CHESAPEAKE BAY PROGRAM
WATER QUALITY GOAL IMPLEMENTATION TEAM
November 14, 2016 CONFERENCE CALL
Meeting Minutes

Summary of Action and Decision Items

ACTION: The Agriculture Workgroup and Pennsylvania will develop language to include in the Phase 6 Nutrient Management Expert Panel report to allow for book values to receive credit if the state can demonstrate that the resulting program is more conservative and results in more restrictive nutrient application than programs based on manure sample analysis.

DECISION: The WQGIT agreed to support the decision of the Federal Facilities Workgroup and the Chesapeake Bay Program's GIS team with regards to the default land use splits for federal herbaceous lands. If a significant change is requested, the WQGIT will be updated.

DECISION: The WQGIT approved the proposed climate change assessment procedures.

Introductions and Announcements

- Please hold December 19th on your calendars for a face-to-face meeting in Annapolis. The meeting would run from 10am-3pm and would be focused on seeking approval of BMP expert panel reports.
- The Manure Incorporation/Injection BMP Panel report and the Conservation Tillage BMP Panel report are now out for review and comment.
- The Manure Treatment Technology BMP Panel report policy document is posted on the Management Board page for anyone who is interested.

Phase 6 Nutrient Management BMP Expert Panel

Mark Dubin (UMD) reviewed the current status of the report and Nicki Kasi (PA DEP) outlined Pennsylvania's position. Pennsylvania (PA) could not live with the Agriculture Workgroup's (AGWG) proposed approach of a 50% reduction credit for book values.

Discussion:

- Kasi: In talking to our management, they are concerned with getting everyone on board and getting support from legislators, which would be more challenging if the Bay Program model will only provide half credit. I'd like to go back to the report as-written by the expert panel that strongly recommends the manure analyses, but does not require it.
- James Davis-Martin (VA DEQ, WQGIT Chair): PA can't live with the previously supported alternative discussed at our October meeting. For jurisdictions who were not supportive of the language in the original report that allowed full credit for using book values, has your position changed?
- Lee Currey (MDE): I feel like I don't know enough about the book values. I have sympathy for PA, and there was a decision by the AGWG that we should provide something halfway.

- Davis-Martin: The panel's initial report actually offered no credit for book values. The compromise was 50% credit for book value, developed by the AGWG.
- Davis-Martin: To answer your question from my perspective, the concern is that if book values are acceptable, even if sampling is highly recommended, programs requiring sampling may be left open to challenges from industry saying if book values are good enough for the CBP it should be good enough for state regulations. It is a fear of undermining programs that do require sampling.
- Jason Keppler (MDA): There was recognition by the AGWG that there was benefit to having book values, but there was concern about the variability among manure analysis. I understand PA's concern but I think there is a broad range of values included in the book value. If there is a better way to quantify that value (looking at a broad range of manure analyses and how that compares to book values) then maybe we could revisit the 50% credit issue, but in the meantime, I think the AGWG was being somewhat liberal in allowing that 50% value to be included in the report.
- Dubin: To clarify the panel's perspective, the first draft of final report stated that to receive credit, states "must require sampling analysis". Following the comment period, the final version of the report revised that language to say that sampling analysis was "strongly recommended". There was a lot of discussion at the AGWG from partners and there was a request from Rich Batiuk (EPA) to include language to allow states to make adjustments to their BMP verification program plans in order to align them with the panel recommendations. Through that process, Rich was able to lengthen the verification transitional period (another one year beyond verification) because of the changes. The panel felt that gave an option for states to make adjustments to their programs by using analysis values instead of book values. The reason the panel didn't create a separate BMP for book values was because they couldn't offer any specific scientific language that would support a unique credit for book values. The AGWG made their recommendations based on programmatic considerations as opposed to scientific considerations.
- Davis-Martin: I also wanted to raise the issue that the 2017 Bay Grant Guidance prohibits use of Bay grant funding for any activities that don't provide a benefit in nutrients sediments or other bay outcomes. With this panel's recommendations for pastures, no BMP for nutrient management on pasture, nutrient management on pasture will no longer be fundable through those grants, which is of great concern for Virginia. This could be resolved by having very marginal benefit for pasture added to this report, or by changing the grant guidance, or maybe by an explicitly written statement from EPA that it isn't their intent that we defund those projects. If that isn't the case, Virginia can't support the report or any of the alternatives.
- Kasi: Do we send the whole thing back to the drawing board?
- Davis-Martin: I don't think that is necessary. I think the WQGIT could change those factors for pasture from 1 to 0.99, thereby allowing us to use bay funding for nutrient management on pasture.
- Sarah Diebel (DOD): Are you saying that the grant guidance is inconsistent with the recommendations from the panel report?
- Davis-Martin: The grant guidance has always said that we can't fund programs that don't produce benefits in terms of nutrient and sediment reductions or contribute to habitat living

resource objectives of the Bay Agreement. That language has been there for years, but up until now we have received nutrient reduction credit for nutrient management on hay and pasture.

- Currey: You said the Model takes nutrient management on pasture into account in other ways?
- Davis-Martin: I think there are ways to work around it, but without an answer from EPA, we can't support the report as-is.
- Dubin: The Nutrient Management expert panel looked at this as a series of nutrient management planning practices. It doesn't specifically represent a nutrient management plan, which is more comprehensive, and includes other types of BMPs. People look at this BMP and think it is for nutrient management plans, but that is not exactly the case.
- Currey: My understanding is all that all states except one use soil samples?
- Davis-Martin: I believe that is true.
- Kasi: In PA if they don't have analyses, we use book values but are more conservative with how they are applied.
- Dubin: All states use book values at times. It is in the report that the majority of states, besides PA, use book values in a much more restrictive way.
- Keppler: I think there should be recognition that there is uncertainty with the book values.
- Marel King (CBC): I hear the concern about the book value itself, but if the program is structured in such a way that the book value is applied in a more restrictive way than with manure analysis and it automatically puts you in a more restrictive application, I'm not sure of the concern over the potential inaccuracy of the book value. We had a separate, extensive effort to do a crosswalk between the Phase 5.3.2 Nutrient Management BMP panel report and the state programs, and I'm afraid we're trying to do that same thing over the phone. Maybe we go back to the original expert panel recommendations, and put emphasis on the fact that book values could be used if the resulting program has more restrictive applications. That said, I am wary of putting in changes to the panel report. Same with the grant guidance. I am very concerned about amending the report because of a perceived change in policy in the future.
- Davis-Martin: Where in the panel report can we find some supplemental language to specify that sampling is strongly recommended over book values, but book values are allowed if they result in a more conservative application rate? Would PA be able to live with such language?
- Kasi: Yes.
- Dubin: The panel report does have specific language that does refer to PA's use of book values for soil testing. That language already exists. The difference would come in for manure analysis. The manure analysis book values are a weighted average that represents the range from PA, and that is in the panel report.
- Kasi: I think we can demonstrate where our program, using book values, is more protective of water quality.
- Davis-Martin: Can we table the decision and come up with the appropriate language to make a decision at an upcoming meeting?
- Suzanne Trevena (EPA): Would we need PA to demonstrate their program is more protective before the end of December?
- Davis-Martin: I don't know if we need the demonstration but we need consensus on the language.
- Dubin: I will work with PA and the AGWG to revise the language and bring it back.

ACTION: The Agriculture Workgroup and Pennsylvania will develop language to include in the Phase 6 Nutrient Management Expert Panel report to allow for book values to receive credit if the state can demonstrate that the resulting program is more conservative and results in more restrictive nutrient application than programs based on manure sample analysis.

- King: To clarify, it's not that the book values are more conservative, but how they are applied in state programs.
- Kasi: This is a programmatic policy decision. I'm not sure I want the AGWG to get weighed down in the numbers.
- Davis-Martin: But how do you demonstrate that the resulting program is more conservative without looking at the numbers?
- Currey: I think that's why we need to get the words down correctly. Having that set up first will allow the jurisdictions or CBP to determine whether that has been demonstrated.
- Bill Angstadt (Angstadt Consulting): I'd support sending this back to the AGWG.
- Bill Ball (CRC): It seems part of the discussion is around the book values being an unknown quantity. The first question is what constitutes enough future analysis. Also, it could be conveyed that you are getting the credit that the scientists deemed to be most appropriate. Referring to 50% of the credit as pejorative and negative isn't necessary. It still helps you get closer to your goals and addresses concerns about uncertainty.

Options for Addressing Conowingo Infill

Lee Currey introduced the full range of options for addressing Conowingo Infill.

Discussion:

- Currey: I think we need to be careful about placing our decisions and thought processes into silos. I think about these decisions in three groups: changes in scientific understanding, observed physical changes, and projected changes to inform risk management. We have new information on land uses, nutrient management, etc. and we also have physical changes we've observed since when we developed the TMDL, such as Conowingo now being full. There are also projected changes that inform managers of risk, like climate change. I think that helps in terms of organizing principles.
- Davis-Martin: From my perspective, I don't know that option 6 captured what I thought this option was. I'd like to potentially offer a 7th option that was a little closer to what I thought we discussed. Option 6 suggests the additional loads won't be allocated and addressed in the Phase III WIPs, but that between now and 2025 we would develop a plan for addressing them after 2025. I propose that for option 7, we allocate the additional loads and plan implementation into the WIPs necessary to achieve the additional reductions, understanding that in our WIPs we may need to set a date beyond 2025 to achieve the new targets.
- Tanya Spano (MWCOG): I was going to suggest that there was a hybrid of options 2 and 6 that align closely with your suggested option 7. I remain concerned about the unofficial reopening of the TMDL and making up new rules. I like Lee's characterization of the principles. I think it is important to understand why we would move away from what was discussed in Appendix T of the Bay TMDL. I think we need to be clear about that.

- Diebel: I don't think the TMDL even considered Conowingo in the planning targets. The problem is that some level of understanding of the loads would be necessary to know what implementation is needed.
- Spano: I'm more talking about why we would depart from the proposal for the upstream states to offset the additional loads.
- Davis-Martin: The TMDL did include loads from Conowingo, just lower loads because we assumed a greater trapping of nutrients and sediments behind the dam. When we defined the slope of the lines for the planning targets, that falsely distributed loads, counter to where they originated, so I don't know that these proposals are all that different from what was done in the past, though I hear your point that in the TMDL, where this potential was considered, it stated the states from where the loads originated would be responsible.
- Teresa Koon (WV DEP, WQGIT Vice-Chair): Is option 4 offering to consider special cases already considered in the TMDL to ensure the level of effort is reasonable, or is to apply special cases to upstream states of Conowingo?
- Currey: The original thinking was it would go along with option 2a or 2b.
- Davis-Martin: Special cases could be a way by which we implement option 2, which would allocate loads to the Susquehanna states within the allocation approach. That could be the means to apply additional loads to the Susquehanna jurisdictions.
- Currey: We could probably have a 1a and 1b and a 2a and 2b.
- Davis-Martin: We could say we'd use special cases to assign 50% of the original loads to upstream states and use the existing approach to assign remaining loads.
- Currey: We could say, you need to choose between options 1 and 2, then bring in whether you want to add in options 3 or 4, and then talk about the timing. Almost like a decision tree.
- Beth McGee (CBF): I'd like to go back to James' point that it is fine if we revisit the decision because we now have the science that we lost the capacity of the dam, probably a few years ago. If we'd known this when the TMDL was developed, we would have just allocated the total load following the methodology and associated decision rules and principles.
- Spano: I am just saying we need to be clear that if we depart from the principles used to establish the Bay TMDL, then we need to be clear about why.
- Diebel: The allocation used in the 2010 TMDL, the portion of Conowingo had already been incorporated into the planning targets, but was that load distributed across jurisdictions or just to those who contributed?
- Lew Linker (EPA): We used an average hydrology (1991-2000) for the model calibration. What has changed is that now we have a very explicit description of what we get with respect to infill conditions. So the question is what do we do with our best estimate of the additional loads?
- Currey: There are three basic options: #1, which goes back to the allocation approach in the Bay TMDL but is updated with new science; #2, we made a decision in Appendix T of the Bay TMDL that if trapping capacity were to be lost, we put the responsibility on the upstream states; and #3 is the current option 5, which is resource optimization. I think choosing between those three options is the decision we need to get ourselves through.
- Davis-Martin: Is there a clear understanding of options 1, 2 and 5 to identify a preferred approach?
- Kasi: Why do we need to pick one now? I like Lee's approach, but without knowing what the loads will be, I don't know if I want to pick an option.

- Davis-Martin: I think it would be useful to understand where folks stand on their preferences for options 1, 2 and 5.
- Currey: I'm a little concerned about voting on the 3 options.
- Davis-Martin: I'm expected to brief the Management Board on the options the WQGIT considered, and how people are leaning, even if we aren't ready to pull the trigger yet.
- Kasi: I think we should be able to look at the numbers, and then walk through the decision tree and thought process we've decided upon once we have the numbers.
- Davis-Martin: I think we are trying to develop a methodology that is logical. We can reconsider once we see the numbers.
- Spano: I would make two observations. If you are talking about a strawman to see where people are going, I'd have concerns about making a decision at this point because I don't understand why we would make those decisions. I'd feel more comfortable if I knew why we thought any of these would be recommended.
- Gary Shenk (USGS): I just want to say one thing about option 5: it is an interesting option, but we won't be able to run a scenario like this until the beginning of 2018 at the earliest. There have been some scientific papers discussing where the loads would move more generally, but we can't technically do the optimization in the timeframe needed for this decision. This is an optimal cost minimization. In order to do that, you need to run millions of scenarios and that is beyond what we are capable of doing with the models. We need to hire someone who is an expert in the field and it will be a long time before we have the product ready.
- Angstadt: When I look at the USGS monitoring data, I see phosphorus loads decreasing over the last 10 years at the Susquehanna monitoring stations until you get to the reservoir stations. If Conowingo is now becoming a source, what does load allocation mean to the farmers of PA?
- Shenk: The science doesn't say Conowingo is becoming a source, it's no longer a sink in the long term.
- Angstadt: If we are going to do options 1 or 2, I would sure like to have some sensitivity analysis performed. If we increase BMPs, will that effect phosphorus coming from these reservoirs?
- Davis-Martin: Our allocation process is designed to do just that by looking at the relative effectiveness of the state basins on main stem dissolved oxygen and those with higher effectiveness do a bit more.
- Currey: Do we take option 5 off the table?
- Davis-Martin: No, maybe we use less than ideal tools, but I think it is still something of value. I think the best approach is something that uses a mix of all three options. Maybe we use 50% of additional load allocated to upper basin states, remaining 50% shared among additional states. Maybe we also do a cost comparison scenario in one of our tools.
- Spano: I think the resource optimization option is an important tool, but going to Lee's point about not putting things in silos, if that exists, shouldn't it be a consideration for other loads as well?
- Davis-Martin: Yes.
- Kasi: I think the decision tree option is the way to go.
- Currey: I agree that is a valid stance to take to the Management Board. Options 1, 2 and 5 are the core options and then we build from there. I think it is important to understand the why and the implications.
- Spano: What is the difference between the December PSC decision and the May decision?

- Davis-Martin: The decision planning process is certainly incremental, and one decision would build on the next. One is more focused on allocation methodology and the second is more specifically related to how to offset the loads. They are of course connected.

Phase 6 Land Use Update

Peter reviewed the default classification for herbaceous portions of federal lands and parks. The proposal for new default values for herbaceous lands in federal acres are:

<10 acres=70% turf/30% mixed open

10-1,000 acres= 50% turf/50% mixed open

>1,000 acres= 30% turf/60% mixed open/5% crop/5% hay and pasture

The default splits can be overwritten by entries to federal facility editor tool.

Discussion:

- Kasi: What does the Federal Facility Workgroup think of this proposal?
- Diebel: We were presented this option on Tuesday and we felt it wasn't appropriate for facilities assuming greater than 10 acres were 100% mixed open and we wanted to improve upon that assumption. We just wanted it to be representative. Second, Tuesday was the first time we'd heard of the revision of the 70/30 split.
- Davis-Martin: When it was presented last Tuesday, they only had the middle part of this table in front of them (the shift from 70/30 to 100% mixed open for facilities over 10 acres). This compromise was not presented to them yet. Peter needs a decision on this before it can go to the FFWG.
- Diebel: There is only a select number of federal facilities that have agricultural acres. The last decision I was aware of was that there was not going to be any ag applied to federal facilities.
- Kasi: I don't think many have ag on them.
- Claggett: This is a proposal for mapping purposes. For cropping, I don't know how this has been decided yet. They can be switched from federal ag to non-federal ag. At least now we have a record of it and I think the numbers are more defensible. We have time to resolve crop and pasture on federal lands and how it's treated. There is ag showing up in some of the National Wildlife Refuges as well as some other facilitates. Maybe they are crudely drawn, or it is how they are drawn and there is actual ag.
- Davis-Martin: Inholdings are inside your boundaries but not part of your facility?
- Diebel: Correct, or there are out-leases of ag activities to a private farmer.
- Spano: Is Peter saying that the third table and the distribution represents his best professional judgment based on what he's seeing?
- Claggett: It is based on records entered into the federal facility editor tool. There is a huge amount of diversity and it is hard to make generalizations. I think we can make the generalization that larger parcels are more weighted towards mixed open and smaller is more weighted towards turf.
- Davis-Martin: We need to remember that all federal facilities have been given the opportunity to characterize those splits in all of their lands. Some have responded, but many have not. The

default would apply to those that did not. The goal would be to encourage them to explicitly report their distribution of herbaceous lands.

- Diebel: When do you need this decision? I don't think I can make a call on all federal agencies. I want to see if we could reach out to some of the specialized and more involved federal agencies to see their take on the default method.
- Claggett: We could give the partners a week to make the decision, but we need a collective call from the partnership.
- Diebel: I just have a problem with assigning pasture and crop to facilities with 1,000 acres or more. The ones with agriculture have likely provided that input, but I may be wrong.
- Kasi: How about we say we are alright with whatever the federal agencies work out with Peter. If Sarah knows the right contacts, whatever they are comfortable with works for me.
- Spano: I agree. This seems to be really in the weeds unless these assumptions are way off.
- Davis-Martin: You need this decision in a week?
- Claggett: Yes, so we can code it, test the code and start rerunning the counties we need to rerun.
- Davis-Martin: Any concerns with the approach?
- None were raised.

DECISION: The WQGIT agreed to support the decision of the Federal Facilities Workgroup and the Chesapeake Bay Program's GIS team with regards to the default land use splits for federal herbaceous lands. If a significant change is requested, the WQGIT will be updated.

- Peter provided an update on the Phase 6 land use development. The final remaining counties will be posted to the land use viewer tomorrow.
- Davis-Martin: We will have to come back to the topic of agricultural land uses on federal facilities. We have a team in the FFWG working to hash that out. It will come back to the WQGIT in the coming months.

Climate Change Assessment Procedures

Lew Linker reviewed the climate change assessment procedures. The Modeling Team proposal is to proceed immediately with the blue highlighted inputs, then develop the proposed uncertainty analysis (scenarios in yellow/orange) moving forward.

Discussion:

- Davis-Martin: Is Bay water temperature part of the analysis?
- Linker: Yes, but the model is so insensitive to that parameter, so it was not included in this table.
- Spano: One problem I have with your logic for not listing bay water temperature in this table, is that while it won't have a large impact on deep water in the main stem, it may impact our tributaries and smaller streams and the living resources in those areas. I'm concerned with you saying it isn't important.
- Linker: Temperature is certainly important; the limited case of estuarine temperature is what is very insensitive. However, its forcing on evapotranspiration is important and that is why temperature is listed on the table. As we get into summer 2017, we can look at impacts of increasing temps on other resources.

- Spano: Part may be messaging, but if the temperature increases enough, it might make a huge difference on local waters. If the Bay model won't analyze those impacts, that needs to be acknowledged.
- Linker: We will be looking at the impact on evapotranspiration in 2017 and other impacts beyond our immediate deadlines for the planning targets. It is more of a matter of phasing. There are a lot of issues related to climate change, it is just the immediate needs of the water quality standards in June that creates a parsing of different schedule elements.
- Mark Bennett (USGS): I want to be sure it's clear that other groups are looking at other Bay Program goals. Lew's focus is on the Watershed Model and estuarine model, but for instance, the Brook Trout Workgroup is looking at impacts of climate change on brook trout.
- Davis-Martin: Are you looking at just impacts on the dissolved oxygen standard?
- Linker: We are looking at all water quality standards.
- Zoe Johnson (NOAA): Could you clarify the difference between the yellow and orange analysis and when those would be run?
- Linker: For example, we have RCP 8.5 that we could apply with 90th percentile precipitation and look at observed intensity and that would give us the high range of loads we'd expect in an analysis. In combination with RCP 2.6, that would describe a full range of potential climate outcomes. However, a more complete way of analysis would be to look at all the yellow and orange to develop a full picture of overall uncertainty. Between now and the PSC decision in May, we'd expect all yellow and orange completed.
- Davis-Martin: We are seeking concurrence with the direction or any refined guidance. I'd like to suggest, as a point for initiating discussion, the group spend more time focusing on 2025 climate change conditions for our Midpoint Assessment work. While 2050 is important to look at and evolve, if we incorporate anything into planning targets or WIPs, it would likely be based on 2025.
- McGee: I think we'd want to know what would happen in 2050, so I guess it depends on what you mean by that. It would probably be useful for WIPs to have some 2050 scenarios.
- Davis-Martin: I'm thinking more for model development next year, but I agree that 2050 scenarios would be useful for WIP planning purposes.
- Currey: I think it is really important to understand there are ranges around these values and to improve confidence in where we place practices and choose practices, as we want to better understand the drivers of these changes. These programmatic actions are really important to us. I'm not clear what the decision is here. I think the range of projections is really important for us to understand and adapt our programs.
- Linker: We are looking at the package of all four points being the process for moving forward on climate change. Is this proposed approach the approach we want going forward?
- Davis-Martin: Let's keep in mind we have limited time and resources to do these analyses. I think we are at a point where we need to start picking and choosing the routes we want to pursue. We need to see the final result in April so we can make a recommendation to the MB and PSC.
- Kasi: There are only so many hours Lew has, and with the impact of climate change compared to other things, do we want him to spend time on it or focus on other areas? I don't know this is the best use of our resources.

- Spano: I agree. My concern is if this can't be done, then it seems we really don't have the information to make a decision about explicitly including climate change impacts.
- Linker: Three points: 1. The CBP said we'd be evaluating climate change impacts on water quality standards, and we are following through on what we documented in 2010; 2. Focusing on 2025 would make the lift easier, but I think we need to still look at 2050 for, say BMP design purposes; 3. We would be able to provide uncertainty analysis by May which shouldn't derail us on these procedures today.
- McGee: I think we'd have a hard time explaining to the public that the Bay Program, viewed to be a premier restoration effort across the country, would not consider climate change. I understand the concerns about how much effort goes in, but I think it needs to be included. And as far as the impacts, loads will increase, even if they are minor. I am hearing Lew say that they can do all of the analyses in the time period we have. Maybe pick a best case and worst case scenario for now, so we at least have bounds for 2050 if folks don't want to run all the scenarios laid out.
- Spano: I would support Beth's point.
- Kasi: What does 2050 really give us?
- Currey: It provide insights into our programs. We're putting practices into the ground and we want to make sure we are choosing the right ones that will give insight into our long term investments. I have concern with using the word "uncertainty;" instead, how about the range of possible outcomes.
- Ball: I think it would be extremely hard to justify to STAC if climate change was not addressed.
- Davis-Martin: Do we have any course corrections for Lew's proposed procedures?
- No objections were raised with the proposed procedures.

DECISION: The WQGIT approved the proposed climate change assessment procedures.

Adjourned

List of Call Participants

Member Name	**Affiliation**
James Davis-Martin (Chair)	VA DEQ
Teresa Koon (Vice-Chair)	WV DEP
Lucinda Power (Coordinator)	EPA
David Wood (Staff)	CRC
Lindsey Gordon (Staff)	CRC
John Schneider	DE DNREC
Mary Searing	DOEE
Dinorah Dalmasy	MDE
Lee Currey	MDE
Jason Keppler	MDA
Bruce Michael	MD DNR
Sara Latessa	NYSDEC
Veronica Kasi	PA DEP
Janice Vollero	PA DEP

Kristen Wolf	PA DEP
Ted Tesler	PA DEP
Jill Whitcomb	PA DEP
Suzanne Trevena	EPA, R3
Ann Carkhuff	EPA, R3
Chris Day	EPA, R3
Kelly Gable	EPA, R3
Lew Linker	EPA, CBPO
Jeff Sweeney	EPA, CBPO
Bill Angstadt	Angstadt Consulting
Tanya Spano	MWCOG
Beth McGee	CBF
Jenn Volk	U of Delaware
Sarah Diebel	DOD
Chris Thompson	LCCD
Mark Dubin	UMD
Kevin McGonigal	SRBC
Bill Ball	CRC
Gopal Bhatt	PSU
Gary Shenk	USGS
Peter Claggett	USGS
Mark Bennett	USGS
Zoe Johnson	NOAA
Karl Blankenship	Bay Journal
Jennifer Herzog	Land Trust Alliance