



**Science and Technical Advisory Committee**  
**Partnership for the Delaware Estuary:**  
**A National Estuary Program**  
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**Minutes**  
**Thursday, June 14, 2007**  
**Partnership for the Delaware Estuary - Wilmington, DE**

**Members Attending:**

Allison Allen - NOAA  
Ken Anderson II – PADEP  
Dr. Dewayne Fox – Delaware State Univ.  
Dr. Jack Gallagher - Univ. of Delaware  
Dr. Jawed Hameedi - NOAA  
Dr. Bob Hoke – DuPont  
Amy Jacobs - DNREC  
Dr. Sue Kilham – Drexel University  
Dr. John Kraueter – Rutgers University

Dr. Danielle Kreeger – PDE  
Dr. Dave Russell – EPA Region 3  
Dr. Jonathan Sharp – Univ. of Delaware  
Dan Soeder - USGS  
Dr. David Velinsky, Academy of Nat. Sci.

**Also Attending:**

Simeon Hahn – NOAA  
John Kennell - DNREC  
Kathy Klein - PDE  
Krista Laudenbach-Nelson – PDE

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***I. Welcome & Introductions (Daniel Soeder, STAC Chair)***

Dan Soeder officially opened the meeting at 9:40 a.m. and welcomed all in attendance.

1. Introductions were made. Dan Soeder introduced Allison Allen from the NOAA National Ocean Service. Ms. Allen is the new STAC member elected in the spring (replacing Simeon Hahn).
2. Mr. Soeder briefly summarized the scheduled agenda.

***II. PDE Updates and Strategic Planning (Kathy Klein, PDE Executive Director)***

1. Kathy Klein discussed the recent announcement that she would be stepping down as PDE Executive Director on July 13<sup>th</sup>, 2007. A professional search company would be working with the PDE Board and other key partners to select a new ED by early fall. She noted that her decision was primarily for personal family reasons. With all of the new programs and PDE's recently completed strategic plan, Ms. Klein noted that the STAC's direction and PDE science programs should be unimpacted in the short term by the pending changes in PDE leadership.

***III. Elections and Charter Revision for 2007-2008 (Danielle Kreeger, PDE)***

1. As PDE Science Advisor on the STAC, Danielle Kreeger is responsible for handling elections and maintaining a current STAC Charter. Danielle first summarized the process and outcome of the recent (first) STAC election for six open seats, with nine candidates. Since Simeon Hahn chose not to run again, we were assured of having at least one replacement. Based on

the vote totals, there was strong support for incumbents because many felt the STAC was still new and incumbents should be given more than one year to work on the STAC. Greg Breese, Robert Hoke, Susan Kilham, Dan Soeder, and David Velinsky were re-elected for 2-years (summer 2007 - summer 2009). As noted above, Allison Allen from NOAA was the top vote-getter of the other candidates, and her term will also last from (2007-2009).

2. The STAC Charter was revised in May to reflect the addition of the Environmental Protection Agency (EPA) as an additional standing entity for STAC representation. Since EPA sponsors the National Estuary Programs and is a member of the Steering and Estuary Implementation Committees for PDE, the failure to appoint EPA as a standing entity for the STAC was an oversight when the STAC was re-formed in 2006. By request from the EIC and PDE, the STAC Charter was therefore revised to show that a representative from either EPA Region 2 or Region 3 should be a standing member of the STAC (to be determined jointly by EPA). The current version of the STAC Charter can be downloaded from the STAC webpage. To date, Dave Russell (EPA R3) has served as an elected representative for EPA, and his membership is now converted to the status of standing representative for EPA.

3. STAC Chair is a one-year position to be elected at the summer STAC meeting by a majority of a quorum, as noted in the STAC Charter. Dan Soeder has served as STAC Chair for the past four meetings making up the first year since the re-formation of the STAC. Dan agreed to continue his service should he be re-elected to the STAC as a member and also by the STAC as Chair. No additional nominations were received by Dr. Kreeger or PDE leadership. Dr. Kraeuter motioned for nominations to be closed. Dr. Sharp seconded the motion. Dr. Kreeger then held a vote to accept the motion, and the STAC members present voted unanimously in favor of this motion. With no candidates besides Mr. Soeder for STAC Chair, Dan was thereby elected as Chair for the term spanning from the present meeting to the beginning of the summer, 2008 meeting.

#### ***IV. Review and Approval of Minutes from Last Meeting (Daniel Soeder, STAC Chair)***

1. Danielle Kreeger asked if there were any comments or changes requested for the minutes from the March 28, 2007, STAC meeting, which had been circulated in draft form for review prior to this meeting. Hardcopies were also circulated for a period of comment during the meeting today.

2. (later) No edits were requested. With no further discussion, Dr. Kraeuter moved that the minutes from 3/28/07 be accepted; and Dr. Kilham seconded this motion. The STAC voted to accept the minutes with no opposition.

#### ***V. Discussion of the Delaware River Study (Robert Hoke, STAC Member)***

1. Time had been allotted on the agenda for a presentation on the study and its results by either Amanda DeSantis or Ralph Stahl (Dupont), however, neither was able to attend. Therefore, Dan Soeder invited Dr. Hoke to provide a synopsis of the recently completed study commissioned by DuPont on historic and current environmental stressors in the watershed.

2. Dr. Hoke noted that the report was an attempt to look holistically at the stressors in the system, with one component to assess how the DuPont plants might fit within the landscape of other activities. The report effort was voluntary. DuPont hired BBL and Integral to undertake the report effort, and more recently, to meet with various agencies and environmental groups like PDE to review the report. The current version has a summary component (about 60

pages), with 2-3 more detailed volumes that have the underlying technical information. Although not 100% complete, the literature review was quite comprehensive. Much of the reviewed literature is being scanned and will be made available electronically to PDE and other partners (i.e., the items not copyright protected). Dr. Hoke said that DuPont is very interested in getting input from the STAC, whether it is comments on the report or suggestions for the future.

3. Dr. Kreeger noted that PDE first became aware of the study and forthcoming report in early 2006. PDE was not engaged early in the study, i.e., we were not invited to engage the STAC in its design or conduct. However, PDE has been increasingly kept informed about the study's progress. We are taking a cautious but interested position with regard to the study's outcomes, and although we are not planning at this time to take a formal position on any of the major conclusions in the report we are certainly interested in making the most of the available information and providing our suggestions on possible next steps. In the least, we would like to solicit and compile voluntary comments from STAC for DuPont, and individual members can indicate whether they wish to have their comments maintained in confidence. A PDE or STAC collection of comments would not be treated as formal peer review, but would be contributed in the spirit of collegiality.

4. Dr. Sharp, who is one of the official scientific reviewers for the study, noted that the report still has some issues to be addressed. The volumes of material are massive and redundancy should be culled. The goals of the study could be better articulated, and the ways that the information will be used in the future should also be clarified.

5. Dr. Kreeger noted that she had reviewed much of the report and provided summary comments direct to DuPont, not on behalf of the STAC but as PDE Science Director. Several other individuals and entities, some also represented on the STAC, had done the same (not on behalf of the STAC). Bob Hoke noted that these various comments were well received by the report team and DuPont, and they had many parallel criticisms and suggestions. Danielle suggested that STAC members should send additional comments to PDE to be synthesized into a "STAC collection of comments," and Simeon Hahn agreed to compile any additional comments on behalf of the STAC and PDE. Mr. Hahn has been attending all of the meetings about the report, and although he is no longer a STAC member he is well positioned to compile external comments by those not directly connected to the report. Mr. Soeder asked STAC members to send any additional comments to Simeon by email on or before June 21, 2007 (within one week). Simeon will then compile the comments and send them back to the STAC and PDE for review, prior to disseminating to the report team which is due to meet again on June 27, 2007. *[Note: Simeon Hahn later reported that no additional comments were received by STAC members in response to this invitation.]*

6. Although there were differences of opinion regarding some of the report's basic assumptions, methods and conclusions (e.g. use of area-weighting to assign more "risk" lower in the estuary rather than the urban corridor), in general the STAC members present voiced support for the dialogue that the report effort is creating. The report's focus on watershed-wide stressors provides another vantage with which to elevate and examine ecosystem-based management, which is a growing area of discussion within the STAC.

## ***VI. PDE Science Updates (Danielle Kreeger, PDE)***

1. Regional restoration initiatives. Dr. Kreeger provided an update of several PDE initiatives related to regional restoration coordination. These include a fall workshop on regional

restoration planning, a fall/winter regional restoration feasibility study by PDE, formation of a regional restoration workgroup affiliated with the STAC, and the possible formation of a restoration-focused policy group tentatively being named the Alliance for Comprehensive Ecosystem Solutions (ACES). Collectively, these activities and possibilities represent a new regional restoration initiative (RRI) by PDE that seeks to maximize net ecosystem benefits of various types of conservation and restoration activities in the watershed by considering the landscape context, signature resource needs, and economies of scale.

The workshop is being tentatively scheduled for September. National caliber speakers will be invited to talk about case studies related to regional restoration elsewhere, including lessons learned. The intended audience will include environmental scientists and managers from regional state and federal agencies, industry, non-profits and academia, as well as leading restoration practitioners in our area. A panel discussion will be used to get stakeholder input from this audience regarding the prospects for regional restoration in the Delaware Estuary and its watershed. Funding (\$6,000) for this workshop is being furnished by DuPont though the National Fish and Wildlife Foundation. *[note: this was held on September 25, 2007]*

The feasibility study by PDE will synthesize information presented at the workshop, compile stakeholder interests, review relevant literature, generate a working project directory framework, and provide models and preliminary tools for restoration planning here. This report effort is being funded through a grant from DuPont's Clear into the Future Program. Formation of a regional restoration workgroup is also expected in the late fall or winter, and this group will be charged with helping to polish and peer review the products prepared as part of the strategy development and feasibility study. This workgroup's charge and tasks in 2008 and beyond will depend on the outcome of the 2007 workshop and report; however, PDE envisions the workgroup as providing the scientific basis for refinement of restoration matrices and decision support tools that should be useful for restoration managers, SEP and NRD trustees, restoration practitioners, and so forth. Outcomes for these initial steps in a RRI will also determine whether and how a policy groups is formed (e.g., ACES).

2. State of the Estuary (SOE) Report. Progress has been slow. There is an enormous amount of information of a patchy nature (e.g. among different states), and we are linked with DRBC and four state universities in developing a State of the Basin report. By an earlier agreement, the State of the Estuary report will be prepared as a sub-basin regional chapter in this overall basin report effort. For its part, PDE had agreed to contribute in three major ways. First, PDE provided funding as a \$10,000 direct NEP contribution, \$50,000 in kind support via a contract with Battelle, as well as PDE staff time. Second, PDE furnished basin-wide raw data and data synthesis products regarding four (tidal wetlands, wetland buffers, fish passage, horseshoe crabs) of the more than 25 indicators chosen at the start of the effort. Third, PDE agreed to take the lead on writing the SOE chapter after we were provided with all of the data products and interpretations for all 25+ indicators for the estuary study area. PDE completed its first two contributions on time; however, the third task (actual report-writing) is not possible until we receive the appropriate materials from which to write the report. We have outlined the report and filled in those areas that we can at this point. The slowness on the part of the overall team is due in part to the complexities of the data and some other challenges with coordination of the overall effort. If we do not receive what we need, at some point (this year) PDE may be forced to complete a SOE report using best available data without waiting on all of the expected materials.

**VII. Update on the National Water Quality Monitoring Network and DE Basin Pilot  
Dr. Hameedi (STAC Member)**

1. Dr. Hameedi provided an update on the progress of these programs, including comments on the funding prospects for a demonstration phase in 2008 and an implementation phase in 2009. Since the pilot phase currently underway is unfunded, the objectives are being kept relatively simple. The goals are to examine which of the network's core goals are relevant for water quality monitoring and management in the DE Basin. The second goal is to inventory what programs exist that support the monitoring needs, and also what is currently needed to fully implement the network. Pilots are also being asked to estimate the costs of fully implementing the network here. Lastly, pilots are being asked to consider how well are our data being shared in the region and providing ways to improve data sharing and use.

The network is not very specific and includes non-traditional water quality linkages such as wetland extent and function. These factors led to a decision to create several network refinement workgroups to polish the network design. There is not currently a good national lead for the wetlands component, and so the San Francisco and DE Basin pilots, which have some wetland expertise and programs, may be providing important information for the network in this sort of capacity as well.

More information on the Network can be found online at:  
[http://acwi.gov/monitoring/network/ceq\\_proposal.html](http://acwi.gov/monitoring/network/ceq_proposal.html).

2. Danielle Kreeger added that the DE River Basin pilot has a steering group that meets every few weeks, of which PDE is a member. Also, several STAC members are assisting with the 7-8 subgroups for the pilot, including Amy Jacobs and Danielle (wetlands workgroup), Jonathan Sharp (estuaries subgroup), John Kraeuter and Danielle (biology workgroup), Tom Fikslin (contaminants subgroup). If any other STAC members have an interest in being involved with the pilot, please let Dan Soeder or Danielle know.

**VIII. Web-Based Data Clearinghouse and Data Management (Dan Soeder, STAC Chair)**

1. Potentially linked to the data management and website component of the Network pilot, PDE continues to build the Delaware Estuary Information Gateway. Using funding from DuPont Clear into the Future and a grant from USGS NBII, PDE has hired a graduate student from University of DE to put "meat on the bones." Based on the growing needs, in the future the STAC might consider formation of one or two additional subgroups or affiliated workgroups: a Data Management workgroup and an Information Clearinghouse (website) workgroup. As an organization, PDE will probably be more active in the website workgroup, although the STAC should take a lead role in both. Jonathan Sharp and others advocated a straightforward, simple and fast strategy.

2. Bob Hoke, Dan Soeder and Jonathan Sharp indicated a strong interest in working together as a subgroup on DMAC type issues. The PDE watershed restoration coordinator, Krista Laudenbach-Nelson, would be a possible facilitator for this workgroup. Krista and Jonathan Sharp both expressed an interest in working on a website group. Dan Soeder noted that Gabrielle Canonico from the USGS NBII Information Node is interested in attending a future STAC meeting and possibly presenting on these subjects. The STAC agreed to put the DMAC and website issues on the agenda at a future STAC meeting, and invite Gabrielle to attend and present. If someone steps forward to lead one or both efforts, the STAC suggested setting up

a conference call soon rather than waiting until the fall or winter to tackle these areas of need and interest. *[Note: subsequently, the fall meeting of the STAC was scheduled jointly with the EIC as a special meeting, meaning that this topic will be deferred to the winter STAC meeting. Also, Gabrielle Canonico has left USGS for the NOAA IOOS office; however, she and Dan Soeder have initiated discussions on this with data management experts at UMBC.]*

***IX. Presentation: "Coping with global warming and sea-level rise: maintaining ecological and economic functions at the edge of the estuary." Jack Gallagher (STAC Member)***

1. Dr. Gallagher provided a 25 minute seminar on research at the University of Delaware to develop new crops for farmers that are salt tolerant and have many uses, including potentially for biofuels. Plants such as the seashore mallow may offer farmers a transitional crop as farmlands in the buffers around salt marshes begin to convert to tidal wetlands.

***X. Presentation: "Update on the sudden marsh dieback." Amy Jacobs (STAC Member)***

1. Amy Jacobs summarized the activities of a marsh dieback task force, which Dan Soeder is also involved with. Amy described the effects that were seen in lower Delaware in 2007, including two patterns. First, some marshes failed to green up in the spring, suggesting that dieback had occurred during the previous winter. Second, some marshes did get green, but then browned during the growing season. Once marshes turned brown, the canopies quickly fell and much of those areas turned into open water.

2. Looking at this summer (2007), there is a need to fly over the marshes where die back was observed in 2006 to determine if there was any re-vegetation or new outbreaks. The progression of marsh browning will be monitored in the Delaware Estuary as well as the Inland Bays in 2007. In 2006, the only area in the estuary that may have seen some browning was in Prime Hook, as well as some 2004-2005 anecdotal reports from the NJ side of the estuary.

3. The STAC asked about potential causes. Jack Gallagher asked about herbivores that were seen to be grazing in browned areas. Danielle Kreeger note the patterns in the aerial photography that seemingly suggest sediment budget dynamics (e.g. green on mosquito ditched levees, but brown in interior areas). Amy reviewed the various possible causes, as well as the need for more research into the causes. Danielle noted that the STAC has an opportunity at the fall meeting (joint with the EIC) to elevate tidal marsh monitoring needs as a funding priority, considering that this was the subject area that was a close second finisher in the recent STAC project funding competition. Amy suggested that a top priority would be to have Dr. Michael Kearney from University of Maryland finish satellite imagery assessments for the Delaware Estuary. In addition to research into marsh die-back causes and landscape patterns in remote sensing data, there is also a need to establish fixed monitoring stations for marsh condition and to develop restoration strategies to attempt to offset die-back losses.

4. Danielle Kreeger noted that the new tidal wetland subgroup for the DE Basin pilot of the National Water Quality Monitoring Network is also focusing on wetland monitoring and assessment needs for the Delaware Estuary. This Delaware Estuary Wetland Work Group (DEWWG) is being seen within PDE as the first STAC-affiliated subgroup that will focus on developing (reasonably) a uniform tidal wetland monitoring and assessment design and strategy across the Delaware Estuary study region, including NJ, PA and DE. Several STAC members are involved or are being included in initial activities, including Amy, Danielle, David

Velinsky, Jack Gallagher, and Dan Soeder. *[Note: the new DEWWG began meeting at least monthly in June and is striving to complete a first draft monitoring design and strategy by the end of October, 2007.]*

**X. Discussion: Channel Deepening (Dan Soeder, STAC Chair)**

1. The STAC discussed the current plan to dredge the main channel to increase the depth to 45 feet. Reflecting on the discussion about advocacy at the March meeting, the STAC reiterated its position that it should and will not “take a position” on contentious issues; however, it should and will take a position that important decisions should be suitably informed by science, and that important scientific questions and needs should be addressed if they are not fully understood or met.
2. In the case of channel deepening, there is a rich history of studies and debate about the real and potential environmental effects of channel deepening. It does appear that some factors have been suitably studied and discussed by these past efforts; however, there does appear to be some remaining questions that the STAC is unable to answer. This may be because there is information available for which the STAC is unaware. However, if the possibility exists that some important questions remain unaddressed, then the STAC (and PDE) has a duty to elevate those questions and advocate for more scientific information to answer them. The STAC would then provide its best judgment as to the environmental effects of further channel deepening. The decision-makers (e.g., EIC, Steering Committee) would be left to decide or elevate the information however they see fit. The STAC would merely provide information relevant for the decisions to be rooted in science.
3. In this context, the STAC reviewed some of the main environmental effects and questions that have been posed in the past, including the potential exposure of aquifers, increased tidal amplitude, and increased salinity and concomitant effects on oysters (disease virulence) and sturgeon (spawning habitat loss). For some of these potential factors, studies do exist, and the STAC suggested that those reports be reviewed by a subgroup of the STAC.
4. Danielle Kreeger noted that there is one area of new potential concern that to our knowledge has not been suitably investigated. Phrased as a question: Would further channel deepening increase the net export of total suspended sediments from the estuary, by possibly increasing channelization of river flow and volume, and thereby deprive fringing habitats such as tidal marshes of needed sediment supply? With a potential hastening pace of sea level rise and land subsidence, tidal marshes depend on suspended sediments to keep pace and accrete vertically. Since PDE has been elevating tidal marshes as one of the signature traits of our region’s ecosystem, it is important to understand all of the factors that might affect their extent and condition past, present and in the future.
5. The STAC agreed that this is a good example of a scientific question that PDE should ask to be answered. Furthermore, the STAC suggested that this question represents an excellent case study for the need for ecosystem-based management. The interrelationships between physical forcing functions (freshwater inflow, climate change, salinity, suspended sediments) and biological responses (to oysters and marshes) are complex and require an understanding of linkages between the non-tidal and tidal system as well as the physical-biological. For these reasons the STAC suggested that we frame the forthcoming dialogue about ecosystem-based management around a case study such as channel deepening.
6. Dan Soeder asked for STAC members to send any additional thoughts about channel

deepening to either himself or Danielle by the end of June. Dan will prepare a short synopsis of the issue, outlining our current understanding as well as remaining questions, as an ecosystem-based management case study to be discussed at the fall EIC/STAC meeting.

#### ***XI. Discussion: Joint EIC/STAC Fall Meeting (Dan Soeder, STAC Chair)***

1. The STAC discussed what it would like to see attended to in the fall meeting with the EIC, which will be the first time the two groups have met.

2. The STAC noted that the theme of ecosystem-based management is a good one. What does this terminology really mean? Is it needed? Simeon Hahn suggested that we consider presenting the concept of a wiring diagram as well as discussing the channel deepening case study (see above). *[Note: in the interests of time, the draft agenda for the fall meeting is being kept simple and no detailed talks on wiring approaches or other technical issues are possible at this time, but a short general discussion on ecosystem-based management will be included.]*

3. A second agenda topic that the STAC suggested is **funding**. Is there some way to eventually move from an ad hoc funding approach to something more sustainable, such as the Science and Restoration Trust that PDE has been exploring for the past few years?

4. A third agenda topic is EIC-STAC interrelations. How can the STAC and EIC more effectively work together to address top CCMP action areas and science and management needs? Should the STAC lead the way and tee up concepts for the EIC to react to, should the STAC wait for guidance from the EIC and respond only when asked, or some two-way blend of these approaches? Should the EIC and STAC meet regularly perhaps?

5. A fourth area for discussion is how to better engage the states to work with PDE, specifically estuary-wide monitoring and watershed-based programs.

6. A possible fifth area of interest is how to improve collegial relationships among different sectors, such as industry (the regulated) and agencies (the regulators). Is this desirable? Might PDE offer a good medium?

#### ***XIII. Future Meetings***

The next meeting is expected to be a special joint meeting with the Estuary Implementation Committee, the group that has authority over the STAC. A tentative date for this fall meeting was scheduled for **October 4<sup>th</sup>, 2007**. Since the size of the group meeting will exceed the capacity at the PDE offices, the fall meeting will be held at a venue to be determined later.

*[Note: the EIC approved this date, and the meeting is scheduled for the EPA Region 3 offices in Philadelphia].*

***XIV. Adjourn.*** Mr. Soeder formally adjourned the meeting of the STAC at 2:59 p.m

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