

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

August 20, 2008

The August 20, 2008 Flood Advisory Committee (FAC) meeting began at 10:00 AM at the Commission office (DRBC) in West Trenton, NJ. Scott Steigerwald of the Pennsylvania Department of Environmental Protection (PADEP) chaired the meeting.

A. Introductions and Review of the Draft Minutes from the May 7th Meeting

The minutes were approved with no corrections or changes. The summary will be posted on the DRBC web site. Tapes of the meeting may be reviewed upon request.

B. Request Nominations for Vice Chair-State Member

Mr. Steigerwald, Committee Chair and PADEP employee, reported that this was his last FAC meeting as Chair. As is customary, the current Committee Vice-Chair will assume the role of Chair at the next meeting. As such, the next FAC Chair will be Jason Miller, U.S. Army Corps of Engineers. Mr. Miller is Chief of the Flood Plain Management Services Branch at the Philadelphia District of the U.S. Army Corps of Engineers.

Mr. Steigerwald subsequently requested nominations for the next Vice-Chair. As is customary, the Chair and Vice-Chair alternate representation from federal and state organizations from year to year. Since the next Chair will be a federal member, it was requested that the next Vice-Chair be a state member of the Committee. John Moyle, NJDEP, was nominated and approved. Mr. Moyle is Manager of the Bureau of Dam Safety and Flood Control at the New Jersey Department of Environmental Protection.

C. Hydrologic Conditions Report

Amy Shallcross, DRBC, gave a brief hydrologic conditions report. The year-to-date in the upper and central part of the basin is about 3.3 inches above normal, and in the lower basin it is about 2 inches below normal. There was greater than normal streamflow in July in both Montague and Trenton. In August to date, it is above normal at Montague and slightly below normal at Trenton.

In the upper basin, the NYC reservoir storage range is from 80 to 90% above normal in the reservoirs with a total storage of 230 bg which is about 80% of normal. The reservoirs are releasing at the FFMP L2 levels, but Cannonsville is currently releasing more to meet the Montague target. For the month to date, the average flow from Cannonsville has been about 405 cfs. The reservoirs in the lower basin storage are slightly below their normal pool indicating that all of the flood control storage is available. The DRBC, to date, has not had to make any directed releases from the storage to meet Trenton.

The salt line is currently at river mile 75 which is two miles downstream of its normal position at 77 miles. Over the next three months, higher than normal temperatures are expected, as well as higher than normal precipitation. Pennsylvania is slightly below normal groundwater levels and New Jersey and Delaware are within the 25-75 percentile range, but they are obviously getting low.

D. Report on Federal Coordination Summit Outcome

Mr. Tudor announced that the second Federal Coordination Summit for the Delaware River Basin was held on May 15th at the Independence Seaport Museum in Philadelphia. The Summit is for the DRBC Commissioners and regional leaders of federal agencies with a direct interest in and responsibility for water resource matters in the Delaware River Basin. The agenda for the meeting covered monitoring coordination, flood mitigation, and water supply management.

Hank Gruber, Army Corps of Engineers, facilitated the flood mitigation component. Four priority issues for which there was some common interest were discussed. These included the flood analysis tool being

developed for the basin reservoir operations called the flood model, flood forecast inundation mapping, enhancing existing rain stream gage networks and floodplain regulations. Each of the states then reported what was going on in their respective states to make their community more flood resilient.

E. Proposed Charge and Composition of Floodplain Regulations Evaluation Subcommittee

In May 2008, Commissioners from New Jersey and Pennsylvania requested that that a subcommittee of the FAC be formed to address the Interstate Flood Mitigation Task Force Recommendation FR-1: Catalog, Evaluate and Update Existing Floodplain Regulations in the Basin.

Mr. Steigerwald introduced the charge and composition of the Floodplain Regulation Evaluation Subcommittee (FRES) for review and comment. Both the charge and composition had been developed by a subset of FAC members, the co-chairs of FRES and DRBC staff. Joseph Ruggeri, NJDEP, and Dan Fitzpatrick, PADCED, have agreed to serve as co-chairs for this subcommittee.

The proposed charge of the subcommittee is “to review and evaluate the similarities and differences in floodplain regulations throughout the Delaware River Basin, and to develop and present recommendations on the potential for more effective floodplain management throughout the basin to the FAC.” No comment was received from members of the FAC that resulted in a change to the subcommittee charge.

One point of clarification that was discussed is that this subcommittee will not be cataloging the ordinances of the 868 municipalities in the basin. Instead, FRES will be evaluating the various state regulations, NFIP minimum regulations, DRBC floodplain regulations and a few examples of local regulations that are “more than the minimum” (i.e. New Castle County, DE). It is the intent of this subcommittee to catalog existing regulations as means of base lining current regulations and make recommendations to the FAC as to what changes (either at the state, local or regional level) would be appropriate in order to provide more effective floodplain management. The FAC would then inform and make recommendations to the DRBC Commissioners. At that time, it would be up to the Commissioners, upon considering those recommendations, to recommend any regulatory changes going forward. Any proposed regulatory changes would be accompanied by an official rulemaking process.

Mary Colvin, FEMA RII, brought up that all communities that participate in the National Flood Insurance Program (NFIP) are required to have flood damage prevention ordinances. But that enforcement of those ordinances is a different issue. Mr. Steigerwald responded that the subcommittee will also try to evaluate how varying states and entities deal with the issue of enforcement.

To keep this subcommittee to a workable size, this subcommittee was proposed to be organized into representative interest groups, each having designated representatives or spokespersons. The representative interest groups proposed were:

- basin states (6 total, 2 per state if applicable)
- federal government (2)
- environmental and citizen groups (3)
 - environmental
 - riverbank property owners
 - education and outreach
- business and industry organizations (3)
 - builders association (1)
 - engineering consultants (2)
- local officials (4 total, 1 per state - designated by state)

Jeff Zimmerman, representing ACU and NorDel, requested that two additional members be added to the subcommittee, one representing agricultural interests and another representing business interests. Ms. Colvin stated that the subcommittee should have representation from all three interests (homeowners, business owners and agricultural) if it is desired. Mr. Burd stated that there is an inherent real value by increasing the size of the committee by two to ensure that the different relative interests of business,

agriculture and homeowner be represented. The FAC agreed that representation should be offered to an agricultural bureau and also to a state or county level Chamber of Commerce. Following the meeting, representation was modified to:

- Basin states (6 total, 2 per state when applicable)
- Federal Government (2)
- Environmental, Citizen and Educational (3)
 - environmental
 - riverbank property owners
 - education and outreach
- Builders, Agriculture and Commerce (3)
 - builders association
 - farm bureau
 - chamber of commerce
- Flood Mapping Consultants (2)
- Local Officials (4 total, 1 per state - designated by state)

Although all subcommittee meetings will be open to the public, participation in the deliberative process will be limited to the designated representatives. Those wishing to actively participate in the deliberative process should do so by commenting through one of the representatives. All designated representatives will be required to state both majority and minority opinions of their interest group to the subcommittee for consideration. Ms. Tessieri mentioned that once all representatives had been seated, the first meeting would be arranged for the October/November timeframe.

F. Report on July 2008 Flash Flood Event; Overview and Application of the KINEROS Site Specific Distributed Model to the Upper Delaware River Basin (Michael Schaffner, Senior Service Hydrologist, NWS – Binghamton Weather Forecast Office)

Mr. Schaffner gave a presentation discussing the July 2008 flash flood event and detailed the application of the KINEROS site specific model to the upper portion of the Delaware Basin.

The project was originally funded in 2003 by a National Weather Service Comet Grant in Tucson, AZ. The goal was to place in the hands of a local office a site specific model that would use rainfall input at a very fine scale temporally and spatially, and this would be used to produce a flash flood hydrograph for prediction purposes. The project was successfully completed while Mr. Schaffner was employed in Tucson. Before he left Binghamton, he got the commitment of the USDA to test the model out in the Binghamton service area in the Delaware, the Susquehanna and the Finger Lake Basins. The test basins in the upper Delaware are the Beaver Kill, Platte Kill, Spring Brook, and Berry Brook. Two are ungaged and the other two are USGS stations.

The NWS FFMP (Flash Flood Monitoring Prediction) program takes rainfall from the radar, maps them to small basins sometimes in a scale as small as maybe two square miles to get a basin average rainfall. Then it compares this to flash flood guidance and other rules of thumb to decide if there is going to be flash flooding in a particular small basin or a particular grouping of small basins. This information is very helpful for deciding if the NWS is going to issue a flash flood warning. It is also very good for mentioning different basins in the warning, but it does not do much in giving us the timing or magnitude of the event. This model is a distributed model and is made of two different components, both planar units and channel units, which are between the planar units. It takes into account spatial distribution of soil type, land use, typography from the DEM, and also the rainfall from the radar. It does use kinematic wave equations for the routing, and the model does function in real-time and has a greater interface to bring that information into the model.

In Spring Brook, there was a Flash Flood event that occurred on June 19, 2007 which resulted in four fatalities. That same area also experienced a flash flood on July 23, 2008. The 2007 event experienced a higher basin average rainfall than the 2008 event, about twice as much rain fell during the 2007 event as

during the 2008 event. The basin average rainfall for the 2008 event exceeded nine inches. Another difference between the two events is that the 2008 event was more widespread and affected a larger area.

Mr. Hainly asked if the KINEROS model could be used to give warnings, what would the timing of those warnings? Would it be about the same as is achievable with the flash flood guidance? Mr. Schaffner replied that if the model had been able to be run in the July 2008 event, it may have been able to provide up to an additional half hour of warning time in advance of the flash flood warning.

Mr. Ahnert reaffirmed that what Mr. Schaffner is doing is very ground breaking work. The Weather Service as a whole has been trying to move in the direction of distributed modeling as a means to provide more specific information in shorter time scales. This is a great prototype or demonstration of that capability. A lot of the lessons learned with this model, will hopefully be able to be applied basinwide in the future when distributed modeling gets implemented on a larger scale.

G. Flood Mitigation Plan for the Non-Tidal NJ Section of the Delaware River Basin (Laura Tessieri, DRBC)

Ms. Tessieri presented the results of a multi-agency and local partnership that formed following the three Delaware River main stem flood events. The geographic scope of this Flood Mitigation Plan includes forty-three (43) New Jersey municipalities located in Mercer, Hunterdon, Warren and Sussex counties that are either entirely or partially located within the Delaware River Basin and have elected to participate in the planning process.

This Plan is unique in that while it meets the flood mitigation plan requirements of each municipality, it also employs a watershed management approach to ensure that final mitigation actions address both local jurisdictional needs and regional multi-jurisdictional needs. Through this Plan, local flood issues are elevated to the county, state and regional level. This Plan is essentially an action plan that contains over one hundred and sixty (160) mitigation actions developed by individual municipalities and counties.

One of the purposes of the Flood Mitigation Plan is to enable participating municipalities to get one step closer to becoming eligible to compete for FEMA funding aimed at flood mitigation. There are two types of natural hazard mitigation plans recognized by the Federal Emergency Management Agency (FEMA): a Flood Mitigation Plan and an All Hazards Mitigation Plan. As the name suggests, a Flood Mitigation Plan is specific to flooding. For participating municipalities, this Flood Mitigation Plan is an important and significant step towards completion of the required All Hazards Mitigation Plan. It also is a stand-alone document that details regional, county-wide and municipal mitigation actions that when implemented could reduce future flood loss.

The full report, currently under review by FEMA, can be found online at http://www.state.nj.us/drbc/Flood_Website/NJmitigation/index.htm

H. Flood Analysis Model Deliverables – What to Expect (Amy Shallcross, DRBC)

Ms. Shallcross said one of the recommendations of the flood mitigation task force was to prepare a flood analysis model. Currently, an agreement with the USGS, Army Corps of Engineers Hydrologic Engineering Center and the National Weather Service is in place to develop this flood analysis model. She reported that it is due to be completed in January 2009.

The model is composed of three parts. It has a rainfall runoff model, precipitation runoff modeling system or PRMS, which is being prepared by the USGS. PRMS simulates storm events and estimates the amount of runoff for different events based on the antecedent conditions and the amount of rainfall. The reservoir operations and channel routing model, HEC-RES Sim, is being developed by the Army Corps of Engineers Hydrologic Engineering Center in California. In addition, the Lag and K flow routing method, is what is used in the existing NWS flood forecasting model.

The model is intended to be a planning tool. For different storm events, the model will be capable of

evaluating effects of reservoir voids and release operations on downstream flood crests. It will provide a tool to inform the development of discharge mitigation plans for 15 basin reservoirs and it will enhance understanding of the impact of reservoirs on basin hydrology. The model will not be run in a real-time mode to direct operational changes during flood events. Model results will be among the considerations that inform reservoir management and policy decisions.

I. Status of FY-08 Flood Warning Improvements

An update on the status of the FY-2008 flood warning improvements was discussed. Handout I-1 is the NWS scope of work for the \$235,000. Tasks included in the scope and labeled to indicate the relevant Interstate Flood Mitigation Task Force agenda recommendations are as follows:

- FW-1 Inventory and Evaluate Precipitation Observing Stations in the Basin
- FW-2 Evaluate and Upgrade River gage network
- FW-4 Flood Harden Gages at Key Forecast Locations
- FW-7 Evaluate and Establish New River Forecast Sites
- FW-9 Develop Flood Forecast Inundation Mapping
- FW-11 Establish a Coordinated Flood Warning Education and Outreach Program

Regarding FW1, FW2, FW7, and FW9, Al Matte communicated that bids have been received for the specific tasks. Currently, bid evaluations are being reviewed and it is hoped that in the next couple of weeks awards will be made.

Regarding FW-4, a memorandum of understanding is currently in place between NWS and USGS. This will allow us a funds transfer so that USGS will be able to start on the gage hardening task.

Regarding FW11, the NWS is still discussing with DRBC how to best transfer the \$15,000 dedicated to education and outreach. A method of transferring the funds has not yet been identified given the current restrictions placed on the NWS.

J. Opportunity for Public and Interested Party Comments

- Ms. Tessieri brought attention to a draft matrix that was handed to the commissioners at the last DRBC commission meeting. It lists the status of ongoing flood studies and projects in the basin as a means of tracking the implementation of the Interstate Flood Task Force Action Agenda. This matrix plans to be continually updated, so a request for additional information from federal, state and local members was requested. The matrix is now posted on DRBC's website.
- Ms. Tessieri mentioned that Bob Molzahn with Water Resources Association of the Delaware River Basin put brochures in the lobby for a Northeast Summit on Monitoring Technologies and Early Warning Systems for Drinking Water Supplies to be held on October 2, 2008.
- Ms. Tessieri also announced that the annual conference for the NJ Association for Floodplain Management (NJAFM), a state chapter of ASFPM will be held on October 21-22, 2008 in Cherry Hill, NJ.
- NOAA's National Weather Service recently posted a "Guide to Hydrologic Information on the Web". Handouts of the posting were available at the meeting. It is also available at <http://www.weather.gov/os/water/ahps/pdfs/AHPSbrochure.pdf>
- Mr. Mahood, NRCS, said that a representative from the 7th District in PA had a watershed and flood preparedness forum in mid-August. Invited were NRCS, the Corps of Engineers, state DEP, FEMA and PEMA. This Congressman described that one of his top priorities is to do a watershed study and take a watershed approach to flooding and stormwater issues.
- Mr. Miller thanked Mr. Steigerwald for a year of his time and efforts as Chair of the FAC.

K. Next Meeting

The next meeting was scheduled for Wednesday, November 5, 2008 at 10:00 am.

**FLOOD ADVISORY COMMITTEE
ATTENDANCE
August 20, 2008**

NAME	AGENCY
AHNERT, Peter	National Weather Service (NWS)
BURD, Dave	Lambertville Office of Emergency Management (OEM)
CHAPMAN, Fred	Pennsylvania Department of Community and Economic Development (PADCED)
COLVIN, Mary	Federal Emergency Management Agency (FEMA) Region II
DEANGELO, Jim	Michael Baker
DOUGLASS, Bill	Upper Delaware Council (UDC)
DRUSTRUP, Mick	Lower Delaware, Wild & Scenic
DUNN, Kim	Dewberry
FERRARI, Mark	New York State Emergency Management Office (NYSEMO)
FITZPATRICK, Dan	Pennsylvania Department of Community and Economic Development (PADCED)
GARLITS, Skip	Stakeholder
GOULD, A. Chris	NJ Department of Environmental Protection (NJDEP)
HAINLY, Bob	United States Geological Survey (USGS) – PA
HOGAN, Laurie	National Weather Service (NWS)
JESPERSON, Eric	Pennsylvania Mapping and Geographic Information Consortium (PAMAGIC)
KRUZDLO, Raymond	National Weather Service (NWS)
MAHOOD, Jeff	Natural Resources Conservation Service (NRCS)
MATTE, Al	National Weather Service (NWS)
MILLER, Jason	U.S. Army Corps of Engineers (USACE)
MOLZAHN, Bob	Water Resources Association of the Delaware River Basin (WRADRB)
PEDRICK, Gail	Delaware Riverside Conservancy
PLACER, Katrina	Mercer County Planning
REISER, Robert	United States Geological Service (USGS)
RIMAWI, Hani	Medina Consultants
RUGGERI, Joseph	New Jersey Department of Environmental Protection (NJDEP)
RUPERT, Clarke	Delaware River Basin Commission (DRBC)
SAFAFAR, Senobar	New York City Department of Environmental Protection (NYCDEP)
SCHAFFNER, Mike	National Weather Service (NWS)
SCORDATO, John	New Jersey Department of Environmental Protection (NJDEP)

SHALLCROSS, Amy	Delaware River Basin Commission (DRBC)
STEIGERWALD, Scott	Pennsylvania Department of Environmental Protection (PADEP)
SURO, Thomas	United States Geological Service (USGS) - NY
TAMM, Alan	Pennsylvania Emergency Management Agency (PEMA)
TESSIERI, Laura	Delaware River Basin Commission (DRBC)
TUDOR, Bob	Delaware River Basin Commission (DRBC)
WILLIAMS, David	Pennsylvania Emergency Management Agency (PEMA) Eastern Area
WILLIAMS, Greg	Delaware Department of Natural Resources and Environmental Control (DNREC)
WINSLADE, C. William	Yardley Borough Manager & Emergency Management Coordinator
ZIMMERMAN, Jeff	Aquatic Conservation Unlimited, Inc. (ACU) / NorDel Conservancy, Ltd.