



**Chesapeake Bay Program
Partnership's Sector Workgroup
Coordinators Review of the
Jurisdictions' Draft BMP Verification
Program Plans**

Prepared by the Chesapeake Bay Program Partnership's
Agriculture, Forestry, Stream Health, Urban
Stormwater, Wastewater and Wetlands Workgroup
Coordinators



Chesapeake Bay Program
A Watershed Partnership

CBP Sector Workgroup Coordinators' Review of Jurisdictions' Draft BMP Verification Program Plans

Background

To ensure the seven Chesapeake Bay watershed jurisdictions fully benefitted from those originally responsible for drafting up the Partnership's sector specific BMP verification guidance, Rich Batiuk, Chesapeake Bay Program (CBP) BMP Verification Committee chair, asked the Partnership's six sector workgroup coordinators to review the jurisdictions' draft BMP verification plans relative to their workgroup's BMP verification guidance. In coordination with their respective workgroup chairs, the workgroup coordinators used the series of review evaluation questions they originally prepared for use by the CBP BMP Verification Review Panel to help structure their reviews. These review comments and recommendation are being provided to the jurisdictions in the spirit of the Partnership working collectively to help further strength and enhance the jurisdictions' BMP verification program plans.

Overarching Comments:

Agriculture (Mark Dubin):

The BMP Verification Review Panel's assessment of the jurisdictions' plans was very thorough. I do not have any additional comments to add at this time.

Forestry (Sally Claggett):

Comments on Protocols Themselves:

Some states placed the forestry practices in the Ag section of their BMP protocol. This is not ideal because forestry practices have distinct partners, lifespan, needs, tracking mechanisms, etc. This is especially true for agricultural riparian forest buffers (RFB) because of the great reliance on this practice to meet WQ goals, but some states are also relying on urban RFB, timber harvesting BMPs and urban tree canopy. States should revise their Protocols to make distinct the forestry BMPs. Some forest practices are not high priority. In this case, states should provide a schedule for when those verification protocols will be completed.

Forestry Practices and Verification Guidance:

There can be many hurdles to getting new riparian forest buffers functioning on the ground. Multiple state-federal-NGO organizations are involved in outreach, technical assistance and record-keeping in each state. Increased coordination among partners is a big issue cited in the new Riparian Forest Buffer Management Strategy. It is not clear even to the RFB partners what contracted sites are being inspected by who and when. Even the procedure will change from year-to-year based on budgets.

Initial inspections of RFB are usually visual field inspections completed by agency personnel [usually a forestry partner, NRCS or SWCD] since they are needed in the planting/conservation plan necessary for all cost-shared tree planting. Landowners are given the option of self-

reporting (Note: It is not uncommon for a landowner to self-report after a planting has occurred as it is in his/her interest to get paid for the work.) Because of this self-reporting, Forestry Workgroup (FWG) guidelines stipulate a follow-up visit by inspection professional during the establishment period (years 1-4 post-planting). Issues with survival (insect infestation, invasives, flooding, herbivory) can happen at any time in the life of the practice, but most occur during the establishment period.

One measure of confusion surrounds spot checks. It is unclear whether the variously mentioned FSA and NRCS inspections are additive or the same. FSA often provides funding to NRCS or State Forestry to do this type of field work. For instance, if FSA conducts a 5% spot check and NRCS conducts 10%, this may mean 15% are spot-checked, but more likely it is 5 or 10%. Likewise if a state's criteria is to have 25% spot-checked, that amount may include what is being spot-checked by federal agencies.

There is required maintenance, often performed by the landowner. The landowner may receive \$5/acre/year to do maintenance, but this is less than what it costs and it is common that the maintenance is not performed. In some cases, no tree shelter is used to protect the trees or the stake in a tree shelter breaks, making herbivory a problem. With properly installed shelters, mortality is only 10 to 30% (compared to 70% without shelters). Sometimes inferior seedlings or the wrong tree species for the site are planted. Information from VA's Hardwood monitoring regime has provided excellent information on this, and the monitoring regime is needed more than ever when considering a changing climate. More states should adopt monitoring regimes like VA's.

Tree survival is only one indication of RFB function. Issues with concentrated flow (vs. the uniform flow needed for a buffer to function) may develop but information on this has never been routinely collected and I know of no studies that gathered the information on likelihood of occurrence. Logically, uniform flow is more likely to happen on steeper grounds.

The FWG's guidance calls for 100% inspection at planting or prior to; a second inspection during the period a buffer is becoming established to assure that any maintenance problems are detected and corrected, and risks identified; inspections during years 5-10 based on a risk-based statistical sampling with 80% confidence; and 100% inspection near the end of contract to encourage/facilitate buffer re-enrollment or retention.

Some of these issues with verification can and should be addressed as part of the partners' two-year workplan that accompanies the Management Strategies for RFB and Tree Canopy.

Forest Conservation: There is a lot of confusion around this practice. Because it is defined for MD only by virtue of their Forest Conservation Act, the FWG did not treat it in their Verification Guidance. Some states may interpret this as forests that are protected in their state-- this is not accurate. It can be characterized as forested acres not developed, because annually a certain number of acres are assumed to be developed in the CB Model based on an algorithm. As the Model changes, this practice is likely to change too.

Stream Restoration (Jennifer Greiner):

Feedback from Denise Clearwater, Workgroup Chair:

All jurisdictions that provided a protocol will rely on permit requirements for monitoring. The level of detail in the protocols varies, with West Virginia and Delaware providing answers to many of the sample questions. No protocols mentioned including a post-construction certification or deadline for bringing a failed or sub-standard practice into compliance to receive credit. It would be useful for revised protocols to specifically answer the questions and link these to the verification guidance elements, where the information is missing or lacking detail.

The duration for receiving credit (10 years in Virginia, 20 years in West Virginia) is inconsistent with the duration mentioned in *Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects*, prepared for and accepted by the Water Quality Goal Implementation Team for the Chesapeake Bay Program on May 12, 2013, and revisions approved on September 8, 2014 (Panel Report). The Panel Report recommends a 5-year duration for stream restoration projects before verification is again required to continue to receive credit.

The Delaware protocol contains the most detail addresses most elements, naming the U.S. Fish and Wildlife Service rapid method for verification. Sites in Delaware will be visited for every year for three years, and then once every five years.

West Virginia's protocol relies on U.S. Army Corps of Engineers permit requirements for monitoring and reporting. This includes annual monitoring for five years. A list of relevant physical features to assess, and potential methods, are named.

Verification protocols and guidance focus on post-construction monitoring, but it is unclear if verification is supposed to include any qualifying conditions from the Panel Report. According to the Panel Report, it is not sufficient for a project to meet the definition of one of the named practices and receive BMP credit. There is no automatic presumption that the projects are "good projects." "Stream restoration" in the Panel Report includes a statement that qualifying considerations must be met, including environmental limitations and functional improvements to receive credit. Qualifying conditions include evidence of degradation and design review to ensure functional uplift. The verification questions and submitted protocols do not address an initial assessment nor design analysis.

In establishing conditions, the Panel Report makes several statements recognizing that improperly designed and located projects can be harmful, rather than beneficial, to aquatic resources. The need for qualifying considerations is repeated several times in the Panel Report. The Panel Report highlights the need for assessment of existing resources and presumes that the assessment will be done thoroughly. The assessment process, necessary for qualifying stream restoration projects for BMP credit, also follows the steps taken in regulatory review, particularly the design alternatives analysis, for minimizing impacts according to State regulation and statute. The assessment process also matches federal requirements for the required assessment in the RGP for most activities. The thresholds for degradation named in the Panel Report are also the same as those subsequently used in the RGP as being among the federal qualifying

conditions. The steps in the assessment also parallel the steps in the process that U.S. Fish and Wildlife Service is developing for MDE.

The Panel Report demonstrates strong support of existing regulatory requirements, with examples shown in italics:

“Important Disclaimer: The Panel recognizes that stream restoration projects as defined in this report may be subject to authorization and associated requirements from federal, State, and local agencies. The recommendations in this report are not intended to supersede any other requirements or standards mandated by other government authorities. Consequently, some stream restoration projects may conflict with other regulatory requirements and may not be suitable or authorized in certain locations.”

Thorough regulatory review is considered essential for success of the stream restoration projects and to ensure their proper siting and design and is recognized in the Panel Report as being among additional qualifying conditions.

It is unclear how credit is assigned to a floodplain re-connection project, which presumes to add credit for wetland treatment, if the area affected by the re-connection is already wetland and may be credited under a new wetland land use.

The Panel Report emphasizes the need to maintain or expand existing riparian vegetation, citing studies where loss of vegetation contributed to project failure. In addition, the Panel Report is supportive of requiring compensatory mitigation for loss of riparian vegetation.

Riparian vegetation is not mentioned as being part of post-construction verification. If the Panel Report qualifying conditions are supposed to be required before accepting stream restoration projects as BMPs, then the verification protocols should address those conditions.

Urban Stormwater (Tom Schueler):

1. Most of the states still confuse paper *BMP reporting* with field *BMP verification*. While improved BMP reporting is useful, it must be combined with periodic field inspections to confirm they still exist and are working as designed. In practice, many states are still struggling to develop credible BMP reporting systems (PA/VA especially). At this point, most states stop verifying (i.e., inspecting) once the BMP has been initially constructed and existing regulatory or general permit requirements expire. If there was a common theme among the state protocols, it was that they do not intend to commit any more work to field verification than they were doing before the verification process began three years ago.
2. The majority of the state verification protocols do not address the following key verification principles outlined in USWG (2014): post-construction field inspections, visual indicators, BMP down-grades, BMP life-spans, inspecting legacy BMPs, non-MS4 sub-sampling. These principles are critical to ensure that proper sediment and nutrient credits are assigned to past and present urban practices.

3. The real responsibility for BMP verification falls to local governments, especially MS4s. None of the state protocols, however, contained any guidance on how they would reach out to these communities to provide the technical methods and procedures on how to verify practices on the ground, especially any "hard and fast" procedures to decide when a BMP should be dropped from the rolls or downgraded. Indeed, several states (e.g., PA/VA) presume that their BMPs could never be lost or downgraded, since their regulations require every BMP be faithfully maintained in perpetuity.
4. None of the states outlined how they will verify the reductions in non-farm fertilizer nutrients going forward, as a result of statewide UNM legislation. This was the one BMP that contributed the most nutrient reduction for the urban sector in the last few progress runs. The Urban Stormwater Workgroup (USWG) is asking the states to present their methods later this Fall, but at this time there does not appear to be a verifiable path forward.
5. With respect to the "big picture" comments developed by the CBP Verification Review Panel, I generally concur with them, especially #10-12, 15-22, and 25 and 27.
6. I also generally agreed with the "stop light" grades that the Panel assigned to the individual states, although I would down-grade VA and MD from yellow to red, and simply rate PA as being unresponsive (see Part 2).

The key question is what can be done to get the Bay states to strengthen their verification commitments in their final versions of the protocols, or at least by the mid-point assessment (2017-2018). On the carrot side, it would make sense to work with the states to develop specific products, inspection tools, and technical guidance needed by their MS4s, using state CB grants. The states should contract with the private sector to get the actual products done. On the stick side, EPA should set a 2 year deadline for the states to meet a minimum threshold metrics for reporting and verification efforts. This would give the states more time to figure out how they are going to evolve to the next level of verification. Absent an improvement by that deadline, a state would be "fined" a fixed percentage of its urban nutrient reduction (i.e., non-verified BMPs would be dropped from the input deck).

Wastewater (Ning Zhou):

Provided jurisdiction-specific comments only.

Wetlands (Denise Clearwater):

No protocol includes all elements listed in the sample questions and verification guidance. It would be useful for protocols to specifically answer the questions and reference to specific elements in the guidance, to demonstrate how the guidance is followed, and if not, the reason why a different approach is used. When mentioning requirements from other USDA programs, it will be useful to clearly attach the relevant requirements or state them as part of the

protocol. Some of the intended protocols may be adequate, but the descriptions lack sufficient detail to clarify what actions will be taken.

Pennsylvania and Maryland did not submit protocols for streams and wetlands but will do so at a later date. New York will provide a protocol for stream restoration.

Delaware

Agriculture (Mark Dubin):

No additional comments.

Forestry (Sally Claggett):

Is the intensity of verification efforts prioritized in proportion to a practices contribution to the overall TMDL pollution reduction in the jurisdiction's WIP?

Forest Buffers: 10.0% N 5.1% P 6.6% S

DE's Protocol followed suggested terms and content, making it easy to follow and understand. Ag Forest Buffers are appropriately in the "highest" priority category.

Do verification methods for cost-shared agricultural riparian buffers utilize and build upon the existing verification programs for cost-shared contracts?

DE's Protocol for follow-up inspections seems to depend entirely upon current procedure (generally 5-10%), but could be more clear. In the narrative, DE points out that timing of inspections is important, but says it has no influence over timing. It should be noted that DE has reported "0" RFB for the past several years despite their high reliance in the WIP.

Are the frequency of site-checks consistent with the following recommendation from the sector guidance: Two visits within the first 4 years, spot-checked between years 5-10, and spot checked between years 10-15 to determine contract continuation? If not, are they sufficient to ensure scientific rigor? Are CREP partners involved in the reenrollment process?

FWG guidelines suggest 100% site inspection at planting or immediately prior; a second inspection during the period a buffer is becoming established (1-4 years) to assure that any maintenance problems are detected and corrected, and risks identified; inspections during years 5-10 based on a risk-based statistical sampling with 80% confidence; and 100% inspection near the end of contract to encourage/facilitate buffer retention. DE's Protocols do not follow this. The Protocols for the different funding categories of agricultural tree planting look fine.

Do proposed site inspection methods focus on common maintenance issues specifically related to water quality standards such as channelization or concentrated flows?

Not found in DE's protocol.

Do statistical sampling methods document how they demonstrate a clear improvement over the current sampling rate? (The recommended rate is 80% confidence in reported practices)

Not found in DE's protocol.

Are the baseline acres for each practice tracked in order to ensure there is a net gain in acres across a county or watershed segment over time? Are tree canopy and riparian buffer acres re-assessed every 5 years to ensure net gain in tree canopy acres and riparian buffer acres over time?

This part of the FWG's Guidance has been revised, although it would be good to have states do some of their own assessments of net gain.

Does the program rely upon qualified local forestry partners for tracking, reporting, and maintenance for expanded tree canopy practices?

The protocol covers cost-share urban tree planting. Tree Canopy practices are represented by a new Management Strategy as well as an Expert Panel to determine efficiencies of the BMP. DE Forest Service is helping the FWG to develop improved tracking procedures accordingly. Possible areas of improvement are tracking and crediting urban tree planting performed by localities under stormwater permits or voluntary tree planting.

Do existing and planned forest harvesting inspection programs track total acres or rate of implementation of forest harvesting BMPs? Do they require site-visits to ensure proper installation?

DE's Protocol is strong on forest harvesting BMPs. Loggers or operators submit a permit prior to commencing forest management activities, and DFS staff reviews 100% of sites during the harvest operations. DE Forest Service works with loggers to address concerns – verbal warnings & remediation plan. If problems are severe or recurring, regulatory action (usually fines) is taken.

Stream Restoration (Jennifer Greiner):

The Delaware Verification Program is excellent and conforms to almost all of the recommendations found in the guidelines from the BMP Verification Committee except for those indicated below. Also Table 2.3 references an earlier draft of the stream Restoration Protocols with outdated "default rates". The correct version can be found here http://www.chesapeakebay.net/publications/title/recommendations_of_the_expert_panel_to_define_removal_rates_for_indivi

1. Is a professionally appropriate checklist or other tool used to assess the design of the project and whether the project was installed according to the design?
Yes using Rapid Stream Monitoring Protocol from NFWS.

2. Does the verification program seek to identify the key features that relate to stream function?

Yes.

3. Is a professionally appropriate checklist or other tool used to assess post-construction performance?

Yes, using checklist as suggested by Rapid Stream Monitoring Protocol.

4. Is the frequency of field verification defined?

Yes

5. Are inspections required two years after the initial construction and once every five years after that?

Annually for first 3 years then once per 5 years and after major storms.

6. Does the program require a post-construction certificate to ensure that the project was installed properly, meets its functional restoration objectives, and is hydraulically and vegetatively stable?

No, could not find any reference to post construction certification

7. What is the defined amount of time a locality/federal facility has to take corrective maintenance or rehabilitation to bring a sub-standard BMP back into compliance?

No criteria for when a credit will be removed or specific time period given for correction.

8. Are separate procedures necessary, and if so, identified for verifying restoration projects built for the purpose of nutrient trading within a state or to offset new loads elsewhere in the watershed?

No, doesn't appear applicable.

9. Is the program consistent with the Bay Program-approved reporting standards as far as reporting units, geographic location, and removal rates?

Yes

Urban Stormwater (Tom Schueler):

Recommend: Shift to Green

Delaware has done a creditable job on their initial verification and should be encouraged to push ahead toward implementation. The state agency staff who prepared the plans appeared to have

more ownership of the protocols, and given their small size, appear to have the resources to handle the overall verification burden in their state.

Wastewater (Ning Zhou):

- 1) WWTP: DE QAPP is for non-point source only. WWTWP is not mentioned.
- 2) CSO: DE does not have any active CSO. Their QAPP does not need to address CSO.
- 3) Septic: It is well documented. No additional comments on septic system.

Wetlands (Denise Clearwater):

The Delaware protocol includes many recommended elements, but would benefit from more detail. The protocol does not mention if the predominance of native vegetation, or other field indicators will be determined, but this may be covered in the habitat determination. Wetland restoration is stated to also include creation and enhancement. However, there is not yet an efficiency assigned to enhancement/rehabilitation projects, and it is not clear if these projects can be identified once submitted to NEIEN.

District of Columbia

Agriculture (Mark Dubin):

Not applicable.

Forestry (Sally Claggett):

Does the program rely upon qualified local forestry partners for tracking, reporting, and maintenance for expanded tree canopy practices?

DC's Protocol should follow the FWG guidance regarding Tree Canopy given their in-depth and active program and the reliance on this practice in their WIP. DC's Protocol should say what and how verification practices are followed by the organizations from which the District receives its tree information. DC information included in the new Tree Canopy Management Strategy is extensive regarding UFA's program. There should be hot links to any documents being referenced in the Protocol. DC should complete Table 8 plus add a short explanatory narrative. There may also be a double-counting issue regarding tree planting vs tree replacement. Interagency coordination of DC's urban tree effort should continue and include prominent NGOs working in this field. DC is participating on the Management Strategy and in developing improved tracking and reporting procedures for Tree Canopy.

Stream Restoration (Jennifer Greiner):

The quality assurance project plan for Urban Best Management Practices Database is lacking in detail and does not incorporate the verification guidance for stream restoration recommended by the Verification Committee as indicated below.

1. Is a professionally appropriate checklist or other tool used to assess the design of the project and whether the project was installed according to the design?

No.

2. Does the verification program seek to identify the key features that relate to stream function?

No.

3. Is a professionally appropriate checklist or other tool used to assess post-construction performance?

No.

4. Is the frequency of field verification defined?

At least once per five years.

5. Are inspections required two years after the initial construction and once every five years after that?

Unknown.

6. Does the program require a post-construction certificate to ensure that the project was installed properly, meets its functional restoration objectives, and is hydraulically and vegetatively stable?

Unknown although as-built plans are required.

7. What is the defined amount of time a locality/federal facility has to take corrective maintenance or rehabilitation to bring a sub-standard BMP back into compliance?

Unknown.

8. Are separate procedures necessary, and if so, identified for verifying restoration projects built for the purpose of nutrient trading within a state or to offset new loads elsewhere in the watershed?

No.

9. Is the program consistent with the Bay Program-approved reporting standards as far as reporting units, geographic location, and removal rates?

Urban Stormwater (Tom Schueler):

Recommend: Move to Yellow

The District has made great strides in coordinating the urban BMP reporting functions across the many DC agencies that are involved, and takes justifiable pride in their new urban BMP reporting system. This represents a vast improvement from what they were reporting just a few years ago.

The protocol does needs more detail about the specific field verification methods they will use after practices are initially constructed, which was also noted by the BMP Verification Review Panel.

Wastewater (Ning Zhou):

- 1) WWTP: DOEE briefly stated how Blue Plains WWTP upgrade and CSO LTCP have been carried out and DC water is responsible for the related verification. No detailed references were mentioned. Since QAPP is only at the jurisdiction level, DOEE could address the coordination with DC Water and EPA on this effort and reference some DC Water documentation on Blue Plains data QAQC and the EPA permit.
- 2) CSO: see above
- 3) Septic: DC does not have any septic systems. No QAPP on septic is needed.
- 4) In addition to the Panel's comments, I recommend that the District should provide a BMP protocol that specifically addresses the questions in the wastewater part of the BMP Panel evaluation form.

Wetlands (Denise Clearwater):

No comments provided.

Maryland

Agriculture (Mark Dubin):

No additional comments.

Forestry (Sally Claggett):

Is the intensity of verification efforts prioritized in proportion to a practices contribution to the overall TMDL pollution reduction in the jurisdiction's WIP?

Ag Forest Buffers:	4.9% N	2.0% P	2.3% S
Urban Forest Buffers:	4.7% N	3.1% P	4.7% S

Maryland's WIP reflects less reliance on agricultural forest buffers than in other states, and more reliance on urban forest buffers than in other states.

Agriculture RFB are included in MD's protocol as Structural, High priority, Visual Multi-Year BMPs along with other agricultural practices. There is no forestry-specific information here, but because DNR is active in informing MACS (as shown in DNR FS's QAPP), there is often additional data such as buffer width data for agriculture buffers where this information may not be reported through 1619 Agreement.

The narrative entitled "Quality Assurance to Verify and Track Visual Multi-Year BMPs" notes that the majority of such BMPs are implemented through MACS cost-share or co-cost-sharing with USDA. The follow-up site visits during the life-time of a contract are based on a random, computer-generated sampling of 10%/year of all active practices and performed by a qualified SCD inspector who was not involved with the initial design of the project. There are also requirements for practice maintenance if the land is sold; if the new owner does not agree, the BMP is removed from database. Maintenance requirements are based on NRCS standard. In MD's 2015 RFB Task Force report, the need for additional technical assistance/site visits was identified as was the need for additional maintenance to ensure survival. The FS is funding 2 additional RFB foresters in MD beginning in 2015, and more funding has been requested by MD from Farm Service Agency for this practice, which will help with site visits as survival and lack of maintenance continue to pose challenges.

Do verification methods for cost-shared agricultural riparian buffers utilize and build upon the existing verification programs for cost-shared contracts?

Initial inspection is described as: "SCD staff is on-site ... to ensure all elements of the design and construction are verified and documented." For cost-shared buffers, this is likely reflective of the initial site visit/planting plan and development of the contract, and technical staff may not always be present during the actual planting of the buffer.

For follow-up inspections: "Annual MACS spot-check reviews. Field inspections determine whether the BMPs were constructed according to plans and specifications and whether the BMPs are being maintained in accordance with contract." 10% of practices are re-verified annually, and information put in MDA's Conservation Tracker regardless of funding source. This is current procedure and does not follow FWG guidelines to revisit all sites after planting (years 1-4) to ensure establishment.

When the RFB is unsatisfactory, a letter to farmer IDs issue and sets timeframe to correct problem. BMP is re-inspected again--normally w/in the year—and the farmer can't receive additional cost-share until BMP is brought back into compliance. This is standard contract practice that is not addressed by the FWG guidance.

Buffers may also be included in the category Resource Improvement/Visual Multi-year. These are non-cost shared practices (presumably voluntary) and SCD makes an initial inspection when the practice is discovered. 20% in this category are verified annually and the status will be updated in Conservation Tracker to indicate 'satisfactory' or 'unsatisfactory'... those practices assessed as satisfactory will need re-verification over the next credit duration and will be re-submitted through NEIEN protocols. Practices assessed as unsatisfactory will be removed." The established CBP credit duration of 15 years will be used for RFB.

The FWG's guidance calls for 100% inspection at planting time; a second inspection during the period that a buffer is becoming established (years 1-4) to assure that any maintenance problems are detected and corrected, and risks identified; inspections during years 5-10 based on a risk-based statistical sampling with 80% confidence; and 100% inspection near the end of contract to encourage/facilitate buffer re-enrollment or retention.

Are the frequency of site-checks consistent with the following recommendation from the sector guidance: Two visits within the first 4 years, spot-checked between years 5-10, and re-visited between years 10-15 to determine contract continuation? If not, are they sufficient to ensure scientific rigor? Are CREP partners involved in the reenrollment process?

MD's Protocol is clear about the first visit, at inception, but it is not clear about a second visit that is needed during the establishment period (1-4 years) to assure that any maintenance problems are detected and corrected, and risks identified. Re-visits happen on 10% of the practice sites, presumably for the life of the contract (15 yrs), but there is no mention of a risk-based statistical sampling with 80% confidence, nor is there mention of 100% inspection near the end of contract to encourage/facilitate buffer re-enrollment or retention.

Do proposed site inspection methods focus on common maintenance issues specifically related to water quality standards such as channelization or concentrated flows?

Not found in MD's Protocol.

Do statistical sampling methods document how they demonstrate a clear improvement over the current sampling rate? (The recommended rate is 80% confidence in reported practices)

MD's Protocol does not mention statistical sampling methods. There is no additional sampling suggested for RFB than what is currently being done.

Are the baseline acres for each practice tracked in order to ensure there is a net gain in acres across a county or watershed segment over time? Are tree canopy and riparian buffer acres re-assessed every 5 years to ensure net gain in tree canopy acres and riparian buffer acres over time?

This part of the FWG's Guidance has been revised, although it would be good to have states do their own assessments of net gain using high-resolution remote sensing. MD's Protocol has a placeholder for this item, based on Verification Panel feedback. They do acknowledge that tree planting BMPs will be usurped into the appropriate forest land use for the model at which time they will cease to be counted as BMPs.

Does the program rely upon qualified local forestry partners for tracking, reporting, and maintenance for expanded tree canopy practices?

Overall, there is a lack of verification for urban forestry practices, especially considering the reliance on urban RFB.

Tree Canopy practices are represented by a new Management Strategy as well as an Expert Panel to determine efficiencies of the BMP. MD Forest Service is helping to develop improved tracking procedures and a Workplan which will help with verification.

Do existing and planned forest harvesting inspection programs track total acres or rate of implementation of forest harvesting BMPs? Do they require site-visits to ensure proper installation?

Yes, MD's Protocol calls for tracking the rate of forest harvest BMP implementation. MD is currently doing a study to determine forest harvest BMP implementation in MD and DE. A determination of the rate of implementation has been occurring approximately every 10 years which may not be adequate.

Stream Restoration (Jennifer Greiner):

No comments provided.

Urban Stormwater (Tom Schueler):

Recommend: Drop from Yellow to Red

There was nothing in their submission that addressed the basic urban BMP verification principles developed by the workgroup, despite the fact that MDE has many of the tools and permit requirements needed to establish a credible verification system.

While MD has a good BMP reporting system for MS4s for many years, it is still not fully integrated with all of the CBP-approved BMPs. The existing reporting system appears to constitute everything thing MDE intends to commit when it comes to verification going forward. The most troubling issue was to their failure to account for cleaning up their legacy BMPs, or provide any guidance to their MS4s on how to do it themselves. This is noteworthy because MD has the largest number of historical stormwater BMPs of any Bay state due to their 4 decades of doing stormwater BMPs. Without this degree of field verification, there is strong possibility that

the model would over-credit the aggregate nutrient reductions achieved by stormwater practices in Maryland.

Wastewater (Ning Zhou):

- 1) WWTP: MDE provided two QAPPs for the wastewater sector, one is the WWTP data QAPP for the EPA ICIS database and another is the QAPP for their WWTP data submitted to CBPO. No overall verification plan for WWTP is provided.
- 2) CSO: CSO is not covered. I recommend that MD specifically answer the CSO questions in the evaluation form. This assume that Baltimore and other areas have CSO program and contribute something to Bay nutrient/sediment reductions.
- 3) Septic: Onsite system verification is not covered. Maryland should answer the questions regarding septic tanks in the evaluation form, as part of its septic tank verification protocol. Such a protocol is needed immediately, as this is a priority practice accounting for 7.2% of the nitrogen reduction in the WIP.
- 4) I recommend that MD provide a narrative which summarizes the status of its WWTW nutrient reduction program, as an intro to its answers to the Panel's evaluation form. The purpose of such a narrative would be public information, so readers understand context and what's been done.

Wetlands (Denise Clearwater):

No comments provided.

New York

Agriculture (Mark Dubin):

No additional comments.

Forestry (Sally Claggett):

Is the intensity of verification efforts prioritized in proportion to a practices contribution to the overall TMDL pollution reduction in the jurisdiction's WIP?

Ag Forest Buffers:	5.3% N	1.8% P	2.2% S
Urban Forest Buffers	4.1% N	7.1% P	4.9% S
Forest Practices:	0.8% N	0.3% P	17.4% S

Upper Susquehanna Coalition's (USC) submittal refers to New York's Agriculture Environmental Management system, which seems comprehensive. NY's Protocol says that "Inspection forms are being currently being considered and investigated by the USC Ag Team....This process is under development and included in the BMP verification program in Section D." Section D says that the "a new effort is underway in 2015 to further develop the

USC data validation and usability protocols....For each BMP, the [Ag] Committee will identify which New York verification protocols meet the Chesapeake Bay Program BMP verification guidelines. For those protocols which are not a best fit for the CBP guidelines, the USC Ag Committee will develop options for improvement and investigate statistical sampling methods....”

All three of the forestry practices mentioned above should have appropriate intensity of verification based on the overall TMDL pollution reductions expected from them.

NY’s Protocol does not specifically address the FWG guidelines, so the answer to the standard questions below is “No.”

Do verification methods for cost-shared agricultural riparian buffers utilize and build upon the existing verification programs for cost-shared contracts?

Are the frequency of site-checks consistent with the following recommendation from the sector guidance: Two visits within the first 4 years, spot-checked between years 5-10, and spot checked between years 10-15 to determine contract continuation? If not, are they sufficient to ensure scientific rigor? Are CREP partners involved in the reenrollment process?

Do proposed site inspection methods focus on common maintenance issues specifically related to water quality standards such as channelization or concentrated flows?

Do statistical sampling methods document how they demonstrate a clear improvement over the current sampling rate? (The recommended rate is 80% confidence in reported practices)

Are the baseline acres for each practice tracked in order to ensure there is a net gain in acres across a county or watershed segment over time?

Are tree canopy and riparian buffer acres re-assessed every 5 years to ensure net gain in tree canopy acres and riparian buffer acres over time? (This part of the FWG’s Guidance has been revised, although it would be good to have states do some of their own assessments of net gain.)

Does the program rely upon qualified local forestry partners for tracking, reporting, and maintenance for expanded tree canopy practices?

Do existing and planned forest harvesting inspection programs track total acres or rate of implementation of forest harvesting BMPs? Do they require site-visits to ensure proper installation?

Stream Restoration (Jennifer Greiner):

No comments provided.

Urban Stormwater (Tom Schueler):

No comments provided.

Wastewater (Ning Zhou):

- 1) WWTP: Although the NYDEC document is a QAPP for the WWTP data submitted to CBPO, it has addressed all aspects of their verification efforts on WWTP, including their plan to add monitoring requirements to some non-significant facilities.
- 2) CSO: CSO is not covered.
- 3) Septic: NY does not plan to claim septic BMP. It is OK not to include septic BMP verification.

Wetlands (Denise Clearwater):

New York will sort information by land use type and project type (enhancement vs. gains). Enhancement projects do not yet have an assigned efficiency. No additional details are included.

Pennsylvania

Agriculture (Mark Dubin):

No additional comments.

Forestry (Sally Claggett):

Is the intensity of verification efforts prioritized in proportion to a practices contribution to the overall TMDL pollution reduction in the jurisdiction’s WIP?

Forest Buffers:	12.9% N	5.7% P	8.8% S
-----------------	---------	--------	--------

PA’s Protocol had a clear emphasis on verifying the RFB practice—“high priority”—as is appropriate given the anticipated load reductions from this practice, but the protocol actions do not support this. They were open about a number of gaps even in its verification of high priority practices however no gaps have been identified for verification of riparian buffers, “as federal and state efforts result in nearly 1/3 of sites being verified annually” implying that FSA, NRCS and DEP inspections are additive. The Protocol notes that DEP’s inspections are short visual reviews and no detailed information on hardwood monitoring or site risks are tracked but staff capture location, type of buffer; and status of the buffer (to include photos). Given their past and future reliance on this practice, PA should have a separate verification protocol section on forest buffers.

The remote sensing pilot in the Potomac River Basin mentioned in the Protocol is interesting and the FWG would like to hear about the outcomes when they are ready (December 2015?). The Tree Canopy Expert Panel has stated that high-resolution remote sensing can detect trees that are at least 10-15 years old, which means that tree planting will have to have other means of verification in the first 10 -15 years.

Do verification methods for cost-shared agricultural riparian buffers utilize and build upon the existing verification programs for cost-shared contracts?

Current practices for conducting re-inspections are stronger than in other states. As with some other states, it is unclear whether the variously mentioned FSA and NRCS inspections (% or 10% annually) are additive or the same since FSA will often provide NRCS or State Forestry funding to do this type of field work (see comment above). The 25% revisits provided by DEP currently are additive. This still falls short of the recommended re-inspection of a site 1-4 years post planting to address maintenance needs.

Are the frequency of site-checks consistent with the following recommendation from the sector guidance: Two visits within the first 4 years, spot-checked between years 5-10, and visits between years 10-15 to determine contract continuation? If not, are they sufficient to ensure scientific rigor? Are CREP partners involved in the reenrollment process?

All states conform to the initial site visit which often happens prior to planting. As mentioned above, there does not appear to be a re-inspection on all sites in years 1-4 post-planting, as suggested by FWG guidelines. PA's Protocol indicates that NRCS or a TSP provider is required to spot-check the site at the end of the second year to determine whether the riparian buffer is established and meets the standards and specifications—again, it is unclear whether this means 100% or 5% or 10%. Spot checks on a risk-based subsampling (80% confidence) in years 5-10 post-planting is not addressed, however more RFB sites are re-inspection visits in PA than in other Bay states.

Chesapeake Bay Foundation reports that prior to 2008, there was only 40% survival of buffers due to lack of maintenance and follow-up visits. By learning from past mistakes, this survival has greatly improved and is estimated to be 80%. It should be noted that survival is not the same as function, but it is easier to measure.

DEP staff annually visit (25% of) riparian buffer sites, and determine if buffers are still in place. Sites visited include projects funded by CBIG, 319, NMA, REAP, and Growing Greener as well as those tracked through a 1619 Agreement and they are tracked on their internal database. Past reporting may have double-counted some of these sources of information. This has been pointed out in the past but historic clean-up for RFB may still be needed because PA is reporting about half of their RFB practice to be outside of CRP/CREP. This is the highest amount of non-CREP in the watershed. If the historic buffer was not at least 35' wide and defined as a forest riparian buffer (vs. riparian buffer) it should not be counted toward RFB.

Do proposed site inspection methods focus on common maintenance issues specifically related to water quality standards such as channelization or concentrated flows?

Not found in PA's Protocol.

Do statistical sampling methods document how they demonstrate a clear improvement over the current sampling rate? (The recommended rate is 80% confidence in reported practices)

No additional sampling is being proposed as an improvement on what is currently done. Information obtained from USDA should not automatically assumed to be accurate and PA needs to determine if, and document whether and how they achieve PA's verification objectives.

Are the baseline acres for each practice tracked in order to ensure there is a net gain in acres across a county or watershed segment over time? Are tree canopy and riparian buffer acres re-assessed every 5 years to ensure net gain in tree canopy acres and riparian buffer acres over time?

This part of the FWG's Guidance has been revised, although it would be good to have states do their own assessments of net gain using high-resolution remote sensing.

Does the program rely upon qualified local forestry partners for tracking, reporting, and maintenance for expanded tree canopy practices?

Not found in PA's Protocol.

Do existing and planned forest harvesting inspection programs track total acres or rate of implementation of forest harvesting BMPs? Do they require site-visits to ensure proper installation?

PA is not counting on any water quality improvements resulting from forest harvesting BMPs. However state forests do follow forest harvesting BMP's 100% of the time (3rd party certified) and most private operations also have legitimate forest harvest BMPs.

Stream Restoration (Jennifer Greiner):

No comments provided.

Urban Stormwater (Tom Schueler):

Recommend: Deem Unresponsive.

The "protocol" is a simple rehash of their existing regulatory and permitting programs for SWM and ESC, much of which has been around for years, with nothing that addresses the key urban BMP verification principles outlined in USWG (2014).

Given the extent to which PA relies on urban BMPs to meet its overall load reductions, this "paper" approach to both BMP reporting and verification does not provide any reliable assurances that load reductions from urban sector can be properly verified.

The three specific areas where it falls short are:

1. "stormwater BMPs implemented or retrofitted as a MS4 program, 319 grant or growing greener grant are not addressed" in the verification plan.
2. "there is no established lifespan for BMPs" ...Like Peter Pan, PA BMPs never grow old.
3. "no verification of legacy BMPs prior to 2006" -- but we still want to keep the reduction credits forever.

Under this system, PADEP would never lose credit for any urban BMP under any circumstance at any point in the past and the future ...which is clearly contrary to the spirit of verification.

Wastewater (Ning Zhou):

- 1) WWTP: PA wastewater QAPP is also a WWTP data QAPP for the CBPO model run purpose. No detailed overall verification procedures are provided, especially for non-significant facilities.
- 2) CSO: CSO is not covered.
- 3) Septic: PA does not plan to claim septic BMP. It is OK not to include septic BMP verification.

Wetlands (Denise Clearwater):

No comments provided.

Virginia

Agriculture (Mark Dubin):

No additional comments.

Forestry (Sally Claggett):

Is the intensity of verification efforts prioritized in proportion to a practices contribution to the overall TMDL pollution reduction in the jurisdiction's WIP?

In Virginia's Draft Verification Protocols (June 30, 2015) the RFB practice is treated similarly to other agricultural BMPs practices even though relatively high pollutant reductions are expected from this single practice (9.1% N, 3.6% P, 5.7% S).

In the VA Protocol, most RFB practices reported would fall into the BMP Grouping of “State or Federal Cost-share within Contractual Period” and the BMP Type of “Low Risk as determined by existing VACS spot check program” (Appendix 3, Table 1). (Q: are RFBs considered structural agricultural practices by VA?) All agriculture cost-shared practices in the contract period, including forest buffers, are “low risk” with a pass/fail ratio of 90-10 (pass means 90% are successfully functioning) based on VACS-documented compliance of 97% for multiple practices.

Watershed-wide, the rate for successful RFB establishment is estimated to be 80%. There is no good estimate for how well the RFB functions after establishment and RFB functional efficiency has been difficult to study. However, roughly 10% of RFBs are not eligible for re-enrollment because they are not up to standard, usually dictated by lack of tree survival. That 97% of RFB’s in are in compliance seems high. VA’s 2015 RFB Task Force report points out that DCR will provide 50% cost-share for replanting of RFB, as needed, indicating that this may be an issue. Survival is only one indication of RFB function. Issues with concentrated flow (vs. the uniform flow needed for a buffer to function) may develop.

Do verification methods for cost-shared agricultural riparian buffers utilize and build upon the existing verification programs for cost-shared contracts?

Virginia currently has very good guidelines on RFB hardwood plantings under the various federal cost-share programs and also good monitoring for these. Current practice is to have a professional forester visit every RFB site 3 times (and 3 sets of recorded documentation—a plan, an initial inspection and a re-inspection after 2 years). In addition, a number of audit/inspections are conducted by foresters or SWCDs. The VA Protocol seems to suggest re-visiting only 1% of the RFBs once, instead of 100% of RFBs twice (which is done currently). The RFB hardwood planting guidelines are not mentioned in the protocol. If the Protocol was to replace the existing monitoring effort, it would represent roughly a 200% reduction in rigor.

Virginia’s 2015 Task Force report on RFBs states that “Agricultural landowners and operators across Virginia, especially within the Chesapeake Bay Watershed, have a wide variety of technical and financial resources available to support and assist them with implementation of forest buffers, including USDA’s Conservation Reserve Enhancement Programs (CREP), Environmental Quality Incentives Program (EQIP), and Virginia’s Agricultural Cost-Share Program (VACS).” This indicates that resources are available for technical assistance and inspections.

Furthermore, with all Ag practices being lumped together with RFB, much less than 1% of RFB will be visited. The VA Protocol states that if one of these 1% “fails,” it will be issued a corrective action or taken off NEIEN. What about the rest of the practices that this 1% represents? Wouldn’t a failure trigger reinforced inspections of similar practices in a similar geographic area or done by the same contractor?

Are the frequency of site-checks consistent with the following recommendation from the sector guidance: Two visits within the first 4 years, spot-checked between years 5-10, and 100% re-inspection between years 10-15 to determine contract continuation? If not, are they sufficient to ensure scientific rigor? Are CREP partners involved in the reenrollment process?

The Protocol lacks specific mention of RFB apart from other agricultural practices, and FWG's guidance for this practice has not been addressed. There is mention of an inspection of 100% of structural practices one year prior to end of contract—but it is not clear if buffers are included. Re-enrollment is not specifically mentioned as suggested in FWG's guidance.

As all Ag cost-share BMPs are grouped together for 1%/year follow-up inspection, there is no assurance that any one BMP such as RFB will be inspected at all during the contract lifetime. Few, if any, buffers will be re-inspected.

As mentioned, RFBs across the watershed have been known to fail. In some cases, no tree shelter is used or the stake in a tree shelter breaks, making herbivory a problem. With properly installed shelters, mortality is only 10 to 30% (compared to 70% without shelters). Sometimes inferior seedlings or the wrong tree species for the site are planted. Information from VA's Hardwood monitoring regime has provided excellent information on this, and the monitoring regime is needed more than ever when considering a changing climate. Results of a two-year study by the VA Department of Forestry between 2006 and 2008 to evaluate hardwood planting sites showed that 40 percent of 300 sites had acceptable survival of 80 percent. The 60% unacceptable survival was prior to corrective action, but does cast doubt on the 97% acceptable compliance figure for this practice.

In VA's 2015 Task Force report on RFB, maintenance and management issues were identified as a barrier to establishment along with the lack of technical assistance/field visits from professionals. Invasives were identified as big concern, and one that is increasing in severity. For these reasons, the FWG guidelines emphasized the need for multiple follow-up inspections specific to the RFB practice.

The FWG's guidelines called for 100% inspection at planting or prior to; a second inspection during the period a buffer is becoming established to assure that any maintenance problems are detected and corrected, and risks identified; inspections during years 5-10 based on a risk-based statistical sampling with 80% confidence; and 100% inspection near the end of contract to encourage/facilitate buffer re-enrollment or retention.

Do proposed site inspection methods focus on common maintenance issues specifically related to water quality standards such as channelization or concentrated flows?

Not found in VA's Protocol.

Do statistical sampling methods document how they demonstrate a clear improvement over the current sampling rate? (The recommended rate is 80% confidence in reported practices)

As previously stated, VA's Protocol does not appear to be an improvement over the current sampling rate established as 5% by NRCS (compared to 1% or less), and by the re-inspections and audits done by CREP partners (which are not mentioned in the Protocol).

The inspection regime does not meet the Forestry guidance, and does not include any information about forestry technical assistance site visits after buffers are planted. There is a chance there could be some trees included in the stream fencing with buffer category, which is singled out for 4%/yr inspecting, but this is not identified as including trees.

Are the baseline acres for each practice tracked in order to ensure there is a net gain in acres across a county or watershed segment over time? Are tree canopy and riparian buffer acres re-assessed every 5 years to ensure net gain in tree canopy acres and riparian buffer acres over time?

This part of the FWG's Guidance has been revised, although it would be good to have states do their own assessments of net gain using high-resolution remote sensing.

Does the program rely upon qualified local forestry partners for tracking, reporting, and maintenance for expanded tree canopy practices?

Virginia follows the Urban Stormwater guidance idea of separating urban practices according to legal requirements vs. voluntary and a homeowner category. These Tree Canopy practices are represented by a new Management Strategy, and VA Department of Forestry is helping the FWG to develop improved tracking procedures.

Do existing and planned forest harvesting inspection programs track total acres or rate of implementation of forest harvesting BMPs? Do they require site-visits to ensure proper installation?

As Verification Panel members already pointed out, there is a lack of reference to VA's excellent forest harvesting BMP monitoring program which should be noted in Table 3, at a minimum. More credit should be given to VA's Department of Forestry for conducting this important work.

Stream Restoration (Jennifer Greiner):

The Commonwealth of Virginia Quality Assurance Project Plan for Managing and Reporting Data on Practices, Treatments and Technologies Resulting in Reductions of Nitrogen, Phosphorus and/or Sediment Pollutant Loads to the U.S. EPA - Chesapeake Bay Program Office is lacking in detail and includes few of the recommendations for stream restoration from the Verification Committee. Details for verification for stream restoration are referenced either to MS4 Permit requirement, BMP installed pursuant to Bay Act requirement or BMP installed to meet VSMP requirements under the Construction GP.

1. Is a professionally appropriate checklist or other tool used to assess the design of the project and whether the project was installed according to the design?

Unknown.

2. Does the verification program seek to identify the key features that relate to stream function?

Unknown.

3. Is a professionally appropriate checklist or other tool used to assess post-construction performance?

Unknown.

4. Is the frequency of field verification defined?

Unknown. BMPs implemented in MS4s must be maintained in accordance with permit conditions. Credit duration is 10 years.

5. Are inspections required two years after the initial construction and once every five years after that?

Unknown. DEQ does not anticipate any specialized training and certifications requirements for Verification. Training and certification for DEQ internal data are inherent to the regulatory programs from which the data is generated.

6. Does the program require a post-construction certificate to ensure that the project was installed properly, meets its functional restoration objectives, and is hydraulically and vegetatively stable?

Unknown.

7. What is the defined amount of time a locality/federal facility has to take corrective maintenance or rehabilitation to bring a sub-standard BMP back into compliance?

Unknown. Data verification standards are outlined in section D2. Any dataset that fails to meet these standards for validation and verification will, upon full implementation of the Verification Framework, result in exclusion of that data from the DEQ reporting of practices, treatments and technologies resulting in reductions of nitrogen, phosphorus and/or sediment pollutant loads in the Chesapeake Bay.

8. Are separate procedures necessary, and if so, identified for verifying restoration projects built for the purpose of nutrient trading within a state or to offset new loads elsewhere in the watershed?

Unknown.

9. Is the program consistent with the Bay Program-approved reporting standards as far as reporting units, geographic location, and removal rates?

Urban Stormwater (Tom Schueler):

Recommend: Drop to Red.

The state protocol exempted most of its BMPs from verification, as it claimed that "For regulated BMPs, **no sunsets will apply** (*i.e., no BMP life spans*), because they will be maintained perpetually due to the maintenance agreements we require." This class of BMPs includes all of those required under stormwater and ESC regulations for new development or redevelopment in the past, now or in the future -- which represent the lion's share of BMPs that VA will ever report to CBPO. To exempt them from ever losing credit (*i.e., perpetuity*) fundamentally violates the core urban verification principles outlined in USWG (2014). This also contrasts with DEQ's own MS4 permit requirements that require locals to inspect the condition of their entire stormwater BMP inventory every 5 years.

The VA protocol did have acceptable guidance on how to verify UNM plans and local street sweeping effort, but these BMPs produce much less nutrient reduction than the regulated BMPs that are exempted above.

Wastewater (Ning Zhou):

- 1) WWTP: Brief and clear summary tables documented their verification plans for WWTP, but no details are available for the WWTP data QA plan.
- 2) CSO: CSO is not covered.
- 3) Septic: Brief summary tables documented their verification plans for onsite system.
- 4) It would be good public information for VA to say whether the nutrient limits for its significant WWTWs are not being met, or provide information on when they will be met.

Wetlands (Denise Clearwater):

Virginia's protocol for wetlands states a 15-year duration for credit and that an assessment will be done to ensure that the project meets design standards. Detailed information is not included to compare to the verification guidance.

West Virginia

Agriculture (Mark Dubin):

No additional comments.

Forestry (Sally Claggett):

Is the intensity of verification efforts prioritized in proportion to a practices contribution to the overall TMDL pollution reduction in the jurisdiction's WIP?

Forest Buffers:	4.8% N		1.5% S
+ high reductions for Stream Access Control w/ Fencing:	16.3% N	19.5% P	41.1% S
Other Agriculture (Trees?)	2.7% N	3.2% P	2.3% S
Forest Harvesting Practices:	3.8% N	1.1% P	2.5% S

Forest Buffers and Ag Tree Planting are included in the Ag section of “West Virginia Plan for Verification and Validation of Nutrient Reduction Strategies”. WV’s Protocol followed suggested terms and content, making it easy to follow and understand. Forest buffers and tree planting are in the column entitled “Structural/Agronomic BMPs Verification Program.” The practices covered include Forest Buffer (high priority) and Tree Planting (medium).

The extremely high value placed on stream fencing with exclusion is noted. It would be interesting to know if WV expects achievement of this practice to lead to more forest buffers, or if the widths are not great enough. Will these goals be mutually supportive or compete for the riparian space? What are the implications for RFB?

Do verification methods for cost-shared agricultural riparian buffers utilize and build upon the existing verification programs for cost-shared contracts?

WV’s Structural/Agronomic BMPs are driven by cost-share and non-cost-share programs. Five percent (5%) of Structural/Agronomic BMPs will be inspected through aerial coverage and will all be reviewed annually. It is not clear what is intended by “reviewed annually” and more explanation is needed.

WV plans to rely “solely” on federal verification programs already in place until each BMP has reached the end of its contract lifespan. This is counter to FWG guidelines for this practice. Structural/Agronomic practice states that inspection methods will be visual (does this mean remote sensing? Site visits?) and will be conducted by NRCS, WVCA, WVDOC, NGO depending on the BMP and/or funder—this needs more explanation.

Initial inspections of RFB are usually visual field inspections completed by the agency [NRCS or SWCD] since they are needed in the planting/conservation plan necessary for all cost-shared tree planting. Landowners are given the option of self-reporting (Note: It is not uncommon for a landowner to self-report after a planting has occurred as it is in his/her interest to get paid for the work.) Because of this self-reporting, FWG guidelines stipulate a follow-up visit by inspection

professional during the establishment period (years 1-4 post-planting. A two-year status report is completed after which projects are spot-checked according to an established protocol (usually 5-10%). There are no other requirements for annual reporting. When participants re-enroll in CREP, a new inspection is prompted.

Are the frequency of site-checks consistent with the following recommendation from the sector guidance: Two visits within the first 4 years, spot-checked between years 5-10, and revisited between years 10-15 to determine contract continuation? If not, are they sufficient to ensure scientific rigor? Are CREP partners involved in the reenrollment process?

WV Protocol falls short of FWG guidance. The table for Structural/Agronomic doesn't say there is a 100% initial inspection. In addition, there are the issues with follow-up inspections. The re-inspection during the critical establishment period is not indicated in WV's Protocol. Neither is the risk-driven spot-check sampling during years 5-10 post-planting or the end-of-contract visit to encourage re-enrollment or retention of the buffer.

For practices that no longer have a contract, WV state agencies and NGOs will be responsible for ongoing verification (will this be done on 100% of sites or a sub-sampling?). WV's Protocol reflects tree planting lifespan as 5 years, and buffers are 3 years— should be 10 or 15 years (life of contract).

Do proposed site inspection methods focus on common maintenance issues specifically related to water quality standards such as channelization or concentrated flows?

Not found in WV's Protocol.

Do statistical sampling methods document how they demonstrate a clear improvement over the current sampling rate? (The recommended rate is 80% confidence in reported practices)

Not found in WV's Protocol.

Are the baseline acres for each practice tracked in order to ensure there is a net gain in acres across a county or watershed segment over time? Are tree canopy and riparian buffer acres re-assessed every 5 years to ensure net gain in tree canopy acres and riparian buffer acres over time?

Remote sensing is mentioned but the context in terms of net gain is unclear. This part of the FWG's Guidance has been revised, although it would be good to have states do their own assessments of net gain using high-resolution remote sensing.

Does the program rely upon qualified local forestry partners for tracking, reporting, and maintenance for expanded tree canopy practices?

WV's Protocol met the FWG guidance on tree canopy. WV is well-informed and active with the Tree Canopy Management Strategy. Even though the FWG guidance regarding verification of "net gain" has been changed, it was refreshing to see it addressed here for tree canopy.

Do existing and planned forest harvesting inspection programs track total acres or rate of implementation of forest harvesting BMPs? Do they require site-visits to ensure proper installation?

WV's Protocol for forest harvesting BMP verification is consistent with the FWG guidance, however would improve with greater detail regarding inspections and when enforcement is triggered. WV is highly regulated around forest harvesting because of past problems, and has the strongest laws in the country regarding reducing sediment run-off from harvest sites.

All BMPs associated with registered timber operations on public and private land will be inspected at least three times, according to IAW DOF policy. Division of Forestry will do the inspecting.

Stream Restoration (Jennifer Greiner):

The West Virginia Plan for Verification and Validation of Nutrient Reduction Strategies includes very little of the recommended guidance for verification of stream restoration BMPs recommended by the Verification Committee.

1. Is a professionally appropriate checklist or other tool used to assess the design of the project and whether the project was installed according to the design?

No.

2. Does the verification program seek to identify the key features that relate to stream function?

No. Focus on structural stability.

3. Is a professionally appropriate checklist or other tool used to assess post-construction performance?

No.

4. Is the frequency of field verification defined?

Unknown except the requirements from USACE permit or NRCS funded projects.

5. Are inspections required two years after the initial construction and once every five years after that?

No.

6. Does the program require a post-construction certificate to ensure that the project was installed properly, meets its functional restoration objectives, and is hydraulically and vegetatively stable?

No. However, all permits require as-built drawings of the completed project, with structures, cross-sections, and photo points labeled as per Army Corps permit requirements.

7. What is the defined amount of time a locality/federal facility has to take corrective maintenance or rehabilitation to bring a sub-standard BMP back into compliance?

Unknown.

8. Are separate procedures necessary, and if so, identified for verifying restoration projects built for the purpose of nutrient trading within a state or to offset new loads elsewhere in the watershed?

Unknown

9. Is the program consistent with the Bay Program-approved reporting standards as far as reporting units, geographic location, and removal rates?

Unknown.

Urban Stormwater (Tom Schueler):

Recommend: Shift to Green

West Virginia has done a creditable job on their initial verification and should be encouraged to push ahead toward implementation. The state agency staff who prepared the plans appeared to have more ownership of the protocols, and given their small size, appear to have the resources to handle the overall verification burden in their state.

Wastewater (Ning Zhou):

- 1) WWTP: well documented verification plan for WWTP, but no WWTP data QA plan
- 2) CSO: CSO is not covered
- 3) Septic: Septic is not covered

Wetlands (Denise Clearwater):

In West Virginia, wetland restoration sites will only be inspected at the time of completion, for functionality and acreage. Occasionally hydrology, vegetation, and soils will be evaluated. Written notes and digital records will be kept.