

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

**May 7, 2008**

The May 7, 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 February 6<sup>th</sup> Meeting**

The minutes were approved with changes on pg 4 as suggested by Peter Ahnert. The summary will be posted on the DRBC web site. Tapes of the meeting may be reviewed upon request.

Bob Tudor introduced Amy Shallcross, Supervisor of the Operations Section of the Water Resources Management Branch at DRBC. She is a licensed professional engineer with experience in watershed modeling. She comes to DRBC from the New Jersey Water Supply Authority.

Mr. Ahnert announced that they created a new position at the Mid-Atlantic River Forecast Center called Service Coordination Hydrologist and he introduced Patti Wnek who has been named to that position. Patti has been with the Mid-Atlantic River Forecast Center for 15 years as a senior hydrometeorologist. She will be working with customers and partners to improve the services of the River Forecast Center. She is also going to assist the weather forecast offices with training and outreach and evaluate products and services.

Gary Szatkowski introduced Raymond Krzdlo, the new senior service hydrologist at the Weather Service forecast office in Mt. Holly, New Jersey. He previously was a general forecaster at the office. He will be attending the FAC meetings regularly.

**B. Hydrologic Conditions Report / Flood Analysis Model Update**

Amy Shallcross, DRBC, gave a brief hydrologic conditions report. Overall, it has been a very wet spring. In the upper basin, as of March 9<sup>th</sup>, the precipitation as percent of normal over the last 180 days was between 125-150% over the entire basin. In the 30 days prior, it was between 200-400% above normal precipitation for the northern part of the basin. The departure was almost eight inches above normal for that time of year. NOAA-NWS reported that it was the wettest February on record for the upper basin.

On March 3, the snowpack water equivalent was about 29 bg. After two back-to-back storm events in March where the majority of the basin got well over two inches of precipitation, the snowpack water equivalent was reduced to 6 bg.

In March, the upper basin received more than 75% above normal precipitation. During this same period, the central and the lower basin had less than normal rainfall. In April, the entire basin reported less than normal rainfall. The Governor of Delaware rescinded the drought watch on April 25th.

The streamflow in April was at 85% of normal, coincidentally the same at both gages, Montague and Trenton. The streamflow was at 50% of normal for the beginning of May at Montague and about 75% of normal at Trenton. As of May 6<sup>th</sup>, the New York City Delaware Reservoirs were at a combined 97.9% full with Cannonsville at 97.9%, Pepacton at 97.5%, and Neversink at 98.4%.

The forecast for the next five days shows that the middle of the basin between Trenton and Belvidere is supposed to get two to two and a half inches, and the lower and upper basins will get a lesser amount.

Ms. Shallcross also gave a brief update on the flood analysis model to be completed in January 2009. The model components include the PRMS rainfall/runoff model developed by the USGS, the ACOE HEC-ResSim reservoir operations model, the Lag and K flow routing method model as used in the existing NWS flood forecasting model, and GIS and hydrologic data management. The framework for the reservoir model has been developed and they are now adding reservoir information. They are getting

fairly good correlation with the Lag and K flow routing method from the National Weather Service. USGS is progressing with the PRMS model which will calculate the amount of runoff for the model. Because the topology is relatively flat in some areas, the automated delineator for the hydrologic response units is causing some trouble which is resulting in a lot of hand digitizing. However, they are still on track to get a Beta version of the model to test. The Graphical User Interface, GUI, is expected to be developed in the September – December timeframe and they are on schedule for model completion in January 2009.

### **C. Flood Project of the Nurture Nature Center in Easton, PA**

Jane Stanley, director of the Nurture Nature Foundation, gave an update on the status of the Flood Project. The short term goal is to open the historic building as a conference center for events, meetings, etc. The longer term goal is to build up exhibits and make it into a real science discovery center concerning the issue of flooding. The goal is to have the building ready for events by the end of the year. For future conference planning, the Foundation has an extended stay facility of approximately 20-30 rooms that are within walking distance of the conference center.

The Nurture Nature Foundation has been following up with individuals who were at the January 2008 meeting to further explore how to work together to reach the long term goal. Ed Mooney of the National Canal Museum has agreed to help the Foundation apply for a National Science Foundation Grant that has a due date of September. Mary Schaffer, author of “Devastation on the Delaware”, has a lot of documents about the history of flooding along the Delaware. The Foundation plans to scan and archive some of these documents. Through Peter Ahnert, the Foundation has pursued a NOAA grant opportunity.

Ms. Rachel Hogan thanked Clarke Rupert for informing her about a grant from State Farm Insurance given to the Northampton Community College (NCC). As an insurance agency, State Farm has an interest in flooding. NCC secured one of these grants to work with the local high school students and create an older students mentoring younger students scenario about youth leadership particularly by the development of flooding projects.

The Foundation has sought some congressional appropriations through the help of Congressman Dent, and Senators Casey and Specter. The Mayor of Easton issued a letter of support for the Foundation. The Foundation has also attended various conferences with a double purpose of sharing what they are hoping to do with the public and also picking up additional information. They went to the Lehigh River Watershed Conference, meetings regarding the formation of the Pennsylvania Association of Floodplain Managers, and they plan to attend the National Association of State Floodplain Managers Conference.

In terms of structure going forward, they have plans to build an advisory committee that could be available by internet or conference calls. If anyone would be interested in serving in a capacity on an advisory committee, please contact Ms. Stanley. In addition, Marshall Frech is looking for flood footage. If anyone has flood footage, please contact Ms. Stanley at [jstanley@nurturenature.org](mailto:jstanley@nurturenature.org).

### **D. Formation of a Workgroup to Explore Establishing Uniform Floodplain Regulations for PA and NJ**

Mr. Steigerwald, FAC Chair and PADEP employee, reported that New Jersey and Pennsylvania DRBC Commissioners spoke during the week of April 28<sup>th</sup>. He conveyed to the FAC that they want to advance certain recommendations contained in the Interstate Flood Mitigation Task Force Report of July 2007. Specifically, they mentioned the recommendation to establish more uniform floodplain regulations throughout the basin. Mr. Steigerwald suggested that a subcommittee of the FAC be formed to evaluate this recommendation. A sign-up sheet for interested FAC members, as well as, other interested attendees was passed around the room. Further discussion on this subcommittee will be held among these interested parties and more discussion on the subcommittee scope and composition will be discussed at the next FAC meeting in August.

**E. Report on Stage Frequency Curves and Structure Inventory from Task 2 of the Multi-jurisdictional Use and Management of Water Resources Study for the Delaware River Basin**  
(Jason Miller and Rob Lowinski, U.S. Army Corps of Engineers)

Structure Inventory: Mr. Miller gave a report on the development of a GIS database of frequently flooded structures in frequently flooded communities for use as a planning and emergency management tool. Identified communities were chosen based on repetitive loss occurrence. All structures in the 100-year floodplain of chosen communities (excluding roads and bridges) were surveyed, resulting in a survey of approximately 3,000 individual structures. Identified damage centers include New Hope, Yardley, Easton and Upper Makefield PA; Lambertville, Stockton, Harmony and Belvidere NJ; and Rockland and Colchester, NY.

The database will have points at each of the structures so they can coordinate location of the building to the water surface elevation and come up with an interior depth of flooding based on the first floor elevation. Knowing the interior depth of flooding at each structure allows them to go into depth damage curves and come up with an estimate of damage based on percent of structure value and content value. The contractor that is doing the surveys is getting a recent assessed value of buildings as part of the survey. But, they are using FEMA's standard curves for the relationships of depth and damage.

Since this will all be in GIS, the information will be able to be compiled at a municipal, county, state, etc. level or they could also look at it structure by structure. Communities should also be able to come up with an estimate of damage based on a forecasted stage. This has been used along the Susquehanna River and it has proved useful to communities for planning and also to allow for a first cut of damage estimates to provide to FEMA or the state emergency management agencies.

This survey work directly supports the inundation mapping being developed by the Corps. This inundation mapping will be available as a stand alone product and also through the NWS AHPS web page at applicable gages. The stand alone product will be given to the county emergency managers and local communities. You will be able to see inundation mapping for the whole Delaware, but in the specific communities with survey data, you will also be able to get some structure information. This stand alone study is completely separate from the flood analysis model, and is expected to be completed by the end of September.

Stage Frequency Curves: Mr. Lowinsky described the task of updating of the flood frequency curves on the Delaware River to incorporate the three most recent storms. This update was a collaborative effort with both the Corps and USGS involved. The curves of eight active stream gages were updated from Callicoon down to Trenton. Previous curves were last updated in 1984. The Corps provided the USGS with flow reduction curves to account for effects of regulation.

During the process, they noticed that it would probably be a good time to update the 1983 Regional Skew Study for the Delaware River Basin. They are going to compile the flood peak data for 215 sites in the basin and perform a regional skew analysis using methods recommended by bulletin 17B. Anticipated completion is fall 2008.

**F. Federal Coordination Summit/FY-08 Flood Warning Improvements**

A Delaware River Basin Commission Federal Coordination Summit will be held on Thursday, May 15, 2008 in Philadelphia, PA. There will be three sessions that are hoped to result in enhanced agency communication, resource leveraging, and a prioritization of coordinated Federal-State and Federal-Federal Actions. These sessions include monitoring coordination, flood mitigation and water supply management. Hank Gruber, USACE, is the planned discussion leader for the flood mitigation session. All FAC members that have not yet provided information for the summit that desire to do so should contact Hank Gruber or Jason Miller.

A scope of work for the FY-08 Flood Warning Improvements earmark of \$235,000 should be finalized soon by the NWS. The scope will include an inventory and evaluation of precipitation and river stage gages in the basin, gage hardening through USGS, input of USACE inundation mapping into AHPS and

an education and outreach component. Bureaucracy efforts are underway via an MOU between NWS, USGS and DRBC in order to transfer funds between federal agencies to address the gage hardening and outreach objectives in the scope of work for this earmark. The MOU will be presented to DRBC Commissioners at the next Commission meeting on May 14. The outreach initiative that is being proposed is going to be held in the Easton Museum at the end of the year and geared towards county emergency managers.

**G. AHPS Flood Inundation Mapping Status, AHPS Google Maps, and Status of Other NWS Efforts** (Laurie Hogan, NOAA/NWS Eastern Region Headquarters)

Ms. Laurie Hogan presented an update on the AHPS flood inundation mapping status (part of the FY-08 earmarked funds). She also conveyed how AHPS information is available via Google Maps and Google Earth.

The Corps of Engineers is producing digital flood inundation maps for the main stem Delaware using existing data. Mapping will be available from Trenton, NJ north to Port Jervis, NY, excluding the area of the Delaware Water Gap. This mapping will allow local residents, emergency managers and the general public to view what is forecasted to be inundated by a specific forecasted gage level. These maps will be available to County Emergency Managers, but online mapping will also be available through the NWS AHPS website at specific forecast gages. During a conference call on April 8th between NWS, DRBC and the Corps, it was decided that nine Weather Service forecast points would be good candidates for inclusion of inundation mapping. These include: Matamoras/Port Jervis, Montague, Belvidere, Easton, Riegelsville, Frenchtown, Stockton, New Hope/ Lambertville and Trenton.

The process to get the money to the AHPS contractors is underway and the statement of work has been submitted. The NWS plans to provide the Corps with a comprehensive list of all the pieces the Corps has to provide the Weather Service for the mapping to be available online. The draft list is ready to be given to the Corps and as soon as the contractor has a signed contract, this process will get started.

Google Earth/Google Maps: On the national Weather.gov/AHPS page, there are a set of tabs. Most people go to either the river observations or the river forecast tab. On the far right, there is a tab called river download and one of the download options is the AHPS RSS feed. In addition, there are shape files that are used in applications like ArcView, and there are also KMZ format files. With the KMZ files, anyone can take the AHPS information and put it into the Google Map or Google Earth applications.

**H. Yardley Flood Mitigation Activities** (Bill Winslade, Borough Manager and Emergency Management Coordinator for Yardley, PA)

Mr. Winslade provided an update on some of the mitigation activities in Yardley. Presently, they are working with six major players on five major projects. They are working with the Department of the Interior on a backflow project. This should protect homes up to 15'-22'. They are working to bond \$6.2 million for rehabilitation of the sewer. EPA is willing to get involved with a \$500,000 project. The Department of Commerce is working with Yardley on a low head pump to pump the canal into the river during high water events to prevent canal damage and blowouts from the canal from occurring. This cost is \$500,000. The DRBC and CSX are in discussions regarding debris that has accumulated along the abandoned piers upstream of the CSX railroad trestle. Bill Winslade also mentioned that five homes have applications into FEMA/PEMA and that FEMA will dictate if acquired or elevated but noted that homeowners are being asked to sign contracts in advance of that determination. He stated that this requirement may be slowing down the process and limiting interested homeowners.

**I. Status Report on Updated Floodplain Study and Mapping Delineation for the Delaware River** (Medina Consultants)

Ms. Tessieri introduced Wassim Nader and Hawi Rimawi from Medina Consultants. They are the contractor through FEMA Region II for the updated Delaware River mapping. They are also a subcontractor to Dewberry in their contract with FEMA Region III in Philadelphia. Medina Consultants

was tasked by FEMA Region II to survey the riverine portion of the Delaware River from Port Jervis down to Trenton, approximately 126 miles, to be used in an updated hydraulic analysis to develop updated floodplain maps for the New Jersey side of the river.

The survey effort extends from the Mercer/Burlington line up to the Sussex NJ/Orange County NY line. They have about 444 wet cross sections that are spaced at roughly 1500 feet. Out of the cross sections, they have 12 cross sections that extend 200-300 feet beyond the banks, with regular cross sections about 50 feet. The purpose of these 12 cross sections is to cross check with the topography. This survey effort commenced in October 2007, and they have five two-man crews in the field. There are 956 GPS control points established; two points per cross section and two points per structure. These GPS control points are tied into NGS control stations and established USGS stations. There are 37 structures, most owned by the Joint Toll Bridge Commission and Medina in the process of securing access for those sites.

Processing of the hydraulics is dependant on finalizing the survey and securing adequate topography. Mercer and Bucks Counties topography was provided by Delaware River Valley Planning Commission, at five foot contours. Hunterdon County LiDAR was flown by a FEMA contractor in spring 2006 and will be based on two foot contour accuracy. LiDAR covering half of Warren County was flown in 2006 by the Highlands Commission, which is two foot contour accuracy and will be made available to them soon. The remainder of Warren/Sussex County with a mild extension into the Pennsylvania side has been contracted by Medina, was flown late April, and is currently being processed.

Under a separate task, money was allocated to initiate the study of the Delaware River. Interested parties who ensure that the study is coordinated and using best available data includes NJDEP, FEMA R II and III, Army Corps of Engineers, DRBC, and DRJTBC. There are a total of about 50 communities in the study area. It will be important to schedule some outreach and education to these communities. Medina is currently talking with FEMA Region III to update the mapping on the Pennsylvania side.

## **J. Opportunity for Public and Interested Party Comments**

- New York State Acquisition Funding: Bill Nechamen mentioned that \$15.25 Million in NY State funds is being allocated through the State Department of Communities and Development to buy out homes in flood-prone areas. Sullivan will receive \$4 million; Ulster, Orange and Delaware counties, \$2 million each. Other counties receiving money include: Broome, \$750,000; Chenango, \$750,000; Herkimer, \$750,000; Montgomery, \$750,000; Otsego, \$750,000; Schoharie, \$750,000; and Tioga, \$750,000. To qualify for the program, homes must be primary residences appraised at under \$250,000. Preference would be given to homes that have been flooded twice since April 1, 2004, and are appraised at under \$100,000. The county's emergency management director and a town building official will certify that homes qualify. NYSDEC will assist in prioritizing buyouts.
- New Jersey Blue Acres Program (Acquisition Funding): Laura Tessieri mentioned the existence of the Green Acres, Farmland, Blue Acres, and Historic Preservation Bond Act of 2007 which was presented to the voters and approved at the November 2007 election. The bond act will provide \$12M for the state to acquire, for recreation and conservation purposes, lands in the floodway of the Delaware River, Passaic River, and Raritan River, and their respective tributaries, that have been damaged by, or may be prone to incurring damage caused by storm-related flooding or that may buffer or protect lands from such damage. No details on prioritization of properties has been published.
- Jason Miller referred to handouts E1 and E2 mentioning a new online website, which links to USGS feeds of Corps flood control reservoirs: <http://www.nap-wc.usace.army.mil/nap/>.
- Clarke Rupert mentioned that the Congressional Task Force had plans to request another \$235,000 in FY-09 for Flood Warning.
- Mr. Tudor mentioned that DRBC is interested in anticipating global climate change, how flow dynamics in the Delaware River might change and how it would affect the estuary in terms of biological and water quality end points. A proposal will be forthcoming in the upcoming year to

connect climate change models with National Weather Service precipitation/temperature forecasting, DRBC riverine hydrologic capability and estuarine hydrodynamic capability.

- Ms. Tessieri reported that the New Jersey Association of State Floodplain Managers has a conference coming up October 21-22. Right now they are accepting applications for exhibitors and also a call for presentations so if anyone has something technical that they want to present, please consider sending in an application.
- Laura Tessieri mentioned that real-time data is now available online for USGS stations WBr Delaware R at Stilesville (01425000), EBr Delaware R at Downs ville (0141700).
- Elaine Reichart questioned Stilesville discrepancy, and asked if accuracy is in question. Tom Suro responded that any discrepancy at Stilesville, downstream of Cannonsville, between NYC and USGS; is small and depends on flow; with low flows approx. 3-5% differences may be seen. He also mentioned that Stilesville has three portals in the control structure that at times of high water can collect debris. He mentioned that a low-end correction was necessary and that USGS is scheduling a step down to clear out any debris. Elaine Reichart questioned how the public was to be adequately noticed of this planned step down and requested advance notice. Ms. Tessieri mentioned perhaps NYC can relay this information was via the River Master website. DRBC will bring this issue to NYC's attention.

#### **K. Next Meeting**

The next meeting was scheduled for Wednesday, August 20, 2008 at 10:00 am.

Note: The power went out during the meeting. As such, the taped transcripts are not fully complete. The summary above attempts to convey all information discussed at the meeting.

**FLOOD ADVISORY COMMITTEE  
ATTENDANCE**

**May 7, 2008**

<b>NAME</b>	<b>AGENCY</b>
AHNERT, Peter	National Weather Service (NWS)
CHAPMAN, Fred	Pennsylvania Department of Community and Economic Development (PADCED)
DEANGELO, Jim	Michael Baker
DELAMETER, Nelson	New York State Emergency Management Office (NYSEMO)
DOUGLASS, Bill	Upper Delaware Council (UDC)
FERRARI, Mark	NYSEMO
GARLITS, Skip	Stakeholder
HOGAN, Laurie	NWS
HOGAN, Rachel	Nurture Nature Center
JESPERSON, Eric	Pennsylvania Mapping and Geographic Information Consortium (PAMAGIC)
KRUZDLO, Raymond	NWS
LEAR, Kathy	NJ Office of Emergency Management (NJOEM)
MILLER, Jason	U.S. Army Corps of Engineers (USACE)
NADER, Wassim Y.	Medina Consultants
NECHAMEN, Bill	New York State Department of Environmental Conservation (NYSDEC)
PLACER, Katrina	Mercer County Planning
REICHART, Elaine	Aquatic Conservation Unlimited
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	NWS
SCORDATO, John	NJDEP
SHALLCROSS, Amy	DRBC
STANLEY, Jane	Nurture Nature Foundation
STEIGERWALD, Scott	Pennsylvania Department of Environmental Protection (PADEP)
STEVENS, Glendon	USACE

SURO, Thomas	USGS - NY
SZATKOWSKI, Gary	NWS
TESSIERI, Laura	DRBC
TUDOR, Bob	DRBC
VAN ROSSUM, Maya	Delaware Riverkeeper Network
WESTFALL, Greg	Natural Resources Conservation Service (NRCS)
WILLIAMS, David	Pennsylvania Emergency Management Agency (PEMA) Eastern Area
WINSLADE, C. William	Yardley Borough Manager & Emergency Mgmt. Coord.
WNEK, Patti	NWS