

**WV Potomac Nutrient Credit Bank and Trade
Program**

**NRCS Conservation Innovation Grant
NRCS 68-3A75-6-185**

**Biannual Progress Report:
February-August 2008**

**West Virginia Water Research Institute
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Executive Summary

The majority of the effort this reporting period focused on working with WVDEP and the Steering Committee to finalize both the draft statewide trading guidance, the Potomac basin specific nutrient trading guidance and supporting documentation. Critical issues that remain unresolved include: Establishing the appropriate baseline for the agriculture sector to achieve before generating credits; inclusion of nutrient limits/allocation for wastewater treatment facilities discharging less than 50,000 gpd; and, determining the appropriate methodology for calculating credits for the urban and mixed open sectors.

Stakeholder efforts undertaken during this reporting period included: A number of conference calls with WVDEP to discuss and refine the draft guidance documents; a full project steering committee meeting in April to present and discuss the draft guidance; a point source sector briefing of the trading program status in May; and, a meeting of the agriculture workgroup to review Nutrient Net calculation methodologies in June.

The full cost-share commitment to this project has been fulfilled via the WV Conservation Agency pasture liming program and an additional cash commitment in the amount of \$102,300 from our subcontractor, The World Resources Institute. Over the past five years the WVCA liming program has achieved an average reduction of phosphorus loading of 1,515 pounds/year at an investment of \$284,448.

As reported in the last progress report the city of Martinsburg, WV has filed an NPDES permit appeal of nutrient load limitations implemented by the WVDEP. Attorneys for Martinsburg argue that WVDEP does not have authority under WV code to require nutrient reductions by point source dischargers. The outcome of this action has the potential to delay implementation of point source nutrient requirements and thereby delay participation in the Potomac trading program. Several settlement meetings have taken place and the parties have agreed to continue the appeal at a hearing before the Environmental Quality Board in September.

Activities this reporting period

Steering committee meetings and Tasks 2 and 3. Target stakeholder group meetings.

Stakeholder engagement continued this period with phone conferences and meetings including WVDEP, the project steering committee, Potomac basin NPDES permit holders (point source sector) and the project agriculture credit calculation workgroup. The Core Team has not met this reporting period but has been active in the process of document review and editing on a member by member basis.

Steering Committee Meetings: The steering committee met April 8, 2008 at WVU to discuss the draft trading framework including both the state trading guidance as well as

the Potomac basin specific guidance. The meeting minutes are included as attachment 1 to this report. The steering committee serves the project core team in an advisory capacity and provides broad stakeholder representation and outreach to both the non-point and point source sectors. The committee also advises the core team of the most workable combination of elements to be incorporated into the trading framework.

The meeting discussion included determining the appropriate baseline for agriculture and urban/mixed open sectors for credit generation, the importance of WVDEP applying nutrient permit limits and load allocations to sewage facilities with less than 50,000 gpd capacity and the importance of third party aggregators to the development of a robust trading program.

May 14, 2008 Point Source Sector Briefing, Martinsburg, WV. Industrial and municipal Potomac River basin NPDES permit holders with nutrient load allocations were briefed on the status of the nascent trading program.

The agenda and invitation are provided herein as attachment 2. Presentations on the status and program requirements of the Potomac trading program, WVDEP nutrient allocation program in the Potomac basin and an overview of the EPA watershed based permitting program can be found on the project website (<http://wvri.nrcce.wvu.edu/programs/pwqb/index.cfm>).

Of the 56 invitees only 12 municipal and two industrial representatives attended. The low interest is attributed to the fact that WVDEP has only recently begun issuing nutrient limits and load allocations in NPDES permit renewals (v/s revoking and reissuing all permits at the same time). Moreover the language the agency is including in the permits indicates that nutrient limits/allocations are applicable unless funding can not be obtained. Therefore, until the WVDEP sends a stronger signal to NPDES permittees that compliance with nutrient obligations is mandatory there will continue to be little or no interest in a trading program.

At the briefing municipal facility representatives expressed an interest in a watershed based permit to provide for the possibility of trading among point source dischargers. However, to date the agency has been unresponsive to requests from permit holders. We believe that a watershed permit in the Potomac basin would likely spur point-to-point source trading providing a forum for participants to become familiar with the opportunities associated with trading including point to non-point trades that will be needed as offset credits for new facilities as well as expansions.

To address this issue we are working with the WVDEP and Freshwater Institute to organize a watershed based permitting workshop for agency and NPDES permittees.

Core team meetings: The Core Team presents WV Water Quality Trading program to key WVDEP staff members to discuss how various WVDEP policies have adverse implications for creating a viable trading program as well as meet WVs nutrient reduction commitment to the Bay Program. The core team has not formally met this reporting period but has been active individually revising and editing the trading

guidance documents. Additionally the core team drafted and sent a memorandum to the WVDEP Cabinet Secretary and Director of Water and Waste Management requesting that the agency reconsider its position of exempting sewage facilities of >50,000gpd capacity from nutrient limits and load allocations (Attachment 3). The rationale for this request is that exclusion of a subset of NPDES permit holders from meeting nutrient requirements is inequitable reducing the demand for credits and ultimately the robustness and potential success of the trading program.

WVDEP responded in part by allowing for generation of credits when these smaller facilities are taken off line or absorbed by a municipal system. In addition the Chesapeake Bay Program is reconsidering its position on the small sewage facility exemption.

June 17, 2008 Agriculture Credit Calculation Workgroup Meeting, Keyser, WV:

The purpose of this meeting was to test the effect of various baselines on the generation of trading credits from agriculture operations in the Potomac basin. It was generally agreed by the steering committee to apply a baseline on a specific field nutrient loading rate (pounds/yr) (MD program) as opposed to prescribing implementation of certain practices (VA and PA programs) before credits can be generated. The issue addressed by the group is the level of loading that must first be met on a field basis. By running various scenarios of Nutrient Net we were able to determine that it is most equitable to use the CBM Edge of Field (EOF) loading rates for the specific land uses (High Till, Pasture, Hay and Manure) within each segment. These rates will be incorporated into the trading guidance and we plan to further test them on several cooperating farms in the fall to determine their efficacy. A draft meeting summary is attachment 4.

Task 1a. Interstate coordination and collaboration on development of WV trading program: The project team has participated in the following activities to ensure that the Potomac trading program design reflects lessons learned from other trading programs and that it does not preclude future interstate trading opportunities.

Interstate Water Quality Trading Conference Calls: Project staff continues to participate in the EPA Interstate Water Quality Trading Conference Call series coordinated with Patricia Gleason from Region 3 EPA. The objective of these calls is to inform Bay state participants of trading program developments in the respective states with the ultimate goal of developing a bay-wide trading program.

Outputs to date

Task 3. Nutrient Reductions for Local Benefits: Rocky Marsh watershed project.

The National Fisheries and Wildlife Foundation awarded a Targeted Watershed Grant to the Conservation Fund's Freshwater Institute and collaborator West Virginia Water Research Institute in February 2007. The goal of this complementary project is to implement a pilot trading project in Rocky Marsh watershed, Jefferson County, WV that emphasizes local agency/organization/business cooperation in exchange for the explicit

generation of ancillary local benefits from nutrient offset projects. The project also emphasizes generation of credits from urban/mixed-open land use areas. This project is critical for this NRCS CIG project as it solidified WVDEP commitment to participate in a water quality trading program and will advance the actualization of CIG grant Task 3, Program Implementation.

The project team has met with the Freshwater Institute team and identified respective tasks to be accomplished to complement the goals and objectives of both projects. Additionally, preliminary meetings have been held with the City of Ranson, WV to identify opportunities for generating urban/mixed open credits associated with low impact development and a newly established city park.

Task 2. Potomac Trading Website
<http://www.wri.nrcce.wvu.edu/programs/pwqb/index.cfm>: The WV Potomac Trading Website is a continually evolving website designed to advance the project goals of transparency, public outreach, and keeping stakeholders as well as our steering committee members informed with the latest reports, organizational links, and materials related to the WV program process. New postings include: The current draft trading guidance documents, and the point source sector briefing presentations.

In addition, in an effort to engage and inform the point source sector of the developing nutrient trading program we prepared an article for publication the the WV public Service Commission's newsletter *Pipeline*. A copy of this article is included as attachment 5.

Task 1. Draft WV (statewide and Potomac River specific) trading guidance (Attachments 6 and 7.

These documents represent the latest draft trading guidance that will be reviewed once again by WVDEP and the steering committee before issued for public comment.

Subtasks 1a-1d. Technical development of WV Nutrient Net: This task has been implemented through conference calls with the Agricultural Technical Workgroup and subsequent call notes; follow-up from conference calls; side-meetings with needed technical experts; drafting of policy decision piece and initial analysis concerning Chesapeake Bay Model data needs. We are working with WRI, WVU and NRCS soil nutrient experts to evaluate and compare BMP efficiency rates, runoff coefficients, soil retention factors, equivalence factors, and other inputs and assumptions used by the CBWM with equivalent WV-specific water quality, soil, land use and other pertinent data and information to establish appropriate efficiency rates for practices.

The summary of WRI work performed to date includes:

Progress Report

Summary

The World Resources Institute continued to be active in the initial stakeholder process. It has contributed its knowledge of water quality trading programs across the U.S. to help identify critical policy decisions. WRI developed the straw-man calculations and has performed outreach and follow-up with technical experts for the purposes of refining these calculations for West Virginia. WRI will continue to be active in the stakeholder process as it works through the program design and implementation phases.

Task 1. Develop Accurate Data and Information to Inform Process

Subtask 1a. Utilize and build on existing trading programs (Great Miami, Conestoga, etc.), State trading policies and rules (Pennsylvania, Virginia, Michigan, etc.), and EPA policy and guidance to identify key program elements and “lessons learned” that are transferable to the Potomac Watershed.

Status: Ongoing

Work to date: WRI continued to provide feedback and expertise to the project members via phone calls and meetings.

Planned Work: While the initial research is complete, the program design phase and stakeholder process will continue to draw upon lessons-learned from existing and emerging programs.

Subtask 1b. Evaluate and compare BMP efficiency rates, runoff coefficients, soil retention factors, equivalence factors, and other inputs and assumptions used by the CBWM with equivalent WV-specific water quality, soil, land use and other pertinent data and information to establish appropriate efficiency rates for practices.

Status: In progress (95% complete)

Work to date: Have gathered appropriate CBWM and agronomic factors from WVU, NRCS, and CBP. This data has been incorporated into spreadsheets.

Planned Work: Continue follow-up work to determine appropriate agricultural nitrogen calculation methodologies where needed; finalize eligible BMP list; gather input for animal operation calculations.

Deliverables:

- CBWM delivery factors and baseline factors table. (in progress)

Subtask 1c. Based on findings from Subtask 1b, develop WV specific BMP efficiency rates, soil nutrient retention factors, equivalence factors, and runoff coefficients that can be used to tailor NutrientNet.

Status: In progress (80% complete)

Work to date: Draft N and P spreadsheets for crop and pasture.

Planned Work: Finalize N and P spreadsheets for crop and pasture, and develop N and P spreadsheets for animal operations.

Deliverables:

- Draft N spreadsheet for crop/pasture (complete)
- Draft N spreadsheet for animal operations (in progress)
- Draft P spreadsheet for crop/pasture (complete)
- Draft P spreadsheet for animal operations (in progress)
- Final N spreadsheet for crop/pasture (in progress)
- Final N spreadsheet for animal operations
- Final P spreadsheet for crop/pasture (in progress)
- Final P spreadsheet for animal operations

Subtask 1d. Modify NutrientNet and develop various trading scenarios to estimate potential credit supply and demand, relative incremental credit costs and projected loading reductions.

Status: In progress (20% complete)

Work to Date: Developers have begun site set-up of marketplace and administrative modules based on PA-NN site design.

Planned Work: Develop beta version of NutrientNet-WV. Beta version will start with development of marketplace and administrative module. Nonpoint and point source calculations will be incorporated once spreadsheets from above task are finalized.

Deliverables:

- Beta version of NN marketplace and administrative modules (in progress)
- Final version of NN marketplace and administrative modules
- Beta version of NN nonpoint and point source credit calculation tools
- Final version of NN nonpoint and point source credit calculation tools

Task 2. Develop and Implement Stakeholder Process

Status: ongoing

Work to date: WRI attended the following stakeholder meetings:

- March 6, 2007 – Morgantown (WRI presented a demo of NutrientNet)
- May 1, 2007 - Shepherdstown
- July 11, 2007 - Moorefield
- September 28, 2007 - Charlestown
- April 8, 2008 – Morgantown
- June 17, 2008 – Keyser, WV (WRI presented nonpoint source worksheets and solicited input)

Planned Work: WRI will continue to attend stakeholder meetings and conduct outreach as necessary.

Task 3. Develop Trading Rules and Infrastructure and Implement Program

WRI will work with project team to develop a trading policy for West Virginia pilot project.

Status: In progress

Work to date: WRI has provided comments and input on draft policy. WRI attended stakeholder meeting to review draft policy in March.

Planned Work: WRI will continue to provide input and feedback as needed as draft moves forward and becomes final.

Project Cost Share

The cost share commitment of this project has been exceeded with an additional cash contribution from project partner The World Institute and the match of the WV Conservation Agency pasture liming program (Attachment 9).

The original proposal contemplated raising cost share from the point source sector by providing a reduced trading ratio to NPDES permitted facilities for early buy-in to the trading project. This cash infusion was to be used to capitalize the trading bank. However, the WVDEP has chosen to implement nutrient limits and load allocations upon NPDES permit renewal rather than to revoke and reissue permits. The consequence of this action is that only a handful of facilities have received nutrient limitations. Moreover, as noted above several municipalities have appealed their NPDES permit nutrient limitations to the state. Therefore, pending the outcome of the appeal and the full implementation of nutrient discharge limits point sources are unlikely to be willing to participate in early buy-in to the trading program. We have included the early buy-in provision in the Potomac trading guidance and are hopeful that when these issues are resolved (or EPA develops a TMDL) interest will develop in participating in the early buy-in provision.

In lieu of the proposed cost share approach we have obtained an additional \$102,300 cash match from project partner The World Resources Institute and \$284,488 from the WV Conservation Agency through its pasture liming program. Since its inception this program has resulted in the reduction of 23,469 ton/yr of sediment and 1,514 pounds/year of phosphorus to the Potomac River and Chesapeake Bay.

Next six months (September 2008 – February 2009)

- **Task 1a.** Develop and submit Targeted Watershed Grant proposal to EPA for funding to evaluate feasibility of expanding Potomac trading program to WV Ohio drainage.
- **Task 1c.** Continue development of NNet-WV for phosphorous and sediment calculations; finalize agriculture baseline issue.
- **Task 1d.** Continue analysis of credit supply and demand.
- **Tasks 1c and d.** Implement required modifications for *NutrientNet* and beta test on model farms.
- **Task 2.** meet with major point sources and producers to present and assess interest in trading program.
- **Task 2.** Publication of another project article in *Pipelines*, the state Public Service Commission newsletter.
- **Task 2.** Collaborate with Tom Schueler on WV urban stormwater plan for the Bay states.
- **Task 2b.** Continue to develop WV Water Quality Trading information website.
- **Task 2/3.** Review final draft trading guidance with Steering Committee and WVDEP.
- **Task 2/3.** Clear WV Trading Policy, Guidance, and Potomac Program guidance through WVDEP and steering committee and post for public comment; assist DEP in responding to public comments.
- **Task 3.** Core Team meeting with WVDEP on policy and program developments
- **Task 3.** Coordination of CIG and Targeted Watershed trading grants – continue participating in riparian buffer/stormwater/wetland project development

Attachments

Attachment 1: Minutes of April 8, 2008 Steering Committee meeting

Attachment 2: Agenda and invitation to May 14, 2008 Point Source sector Briefing

Attachment 3: Memo to WVDEP leadership requesting reconsideration of the >50,000 gpd nutrient permitting policy

Attachment 4: Minutes of June 17, 2008 Agriculture baseline workgroup meeting

Attachment 5: WV public Service Commission newsletter article on the Potomac trading program

Attachment 6: WV Draft Trading Framework Guidance

Attachment 7: Potomac River Draft Trading Framework Guidance

Attachment 8: Cost share commitments-World Resources Institute and WV Conservation Agency

Attachment 1

Potomac Nutrient Trading Steering Committee Meeting Minutes April 8, 2008

1. **Attendance:** Randy Sovic, Mike Warwick, Bill Brannon, Jennifer Pauer, WVDEP; Tom Brand, WVCA; Fred Blackmer JCHBA; Tom Basden, WVU; Pat Bowen, Isaac Wolford, NRCS; Rick Herd, Jen Fulton, Alyse Schrecongost WVVRI; Matt Monroe, WVDA; Mindy Selman, World Resources Institute. **By phone:** Pat Gleason, EPA; Bryan Moore, TU; Joseph Hankins and Michael Schwartz, FWI.
2. Review of State and Potomac Specific Trading Guidance Issues
 - ✓ **Insignificant Dischargers (<50,000gpd)**
 - Discuss memo from trading team to WVDEP requesting policy review of the insignificants' current exclusion from nutrient limits.
 - Current trading baseline criteria for credit generation has been put on hold along with the issue of assigning limits in permits, but language is in draft guidance.
 - Benefit to leaving in baseline language for credit generation purposes, even if there are not yet permit limits.
 - Fred Blackmer raises point that some package plants treat below baseline, so PSDs could generate (and are interested in) credit for bringing old package plants on line, or the newer package plants that treat below baseline.
 - Check in on May 10 with WVDEP about internal discussions/decision regarding treating nonsignificants the same as larger facilities.
 - ✓ **Providing for Third Parties to Purchase/Sell Credits**
 - Stratton- wants to make distinction between brokerage roles and aggregators that can aggregate and 'hoard' credits to drive up prices.
 - Selman – role of third party as opposed to broker is that contract is w/ 3rd party as opposed to with the farmer which allows for easier management of liability and contract enforcement – politically and organizationally. Suggests language that allows for WVDEP final approval of credit sales that would allow for the Agency to block transactions that are unfair. Role of 3rd parties will be important in interstate trading.
 - Brand – based on air trading, let the mkt set the price or the gov't will have to set an inflexible price.
 - Blackmer suggested putting in a line that would limit any one aggregator from managing more than 30% (or whatever the % should be) to avoid any single control over the market.
 - Schrec – this may preclude good actors from having mkt control in an already small mkt (if there are high fixed costs to becoming an

- aggregator, there may not be room for more than one aggregator to buy/sell and clear costs).
- Basden – role for professional service organization that does brokering, risk management, and technical service extension.
 - Credit sellers have control over duration of credit sale contracts just like ag product futures markets and buyers can back out of contracts if prices increase. Flexibility and protection to allow for buying and selling independently of a hypothetical monopsony (single) buyer with excessive price setting control: 1) farmers have experience with prices and long term contracts; 2) pt source buyers have limited budgets that have to be approved by PSC and rates that are passed onto ratepayers, so there is extensive public check on credit prices going too high.
 - WVDEP could possibly establish a percentage per credit/per farm (or some combo) that an aggregator is allowed to take.
 - Alyse will fix definitions and suggest some protective language for guidance and discuss with Stratton to refine.
- ✓ **Agriculture baseline-WRI demonstration of *NutrientNet***
- Demonstration worksheet, in process of modification from PA NNet worksheets.
 - Baseline and Ratios are going to be critical to making the program reliable/ acceptable and must be documented. Alyse to revise 2-pager that explains need for and reasoning behind ratios in guidance and post on-line.
 - Post new demo/draft worksheet online for now with note that it will be revised based on CBModel and WV updates.
 - Herd explained three approaches to baseline- 1) 3 years of monitoring before credit generation (OH); 2) specific suite of BMPs that must be installed before generating credits (PA and VA); 3) select an average load per acre that must be achieved before credits can be generated beyond that average (MD). Based on feedback from other states and ag stakeholder group, WV has proposed to follow MD's example. Also because MD is downstream and synchronizing our programs could make the most sense for facilitating interstate trading in the future.
 - Mindy demonstrated development of how WV baseline was developed. Baselines from segments will be trib strategy goals averaged across segments. Averages may vary by large categories of landuse or crop type.
 - Rick suggests that an alternative is to use 2006 numbers rather than goal, but then credits generated are used to allow pt source load increases, so achieving goal becomes impossible.
 - Bowen offers to have NRCS evaluate what ag activities and conservation practices are actually present in each of the segments and how they correspond with the segment goals.

- Mindy/Basden to run through some real world examples in various segments to determine if averaging or segment-specific numbers make more sense.
- Mindy/Basden to work through NNet examples and trouble shoot for other problems in estimates and assumptions.
- ✓ **Providing for discounted Trading Ratio for point source early buy-in**
 - Team will write up some language and share with WVDEP
- ✓ **Baseline suggestions for septic**
 - Bay Foundation/Progam/EPA (Trading or On Site Manuals) may have appropriate numbers, but we would need to have separate baselines for various categories of service (10-13 lbs per person per year are numbers used in various places).
 - Connect
 - Pump
 - Upgrade
 - Jefferson County rules require that only traditional septic tanks are allowed... this should be changed. County sanitarian measurements and estimates are not reliable for developing baselines or estimates for trading program.
 - Alyse to make suggestions based on other states' and guidance documents.
- ✓ **Baseline for urban-mixed-open land category**
 - Working through possible scenarios with RMRun and Ranson possible projects to use to help develop rules for UMO specifics.
 - Need to have stakeholder group meeting
- ✓ **Next steps/Next meeting**
 - NRCS segment activities evaluation
 - Fix 3rd party language
 - WVDEP to evaluate current language on <50Kgpd facilities' capacity to generate credits.
 - NNet trial model runs with WV examples
 - Septic baseline recommendations based on other states and programs
 - Next SC meeting to be scheduled following completion of above action items/revisions to guidance.

Attachment 2

**Point Source Sector Briefing Agenda and Invitation
May 14, 2008
Martinsburg, WV**

AGENDA

Potomac, WV Nutrient Trading Program
Point Source Sector Meeting
Berkeley County PSSD
Martinsburg, WV
May 14, 2008

- Welcome and Introductions
- Meeting purpose
- Review WV Water Research Institute Water Quality Trading grant project goals and status (20)
- WVDEP update on nutrient requirements in Potomac NPDES permits (20)
- EPA discussion of watershed based permitting: ideas and potential benefits for WV *plus* Q&A (45)
- Overview WV Water Quality Trading Guidance and WV Potomac Program Guidance documents (35)
- Questions, comments, discussion session (remaining time)

Website <http://wwri.nrcce.wvu.edu/programs/pwqb/index.cfm>

Berkeley County Public Service Sewer District

May 14, 2008

1:00 - 4:00

This session is intended to inform the point source community about the status of the WVVRI Water Quality Trading Project *AND* to solicit feedback and suggestions from the stakeholder community.

Hosted by the WV Water Research Institute

RSVP/QUESTIONS: 304.293.2867 x5450

Water Quality Trading in the
WV Potomac River Basin

WV Potomac Point Source Stakeholder Briefing

Agenda to include:

- WVDEP update on nutrient requirements in Potomac NPDES permits;
- EPA discussion of watershed based permitting: ideas and potential benefits for WV *plus* Q&A;
- Review WV Water Research Institute Water Quality Trading grant project goals and status;
- WV Water Quality Trading Guidance and WV Potomac Program Guidance documents: review, questions, com-ment session.

DIRECTIONS: Berkeley Co PSSD Administrative Office, 65 District Way. From I-81, take Exit 16E onto Edwin Miller Blvd. Turn left at the light after the Sheetz, take the next right, and a then left onto District Way. The PSSD is at the end of the cul de sac.
Lost? (304) 263-8566

Attachment 3

Memorandum to WVDEP Requesting Reconsideration of >50,000 GPD Nutrient Permitting Policy

Memorandum

Regarding: Environmental and economic importance of including nutrient limits in NPDES permits for point sources <50K gpd

Date: March 26, 2008

To: WV Department of Environmental Protection Secretary Stephanie Timmermeyer
Lisa McClung, Director of WVDEP Office of Water and Wastewater

From: Richard Herd and Alyse Schrecongost, WV Potomac Water Quality Trading Program

Background

This memo addresses the current exclusion of sewage facilities with a <50,000 gpd design flow from nutrient management requirements that are similar to larger facilities in the Potomac Basin. According to the WV Potomac Tributary Strategy, this group represented **74%** of the permitted wastewater facilities in 2002, and permits continue to be issued regularly in the region due to rapid population growth and development.

Facilities over 50K gpd are required to offset new loads, which results in increased expenditure on environmental protection. Developers currently face an incentive to avoid connecting to major infrastructure projects and use the one-time available funds to instead advance development through the construction of package plants that, seemingly arbitrarily, are exempt from the nutrient offset requirements. These package plants and smaller facilities steer funding away from necessary public water and wastewater infrastructure extensions and environmental protection investments. The proliferation of these smaller facilities, at the expense of sustainable infrastructure investments, threatens local sourcewater supplies and increases the state's nutrient load to the Bay.

The expenses related to short sighted and unsustainable infrastructure planning and development will arise not only in terms of public health risk and environmental degradation, but will also entail a significant financial burden to the state when the Chesapeake Bay TMDL is implemented. Funds available and used for package plants to skirt regulatory requirements in the short run could be used to prevent the inevitable expensive retrofits and upgrades in the future. These future costs will fall to the public as a whole because the state is not tying those costs to the new pollution sources now, when funds are available in the private sector.

Based on the general permit list provided to us by WVDEP (July 2007), this <50K gpd sector comprises well over 2.5M gpd of the design flow discharges into the Potomac drainage. For the most part, these small package plants have not been designed to achieve nutrient reductions and therefore constitute a significant PS nutrient loading that, if not addressed, are likely to increase dramatically in the future. Despite this, the group of permittees does not face nutrient load reduction or offset requirements, and are not addressed in the WV Potomac Tributary Strategy Point Source Implementation Plan within the State's Tributary Strategy document of 2004 (relevant sections and PSIG concerns and recommendations are included in this memo below).

With respect to the WV Potomac Water Quality Trading Program, WVDEP staff further suggested in comments on the draft trading guidance, eliminating the category of facilities under 50,000 gpd as an eligible source of nutrient offsets if taken off-line by larger facilities as they extend their networks. This, essentially, creates an additional layer of significant costs for municipal/county and other larger facilities if extending wastewater treatment infrastructure services sustainably to accommodate current and reasonably anticipated future growth patterns. The elimination of this category of point sources could also undermine future efforts to launch interstate trading agreements, which could otherwise have the potential to generate future environmental and economic benefits in West Virginia, as surrounding states are all addressing this category of permittees in their nutrient management strategies.

Thank you for taking the time to review this policy analysis and stakeholder concerns highlighted in this memo. We would be happy to meet with you at your convenience to discuss this important issue.

Concerns of the Point Source Innovation Working Group

Issues that support the application of nutrient requirements to this group are enumerated below for consideration and discussion. Many of these issues were addressed in the Point Source Working Group conclusions, reported in the Tributary Strategy Implementation Plan.

- 1) Monitoring all permitted facilities improves transparency and regional nutrient discharge accounting. This accounting will also be useful for management of issues ancillary to monitoring for nutrient loading such as source water protection and other WV Bureau of Public Health concerns, addressing/avoiding discharge-related local water quality impairments (nutrient and non-nutrient impairments), and overall ability for state agencies to efficiently and effectively monitor and enforce general permit compliance.

Current approaches to registering, tracking, and monitoring permitted facilities under 50,000 gpd does not allow the state to monitor and properly manage the rate of growth in nutrient loadings and other ancillary environmental impacts such as sprawl related to growth in this sector.

- 2) While upgrading to meet new nutrient concentration limits may be cost prohibitive for some *existing* facilities <50,000 gpd, all facilities can reasonably monitor and report concentration levels. This monitoring data will also facilitate opportunities for larger point sources to realize opportunities for generating offsets by upgrading/connecting significant nutrient loading problems among the smaller facilities. Requiring all existing <50,000 gpd facilities to upgrade to stringent nutrient removal technologies is politically and economically problematic in the near term. However, these facilities should be assigned a nutrient load allocation (NLA) based on reasonable or demonstrated performance. In the future, as the scarcity of nutrient load allocations for new and other expanding sources becomes acute, there will be financial incentive to bring capital to upgrade or eliminate these obsolete or under-performing sources. *Absent a clear quantifiable allocation policy there will be no incentives to reduce or even halt the increase of nutrient loadings from small facilities.*
- 3) Requiring *new* facilities with <50,000gpd design flow to totally offset its nutrient load will likely improve the liquidity of the developing water quality trading market (also see points 6 & 7 below).
- 4) Data from monitoring of all NPDES permittees would contribute to general knowledge water quality issues in the area if it were included in the ERIS/PCS compliance program.
- 5) Meeting concentration limits and offsets for *new* facilities <50,000 gpd should be financially feasible given available technology. Enhanced nutrient removal with membrane bioreactors (MBR) and the next generation of sequencing batch reactors (SBR) will allow smaller footprint and modular capacity plants to perform as well or better than large facilities with extensive and capital-intensive collection systems.

Issues specific to wastewater facilities:

- 6) If treatment facilities *above* 50,000 gpd face nutrient requirements for existing design flows and those under 50,000 gpd do not, then existing facilities and the customers they serve face uneven burdens for environmental quality protection costs.
- 7) If treatment facilities *above* 50,000 gpd face nutrient requirements for expanded design flows, these costs can reasonably be expected to be passed on in full or in part to the newly connecting users (developers/homebuilders, etc). If new facilities under 50,000 gpd do not face nutrient requirements, new developments will have a financial incentive to install package plants, drip fields and other solutions that remain just under 50,000 gpd rather than connecting to larger system. This would likely result in the following:
 - a. An unintended consequence is likely to be the proliferation of smaller systems under the <50,000 gpd line, an outcome that seems at odds with

- sustainable infrastructure planning, public safety for drinking water in karst areas, and environmental policy goals;
- b. Increasingly the cost burden of nutrient reduction requirements will fall more heavily on the existing rate payers of major centralized systems and other significant private sector dischargers and miss the potential economic contribution from new growth and development;
 - c. New developments generating new nutrient streams will avoid any wastewater related nutrient requirements;
 - d. Cap maintenance will be increasingly difficult to manage if new permitted sources of nutrients are excluded from nutrient reporting and management requirements.
- 8) New customer wastewater connection fees for capacity impact or improvement in WV range from \$1,581 (Berkeley county PSSD) to \$7,500 Jefferson County PSD proposed). The same fees in neighboring VA and MD counties reach as high as \$11,700 (Clark County, VA).
- 9) Requiring new developments to address their new nutrient loads financially when connecting as a new load to a wastewater facility may encourage developers/builders to address nutrient loading structurally and more holistically in their project design (e.g. offsetting nutrient loadings on-site by investing in alternative development designs to generate nutrient credits such as protecting forested riparian buffers, investing in creative stormwater management techniques, etc.).

Point Source Innovation Workgroup Final Recommendations Document – July 2005, Sections 310 and 315

Expansion of the point source sector cap load allocation. The PSIG recommends that all identifiable point sources, irrespective of scale, are consolidated into the point source sector for Bay modeling and reporting purposes. Currently point sources below 50,000 gpd are lumped into a general land use of mixed open and urban and treated as non-point loading by assumption. The PSIG finds this problematic and inequitable and notes that the new version of the Bay model provides for specific extraction and modeling of all point sources down to the individual on-site level. The PSIG observes that changing land use patterns in WV will favor dramatic expansion of smaller decentralized or cluster treatment systems and is concerned that the nutrient control implementation strategy captures the broadest possible base of potential nutrient discharge actors. An artificial bright-line of nutrient control exemption will create additional pressure for the small-scale decentralization and make cap load maintenance impossible to achieve in the future.

Recommendations to WVDEP from Point Source Innovation Work Group as cited by the WV Potomac Tributary Strategy Implementation Plan

- 1) **Modify all discharge permits, regardless of scale of discharge, to incorporate TN and TP monitoring.** There is no current basis for accurately projecting actual point source nutrient discharges in the absence of performance information. It is important to create an accurate, real world base-line of nutrient loads to fairly credit progress and to assist in Bay watershed model calibration. In addition to the immediate imposition of monitoring, accelerated handling, or electronic submission of DMRs should be made near real time and in concert with national or regional permit compliance systems. Transparency and timeliness are important.
- 2) **Begin to incorporate nutrient load limits into all new and existing discharge permits.** Priority should be on permit reissuance and major modifications based on facilities likely to discharge nutrients, discharge scale and proximity to the Bay.
- 3) **Expand point source sector cap load allocation.** All identifiable point sources, irrespective of scale, should be consolidated into the point source sector for Bay modeling and reporting purposes. Currently discharges of <50,000 gpd are lumped into a general land use of mixed open and urban and treated as non-point loading by assumption. The new version of the Bay model provides for specific extraction and modeling of all point sources down to the individual on-site level. Changing land use patterns in West Virginia will favor dramatic expansion of smaller decentralized or cluster treatment systems. The nutrient control implementation strategy must capture the broadest possible base of potential nutrient discharge actors.
- 4) **Assign nutrient load allocations (NLA).** Nutrient load allocations should be the mechanism for point source dischargers to benchmark individual facility nutrient control performance over an assigned time period. Nutrient load allocations should be based on effluent averaging and reflect that seasonal removal performance will vary and that total annual load is more important than instantaneous concentration. Annual NLA can be achieved by some combination of actual discharge and the use of offsets or credits through partnership with others. Assignment of NLA may also be based on prospective performance drawn from the Best Available Demonstrated Control Technology (BADCT) literature.
- 5) **Develop a framework for watershed permitting or nutrient trading as part of an inter-state Potomac Basin strategy.** In the absence of an in-place and articulated watershed permitting or trading program it appears that West Virginia point sources will seek technological upgrades as a near-term response to nutrient reduction objectives. Sustained maintenance of cap load achievement goals in the

context of double digit population growth and rapid land use conversion will require the development of a framework system of offsets and/or credit trading within and, more likely, with actors external to the point source sector. Critical to such a framework is the certification and monitoring of trades, the creation of a credit reserve buffer for excursions and new projects, flexibility in capital and operational financing of trading investments and coordination with local planning to assure offset consideration.

6) Develop nutrient-based pretreatment requirement or treatability standards.

A generalized approach to nutrient prevention should be created through development of pre-treatment state standards for nutrients similar to the approach for toxics. These standards would require the connecting customer (including residential) to maintain a waste stream that is cost-effective and equitable to treat and that would not lead to WWTP violations or loss of nutrient load allocation capacity. Making nutrient limitations a condition of wastewater treatment service will place part of the responsibility for the treatability cost in the hands of the generator.

Attachment 4

Agriculture Baseline Workgroup Meeting

June 17, 2008

Potomac State College

Keyser, WV

Participants

Michael Schwartz-FWI

Mindy Selman, WRI

Issac Wolford, NRCS

Tom Basden, WVU

Randy Sovid, WVDEP

Tom Brand, WVCA/WVU

Rick Herd, WVU

Objective

Agree on an agriculture baseline that is equitable and achieves real nutrient reductions.

Background

The agriculture baseline is defined as the level of nutrient reduction that must be achieved before a producer can begin generating nutrient trading credits. There are three approaches for establishing baselines: 1. Prescribe installation of a minimum level of BMPs (Pennsylvania and Virginia approach); 2. monitor pre-BMP nutrient loading (Ohio approach); and 3. establish a numeric nutrient load to be achieved (Maryland approach).

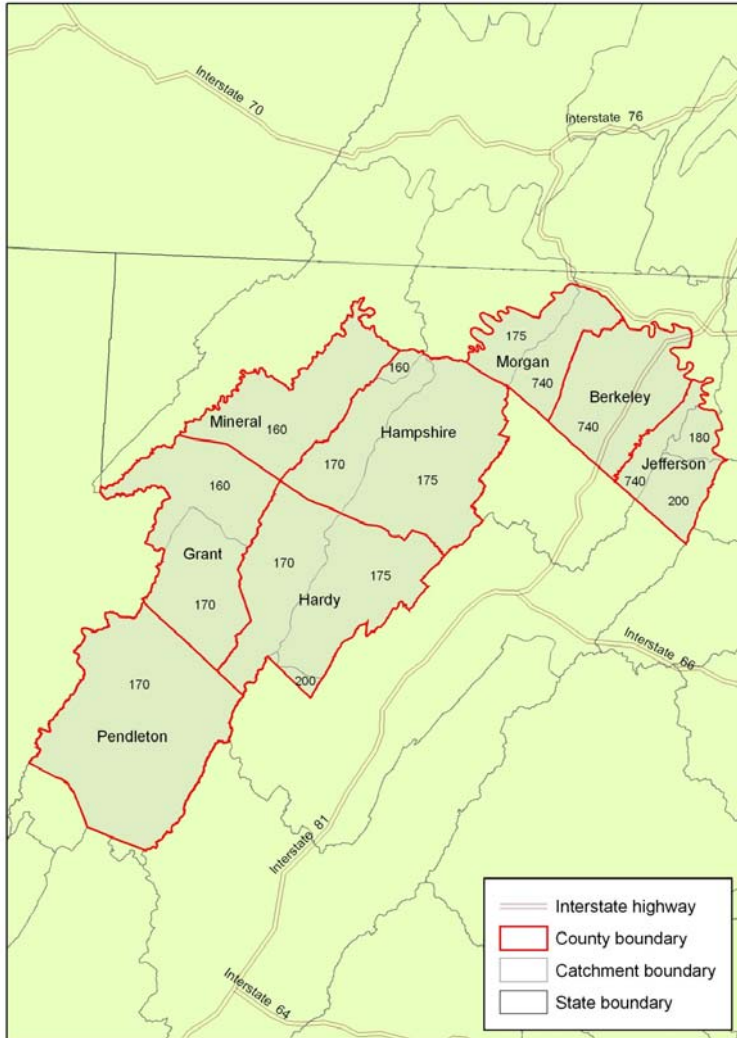
Outcome

The workgroup recognizes that the detailed data required to establish field specific baselines is not available and would be too expensive to collect. In lieu of field specific data the workgroup recommends that the agriculture baseline be established as follows: Establish numeric agriculture baselines for nitrogen and phosphorus based on the Edge of Field (EOF)* WV Tributary Strategy loading goals for each of the five agriculture land uses categories; *high till, low till, hay, pasture and manure* in the Chesapeake Bay Model segments (map attached) of the WV Potomac basin. Due to similar EOF loadings segments 170 and 175 are averaged and segments 180, 200 and 770 are also averaged.

| Watershed Segment ID | N Baseline EOF lbs/ac/yr | P Baseline EOF lbs/ac/yr | Average Baseline lbs/ac/yr |
|-----------------------------|------------------------------------|------------------------------------|--------------------------------------|
| 160 | 49.38 | 31.33 | 31.33 |
| 170 | 115.50 | 71.50 | 79.09 |
| 175 | 121.00 | 83.67 | |
| 180 | 28.37 | 17.10 | |
| 200 | 25.43 | 13.33 | 13.23 |
| 740 | 29.62 | 9.25 | |

*EOF represents a balance calculation of the available nutrients that runoff a field to a receiving waterbody

**West Virginia Counties and Subwatershed Segments
Within the Potomac Watershed**



Attachment 5

WV Public Service Commission “Pipeline” Article

Nutrient Credit Trading in the Potomac River Watershed: Improving & Protecting Water Quality while Providing for Economic Development

*By: Alyse Schrecongost and Richard Herd
WV Potomac Water Quality Trading Program*

Water Quality Trading for Nutrient Management in WV

West Virginia has been addressing federal water quality requirements in the Potomac watershed related to the Chesapeake Bay for more than six years now, but has only recently begun addressing the issue through NPDES permits. The WV Potomac Water Quality Trading Program was initiated to help the state take advantage of the new requirements in a manner that will provide for future economic development while enhancing environmental benefits in the Potomac watershed that residents and businesses will enjoy for decades. This article describes some background information about what trading is and how it can help the state achieve environmental and economic goals. Future articles will keep readers informed of the trading program development and implementation progress, specific Potomac Trading Program issues, and detail how to take advantage of the program.

Background

West Virginia’s nutrient and sediment loads to the Potomac combine with loads flowing from other jurisdictions within the Bay watershed creating significant downstream water quality problems in the Chesapeake Bay. Under the Clean Water Act (CWA), West Virginia is mandated to protect the water quality of downstream states and is therefore required to address the water quality of the Potomac watershed - a tributary of the Chesapeake Bay. West Virginia signed on to the Chesapeake Bay Memorandum of Understanding in 2002 as a way to voluntarily begin to reduce our downstream nutrient and sediment loads, moving the state toward CWA compliance. Load reductions are needed and must be maintained by point sources and non-point sources. Currently, the State retains control over *how* CWA compliance will be achieved. If the state-selected actions fail to reduce pollutant loads leaving West Virginia, the EPA will issue a Bay-wide (West Virginia included) TMDL that will include implementation requirements for the states. Water quality trading is one tool being developed by the state, under the direction of the EPA, to help dischargers meet water quality obligations in a manner that is economically and environmentally advantageous to the region and financially feasible for facilities. A principle goal of the WV Potomac Water Quality Trading Program (<http://www.wri.nrcce.wvu.edu/programs/pwqb/index.cfm>) is to establish a trading program that facilitates the greatest level of economic and environmental benefits for West Virginia in compliance with federal requirements.

Currently, a steering committee meets regularly to discuss the design of draft trading guidance for nutrient discharge management. This guidance document is anticipated to be available for public comment by fall 2008.

Questions about Water Quality Trading

What is water quality trading? According to the EPA, water quality trading is “an innovative approach to achieve water quality goals more efficiently. Trading is based on the fact that sources in a watershed can face very different costs to control the same pollutant. Trading programs allow facilities facing higher pollution control costs to meet their regulatory obligations by purchasing environmentally equivalent (or superior) pollution reductions from another source at lower cost, thus achieving the same water quality improvement at lower overall cost.” The estimated capital cost to “clean up the Bay” was estimated to be \$28 Billion with the West Virginia portion at about \$900 million. The traditional approach to such cleanups has been to invest billions of public dollars into treatment facility upgrades and voluntary Farm Bill type nutrient management programs. In an era of competing social and environmental priorities, water quality trading can help improve the environmental value received for funds spent while generating important economic activity in the private sector as well.

Trading encourages innovation allowing public money to be spent more wisely. Rather than subsidizing a small number of federally defined pollution reduction efforts, trading allows innovators to compete for public funds by developing new practices at lower costs. Ideas and pilot projects that can inexpensively prevent pollution and eliminate waste streams are already cropping up throughout the Bay as companies gear up for the anticipated TMDL. Updating development and building ordinances, like those for managing urban stormwater, have the potential to lower development costs and stormwater facility maintenance costs for private companies and residents. Some privately developed technologies, like the Algal Turf Scrubber, have the potential even to turn waste streams into revenue streams. In this way, public investments not only clean up the Bay at lower costs, but that money also invigorates the private sector, growing a labor force increasingly referred to as “green-collar” jobs. The clean-up costs become a stream of environmental and economic benefits. Water quality trading can also generate an important stream of ancillary local environmental benefits, such as the air quality improvement, recreation and aesthetic benefits resulting from establishment of forested riparian buffers and wetlands, improved habitat, and source water protection. Because the entire Bay watershed must be addressed to protect the Bay, it benefits wildlife, water and land resources. This additionally provides financial benefits from smarter planning and management approaches and practices.

And lastly, a well designed trading program moves the regulatory paradigm from an adversarial command and control approach to a market- and performance-based approach that engages community members to assist one another in achieving economic and environmental goals. It rewards those who invest time, thought, and funds into managing their land and water responsibly. This encourages others to consider changing their practices as well.

What is the alternative to water quality trading? While some people would like to believe we can eternally ignore our waste streams and their environmental and economic impacts downstream, this is not realistic. Significant streams of pollutants are already leaving the state. If the region's population and agricultural productivity continue to grow, using current technology and practices, the waste streams will also continue to grow. Nutrient-induced algal blooms that drain water bodies' dissolved oxygen and block light, sedimentation, loss of water clarity, and other pollution related effects in the Chesapeake Bay, are estimated to cause damages totaling several million dollars and lost revenues annually to riparian states from damaged commercial fisheries, lost recreation, and impaired water supplies. With this scale of lost revenues, tributary states are facing either strict federally- defined controls, citizen lawsuits, or both. Trading can help West Virginia maintain control over how our private and state resources are spent. Bay states have been investing large public subsidies into important clean-up efforts such as necessary wastewater treatment plant upgrades and support for agricultural best management practices. These are important investments, but they do not guarantee the largest reductions per dollar. Trading can be used to help ensure that such public funds are spent to improve water quality with greater efficiency and to target activities that also generate public benefits locally. If the program is designed properly, it can help ensure that public money does not crowd out private sector innovation or impede progress.

What is a nutrient load allowance or waste load allocation? The Chesapeake Bay Program has done extensive research to estimate and source pollutant loads flowing into the Bay. To restore the Bay, all contributing jurisdictions must reduce their load by differing amounts. Bay jurisdictions have developed Tributary Strategies and Implementation Plans to define how the states are to reduce and maintain load levels entering the Bay watershed. While the modeling and estimates are not perfect, they represent the best available data based on professional and academic monitoring and research. West Virginia's Tributary Strategy commits the state to reducing our sediment loads by 6 percent, phosphorous by 33 percent, and nitrogen by 35 percent. Annual reports to the Bay Program indicate that the state has already made significant strides toward reductions, but programs and plans (like trading) are needed to ensure that we meet our obligations for future growth and development.

How could WV benefit from stricter federal requirements? Generally speaking, many of our existing NPDES-regulated point sources will comply by making costly but fairly straightforward nutrient removal upgrades. Trading allows those existing facilities that face high costs for upgrading (usually older plants with shrinking service bases) and for new or expanding plants that will not receive a nutrient load allowance to generate or purchase nutrient credits to meet regulatory requirements. Both categories of permittees will be looking to "offset" any discharge in excess of their permitted annual load. Under a trading program, these facilities can buy nutrient offset credits from local projects that generate real nutrient reductions and, often, many other ancillary local benefits at the same time. Money from West Virginia to solve a nutrient problem stays in West Virginia to solve local priorities, funding erosion and sediment control projects, stream

stabilization and restoration projects, addressing leaking septic systems in sourcewater protection areas, and other important activities.

In trading, can discharging facilities buy credits upstream? In other watersheds?

Yes! Under the proposed trading program, adjustments or “delivery” factors will be applied to the use of credits so that the discharge and corresponding offset have an equivalent effect in the impaired water body - the Bay. Nutrient hot spots (eutrophication) will continue to be evaluated and monitored. Other safety measures will be applied in certain areas, as appropriate. Trading across watersheds is not as straight forward because of jurisdictional boundaries that do not match watershed boundaries. Currently, West Virginia only has plans to trade in the Potomac. Credits may be traded from the Opequon watershed to the Cacapon watershed, but all credits must be bought and sold in the West Virginia Potomac. Eventually, credits may be tradable across jurisdictions - such as between Maryland and West Virginia within the Potomac, and across larger watersheds within the Bay watershed - like between the Potomac and the James. Where localized nutrient hot spots or nutrient impairments (such as eutrophication) are anticipated, trading will not be allowed.

Why are only point sources regulated? Is that fair? Non-point sources such as farm and urban runoff generally have no single point of effluent discharge. Regulating these entities and the quality of their discharge is extremely time consuming, uncertain, and expensive. For these reasons, they are traditionally not addressed in federal regulations unless they are determined to be causing a localized water quality problem. Many surrounding states have formulated a minimum set of practices that non-point sources must implement rather than effluent standards. The trading program would not have the authority to develop mandatory management practices. The program is, however, interested in fairness and ensuring that trading rules do not undermine the state’s progress toward achieving commitments in all sectors. The developing trading program proposes to handle these two issues by setting **baselines**. Baselines are the minimum standards that an entity must demonstrate before it can generate and sell credits in the trading program. These standards encourage implementation of best management practices in the non-point source sector. They also level the playing field so that those who have always been good land stewards are not disadvantaged by a trading program, and they ensure that progress is being invested in and accomplished by all sectors.***

Attachment 6

West Virginia Nutrient Trading Guidance

West Virginia Water Quality Nutrient Credit Trading Program

Guidelines

The purpose of this document is to provide guidance for the generation and trading of nutrient reduction credits in West Virginia's river basins. The Department of Environmental Protection (WVDEP) allows the voluntary generation and trading of nutrient reduction credits to meet water quality requirements under applicable laws and regulations. The guidance is also intended to assist individuals through the process of submitting proposals for the approval, certification, verification and registration of credits, and to describe how nutrient reduction credits may be used to fulfill a permit requirement.

The guidance procedures herein are not adjudication or a regulation. This document establishes the framework, within which the Department exercises its administrative discretion to deviate from this guidance if circumstances warrant.

Introduction

The Department recognizes the many potential benefits of using market mechanisms to efficiently and effectively address environmental challenges by providing flexibility for the regulated community to meet legal requirements, especially when done on a watershed basis.

Water quality credit trading is one approach to improve and maintain water quality using market mechanisms to produce nutrient reductions at lower costs. Participation in the **voluntary** trading program is an option for point sources to provide for achievement of their environmental obligations by purchasing pollutant reductions from another point source or non point source that can more cost effectively reduce their pollutant discharge. It is also an opportunity for unregulated non point sources who desire to improve water quality (and produce other environmental benefits) to generate nutrient reductions which can be used as tradable credits and sold to others who are seeking nutrient reduction credits.

Definitions

“Aggregator/Broker”- *An individual or entity that can collect and compile credits from individual sources. These credits can then either be sold on the credit marketplace, or sold directly to a point source or developer.*

“Baseline”- *The compliance activities and performance standards which must be achieved before an entity can generate credits.*

“Basin” – *The three major river basins of West Virginia include the Potomac, Ohio and James Rivers and their watersheds, subwatersheds and tributaries. See “Watershed”.*

“Best management practice” or “BMP” - *Structural, vegetative, or managerial practices that reduce or prevent the discharge of pollutants to waters of the state.*

“Certification”- *The approval, by the department, of credits generated by a credit development proposal as verified by the Department or a delegated entity.*

“Conservation Plan”- *A farm specific plan developed by the NRCS that contains information on why and where the practice is applied, and sets forth the minimum quality criteria that must be met during the application of that practice in order for it to achieve its intended purpose(s).*

“Credit” – *The unit of compliance that corresponds with a pound of nutrient reduction per unit time as recognized by the Department which, when registered by the Department, may be used in a trade.*

“Credit Marketplace” - *The credit marketplace is an on-line marketplace that facilitates exchange of nutrient credits among buyers, sellers, aggregators, and brokers by posting guidance, credit prices, the credit registry, and the credit calculator, NutrientNet.*

“Credit Registry” - *The Department’s official system that tracks and records credits needed, generated, and traded among point sources and non-point sources.*

“Credit Reserve” – *Credits set aside by the Department to address naturally or otherwise uncontrolled failure of credit generating activities.*

“Delegated entity”- *An entity designated by the Department to carry out specific tasks related to the Nutrient Trading Program.*

“Department” - *West Virginia Department of Environmental Protection*

“DMR” or “Discharge Monitoring Report” - *The EPA uniform national form, including any subsequent additions, revisions, or modifications, for the reporting of self-monitoring results by NPDES permittees.*

“Non-point Source” – *A source of potential water pollution that is not a point source. Non-point source pollution, sometimes referred to as “polluted runoff”, is generally caused by stormwater runoff across the land. Examples of non-point sources include: agriculture abandoned oil and gas wells, atmospheric deposition, failing on-lot sewage systems, and silviculture (forestry).*

“NPDES” – *National Pollutant Discharge Elimination System, the permit program required under the federal Water Pollution Control Act (also known as the “Clean Water Act”), administered by the Department.*

“NRCS”- *The Natural Resources Conservation Service, a division of the United States Department of Agriculture*

“Nutrient” – *Nitrogen or phosphorus.*

“Nutrient Allocation” - *The amount of nutrient discharge allowable by an NPDES permit.*

“NutrientNet” – *Created by the World Resources Institute (WRI), it provides a web-based interface for administering the trading program by standardizing nutrient reduction calculations, establishing a credit registry and provides for tracking of credits and trades.*

“Nutrient Balance”-*A component of the Nutrient Management Plan that calculates the total nutrient runoff potential for all farm fields under current land use practices. Where BMPs have been installed and properly maintained the farm nutrient balance shall reflect the nutrient reductions achieved by these practices. Nutrient Net can be used to calculate the farm nutrient balance.*

“Nutrient Management Plan (NMP)” – A plan to assist landholders in managing the mass balance of nutrients developed by the WV Department of Agriculture, the WV Conservation Agency, the Natural Resources Conservation Service or another Department-approved entity which must be developed for agricultural entities to generate nutrient reduction credits.

“Nutrient Reduction”- Reductions of nutrient discharges to waters or of nutrients within waters achieved by activities such as best management practices, application of wastewater treatment upgrades, stream bank restoration, and activities that quantifiably increase waters’ assimilative capacity compared to the applicable baseline.

“Nutrient Trading” – Transactions that involve the exchange of quantifiable nutrient reduction credits, registered with and approved by the Department.

“Offset”— A unit (equivalent pounds) of nutrient load reduction approved by the Department that can be used by a facility to meet its NPDES nutrient requirements.

“Point Source” – For the purposes of this guidance, any NPDES-permitted discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, landfill leachate collection system, or vessel or other floating craft, from which nutrients are or may be discharged.

“Permittee” - An NPDES permit holder with nutrient discharge limits.

“Point source-point source trade” - A trade in which the person using water quality credits and the person generating water quality credits are both permittees.

“Point source-nonpoint source trade” - A trade in which the person using water quality credits is a permittee and the person generating water quality credits is a nonpoint source.

“Person”- An individual, corporation, organization or other legal entity whose actions or activities contribute to or reduce nutrient loadings.

“TMDL” – Total maximum daily load which is the sum of individual waste load allocations for point sources, load allocations for non-point sources and a margin of safety expressed in terms of mass per time, toxicity or other appropriate measures.

“Third Party”- 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.

“Trading Ratios” or “Trading Calculation Factors”- Discount factors applied to nutrient reductions, to account for uncertainty, delivery, credit reserve or special need concerns.

- **“Delivery Ratio” or “Delivery Factor”-** The factor that compensates for the natural attenuation or loss of nutrients as they travel in water.
- **“Reserve Ratio”-** The proportion of the credits generated by a nutrient reduction set aside in the credit reserve for the purposes of insurance against risk of nutrient reduction project failure for natural or uncontrollable causes.
- **“Special Concerns Ratio”-** Additional ratios applied to credits generated in watersheds of impaired streams (303d-listed) and otherwise as the Department deems necessary in areas of special water quality concern.
- **“Uncertainty Ratio”-** Ratio applied to point-to-nonpoint trades to account for uncertainty in modeling and BMP performance.

“True Up Period”- Two month period at the end of each Credit accounting year during which time permittees may obtain or secure credits needed to meet their compliance obligation.

“Verification”-The process by which the Department determines that a credit represents a real reduction in nutrient loading that is eligible for trading.

“Water quality trade”- The purchase, sale, conveyance or other transfer of a water quality credit from one person to another person.

“Watershed”- An area of land as determined by the Department that drains to any waters of the state which may encompass a large river mainstem or any of its subwatersheds and tributaries. See **“Basin.”**

“Watershed Segment” – A hydrological-based unit of land with a numeric code or HUC, which uniquely identifies it and indicates its relationship to smaller and larger watershed/basin delineations.

FUNDAMENTALS

General

Nutrient Trading has the potential to achieve water quality and other environmental benefits more cost-effectively and generate greater economic and environmental benefits than traditional regulatory programs. Nutrient trading under these guidelines must be consistent with legal requirements under applicable laws and regulations, including the federal Clean Water Act.

Trading in a broader watershed area must not cause localized water quality impairment. Where a TMDL is established, trading must be consistent with the TMDL and associated implementation plans, approved by the Department.

Nutrients Traded

This guidance deals with the nutrients nitrogen and phosphorus, the principle constituents determined to cause eutrophication of local and downstream waters. Waters overly enriched by nutrients are listed as water quality impaired under section 303(d) of the CWA.

Trading Guidelines

Trading must occur within the same basin. Trading may be limited to smaller watersheds within basins if the Department determines that greater efficiencies can be obtained for implementing a TMDL or for avoiding localized water quality impairment. Interstate trading of nutrient credits may be permissible within the same basin and in compliance with applicable state policies, rules or laws.

Trading can occur among the sources within that basin for that nutrient on the condition that the discharges covered by the trades do not exceed water quality standards and any nutrient cap load established for the basin.

Under this guidance several principles apply throughout: (1) trades must involve comparable parameters (e.g. nitrogen must be traded for nitrogen); (2) trades must be expressed as mass per unit time (e.g. pounds per year); (3) trades can occur only between eligible parties; and (4) credits generated by trading cannot be used to comply with existing technology-based effluent limits except as may be expressly authorized by federal regulations.

Eligibility

Trading may take place between any combinations of eligible point sources and nonpoint sources. Both public and private entities are eligible to participate. Each trading entity must meet applicable eligibility criteria established by the Department for this voluntary program.

Baseline Levels

All sources must meet baseline requirements before additional nutrient reductions will be considered eligible for trade by the Department. This applies to those activities and performance standards associated directly or indirectly with the pollutants being traded (i.e., nitrogen and phosphorus). More restrictive limits may apply if a TMDL is established, as discussed later in this guidance.

For **point sources regulated by individual permit for the pollutant being traded**, the baseline is the more restrictive of any technology based or water quality based effluent limitation, over the applicable time period, expressed in an NPDES permit.

MS4 related urban non-point source reductions must first achieve “maximum extent practicable” compliance with MS4 NPDES permit requirements to be eligible to generate credits from additional reductions if the reductions fall within the jurisdiction of a permitted MS4 authority.

Where an effluent limitation is not applied, such as in MS4 and stormwater construction permits, the permittee is obligated to meet the applicable management requirements to the maximum extent practicable. The discharge must therefore be in compliance with any expressed baseline effluent limits or management requirements in order to generate tradable credits of nutrient reductions.

For **non-point sources**, baseline is the set of regulatory and or trading program requirements applicable to the credit generator:

a) Agriculture, Currently, WV does not have sector specific legal control requirements applicable to agricultural non-point sources. Baselines will be calculated and applied on a basin by basin basis to reflect the specific trading and watershed situation. Case-by-case requirements may be imposed on agricultural operations in areas where runoff impairs surface water quality or where groundwater is declared to be at risk.

b) Forestry, Forestry practices must first comply with W.V. Code 19-1B-5 before credits can be generated.

Process for Generating, Approving and Tracking Credits

The Department is responsible for approving and tracking all credits. A credit generation practice must be approved, and trades must be registered, by the Department under this process before they can be used for NPDES permit compliance.

The Department, or its delegated entity, will use the following elements in its process of approving and tracking the generation and use of credits in the trading program. The process is summarized in the flow chart following this section.

Farmland and Open Space Concerns

The Trading Program is not intended to accelerate development of productive farmland or open space.

The Department does, however, recognize that farmland and open space will continue to be converted to developed land uses, and it supports sustainable development principles. Therefore, where an investment is made in land development which yields nutrient load reductions through the use of approved practices due to implementation of green infrastructure, low impact development, and smart growth practices (above and beyond federal, state, county or local legal development requirements) the Department will, on a case by case basis, accept and review proposals for generation of nutrient credits. In scenarios of development of farmland or open space, credits can only be generated from the difference between the enhanced and the traditional/baseline development practices for the same category of land use. Additional guidance is provided on a basin by basin basis under the Eligibility section.

Calculation of Credits

All credit generation calculations must be approved by the Department.

a) Basic calculation. The Department will provide a pre-approved calculation methodology for estimating available credits from various BMP applications. For example, the pre-approved credit calculation methodologies and calculation tool for nutrient trading in the Potomac is WV NutrientNet as described in Appendix A .The Department will also consider other scientific calculation approaches, although the proposal review time may take longer.

For non-point sources generally, the Department expects that proposals will contain scientifically-recognized methods to demonstrate nutrient reductions (e.g. methods employed by NutrientNet).

Credits must be expressed in terms that correspond to the unit of compliance (e.g., pounds), and a time period, all specified in the applicable permit discharge limits.

For example, credits will be expressed as pounds per year, and will be valid for one year or longer dependent upon Department approval.

This means that credits need to be measured, verified and accounted for according to the approved time period. For example, if a BMP has a longer lifespan than a year, credits can be generated for the life of the project but may need to be re-verified and must be accounted for each year. This can be accomplished through a request to the Department or through the Department's own initiative. Proposals to generate credits must include adequate provisions for verification throughout the credit generating life span of the project.

Groups of credits for discrete nutrient reduction activities will be assigned a unique identifier by the Department, and will have a "shelf life" of one calendar year.

Credits cannot be banked for future years. For example, if a BMP generates 100 credits each year and has a life span of five years, 500 credits cannot be applied to a permit in year five. Credits must be applied in the year that they are generated.

b) Application of trading ratios or credit calculation factors.

Nutrient reductions must be calculated in a manner that accounts for factors such as location, reserve/risk, uncertainty, and/or other special needs. Trading ratios may need to be considered and used as appropriate to ensure that trading provides the desired level of nutrient reductions and water quality benefits. Examples of ratios that would apply to trades are below and their specific application to a Potomac program is explained in Appendix A.

Delivery Ratio is a function of the distance from the location where the nutrient activities are carried out, to the compliance point and the related estimated diminution of the effect of the nutrient reductions between upstream and downstream points.

Reserve Ratio is applied where the Department determines that it is necessary to provide for possible failures in nutrient reduction efforts.

Uncertainty Ratio is applied to point-to-nonpoint trades to account for uncertainty in modeling and variation in BMP performance.

Special Concerns Ratio – Additional ratios may be applied to credits generated in watersheds which the Department deems to be of special water quality concern such as those with impaired

streams (303d-listed) and otherwise as the Department deems necessary.

Guidelines for Proposals to Establish Reduction Credits

a) General. All credits generated in this program must be based on proposals reviewed and approved by the Department.

b) Elements Needed for Potential Credit-Generating Projects.

The general information normally required for credit proposal submittals is outlined below. Credit certification application forms tailored to specific trading programs will be made available by the Department. For the Potomac Nutrient Trading Program Credit certification application form, see Appendix A.

Comment [a1]: Currently in draft form

Credit Generator Information

Credit Generator/Producer
Generator Type
Name of Responsible Party
Phone Number/Email of RP
Generator Address
Generator County and State
Generator Zip Code
Latitude and Longitude
Receiving Stream

Watershed Information

Watersheds and Watershed Segment Number for the trading proposal.
Specify the “designated use” (e.g., cold water fishery) and any listed impairments.

Current Practices/Baseline Information

Current land use
Currently installed BMPs
Eligibility information
Date practice implemented/completed
BMP units (acres, feet)

Credits to be Generated Information

Reduction: Point or Non-point
Reduction Description
Area of Reduction
Nutrient Reduced
Nutrient Source
Ratios Applied
Quantification Method

Generated Credits
Project Lifespan

Restrictions

Identify if a funding source that was used to pay for a nutrient reduction activity restricted or limited in any way the sale or income from credit generation.

Verification

Describe the method of verification (e.g., records of BMP implementation, nutrient application and crop yields to be maintained by the landowner). Verification may be defined for a trading program or tailored by situation.

Risk mitigation plan

Describe the plan to manage any potential risks of BMPs failure.

Previous efforts

Indicate if any preservation/conservation easements exist on lands where credit generating BMPs are to be implemented.

Ancillary benefits

List any known or anticipated ancillary local benefits that may result from the implementation of the nutrient reduction activity (e.g., source water protection, trout habitat restoration/protection, stormwater flow management, green space protection, green house gas (GHG) reductions, etc.).

Credit-Submitting Entity Information

Submit name, address and contact information for the submitting entity if the proposal is submitted on behalf of the credit generator.

Operation and Maintenance Information

A plan to ensure that the practice will be properly operated and maintained for the life of the credit is required for the credit proposal to be approved.

Proposal Review

a) Proposal Review Process. Proposals will be reviewed by a panel of selected experts, approved by the Department, for technical acceptability, and consistency with program guidelines. For example, for reductions at agricultural operations, experts may include representatives from the West Virginia Conservation

Agency, WV Department of Agriculture, and the USDA Natural Resources Conservation Service (NRCS). The Department may identify additional experts as needed. The Department shall attempt to provide a response to the proposal within 60 days.

b) Proposal Approval. Following proposal review, the Department will respond in writing to the applicant with its determination.

If a proposal is not approved, the response will include why the proposed activities will not generate the requested reduction credits and/or what additional information may be needed from the applicant for credit certification.

The Department will publish public notice of receipt of complete proposals for credit generating activities, approvals of credits and trades of credits on the Department's Nutrient Trading website and any applicable on-line marketplace (e.g., NutrientNet).

Verification

a) General. Every proposal for use of credits must include a credit sale or purchase agreement which contains a plan for inspecting and verifying the nutrient reductions by a qualified and approved third party professional. The inspector shall have the education, knowledge and experience to determine if the control is properly installed, operated and maintained to achieve the nutrient reductions approved and certified by the Department.

In addition, the Department will use a combination of record keeping, monitoring, reporting, inspections, self-certifications, and compliance audits to further ensure that the credit-generating obligations are being met. The Department will also conduct spot checks of credit generating projects, and the applicant's verification activities, to ensure certified practices and activities are being implemented and properly operated and maintained.

b) Baseline verification. The Department will verify that the generator of the credits meets the baseline requirements of the trading program. This may involve a site visit by Department staff or a delegated entity, self-verification by the generator of the credits by means of a process established by the Department, or a combination thereof. This step may occur at any time in the process, but will most likely occur before credit approval.

For agricultural operations, baseline compliance will be verified through a site visit or by review of applicable plans such as a Nutrient Management Plan, Erosion and Sedimentation Control Plan, Conservation Plan, Manure Management Plan, or a

combination thereof as required by the specific trading program. Compliance must be verified by the Department, a Conservation District, or other entity approved by the Department.

c) Nutrient Reduction. The Department, and the generator of the credits, will have a process to verify that the reduction efforts have occurred as planned. The types of verification will depend upon the individual project proposal. Verification may occur at any time during the life of the credit attributed to a particular activity. Examples of verification methods which can be approved for use by project applicants include engineering plans (if appropriate), photographic documentation of the installed BMP or receipts confirming BMP activities, such as documentation showing the results of a truck that was weighed to haul manure.

d) Operation and Maintenance. The Department, and the generator of the credits, will have a process for verifying that the operation and maintenance of any nutrient reduction efforts are being implemented as planned. The verification process will depend upon the individual project but will be outlined in the credit proposal.

e) Other. The Department may allow qualified and approved third parties to perform verifications on behalf of the Department. For a third party to qualify to verify credits, the Department requires that the party:

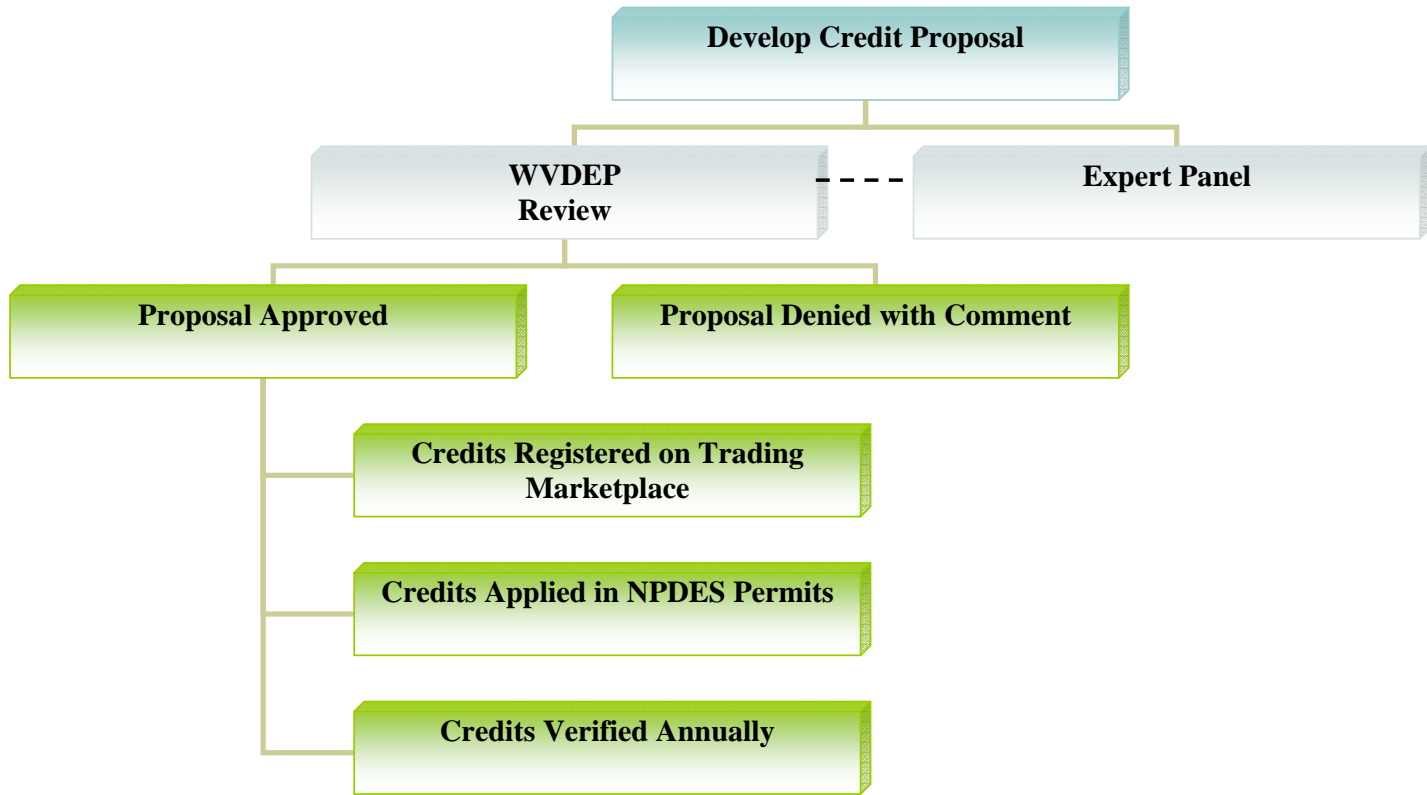
- Have the necessary qualifications to perform the verification (e.g., a certified nutrient management planner, technical service provider, soil scientist, conservation planner, registered professional engineer, etc.);
- Provide potential trading partners with information on the program;
- Calculate credits based on the Department's Trading policy;
- Accurately provide the Department with the information listed in the Elements Needed for Potential Credit-Generating Projects;
- Confirm in writing that the activities intended to generate credits have occurred or are scheduled to occur prior to the end of the calendar year.
- Not be in a position to profit directly or indirectly from sale or purchase of Credits; and
- Confirm in a certified written statement that the credit-generating entity meets baseline criteria, using checklists and forms provided by the Department.

Registration and Tracking

a) Registration and Tracking. Trades must be registered before the credits can be used to meet permit limits. The Department will operate an on-line marketplace tool (e.g. NutrientNet) that will assist with the registration, tracking and application of credits. The registration system will be used by Department staff when credits are proposed to be used in a NPDES permit. The registration system may also be used by buyers and sellers to verify that their trades have been approved by the Department.

FLOW CHART FOR GENERATING, APPROVING, AND TRACKING CREDITS

Comment [WVWR12]: For more details, see organizational options PPT on trading website. To be discussed w/ CDs and Pt Source group before detailing the guidance document... or it may not be appropriate here since each trading program may be organized differently (OH has 4 very different structures for their current approved trading programs).



Use of Credits in NPDES Permits

NPDES permittees are authorized under this program to use registered and certified credits to achieve compliance with permit effluent limits under the following conditions:

- Permittees are responsible for ensuring that the credits they obtain and apply to their permits for compliance purposes are approved by the Department (i.e., are certified and registered by the Department).
- Permittees must report with the Discharge Monitoring Reports (DMRs) or in another acceptable form the number of credits that are being applied to achieve compliance with their permit limits.
- Permittees are responsible to the maximum extent practicable for assuring adherence to the terms of their credit purchase agreements. Where credits have been procured through a Department-approved broker/aggregator, it becomes the responsibility of this agent to ensure the credit supplier abides by the purchase agreement. Where a credit supplier fails to comply with a contractual agreement the Department may decertify the credits in question. Permittees can acquire supplemental credits, or in the case of a Department-verified case of credit loss from natural disaster or other unforeseen/uncontrollable causes, credits could be obtained from the credit reserve pool.

The Department may exercise enforcement discretion with respect to permittees in the year in which credits are determined to be invalid, as long as (1) the credit failure is not due to negligence or willfulness on the part of the permittee and (2) the permittee replaces the credits in a “true up” period.

The Department may also help to ensure the effectiveness and validity of the credits used in NPDES permits. This may include the use of (1) methodologies to calculate credits before approval, (2) verification processes and requirements, and (3) the credit reserve, all of which are discussed elsewhere in this guidance.

Use of Credits to Offset New and Expanding Discharges

When applicable, in accordance with nutrient reduction requirements of the relevant facility NPDES permit, permittees are required to obtain credits to offset all nutrient loadings from all new or expanded sources.

Public Participation

The Department will operate a transparent system for review and approval of credits by providing notice to the public and comment on the use of trading in permits as part of routine procedures followed with all NPDES permit actions and as required under the regulations governing NPDES permits.

The Department will note in the public notice any conditions allowing trading in the draft permit or any required necessary major modification of the permit. Notice of annual compliance will be included with the monthly discharge monitoring report (DMR) or other Department approved form.

DMRs and/or other Department Approved forms are records that can be accessed by the public. The information in these documents must include unique identifiers and the numbers of credits purchased. More detailed information about the credits can then be accessed from the Department's Nutrient Trading website.

An inventory of credits developed, available and those used in trades is public information and will be published on the Department's Nutrient Trading website and the on-line marketplace (NutrientNet).

Ensuring Program Integrity and Managing for Success

The Department recognizes that there are factors of uncertainty and risk in the ultimate success of nutrient reductions that are to serve as the basis for tradable credits. This uncertainty and risk may be addressed in several ways:

- a) **General.** Non-point source practices generate greater uncertainty with reductions and may need to be addressed by establishing a trading program baseline for generation of credits above an agent's otherwise established regulatory obligations.

- b) **Conservative assumptions.** The Department uses conservative assumptions and methodologies for calculating credits. In the Potomac, these assumptions have been employed within NutrientNet credit calculation methodologies (see Appendix B). The Department will continue to confer with experts in agronomics and other specialized areas in order to employ the best available science when applying its credit calculation protocols.

As well, trading ratios are applied to account for uncertainties inherent in estimating the delivered loads and reductions in the absence of daily site or stream monitoring and other cost-prohibitive measures. Despite conservative estimation methodologies, remaining uncertainty can include but is not limited to estimating the effect of temporal, spatial, and water quality factors specific to reductions that cannot be captured by models and methodologies - these uncertainties can include the variation in annual/seasonal weather, in the fields and crops, in human practices, in receiving streams, in the estimation of past loadings, and in the equivalency of various forms of pollutants (e.g. bound vs biologically available phosphorous).

- c) **Reserve Ratio.** The Department adjusts all load reductions available for credit generation to populate an annual risk reserve of credits to be used

in the event of natural or otherwise unforeseeable/uncontrollable causes of project failures.

- d) **Verification.** The Department and/or its agents retain the right to conduct audits or verifications of baseline and reduction activities/technologies. The Department also requires a level of monitoring and verification of the point sources using credits for permit compliance, or their agents, to ensure the integrity of credit generating activities. Sampling and other monitoring are conducted where/when appropriate.

For instance, the Department regularly conducts water quality monitoring at monitoring stations throughout the state, and this data can be used to evaluate any impacts from use of trades in NPDES permits. It should be noted that the data derived from water quality monitoring sites within the Chesapeake Bay drainage area is provided to the EPA Chesapeake Bay Program to help calibrate the model and evaluate changes in nutrient loadings over time.

- e) **Transparency.** A registry of credits generated and verification records will be maintained and made publicly available as part of the conditions of the NPDES permit process.
- f) **Other.** The Department will evaluate trading programs and their progress at least every five years or more frequently if the Department deems appropriate. Based on these reviews, the Department may determine program enhancements are needed and the appropriate changes will be made. These will be shown on the Department's Nutrient Trading website. Stakeholder input will be obtained prior to the changes, as appropriate.

Program Organization

Trading programs will be a joint effort between the Department and a Department-approved trading program management organization (e.g., Conservation District staff).

- a) **Credits** will be approved and certified by the Department through consultation between the Division of Water and Wastewater Management and additional experts as appropriate.

- b) **Verification** may be coordinated by the Department, the buyer, and or an aggregator but in most cases will be conducted by the approved trading program management organization.

- c) **Registration** of credit generation approvals and trades will be managed by the NPDES Permitting Office, in coordination with the approved trading program management organization.

d) Registration and use of credits in permits will be managed by the NPDES Permitting Office.

e) Public participation during the permit process will be the responsibility of the NPDES Permitting Office.

Water Quality and TMDLs

Trading will be allowed only where water quality will be protected and maintained as required by applicable regulations.

a) TMDLs. Once a TMDL is approved by EPA, any load allocations and individual waste load allocations established by the TMDL to meet local water quality standards apply. This may mean that additional “baseline” requirements must be implemented before credits can be generated. Trading will be consistent with the assumptions and requirements upon which the TMDL is based.

b) Antidegradation. Trading will be consistent with the antidegradation requirements contained in Department regulations.

Attachment 7

Potomac Basin Nutrient Trading Guidance

APPENDIX A West Virginia Potomac River Basin Water Quality Nutrient Trading Program

Purpose: The purpose of Appendix A is to provide program specific guidance regarding water quality trading of nutrients in the West Virginia portion of the Potomac River Basin.

Definitions

“Cap Load Allocation” *The total allowable load of nutrients that can flow from a basin within the Chesapeake Bay watershed that is based on protection of downstream water quality.*

“Chesapeake Bay Watershed Model”- *The Hydrologic Simulation Program in Fortran (HSPF), used to simulate the surface water run off, groundwater flow and the transport of nutrient and sediments within the Chesapeake Bay watershed.*

“Chesapeake Bay Watershed”- *The area of land defined by the aerial extent of surface water which drains to the Chesapeake Bay and its tributaries.*

“Segment Factor” or SF – *A factor that represents the fraction of the nutrient load originating from a given land use type that is delivered (via runoff, groundwater and atmospheric deposition) to the edge of the corresponding stream segment. Segment soil types, topography, hydrological, and land use characteristics of each WV Chesapeake Bay Model watershed segment are considered.*

“Insignificant facilities” –*For the purposes of the Chesapeake Bay Water Quality Initiative refers to permitted facilities that discharge less than 50,000 gallons per day.*

“Non-significant facilities” – *For the purposes of the Chesapeake Bay Water Quality Initiative refers to permitted facilities that discharge between 50,000-400,000 gallons per day.*

“Significant facilities/point sources” – *For the purposes of the Chesapeake Bay Water Quality Initiative refers to permitted facilities that discharge more than 400,000 gallons per day.*

“West Virginia Potomac Basin”- *The area of land within West Virginia that drains to the Potomac River and its tributaries.*

“West Virginia Tributary Strategy Implementation Plan” – *The Plan written by the WV Department of Environmental Protection and stakeholders to help define and address nutrient and sediment loadings in the WV portion of the Potomac Basin.*

Background

The Chesapeake Bay and its tidal tributaries have been determined by Maryland and Virginia to be impaired under Section 303 (d) of the CWA. As nutrient sources in West Virginia contribute to this impairment, West Virginia became a partner in the Chesapeake Bay Water Quality Initiative (CBWQI) in 2002 by signing a document committing cooperation and efforts to protect and restore the Bay and its tributaries - joining a multi-jurisdictional effort to restore ecological functions within the Bay watershed which have been degraded by excess nutrients and sediment loads. In accordance with the 2002 CBWQI, each jurisdiction within the Chesapeake Bay watershed (WV, VA, PA, DE, Washington DC, MD, and NY) was to develop its own Tributary Strategy^[1] and Implementation Plan^[2] that would outline steps and goals for achieving agreed upon cap load allocations (CLAs) for nutrient and sediment loads by 2010. This was done as an effort to avoid a mandated EPA TMDL for the Chesapeake Bay watershed.

Implementation of these strategies supports commitments associated with the CBWQI as well as compliance with Clean Water Act (CWA) requirements, which mandate that states assure the attainment and maintenance of downstream water quality standards--- in the case of WV, this results in the inclusion of permit conditions for dischargers of nutrients in the Potomac Drains that provide for the protection of Maryland water quality standards including those applicable to the Chesapeake Bay.

West Virginia voluntarily committed to reducing nitrogen, phosphorus and sediment loadings to the Potomac River by 33, 35, and 6 percent respectively over 1985 loading rates. The Strategy and Plan further include specific initiatives to address loading reductions from both point and non-point sources. Reductions are needed in the Potomac Basin in the regulated point source sector (e.g., sewage treatment plants, industrial dischargers, regulated MS4s) and in the non-point source sector (e.g., farms, forestry, and unregulated urban stormwater runoff) to achieve EPA allocated levels.

The Strategy does not prescribe mandatory requirements, but rather describes how the state can achieve its nutrient load allocation through a combination of actions, including changes to NPDES permits and other actions such as installation of best management practices. The Strategy also describes the basis for calculating the total allowable loading from WV to the Potomac.

In support of the state's voluntary commitments and in anticipation of an impending Bay-wide TMDL, WVDEP is providing guidance for this water quality related nutrient trading program, which was one of the innovative measures outlined as a part of the CBWQI. This measure is just one part of a larger program to help sources in all sectors take preventative and proactive measures to achieve cost effective reductions in nutrient loadings that will improve and protect local water quality and help meet WV's commitment to reduce nutrient loads to the Potomac Basin. Most importantly, the water quality trading guidance outlined here is designed to ensure that WV's local goals for

economic development, environmental and public health protection, and soil conservation are advanced through efforts to also restore and protect the Bay.

Fundamentals

General

The Environmental Protection Agency (EPA) advocates water quality (nutrient) trading as a cost effective approach to achieve water quality goals that will increase overall environmental and economic benefits. In the Bay watershed nutrient trading programs have been adopted by Pennsylvania and Virginia, and Maryland's program is currently under development. Although the specific criteria of these programs differ, all programs, including the WV program rely on trading to benefit the states in two principle ways. The first is the expected cost difference for some facilities between upgrading treatment technology of point sources versus other approaches for reducing nonpoint source discharges. The second is the policy flexibility in trading that allows for future economic development and growth to take place without sacrificing water quality.

Nutrients Traded

Trading may occur for nutrient (total phosphorous and total nitrogen) credits. Credits are the units of compliance that correspond with a Department-recognized nutrient load reduction, instream nutrient load removal, and/or unused nutrient allocation which, when registered by the Department, may be used in a trade to offset a permittee's increase in a nutrient load beyond its permitted nutrient allocation.

Trading Guidelines

Credits must be expressed in units of compliance needed for applicable permit compliance requirements. Nutrient credits will be expressed as delivered pounds per year, and will be valid for one year for trading in the context of the WV Potomac Basin. Credits must be measured, verified, and accounted for according to that time period.

Credits must be verified each year. If a credit-generating project has a longer life span than a year, then credits can be generated for the life of a project but they must be verified each year. Credits cannot be banked for future years but must be applied in the year that they are generated. Projects with variable credit production capacity, however, can generate credits that reflect average performance (e.g. forested riparian buffer strips).

For example, if an agricultural BMP generates an average of 10 credits per year and has a life span of five years, 50 credits cannot be applied in the fifth year.

Credit Trading may occur anywhere within the West Virginia portion of the Potomac Basin. But no trade may cause an impairment of any local water quality.

Trades must be of comparable parameters (e.g. nitrogen must be traded for nitrogen) and can occur between:

- Point sources;
- Non-point sources;
- Aggregators/Brokers;
- Any combination of the above.

Eligibility

Sector Trading Caps & Baselines

In the WV Potomac Tributary Strategy, various sectors were estimated to be contributing a nutrient load to the Potomac Basin. Using this initial estimated load, goals to reduce each sector's load by a certain amount are also described in the Tributary Strategy. The post-reduction loading levels are the nutrient loading caps that each sector/the state is responsible for obtaining and maintaining.

These load reduction goals are intended to be implemented across all sources. For point sources, regulatory efforts initially address point source sector permittees with design discharge flows of 50,000 gallons per day or greater. Other sector strategies are being implemented through different types of programs. For the purposes of the trading program, a party without permitted nutrient load restrictions that is interested in credit generation must demonstrate that it is also contributing to sector reductions and cap maintenance efforts as defined below. It is important to the integrity of the trading program that efforts intended to advance water quality goals not become credits that simply increase nutrient loadings elsewhere without resulting in a net load reduction. It is also important to the integrity of the trading program that efforts to reduce nutrient loads to achieve water quality goals not violate water criteria locally.

The point at which an entity can begin to generate credits is its baseline. The baseline for all sectors is defined in the sections below.

Point Source Sector Baselines

Regulated significant and non-significant facilities in the municipal point source sector have or will receive annually applied nutrient allocations in their NPDES permits based on Department-selected effluent concentrations for the facility multiplied by the facility's permitted design flow as of November 2005. New facilities or expansions permitted after November 2005 are required to offset all new nutrient loads.

Targeted industrial and mining operations receive similar limits based on equivalent levels of nutrients as facility permits are reissued. To be eligible to trade, any facility must have an NPDES permit nutrient allocation for nitrogen and/or phosphorus.

b) Insignificant Facilities - Reserved

Other Point Sources - Where a permittee does not have a nutrient allocation, such as in the 2003-2008 general MS4 permit, the

permittee is obligated to meet the applicable monitoring, reporting, and management requirements to the maximum extent practicable. Dischargers must be in compliance with the expressed monitoring, reporting, and/or management requirements before the permittee is eligible to generate tradable credits from nutrient reductions.

Non-Point Source Sector Baselines

Non-point sources are not currently regulated by the Department and therefore do not have a regulatory nutrient baseline. The NPS sector reductions contemplated by the Tributary Strategy are to be achieved by application of voluntary conservation practices by individual landowners, many of which can be funded by state or federal cost share or grant programs. The Department has decided, however, that a baseline performance must be achieved to ensure the credit supplier's contribution to achieving sector goals at the parcel level before credits can be generated, certified, and registered by the Department for sale or exchange to help meet another entity's regulatory obligations for surpassing its nutrient allocation.

The numbers below may change based on future requirements set forth in any applicable TMDL or state nutrient criteria.

Agricultural Sources Baseline Requirements-The baseline eligibility requirement for agricultural sources is the more restrictive of 1) any existing regulatory requirements or effluent limits related to nutrient management or 2) implementation of a whole-farm Nutrient Management Plan and an average per acre load for the field or livestock production area where credits are being generated based on the edge of field (EOF) nutrient load goal for the specific land use (*high and low till, hay, pasture and manure*) in the specific Chesapeake Bay Model segment.

Compliance with the baseline requirement can be determined and verified with the use of Department-approved calculation methodologies available via NutrientNet, an online tool, and through a site visit by Department staff or a Department –approved certified nutrient or conservation planning specialist.

Non-agricultural Non-point Source Baseline Requirements- For non-agricultural non-point sources and for entities with nutrient allocations resulting from a TMDL or other specified performance requirements, the trading baseline is the stricter of the nutrient load associated with existing land uses as of 2005 or management practices needed to comply with applicable state regulations.

Comment [a3]: This table will be developed based on the work being completed by World Resources Institute and the NRCS to develop appropriate averages for segments and landuse categories.

Comment [a4]: NEEDS WORK!!! This will have to be crafted to incentivize UMO participation... next hurdle though.

Comment [WVWRI5]: The baseline here has to be either measured or calculated using BEJ and standard runoff and loading calculations.

Farmland & Open Space Concerns

The Trading Program is not intended to accelerate development of productive farmland or open space. For credit generation in developments or mixed urban land categories, please see information under Section E of the State Guidance document.

Generating Tradable Nutrient Credits

Eligible activities for generating credits

Nutrient load reduction activities beyond baseline requirements are eligible for credit generation.

Point Sources

Nutrient-Regulated Point Sources - For a permitted point –by-source with a nutrient allocation to generate nutrient credits, it must discharge at levels below its nutrient allocation stated in the NPDES permit. Credits are based on the difference between the permit limit and discharge level reported with the DMRs deemed to be representative by the Department of average discharge loads and adjusted with relevant factors in section IV.C. below.

Existing Insignificant Facilities (*design flow less than 50,000 gallons per day*) – These facilities represent a nutrient load which may be used for offset and/or trading purposes. On a case-by-case basis, these facilities will be assigned an average annual nutrient load which would provide opportunities for new and expanded non-significant and/or significant facilities to use as offsets for increased nutrient loads.

Once the Chesapeake Bay Total Maximum Daily Load (TMDL) is developed all facilities with design flows less than 50,000 GPD may be assigned nutrient loading limits commensurate with the TMDL and may be required to obtain offsets.

Comment [r6]: Language provided by WVDEP 5/12/08

For MS4s, the six Minimum Control Measures in the MS4 general permit must be attained before other activities are eligible to generate credits (e.g. increasing nutrient assimilative capacity or using wetland treatment at outfalls, investing in nutrient removal efforts on public lands, etc.). Such activities must be proposed and will be reviewed on a case by case basis by the Department.

Non-point Sources

For non-point sources, nutrient reduction proposals must contain Department recognized methods to demonstrate nutrient reductions that occur from activities that reduce nutrient application, or increase nutrient uptake and retention, or result in net export of nutrients from the watershed. Currently, all approved Chesapeake Bay Program BMPs are eligible to generate credits. A current list of approved activities in West Virginia is available on the Department's trading program website.

Where Department-recognized methods for a nutrient reduction activity do not exist, methods can be proposed for Department approval, though the necessary approval period for this may delay approval of proposed credits.

Credits can only be generated from manure sheds if the structure was installed after 2005. Credits can be generated from nutrient management practices such as no till, cover crops, etc. and for conservation easements and protections such as riparian buffers and fencing in the year they are generated regardless of what year the practices were first initiated.

Calculation of Delivered Load

To calculate the number of credits that can be derived from nutrient reduction activities, the factors below are used. These factors serve to translate how various activities on a parcel of land result in a delivered nutrient load reduction and are automatically calculated in the Nutrient Net online forms (for nutrient reduction activities not included in the Nutrient Net program, the Department may be willing to review and approve alternative methodologies, but this may result in a delay in credit certification).

Segment Factor (SF)

The Segment Factor is a factor that represents the fraction of the nutrient load originating from a given land use type that is delivered (via runoff, groundwater and atmospheric deposition) to the edge of the corresponding stream segment. This factor also accounts for average soil types, topography, hydrology, land use, and other factors within the segment. The SF is derived from the Chesapeake Bay Watershed Model and included in the NutrientNet calculation tools.

Delivery Factor

The delivery factor is a function of the distance from the edge of the watershed segment and the fall line of the Chesapeake Bay. It represents the effective delivery of the nutrient load to the Chesapeake Bay and the related estimated diminution of the effect of the nutrient reductions between upstream and downstream points. The delivery factor is derived from the Chesapeake Bay Watershed Model and included in the NutrientNet calculation tools.

Calculation of nutrient credits from relevant activities

Point Source

Nutrient-Regulated Point Sources - For a nutrient-regulated point source to generate credits, it must discharge at levels below its

nutrient allocation stated in the NPDES permit. Credits generated are based on the difference between the permitted nutrient allocation and discharge level reported in the DMR. A point source must also calculate credits using the relevant delivery factor.

Insignificant Facilities – These facilities are currently exempt from nutrient regulation.

Other Point Sources - A point source without nutrient limits can also generate credits. MS4s must fulfill their SWMP submitted to the Department for how they will meet the six minimum control measures in the state general permit.

Each of these point sources generating credits must apply the delivery factor.

Non-point source

Agriculture – Agricultural sources can generate nutrient reduction credits by implementing activities on their fields or animal concentration areas that reduce nutrient loads to ground and surface water. In order to generate credits, these activities must result in an average per-acre load below the stipulated baseline. The Department's calculation methodology, NutrientNet, should be used by persons seeking approval of credits in the context of trading within the Potomac Basin. The on-line NutrientNet computer program must be used to calculate the nutrient reduction efficiencies of BMPs that are included in this on-line system. The Department may consider other calculation approaches for practices not addressed in the NutrientNet program, although the proposal review time may take longer.

NutrientNet automatically applies relevant adjustment factors to the calculation of credits from nutrient reduction activities. Factors that will be used include the Segment and Delivery factors.

Non-point source (Non-agriculture) – Reductions from land in the Urban/Mixed Open (U/MO) category of land use can generate credits using calculations based on the Chesapeake Bay Model and applying relevant Segment and Delivery factors.

The Department is considering development of a credit calculator for Urban/Mixed Open land uses that may be incorporated into the Nutrient Net system. In the interim persons interested in developing U/MO credits must work with the Department on a case by case basis.

Comment [r7]: Added 6/19/08 as a potential outcome of the Rocky Marsh Project.

Other - Credit generation by other non-agriculture non-point sources and other projects to increase nutrient uptake/increase nutrient assimilation and retention are evaluated on a case by case basis. If the Chesapeake Bay Program has already determined efficiencies or methodologies for the practices in question, alternatives are only considered with justification and upon approval of the Department. Presenting alternative methodologies or efficiencies may delay the process of credit approval. Relevant calculation factors will be determined on a case by case basis.

Use of Credits in NPDES Permits and Trading Ratios

Department approved and registered credits may be used by NPDES permittees to comply with permit requirements. For a nutrient regulated point source to apply available credits as offsets to plant loads in excess of permitted nutrient allocations, the facility must apply the appropriate ratios as described in this section.

The Department ensures the effectiveness and validity of the credits used in NPDES permits. This includes the use of (1) methodologies to calculate credits before approval, (2) supplemental credit verification processes and requirements, and (3) the credit reserve, all of which are discussed below in this Guidance. Permittees' record keeping, monitoring and credit tracking are to be documented with the monthly Discharge Monitoring Reports or in another Department-approved/provided format.

Trading Ratios

Reserve Ratios set aside a percent of load reductions to be held in a "Credit Reserve." Similar to risk or crop insurance, this Reserve covers permittees' obligations in the event of natural or the otherwise uncontrollably-caused failure of credit generating activities. The reserve ratio applies to all credits generated. This ratio may be adjusted by the Department to ensure program integrity.

Uncertainty Ratios are an allowance for the relative uncertainty in the relationship between credit generation efforts and actual resulting nutrient reductions in local waters and ultimately the Bay – this accounts for uncertainties related to the absence of monitoring data and the challenge of estimating how individual actions affect stream loads over time and space. For example there is uncertainty in estimation of initial loadings, the load reduction effectiveness of various BMPs, the delivery of the nutrients to the nearest stream and across watersheds).

Special Concerns Ratio – Additional incentives or ratios may be applied to credits generated in watersheds which the Department deems to be of special water quality concern such as those located on impaired or high quality streams and/or their tributaries.

Application of Ratios

1. Credits generated by all non-point sources and MS4s can be used by NPDES permittees at a ratio of 2:1 – for each pound of nutrient discharged above permit levels, the permittee must purchase two credits of non-point source reductions. This accounts for both the risk reserve (0.3) and uncertainty (0.7) inherent in the generation of NPS credits.

2. Credits generated by **nutrient-regulated point sources** can be used by NPDES permittees at a ratio of 1.1:1 – for each pound of nutrient discharged above permit levels, the permittee is required to purchase 1.1 credit pounds of point source reductions. This accounts for the risk reserve (0.1).

3. Credits generated by regulated **point sources without nutrient requirements** can be used by NPDES permittees at a ratio of 1.5:1 – for each pound of nutrient discharged above permit levels, the permittee is required to purchase 1.5 credits of point source reductions to account for risk 0.3 (Reserve Ratio) and the increased level of uncertainty 0.2 (Uncertainty Ratio) associated with this category of point sources due to the inadequate history of nutrient monitoring data.

A nutrient regulated point source may take measures to control or eliminate discharge from an unregulated wastewater point source in order to increase its own nutrient allocation. For example a PSD may choose to control the discharge from an existing package treatment plant or on lot sewage disposal system. The PSD could claim credits from absorbing an unregulated point source at a ratio of 1:1.5 for the amount of credit-eligible load eliminated.

4. Point Source “Early Buy-in” Incentive. During the period between <<DATE the guidance is finalized>> until the TMDL is developed, point source dischargers have the opportunity to buy into the trading program in exchange for a reduced trading ratio of 1.5 to 1 for the purchase of credits from nonpoint sources. The fees for early buy-in are as follows:

Significant dischargers - \$15,000
Non-significant dischargers-\$4,250

The funds obtained from this program will be used to implement conservation practices in the Potomac basin thereby capitalizing the nutrient credit bank.

Comment [W8]: Subject to agency review of insignificant sources.

| Source | Credit calculation factors | | | Trading ratios | | | |
|----------------------|--|---|------------------------------------|----------------|--------------------|--------------------|--------------------|
| | Baseline | Segment (calculated by CBM) | Delivery (calculated by CBM) | Uncertainty | Reserve | Total | |
| <i>Point-Source</i> | Significant / NonSignificant (municipal/industrial) | Permitted nutrient load | N/A | Yes | N/A | .1 | 1.1:1 |
| | Insignificant | | N/A | Yes | .2 | .3 | 1.5:1 |
| | MS4 | Permit requirements | Yes | Yes | .7 | .3 | 2:1 |
| | Nutrient assimilation (projects designed for nutrient removal) | - 0 - | Project by project | Yes | Project by project | Project by project | Project by project |
| <i>Non-Pt Source</i> | NPS Agriculture | Farm-wide Nut. Mgt Plan & attainment of average field or practice area load in accordance with Table X | Yes | Yes | .7 | .3 | 2:1 |
| | NPS Urban/Mixed (non-MS4) | Legal compliance with federal, state, and local codes and an average per acre load. | Yes | Yes | .7 | .3 | 2:1 |
| | Septic | To be determined - approx 10lbs N per person per hh per year. | Yes | Yes | .7 | .3 | 2:1 |

Comment [a9]: Requested by WVDEP to be deleted. To be discussed along with Section III.1.c.

Monitoring and Evaluation / Risk Allocation

The Department enforces permit limits through established Departmental compliance procedures. The Department also helps to ensure the effectiveness and validity of the credits used in NPDES permits. This includes the use of (1) methodologies to calculate credits before approval, (2) verification processes and requirements, and (3) the credit reserve.

Permittees must ensure the credits satisfy their permit conditions. Permittees are responsible for ensuring that the credits they obtain and apply to their permits for compliance purposes are certified and registered by the Department. Permittees are responsible for the terms of their credit purchase agreements are met, when needed to ensure compliance with their permit. In the event that nutrient reduction activities fail due to uncontrollable or unforeseeable circumstances such as extreme weather conditions, timely notice must be provided to the Department and Reserve Credits may be applied for the purposes of permit compliance. The Department plans to exercise enforcement discretion with respect to permittees for the year in which credits are determined to be invalid, as long as (1) the credit failure is not due to negligence or willfulness on the part of the permittee or credit supplier and (2) the permittee replaces the credits for future compliance periods.

Additionally the Department provides permittees a “true up” period at the end of each accounting year to generate or purchase credits needed to meet their compliance obligation due to credit failures not related to natural disaster or risk or due to unexpectedly higher discharge annual average discharge volumes or effluent levels. This period extends for two months from the end of the credit accounting year.

Documenting Credits and Trades

The Department, using approved methodologies, must approve all credit calculations, credit and trade registries, and credit tracking activities. This information is public and current information will be available on the Department's Nutrient Trading website and the on-line marketplace (NutrientNet). All credits must be registered before they can be used to meet permit limits.

The marketplace tool may also be used by buyers and sellers to verify that their trades have been approved by the Department.

The Department may provide guidelines for acceptable contract terms and a model trading contract, purchase agreement or a list of certain essential elements of a trading contract in the future if deemed necessary.

Ensuring Program Integrity and Managing for Success

The Department recognizes that there is some level of uncertainty in the ultimate success of nutrient and sediment reductions that serve as the basis for tradable credits.

The Department will evaluate the program at least every five years or more frequently if deemed appropriate. Based on these reviews, the Department may determine program enhancements are needed and the appropriate changes will be made. These will be shown on the Department's Nutrient Trading website. Stakeholder input will be obtained prior to the changes, as appropriate.

Attachment 8

**World Resources Institute and WV Conservation Agency Cost Share
Commitment Letters**



West Virginia Conservation Agency



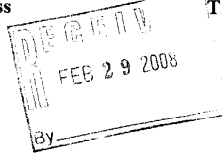
**Governor
Joe Manchin III**

**Chairman
Gus R. Douglass**

**Executive Director
Truman R. Wolfe**

February 25, 2008

Richard Herd
WV Water Research Institute
West Virginia University
202b NRCCE, Box 6064
Morgantown, WV 26506



Dear Rick,

As a partner in development and Implementation of the WV Potomac Nutrient Trading program the West Virginia Conservation Agency (WVCA) is pleased to offer the following information in support of the NRCS Conservation Innovation Grant cost share requirements.

The attached spreadsheet shows the number of acres in the eight WV counties draining to the Potomac River drainage that benefited from the WVCA pasture liming program. The spreadsheet also shows that the liming program reduced sediment runoff by 23,469 tons/year and phosphorus loading by 1,514 pounds/year. The total state funding expended on this program to date is \$284,488.

Additionally, Mr. Thomas Brand, Program Coordinator in the Davis College at WVU is partially funded by the WVCA to support the development of the Potomac nutrient trading program. His involvement includes participating in trading team meetings, researching other trading programs, and conducting outreach with various stakeholders. The estimated value of his cost share contribution to date is \$20,000.

The total cost share contribution of the WVCA to your project is \$304,488.

We look forward to continued collaboration with the WV Water Research Institute on development and implementation of this important project.

Sincerely,

Truman R. Wolfe
Executive Director

WVU 237 1000 9762

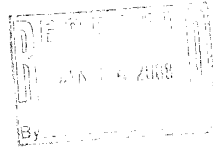


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January 10, 2008

Richard Herd
WV Water Research Institute
West Virginia University
202b NRCCE, Box 6064
Morgantown, WV 26506



Re: Additional Matching Funds for Conservation Innovation Grant

Dear Mr. Herd,

Pursuant to our agreement with WV Water Research Institute, the World Resources Institute has raised additional cash matching funds of \$102,300 to be applied toward the Upper Potomac Bank-and-Trade Conservation Innovation Grant Project led by West Virginia University. Together with \$119,000 of cash matching funds that WRI has previously committed to the project, the World Resource Institute's total cash match for the project is equal to \$221,300. The total value of WRI's project funds is now \$442,549.

A new invoice will be submitted for the period beginning February 1, 2007 through July 31, 2007 reflecting a higher cost share, rather than the one-to-one proportional cost share reporting that was requested in the agreement. Future invoices will also reflect higher cost share until the \$221,300 matching funds commitment is satisfied.

We look forward to continued collaboration with the WV Water Research Institute on this project.

Sincerely,

Steve Barker

CFO and VP for Finance and Administration
World Resources Institute

World Resources Institute