Maryland's Trading and Offset Programs Review Observations

I. Summary of Program Characteristics and Regulatory Status

For the common trading and offset program elements discussed in Appendix S of the Chesapeake Bay TMDL, Table 1 distinguishes between trading (T) and offset (O) provisions, categorizes the degree to which Maryland's program addresses each element, and illustrates whether the program is designed to support Point to Point source transactions, Nonpoint to Point source transactions, Nonpoint to Nonpoint source transactions and/or Point source to Nonpoint source transactions.

Table 1. Maryland Trading and Offset Programs Summary Table

Element	Types of Transactions							
	Point Source to Point Source		Nonpoint Source to Point Source		Nonpoint Source to Nonpoint Source		Point Source to Nonpoint Source	
Trading (T) /Offset(O)	T	O	T	O	T	O	T	O
Authority	●	●	●	●	●	●	●	●
Baselines (for a credit generator)	●	●	●	●	●	●	●	●
Minimum Controls	●	●	●	●	●	●	●	●
Eligibility	●	●	●	●	●	●	●	●
Credit Calculation and Verification	◉	◉	●	●	●	●	●	●
Safeguards	●	●	●	●	●	●	●	●
Certification and Enforceability	●	●	●	●	●	●	●	●
Accountability and Tracking	●	●	●	●	●	●	●	●
Nutrient Impaired Segments	●	●	●	●	●	●	●	●
Credit Banking	◉	◉	◉	◉	●	●	●	●
Growth	×	◉	×	◉	×	●	×	●

○	Necessary measures not in place
◉	Partial (e.g., Legislation drafted or steps have been taken to implement but not fully in place, some details still to be determined but framework is largely established)
●	Jurisdiction has measures in place and in effect
●	Jurisdiction is evaluating the issue but has taken no formal measures to implement anything specifically
×	Not Applicable

II. Summary of Review Observations

On the basis of interviews and review of statutes, regulations, policies and program documents related to the jurisdictions' trading and offset programs, EPA has drafted the following findings. Tier 1 are classified as statutory or regulatory conformance that EPA expects to be addressed by the jurisdiction in order to maintain consistency with the policies, definitions and elements described in Section 10 and Appendix S of the Chesapeake Bay TMDL. Tier 2 is classified as program recommendations that EPA finds should be addressed in order to strengthen the jurisdictions' trading and offset programs.

A. Programs Recommendations Common to All Jurisdictions

1. Jurisdictions' definitions of trading ratios, offsets, credit, trading, etc. should be consistent with federal definitions. Some jurisdictions use the terms "trading" and "offsetting" interchangeably. See Section IV.1.

2. Interstate and intrabasin trades and offsets should be evaluated by the jurisdictions for potential inclusion in their trading and offset programs. See Section IV.10.

3. Local governments' data and information should continue to be integrated into state tracking and accounting systems. See Section IV.8.

4. Stormwater offsets programs are being evaluated and developed in many jurisdictions. These programs should be consistent with the Chesapeake Bay TMDL and EPA regulations, policy, and guidance. See Section IV.1.

5. Several jurisdictions are considering developing or expanding their current programs. The jurisdictions should continue to develop guidance and methodologies to address meeting baseline for point and nonpoint source sectors including consideration of the use of non-traditional Best Management Practices (BMPs) such as algal scrubbers, oyster aquaculture, etc. EPA suggests that the jurisdictions consider incorporating the retirement of credits and use of net improvement offsets in this guidance and methodology. See Section IV.2 and 5.

6. Jurisdictions expressed interest in finding a good way to use stormwater BMPs to offset nonpoint sources such as new septics and nonregulated agriculture. The jurisdictions should continue to explore the potential use of that type of offset. See Section IV.2 and 5.

7. Updating enforcement policies and procedures should continue and include, but not be limited to, items such as inspectors' access to off-site areas where credits or offsets are generated and compliance determination methodology. See Section IV.7.

8. Jurisdictions should continue to develop tracking and accounting systems for new or increased loads and offsets for those loads. These systems should be transparent and accessible to the public. See Section IV.8.

9. Jurisdictions should ensure that adequate resources are available to fully implement the developing trading and offset programs. See Section V.

B. Maryland Specific Observations

Tier 1 – Statutory or Regulatory conformance

1. Point source effluent limits in Maryland should not be based on trades and/or offsets, and WQBELs should not change regardless of trading or offset status/activities. The original (pre-offset or trade) permit limit should be included in both the permit and the permit fact sheet. In the case of a new or expanding Maryland source, the discharge limit for nitrogen and phosphorus should be zero. Compliance with that limit can be added to the permit if trading or offsets are used. EPA suggests that Maryland check its NPDES permits to insure that limits are correctly reflected. See Section II.A.7.

2. Appendix S of the Chesapeake Bay TMDL expects pollutant loads from new or increased loads to be offset in the event that the jurisdiction did not set aside allocations for new growth. Maryland's final Phase I WIP did not include an allocation for new nonpoint source growth. How will Maryland accommodate new nonpoint source growth? See Section IV.1.

Tier 2 – Program recommendations

None.

III. History and Overview of Maryland's Trading and Offset Programs

Maryland currently authorizes two types of nutrient trading: point source to point source (Type I), and nonpoint source (NPS) to point source (Type II). The Type I program was first implemented in April 2008 and the agricultural trading program— Type II—began on June 1, 2010. Maryland is considering a development of its Type III trading program for NPS to NPS trades.

Maryland has described different aspects of its trading policies in the *Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed* (Maryland Department of Environment 2008) and the draft *Producing and Selling Credits in Maryland's Nutrient Trading Market: Guidance for Agricultural Producers and Landowners in the Chesapeake Bay Watershed* (Maryland Department of Agriculture 2011). In addition, Maryland has included a summary of its trading policy on pages 3-12 of its final Phase I WIP in December 2010. Maryland has set up a specific trading website (http://mdnutrienttrading.com/) with additional information and a link to its online calculation tool, registry, and marketplace.

The initial phase of nutrient trading in Maryland was PS to PS. This trading program is mainly for new or increasing dischargers as all existing significant POTW dischargers are required to upgrade to Enhanced Nutrient Removal (ENR) level of treatment and trading is not be available in lieu of treatment upgrades to achieve NPDES permitted WLA caps. To date, there have been 3 transfers in Maryland under the Type I program. Trades in Maryland are good for 5 years (permit cycle) and buyers must obtain credits for 2 cycles. In addition, a Maryland facility wishing to purchase credits must submit a plan showing how it intends to acquire the necessary credits for at least an additional 10 years. At each subsequent NPDES permit renewal, that facility must demonstrate the securing of credits for the next two permit cycles (10-year period), and submit a plan for acquiring them for the 10 years beyond the two permit cycles (i.e. a total 20-year planning horizon).

Type II trades in Maryland involve the sale of credits generated by nonpoint sources (agriculture) to point sources. Currently, there have been no Type II trades, although there have been five applications for credit generation: two were reviewed prior to submission and rejected, three were under review at the time of EPA's interview, and of those, two have been verified and certified. It is expected that Type II trading could be used in Maryland by different conservation groups to purchase and then retire credits.

IV. Detailed Evaluation of Maryland's Trading and Offset Programs Conformance with the 2010 Chesapeake Bay TMDL

1. Authority

Point source measures are in place for trading with additional legislation and evaluation being pursued for the additional types of transactions including nonpoint source users. See Section II.B.2 and Section II.A.1 and 4.

The Maryland Agriculture Code Annotated, Chapter 447 (House Bill 974 passed on May 4 2010, and effective June 1, 2010) not only provides legal authority for the Maryland Department of Agriculture (MDA) to establish a voluntary nutrient credit certification program, establish its requirements, and suspend or revoke credits, but also preserves the authority of the Maryland Department of the Environment (MDE) to establish eligibility and requirements under the State permit and other regulatory programs.

NPDES permits in Maryland include a provision enabling MDE to enter a plant to inspect unit process and collect samples.

The contracts for Type II trading are approved by MDA, which has authority to inspect. Once installed, credit-generating practices must be verified by a third party selected by the buyer as per a provision in the trading contract. Farmers and landowners give the state the authority to verify trading credits and inspect the generating property. In addition, the Maryland Nutrient Management law gives MDA the authority to access all farms. MDE does have access to the property generating the credit through contract provisions.

Type I trading in Maryland is point to point or through permanent connections of septics to wastewater treatment plants (WWTPs). Maryland policy is being implemented and enforced through discharge permits and therefore, all standard NPDES permit inspection requirements apply to the Type I Program.

MDA is currently requesting legislative authority to certify agricultural sediment credits. Maryland's Greenhouse Gas Reduction Act of 2009 requires MDA to add or "stack" carbon credit onto its nutrient trading program.

2. Offsets Baseline (for credit generators)

Necessary measures are in place for point sources users and being evaluated for nonpoint sources users. See Section II.B.2 and Section II.A.5 and 6.

Maryland has established specific ways to calculate baseline loadings for Type I and Type II trades and Maryland is currently discussing how to calculate baseline for Type III trades. Currently Maryland only has a process for trading total nitrogen and total phosphorus, but will be adding sediment and carbon in 2012. Other nitrogen and phosphorus species are reported, but only the totals are included in trading.

For nonpoint source agriculture credit producers, MDA performs a field-by-field assessment on the farm to calculate or model the per acre load to identify the loading level for the farm. For agricultural generators, MDA load calculations start with the no action load then adds BMPs to the farm through a model. The farmer must reach his baseline level before being allowed to trade in Maryland. Maryland's baseline loading rate is established by Maryland's Tributary Strategy or an applicable TMDL, and is defined in Maryland as the level that a land owner must achieve to meet the local tributary strategy or a TMDL. Once the baseline is met, the land owner will be allowed to generate credits on the basis of further reductions. Maryland gives no partial credit for practices used to help achieve the baseline, and gives no credit for turning agricultural land to developed land. This process is described in detail in MDA's draft trading guidance for agricultural producers and landowners (MDA 2011).

Baselines for Maryland point sources are the calculated 2003 loading caps. Plants must be at ENR before they are allowed to acquire credits. Maryland's 2003 loading caps are derived from the target concentrations of 4 mg/L for total nitrogen and 0.3 mg/L for total phosphorus and the design flow. This is to create a limit for a given year to determine if the facility is discharging at ENR and not using excess capacity and not meeting ENR limits. Baseline conditions in Maryland are identified in permits, or in the associated public record for the permit. As per the permits, facility effluent in Maryland cannot cause an exceedance of applicable water quality standards.

Maryland facilities have interpreted this to mean that by using 3 mg/L for total nitrogen, they can discharge above capacity and still meet limits. For example, a 7.5 MGD facility can go to 10 MGD and still meet its loading limits and will not have to worry about offsets from growth, but only if the water and sewer plan and the permitted design capacity are consistent.

3. Minimum Controls Required for Credit Purchasers

Necessary measures are in place for point sources and are being evaluated for nonpoint source users. See Section II.B.2.

Maryland requires credit generators to meet certain minimum controls. Part of Maryland's basic nutrient trading policy is that all significant treatment plants are at ENR technology; minor dischargers may generate credits when the baseline loads of 6,100 lbs/yr of nitrogen and 457 lbs/yr of phosphorus or less are assigned as a permit limit. Maryland expects there to be consistency with water and sewer plans and Maryland enforces nutrient loadings through permits. If there are changes to the treatment plant, Maryland expects these changes to be reflected in an updated water and sewer plan. Water and sewer plans need to go through an approval process for any changes in service areas, such as expansions and annexing. This includes a public participation period, which is part of regulatory state law. The water and sewer plans need to be consistent with local planning.

The Maryland Water Quality Improvement Act of 1998 requires farmers who meet certain threshold size conditions to have nutrient management plans. The plans are good for three years and require a soil test upon renewal, although changes to agricultural practices may require an update of the plan sooner. MDA will inspect 10 percent of farmers' plans and records of implementation. In addition, Maryland has other plans, such as soil and water conservation plans, that are in effect. Maryland's agricultural baselines are set to meet federal TMDLs.

4. Eligibility

Necessary measures are in place for point sources users and are being evaluated for nonpoint sources users. See Section II.B.2.

Maryland's trading program requires participants to meet specific requirements to be eligible to trade. In order for a major point source in Maryland to trade, it must have ENR technology installed, and its effluent must be consistent with any TMDLs and maintain water quality. Trades are incorporated into major point source permits in Maryland along with updated water and sewer plans. Eligibility for NPS generators in Maryland is determined through the online nutrient management trading tool. MDA conducts field verification of eligible generators prior to credit certification.

Details related to how credits are generated by point sources are found in Maryland guidance documents, which include a section on generating credits for septics to connect to POTW.

Assessment of credit potential for Maryland nonpoint source credit generators is effected by using the online nutrient calculation tool. The resulting information is then field verified by Maryland. Maryland requires nonpoint source credit generators to be in compliance and to meet TMDL water quality baselines in order to trade. Maryland does not allow BMPs that are funded by cost-share programs to be used to generate credits during the specified life-span of the BMP. Instead, an agricultural practice or BMP can generate credits only after it is installed or placed in operation. There can be no substantial conversion of productive farmland to non-agricultural uses in Maryland. Trades must result in a net decrease in loads, and to ensure that this occurs, Maryland applies a 10% retirement ratio at the time of sale. All certified credits are registered and recorded in a public registry. A separate registry maintains a record of all trades in Maryland.

Maryland uses the TMDLs as the baseline for WWTPs and agricultural generators. Land use changes from agriculture to urban development cannot generate offset credits in Maryland.

Maryland plans on using the online nutrient trading tool for credit evaluation. If BMPs that do not have recognized efficiencies are used for credit generation, Maryland will require review by a technical workgroup and may require monitoring to ensure the credits are appropriate. Maryland will follow the methods used by the Chesapeake Bay Program partnership to accept new BMPs.

Aggregators

In certain circumstances, Maryland trades may involve aggregators. Aggregators are more likely to be used in Type 2 trades. Maryland does not oversee aggregators, who may hold credit reserves to lower their risks. The aggregator can service multiple municipalities simultaneously.

Offset Ratios

Maryland uses a 5% retirement ratio for point source trades and a 10% retirement ratio for nonpoint source trades to provide a water quality benefit.

5. Credit Calculation and Verification

Necessary measures are in place for point source users and are being evaluated for use by nonpoint source users. See Section II.B.2 and Section II.A.5 and 6.

Maryland's online nutrient trading tool is used in the trading process to calculate and verify non-point source credits. Use of Maryland's tool is not required for trading, but land owners must calculate baseline loadings in order to participate in Maryland's trading program. Maryland has developed draft trading guidance to go along with the online nutrient trading tool. Potential credit generators in Maryland using the online tool go through multiple steps, which include built-in safeguards to prevent violations in trading policy. Several of the main steps of Maryland's online nutrient trading tool are:

- Draw farm and crop boundaries. The tool will return the watershed, soils, slope, and additional data for the area.
- Input current BMPs, crops, animal feeding operations (AFO), current operational info also with future management decisions.
- Model then returns the baseline and current loads, thus indicating the baseline level the farm must meet to be able to trade.
- Once farm meets baseline, additional BMPs can be inputted and the model will return baseline and planned edge of stream loads. The efficiencies are taken from the Chesapeake Bay Watershed Model.
- The tool then takes into account delivery ratio and credits.
- The land owner is asked to verify the information and submit an application to MDA to get identification number. A third party then field verifies the credits.
- Landowner can post certified credit information to the online marketplace (e.g. how many, price, and watershed).

Maryland normalizes calculated nutrient load credits and offsets for delivery to the Chesapeake Bay.

For Type II trades, involving nonpoint sources, Maryland's online nutrient trading tool calculates credit potential on the basis of user input and pre-programmed data from both Maryland and the Chesapeake Bay Program partnership.

MDA's' guidelines outline certain elements that all contracts must contain. MDA reviews certain contract information for Type II trades, but has no legal approval of the process. For Type I, credit application includes information on the general contract arrangement. MDE requires written verification that point source connections have been made in applicable Type I trades.

Maryland Type I trades require permit modifications that show current or anticipated changes in loadings and, ideally, that the facility is involved in a trade. Maryland requires permittees to comply with permits, so for instance, once flow from one wastewater treatment plant has been connected to another plant, the original plant has to stay dismantled due to changes in the permit. Maryland's Type I trading policy is being implemented and enforced through discharge permits and, therefore, all standard NPDES permit inspection requirements apply to the Type I Program.

For Maryland agricultural credit generators, credits are based on delivered loads to the Chesapeake Bay and, according to Maryland, are consistent with the Bay TMDL. Maryland does not allow a cost-shared practice to be used to generate credits during the lifespan of the BMP. Maryland utilizes the Chesapeake Bay Program partnership efficiencies for BMPs as part of the required annual inspection to assure proper maintenance and operation. Documents related to the trading program are stored at MDA and are open for public inspection.

Schedule of Certification and Reporting

Maryland Type I trades are implemented and enforced through NPDES discharge permits based on all applicable compliance and inspection requirements. In addition, under certain circumstances, an inspector might verify that plant modifications, such as a pipe being closed and plugged have occurred. Maryland allows trades involving septics to become effective only once homes previously served by septic systems have been connected into the collection system for a wastewater treatment plant that has installed ENR technology.

For trades in Maryland involving nonpoint sources, an initial verification of practices is done to verify functioning. Annual or semi-annual inspections are done by an independent third party. In addition, MDA, through its soil and water conservation district (SCD) offices, inspects 10 percent of the practices. MDA has standard inspection forms.

Recordkeeping

Documentation relating to trades is stored at either MDA or MDE, depending on the type of trade, and all information is stored on the online nutrient trading program website.

Practice Validation and Verification

Annual inspections are attached to the generated credit for Maryland Type II trades. Credits are only generated in Maryland once the practices are installed and verified by a third party. This verification is only good for 1 year in Maryland, although annual practices are only good for 6 months. The value of the credits exists for the buyers throughout the contract, however – if Maryland's laws or policies change, then the credits stay under the law or policies under which they were signed. If the credit generator were to reapply, those credits would be reviewed under Maryland's then-existing law or policy. During the life of the contract, credits in Maryland are grandfathered if there is a change in BMP efficiency or regulation.

6. Safeguards

Necessary measures are in place for point source users and are being evaluated for nonpoint source users. See Section II.B.2.

Maryland's trading program includes numerous safeguards to ensure that loads are properly accounted for and that water quality is protected. A 10 percent reserve is required for each Type II trade, which is paid by the buyer. For example, if 1,000 credits are needed, then 1,100 would need to be bought. This is built into the contract, and the extra 10 percent is permanently retired. This is similar to Maryland's 5 percent reserve in Type I trading. For Type I and Type II trading, a Maryland credit purchaser must obtain enough credits for 2 permit cycles (10 years) and must have a plan to meet loading limits for the next 10 years after the purchased credit agreement expires, which can either be plant upgrades or further trading. Maryland's online nutrient trading tool normalizes loadings to those delivered to the Chesapeake Bay. Each Maryland farmer has a unique identification number. Additionally, credits are identified in Maryland using latitude/longitude and practices are field verified by an independent third party before credits can be traded.

For nonpoint to point trades in Maryland, the same provisions as the point-to-point arena apply. Purchases of such credits in Maryland can be of varying duration, depending on the contract.

Maryland has a basic trading policy that a trade cannot occur if it is not protective of water quality or consistent with previous TMDLs. As part of Maryland's permitting process, there is also a public participation process, where communities can voice their concerns.

As part of Maryland's credit verification process, potential traders are evaluated to ensure they are in compliance with NPDES permits and all applicable laws and regulations. Maryland does not allow trading if one of the participants is not in compliance with nutrient or sediment

requirements or is not at its baseline loading level. Maryland'sType II trading application form asks potential traders to confirm that they are in compliance with all laws. Trading participants in Maryland are verified for compliance through access to permits, nutrient management plans, CAFO records, and inspections. Maryland's April 2008 policy document for nutrient cap management and trading specifies that participants must be in compliance. (See 2008 Policy, Section 3-5).

7. Certification and Enforceability

Necessary measures are in place for point source users and are being evaluated for nonpoint source users. See section II.B.2 and Section II.A.7. and 8.

In Maryland, MDE is responsible for overseeing the NPDES program. The MDA Office of Resource Conservation is responsible for nonpoint source credit generators. Maryland will only allow trades to occur if the practice is installed, active, and will be active throughout the NPDES permit term. Maryland has considered guidance regarding procedures related to what to do if the deed of a generating property is sold. Trades occurring within Maryland's NPDES permit framework are good for the 5 year permit cycle and are reflected on an annual basis. Maryland enforces the trade through facility NPDES permits.

Maryland's NPDES permit contains the name of the entity responsible for the offset. Maryland's trading application also requires this information.

Maryland's NPDES permits contain information on the permitted flow and annual loading rates for total nitrogen and phosphorus. These permits require monthly monitoring, provide an explanation of load calculations and assumptions, and detail special conditions such as trading and the transferred credits. Maryland permits explicitly state that a facility is in violation of the permit if it discharges any substance not listed in the permit that would cause or contribute to a water quality standard exceedance. If this happened, MDE is authorized to modify, suspend, or terminate the permit. Details regarding new or increased loadings are required in Maryland permit applications, which must match water and sewer plans; the consistency between applications and plans ensures that all water quality objectives are met. Maryland requires new or expanded facilities greater than 0.1 MGD to implement ENR limits and offset as per section 5.1.4 of the MD April 2008 policy on nutrient cap management and trading.

New annual loads that are the result of trading are incorporated into Maryland's NPDES permits and are enforceable through Maryland's NPDES program. Maryland facilities remain accountable and cannot shift accountability onto the credit generator for not meeting the revised effluent limitations, although facilities can hold the credit generator accountable under contract laws if they so choose.

Permittees in Maryland must reopen permits and hold a public comment period if they obtain more credits.

The Maryland Agriculture Code Annotated, Chapter 447 (House Bill 974passed on May 4 2010, and effective June 1, 2010) not only provides legal authority for MDA to establish a voluntary nutrient credit certification program, establish its requirements, and suspend or revoke credits, but it also preserves MDE's authority to establish eligibility requirements under Maryland's permitting and other regulatory programs.

To date, Maryland has not needed to take an enforcement action against a regulated point source for a permit violation involving a trade or offset.

Maryland's trading program includes certain provisions to address risk and uncertainty inherent in trading. The uncertainty ratio in Maryland applies to certain types of BMPs. Maryland requires a 10 percent retirement reserve for each Type II trade, which is paid by the buyer. For example, if 1,000 credits are needed, then 1,100 would need to be bought. This is built into the contract; the extra 10 percent is permanently retired. This is similar to the 5 percent reserve in Maryland Type I trading.

Maryland believes that it does not need an uncertainty reserve because it uses efficiencies agreed upon by the Chesapeake Bay Program partnership. In Maryland, the reserve is not insurance for failed offsets.

Type I trades in Maryland must have legal contracts and county ordinances, in addition to the water and sewer plan. Maryland staff state that" facilities report their actual discharged loads in monthly DMRs to MDE."

For point sources, record keeping in Maryland is the same as it would be under a typical NPDES permit. For nonpoint sources, MDA has the underlying inspection authority to decertify credits from agricultural participants. Records are stored at MDA and in the online nutrient trading tool.

8. Accountability and Tracking

Necessary measures are partially in place for point source users and are being evaluated for nonpoint source users. See Section II.B.2. and Section II.A.3 and 8.

Maryland requires contracts involving nonpoint trading to have third-party yearly inspections; if the practice is annual, the inspections must be bi-annual. Under this process, the credit buyer identifies and pays for a third-party inspector. MDA is considering certifying the inspectors.

MDA expects the third-party inspectors have Natural Resource Conservation District (NRCS) training or to be retired from NCRS or State Conservation Districts (SCD). MDA and NRCS would ensure that the third-party inspectors meet NRCS standards. MDA performs random 10 percent checks in addition to the third-party verifications and, if the buyer is a NPDES facility, MDE has the right to verify the practice/credits. The MDA Secretary has the authority to decertify credits if, for example, the seller plows under the buffer. Maryland tracks traded and retired credits.

Maryland's online nutrient trading tool keeps all worksheets private until they are submitted for review to MDA. The Maryland online website lists all registered and traded credits, which are viewable by the public.

Maryland tracks NPDES permit loadings for point sources using permits for the allowable loads and through DMRs for actual discharge rates. For Maryland nonpoint sources, tracking is done in the online nutrient trading tool.

All nonpoint source credits in Maryland have a registration number that is unique to the farm since each farm can have several different practices. Each nonpoint source credit in Maryland also has a latitude and longitude descriptor to prevent double counting. Tracking of Maryland nonpoint source credits can be done online; MDE tracks items related to a buyer's permit, such as NPDES compliance and DMR data.

Maryland's online nutrient trading tool tracks multiple aspects of a nutrient trade, from the generation of credits to the actual trade. The tool can track the baseline used to generate offsets or credits; quantify credits according to standards established; sellers and buyers, delivery loads to the Chesapeake Bay; and the latitude/longitude of the generated credit. MDA and SCDs verify and inspect generated credits for nonpoint sources.

Trading contracts in Maryland contain the name of the parties to the contract and spell out the period for which the trades are applicable.

9. Nutrient Impaired Segments

Necessary measures in place for point source users and are being evaluated for nonpoint source users. See Section II.B.2.

Maryland does not permit trades that cause or contribute to any local violations of applicable water quality standards.

Maryland's nutrient trading policy helps improve water quality by offsetting credit buyer's loads with the reduced loads of credit generators. In addition, each trade in Maryland includes a reserve that is set aside.

All trading done in Maryland must meet all applicable water quality standards and TMDL requirements. For point sources, this is ensured through the Maryland permitting process. For Maryland nonpoint source generators, this is verified during the application process and the online nutrient trading tool.

Maryland's online nutrient trading system identifies local TMDLs. Maryland accounts for downstream TMDLs by utilizing the Chesapeake Bay Watershed Model to standardize credits to delivered loads to the Chesapeake Bay.

10. Credit Banking

Necessary measures are partially in place for point source users and are being evaluated for nonpoint source users. See Section II.B.2 and Section II.A.2.

Maryland's expectations regarding use of credit banks, in-lieu-of-fees, insurance, exchanges, aggregators or other third parties are as follows. Maryland will not provide a central exchange of agriculture credits. Maryland envisions the trading as free market like eBay®. Maryland traders and trades will have unique tracking numbers and registration numbers. The Maryland trading process will not include credit banks or in-lieu of programs, but will use aggregators for NPS trades. Aggregators will not be managing the process, however.

Trades in Maryland can occur between agricultural land owners and municipalities either directly or through trading brokers. Maryland will, however, review and certify the credits. The sellers are approved for certain main watersheds and MDE will review the buyer to see if applicable water quality standards will be met.

To date, MDE has only had requests for in-watershed trading and has not had cross-watershed requests.

Maryland has some interstate trading potential with the three counties in Delaware. Maryland would require the Delaware agricultural land owners to meet Maryland baseline requirements, however, Maryland may expand this capacity to other states, such as Virginia and West Virginia.

Maryland has taken some measures to reduce transaction fees related to trading, such that there are currently no fees for Type I trades in Maryland, and municipalities are using grants to subsidize the program for Type II trades. Maryland does not charge a fee for the process

applications. The maintenance of Maryland's nutrient trading website is currently paid for by grants.

11. Growth

Necessary measures are partially in place for point sources and are being evaluated for nonpoint source users. See Section II.B.2.

Section 3.2 of Maryland's final Phase I WIP provides a good description of Maryland's initiatives to manage nonpoint source growth in ways consistent with the Chesapeake Bay TMDL. Currently, Maryland has an offset group that is considering a number issues regarding growth and offsets.

IV. Additional Information and Programmatic Needs

Maryland does not use the credit based system to meet the TMDL load reduction or to offset current needs of the wastewater sector because the state uses the Bay Restoration Fund (the flush fee) to pay for nutrient removal. There is currently no process in Maryland for addressing stormwater under the trading program.

Maryland feels that municipalities will play a big role in the future implementation of trading and offset programs because municipalities will need the ability to tell developers when offsets are needed and how to obtain offsets. MDA and SCDs are currently helping local planning offices to understand the processes involved in nutrient trading.

Maryland identified the following needs for federal assistance. Maryland wants assurance that if Maryland's baseline conditions are met that the baselines will not change, especially if the baseline decreases. Maryland's concern is that if baselines decrease, facilities may no longer be able to meet baselines if they have traded away all their credits. Maryland pointed out that the agriculture baseline has changed 3 times: 1994, CAFO rule, and the tributary strategies.

In addition, Maryland noted that some WWTPs may need help going from BNR to ENR and some WWTPs have concerns regarding trading with NPS.

Maryland expressed concerns with different baseline levels in different jurisdictions and that it might be costing Maryland credits.

Maryland requires advance contracts depending on the type of trade. For example, Maryland has a 10-year cycle for point source permits.

V. Maryland References

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APPENDIX A- Maryland

1. EPA expects Maryland to develop a plan of action to address all unresolved, jurisdiction-specific Tier 1 and Tier 2 recommendations from EPA's final offsets and trading program assessment by the end of 2012. These recommendations are as follows:

Tier 1 – Statutory or Regulatory conformance

A. Point source effluent limits in Maryland should not be based on trades and/or offsets, and WQBELs should not change regardless of trading or offset status/activities. The original (pre-offset or trade) permit limit should be included in both the permit and the permit fact sheet. In the case of a new or expanding Maryland source, the discharge limit for nitrogen and phosphorus should be zero. Compliance with that limit can be added to the permit if trading or offsets are used. EPA suggests that Maryland check its NPDES permits to insure that limits are correctly reflected. See Section II.A.7.

MDE's comments:
Maryland's NPDES permits include WLAs, the nutrient cap-based permit limits for significant point sources, minor point sources and industrial point sources. WLAs serve as the baseline for generating point source discharge credits for use in trading. All new and expanded point source nutrient loads must be fully offset. MDE's discharge permits program has consulted with the EPA Region III's NPDES Permits Branch, and we have not identified any shortcoming in our approach to establishing permit limits based on trades or offsets. To-date, Maryland has not executed temporary trades. It would be helpful if EPA comments distinguish between approaches appropriate to permanent trades versus temporary trades requiring renewed implementation on an annual basis, for example.

EPA Response: EPA and MDE agreed to have a meeting/conference call to further discuss and review NPDES permit limit requirements when incorporating trading and offsets into permits for compliance purposes.

B. Appendix S of the Chesapeake Bay TMDL expects pollutant loads from new or increased loads to be offset in the event that the jurisdiction did not set aside allocations for new growth. Maryland's final Phase I WIP did not include an allocation for new nonpoint source growth. How will Maryland accommodate new nonpoint source growth? See Section IV.1.

MDE's comments:
Maryland's Phase I WIP established that all nutrient impacts from future growth must be offset if the TMDL is to be met and the Chesapeake Bay restored. The Phase I WIP planned to implement an offset policy by the end of 2013. In 2011, Maryland convened a Growth and Offset workgroup. The next steps are described in the Phase II WIP.

EPA Response: If Maryland does not develop a credible offset program to manage growth from a particular source sector, EPA expects Maryland to make a quantitative demonstration as to why those sectors either are not growing or do not contribute new or increased loads even though they are growing. This demonstration should be based on recent historical trends and be consistent with the suite of Chesapeake Bay models and their underlying assumptions. EPA expects Maryland's demonstration to address septics, agriculture and development.

2. EPA expects Maryland to address all unresolved recommendations common to all jurisdictions from EPA's final offsets and trading program assessment by the end of 2013. These recommendations are as follows:

1. Jurisdictions' definitions of trading ratios, offsets, credit, trading, etc. should be consistent with federal definitions. Some jurisdictions use the terms "trading" and "offsetting" interchangeably. See Section IV. 1.

EPA encourages the Chesapeake Bay watershed jurisdictions to provide clear and comprehensive definitions for the terms and concepts incorporated in their nutrient credit offset and trading programs. EPA notes that common terminology may be necessary or appropriate should methods or policies be developed for interstate offsets or trading. EPA expects that MD will continue to work with and support the WQGIT Trading and Offset Workgroup as trading and offset programs continue to advance in the watershed.

2. Interstate and intrabasin trades and offsets should be evaluated by the jurisdictions for potential inclusion in their trading and offset programs. See Section IV. 10.

In Section 10 of the Chesapeake Bay TMDL, EPA identified interstate trading as a potential stage in the expansion of the trading concept. EPA will continue to work with the Chesapeake Bay jurisdictions to support efficient and appropriate means of expanding nutrient credit trading to meet the goals of the TMDL. EPA expects that MD will continue to work with and support the WQGIT Trading and Offset Workgroup as trading and offset programs continue to advance

in the watershed.

3. Local governments' data and information should continue to be integrated into state tracking and accounting systems. See Section IV.8.

Conversion of land uses as the result of development and the redevelopment of land are two examples of important types of information that should be tracked and integrated into the state tracking and accounting systems. EPA expects that MD will continue to work with and support the WQGIT Trading and Offset Workgroup as trading and offset programs continue to advance in the watershed.

4. Stormwater offsets programs are being evaluated and developed in many jurisdictions. These programs should be consistent with the Chesapeake Bay TMDL and EPA regulations, policy, and guidance. See Section IV.1.

EPA looks forward to working with MD in reviewing the baseline loading reduction expectations for existing sources to achieve TMDL targets as identified in their draft Phase II WIP. EPA expects that MD will continue to work with and support the WQGIT Trading and Offset Workgroup as trading and offset programs continue to advance in the watershed.

5. Several jurisdictions are considering developing or expanding their current programs. The jurisdictions should continue to develop guidance and methodologies to address meeting baseline for point and nonpoint source sectors including consideration of the use of non-traditional Best Management Practices (BMPs) such as algal scrubbers, oyster aquaculture, etc. EPA suggests that the jurisdictions consider incorporating the retirement of credits and use of net improvement offsets in this guidance and methodology. See Section IV. 2 and 5.

EPA expects that any expansion and or development of trading and offset programs, including guidance and methodologies, will be consistent with the Chesapeake Bay TMDL, the Clean Water Act, and relevant regulations, policy, and guidance. The use of non-traditional technologies for meeting baseline for point and nonpoint source sectors needs to be consistent with the Bay model and its assumptions. The Chesapeake Bay Program does have an established process for the validation of non-traditional BMPs and inclusion of those BMPs in the Chesapeake Bay Watershed Model. EPA expects that MD will continue to work with and support the WQGIT Trading and Offset Workgroup as trading and offset programs continue to advance in the watershed.

6. Jurisdictions expressed interest in finding a good way to use stormwater BMPs to offset nonpoint sources such as new septics and nonregulated agriculture. The jurisdictions should continue to explore the potential use of that type of offset. See Section IV.2 and 5.

EPA expects MD to develop and implement a credible offset program that addresses new and increased loads, including loads from septic systems and other on-site systems. EPA expects that MD will continue to work with and support the WQGIT Trading and Offset Workgroup as trading and offset programs continue to advance in the watershed.

7. Updating enforcement policies and procedures should continue and include, but not be limited to, items such as inspectors' access to off-site areas where credits or offsets are generated and compliance determination methodology. See Section IV.7.

EPA expects that the jurisdiction develops and implements a Trading and/or Offset Compliance Monitoring Strategy and the policies/guidance necessary to implement the strategy. The strategy

should provide for regular on site verification by the jurisdiction of generator requirements and conditions to ensure that credits generated are credible.

8. Jurisdictions should continue to develop tracking and accounting systems for new or increased loads and offsets for those loads. These systems should be transparent and accessible to the public. See Section IV. 8.

EPA expects the jurisdictions to develop and implement a tracking and accounting system for new or increased loads and offsets of those loads to ensure that progress is maintained in achieving Bay goals. Tracking of offsets is expected regardless of whether the jurisdiction has a well-developed offset and /or trading program or is conducting offsets or trades on a case-by-case basis while it determines whether to develop a formal program.

9. .Jurisdictions should ensure that adequate resources are available to fully implement the developing trading and offset programs. See Section V.

EPA expects the jurisdictions to provide additional resources, as needed, to fully implement their developing trading and offset programs. EPA expects the jurisdictions to provide adequate resources regardless of whether the jurisdiction has a well-developed offset and/or trading program or is conducting offsets or trades on a case-by-case basis while it determines whether to develop a formal program.