 'Everything Else' trading basin), pasture has an average annual load of 9.06 lbs of nitrogen per acre and 1.43 lbs of phosphorus per acre delivered to the Bay, whereas forest has an average annual load of 1.43 lbs of nitrogen per acre and 0.02 lbs of phosphorus per acre delivered to the Bay. The landowner would be able to generate reductions equal to 7.63 lbs of N and 1.31 lbs

of P per acre, for a total of 152.6 lbs N and 26.2 lbs P for the entire 20 acres. While not large reductions, tree planting would generate credits annually for the life of the project.[8]

In addition to the nutrient benefits, tree plantings can also sequester carbon and remove air pollutants from the air. Twenty acres of trees can be expected to remove the following amounts of pollutants from the air per year limiting air deposition to waterways and improving public health:
- 36 pounds of carbon monoxide
- 168 pounds of nitrogen dioxide
- 1,100 pounds of ozone
- 668 pounds particulate matter: equal to removing 890 cars from the road each year
- 177 pounds of sulfur dioxide[9,10]

The same tree planting size can be expected to sequester 28 tons of carbon per year over a 50-year practice life.[11]

Scenario 2. Stream Restoration on Forested Land
A small forest owner decides to undertake a stream restoration project on her property. Stream restoration restores the natural hydrology and landscape of a stream. Stream restoration is used to help improve habitat and water quality conditions in degraded streams. Typically, streams in need of restoring have watershed conditions that have destabilized the stream channel and eroded stream banks. In our scenario, we assume that the landowner plans to restore 2,000 feet of stream running through her property. The landowner would generate 40 pounds of nitrogen reductions (2000 ft x .02 lbs N/ft) and 7 pounds of phosphorus (2000 ft x .0035 lbs P/ft). Like tree planting, stream restoration is a multi-year best management practice and would be able to generate credits throughout the lifespan of the project.[12]

---

[8] Selman et al. "Private Landowner Involvement in Water Quality Markets." Unpublished research from "Nutrient Trading in the Chesapeake Bay Watershed: An Analysis of Supply and Demand." Pinchot Institute for Conservation. 2010.

[9] US Forest Service, Northern Research Station, Syracuse, NY. Unpublished results of i-Tree analysis of 2007 county data. October 2011.

[10] Air pollutant removal rates calculated assuming project is located in Talbot County, Maryland..

[11] Ecosystem Crediting Platform, http://baybank.ecosystemcredits.org. Carbon Practice Estimator. Accessed February 2012.

[12] Selman et al. "Private Landowner Involvement in Water Quality Markets." Unpublished research from "Nutrient Trading in the Chesapeake Bay Watershed: An Analysis of Supply and Demand." Pinchot Institute for Conservation. 2010.

CONSERVATION INNOVATION GRANT 2012 PROPOSAL DECLARATIONS

Section I. Declaration of Previous CIG Involvement

The Alliance for the Chesapeake Bay (ACB) has never received a CIG award.   Our Partner, the Pinchot Institute for Conservation received The Pinchot Institute for Conservation received a USDA Conservation Innovation Grant in 2008 titled "Implementing the Bay Bank." The Institute collaborated with national and regional experts to develop an innovative online marketplace that helps connect private landowners in Maryland and Delaware, with markets as well as traditional conservation programs.

Section J. Declaration of Beginning Farmer/Rancher, Limited Resource Farmer/Rancher, or Indian Tribe.

The applicant is not a beginning or limited resource farmer or rancher, nor an Indian Tribe. However, we do anticipate that beginning or limited resource farmers or ranchers will be able to participate and/or benefit from the project.

Section K. Declaration of EQIP Eligibility

The project will include involvement of and outreach and assistance to EQIP eligible producers to help them understand the opportunities for forest-based practices that will qualify for water quality trading and offset and mitigation programs, assist them in evaluating the potential for forest mitigation banking on their properties, and facilitate connections between county and state programs and producers. In the pilot phase of the program, the Alliance i will ensure that all county payments for forest-based offset credits will be made to EQIP eligible producers. While we do not anticipate that cost-share provided per producer will exceed the EQIP maximum of $300,000 between 2012 and 2014.

Section L. Certifications

SF 424B is attached. The Alliance also certifies with submittal of this application that all project partners are in compliance with 7 CFR Parts 3017, 3018, and 3021.

Section M. Duns Number (see 424)

Section N. Central Contractor Registry (CCR).

The Alliance is registered with CCR Database.