

SUMMARY OF DISCUSSIONS AND FOLLOWUP ACTIONS

Chesapeake Bay Program Partnership's

BMP Verification Review Panel

Thursday, October 31st, 2013

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Introductions and Objectives of Today's Conference Call

- Dana York (Green Earth Connection LLC; Chair, BMP Verification Review Panel) verified the conference call participants and outlined the [agenda](#).

Review of August Panel Meeting Summary

- Dana York asked for any comments or corrections to the [draft August 28-29 meeting summary](#).
 - Dianna pointed out a blank thought on page 9 that should be deleted.
 - Rebecca Hanmer and Mike Gerel had a few minor corrections that they agreed to email to Jeremy Hanson.
- Dana York: Hearing no other comments, we'll consider them approved and post online after the noted revisions are made.

DECISION: The August 28-29 Panel meeting summary was accepted, pending incorporation of the minor edits noted by the panelists.

Panel Responses to List of Questions/Issues for Resolution

- Rich Batiuk (EPA, Chesapeake Bay Program Office) noted the panel was not able to bring everything to closure during the meeting in August. So he tried to capture the items where the Panel still needed to weigh in with its perspective. He directed panelists' attention to the [questions/issues for resolution by the review panel](#). The issues and questions posed to the panel members are broken out below.

Transparency

- Rich Batiuk sought confirmation on the Panel's recommendation that the CBP Partnership should use the following language, with recommended text in bold below, in the final version of the operational definition of transparency text.
 - "Transparency of the process of data collection must incorporate **clearly defined** QA/QC procedures, which may be implemented by the data-collecting agency or by an independent third party."
 - "Transparency of the data reported should be transparent at the **most site-specific** scale that conforms with legal and programmatic constraints, and at a scale compatible with data input for the Chesapeake Bay Program partnership modeling tools."
- Richard Klein requested further discussion from the panel at some point to seek a recommendation, up or down, that transparency should include public access to BMP data (location, when it was last inspected, etc.), to the extent possible given legal or programmatic constraints.
- Dana York: is that already included in the current transparency language?

- Richard Klein felt it was not currently expressed in the document that transparency would include making the data available in a way that is user friendly.
- Rich Batiuk: If we agree to go that route to provide BMP data, then the Chesapeake Bay Program Partnership's Chesapeake Stat website would be the likely mechanism that the Bay Program would use. Most of the focus to date has been on posting the modeled/estimated loads from the annual progress assessment runs. Anything that would be posted would definitely be limited according to legal constraints such as the Farm Bill.
- Dana York asked Rich Batiuk to talk with CBPO staff about what would be possible in terms of ensuring public access to the reported BMPs via the Chesapeake Stat website.
 - Rich agreed to CBPO staff and Will also work with Richard Klein on this.

ACTION: Rich Batiuk will discuss with CBPO Staff and Richard Klein about the prospect of posting BMP specific data to a publically accessible webpage on the Chesapeake Bay Program website (e.g., the Chesapeake Stat web site). Rich will report back to the Panel about what could potentially be done.

- Mike Gerel asked if NEIEN captures location data at a resolution finer than county scale.
 - Rich Batiuk: Yes. It depends on the practice. The reported geographical location information ranges from latitude-longitude to larger scales (e.g., county, watershed). Rich will ask the appropriate CBPO staff to look at what scale the majority of practices are currently reported at.
 - Mike Gerel: Perhaps there could be a way to have a public interface for NEIEN for public users to view, or generate reports from. They would not have the ability to manipulate or enter information, but could view the data.
- Rich Batiuk: For the 4th bullet, there needs to be the development of specific text for inclusion in the transparency language more clearly defining the reference to an “independent third party.” This issue came up through the discussion with STAC and Brian Benham (Virginia Tech), who recommended formation of an independent entity. Robert Traver had suggested using terms such as “independent external” to be more specific.
 - Robert Traver: Using the U.S. Army Corps of Engineers as an example, an “independent review” would be when somebody within the organization, but not involved with the project, would conduct the review. An “independent external review” would be when an outside organization reviews the information or report, e.g. the National Academies, a contractor, etc. The Corps does not use the term “third party.”
 - Dana York: NRCS had a similar protocol. They would not often have outside reviewers for specific engineering projects, but they would bring in other NRCS engineers or reviewers from outside areas who were not involved in the original engineering project being reviewed.
 - Dana York: The key point is that “independent” stipulates the person was not involved in the development or operations of the program/practice under review. Personally prefer “independent external” in place of “independent third party.”
 - Tim Gieseke felt “independent external” was more specific than “independent third party.”

- Gordon Smith: feel we are more in the engineering world on these issues, and the terms “independent” and “independent external” have clear definitions. “Third party” is used more in the greenhouse emissions context.
 - Dianna Hogan also felt “independent” and “external” are clear.
- Robert Traver: There is also an issue about the timing and stage when the review is performed. The benefit of the review depends on when it occurs and at what stage it used to inform the project. If it is done too late, then its recommendations may not be incorporated. It is better to do it earlier in the process.
- Mike Gerel: it would depend on the jurisdiction’s choice of what it is doing to verify.
- Dana York: point in time within the process depends on the system. It also depends on the failure rate of the practice.
- Mike Gerel: to clarify, instead of using the phrase “independent third party”, we would use “independent external”. Independent and external would be something that could incur additional cost, relative to just independent.
- Rebecca Hanmer noted she had brought up the issue of “independent third party” early in the conversation of the panel. The states will need to have flexibility on transparency, since we are talking about aggregated data that, by definition, is not transparent. Seems there are at least a couple layers to this. First, there will be verification of the annual data where reviewers would come in and check on the review. Then there would be larger studies, or reviews, to look for evidence of larger problems. Hope that we can leave this definition somewhat loose so the states can tell us how they plan to increase public confidence with their reviews.
- Tim Gieseke: We don’t have the final say on this, correct? We can make these recommendations.
- Mike Gerel: Think we can also set expectations for minimum review or transparency requirements.
- Robert Traver noted he sent some references and links to resources on the subject to Jeremy Hanson.
 - Rich Batiuk: We will work with what Robert provided Jeremy and provide the Panel with some working definitions.
- Dana York: we agree that “independent” means an organization or individual that is not involved in the project or process being reviewed.
 - Robert Traver: We also need to specify that these reviews cannot be delegated to a subordinate. Perhaps external reviews are more important in cases where there is potential for loss of life, or other significant risk.
- Mike Gerel: Independent does not exclude or preclude external.
- Dana York: The need for an external review would be reserved for cases involving factors like those mentioned by Robert, e.g. natural resource problem, threat to human or animal life.
- Robert Traver: External reviews are not free. The work typically has to be done by paid experts.
- Rebecca Hanmer: We don’t have to do everything across the board the same way. Suggest looking at priority BMPs.

Non-Cost Shared Practices

- Rich Batiuk asked for confirmation of the Panel’s support for a recommendation to the CBP Partnership for ensuring non-cost share data provided by producers would also be aggregated and privacy protected the same as cost-shared data. Rationale is to address the concerns articulated by Matt Monroe (West Virginia Department of Agriculture) during the August 28-29 Panel meeting that producers do not want share non-cost shared data unless it will be aggregated or protected in some way. Does the panel feel comfortable with that?
 - Tim Gieseke asked for clarification of “aggregation.”
 - Rich Batiuk: Means that we would follow the same privacy and aggregation requirements under section 1619 in the Farm Bill, for both cost-shared and non-cost-shared data. If there are only a small number of producers in an area that are reporting a specific practice, then it gets aggregated to a larger scale (county, or watershed) to protect the producer’s privacy.
 - Dianna Hogan: This is important and I would support it, especially if producers are asking for this. Do not think we should require something different for practices that are non-cost shared.
 - Rebecca Hanmer: Need to be careful here. Some non-cost shared practices may be regulated, e.g. CAFOs. We should distinguish between regulated non-cost shared practices and non-regulated non-cost shared practices. Wonder about urban BMPs installed on landowners’ private land. Not sure, but perhaps this could be broadened to equally apply to non-regulated non-cost shared urban practices installed on private land.
 - Mike Gerel: If jurisdiction’s aggregation methods are able to meet our principles and transparency requirements, then it is fine. Whatever is required for cost-shared practices should be fine for non-cost shared practices as well.
 - Rich Batiuk: We will continue to build on this during tomorrow’s conference call as well.

Agriculture Workgroup

- Rich Batiuk asked for confirmation of the Panel’s position on whether or not the procedures that NRCS and FSA follow for confirming cost-shared practices have been implemented meet the CBP Partnership’s principles and agricultural BMP verification protocols or not.
 - Mike Gerel did not feel the Panel came to that conclusion. We struggled with aggregation issue. For data collection, believe we were okay. We are still waiting for more information from the Agriculture Workgroup before we can reconsider this and come to a decision.
- Dana York: The Agriculture Workgroup still has to provide the Panel with the narrative documentation to accompany the matrix. Not sure what we would do if we don’t accept the NRCS methods, though.
- Mike Gerel: Think the collection process is adequate. It’s what happens after that can be more confusing and difficult to communicate to the public.
- Rebecca Hanmer: from the Forestry Workgroup perspective, there have been questions about the quality of the verification of CREP and other USDA tree planting programs.

- Dana York: let's keep this in mind and revisit it after we see the Agriculture Workgroup's narrative document. Maybe they will be addressed in that document.

Non-cost shared practices and Functional Equivalents

- Dana York explained Maryland Department of Agriculture is bringing forward a process for addressing functional equivalents and that she is helping with the report. The Agriculture Workgroup has decided that, for agriculture, a non-cost shared practice is something that meets an NRCS standard. So there is a known standard. We are taking the same tact for functional equivalents, so that it can be determined when a practice is there and functioning as it should.
- Dana York: The first presentation of this is going to be next week. There will be design criteria. Hold on this for now while it goes through the workgroups over the coming weeks. Key point is that there are design standards or specifications that a practice will either meet or not.
- Tim Gieseke: Will they look at categories of practices?
 - Dana York: For some things. Maryland decided not to attempt to define functional equivalents for any nutrient management practices. They chose practices that can be seen—e.g., structures.
- Rebecca Hanmer: What kind of review has been done by forestry folks about the width of buffers?
 - Dana York: We'll cover that at next week's Agriculture Workgroup meeting.
- Rich Batiuk: We will track the functional equivalents discussion as it progresses through the Agriculture Workgroup and bring it back to the Panel when appropriate.
- Rebecca Hanmer: not clear why there would be different verification for functionally equivalent practices. Is this an issue for the Panel?
- Mike Gerel: Agree with Rebecca. If there is an agreed-to process for these practices, then we would not need verification to be different than other practices.
- Dana York noted that others have also raised Rebecca's question.
- Rebecca Hanmer: This gets back to the suggestion that future expert BMP review panels should make recommendations about establishing specific life spans for BMPs to receive credit.
- Andrew Sharpley: There are a lot of new initiatives by NRCS, and one is in Chesapeake Bay watershed. Believe that 10% goes to monitoring. Is there a way to leverage this information to improve this process? There are now edge of field monitoring efforts that should provide a great amount of data. The Chesapeake Bay Program should look into this.

STAC Subgroup

- The panel reserved this discussion for the Panel's Friday, November 1 conference call.

Statistical sub-sampling/surveying

- Rich Batiuk asked for the Panel's interest in/willingness to go on the record recommending that the CBP Partnership develop, fund, and maintain for the long term a mechanism through which the jurisdictions can gain direct access to survey design experts.
 - Dana York: This relates back to the STAC issue.

- Richard Klein: Think this is vitally important. Particularly if we are able to go out there and survey a small portion of installed practices to determine the accuracy of the BMP data. Would like to see this sampling done by an independent party.
- Dianna Hogan: Agree that this is critically important. It can be very difficult to design survey and sampling methods, so it would be vital to have some access to experts in this area.
- Dan Zimmerman: If we really want to figure out what is going on the landscape, then we won't be using the cost-share data anyway. Would defer to the modelers about the data they would need. Would think the agencies would have in-house statisticians that could help with survey design. Have dealt with EPA and Forest Service statisticians.
 - Richard Batiuk: Not sure if the statistical design expertise would be there in all the state agencies.
 - Dan Zimmerman: Would make sense if the CBP partnership took the lead on this so they can look at the watershed as a whole.
- Rebecca Hanmer: This raises questions about funding. How much money does the Bay Program have to provide to the jurisdictions on a number of aspects related to verification, including survey and sampling design?
 - Rich Batiuk: If the panel thinks this is a good idea, we would look at EPA funding and perhaps other sources for this service. If providing this service is a priority, then we could certainly push forward in that regard.
 - Rebecca Hanmer: Are there other areas where the states likely have a legitimate need for assistance in designing their verification programs?
 - Rich Batiuk: In some cases they may need additional staff and in others they may need assistance from statistics experts. We have changed language in the EPA grant guidance so those grant resources (e.g., Chesapeake Bay Regulatory and Accountability Grants) are explicitly available to the states to help build or enhance their verification programs. This sampling design service may perhaps need to be more central.

Feedback loop

- The panel reserved this discussion for the Panel's November 1 conference call.

Definitions

- Rich Batiuk thanked the panelists for their discussions of and resolution on the requested definitions. CBPO staff have these recorded the Panel's recommendations and will work to provide clear working definitions back to the Panel.

Verification Framework Implementation

- Rich Batiuk explained that the list of draft recommendations were derived with assistance from Dean Hively, USGS, and Olivia Devereux, Devereux Environmental Consulting in their work on the forthcoming USGS publication entitled: "Integrating Federal and State Data Records to Report Progress in Establishing Agricultural Conservation Practices on Chesapeake Bay Farms". These draft recommendations which were included in section 15 of the July 15, 2013 draft basinwide BMP verification framework document shared with the panel. Rich reviewed the each group of related draft recommendations

[numbered, starting on page 3 of the list of questions/issues] and asked the panelists for their thoughts, concerns, recommendations and/or objections.

1. Reference Partnership's adopted BMP verification principles in the 2014 *Chesapeake Bay Program Grant and Cooperative Agreement Guidance*.
2. The Panel will determine if the proposed verification protocols, procedures, and processes are fully consistent with and supportive of the Partnership's adopted verification principles during review of each of the seven jurisdictions' proposed enhanced BMP tracking, verification and reporting programs
3. The Partnership's Principals' Staff Committee will only approve a jurisdiction's proposed verification protocols, procedures, and processes if they are fully consistent with and supportive of the Partnership's adopted verification principles.
4. Each of the seven watershed jurisdictions will either adopt verification protocols consistent with the protocols adopted by the Partnership as part of the basinwide BMP verification framework or develop verification protocols judged to be comparable by an independent group of recognized experts convened by the Partnership.
 - No objections were raised by the panelists to these recommendations.
 - Rebecca Hanmer: Has it been agreed that the panel will remain together to review the states' verification protocols and programs?
 - Richard Batiuk: Yes, that was part of the original Panel charge approved by the CBP Partnership's Principals' Staff Committee.
5. The Partnership will seek establishment of an independent consortium of land grant universities and charge them with responsibility for determining whether the jurisdictions' designed verification procedures/surveys meet the 80 percent minimum threshold of relative data confidence. This independent university consortium will follow the appropriate procedures and apply the tools adopted by the Partnership in evaluating whether the minimum threshold has been met.
 - Mike Gerel: might be helpful to include universities that are from outside the watershed as well.
 - Robert Traver: May not want to limit it to "land grant."
 - Richard Batiuk: We can make those changes to the draft text.
 - Mike Gerel: would be smart to set these up in advance so the assistance is available to the states when they work to develop their verification programs.
6. The Partnership formally amend its [Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model](#) to commit the Partnership to develop and adopt, as needed, new verification requirements for new BMPs through the Partnership's existing BMP expert panel, workgroup review, and goal implementation team decision making process.
 - Mike Gerel liked this recommendation.
 - No objections were raised by the Panelists to this recommendation.
7. Institute 1619 Conservation Cooperator agreements in all six states covering all state agencies both directly involved in conservation planning, funding, delivery, reporting, and submission of conservation practice data and with responsibility for submitting aggregated

agricultural conservation practice data to the CBP Partnership's Annual Progress Review through their respective state's NEIEN node.

- No comments or objections were raised by the Panelists.
8. Ensure each of these 1619 Conservation Cooperator agreements adopts the broadest, most consistent language as described in the USGS *Tracking Progress Towards Achieving Water Quality in the Chesapeake Bay Using USDA Farmland Conservation Data*.
 - No comments or objections were raised by the Panelists.
 9. Each of the six Chesapeake Bay states should establish a well-documented annual data handling protocol that will ensure routine, thorough, and consistent data access for all USDA Farm Bill agricultural conservation programs.
 - No comments or objections were raised by the Panelists.
 10. Seek NRCS commitment to continue to working to enhance data collection and reporting in the areas identified by the Partnership's Agriculture Workgroup.
 - Tim Gieseke: Is adding end dates to these practices part of this issue?
 - Rich Batiuk: It certainly is, and that has been raised by the Panel and others, including the Urban Stormwater Workgroup. We want to work with USDA colleagues to ensure that the installation date is captured in the collected and reported data.
 - Rebecca Hanmer pointed out that #10 was missing a reference to FSA. She noted that the Forestry Workgroup also made this recommendation.
 - Dana York: Rebecca raises a good point. We have been focusing on NRCS, not FSA, in our discussions and efforts. We need to follow through with FSA to discuss enhancing their data collection. They do a lot of data collection as well.
 - Rich Batiuk: Good points. We will reach out to FSA on this.
 11. Develop a common template for the six states requesting NRCS and FSA Farm Bill Program conservation practice data for Chesapeake Bay farmlands.
 12. Annually update the crosswalk between NEIEN and USDA (FSA and NRCS) practice codes and CBP Partnership Scenario Builder definitions to reflect progressive changes in USDA and CBP conservation practice definitions.
 13. Follow an established timeline each year (see Section 15 for specific timeline dates) for ensuring comprehensive, consistent reporting of federal cost shared conservation practice data across all six states.
 14. Request each jurisdiction, within their respective quality assurance plan, clearly document their specific methods employed to prevent double counting of cost shared practices.
 15. Request each jurisdiction undertake a comprehensive clean-up of their respective historical BMP databases in preparation for re-calibration of the Chesapeake Bay Program Partnership's Chesapeake Bay Watershed Model.
 - Tim Gieseke asked about the differentiation of cost shared and non-cost shared practices.
 - Rich Batiuk: Good point. There have been questions about CTA (conservation technical assistance), among other issues. Rich will circle back with Olivia Devereux and Dean Hively on this topic.

- Dana York: If we set life spans on NRCS practices, then there will be a point when they are no longer cost-shared. We need to make sure we don't double count these practices at that time.
- Tim Gieseke: The practices look the same whether they are cost shared or not.

ACTION: CBPO staff to go back to look at the double counting issue for when cost-shared practices convert into non-cost shared practices.

16. Documentation of each jurisdiction's BMP verification program will build directly upon their existing quality assurance plans already drafted, approved by EPA, and in place supporting their Chesapeake Bay Implementation Grant and Chesapeake Bay Regulatory and Accountability Grant.
 - Robert Traver: Shouldn't that be covered by the QA/QC?
 - Rich Batiuk: The procedures that the state goes through should be covered there. Good point. The CBPO needs to update its own quality assurance program plan to document these internal procedures.
 - Mike Gerel recalled an earlier point. Perhaps someday there will be a way for the public to view certain information online to check when things have been verified.
 - Rich Batiuk: In the case of agricultural cost-share information, once it gets submitted to the Chesapeake Bay Program Office through the jurisdictions' NEIEN nodes, it is essentially public information. By then it has been aggregated according to state and federal requirements.
17. Reach agreement within the Partnership on the set of required data fields to be reported through each jurisdiction's annual progress data submission through their NEIEN node which provide clear documentation that implementation of each reported practice have been verified.
18. Chesapeake Bay Program Office staff will review the jurisdictions annual NEIEN-based submissions of implementation progress data for documentation of verification as part of their routine evaluations of the quality and completeness of the data. The annual progress data reviews will be conducted following the guidelines and protocols agreed to by the Partnership through the Watershed Technical Workgroup. Any submitted progress data without the required verification documentation will be returned to the jurisdiction for incorporation of required documentation and resubmission.
19. EPA will annually review and approve the jurisdictions' quality assurance plans submitted as part of their annual applications for their Chesapeake Bay Implementation Grants/Chesapeake Bay Regulatory and Accountability Grants. EPA will focus its annual reviews on any changes to the plans as submitted by the jurisdictions. EPA must review and approve the quality assurance plans prior to the annual grant awards.
20. EPA will conduct periodic on-site audits of the jurisdictions' BMP verification programs carried by teams of recognized experts to ensure the procedures and protocols documented within the jurisdictions' QA plans are being effectively carried out.
 - Rebecca Hanmer: Draft recommendations 18-20 seem like a Chesapeake Bay Program QA/QC review.

- Rich Batiuk: EPA add an auditing capability focused on the jurisdictions' verification programs to its existing CBP quality assurance program. We do have a field and laboratory auditing program in place for review of the Partnership's various monitoring networks. It would not necessarily be an external audit, but something to ensure quality and accuracy.
- Rebecca Hanmer felt #20 was great. Dianna Hogan agreed, stating it seems like a necessary part of this.

21. The Chesapeake Bay Program Partnership's Scientific and Technical Advisory Committee, working with the Citizens and Local Government advisory committees, will sponsor periodic—every 3-5 years—-independent evaluations of the effectiveness of the basinwide BMP verification framework and the individual jurisdictions' BMP verification programs in achieving the five BMP verification principles adopted by the Partnership. Findings and recommendations from these periodic independent evaluations will be presented directly to the Principals' Staff Committee for consideration and follow-through actions and decisions.

- Dianna Hogan and Rebecca Hanmer agreed this was also a great idea.
- Dana York: May want to have the review sooner at the beginning, that it does not get entrenched if something is not working. After it is established, could perhaps have less frequent reviews.

22. In the first full annual progress reporting cycle coming two years after the date of adoption of the basinwide BMP verification framework by the Principals' Staff Committee, those reported practices, treatment, or technologies for which documentation of verification has not been provided for through each jurisdictions' NEIEN-based report systems will not be credited for nitrogen, phosphorus or sediment reductions for that year.

- Dana York asked for clarification of this item. Not clear what difference was between 22 and 21.
- Rich Batiuk: Under number 22, if PSC approves framework towards end of 2014, then starting with the 2016 progress run, then practices submitted without some documentation of verification would not be credited for that year. Number 21 is describing a periodic, independent review of the entire verification framework.
- Mike Gerel felt number 22 was really important. The states are very tuned into their progress runs and milestones.
- Rebecca Hanmer: We would need to clarify when these 'two years' would happen. After the partnership has approved the states' programs? This will be a huge discussion point for the states.
 - Rich Batiuk: Once the PSC has approved each of the jurisdictions' programs, that is when the clock would start on the 2 years.
 - Dana York: See this as data validation. Agree with Mike that we should do this, but the devil is in the details such as the workload and schedule.
 - Rich Batiuk: Great points. There would need be changes to the NEIEN input requirements and we would want this to be a natural evolution through the partnership so that it is not a huge or sudden burden.
 - Mike Gerel: Agree with Dana York. The details matter, but it will take time to build this.

- Rebecca Hanmer asked Dana York to consider discussion of priority BMPs during tomorrow’s panel call. She reiterated this is a potentially immense effort. We should allow flexibility so states can focus on the BMPs where they get the bulk of their reductions. It would be too much to verify every single practice all at once.
 - Mike Gerel: They wouldn’t necessarily need to verify every single practice. If they do a sub-sample that meets the criteria established by this panel, then that would verify all of that given practice in NEIEN.

Panel Members Interest in Follow up Outcomes Approach Conference Call

- Dana York discussed the agenda for the next day ([Friday, November 1st, 2013](#)).
- Rich Batiuk: if other panelists are interested, we will schedule a conference call to discuss an outcomes based approach.
 - Mike Gerel, Dana York, and Tim Gieseke expressed interest.

ACTION: CBPO staff will work to schedule a conference call for interested panelists to discuss a potential outcomes approach with CBPO modelers.

Adjourned

Teleconference Participants

<u>Name</u>	<u>Affiliation</u>
<i>Panelists</i>	
Dana York, Chair	Green Earth Connection LLC
Curtis Dell	U.S. Department of Agriculture, Agricultural Research Service
Mike Gerel	Sustainable Northwest
Tim Gieseke	Ag Resource Strategies
Rebecca Hanmer	Retired, CBP Citizens’ Advisory Committee
Dianna Hogan	USGS, Eastern Geographic Science Center
Richard Klein	Community and Environmental Defense Services
Andrew Sharpley	University of Arkansas
Gordon Smith	Wildlife Works Carbon LLC
Robert Traver	Villanova University, Dept. of Civil & Environmental Engineering
Dan Zimmerman	Warwick Township
<i>Panel Staff</i>	
Rich Batiuk, Coordinator	U.S. EPA, Chesapeake Bay Program Office (CBPO)
Jeremy Hanson, Staff	Chesapeake Research Consortium/CBPO
<i>Other Participants</i>	
Bill Angstadt	Delaware/Maryland Agribusiness Association
Karl Blankenship	Bay Journal