

**VERIFICATION OF ENVIRONMENTAL CREDITS:  
CHESAPEAKE BAY ENVIRONMENTAL MARKETS TEAM  
DISCUSSION PAPER**

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The Chesapeake Bay Environmental Markets Team (CB EMT) was chartered by the *Strategy for Protecting and Restoring the Chesapeake Bay Watershed*, issued on May 12, 2010 as directed by Executive Order 13508. The CB EMT facilitates collaboration among federal agencies in development of the infrastructure needed for enabling environmental markets to function effectively in the Chesapeake Bay Watershed.

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CB EMT working papers present the perspectives of technical experts on a broad variety of issues related to the development and operation of environmental markets. Information and opinions presented do not necessarily represent the adopted policy of EMT member agencies but are offered for public discussion and for consideration by member agencies as they carry out their responsibilities related to environmental markets.

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*This paper was prepared by the Office of Environmental Markets for use by the Chesapeake Bay Environmental Markets Team (CB EMT). It serves as background for discussion about how federal agencies might best support the development of protocols for verification of environmental credits, specifically in the context of water quality markets in the Chesapeake Bay.*

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### What is verification?

Verification is the process or set of processes used to confirm that market rules have been followed, that a project site, ownership, and selected practices are eligible for credit generation, that credit calculation estimates are accurate and reasonable, and that all required documentation is suitable for credit registration. Verification systems consist of a set of protocols that guide inspection, the conduct of the inspections themselves, and the review of accompanying documentation.

Verification may be done by federal, state, or local agencies and private third party organizations

In the case of water quality markets, verification is meant to ensure that landowners or project developers have followed applicable market rules in order to earn the amount of credits that are being claimed. This paper deals specifically with verification of water quality credits generated by agricultural nonpoint sources of pollution. As with other elements of an environmental market, the verification process can help or hinder the development of the market. It is important to balance the need for quality assurance with the imperative of lowering transaction costs to encourage market participation.

Verification processes come into play during a number of stages in the life cycle of an environmental market. Verifiers ultimately provide a check that:

- The project developer is (or has been deemed) eligible to participate in the market;
- The project can be expected to generate the proposed number of credits; and
- The credit has been generated as proposed. (In markets that award credits based on practices, verifiers monitor practice implementation according to established standards. In markets that award credits based on environmental outcomes, verifiers may monitor the outcomes of implemented actions.)
- All documentation needed for registration has been provided.

Although verifiers may conduct field inspections and collect data needed to document practices or projects that create environmental credits, verification is not necessarily a process of collecting field data from scratch. Instead, verifiers may only look at data collection methodologies and systems, implemented actions versus planned actions, and contracts that are in place to guarantee performance. Verifiers check that information is complete, consistent, accurate, and transparent (Willamette Partnership 2009).

### Who benefits from verification?

Verification provides assurance to buyers of environmental credits that credit suppliers have met the market's standards for additionality, quality, and sustainability. It provides a standardized process for reporting and monitoring that is needed by agencies that oversee mitigation and trading programs and must certify credits for sale. Complete, consistent, and accurate verification provides the public with evidence that market activity is delivering real benefits.

### What gets verified and when?

In markets which award credits for performance of certain activities, verification ensures those activities are in fact occurring and that the property's characteristics match those claimed in the credit quantification calculations. Other market rules award credits based on actual, measurable environmental benefit. In these situations, verification ensures outcomes are achieved, rather than just verifying certain practices have been implemented. For example, the US Fish and Wildlife Service recommends that conservation banks monitor vegetative growth, presence of invasive species, water quality, and presence of threatened or endangered species. Verification protocols may be specific to the nature of the conservation practice or project type.

In water quality markets, credits from nonpoint sources are typically awarded for implementation of practices that are associated with water quality benefits. This is true for all of the state water quality trading programs within the Chesapeake Bay. Most benefits are assessed on an annual basis, however, some practices/projects allow verification of commitments for delivery of benefits in future years that may be part of advance contracts.

Within a verification process, the elements being verified can be broken out by the credit life stage:

#### 1. Determination of eligibility

Before being allowed to generate credits, a project developer or landowner must be deemed eligible for participation according to market requirements. For example, potential credit sellers must first meet "baseline", typically by having certain minimum practices in place or emitting pollutants below a certain threshold. Credit sellers must also document legal ownership over the credits.

#### 2. Validation

Once they are deemed eligible, a project developer or landowner completes a plan to change land use practices in order to enter the credit market and calculates the number of credits those practices will generate. Credits must be validated before being certified and posted for sale. Validation can happen before or after project completion (or both if required by market rules), and includes confirmation that:

- Standards, practice specifications and procedures were followed in developing the project;
- Credits are quantified using appropriate metrics and methodologies or the estimate of credits derived from the project is accurate;

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- The proposed actions have been or are on schedule to be completed; and
- Appropriate arrangements are in place to ensure practices are maintained.

A verification agent or market administrator will review relevant documents to ensure these elements, including monitoring plans, contract terms, and other elements, as part of their decision-making process. Validation may or may not involve a site visit.

If a practice will generate credits for multiple years, market rules may dictate that it needs to be re-certified periodically. For example, in Pennsylvania's water quality trading program, credits are certified for up to five years. A farmer may generate credits from a longer-lasting practice, such as a riparian forest buffer. In this case, the credits are sold annually but must be re-certified every five years. Thus, validation would happen on a five-year cycle.

### Monitoring

Projects or practices generating water quality credits are often monitored to ensure practices are properly implemented and maintained. Depending on the individual project and market rules, this may involve a site visit. If projects are certified for sale ahead of implementation, verifiers typically visit the site before and after implementation. Likewise, if a project is being financed, monitoring may happen at various stages until the project is complete. Market rules may dictate this, or, where market rules do not, credit buyers may specify monitoring expectations in order to be assured the credits are generated.

Monitoring may also happen throughout the life of a project. Under the market rules developed by the Willamette Partnership, a wetland mitigation project, for example, would be monitored annually for up to 20 years, with more intensive review every 5 years. Most water quality markets award credits for one year, even though a project may last much longer. Under the rules developed by the Pennsylvania Department of Environmental Protection (PA DEP), credits are monitored annually but must only be re-validated for certification every five years.

Other practices that generate water quality benefits may require even more frequent monitoring. The nitrogen benefits of cover crops are highly variable depending upon a number of factors, including when they are planted and how they are dealt with at the end of the season. The Maryland water quality market rules require cover crops and other annual operational practices to be inspected at least twice during the practice life.

Practices might be organized into four main categories, each of which has implications for the type of monitoring that would be most appropriate:

- Land conversion, such as establishing permanent cover on a portion of a crop field, is a relatively permanent practice. Less frequent monitoring (or remote processes such as aerial

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photography) could provide reasonable assurance that the practice is in place and generating desired credits.

- Restoration practices to enhance the ecological integrity of existing forests, wetlands, or grasslands. While monitoring of these practices would likely need to be more frequent than for land conversion, annual inspection may not necessary..
- Annual operational practices to reduce nutrient loads. These may vary widely based on the type of operation, and might include cover cropping, reducing the amount of fertilizer applied, transporting manure to a nutrient-deficient area, reducing tillage, changing livestock feed mixes, or amending manure to change its nutrient composition. These practices are likely to require monitoring annually or even more frequently.
- Planning practices, such as development of conservation plans or comprehensive nutrient management plans will require periodic review and inspection and are generally governed by program requirements. These plans are typically required for meeting baseline.

The buyer of a credit (or the nature of what is being offset) may also be important in determining monitoring needs. Monitoring plans may also be spelled out in individual trading contracts. For example, under Virginia's water quality trading market rules, point sources can use five-year offsets while new developments that would impact stormwater loads must acquire permanent offsets. Buyers may dictate very different monitoring timeframes depending on what they are responsible for offsetting. The market rules on measuring offsets thus impact the verification timeline.

### Key considerations for the success of verification systems

A good verification system assures buyers that the credits they purchase meet market requirements. Market administrators or regulators should know that the pollution from entities using credits is being offset by effective on-the-ground measures elsewhere. In this way, project implementation or practice adoption can be assessed against environmental outcomes.

#### Who is ultimately accountable?

In the context of a compliance-based environmental market, such as the Bay TMDL, it is important to be clear as to who is ultimately responsible for reducing pollution and to whom they are responsible. Within Chesapeake Bay water quality markets, state (and in the future, local) governments are responsible for reducing the total nutrient and sediment pollution within their jurisdictions. It is the states that provide reasonable assurance to EPA that they are meeting their reduction and cap load allocations.

Under the TMDL, NPDES (National Pollutant Discharge Elimination System) permit holders are allocated a specific amount of pollution; if they chose to purchase credits to account for a reduction in that amount, these credits must be acceptable to the permitting entity (state departments of environment). Regardless of who develops the protocol used for verifying environmental credits, the entity administering these permits must endorse the verification procedures and requirements.

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Verification protocols may indicate to what extent various parties are liable for nonperformance, or this may be spelled out in the individual trading agreements. While some environmental markets transfer liability from buyer to seller during a trade, liability typically remains with the buyer in water quality markets. The Chesapeake Bay TMDL expectations for offset programs (set forth in Appendix S) indicate that NPDES permit holders should remain accountable for meeting their nutrient load limits.

However, state trading market rules differ on the issue of liability. Maryland's nutrient trading policy prohibits NPDES permit holders from transferring liability in trades. As buyers of credits from nonpoint sources, permit holders that retain liability in this case, will want assurance that the offsets are real and that they are calculated in a way that is acceptable to the regulating agency. In Pennsylvania, on the other hand, the PA DEP takes on much of the liability associated with verifying water quality credits. In any case, market rules must dictate who retains liability and verification protocols may reflect these policies in terms of the detail and intensity of procedures and documentation.

### **Who does the verifying?**

The choice of who verifies environmental credits can have an impact on the price of credits and also the credibility of the system, ultimately affecting the success of a credit trading program. The more strenuous and time-consuming the verification procedures, the higher the transaction costs that must be accounted for in the price of credits that are traded or sold.

Some market administrators allow the buyer or seller of a credit to verify that credit by collecting and reporting supporting documentation. The seller might be a landowner, project developer, or aggregator. In a compliance-based market, the buyer is the regulated entity and would be verifying that the purchased credits meet permit requirements. The 2003 Fish and Wildlife Service Guidelines for species banking had conservation bankers doing their own monitoring, though verification had to be documented and submitted to a board comprised of government regulatory agency officials for review. Similarly, the 2008 rules for wetland mitigation banking developed by EPA and the Army Corps of Engineers requires submission of a monitoring report to the district engineer.

*Self-reporting.* Self-reporting procedures can be highly cost effective but may require provisions for periodic checks on the system or clear penalties for failures of reporting. For instance, a project developer might self-report that a credit-generating practice has been implemented, while the market administrator actually verifies a sample of projects each year. This is the common method used for many for non-market, cost-share incentive programs. Under Maryland's nutrient management plan program, the state trains and certifies farmers to write their own plans. These producers then submit annual reports describing plan implementation. The state Department of Agriculture conducts inspections on about 10% of regulated farms to ensure compliance, focusing on higher-risk operations.

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*Third party verifiers.* Most environmental markets stipulate that a “third party”—an entity other than the buyer or seller of credits—may act as the verifier of the project. These third parties are usually either the lead agency overseeing the market or an independent organizations accredited by the market administrator. Some market rules define third parties more broadly, excluding only those that directly emit pollution or impact the resource of concern. For the purposes of this paper, third parties are those who are not directly involved in the sale of the credit. Thus, aggregators that sell credits are not considered to be third parties.

The majority of compliance-based carbon markets *require* third party verification. In 2008, 96% of voluntary carbon credits were verified by an independent third party group (Hamilton, et al. 2009). Of the Chesapeake Bay state water quality markets, only Maryland requires third party verification.

### Environmental markets and other certification

programs contain some consistent requirements for third party reviewers. They may be accredited by the market administrator or regulator, usually for a period of two to five years at a time.

In order to become accredited, third party reviewers typically must:

- Have adequate technical knowledge (as demonstrated by professional certifications) related to the projects they’ll be reviewing;
- Understand market or certification rules (often by attending specific training sessions);
- Have sufficient operational procedures in place to assure capacity for performance;
- Submit to annual or periodic auditing (internal or external);
- Take steps to prevent conflict of interest; and
- Maintain confidentiality (while allowing the market administrator access to necessary information).

Additional requirements for third party reviewers might include:

- Having the ability to accept financial liability for their actions;
- Making verification documents available to the market administrator upon request; and
- Agreeing to disclose their schedule of fees to the market administrator.

Types of organizations that may serve as third parties include:

- Federal, state, or local government entities
  - In compliance-based markets, state and local government entities have an interest in meeting pollution reduction goals and may wish to delegate the verification function to a more independent party.
- Private companies or nonprofit organizations, such as:
  - USDA/NRCS approved technical service providers,
  - Certified crop advisors,
  - Professional engineers,
  - Land trusts, and
  - Watershed groups.

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Market rules may allow a project developer to choose their own independent third party verifier from a list of accredited individuals or organizations provided by the market administrator (for example, this is the approach the Climate Action Reserve follows). Similarly, USDA agencies such as the Agricultural Marketing Service and the Natural Resources Conservation Service provide lists of approved verifiers for their certification or cost share programs. Another approach is to have verifiers assigned to projects by the market administrator. The Willamette Partnership does this. For its voluntary water quality trading program, the Chesapeake Fund has initially approved one company as a verifier; it is hoped that when the market matures project developers will choose qualified verifiers on their own.

For markets that do require third party verification, procedures are required to ensure that there is no conflict of interest, such as the verifier having an improper connection to the financial outcome of the project or a substantial relationship with the project developer. Some market rules prohibit any relationship of the verifier with the offset project developer or other parties involved in the project and no financial or other interest in the project. Other conflict of interest rules simply require disclosure of any pre-existing relationships.

Some market rules place limits on how long a verification provider can give services to a particular developer (under Willamette Basin policy, the limit is 5 years). Under the National Organic Program, certifying agents are asked to take steps to prevent conflict of interest by:

- Ensuring there is no commercial interest between certifying agent and the producer, including requiring employees to complete annual conflict of interest reports;
- Not taking gifts from producers;
- Refraining from providing advice or consulting services on how to overcome barriers to being certified; and
- Using different staff to inspect operations and to decide whether or not to grant organic certification.

In order to further ensure that verifiers are following market rules, the market administrator or regulator may choose to perform audits of the verifiers. They may do so systematically (as the Forest Stewardship Council (FSC) does or in response to complaints (more common among state and federal government programs). Maryland, under its nutrient management consultant certification program, conducts field inspections and evaluates plans to make sure their certified consultants are implementing the program appropriately.

### **How specific should verification protocols be?**

Verification guidelines range from describing the general process for certification and monitoring (who does what and how often) to laying out detailed guidance on acceptable evidence that a practice is appropriate and has been implemented. It is important to have an appropriate level of detail to guide the process.. Inadequate guidance creates a disincentive to adequate monitoring as

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sellers attempt to minimize the costs associated with generating and certifying credits. More specific protocols can assist regulated entities (buyers of water quality credits) in ensuring that the credits they buy meet the requirements of regulators.

*Project-by-project vs. standardized approach.* Some market verification rules (such as state climate programs and the Willamette Partnership) set up a standardized approach to verification. Essentially, the individuals conducting the verification are given a checklist of things to evaluate for each project developer (such as conducting activities as proposed, monitoring the project's effectiveness and assuring the quantity of credits that should be given to the project are in fact what the developer claimed). Other market rules utilize a project-by-project approach, where a unique contract for verification is established for each project, tailored to the particular circumstances involved. The plan typically must be approved by the market administrator, but the contents may be flexible. Under the 2003 Fish and Wildlife Service (USFWS) guidelines for species banks, the system to verify the continuing health of the credit bank is negotiated by the banker and USFWS and outlined in the conservation banking agreement. Almost all recent market rules incorporate at least some elements of a standardized approach to verification, but the extent to which this happens varies.

A hybrid approach is to have standard protocols for classes of practices. As stated above, in water quality trading markets, practices that generate credits might be classified as land conversion practices, restoration practices, annual operational practices, and planning practices.

*Threshold of error allowable in verifying credits as reported.* A project developer must make a claim as to how many credits their project is creating. When verification occurs, the credits claimed must match up with those produced. Since there is some inherent uncertainty in field data collection, however, market rules may incorporate some amount of leeway for acceptable error. For example, under Willamette Basin's trading program rules, a verifier's estimate of credit quantity must be within 15% of the claim made by the developer. If it is, then credits are issued at the quantity of the original credit estimate. If not, the process of credit calculation must be repeated. For the Western Climate Initiative, there is a 5% threshold for greenhouse gas reduction assertions. Alternatively, credits could be sold only after projects are implemented and verified, as is the case in Virginia's current water quality trading program.

### **What is the appropriate role of site visits?**

On-site inspections provide the buyer of an environmental credit and the regulator with a high level of certainty that the practice generating that credit has been implemented properly. Some verification systems, such as that of the Climate Action Reserve, require site visits at least annually. Site visits are generally considered highly desirable but can also add significant cost to the verification process making credit transactions less profitable. Reviews of incentive-based programs conducted by the USDA Office of Inspector General (OIG) have pointed out that the potential penalty for failure may be as important as the degree of inspection in determining how well practices are implemented and maintained. These findings point out the need to balance verification protocols with other market provisions.

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Other methods, such as document review and use of aerial photography or satellite imagery, may result in less certainty but be more cost-effective. Additionally, performing inspections on a sample of projects can provide an acceptable understanding of overall implementation rates. NRCS and FSA have both been advised by the USDA Office of Inspector General to reduce the amount of on-site inspections they perform under their conservation programs. The two agencies now rely on self-certification, sampling, aerial photography, and a complaint investigation process to ensure compliance. When using a sampling method, market administrators or verifiers could focus on higher risk projects. Maryland does this in its nutrient management planning program, where the state inspects about 10% of farms with plans and focuses on those that have not been submitting annual reports, have had a history of compliance problems, or represent inherently high risk operations.

The need for site visits may also differ based on practice type. For land conversion practices, site visits could in some cases be replaced with satellite imagery or frequently updated aerial photography. Restoration practices would involve more frequent, but not necessarily annual, site visits. Annual operational practices are more likely to require annual site visits, or more frequent inspection. Finally, planning practices could be verified largely through document review.

Additionally, on-site inspections are likely to be more important for practices that have a high level of uncertainty. For example, the success of cover crops in reducing nutrient and sediment loads is highly dependent on management practices and weather. More frequent site visits would allow for a more accurate accounting of credits generated. Conversely, restoration practices or projects may have a higher level of certainty regarding reduced nutrient loads to the Bay, and there may be less uncertainty associated with management or maintenance of this practice. In a case like this, frequent site visits might be less crucial in verifying that restored wetlands have generated credits as expected.

### **How is verification paid for?**

Verification is most often incorporated into the cost of generating an environmental credit. The Chesapeake Fund's guidelines for its nascent voluntary nutrient offsets program requires project developers that have met initial selection criteria to work with a designated third party and incorporate verification costs into the project cost. Chesapeake Bay state water quality trading programs also envision verification being fully incorporated into the price of a credit, even though some costs are currently supported using outside grants.

Government agencies may also incorporate all or some of the costs of verification into their operating costs. For instance, the PA DEP performs certifications internally. Governments may also be able to provide financial support for verification. Maryland's Department of Agriculture (MDA) has used available grant funding to assist with third party verification as their water quality market develops. However, at some point the expectation is for these costs to be fully incorporated into the price of the credit. The California Climate Action Registry shares in some of the costs of verification for smaller, less complex projects. It arranges for "batch verification" of multiple

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participants and arranges for a contract to complete the work. In its certification program, the National Organic Program covers a portion of the cost of certification for producers in order to facilitate participation.

### **Where do the results of verification get housed?**

Verification reports become part of the credit record in the market registry. The Credit Registry is a secure, official database that tracks information about environmental credits including information about the ownership of the environmental benefits, the year in which the benefits are generated, as well as the verified project documentation. Registries typically use unique serial numbers associated with each unit of benefit to prevent double counting. In compliance markets, permittees may also need to include verification documents in what they report to their regulating agency. For example, in order to get credit for offsets in Virginia, permit holders must submit a “nutrient reduction certificate” that includes verification information to the Department of Environmental Quality.

Market rules may also dictate that participants retain records for a set time period. The Climate Registry in California recommends verifiers hold on to documentation for seven years. Typically the verifier retains relevant records and returns all others to the project developer.

## **Examples of Verification Systems**

Current and past environmental markets and certification programs use a range of methods that can inform the design of verification systems for water quality trading markets. It is important to match the expectations of market participants with an appropriate verification system at a cost that will allow effective market function.

### **Outcome-Oriented Systems**

Compliance-based conservation and mitigation banks for endangered species habitat and wetlands are responsible for ensuring that environmental outcomes promised by the credit are achieved. Banks do this by measuring a combination of practice implementation and environmental outcomes. Outcomes are related to factors such as hydrological condition, habitat condition, and endangered species population counts. The verification timeline, therefore, tends to extend beyond practice implementation. For example, wetland mitigation banking projects are monitored for a minimum of five years, and credits are released over time based on meeting specific performance-based milestones (US EPA (with Army Corps of Engineers) 2008). Site visits are usually required in order to verify that each milestone is met.

### **Third-Party Review Systems**

#### Environmental Markets

*The Willamette Partnership.* The Willamette Partnership has developed and implemented a verification protocol used in trading credits for salmon habitat, wetlands, upland prairie habitat,

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and water temperature. Verification is the responsibility of the project developer, but must be performed by an accredited third party. The Partnership solicits requests for applications to become accredited as a verifier and has developed a training program that it uses in accreditation that includes information on credit calculation, credit issuance, and understanding verification protocols. The stated purpose of verification is to ensure crediting protocols were followed, planned actions were taken, appropriate monitoring and maintenance plans are in place, and credits and debits are correctly estimated (Willamette Partnership 2009).

Verification is done on a five year cycle, in an effort to link up with NPDES and wetlands program cycles. “Full verification” happens in year one and then every five years. It involves review of eligibility documentation, credit calculations, and a site visit. “Streamlined verification” happens in all other years and involves review of submitted monitoring reports. Site visits are only required under certain circumstances. The verifier must be changed every 5 years.

*Climate Action Reserve.* The Reserve works to ensure integrity, transparency and financial value in markets for carbon in the United States. It has developed and is working on detailed protocols, which include verification, for various credit-generating projects. It also has a verification program manual which lays out detailed guidance for those activities. Verification must be performed by third parties, who must be changed every 6 years. The Reserve advocates a risk-based approach to verification, whereby the verifier is instructed to pay more attention to higher-risk project components. Specific areas include ownership of the credits, compliance with market rules, credit calculations, and capacity of the project developer to monitor the project (Climate Action Reserve 2010).

While verification activities are expected to differ based on the individual project, the Reserve lists some minimum steps in the process:

- Notifying the Reserve of verification activities and an evaluating conflict of interest related to the specific project being verified;
- Scoping and development of a verification plan (usually includes a site visit);
- Desk review and annual site visit (forestry projects are an exception);
- Preparation and submittal of a verification report to the Reserve (annually for non-forest projects; every six years for forest projects).

### Verification within Product Certification Systems

*Forest Stewardship Council Certification (FSC).* The FSC promotes responsible forest management through certification that forest products meet its standards. FSC sets guidelines for forest management and accredits certification bodies. In order to become certified, landowners choose an accredited certification body to work with and take steps to conform to FSC principles. Certifications are good for five years, but landowners are audited by their certification body every year. FSC periodically audits the certification bodies that it has accredited. Accreditation

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and monitoring of the certification bodies is done by a company called Accreditation Services International.

*USDA's National Organic Program.* The National Organic Standards Board sets the rules producers and handlers must follow to have their products certified under the USDA Organic label. These operations develop “Organic System Plans” that are reviewed by accredited third parties called “certifying agents”. Certifying agents verify that plans are in compliance with regulations and that organic operations adhere to standards. Certifying agents inspect operations once a year. These third parties are accredited by USDA, and must be reaccredited at least once every five years (USDA National Organic Program 2011). USDA conducts on-site audits of certifying agents. These take place prior to accreditation, within one year of the pre-accreditation audit, and midway through the five-year accreditation period. An audit may also occur in preparation for accreditation renewal. In order to increase the effectiveness of these audits, the National Organic Program is considering moving to a risk-based system, wherein it would target its audits to certifying agents with certain characteristics.

### Verifying Cost-Share Projects

USDA cost-share programs provide incentives for a number of conservation practices. Individual agencies have procedures in place to evaluate landowner eligibility, validate practices, and monitor implementation. A multi-agency effort—the Conservation Effects Assessment Project, or CEAP—evaluates the environmental outcomes of USDA-supported conservation practices.

*NRCS Conservation Practices.* NRCS provides technical and financial assistance to landowners to implement specific conservation practices through programs like the Environmental Quality Incentives Program. After a practice is implemented, agency personnel check compliance with plans and specifications and certify the practice(s) as qualified for cost share. While third party technical service providers (TSPs) may perform this function, they typically do not. In the Chesapeake Bay watershed, some NGO organizations such as the Chesapeake Bay Foundation have become TSPs for support of specific practices such as riparian buffers under the CREP Program. Data used to support practice certification includes location identification, practice design and specifications, and field notes from on-site inspections. Practice specifications are laid out at the county level in the various Field Office Technical Guides.

In addition to certifying cost-shared practices, NRCS policies require the agency to perform spot checks on offices that certify conservation practices, the practices themselves, and practices performed by technical service providers. Offices are to be checked once every third year. Each fiscal year, the agency performs spot checks on 5% of practices, up to a total of 20 practices per state.<sup>1</sup> Spot checks are distributed among different types of practices and technical work of

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<sup>1</sup> State programs operate similarly. According to its Watershed Implementation Plan, Maryland checks 10% of BMPs implemented in the state annually. There are additional procedures in place to verify (through sampling)

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agency employees. They focus on practices that are more costly, represent a high proportion of total cost-share funds, or have higher risk of failure. There is a requirement to spot check all cost-shared practices on farms owned by NRCS employees, or in which agency employees have an interest. Further requirements are in place to ensure employees are not checking their own work. Spot checking of TSPs is more intense during the first three years in which the contractor is a certified TSP (NRCS 2009).

*NRCS Conservation Program Contracts.* NRCS also evaluates its conservation planning activities. Conservation program contracts may include a number of conservation practices. These contracts are reviewed on an annual basis, either by an NRCS conservationist or a TSP performing conservation planning work. Review elements include adequacy of the plan, whether or not practices are completed or on track to be completed, status of operation and maintenance, status of payments, and agreement on practices to be implemented in the following year. The agency also checks 5% of contracts annually to verify farmer self-certifications. These include being certified as a limited-resource farmer, a beginning farmer, or having control of the land for the life of the contract. The agency may also check up on additional landowners if it receives a complaint or suspects the certification to be incorrect (NRCS 2010).

*Conservation Reserve Program.* The Farm Service Agency (FSA) administers the Conservation Reserve Program (CRP), which compensates roughly one million landowners or producers for long-term conservation. FSA has a partnership with NRCS to achieve program goals. Once FSA determines who is eligible for payment, NRCS works with those producers to develop conservation plans. Producers then sign contracts with FSA to implement their plan. In the past, USDA staff would certify all practices before making payments. However, spurred by OIG recommendations to reduce spending on site visits, FSA now allows producers to self-certify that they have implemented practices. Roughly 90% of practices are self-certified; the remainder being certified by USDA staff. Of the 90% that are self-certified, the agency spot checks 5% per year. Thus about 14% of practices are verified via site visits each year (Conversation with Mike Linsenbigler 2011).

Due to the nature of the CRP practices, FSA or other USDA agency staff can use aerial photos to monitor land cover throughout the life of the contract. The agency's National Agricultural Imagery Program acquires these photos on a three-year cycle. During a recent reenrollment/extension cycle, FSA inspected all CRP practices up for renewal or extension, spending about \$19 million to verify 28 million acres of conservation practices. At that time, only a small percentage of practices were found to be below standard.

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manure transport and cover crop practices. The state also reviews the implementation of conservation programs by Soil Conservation Districts.

## Verification in Water Quality Trading in the Chesapeake Bay

### State Nutrient Trading Programs

Four states (Maryland, Pennsylvania, Virginia, and West Virginia) have developed policies or regulations for nutrient trading in the Chesapeake Bay to help them meet their water quality goals under the TMDL. Delaware is in the process of developing a policy. These policies and regulations describe how credits are certified and how associated practices are validated and monitored. Federal guidance and expectations for these programs are laid out within EPA’s Water Quality Trading Policy and Toolkit and Appendix S of the TMDL. The EPA recommends that when setting up trading programs under the TMDL, states should make provisions for verification, including:

- Assuring proposed activities are expected to generate credits and that credits are quantified appropriately;
- Monitoring to ensure credits are generated; and
- Providing guidance on use of third parties.

The existing state water quality trading programs are summarized below.

Maryland	<p>The Maryland Department of Environment issued a policy for point source-to-point source nutrient trading in 2008. The same year, the Department of Agriculture (MDA) issued draft guidelines for the generation and exchange of nutrient credits from agricultural lands, and initiated the program in September 2010. Maryland is unique in that its Department of Agriculture will administer its water quality trading program, while its Department of Environment enforces NPDES permits.</p> <p>In order to be posted for sale, practices generating credits agricultural lands must first be certified by MDA. This certification process includes validation and involves a review for compliance with trading policy and may involve a site visit. If the credit is for a planned practice, MDA will re-certify the credit once the practice is implemented.</p> <p>In addition to being certified, all practices must be monitored by a third party<sup>2</sup> on an annual basis, and for annual practices a minimum of twice during the year. The policy document implies that monitoring will involve on-site inspections. While the state does not set detailed verification protocols, it requires that individual trading contracts include provisions for annual monitoring and allow for regular inspection. Finally, MDA will perform annual spot checks on a minimum 10% of all credits that it has certified (Maryland Department of Agriculture 2008).</p>
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<sup>2</sup> The Maryland Department of Agriculture’s draft guidelines define third parties as anyone not discharging a pollutant. Third parties may include state agencies, conservation districts or other entities.

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Pennsylvania	<p>Pennsylvania is the only state that has allowed in-state point-to-nonpoint source nutrient trades to date. As of February 2011, there were 11 contracts in place within the state, and one contract for interstate trading. The Department of Environmental Protection (PADEP) has had a nutrient trading policy in place since December 2006, and published a related rule in October 2010. Nonpoint sources wishing to sell credits must have their proposal to implement practices certified by PADEP. Certification involves review for compliance with trading policies and may include a site visit. Certification is essentially an approval that the nutrient reductions have been calculated correctly. The typical certification term is five years.</p> <p>Credits are valid for one year, and any practices that generate credits for multiple years must be validated or monitored annually. While PADEP does not establish verification protocols, it requires all proposals for trading nutrient credits to include a plan for validating and monitoring the proposed practices. The state trading policy indicates that PADEP, the local conservation district, or other approved entity may serve as verifier. Third parties may provide verification services but must meet several requirements in order to do so. PADEP reserves the right to use a variety of methods to further verify that the certified practices are implemented (Pennsylvania Department of Environmental Protection 2010).</p>
Virginia	<p>Virginia's Chesapeake Bay Watershed Nutrient Credit Exchange program was established in 2005. In 2008, the Department of Environmental Quality (VADEQ) issued guidelines for trading of credits generated on agricultural lands. These provide information on the process for generating and certifying credits and tools to calculate nutrient reductions for applicable BMPs.</p> <p>Credits are calculated for practices on an annual basis. Prior to certification, landowners or third parties would broker deals with point sources. These agreements would involve validation that baseline requirements are met, and reporting of the intention to generate the offsets to VADEQ in the calendar year prior to practice implementation. Certification happens when point sources report implemented practices to VADEQ in the calendar year following implementation. VADEQ reserves the right to inspect practices or records in order to verify practices. Liability for compliance remains with the point source permit holder (Virginia Department of Environmental Quality 2008).</p>
West Virginia	<p>The West Virginia Department of Environmental Protection (WVDEP) initiated a nutrient trading program in 2009, and has approved one agreement for an interstate trade between a West Virginia Public Service District and a Pennsylvania aggregator.</p> <p>Credits can be generated for one or more years. Practices that generate credits for longer than one year must be monitored and may need to be re-validated annually. WVDEP validates baseline requirements<sup>3</sup> are met and certifies credits before they are sold. Certification involves review by a panel of experts for technical acceptability and consistency with trading guidelines, and may involve a site visit. Certification</p>

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<sup>3</sup> Baseline verification can also be performed by a conservation district.

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also involves a review of the agreement for sale, which must include a monitoring plan. Monitoring is to be performed by a “qualified and approved” third party.<sup>4</sup> WVDEP reserves the right to use a variety of methods to further verify that the certified practices are implemented (West Virginia Department of Environmental Protection 2009).

The state water quality trading policies address: what gets verified (practices), frequency and timing of verification, types of documentation or evidence to be used in verification, the authority of the state agency to periodically audit projects, and whether or not third parties can participate in verification. However, there are a few key areas that are not addressed or only minimally addressed in the existing state policies. These include:

- Potential conflicts of interest among parties involved in verification.
- Criteria for allowing third parties to be verifying agents.
- Liability of the verifier. Policies typically focus on the liability of NPDES permit holders (credit buyers) and otherwise encourage trading contracts to address liability of the buyer and seller. Where they address liability of the verifier, they typically state that verification contracts should contain provisions for nonperformance.
- Specific verification protocol and practice definitions. While states may rely on standards such as the NRCS Field Office Technical Guides, it is unclear how new technologies will be dealt with. Whether intentional or not, policies also tend to provide substantial discretion as to how practices are validated and monitored—providing that the credit-issuing agency typically will review a “verification” plan (likely covering validation and monitoring) during the certification process.

### Voluntary Markets

There is interest in using environmental markets as a tool to fund conservation among a broader community, though there haven’t been any water quality trades to date. The Chesapeake Bay Bank, a partnership project led by the non-profit Pinchot Institute for Conservation provides information on existing environmental markets to landowners through a web-based clearinghouse. The Bay Bank relies on protocols laid out by market administrators, though it does encourage the use of third parties as verifiers. As part of their crediting platform, a site visit to a potential project is required prior to certification of credits for sale.

The Chesapeake Fund, a project of the non-profit Forest Trends, plans to raise voluntary contributions from businesses via a water quality “footprint” calculator and invest in projects in targeted watersheds to encourage water quality protection above and beyond what is required by law. Their guidelines include procedures for evaluating eligibility, certifying planned projects,

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<sup>4</sup> Current WVDEP guidance defines third parties as “Any entity that does not discharge nutrients or create nutrient credits and that participates in the trading program to validate and/or inspect credit development proposals. This entity could include, but is not limited to, environmental groups, developers, watershed associations, aggregators/brokers, businesses, and nonprofit organizations.”

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validating implementation, and monitoring practices and outcomes where feasible. The Fund has partnered with another nonprofit, Watershed Stewardship, Inc. (WSI), which has been developing and testing verification protocols for agricultural practices. Initially, the Fund will steer project developers to WSI as the verifier with the hope that eventually project developers will be able to choose among a variety of qualified third parties for these services. The WSI protocols include a site visit at certification and during annual monitoring reviews. Specifications for practices are based upon the Chesapeake Bay Watershed Model or state requirements (for practices not included in the Model).

### **What is needed?** *(section incomplete)*

The development of a common set of widely accepted tools for verifying nutrient credits would help ensure consistency for third party verifiers operating in multiple jurisdictions, help facilitate inter-jurisdictional trading, and provide greater transparency and trust in the quality of environmental credits.

#### **Definition of federal, state and private roles.**

Efficient, cost-effective verification is likely to employ the efforts of both government and private processes and procedures. There are opportunities for leveraging efforts.

#### **Verification protocols for practices or practice types**

In addition to clear definitions of the steps in the verification process, a hierarchy of protocols would provide options for the design of verification systems. These protocols would include, practice definitions, including estimated useful life, credit calculation procedures, and minimum requirements for validation and monitoring through site visits, document review, remote tools such as aerial photos, or some combination of methods.

Resources available to draw from include the Bay Program BMPs and the NRCS Field Office Technical Guides, which provide definitions of practices. These definitions help verifiers understand what they need to check for. Trading programs in the Chesapeake Bay are already using these resources. Additionally, states have programs to track and verify conservation practices. For instance, Maryland's Watershed Implementation Plan (WIP) outlines MDA's verification activities for general BMPs, nutrient transport, cover crops, and conservation plans.

The practice being verified should be consistent with the credit calculation methodology. For example, the Bay Model calculates nutrient load reductions for buffers using a default of 100 feet; however, some cost share programs may require only a 35 foot buffer. Protocols developed for trading programs would resolve these types of differences.

#### **Methods to calculate reductions for new technologies**

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When project developers come up with new ways to reduce nutrient pollution, trading programs may need assistance in understanding how the new technologies translate into credits. In its WIP, Pennsylvania highlights its commitment to encouraging new technologies for nutrient management. For example, the state is working with EPA to develop a BMP efficiency for manure-to-energy projects that can be incorporated into the Bay Model. A clear process is needed for allowing new technologies to generate credits with ongoing evaluation for a specific time of their impact on water quality.

### **Processes for accrediting third parties**

Some level of consistency among systems for approving third parties to participate in the various water quality markets is important to ensuring that these entities are available across jurisdictions. Clear provisions to minimize conflict of interest would help ensure fairness. USDA has experience with accrediting technical service providers, certifying agents for the National Organic Program, and others. Accreditation programs also exist for environmental markets, such as the one developed by the Willamette Partnership.

### **An understanding of how costs differ among verification systems**

As existing markets gain experience, it will be important to track what verification activities cost, what proportion of the credit price they comprise, and whether or not these costs pose a barrier to market participation. Some information is available for the costs of verification in carbon markets. When devising verification systems, it is essential to consider the right balance of cost to rigor. If less stringent verification provides enough assurance of compliance, this may be sufficient to achieving market goals.

### **Understanding the affect of uncertainty on verification protocols**

Uncertainty is a criteria often used to discount the value of credits. Levels of specificity and inspection or reporting techniques used in verification may also influence the willingness to assign full credit value. Some have proposed a sliding scale of discounting that is based on higher value for frequent, field-based inspection and lower value (higher discount rates) assigned for less stringent verification procedures like spot checks of self-reporting. It is important to understand fully the role of uncertainty in verification methods and the effect of stringency.

## **Questions for the EMT**

### **How can the EMT assist states in filling gaps in their policies related to verification?**

Potential areas to consider include development of practice-specific verification protocols, guidelines for accrediting third party verifiers, and guidelines on conflict of interest.

### **How can the EMT bring more consistency to verification of environmental credits?**

The EMT might weigh in on what resources should be used as minimum standards for credit-generating practices, help further the understanding of uncertainty ratios, and help to streamline requirements among related federal programs.

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### **Are there ways in which Chesapeake Bay water quality markets can take advantage of federal efforts?**

USDA/OEM is developing a report to explore issues related to verification protocols as it affects landowner participation in environmental markets. The report will draw on USDA experiences to provide guidance on simple, robust, accurate methods for verification. It will also address how USDA systems could be appropriately used to facilitate verification. How might other agencies be able to contribute in similar ways?

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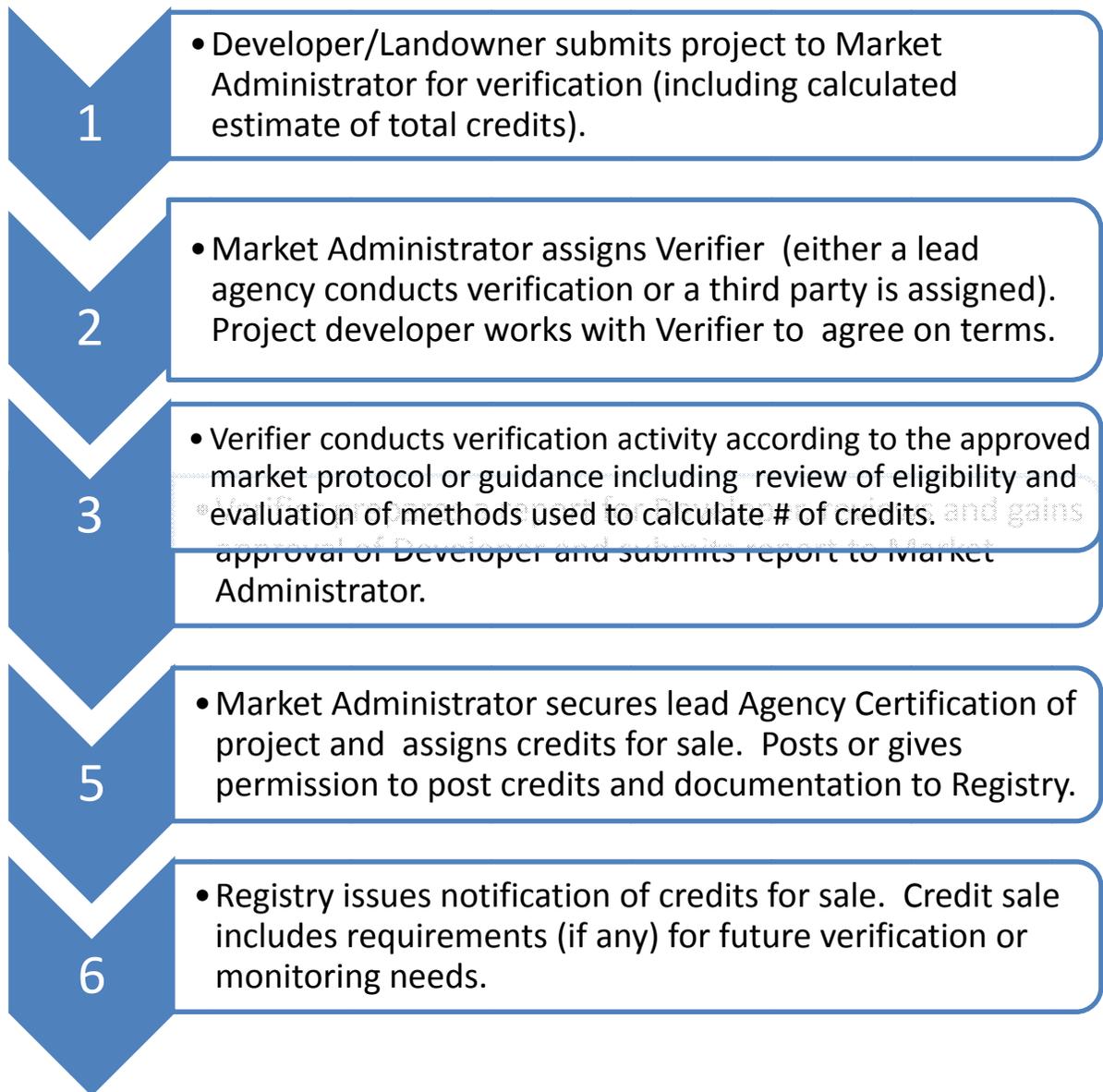
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Attachment A: Sample Verification Process<sup>5</sup>



<sup>5</sup> Modified from Willamette Ecosystem Marketplace, Verification Protocol, September 2009.I