



Science and Technical Advisory Committee
Partnership for the Delaware Estuary:
A National Estuary Program
www.DelawareEstuary.org

Minutes
Joint Meeting of the STAC and Estuary Implementation Committee (EIC)
EPA Region 3, Philadelphia, PA
October 4th, 2007

Note: acronym definitions are provided at the end of these minutes

EIC Members Attending:

Jennifer Adkins – PDE
Ed Ambrogio – EPA Region 3
Kathy Bunting-Howarth – DNREC
Paula Connely - PWD
Joseph DiBello - NPS
Kevin C. Donnelly – DNREC
Simeon Hahn - NOAA
Kerry Kirk Pflugh - NJDEP
Janice Rollwagen – EPA Region 2
Robert Tudor – DRBC
Andy Zemba – PA CZMP

STAC Members Attending:

Allison Allen - NOAA
Dr. Gary Buchanan - NJDEP
Lance Butler - PWD
Dr. Thomas Fikslin - DRBC

Dr. Bob Hoke – DuPont
Amy Jacobs – DNREC
Dr. Desmond Kahn - DNREC
Dr. John Kraueter – Rutgers University
Dr. Danielle Kreeger – PDE
Larry Miller – USFWS
Gary Obleski – PADEP (for Alan Everett)
Dr. Dave Russell – EPA Region 3
Dan Soeder - USGS
Dr. David Velinsky, Academy of Nat. Sci.

Also Attending:

Iana Blount – EPA Region 3
David Burke – PADEP
Amie Howell – EPA Region 3
Martha Maxwell-Doyle – PDE
Irene Purdy – EPA Region 2
John Kennel – DNREC

1. Welcome & Introductions (Jennifer Adkins, PDE Interim Executive Director)

1. Jen Adkins officially opened the first joint meeting of the STAC and EIC at 9:40 a.m. and welcomed all in attendance. Introductions were made.
2. Jen briefly summarized the scheduled agenda and requested any additions or changes to the Agenda. There were none.

II. Interim Executive Director's Report (Jen Adkins)

1. Jen provided an update regarding the status of hiring for the new permanent PDE Executive Director. A small search committee has been formed with representation by the PDE Board, EIC and one STAC members. Jonathan Rinde is chairing the search committee and is working with a search company, Leadership Recruiters. More than twenty-five applications were received and four candidates are being interviewed, and the process is expected to be completed during the fall.
2. The PDE strategic planning process wrapped up in June, and copies of the published document were circulated. This is a useful message piece that summarizes all of the important initiatives underway at PDE and with our partners. Organized under five strategic goal areas, there are numerous specific projects and programs. Martha Maxwell-Doyle and Jen Adkins should be contacted for additional copies of the plan to anyone who would like them. A short discussion followed, initiated by Bob Tudor, about the need for forming a Trust to help fund and sustain many of the listed activities.

III. NEP Updates (Martha Maxwell-Doyle, Deputy Director)

1. Martha Maxwell-Doyle reported that the Memorandum of Understanding (MOU) between the lead Estuary Program partners is being updated and revised to reflect the changed responsibilities after the reorganization. The revised MOU has been reviewed by all of the signatory authorities and is currently in the process of being signed by all of the Steering Committee members. The goal is to have the final EPA signatures by the end of October or early November.
2. Martha provided the 2007 GPRA update, which is an annual NEP reporting requirement that includes elements such as: CCMP implementation progress, leveraging data, and information on acreage of habitat improvements. She thanked everyone who has helped with the latest GPRA report, which is now in the process of being reviewed by EPA Region 3 and will ultimately be finalized by EPA Headquarters. 2007 figures included: >8279 acres of habitat restoration and enhancement activities by the States. This figure was much higher than the average of 1500 acres per year, because of inclusion NJ Green Acres data this year. In addition, PDE was able to report that there was more than \$30.8 million (\$8.8 million cash and \$22 million of in kind) in funding leveraged for environmental programs in our area. A short discussion resulted about why showing extra acreage can present challenges for EPA reporting (e.g., need to explain why you didn't accurately predict it.)
3. The FY 07 NEP budget was discussed. It originally was cut down to \$388K, but then this was bumped back to \$418K (it was \$500K previously). In addition, EPA R2 and R3 were able to secure additional EPA funds in support of the completion of the National Vegetation Classification System (NVCS) project and the new RARE grant to advance the Delaware Estuary Benthic Inventory (DEBI) project.

IV. Science and Restoration Reflective (Danielle Kreeger, Science Director)

1. Since this was the first joint meeting of the EIC and STAC, Danielle Kreeger provided a synopsis of the STAC's progress since its re-formation in early 2006. She also reviewed some of the reasons why the joint meeting was proposed; e.g., a) to provide an opportunity for exchange of information and expressions of needs between the EIC and STAC, and b) to provide a forum for high level dialogue regarding topics of mutual interest such as ecosystem-based management or issues like channel deepening (both on today's agenda). Danielle also suggested that during the day members of the EIC and STAC should consider whether joint

EIC/STAC meetings should be held regularly.

2. A short powerpoint slide show was provided to highlight milestones and accomplishments springing from the 2004 reorganization, such as first science conference in early 2005, white paper on science and management status and needs in early 2006, new conceptual framework for key system attributes in late 2006, second science conference and environmental summit in early 2007, and then a series of topical workshops and programmatic initiatives lifting off throughout the balance of 2007.

3. Danielle provided examples of how PDE is now systematically working to attend to each of the top 16 needs identified in the white paper (10 technical, 6 operational), by either deferring or helping partners address specific needs if they already have the capabilities in place, or by creating new technical workgroups and programs if niches need to still be filled. For instance, the operational need for a clear definition of what defines the key resources and issues in the Delaware system was met with the conceptual framework. The operational need for enhanced linkages between scientists and managers is being met by conferences, workshops, technical workgroups, etc), particularly the re-creation of the STAC itself. The technical need for more comprehensive monitoring is being met by our efforts to facilitate multi-entity teamwork on the Delaware Estuary Watershed to Ocean Observing System (DEWOOS) and the National Water Quality Monitoring Network Delaware Pilot. The technical need for tidal wetlands is being met by formation of a new Delaware Estuary Wetland Workgroup (DEWWG) which is designing a monitoring and assessment strategy for our system. Similar, PDE is leading DEBI to address the call for more understanding about our benthic ecosystem, PDE is leading regional restoration planning to help address habitat restoration needs, and so forth. The PDE strategic plan incorporates and directly addresses many of these needs.

4. Lastly, Danielle explained how PDE is applying the new conceptual framework consistently and systematically across all of PDE's operations in support of the CCMP actions, using it as a focusing tool to guide and cross-link management, monitoring, indicator reporting and goal-setting, restoration, website information clearinghouse, and education/outreach programs.

5. This "PDE science and restoration blueprint" (presented as a flow chart) is expected to be periodically refreshed. The science conference will be held every 2 years, and in the interim PDE will convene workshops to address emerging needs on an ad hoc basis (e.g. NVCS, DEBI, regional restoration workshops in 2007, climate change workshop being planned for spring 2008).

V. Regional Restoration Initiative (Danielle Kreeger)

1. Danielle summarized the genesis and activities to date for the Regional Restoration Initiative (RRI) by PDE. The RRI evolved as an outgrowth of the habitat strategy that was never fully developed as called for in the CCMP. Restoration, broadly defined as including enhancement and conservation, is currently completed without a lot of coordination or planning across the watershed. PDE is interested in helping to produce new tools and information products that can guide restoration to maximize net ecological and natural resource outcomes relative to costs, and to focus efforts on the most critical ecological elements that either sustain quality of life (e.g. ecological function) or are signature or critically important types of living resource or habitats (ecological structure). We also hope to work with key partners (e.g., NOAA, PWD, American Littoral Society) to develop a regional project registry that can serve as a one stop-shop for restoration opportunities, as well as to highlight "gap" areas where projects may be warranted but are not yet available.

2. For the past two years, PDE has been on a fact-finding mission to learn as much as

possible about relevant concepts that can be used to chart restoration at the watershed level, including "restoration up-front," natural capital valuation and ecological economics, as well as to learn about the myriad restoration efforts and knowledge in our region. PDE presented some of these concepts to regional scientists and managers via the September 25th workshop with invited speakers from across the nation and region.

3. Danielle summarized the highlights of the regional restoration workshop, which had the major goals of introducing RRI concepts, soliciting feedback, and gauging interest in participating by key stakeholders. Although we expected about 60-70 participants for the one-day event, more than 130 registered necessitating a change of venue from the Cusano Center at the Heinz Tinicum refuge to the main auditorium at the Academy of Natural Sciences. Personnel from the Academy assisted with facilitating the event. National speakers were from the NOAA restoration center, The Nature Conservancy Global Marine Initiative, and Kieser and Associates. Regional speakers were from NJDEP, PSEG, and PDE. An open panel discussion and challenge questions were held at the end of the day, and feedback was also solicited from participants in written questionnaires. Support for undertaking a RRI was virtually unanimous, and a large portion of the participants avowed to participate at some level. A synthesis of workshop feedback and comments is being compiled.

4. Based on workshop feedback and information provided by a separate fact-finding effort by Marianne Horinko (GETF) and Michael McCabe (McCabe and Associates) as part of DuPont's Clear into the Future initiative, it is clear at this point that there is broad support for the Partnership to take a lead role in proceeding with efforts to coordinate regional restoration. Danielle described the likely next steps for the RRI. First, PDE is preparing a "blueprint" for how to proceed with regional restoration using a grant that was awarded from the DuPont Clear into the Future program. This report is expected to be completed during the winter and will include a) an example of an ecological matrix used to order regional restoration needs and opportunities, b) a description of a comprehensive one-stop project registry that can be developed, c) a review of valuation schemes and restoration concepts that can be used to prioritize needs and opportunities (e.. natural capital valuation, restoration up front), d) a description of funding options for sustaining the RRI and funding actual projects on-the-ground, e) a plan for providing science and technical expertise to ensure the RRI is rooted in science, and f) a prospective timeline and flow chart of RRI activities.

5. Jen noted that there will likely be a need for two separate but linked groups to advance the RRI -- a workgroup to provide the technical guidance needed, affiliated with the STAC, and a second group to help develop regional financing/funding to push forward this effort. The Alliance for Comprehensive Ecosystem Solutions (ACES) was discussed over the summer as a hypothetical trustee or policy group that could perhaps serve in this role, but the nature of this group, what it would actually do, and what it would be called are still being considered. In any case, PDE will need to revisit the formation of a Science and Restoration Trust for the Delaware Estuary (see more below)..

6. Kathy Bunting-Howarth asked for more details about the nature of activities by the RRWG. Danielle responded by saying the work group would define what types of natural resources and habitats are of greatest ecological significance (structural and functional) for the region, to look at restoration and conservation needs and opportunities linked to those resources, and to begin to assess costs and benefits associated with those activities to begin to objectively analyze how to maximize the greatest ecological outcomes per dollars invested for our region. This would be likely be approached sub-regionally, and it would need to carefully consider temporal and spatial variability such as related to historic losses, projected future ecological trajectories with climate change, and to some degree also socioeconomic and cultural factors.

7. Danielle explained that the RRI is expected to proceed along two parallel tracks. A “scientific” track would consist of a continuing, adaptive effort to characterize the regional restoration landscape (needs, opportunities), assign cost/benefit values to various activities, and to identify and fill gaps in the restoration matrix at the watershed level. Likely products would include a unified project registry that lists and categorizes projects throughout the region that addressed various resource needs and injuries, as well as prioritization and decision tools that can be used (their choice) by trustees or other restoration practitioners. The activities and products by the scientific track are expected to gain rigor over time, but at any time, the scientific group could be called upon to provide “best scientific judgment” about top needs or projects. Recognizing that there is strong interest to have restoration efforts lead to tangible projects on-the-ground and as soon as possible, the second track of the RRI is seen as the “project funding” track that would seek to support high value projects whenever opportunities arise to fund them, even at the outset of the RRI, and drawing on best judgment by the RRWG. These two tracks of activities would be the responsibility of the RRWG and regional funding group, respectively, and the two groups would exchange needs and assistance as needed.

8. Andy Zemba noted that Pennsylvania is interested in the RRI and would like to participate in any further discussions of this initiative.

9. A discussion followed about which group would come first, the higher level funding group (e.g. PDE-ACES or some similar regional funding body) or the technical work group. Larry Miller and Bob Tudor both commented that the RRI, in concept, has very high value and that PDE has clearly articulated a sound conceptual framework for the RRI that would fill a vital niche that is needed for our region. But Bob suggested that rather than first form a technical workgroup that might be overwhelmed with details, it might be better to complete the DuPont blueprint report first, form the high-level funding group second to bless the blueprint, and then proceed with the specific actions needed in the blueprint such as forming the restoration workgroup.

10. Desmond Kahn commented that the RRI should focus mainly on ecosystem-based outcomes rather than economic dollar values. Desmond noted that some values are not easily translated into dollars. Danielle agreed, and noted that the natural capital valuation component would only be one valuation factor and we would envision having non-dollar value systems that would be given weighting factors in the integrated restoration matrix. For the blueprint report we plan to provide an example to show how this might be approached.

11. Kerry Kirk Pflugh asked how this would be funded and whether the states would be expected to fund this. Martha noted that there are many ways to support the effort with in kind expertise, or simply by using the products. She added that the scientific workgroup would steer away from any policy decisions, and the States or other partners could be engaged either in the technical group or the policy and funding group, and not necessarily with financial resources.

12. Martha agreed that the RRI blueprint report should be developed next before any movement on either a funding/policy group or a technical workgroup. Jen suggested that corporations may also have an important role in the funding group, and the Environmental Finance Report for PDE highlighted a variety of funding options that we have yet to pursue. Martha noted that there aren't many examples of basin-level restoration strategies and funding mechanisms throughout the nation.

13. Kevin Donnelly asked how the structure for the RRI will actually work to fund projects, and he suggested that we need to still demonstrate how the RRI will improve our region's ability to

get good funded projects completed on the ground. He noted that there are dozens of entities involved in restoration in our area, and asked how this approach can improve the way things are done, yielding tangible outcomes. Kevin noted that he cannot offer his support for this effort until he sees more about the specifics. Kerry wanted to know if PDE was asking for approval of any specific action, and Martha answered that we are not prepared yet to physically form a group like PDE-ACES, but we are interested at this time in getting EIC backing for the concept to form a restoration workgroup affiliated with the STAC.

14. Lance Butler and Simeon Hahn offered examples of restoration activities and needs at present, particularly along the urban corridor and waterfront, as case studies for the need to get a restoration workgroup formed to have a coordinated look at those needs and opportunities.

15. Kerry noted that there isn't anyone at NJDEP that would be appropriate to participate in large scale watershed or ecosystem restoration perspectives. She said that this is because everyone has a more specific expertise or department. She would not be able to name anyone to assist on the workgroup until a specific topic came up where they could find an appropriate staff person to address that topic. NJDEP would have difficulty supporting any additional workgroups because of staffing and travel limitations. Tom Fikslin concurred with this noting that PDE has not articulated specific expectations of the workgroups and asked whether there would be any compensation for time or travel for members.

16. Jen suggested that PDE could incorporate more detail into the blueprint about the specifics of what the restoration workgroup would actually do and expectations for participants. Danielle added that we have strived to limit the numbers and meetings for any workgroups, including the STAC as well as ad hoc groups like the 2007 Delaware estuary Wetland Workgroup. The goal is to have these be lean and effective with as little contact time and organizational staffing as needed, but yet maintain a welcoming and inclusive stance to foster linkages among sectors and rich cross-fertilization of ideas.

17. Janice Rollwagen noted that EPA does not really do restoration work, and to engage any EPA staff in the RRI would take them away from other responsibilities. She agreed with Kerry's suggestion that EPA should only be consulted to participate if and when a specific question and expertise area is required, and then they would look for someone to provide that expertise on a case by case basis. Simeon Hahn noted, however, that there are related EPA activities and programs such as the brownfields revitalization efforts and there is a sense of urgency around many habitat issues.

18. Considering the comments, Jen asked if the EIC would agree to at least commit to reviewing the blueprint once it is developed, and then consider whether and how to support any next steps for this RRI. Andy Zemba, Kevin and several other EIC members agreed to this. Martha also challenged the EIC (and STAC) to begin thinking of which individuals might be appropriate to participate in the RRI or more specifically the regional restoration workgroup if it does form later on.

Action Items:

- PDE agreed to finish blueprint and circulate to EIC for consideration
- EIC and STAC agreed to identify and provide experts who might either participate in the RRI or technical workgroup or who might help address specific needs identified as we move forward on this, and to send those names to PDE

VI. STAC Update (Daniel Soeder, STAC Chairperson)

1. Dan Soeder first pointed out that the vision for the STAC, as articulated in its charter, was to be able to form ad hoc or standing workgroups or subcommittees to address specific tasks and needs as they arose. The potential formation of a STAC-affiliated regional restoration workgroup, and the ad hoc wetland workgroup, are consistent with the charter for the STAC.

----- lunch break

2. Dan provided a PowerPoint slide presentation. He reviewed the early history of the Estuary Program, and the utility of the original STAC that helped to craft the CCMP and ensure it had a suitable scientific underpinning. But soon after the CCMP was in place, the STAC was disbanded and the technical program was operated out of DRBC with PDE serving key roles related to fundraising and outreach. At about the time that the State of the Estuary Report was released in 2000, it was becoming increasingly clear to some of the EIC members that a STAC was still needed to ensure technical rigor for the report and other programmatic elements. For instance, the State of the Estuary report was supposed to establish science-based goals and indicators, but-without the technical involvement by a broader suite of scientists with expertise in different areas, and an understanding of the data available, establishing these goals and indicators was difficult. As a result, the Estuary Program became much stronger in its outreach programs, but the technical programs languished.

3. Dan explained that these technical shortcomings of the Estuary Program began to be rectified in late 2004 with the formation of the steering group to plan the first Delaware Estuary Science Conference. This conference, which was held as a two-part event in 2005 was carefully planned to do two things: 1) to assess the current state of knowledge and identify top science and management needs; but also 2) to bring together scientists and managers from diverse sectors in the context of the watershed. The composition of the planning committees, moderators, speakers, and attendees had balanced representation from academia, federal and state agencies, industry, and non-profits, all interacting and exchanging information and ideas. This proved to be a good model for success, and it has been adopted in much of the Program's ensuing activities, including drafting of the White Paper and formation the STAC, both in 2006. As Danielle noted earlier, the white paper served as a very useful guidance document for the Estuary program. It called for re-formation of the STAC, and the top needs have since been incorporated into the PDE Strategic Plan which you have already looked over today.

4. The re-formation of the STAC in 2006 brought back many of the same scientists who were on the original STAC, and this has helped to maintain continuity of ideas from the original CCMP as well as perspectives on challenges that have been overcome and still remain. Membership in the STAC consists of both standing appointees as well as elected members. Membership is geographically balanced, balanced among sectors, and strives to maintain a balance of expertise needed to peer review diverse environmental products. Expertise ranges from living resource specialists, water quality, habitat, and so forth, and this has been a success. As the Program's staff advisor appointee, Danielle is responsible for coordinating the affairs of the STAC such as taking minutes, setting meetings, holding elections, and so forth.

5. Dan then reviewed the many accomplishments of the STAC in the short time since it was re-formed only about 15 months ago. As example projects and activities, the STAC has been involved with:

- DEWOOS – several members assisted with design and implementation
- Delaware Estuary Information Gateway – PDE web-based clearinghouse of estuary data
- Wetlands – discussed ecological services, restoration initiatives, sudden dieback

- Salt-tolerant plants for agriculture – discussed options and research underway
- Dupont Delaware River study - reviewed multiple stressor report
- State of the Estuary Report – assistance, review, advising
- Ecosystem-based management – discussion of “wiring diagram” concepts
- Delaware Channel Deepening – discussion of what is and isn’t known about possible effects of dredging on salinity, sediment, fringe marsh, indirect effects on biota
- Delaware Bay benthic mapping – substrate assessment, advising PDE on DEBI design
- Funded study - William Amos’ 1950’s invertebrate catalog for Delaware Bay

6. Thanks to the EIC and PDE commitment of \$20,000 of the FY 07 NEP funds for the STAC, for the first time in 2007 the STAC was charged with soliciting and reviewing a handful of small research proposals to address timely data or research needs. Being a relatively small amount of support, it did not make sense to issue a formal RFP and waste a lot of time by proposers or reviewers, and so the STAC solicited project ideas and then quickly narrowed this to three projects that appeared to have high need and value relative to cost. Short proposals were requested, reviewed, and ranked. The top ranked project was contributed by Doug Miller (Univ. of DE) who sought to access, acquire, inventory and catalog specimens and associated metadata for benthic organisms collected from the bottom of Delaware Bay by Bill Amos from 1951 to the early 1960’s. The original intent of Mr. Amos was to prepare an atlas of invertebrates in DE Bay, but now the samples represent an archive of past conditions as well. Dan showed slides from Dr. Miller’s work, including pictures of the well-preserved specimens, which were in storage at St. Andrew’s School in Delaware, where Mr. Amos had taught for many years, while the data cards were in Vermont, where Mr. Amos now lives in retirement. Dr. Miller catalogued the more than 2100 specimens by phylum and to species, and acquired all related files and notebooks that have data even for hydrologic conditions. These are all now at CMES in Lewes for further research and they are being displayed at DE Coast Day next week. Archiving and data mining plans are still to be determined and funded, but at least this historical record of samples and data are now preserved and inventoried for numerous possible applications. Next steps would be to convert it to an electronic format for mining and dissemination, and prepare educational and web-site products.

7. Dan then went on to describe how the benthic study is but one small example of the types of projects that can produce sizeable benefits, fill knowledge gaps, or respond to windows of opportunity to acquire or archive important data. Besides rescuing and putting the data to use from the Amos benthic samples, the project ranked a close second by the STAC for funding this year, was related to studying and monitoring marsh die-back. The marsh dieback issue is another example of a need that fits within the context of the white paper because tidal marsh monitoring was #2 on the list, and where a small amount of resources could go a long way to addressing an especially alarming issue from 2006 and 2007. The STAC can certainly continue to respond to PDE and EIC requests to review technical products, perform analyses, and so forth. But what is really needed to take significant action on the top science and management needs identified in the white paper, and which will continue to emerge, will be a sustainable source of funding for science.

8. Science funding needs and options were discussed. Dan pointed out that a Delaware Estuary Science and Restoration Trust by the Partnership is probably the best approach and it could support not only science and management data needs (STAC elevated priorities) but also address on-the-ground restoration as discussed earlier. But the Trust is not the only way to generate funding for science, and there are models whereby federal, state and local agencies work cooperatively to address issues case by case. Partnering with industry is also a potential option for some areas of need. Leveraging Delaware Estuary projects onto other, existing work such as USGS stream gages to analyze freshwater inputs is also an option.

9. Dan finished the STAC update by posing the two challenge questions that PDE is wrestling with at the moment, and which the STAC and EIC are both challenged with discussing today:

- Challenge Question 1: What effects might the Delaware Deepening have on the physical, chemical, biological and ecological properties of the estuary?
- Challenge Question 2: What is ecosystem-based management, and how can this be implemented in the Delaware Estuary?

Danielle added that the PDE vision for this joint EIC/STAC meeting was to pose one question of mutual interest for joint discussing, which has the basic question of whether we are actually managing the ecosystem in the Delaware Estuary (posed by John Kraeuter at STAC meetings and earlier today here). Most feel that we are managing particular system components, some perhaps better than others, but that no entity or body is charged with considering management needs and linkages holistically for all those system components on balance. Is ecosystem-based management even possible? The question about channel deepening is viewed by PDE as a case study for framing the dialogue about ecosystem-based management because it requires discussion of many interacting, linked system components (e.g. freshwater inflow, saltwater intrusion, sediment budgets for marshes, etc.)

VII. Channel Deepening Discussion (Robert Tudor, DRBC, EIC Member)

1. Bob Tudor provided an overview of channel deepening and it's projected effects in 10, 20 and 30 years on salt intrusion, sea level rise, and consumptive water use in the overall basin. He also referred to the Northeast Climate Change Assessment report (Union of Concerned Scientists) and the pending workshop being planned by the Academy of Natural Sciences and PDE on climate change. Mr. Tudor provided some handouts of major outcomes of the report.

2. Danielle noted that the current channel deepening plans are of renewed interest to PDE and perhaps also the STAC because it appears that there might be unaddressed scientific questions associated with the environmental impacts of deepening. For example, could deepening increase estuary volume and alter sediment supply for tidal marshes? Given that tidal marshes are a signature resource and top priority here, it seems prudent to ensure that this question is satisfactorily addressed, as well as related concerns about salinity increase for freshwater tidal vegetation, oysters, and so forth. Perhaps these questions have been addressed already and we are unaware of the findings. There certainly has been a lot done to investigate contaminants, dredge spoils, etc. The STAC has discussed this somewhat and agrees that it would be inappropriate to take any position on the issue per se. However, the STAC agrees that it has a duty to inform PDE and the EIC about the scientific data related to such issues, or the absence of data that might be needed to make an informed decision. The STAC requested additional guidance from the EIC as to whether they should formally pose these sorts of questions, and if so, how?

VIII. STAC-EIC Relations Discussion (open)

1. As an outgrowth of the channel deepening discussion, the group tackled the question of how the EIC and STAC should interrelate. Dan noted that since the reformation of the STAC, there has been an ongoing discussion about whether the EIC should be giving direction to the STAC as to what it should do or what questions it should address, or vice versa. Bob Tudor commented that most EIC members seem most comfortable with having this be a two-way relationship whereby the EIC has no interest in micromanaging the STAC, but at times it might challenge the STAC to look into something or perform peer review. The EIC should also take note of STAC recommendations, and should probably do so using the channel deepening as a

case study.

2. Kevin noted that since the white paper has been widely embraced as having value for guiding the Delaware Estuary Program and the STAC, it should continue to be used for that purpose - as a guidance document for the STAC. As long as the STAC continues to attend to the priorities specified in that document (and any subsequent updates of the refreshed needs lists), then that's sufficient enough for him. If the STAC wants to go far outside that list then he may want some input on that. It would be worth revising the needs list, but perhaps only every 3-5 years.

3. Kevin also noted that he supports the STAC developing clearly stated questions such as the channel deepening question for elevation to the Steering Committee and his supervisor at DNREC, and he would rather the STAC focus on this sort of specific product rather than broader conceptual efforts such as related to wiring diagrams for ecosystem-based management.

4 Jen and Danielle both noted that one example of more recent needs that were not explicitly listed in the white paper are the issues associated with climate change. Mr. Donnelly and others agreed that this is certainly an area of pressing need and the STAC should feel free to add this to their top ten needs list at this time and proceed.

5. Besides being supportive of the STAC raising questions for EIC consideration (such as the channel deepening questions), Kevin added the STAC can also perform a valuable service by furnishing an annual top 3-5 needs list to the EIC that is more project focused, and which the EIC can then work to build support for with funding or leveraging or in other ways.

Action Items:

- The STAC agreed to formalize the wording of the channel deepening question(s), and to justify any action by providing appropriate background material making the case for what is and is not understood about the issue.
- The STAC agreed to prepare an annual "action list" or workplan of the top 3-5 needs and activities that it intends to undertake. A second list of top science projects or priority funding needs (with costs and justification) should also be developed to challenge the EIC into finding support for these.

6. John Kraeuter suggested that the EIC should monitor how well the STAC does in meeting its workplan goals, Kevin said that he agreed, but he didn't want this to become a burden for either the STAC or EIC, taking a large amount of time that could be spent on other things. Kevin suggested that the action list might even be refreshed only every two years. It should simply be a focusing tool.

7. Martha recommended that the STAC should develop this annual or biennial list in advance of the annual budgeting process in case there might be some NEP funding or other support to help advance the STAC priorities.

IX. Tidal Wetlands and Marsh Dieback Monitoring (Amy Jacobs, STAC Member)

1. Martha reminded the EIC that at the spring meeting John Heinz had suggested that the EIC might work to try to find funding for additional STAC-elevated project priorities if the STAC would bring them to the EIC's attention. PDE asked the STAC to respond to the EIC invitation to elevate priority projects for possible EIC assistance in seeking funding. In response, the

STAC has recommended that the EIC try to find support to fund wetland monitoring for marsh dieback in the Delaware Estuary. This project was the close runner-up in the small STAC project competition in 2007. PDE is working to elevate the overall needs for general tidal wetland monitoring and assessment programs via our participation in the National Water Quality Monitoring Network DE Basin Pilot, and other initiatives by the new wetland workgroup. Currently, one of the most pressing needs is to gain a better understanding on marsh dieback. Amy Jacobs who has been working on this issue has developed a plan for how to do that which was presented to the EIC.

2. Amy Jacobs passed around a proposal summary sheet, and proceeded to give a Powerpoint presentation. Amy summarized the importance of tidal marshes for the Delaware Estuary, noted that they are a top need area as defined by the Estuary Program, and then reviewed what we know about the extent and causes associated with dieback in the region. Lots of aerial images were shown to demonstrate the extent and nature of marsh browning documented beginning in 2006. She also showed the progression of marsh dieback, beginning with one of several different types of stress, and ending with open water in some cases. Causes of dieback may be multiple, and there are biological (fungus, snow geese) as well as physical/chemical (altered hydrology, mosquito ditching, drying and wetting cycles). There can be some recovery in some areas, but others converted to open water do not re-vegetate. Cases have been reported in both DE and NJ.

3. The goals of the proposed project would be to perform an inventory of tidal wetland condition from 2002 through 2006, and then use the results to direct restoration, protection, monitoring, and research activities. The inventory would be conducted using satellite imagery, and yielding information on condition as well as extent and sediment status.

4. The total cost to assess the condition of estuarine tidal wetlands in all three states, including both freshwater and saline tidal marshes, would be \$27,873. So far, \$10,000 has been committed from DuPont and \$5,000 from DNREC. Therefore, \$12,873 is still needed.

5. Danielle added that this marsh dieback project would fit nicely within the new three-tiered strategy for monitoring and assessment of tidal wetlands in the Delaware Estuary, which the ad hoc Delaware Estuary Wetland Workgroup (DEWWG) assembled this summer. Amy took a lead role in that effort.

6. Bob further acknowledged the efforts of the DEWWG as providing the wetland piece for the forthcoming National Water Quality Monitoring Network (NWQMN) Pilot Report, and he said that wetland monitoring will obviously be a component of the NWQMN design for our region. But in consideration of the more urgent nature of this need, he said he would also present this marsh dieback proposal to the NWQMN Interagency Working Group to help demonstrate the need for wetland monitoring and perhaps even to ask if there is any support to fund it.

7. Andy noted that he was impressed by the level of effort and outcomes from the \$15,000 STAC fund in 2007. Based on such results, Andy committed to do what he can to see if PADEP can allocate funding in support of the proposed work.

8. Bob recommended that the New Jersey Coastal Zone Program be contacted as well to see if they can lend some support. Additional options were suggested, including the National Fish and Wildlife Foundation and the PSEG Estuary Enhancement Program; however, these programs were not viewed as being a good match for this project for various reasons.

- Action Item: The EIC agreed to look for funds for the marsh dieback proposal and to report back to PDE within 30 days regarding any funding prospects

X. Funding for Science and Management Needs (Open Discussion)

1. Today's presentations on STAC accomplishments, the 2007 benthic sample study that was funded by the STAC, and the proposed marsh dieback study elevated by the STAC for possible EIC funding assistance, have illustrated the necessity for a more sustainable funding source to address top needs and emerging issues such as marsh dieback. A discussion followed about how to work toward this.
2. Danielle reminded the EIC and STAC that PDE is continuing to look into ways to create a Science and Restoration Trust. Jen added that the Trust could have some focus areas that are dedicated to particular needs or issues or restoration projects, and some could ideally be unrestricted and flexible to address STAC priorities. Efforts have been and continue to be underway to look into the feasibility and actual steps needed to do this.
3. Until this Trust can be established, the EIC renewed their commitment to continue to seek support for high need and high value projects on an ad hoc basis. Amie Howell reminded the EIC that they had agreed to do this previously in response to the cut to the NEP budget for FY 08. So until that budget is restored and/or a Trust is established that can support STAC and EIC science and management priorities and needs, it will fall to the EIC to help marshal support.
4. John Kraeuter commented that most academic scientists will not pay much attention to PDE or STAC elevated needs until more substantial resources can be dedicated to those addressing those needs. He said that it's not worth the time to draft small sized proposals in most cases. Others agreed, but noted that it may require patience to build the Trust.

X. Closing Business

1. Jen asked for approval of the EIC spring meeting minutes. Kevin moved that the minutes be accepted, and the motion was seconded by Ed Ambrogio.
2. Jen polled the group to gauge interest in holding future joint EIC and STAC meeting. The EIC members said that they liked the opportunity for exchange and would do so if the STAC concurred. Jen noted that PDE would look into setting this up as an annual joint meeting.
3. Dan asked for approval of the STAC meeting minutes from June 2007. John Kraeuter moved that the minutes be accepted, and the motion was seconded by Amy Jacobs. The STAC approved the minutes and Danielle Kreeger said she would post them to the STAC webpage.
4. Jen reviewed upcoming meetings and PDE events, such as Delaware Coast Day and PDE Board meeting.
5. Bob commented that he found the recent PDE-led regional restoration workshop to be very informative, and he suggested that we follow-up on the concept of "ecological service districts." Jen agreed, and said that she also has heard references to similar "ecological investment corporations," which we should also consider.
6. Jen thanked EPA Region 3 for hosting today's meeting.

XI. Future Meetings

The next meeting of the STAC will be in January where PDE will begin discussing the 2009

science conference. The EIC will meeting will be in late January/early February with the date to be determined.

XII. Adjourn. Jen Adkins adjourned the meeting at 2:25 pm

Acronym List and Definitions

ACES: Alliance for Comprehensive Ecosystem Solutions
CCMP: Comprehensive Conservation Management Plan
CMES: College of Marine and Earth Sciences (University of Delaware)
DEBI: Delaware Estuary Benthic Inventory
DEWOOS: Delaware Estuary Watershed to Ocean Observing System
DEWWG: Delaware Estuary Wetland Work Group
DNREC: Department of Natural Resources and Environmental Control (Delaware)
DRBC: Delaware River Basin Commission
EPA: Environmental Protection Agency (US)
EIC; Estuary Implementation Committee
NEP: National Estuary Program
NJDEP: New Jersey Department of the Environment
NOAA: National Oceanic and Atmospheric Administration
NPS: National Park Service
NVCS: Natural Vegetation Classification System
NWQMN: National Water Quality Monitoring Network
PADEP: Pennsylvania Department of the Environment
PA CZM: Pennsylvania Coastal Zone Management program
PDE: Partnership for the Delaware Estuary
PSEG: Public Service Electric & Gas (New Jersey)
PWD: Philadelphia Water Department
RRI: Regional Restoration Initiative
RRWG: Regional Restoration Work Group
STAC: Scientific and Technical Advisory Committee
USFWS: U.S. Fish and Wildlife Service
USGS: U.S. Geological Survey
