

**DELAWARE RIVER BASIN COMMISSION
FLOOD ADVISORY COMMITTEE SUMMARY**

October 5, 2005

The October 5, 2005 Flood Advisory Committee (FAC) meeting began at 10:00 AM at the Commission office (DRBC) in West Trenton, NJ. Peter Gabrielsen of the National Weather Service chaired the meeting.

A. Review of Draft Minutes from the July 13th Meeting

Bill Nechamen, Rick Fromuth, and Alan Tamm each listed proposed corrections to the summary from the July 13th FAC meeting. The minutes were approved with these changes. The approved summary is now posted on the DRBC web site. Tapes of the meeting may be reviewed upon request.

B. Confirmation of New Committee Vice Chair

The motion was made, accepted, seconded, and approved for Mariana Leckner to serve as Vice Chair of the Flood Advisory Committee.

C. Consideration of Expanded Membership for the Flood Advisory Committee

Based on recent requests to expand the membership of the FAC to include the Delaware Riverkeeper and a citizen representative for the upper Delaware River, the members discussed a potential revision of DRBC Resolution 2000-8 (which created the FAC) to add a non-profit and a private citizen member. Resolution 2000-8, which is posted on the DRBC web site, lists 18 member organizations, predominantly state and federal agencies involved with flood warning and flood mitigation. The primary focus of the FAC under Resolution 2000-8 is on improvement of the basin's flood warning system, but the FAC is also authorized to make recommendations related to flood mitigation in general. Although the FAC meetings are open to the public, and any interested party can attend, the ensuing discussion pertained to adding a non-profit and private citizen voting member to the committee.

Jeff Mahood had a concern about how to select a single non-profit and private citizen representative from among all those who might want committee membership. Bob Hainly noted that it is important for the FAC to have a connection with citizens and landowners and was concerned with how the two representatives would be able to disseminate information.

Gary Petrewski asked if there were specific individuals that were interested. Mr. Fromuth responded that the Delaware Riverkeeper and Dr. Bill Vogt, representing upper Delaware citizens, had each expressed an interest in expanding the membership to include their interests.

Mr. Gabrielsen noted that the FAC voting members are designated by their representative agencies. He stated that the FAC members are looking at trying to bring federal and state agencies and resources together to support programs that are already in existence. He raised a concern about how one person could represent the citizens of the upper Delaware Basin. Mr. Fromuth noted that the Executive Director of the DRBC has some discretion in selecting a representative individual. Mr. Gabrielsen noted that if the FAC makes a policy recommendation to the Commissioners, the Commission would in turn conduct a public hearing which would be open to interested parties.

Mariana Leckner cited the difficulty in selecting a single representative for private citizen and non-profit interests and the issue of how to limit biases and any special agendas. She noted the

value of public input and the opportunity for interested parties to attend the FAC meetings, which are open to the public. Alan Tamm suggested making a motion to ask the Commissioners whether or not they would be interested in advising on the committee make-up because they are the political head of each one of the governments. If they say this is only a technical committee, then perhaps the existing structure where there is a free exchange of ideas from the audience and the technical members will suffice. Mr. Mahood recommended setting time aside specifically for the public to make comments at each meeting.

Bob Tudor said there are different ways of addressing the membership request. One is to change the make-up of the membership. Another is to operationally provide for an open transparent process. Based on Resolution 2000-8, the Commissioners clearly had in mind that the FAC was a technical committee that was picked based on flood loss reduction responsibility and perhaps even more important, that they all have separate resources. He noted that the FAC is a very effective group in what they all do because they are able to devise strategies where they all have a piece of it. It is just one step short of changing the formal membership if there is an item on the agenda that allows for comment and those comments are fielded in future meetings. Bob Schopp asked if there is any public notice of the FAC meetings on the DRBC web site. Mr. Tudor said they are announced at the Commission meetings, and they are posted on the web site.

Mr. Petrewski said it would be good to get insight from anyone representing the locals. He said that the link between federal and state levels of government down to the local levels and to individuals is missing, and he sees value in having some local representatives and individual representatives on this committee. While there is a reasonable limit to the number of people that can be put on a committee, it is not unreasonable to have more local representatives. Ms. Leckner agreed that the local voice and non-profit voice are important, but her concern is in the voting. When someone is chosen as a voting member, the rest of the basin will ask why they do not have voting representation and the flood gates would be open for many requests for voting membership. There could be many politicians who would be upset when they find out that, for example, one citizen from one jurisdiction has a voting membership on the committee and another citizen in another jurisdiction does not.

Mary Ellen Noble said the Delaware Riverkeeper Network has done a great deal of work with storm water and stream restoration, and they are doing increasingly more in floodplain work. They take a longer view in terms of wanting things that have to do with keeping people out of the floodplains, making changes, and the definition of floodplains. She asked if there are proactive things that the committee would like to get into or would like to urge action into. Mr. Gabrielsen responded that there are many areas that they would like to get into, and they have explored things from new gaging technologies to new ways of doing hydrologic and hydraulic modeling to enhance gaging networks, and they have laid a lot of them out (GIS application, flood mitigation, flood preparedness) in their proposal in March 2001 where they put a plan together with dollar values. The power of the committee is leveraging up other resources to have good government here to not have duplicate efforts, especially between the federal agencies. Ms. Noble said clearly the work the committee has done, especially in terms of the warning system, has been wonderful because it is way ahead of where it was.

Bill Vogt mentioned the reason that he had brought up to Mr. Fromuth that the citizens along the river would like to see a voting member is because the decisions that are made really affect them. They would like to have somebody as a voice on the committee to represent the local citizens. He understands what the FAC members are saying about how you choose somebody that represents everybody that lives on the river, and that is certainly going to be difficult. All of the decisions that the committee makes affect the citizens. Regarding Mr. Tamm's point about

representative government, there is a fear that the majority of the people living on the river do not have much of a representative voice because the majority of the people in their voting districts do not live on the river. Therefore, their concerns do not get as much attention as they potentially could if they had a member on the committee.

Mr. Tamm said public participation is extremely important in any activity where you are looking at possible solutions where residents actually reside in the area of potential impact. NGOs are extremely important in leveraging non-governmental organizations, and provide a driving force in alternative solutions and in formulating what the appropriate solution is. Looking at the resolution, he is tempted to say that this group was set up as a technical advisory group, and the technical advice should be tempered with both the scientific background as well as the understanding of the impact to the people and properties that are in the basin. An alternative would be to leave the FAC as is and modify the procedures such that they would have two ten minute slots or two fifteen minute slots; one for public presentation to the committee and one for public comment or public presentation of the issues that are important to the NGOs and the private citizens. Another alternative may be to seek participation by the Senators. Mr. Gabrielsen said that in dealing with the Senators, it may be difficult to get a representative at the FAC meetings that could speak for their constituents. Maybe the approach would be to change the process so there is a period for local comment from the NGOs, and then time for other issues that they want to present and formalize their input to the FAC. This would provide a block of time for anyone to come and talk about any issue and also a block of time to organize formal input to the FAC.

Mr. Nechamen said basin counties could reach out to the county level of government in terms of outreach, and could at least get a point of contact in each of those counties that would be included in the e-mail outreach with meeting notes, etc. Mr. Gabrielsen said that the counties, Delaware Riverkeeper Network, and other groups could be informed about what is going on and formally invited to come and participate and present things to the FAC if they are interested. Dave Burd said the Commission today is extremely open to public input in the process and at the Commission meetings. He thinks a procedural change might best represent this and still keep the focus of the group as a more technical organization. Mr. Gabrielsen said he thinks that is a realistic first step because at this point the FAC has not made any controversial decisions. He noted that perhaps the first step is to provide the opportunity for both comment of NGOs in the actual meeting and then work to maybe increase the point of contact listing that they are sending out for the FAC meetings. If the FAC then reaches the point where there is a need to bring on other people as representatives then they can go down that path. The concern about not having equal representation for all of the members of the basin is something that makes him concerned about actually giving particular members voting rights, and maybe they will need to find sponsors through their state reps so they can come to the meeting and work that way, and then the state rep could be the voting person.

Mr. Gabrielsen stated that he liked Mr. Tamm's proposal for revising the meeting agenda where there is a period of local comment for the NGOs for both the issues on the agenda and other issues. He would like to try to increase a list of contacts, maybe one county representative and other groups that are interested, and that the website could be used as a vehicle for that.

Mr. Burd had one other observation, a couple of years ago there was an outreach by the National Weather Service to the river communities. He stated that was a good process and certainly gets the local constituents to learn what the committee does, to learn what is out there, to learn how they can be better prepared, and to solicit input that can come back to the committee and go on to the Commission or to the respective agency's representative.

Ms. Leckner said she thinks the approach of having an NGO and public agenda item coupled with expanded notification is very good. It also provides the benefit of hearing from all different jurisdictions, not just having one private and one non-profit.

Ms. Noble asked if the point of contact list was an extensive one. Mr. Fromuth said it would be each county and anyone who has expressed an interest can sign up on attendance here or call in, and they can be included. Ms. Noble asked if that is basically an agenda e-mail for each meeting, and Mr. Fromuth said yes. Ms. Noble said if anybody is really interested in interacting with the committee, they can be added to that e-mail list with little impact on anybody's time.

Mr. Hainly said one other group he was thinking about is industry. There is a similar group like this in the Susquehanna Basin, and there are industries that are right on the floodplain and they need the early warning to get their equipment out of the floodplain. He asked if they could open up to industry. Mr. Gabrielsen said industry falls in as one of the government organizations. If they are located in the basin and flooding is part of their issue, they can come here and talk with us. Mr. Tudor said there is a gentleman named Bob Molzahn, who is the Executive Director of the Water Resources Association of the Delaware River Basin, and he comes to all of the Commission meetings, he participates in many committees, and he knows all about the FAC and keeps track of what is going on, and that organization represents major business and industry in the basin.

Mr. Vogt said that as of three weeks ago a non-profit organization entitled The Delaware Riverside Conservancy was incorporated. The mission is to represent the business people and citizens that live along the Delaware. Although no meeting has yet been held the new organization already has 106 members. Their goal is eventually to represent everybody that lives and works along the river. Mr. Gabrielsen said that would be a great leverage point. Making the meetings and agendas more open with an opportunity for local comment, as well as comment on agenda items, is a reasonable start.

Mr. Tamm made a motion for the committee to table this discussion until the next meeting because he needs guidance from his superiors as to how to proceed on any vote or decision. Mr. Gabrielsen said that a proposal could be drafted which would formalize the structure of the Flood Advisory Committee meetings to allow period for local comment from NGOs for both agenda items and for open items. Mr. Fromuth said if the next meeting is set up with those items on the agenda, the meeting notice can be sent to anyone for whom we have contact information for the next meeting. He noted that unless Mr. Tamm sees a problem, this does not require any special action. The structure of the resolution would stay the same. Mr. Gabrielsen noted the other action item he would like to take out of this is for the current representatives of the FAC to provide Mr. Fromuth with an e-mail list of contacts that they feel are representative so they can start to cull the list. Clarke Rupert said if there is no objection, he would add a sentence or two on the DRBC website inviting anyone who would like to be added to the e-mail distribution list for future FAC agendas to e-mail DRBC.

D. Continued Discussion of Flood Damage Estimates for Recent Flooding

At the July 13, 2005 meeting the damages from the recent flooding were discussed along with concerns regarding the availability of information in order to estimate damages.

In trying to estimate damages, Laura Tessieri who started with the DRBC in August, compiled a comparative analysis of the National Flood Insurance Program (NFIP) claims in the basin for the September 2004 (Ivan) flood and the April 2005 flood. The analysis included GIS maps that

graphically show the number and dollar amount of closed NFIP claims per municipality, a detailed listing of the claims per municipality, and a summary table that ranks the municipalities and counties with the most flood insurance claims and highest dollars paid per storm event.

Mr. Nechamen pointed out that one obvious problem of using NFIP claim data to estimate damages is that most people who live in flood prone areas do not have flood insurance. The NFIP claims data does not include or represent uninsured flood damage. One thing he has asked FEMA for, but has never received, is getting the number of Individual Assistance (IA) registrations community by community which would give a better view of what the losses were. Mr. Nechamen said one of the problems that database has, though, is that you might have addresses and you might have zip codes, but you probably do not have the municipality.

Mr. Tamm said there is an incredible amount of data that is collected, but the federal government must comply with the provisions of the Privacy Act and as such they will not release that information. Ms. Leckner said she was the state's voluntary agency liaison working with the FEMA voluntary agency liaison, and he could have that information but could not share it with her. Mr. Tamm said this is something that emergency management has to address and have this discussed as perhaps an exception to the Privacy Act, because this data is needed to provide assistance. Mr. Tamm said that under the National Flood Insurance Program there is an exception that statutorily permits NFIP data to be shared for floodplain management purposes, and that is why the DRBC is able to secure some data.

Mr. Gabrielsen asked if the committee needs to get some of the experts to put a strategy together to say this is something that the FAC would like to take on, to more quantitatively identify high loss areas. Mr. Nechamen said he thinks there are a lot of uses for the data, and there is a lot of data out there. Identifying potential data and uses and then possibly coming back with a resolution for the Commission to suggest that FEMA and other agencies that hold such data would be urged to share their work for flood mitigation purposes. Mr. Gabrielsen said the start of this is to invite FEMA to the next meeting to talk to us about this, and after that discuss the merits of putting together a subcommittee with the intent of potentially going to the Commissioners and the FAC, if that is deemed necessary once the homework is done, to make a case for more data availability. Mr. Tudor asked if they would do those things in a parallel path as opposed to wait.

Ms. Leckner said that when she goes to the communities to do outreach or to do the investigations for grant proposals, the local PDs can tell you it floods from here to here in this type of rain. They know exactly, so they do not need to go to FEMA for a lot of what they need. What they can do, which would be easier, quicker, and not involve legal wrangling, is invite local people in for the areas where there is concern. Mr. Tamm said those kinds of maps and local knowledge is what is required in the local hazard mitigation plans. Ms. Leckner also said it might be useful to ask the county coordinator for the aggregate datasheets that contain the municipal and county claims for reimbursement. This would give you another subset of data looking at what the local jurisdictions are saying they have lost. Mr. Burd said the accuracy of that data is not as finite as a closed claim.

Mr. Gabrielsen said that at the next meeting it would be useful to have a representative of FEMA come and talk to us and then after that presentation, have a discussion about putting a committee together to maximize our assessment of flood damages in the basin. Based on what they come up with, they will present something to the Commissioners. Ms. Leckner suggested they might request the individual assistance (IA) representatives from these two floods to talk to the committee about them.

Ms. Tessieri also presented maps representing County wide reported damages for the September flood and the April flood. The data represented is provided by each County to the National Weather Service which then reports the data to the National Climatic Data Center (NCDC). Mr. Gabrielsen said he believes that comes from forecast offices from the storm data. Mr. Nickelsberg said that is right, and that they get it directly from the counties.

Mr. Tamm suggested that they share these mapping efforts with all of the planning entities in the basin: regional planning entities, municipal and county governments, and county OEM officials. Mr. Fromuth said a way to do that is to post it on the website. Mr. Tamm also recommended e-mail.

E. Summary of New Jersey Governor's Task Force Activities

Mr. Moyle said that following the recent floods, Governor Codey asked the Commissioner of the DEP, Bradley Campbell, to chair a Delaware River Flood Mitigation Task Force. The responsibilities of the Task Force included a full review of the flooding from the September and April storms, a review of responses from the various government agencies, and the providing of recommendations for measures that can reduce impacts, improve communication, and improve assistance to residents before, during, and after the flood. The full task force under the Commissioner's leadership was composed of the DRBC, the mayor of Lambertville, a Trenton resident, a representative from the Dean of Consultants, a representative from Princeton Hydro, the state hazard mitigation officer, a representative from Rutgers University, the mayor of Trenton, a representative from New Jersey Water Supply Authority, the Corps of Engineers, a representative from Dewberry and Davis, the Delaware Riverkeeper, USDA, Natural Resources Conservation Service, and the mayor of Philipsburg. There have been several meetings ongoing since the summer, and there is a website at www.njflood.org that has updated information.

One of the first tasks that the Commissioner charged was to break the full task force into different subcommittees, and there were three subcommittees formed. One is a technical subcommittee; another is a subcommittee on public outreach; and then another subcommittee to look at finance. Over the summer, there were probably a dozen meetings that were held between the subcommittees as well as one full task force meeting. There were three public hearings this summer; one in Warren County, one in Hunterdon County, and one in Mercer County. As a result of the public input and some issues that have been discussed in the subcommittee meetings and the full public hearings, recommendations were moved to the full task force in a preliminary format at the last meeting, and a report has been prepared. The report is with Commissioner Campbell right now, who is reviewing some of the recommendations and looking at the format.

To highlight some of the things that will be reported back through the task force, the Commissioner intends to look at measures to strengthen the floodplain regulations in New Jersey, incorporate consistent construction codes that are in compliance with the National Flood Insurance Program, an update of some of the flood maps, a need to coordinate and take full advantage of FEMA funds through our hazard mitigation program, increased flood warning, evaluation of some of the water supply reservoirs that are in the watershed, a continuation to work with the Corps to conduct the feasibility study and seek funding to implement the feasibility study, promote and support additional bond issues for flood control and land acquisition programs in the Delaware Basin, as well as additional public outreach efforts to the community. A lot of these items are things that have already come out of this FAC and have reached the full support of the subcommittees to go to the full task force. The schedule calls for completion of this whole task force report by mid-November.

Mr. Schopp said as part of the technical subcommittee, a number of them got together to come up with a proposal for updating flood warning capabilities, which included upgrades or additions to stream gaging stations, precipitation which also includes more complete weather stations, and to make a website where all of this data is readily available. They only addressed the New Jersey portion. They also discussed the recommendation of a partnership being formed with the National Weather Service to develop real-time mapping, using the predictions as part of their AHPS system. Mr. Hainly said that the difficulty is not producing the maps; instead, the difficulty is determining the water surface elevations and then also determining the 100-year flood plain or the 50-year floodplain. In effect, there would be a lot of hydraulic modeling that you would want to do first to make sure you have got accurate data, and then you would map the data on top of that. Mr. Nechamen stated that good hydrology and topography is essential, which emphasizes the need for FEMA's map modernization program; not merely a digitization of old maps. Mr. Moyle said he believes an endorsement from the DRBC supporting this proposal may be helpful after the Commissioner makes the report public. Mr. Moyle said another thing that comes out of the task force is to get the congressional delegation to put money into this fund.

Ms. Leckner mentioned that the WeatherNet system that we have in New Jersey is modeled after the Oklahoma system. In Oklahoma, though, they have a budget from their legislature and have 30 full-time employees working on this system. In comparison, NJ has Dave Robinson put his time into it when he can, and every once in a while he has a graduate student help him out. She stated that it is very empowering at the local level for people to be able to look at the data, get the data and be able to interpret it correctly, as opposed to just popping up a website and misinterpreting what might actually be happening or what is represented; but again, they have a budget of several million dollars from the Oklahoma state legislature. Oklahoma has offered their services to come out and talk to whomever in the hierarchies of the state of New Jersey and potentially for Pennsylvania and New York about the importance of funding the type of system they have out there.

Mr. Gabrielsen asked if there were any other comments on this topic. It was expressed that at the next meeting, after the final task forces report is released, the FAC should further discuss supporting some of its recommendations.

F. Report from Flood Mitigation Subcommittee on a Hazard Mitigation Plan Proposal for the Basin

Following the July 13th FAC meeting, a subcommittee was formed to look at the need for flood mitigation plans for communities in the basin as required under Section 322 of the Disaster Mitigation Act of 2000. A group of people including Mr. Tamm representing PEMA, Kathy Lear representing NJ OEM, Joe Zagone and Michael Shuler from FEMA Region III, Scott Duell from FEMA Region II, and Jason Miller from the Army COE volunteered to meet as a subcommittee a couple of times to discuss developing a concept for a basin wide hazard mitigation plan. Bob Tudor took the lead on the DRBC staff in developing this conceptual proposal based on those meetings.

Mr. Tudor expressed that over the past couple of years, the FAC has been focusing on flood forecasting and flood warning capability to do a better job of letting people know what the flood stage will be and allow them to get out of harms way. As a result of the Ivan storm and the later April storm, there was significant discussion at the July FAC meeting and a confluence of interest amongst three states, New Jersey, New York and Pennsylvania, to give equal time to the issue of mitigation planning.

The point of the subcommittee was to look at how the basin communities/Counties are doing in terms of implementing the Disaster Mitigation Act of 2000. All States and municipalities have been charged to complete and formally adopt Hazard Mitigation Plans in order to be eligible for future mitigation grant opportunities made available through FEMA's Pre-Disaster Mitigation (PDM) program and the post disaster Hazard Mitigation Grant Program (HMGP).

The State of Delaware has an approved Hazard Plan, and we learned that the Governor issued an Executive Order in 2003 to complete the plan. Atlantic City and Wayne Twp in NJ have approved plans. Sullivan County in NY has an approved plan. Quite a bit is underway in Pennsylvania.

The objective of this proposal is to support the compilation of municipal plans and their incorporation into a single basin-wide Multi-Jurisdictional All Hazards Mitigation Plan. The Plan needs to address all hazards, not just flooding. The plan would aim to make the Delaware River Basin more disaster resistant by reducing long-term risks of loss of life and property damage from the full range of disasters.

Joe Zagone indicated that there might be a possibility for FEMA to engage a national contractor in which they would have on retainer to come help market and offer support services to municipalities. DRBC believes that in order to do this in a methodical way that really engages counties and municipalities, you cannot turn it around in six months or you cannot even turn it around in a year if you really want to be listening to what they have to say. From an operational standpoint, you would have to implement the plan, involve a national contractor from FEMA, and apply for competitive PDM grants.

From the perspectives of the state emergency managers, there is a need to have the mitigation plans in place sooner rather than later so that these counties and municipalities would be eligible for funds. This is because once a federal disaster is declared, Mr. Tamm explained that the affected community has an opportunity to petition the regional director, and at the regional director's discretion, they can grant a variance from the November 2004 deadline for unusual circumstances. There is a little bit of a difference in opinion in Region II and Region III as to how to interpret that. In practical application, what they have found in Pennsylvania is that after the April flooding, a number of their communities petitioned the regional director and some were granted one year to come up with a plan and some were not; they were granted a shorter period. There are a couple of letters still pending.

Mr. Tamm said the timeline to complete the plan is disappointing to him, but he does realize that this is a long-range program, and it should be done and will have much merit from the Commonwealth's point of view. They have eight major river basins that they are trying to integrate into the state plan and any one of those components at any one time lag behind the efforts of others. We have included what we have, which is the state water plan, into our plan, and as that is updated, if the Delaware River Basin Commission chooses to undertake this project and gets it funded and it comes to fruition, that would be integrated into the state plan as well. He wanted to have this thing done and adopted by the communities so that they could get all of the assistance possible. His role is to provide assistance as soon as possible; all available assistance that he can muster to his citizens.

Mr. Moyle said there are pre-disaster funds available, and currently New Jersey cannot go after those pre-disaster funds – there is only one municipality that can and that is Atlantic City which has an approved all hazard mitigation plan. As each year goes by, there is an opportunity – for example, if Lambertville had a plan and they wanted to implement a project such as land

acquisition or raising homes. Mr. Tudor said part of the discussion they were having with the FEMA representatives was to allow us to compete for that pre-disaster mitigation money, and they told us they would try to work the system to make that happen.

Mr. Hainly expressed concern regarding the pre-disaster mitigation funding saying that through experience, his understanding is that the sub-applicant has to be the county. He asked if they were just going to facilitate and then continue with trying to get the counties to do their plans, or is the Commission planning to do the plans for the counties. Mr. Tudor said they wanted to do the basin scale work relying on existing information that already has been addressing these kinds of issues, but then to facilitate county preparation of their own plans.

Mr. Tamm said he knows that right now there is a pre-disaster mitigation grant program that has an identified closing date of January 17. They do not have a federal appropriation for this at this point in time. Planning is a legitimate activity, and they had provided some clarification to close the door on mapping. It is something that we should consider strongly as being a worthwhile project for the state and based on what we understand is the mission of DRBC, perhaps all of our existing funds that we contribute to the DRBC could be considered eligible as the “local match” if this was undertaken. That is a decision that has to reside with FEMA.

Mr. Fromuth explained that Mr. Tamm invited him to go to a meeting in Delaware County where they are in the process of doing a multi-jurisdictional hazard mitigation plan. The county planning commission is taking care of that plan; writing it and getting input from the communities on specific hazards and specific projects that they would like to see implemented using survey forms and several meetings, and they are trying very hard to get it done by April so that they can make the communities in Delaware County eligible for the hazard mitigation grant stemming from last year’s flooding. Unfortunately, not all counties are progressing so, and in looking at this concept and what the DRBC has available without additional funds right now, it is a lot of reports and a lot of information on flood hazards. Not so readily available for all hazards, maybe drought, but drought and floods are probably the two that we could contribute to just with the staff that we have in place now and make information available to the counties that want to proceed. We do not have the resources to do the plans for the counties without the extra that is mentioned in this proposal.

Mr. Gabrielsen asked Mr. Tudor where he would like to go with this next, and he said they wanted to just have an opportunity for the committee members to be aware of what the subcommittee was thinking about. He said he would like to see the outcome of the NJ Task Force and would like to see if the states are interested in us playing this role, because we are an organization of the states. If there is any sense of the group that this is a good first start, that is what he would like to know. Or if they want to have an opportunity to consume it in more detail and then write comments back to Rick or Laura, that would be fine as well. They would like to continue to evolve a proposal.

Mr. Gabrielsen said he would like to make the recommendation to have the committee review this proposal and provide comments back to Rick Fromuth through email by November 4th. That would give you the opportunity to start moving along and at the next meeting you could report to us in order to see what the status is.

G. Discussion of the Feasibility of a Flood Operations Model for the Delaware River Basin

Mr. Fromuth said this was put on the agenda to get input on the technical and dollar feasibility of such a model. During a discussion in the New Jersey Task Force Subcommittee meeting, Dr. Bill Vogt, an upper Delaware resident, made a presentation based on his thoughts of the April flooding and the role of reservoirs and potential management of the reservoirs. He brought up the

point that there is no model available at this time that you could use to experiment with reservoir operations in the basin for flood control. The model that the Weather Service uses, while it is very accurate from a volume point of view in predicting peaks, is not well suited for assuming different reservoir storage levels and a real-time operation as to how you might vary reservoir levels and reductions in flood peaks.

Recently, the model was run to look at the difference in results depending on if reservoirs were in place or not in place as a group. The conditions that were listed about the model were that it really was not well suited for analysis of these types of issues. Mr. Gabrielsen said when they are modeling any river system that has reservoirs in it, they just take inflow and outflow from these reservoirs and pass those variables down. They pull the reservoir out to model the hydraulics without the reservoir and then they put the reservoir in different operational scenarios.

There is a model for the Delaware River Basin that incorporates storages, but it is a planning model and all of the flows are lumped into a one-day average/total, and for flooding that is not sufficient. A smaller time step is needed. There is data from that model for the reservoirs that could be used in terms of their characteristics, but to put together and calibrate a model that would be representative of the impacts downstream on reservoir spill rates, etc. would be involved and would be a compilation of several models that are available now. Mr. Gabrielsen asked if this is a model to be used as a planning tool or would this be something that would be used operationally. If it was just a planning tool, then the question that people would have is if they could use it operationally. The key difference between the planning and the operations of any of these models is the data collection to see the state of the system before the event happens. When you can use it for a planning tool, you can arbitrarily set yourselves different precipitation amounts and flow rates, but during the key operations the problem is getting the snow water equivalent, the rainfall rate, the current river level, if there is ice on the river and those types of things. Mr. Fromuth said a first step would be to look at a more deterministic model that was planning based and see what kind of improvement that would be over what is there now in terms of how much you could depend on the results.

Mr. Vogt said some of the things they would like to see with the modeling, from a prevention or a public safety standpoint, is what kind of levels it could possibly project as far as flow so that they know what a worse case scenario might be. Mr. Hainly asked if this is for reservoirs that are not already designed for flood control. Mr. Vogt said it would be for all reservoirs that are in existence right now. They do help prevent flooding in a large storm, but if they are holding back that water and then another storm comes through they are releasing at a higher level. They would like to see models of that so that they could have an idea what the worse case scenario might be in order to do some planning from those models. Mr. Hainly said the Corps of Engineers does that routinely during a storm. They have stream gages that show inflow and outflow and they work with them operationally to figure out if they are going to store or release water. If there is a big storm coming, they will release water the week before to create a void so that they can store water. He would think at least that the Corps' office in Philadelphia would already be able to run that scenario for all of the reservoirs that they operate.

Mr. Nickelsberg said that the reservoirs in question are the New York City water supply reservoirs, which are not flood control. In this case, the reservoirs held back water from the first storm. Unfortunately, the second storm came right on the heels of the first and before any kind of water could have been released naturally. The New York City reservoirs are not there for flood control so they are not going to be able to release water like F.E. Walter or Prompton. They cannot open the gates and lower the lake 20 feet. Mr. Vogt said they would like to know what kind of possible damage could occur by them being there and doing that. If they know that there

is damage that could be done, maybe they could ask them not to spill so much in the spring. Mr. Nickelsberg said he does not think they have a lot of control over it. Mr. Fromuth said there is an on going discussion among the Decree Parties to develop a spill reduction program to create voids based on snowpack. The void in Pepacton did prevent the peak from the first storm in March. There is a difference between the academic exercise of going through and looking at what is possible with the reservoirs and different voids versus what is agreed to in terms of water rights issues with the Decree Parties. The interest in a model would be to just be able to look at the affects of different voids. As New York State and the City are eventually putting together a revised model downstream of the reservoirs, there should be better information elevation wise to look at that in terms of damage reduction. There is a lot more to what is actually possible in terms of flood loss reduction from the New York City Reservoirs or hydropower reservoirs than just looking at the possibilities with the models.

Mr. Moyle said coming out of the public hearings, there was a request that maybe they need to do a little better modeling of those reservoirs and what impact they play. That is going to be a recommendation of the Task Force. Right now they do not have a good handle on the modeling, and the only recommendation that is moving forward at this point is to do a little better overview of what is happening in the watershed. Mr. Fromuth said there is the question of the constraints of the ownership of the storage. He asked for thoughts on how involved it would be to develop a model like that and what the cost would be to extend the model the Corps uses for the lower basin.

Mr. Gabrielsen said if they wanted to take a step down this road there are a couple of things they could do. They could do an inventory of the larger reservoirs that are located in the watershed and find out who the ownership is of these reservoirs and what they were designed for. There are either public laws for the Corps of Engineers, water supply requirements, and the Decree for the New York City water supply. You would have to model the different reservoirs to see what is available and to see if these groups were even interested in providing that information. When he worked for a private hydropower company, they did not provide that information. All the information on how the system ran was proprietary information for hydroelectric generation so you may run into difficulties with that. Past that, the Weather Service would be able and willing to take that information based on scenarios and take the outflow of those based on their existing hydrologic models and run scenarios to see what the flood level would be. The real challenge is to do the inventory of the reservoirs, find the high impact locations, and then actually find the willingness of the people to model it and see what they are up against. Then they could take that information to their existing hydrologic models and give the requirements, route it down, and try different types of scenarios.

Mr. Petrewski asked if attenuation is adding to downstream peak or reducing the downstream peak, and if they already had that captured in the models. PPL was asked if they took into account what New York City was releasing when they were releasing. No, they did not, but that is a legitimate question. The answer is that attenuation helps downstream in terms of stage reduction. If New York City or PPL is spilling later, that is not adding more to the stage downstream than if they were to release water at a higher rate earlier. It is a question of the routing. They are already doing that in the Weather Service analysis. That is what was done post the April event when they took their routing model and could illustrate through that model that the stage was less with reservoir operations than if the reservoirs were not there. Mr. Vogt said he was under the impression that they took out all of the reservoirs and modeled it down in Trenton. Mr. Nickelsberg said they made the outflow equal the inflow, and the outflow was definitely less than the inflow. Mr. Vogt asked if they took into consideration removing one or

two reservoirs. Mr. Fromuth said that could be done just by changing the assumption for the outflow.

Mr. Gabrielsen said in order to provide the requirements for us to do the evaluation, they will take a look at what they can and cannot do. They have the data archived, and they can run it for different scenarios. Mr. Petrewski said in the case of Lake Wallenpaupack where they have greater operating flexibility than they do in the New York City reservoirs, they really do not know the answer to that question, and it would be useful to know that answer whether earlier spills may be more beneficial than holding the water until they have to spill, and relate it to New York City conditions and spills and how they combine downstream. They are generally in the ballpark, but they are not accurate within inches.

Mr. Fromuth said they have this problem with the flow model that they have. It may not be accurate in terms of representing some point in time or some observed condition, but because it is the same except for the difference in the assumptions you put in it to run it, it can show an accurate relative change.

Mr. Gabrielsen said he would take an action to work with Mr. Fromuth to identify some scenarios and then they could work with the Mid-Atlantic River Center based on what their management says to come up with some analysis with the existing caveats. One of the things to be concerned about is if this is going to be used to actually make decisions. The models are used for flood forecast and warning. They are not engineering design models. If the outcome is to be used to make decisions, then the recommendation would probably come out to bring in a consulting firm or get money from the Corps to do a complete river system model.

H. Next Meeting

The next meeting of the Flood Advisory Committee is scheduled for Wednesday, November 30, 2005 at 10:00 a.m.

**FLOOD ADVISORY COMMITTEE
ATTENDANCE**

October 5, 2005

NAME	AGENCY
BURD, David	Merrill Creek Reservoir
FROMUTH, Rick	Delaware River Basin Commission (DRBC)
GABRIELSEN, Peter	National Weather Service (NWS)/Eastern Region Headquarters (ERH)
GOULD, Chris	New Jersey Department of Environmental Protection (NJ DEP)
HAINLY, Bob	United States Geological Survey (USGS) – PA
LECKNER, Mariana	New Jersey Office of Emergency Management (NJ OEM)
MAHOOD, Jeff	Natural Resources Conservation Service (NRCS)
MILLER, Jason	United States Army Corps of Engineers (US COE)
MOYLE, John	NJ DEP
NAJJAR, Ken	DRBC
NECHAMEN, Bill	New York State Department of Environmental Conservation (NYS DEC)
NICKELSBURG, Walt	NWS
NOBLE, Mary Ellen	Delaware Riverkeeper Network
PETREWSKI, Gary	PPL
REUBER, Michael	National Park Service (NPS) – Upper Delaware Scenic and Recreational River
RODGERS, Ted	NWS – Middle Atlantic River Forecast Center
RUPERT, Clarke	DRBC
SCHOPP, Bob	USGS
SCORDATO, John	NJ DEP
TAMM, Alan	Pennsylvania Emergency Management Agency (PEMA)
TUDOR, Bob	DRBC
VOGT, Bill	Delaware Riverside Conservancy
WESTFALL, Greg	United States Department of Agriculture (USDA) – NRCS